Office of Illness and Injury Prevention Programs

07-OEWH-1073

U.S. Department of Energy

Illness and Injury Surveillance Program

Worker Health Summary, 1995-2004

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Additional information about the DOE's Office of Illness and Injury Prevention Programs, the IISP, and reports for DOE sites participating in this program can be found at:

www.hss.energy.gov/HealthSafety/IIPP/hservices/epi_surv.html

2007

HSS
Office of Health, Safety and Security

Director's Message

The Department of Energy's (DOE) Illness and Injury Surveillance Program has created an opportunity to assess illness and injury rates and patterns among workers at participating sites for well over a decade. The *Worker Health Summary* introduces an additional perspective on worker health with the introduction of analyses comparing the experience of sites in different program offices and a focus on time trends covering a decade of worker illness and injury experience. These analyses by program office suggest that illness and injury patterns among National Nuclear Security Administration (NNSA) workers diverge in many ways from those seen among Environmental Management (EM) and Science workers for reasons not yet understood. These differences will receive further investigation in future special focus studies, as will other findings of interest. With the time depth now available in our data, the *Worker Health Summary* reveals an additional nuance in worker health trends: changing health patterns in a specialized and skilled but aging work force. Older workers are becoming an increasing percentage of the work force, and their absence rates for diseases such as diabetes and hypertension are increasing as well. The impact of these emerging health issues, if properly addressed, can be managed to maintain or even enhance worker health and productivity. Prevention strategies designed to reduce the toll of these health conditions appear warranted, and this report gives us an indication of where to focus them. The analyses that follow reflect the Illness and Injury Surveillance Program's continued commitment to apply a public health perspective in protecting the health of DOE's work force.

Dr. Bonnie S. Richter, Director
Office of Illness and Injury Prevention Programs
Office of Health and Safety
Department of Energy

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Foreword

The Department of Energy (DOE) oversees a unique industrial complex whose diverse activities in research, production, dismantlement, and environmental restoration have the potential for workplace exposures to both radiation and chemical hazards. DOE has the legislative mandate (Atomic Energy Act, Energy Reorganization Act of 1974, and Department of Energy Organization Act, 1977) to monitor the impact of its operations on the environment, the health of its work force, and the residents of communities surrounding DOE sites. The Illness and Injury Surveillance Program (IISP) addresses DOE's responsibility to monitor the health of its work force at DOE sites, to identify health hazards in the workplace, and to identify groups of workers who may be at increased risk for job-related illness and injury.

In 2006, the program assessed the overall health of about 79,100 contractor workers employed at 13 DOE sites participating in the IISP. This coverage provides data on nearly 60 percent of the total number of the workers employed at approximately 26 major DOE sites. The IISP is working to recruit additional sites to participate in the program, especially with a number of large Environmental Management (EM) sites leaving the program as they cease operations and undergo final closure.

In past years, DOE has compiled and distributed annual illness and injury surveillance reports for each site participating in the DOE surveillance program. The *U.S. Department of Energy Illness and Injury Surveillance Program Worker Health Summary, 1995-2004* is the first illness and injury surveillance report to include all sites collectively. This report provides an overview of the health of the work force during the period January 1, 1995 through December 31, 2004. The *Worker Health Summary* presents summarized analyses of the participating work force as a whole, particularly in the assessment of trends and characterization of the DOE work force's health experience by sites under each Program Office: EM, National Nuclear Security Administration (NNSA), and Science. The introduction of analyses of the sites according to their program office acknowledges the significant differences in the missions of various DOE sites and provides information from a broader perspective than was available in the site-specific reports.

In 2006, the program assessed the overall health of about 79,100 contractor workers employed at 13 DOE sites … nearly 60 percent of the total number of the workers employed at approximately 26 major DOE sites.

As in previous annual reports, the *Worker Health Summary* includes analyses based on health events reported by workers returning to work following an absence of 5 or more consecutive calendar days and occupational illnesses and injuries recorded in the Occupational Safety and Health (OSHA) 300 Logs. The line between occupational and non-occupational illness and injury is not always clearly delineated. The apparently non-occupational health outcomes reported by returning workers could signal an emerging occupational disease. For this reason, both types of health outcomes are analyzed. Acknowledging the heavy personal and financial burden that accompanies high injury rates, the *Worker Health Summary* examines patterns of injury, both personal and job-related.

The IISP data collection now spans enough years to evaluate illness and injury time trends across the participating sites. Knowledge of illness and injury trends can be vital to safety and health planning. A major objective is the identification of groups of workers who may be at increased risk for occupational illness and injury. The early identification of these groups sharpens the target for interventions and programs which protect and increase the safety and health of the DOE work force.

The *Worker Health Summary* is organized into 4 chapters with technical notes including a glossary, definitions of occupational categories, an explanation of the diagnostic categories, and a list of diagnosis codes. Chapter 1 provides background information, including the history of the IISP; a discussion of the collection, analysis, and interpretation of health data; the benefits of using rates to evaluate the data; and current limitations faced by the IISP. Chapter 2 presents characteristics of DOE workers included in the IISP. The information covers work force demographics and worker health status information describing overall rates and trends in illness and injury. Chapter 3 presents data for selected illnesses and injuries that are of particular importance to the health and productivity of the DOE work force. Chapter 4 uses OSHA-recordable event data to describe the magnitude, distribution, and demographics of occupational illnesses and injuries.

Contents

Chapter 1 • Background

Program History

Implemented in 1990, the DOE IISP had its genesis in activities that began in 1982 when the DOE Office of Health and Environmental Research funded the Health Surveillance System (HSS) pilot project. The pilot project's objective was the design, implementation, and evaluation of a system for routine morbidity surveillance at a number of DOE sites. The Hanford Site and Idaho National Laboratory were the initial participants. When the pilot phase ended in 1990, the Hanford Site, Idaho National Laboratory, the Savannah River Plant, Brookhaven National Laboratory, and the Rocky Flats Plant were active participants.

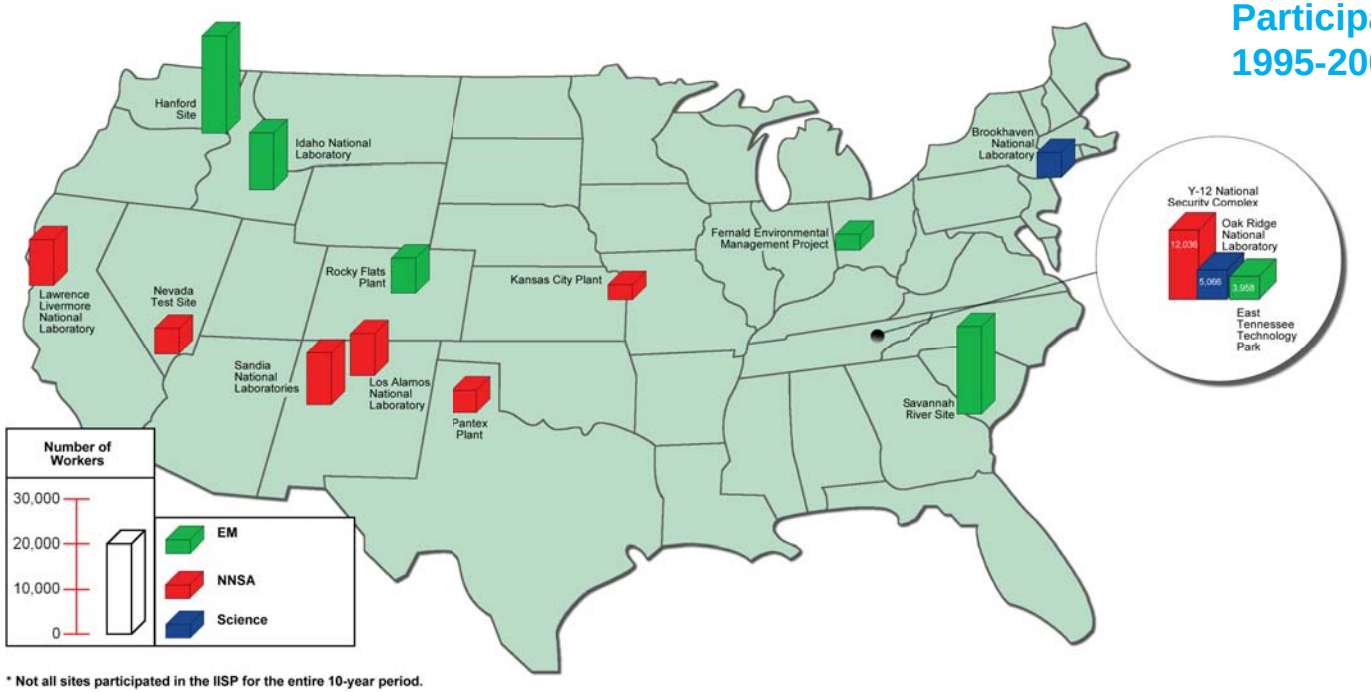
DOE formed the Office of Health in 1990 to establish an occupational health program for the work force. The Office of Health included the elements of epidemiology and health surveillance, occupational medicine, industrial hygiene, and health physics. The need for an ongoing, Headquarters-based health surveillance program was apparent, and the program's transfer to Headquarters acknowledged the demonstrated utility of the HSS pilot project. Surveillance at the participating sites continued without interruption during this period. Site recruitment was guided by interest in including sites that collectively reflected the full range of the DOE mission; were willing to participate in this voluntary program; could assemble and transmit the necessary health and demographic data; had a work force of sufficient size to permit effective use of the available analytical tools; and could be supported with available resources. Budget constraints have limited the continued recruitment of additional sites. The program continues to explore new approaches to occupational health surveillance, provides a resource to assist sites in addressing worker health concerns, generates information on trends in the health status of workers, and monitors worker health for indications of emerging health issues.

Currently in its 17th year, the IISP contributes to the overall Office of Health and Safety mission to protect and promote the health of DOE workers. The goal of illness and injury surveillance is to monitor morbidity in, and assess the overall health of, the DOE work force to identify groups that may be at increased risk for occupational illness and injury. In this manner, the program provides focus for interventions that reduce or eliminate risk. Illness and injury surveillance also provides a means by which the effectiveness of these preventive actions can be measured.

For the purpose of this report, each participating site is assigned to 1 of 3 categories, defined by program office **(Figure 1)**. Sites included in the EM group are involved in cleanup and closure of a facility. Sites included in the NNSA group ensure the integrity and safety of the country's nuclear weapons. Lastly, sites focused on Science include facilities that manage fundamental research programs in basic energy, biological, environmental, and computational sciences.

A system of 10 occupational categories was developed for this summary report to permit comparison of workers who performed similar tasks at the different sites during the period. The individuals who were employed at the 15 sites were classified into 1 occupational category for each year of employment based on their job title, work environment, and potential for exposure to hazardous materials. The list of occupational categories with descriptions of work performed by individuals assigned to the various categories can be found on page 85, Occupational Group Definitions. To facilitate data analysis, the 10 occupational categories were collapsed into 7 categories based on similarities of work environments and potential hazard exposures: 1) Professional: Management, In-House Professionals, and Field Professionals; 2) Administrative Support; 3) Technical Support: Technical Support and Biohazard; 4) Service; 5) Security and Fire; 6) Crafts; and 7) Line Operators.

Figure 1. Distribution of Contractor Work Force by Program Office at Sites Participating in the IISP, 1995-2004



Program Operations

The IISP undertakes regular and systematic collection, analysis, and interpretation of data on illness and injury in the DOE work force to:

- Determine the rates of illness and injury among workers;
- Identify increases in the risk of disease among workers;
- Provide information in response to questions from workers, physicians, and others about possible occupational health effects; and
- Identify areas in which further investigation or analytic studies should be initiated.

This ongoing surveillance requires the regular collection, maintenance, and interpretation of illness and injury data. The Office of Illness and Injury Prevention Programs at DOE Headquarters establishes policy and standards for the IISP. The Program is coordinated by the program manager at DOE with technical assistance provided by the IISP data center staff at the Oak Ridge Institute for Science and Education (ORISE). The ORISE data center manages the Illness and Injury Surveillance database, performs quality assurance procedures, and analyzes data. Each of the participating sites collects illness and injury surveillance data. A site may have numerous contractors, one of which provides the site's occupational medicine staff. Usually, one member of the occupational medicine staff is designated as a data coordinator who takes primary responsibility for coordinating the collection and transmission of surveillance data for that site to the IISP data center.

Illness and injury data are linked with demographic information and job titles to evaluate illness and injury patterns among the DOE work force. DOE sites routinely collect data for other purposes that can be used for illness and injury surveillance. These existing data can be found in records maintained by occupational medicine, safety, human resources, and benefits departments. The site coordinator collects and sends these data to the data center for analysis. More comprehensive information regarding the IISP and data collection can be found at:

http://www.hss.energy.gov/HealthSafety/IIPP/hservices/epi_surv.html

The DOE Office of Illness and Injury Prevention Programs also analyzes and interprets the IISP data and produces reports based on these analyses. The Office coordinates all activities between the IISP data center and site data coordinators and issues reports based on health event data submitted by the sites. The program manager works with analysts at the IISP data center and site staff to identify areas in which further investigation might be needed.

Report Overview

The *Worker Health Summary* presents an overview of the distribution, magnitude, and trends associated with illness and injury in the DOE work force during the period of 1995 through 2004. Through exploring the health status measures of the DOE work force by age, gender, program office, and occupational group, the IISP is able to identify groups of workers that may be at increased risk for occupational-related illness and injury.

Chapter 2, Characteristics of the DOE Work Force, presents demographic information and health measures for DOE workers based on return-to-work data. These data include illness or injury events reported by workers who return to work through the site's occupational medicine clinic to be pronounced "fit-for-duty." These events are recordable absences of 5 or more consecutive calendar days and may not be related to *occupational* illness or injury. The method for counting absences, which includes holidays, weekends, and days off associated with various alternative work schedules, took into consideration many factors. These included the presence of many compressed work schedules, schedules which varied frequently, the ongoing difficulty of determining and updating individual work schedules, and the large number of different schedules, e.g., at one site there were over 90 different schedules. The 5 calendar day requirement corresponded with reporting requirements in DOE Order 5480.8A and its successors while capturing many absences involving fewer actual workdays. This approach responded to concerns that many serious illnesses might be missed because they involved absences shorter than 5 workdays. As a result, the return-to-work data represent total "calendar" days absent, not "workdays" lost. Therefore, the return-to-work data likely overestimate the number of actual workdays absent.

Chapter 3, Selected Illnesses and Conditions, describes the magnitude, distribution, and demographic characteristics of 6 groups of illnesses and injuries that are associated with significant decreases in worker productivity. These include cancer, circulatory conditions, respiratory conditions, injuries, musculoskeletal conditions, and mental health conditions. However, several diagnoses are also potentially preventable and are prime candidates for programs that can help workers either prevent or better manage these health conditions. An evaluation was performed for 3 specifically: hypertension, diabetes, and carpal tunnel syndrome.

It is important to understand that OSHA data pertain only to occupational illnesses and injuries, while return-to-work data include all illnesses and injuries.

Chapter 4, OSHA-Recordable Event Data, provides illness and injury data based on OSHA-recordable events. OSHA-recordable data include the following: all illnesses and injuries that occur on the job; cases that result in lost workdays or fatalities; and cases that do not result in lost workdays but do result in transfer to another job or termination of employment, require medical treatment (other than first aid), or involve loss of consciousness or restriction of work or motion. It is important to understand that OSHA data pertain only to occupational illnesses and injuries, while return-to-work data include all illnesses and injuries. In addition, the days lost or restricted in the OSHA data are the actual number of workdays absent from work or with restricted activity. In contrast, the days absent for the return-to-work events are calendar days, which include weekends and holidays.

Data Presentation: Rates and Small Numbers

Rates are utilized throughout the *Worker Health Summary* to describe the magnitude of illness and injury at the sites. Rates are one of the most appropriate descriptors of health data because they facilitate comparisons, for example, between sites and from year to year.

One consideration for the reader when viewing rates is the influence of small numbers on changes in rates. Substantial changes in rates may result from the effect of small numbers of workers in some groups. Rates calculated for small groups tend to fluctuate more than those based on larger groups. As a result, the reader may notice large changes in rates from year to year for small groups, but they may not indicate significant changes in the health effect being described. The lack of a suitable comparison population outside of DOE limits us to evaluating rates between various groups of DOE workers.

Current Program Limitations

The IISP works toward the goal of monitoring the health of all DOE workers. However, budget constraints currently limit the number of sites that can be supported to participate in the program. Secondly, workers are not followed after termination of work with DOE. Follow-up health information on these former workers would help to identify any long-term health effects associated with exposures received while working for DOE. The data currently collected by the IISP also have limitations. The majority of illness and injury diagnoses were reported to the sites' occupational medicine clinics by workers who were required to obtain medical clearances before returning to work. Some reporting bias may be present because clearance requirements are not enforced consistently among all workers and diagnoses are self-reported. A second concern is the lack of data assessing individual workers' exposures to hazardous materials. Exposure data linked to individuals would allow a more direct search for associated health effects instead of utilizing surrogates such as occupational groups, but often is not readily available to data coordinators who transmit the data to the data center. Third, data addressing important exposures outside the workplace are often unavailable. Lastly, this report includes analyses based on absences of 5 or more days. In recent years, sites have begun to submit absences of less than 5 days. A future report will evaluate the impact of including absences lasting less than 5 days on patterns of illness and injury.

Chapter One

Chapter 2 • Characteristics of the DOE Work Force

Overview

The *Worker Health Summary* is an overview of the health of workers at DOE sites participating in the IISP from January 1, 1995 through December 31, 2004. This chapter provides charts and discussions describing the demographics of the work force, the health status of workers, and characteristics of their illnesses and injuries. The work force is characterized by gender, age group, occupational category, and program office. The demographic and job-related data are analyzed with illness and injury data. Based on these analyses, the figures present a visual summary of the distribution, magnitude, and trends of illness and injury among these workers. Workers at increased risk for certain health conditions can be identified through these analyses.

Work Force Demographics

Over the 10-year period, the 15 sites included in the IISP reported data for a total of 137,698 individual DOE workers. However, all 15 sites did not participate in the IISP for the entire period **(Table 1)**. As sites came into the program, their data were added to the data from other participating sites for analysis. During any given year, the number of workers included in the IISP ranged from 52,100 (1997) to 80,200 (2003) individuals **(Figure 2)**.

Table 1. Site Assignment by Program Office and Years of Participation

Site	Years of Participation
Environmental Management	
East Tennessee Technology Park	1999-2004
Fernald Environmental Management Project	1995-2004
Hanford Site	1995-2004
Idaho National Laboratory	1995-2004
Rocky Flats Plant	1995-2000
Savannah River Site	1995-2004
National Nuclear Security Administration	
Kansas City Plant	2002-2004
Lawrence Livermore National Laboratory	2002-2004
Los Alamos National Laboratory	2003-2004
Nevada Test Site	2002-2004
Pantex Plant	1995-2004
Sandia National Laboratories	1995-2004
Y-12 National Security Complex	1998-2004
Science	
Brookhaven National Laboratory	1995-2004
Oak Ridge National Laboratory	1999-2004

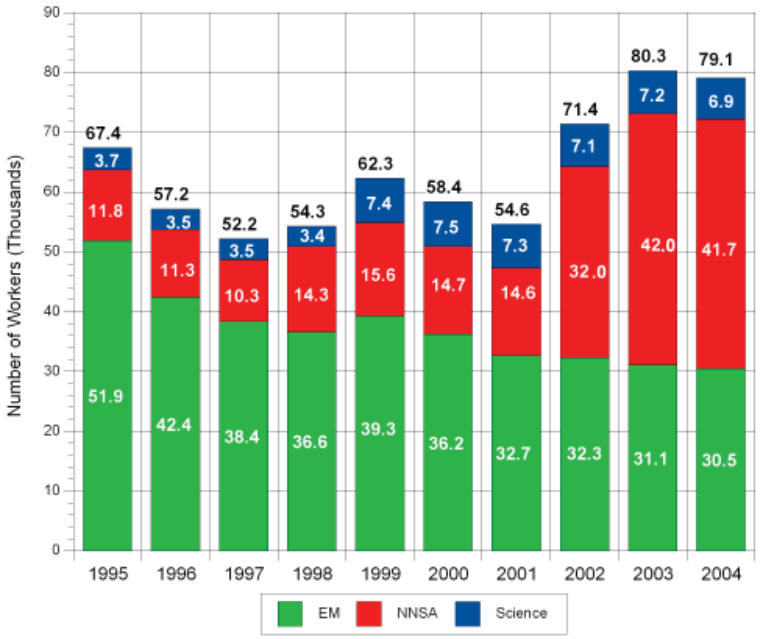
From 1995 through 2002, the EM group had the largest number of workers in the IISP. With the addition of 3 new NNSA sites in 2002 and 1 in 2003, this group surpassed the size of the EM group in 2003. The addition of 1 site to the IISP in 1999 doubled the number of workers in the Science group. Workers using off-site clinics were not included in IISP data collection. Changes in the facility work force composition from year to year influenced illness and injury trends observed over the 10-year period.

Over time, the age of the majority of the workers shifted from 30-49 years old to 40 or older **(Figure 3)**. As expected with a fairly stable work force, the average age increased from 42 years in 1995 to 46 years in 2004. The portion of workers under 30 years old decreased from 11 percent of the work force in 1995 to 8 percent in 2004. In contrast, the portion of workers aged 50 or older grew from 22 percent to 40 percent. A greater percentage of men was 50 years or older, and a smaller percentage was under 30 years old compared with women. Workers aged 30-39 decreased consistently over time in all 3 program offices as workers aged 50 or older increased. Throughout the period, the Science facilities had the highest percentage of workers aged 50 or older **(Figure 4)**. Crafts workers were older on average, and Security and Fire workers were younger compared with those in the other occupational groups **(Figure 5)**. The work force was predominantly male, with a ratio of 7 men to 3 women over the 10 years **(Figure 6)**. However, this ratio varied among the occupational groups from 1 man for every 2 women in the Administrative Support group to 14 men for every 1 woman in the Crafts group **(Figure 7)**.

In most years, the largest number of workers held jobs in Administrative Support, followed by In-House Professionals and Field Professionals **(Figure 8)**. Biohazard workers accounted for less than 1 percent of the work force each year. In 5 of the occupational groups (Management, Technical Support, Biohazard, Service, and Security and Fire workers), the portion of the work force changed less than 1 percent from 1995 through 2004. For the other 5 groups, 2 groups experienced an increase and 3 groups experienced a decrease in the percentage of the work force. The Administrative Support group decreased from 21 percent in 1995 to 17 percent in 2004, In-House Professionals saw a decrease from 19 percent to 18 percent, and Line Operators decreased from 6 percent to 4 percent. In contrast, Field Professionals grew from 14 percent to 18 percent and Crafts workers increased from 6 percent to 8 percent of the work force. In subsequent chapters, analyses were based on the 7 occupational categories defined from these 10 original occupational groups. These 7 categories are enumerated in the Program History section of Chapter 1 (page 2).

Figure 2. Total Number of Workers, 1995-2004

The number of workers in the IISP remained relatively stable from 1996 through 2001, but increased substantially after 2001 with the addition of 4 NNSA sites. About 140,000 individual workers were included in the IISP over the 10-year period. Site participation grew from 8 sites in 1995 to 14 sites in 2004. One site was withdrawn in 2001.



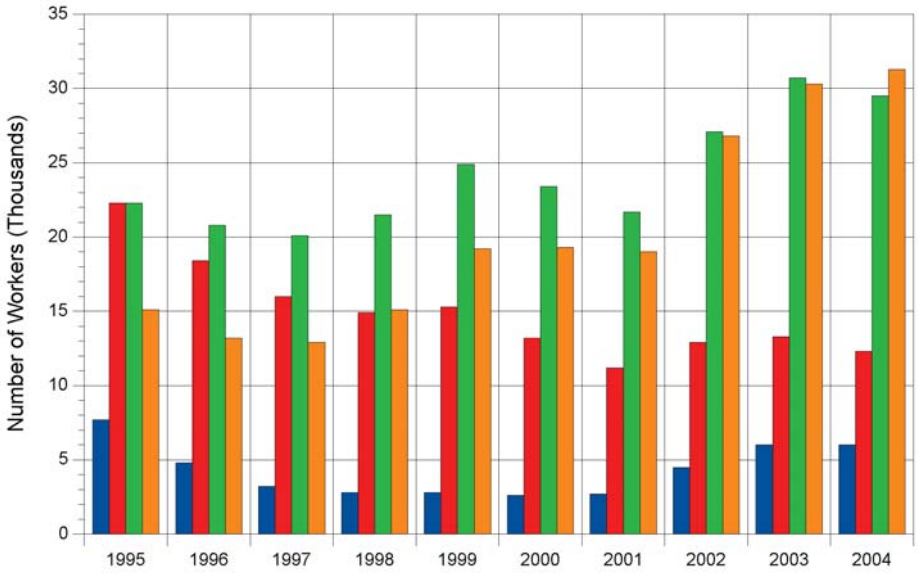
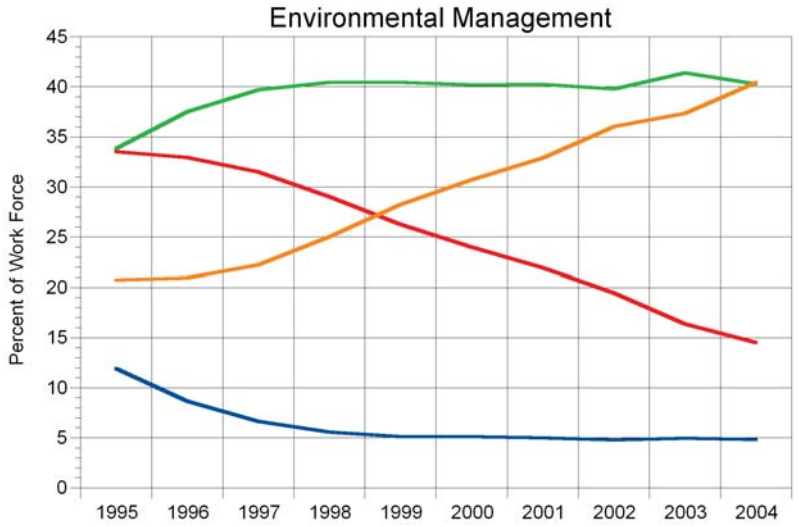


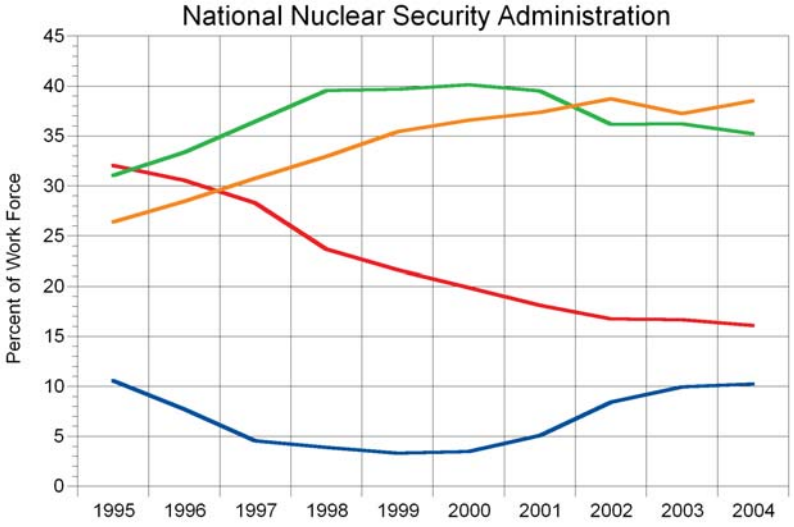
Figure 3. Total Number of Workers by Age Group, 1995-2004

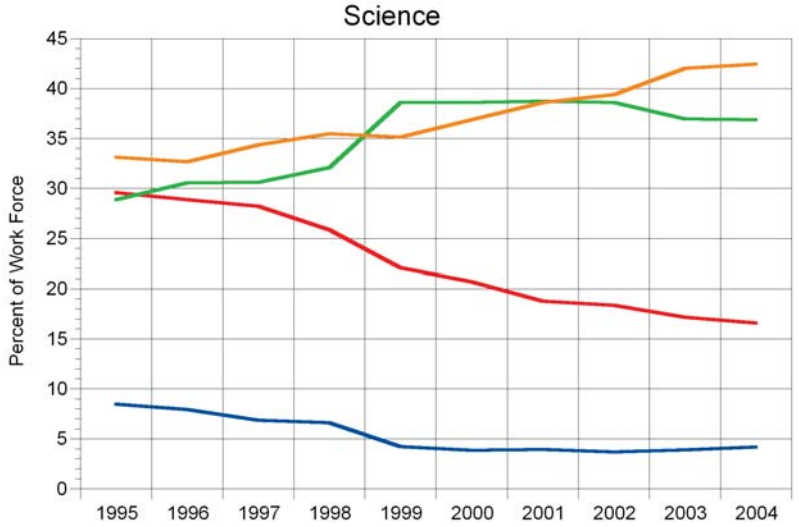
The DOE work force at IISP sites was stable but aging. One sign of a stable work force is its increasing age over time. As current workers remain and hiring of new, younger workers diminishes, the average age of a work force will increase. From 1995 through 2004, the portion of the work force less than 40 years old steadily decreased, while the portion of older workers steadily increased. The average age of the workers increased from 42 in 1995 to 46 in 2004.

Figure 4. Age Distribution by Program Office, 1995-2004

The aging of the work force was apparent in all 3 program office groups. The percentage of workers aged 50 or older increased steadily, nearly doubling at EM facilities over 10 years. Workers aged 30-39 decreased by about half over the same period in each program office.







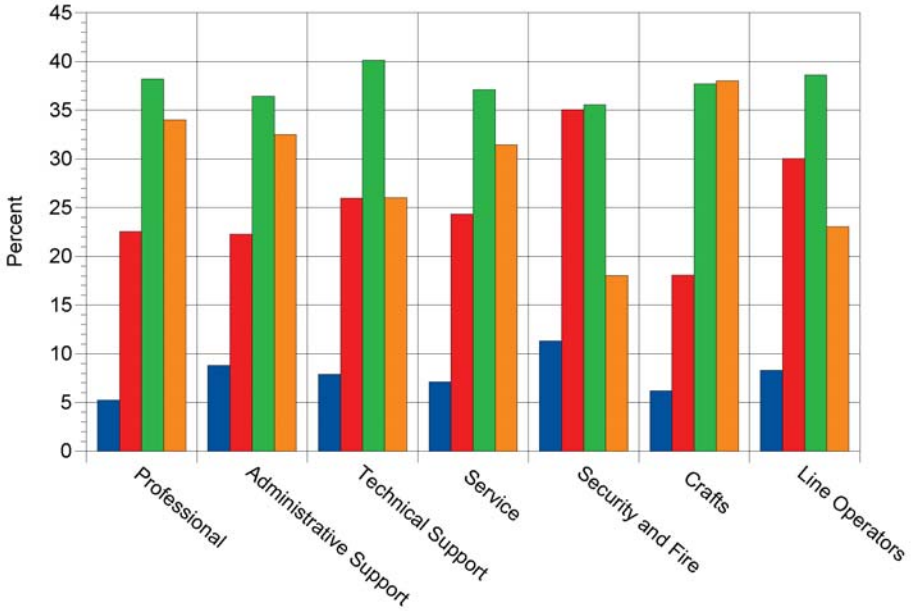


Figure 5. Age Distribution by Occupational Group, 1995-2004

Over the 10-year period, workers aged 40-49 years old were the greatest portion in each occupational group with the exception of Crafts workers. In the Crafts group, the largest percentage of workers was aged 50 or older.

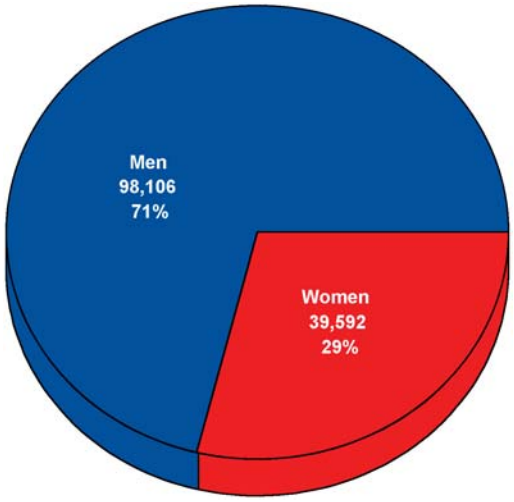
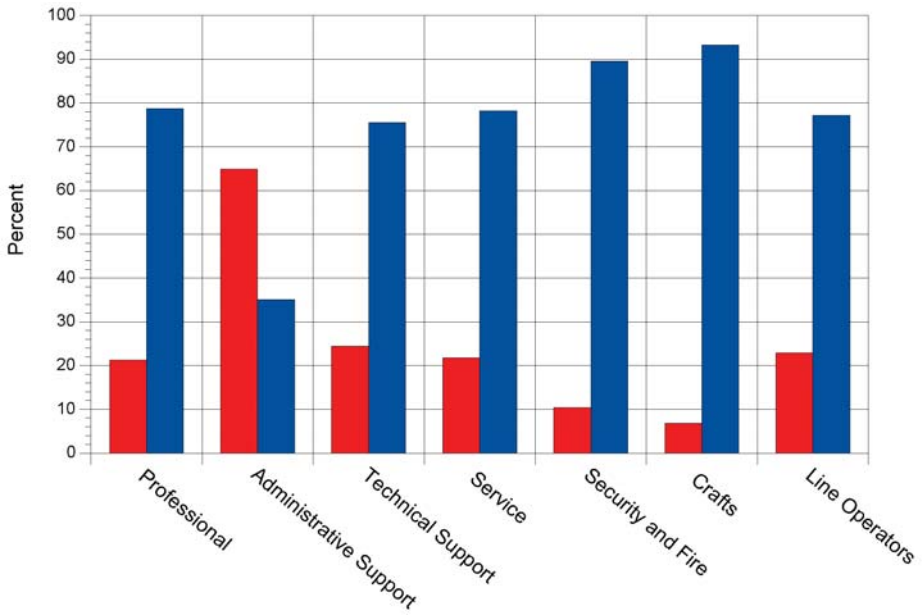


Figure 6. Total Number of Workers by Gender, 1995-2004

The gender distribution of the DOE work force did not change substantially from 1995 through 2004, remaining about 29 percent female and 71 percent male.

Figure 7. Gender Distribution by Occupational Group, 1995-2004

The majority of workers were men in all occupational groups except the Administrative Support group. Women made up 65 percent of this group.



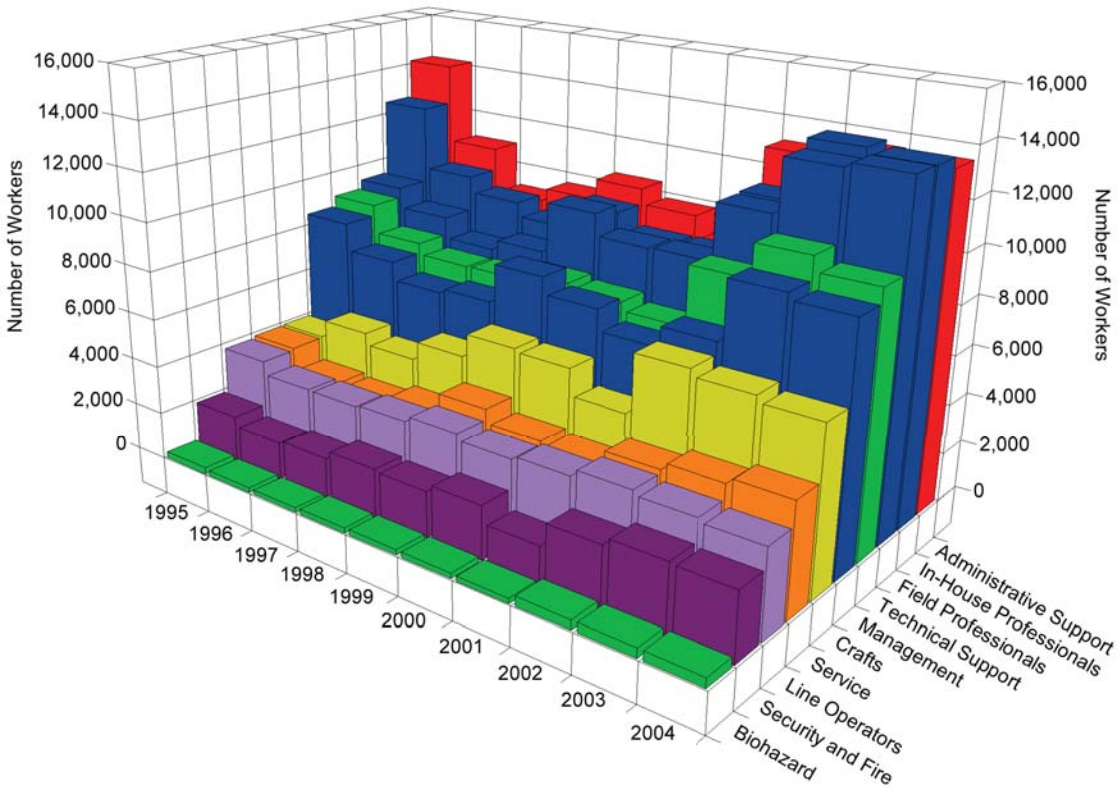


Figure 8. Total Number of Workers by Occupational Group, 1995-2004

The number of workers in most occupational groups increased from 1995 through 2004. Most of the increase came after 2001 with the addition of 4 new sites. Exceptions were workers categorized in Administrative Support and Line Operators, whose numbers decreased over the 10 years. The initial 10 groups were collapsed into 7 groups for the purpose of analysis. These 7 groups are used in the remainder of the report. The colors of the bars in the graph reflect the combination scheme. Refer to page 85 for Occupational Group Definitions.

Worker Health Status

Analyzing the number of absences reported by workers provides a picture of the overall health of the combined work force at the IISP sites. Combining the data from 15 sites assumes that worker compliance with DOE directives (5480.8A, 440.1) and federal regulations (10 CFR 851), which require that all absences lasting at least 5 consecutive workdays (or the equivalent workweek) be reported and the worker evaluated before returning to work, is the same across all the sites.

From 1995 through 2004, workers included in the IISP reported a total of 75,541 absences. Overall, 75 percent of the workers reported no absences **(Table 2)**. Fourteen percent of the workers reported only 1 absence and 11 percent reported more than 1 absence (the maximum number of absences reported by any worker was 36). The absence rate increased 43 percent, from 88 absences per 1,000 workers in 1995 to 125 absences per 1,000 workers in 2004. The absence rates increased with age and over time **(Figure 9)**. The trend in the rates was very similar for workers aged 40 or older. These rates increased through 2003, then decreased to levels similar to those seen in 2000. The rates in the 16-29 age group were the lowest and changed the least over the period. Women reported 28,933 (38 percent) of the total absences, and men reported 46,608 (62 percent) absences. Each year, the absence rate among women was at least 51 percent higher than the rate among men **(Figure 10)**.

The absence rate among the workers at the EM and Science facilities increased the most over the period, doubling between 1995 and 2003. The rate at the NNSA facilities showed little change **(Figure 11)**. The decreased rate after 2001 among NNSA sites resulted from the addition of 3 new NNSA sites in 2002. The addition of these 3 sites increased the number of workers in this program office by 51 percent but only increased the number of absences by 24 percent. From 2001 to 2002, the NNSA absence rate decreased from 156 absences per 1,000 workers to 115 absences per 1,000 workers. From 2002 through 2004, the absence rate remained steady.

The absence rate among the workers at the EM and Science facilities increased the most over the period, doubling between 1995 and 2003. The rate at the NNSA facilities showed little change.

All 7 occupational groups included in this analysis ended the surveillance period with higher absence rates compared with their rates at the beginning **(Figure 12)**. The increase was greatest among Line Operators and Service workers; intermediate among Professional, Security and Fire, and Technical Support workers; and least among Administrative Support and Crafts workers. In summary, the trends indicated that no particular occupational group was responsible for the overall increase in absence rates from 1995 through 2002.

Number of Absences	Number of Workers	Percent of Workers
0	102,628	75
1	**19,262**	**14**
2	7,295	5
3	3,481	**2**
4+	5,032	4

Table 2. Number of Absences per Worker, 1995-2004

Overall, 75 percent of the workers had no absences over the 10-year period.

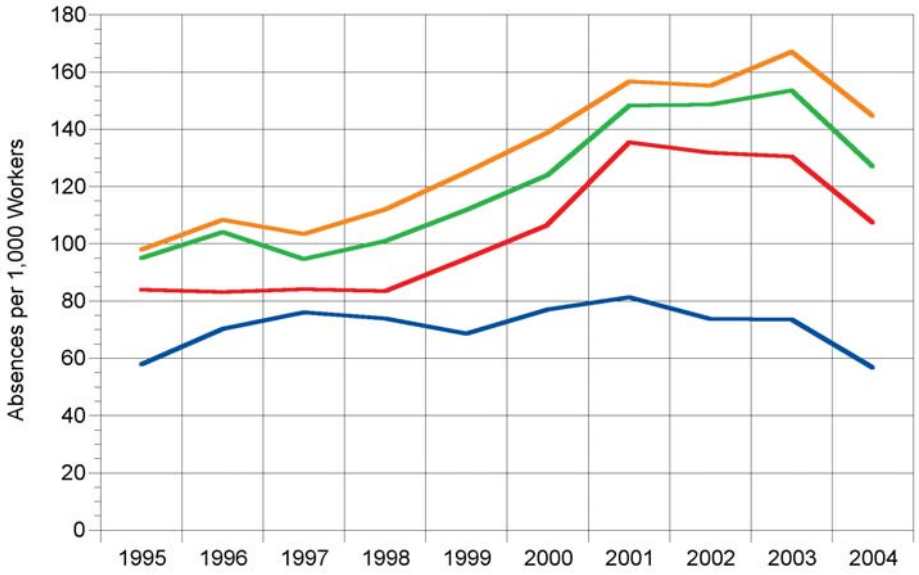


Figure 9. Absence Rates by Age Group, 1995-2004

Among workers aged 30 or older, the absence rate increased steadily from about 1997 through 2001, then stabilized among workers 40 or older and declined among workers younger than 40. Among the youngest workers, the rate in 2004 was lower than the rate in 1995; in the other 3 age groups, the rate increased at least 25 percent over the 10 years. Absence rates increased with age in each of the 10 years.

Figure 10. Absence Rates by Gender, 1995-2004

From 1995 through 2004, the absence rate increased for both men and women. The absence rate among women was at least 51 percent higher than the rate among men each year.

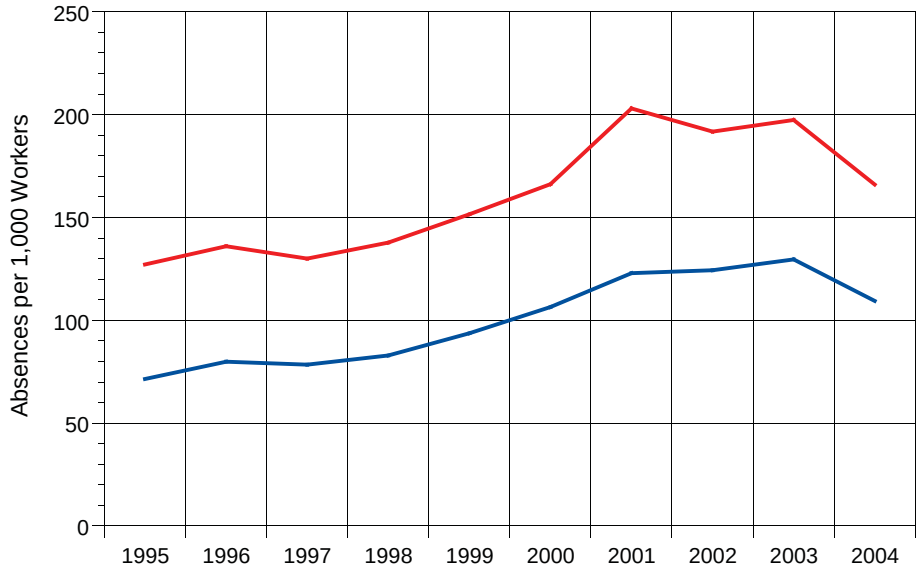
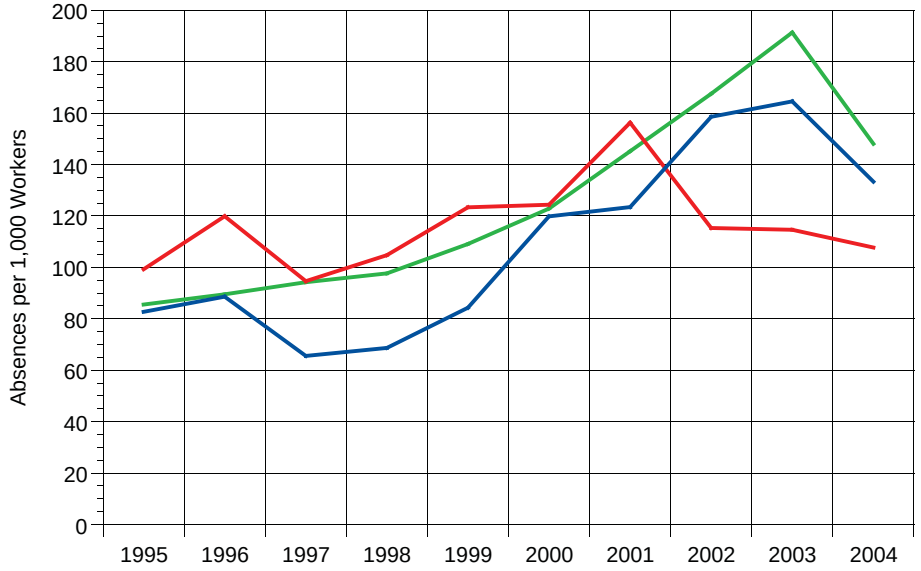


Figure 11. Absence Rates by Program Office, 1995-2004

From 1995 through 2003, the absence rates for EM and Science facilities increased steadily. NNSA facilities, which began the period with the highest absence rates had the lowest rates by 2004.



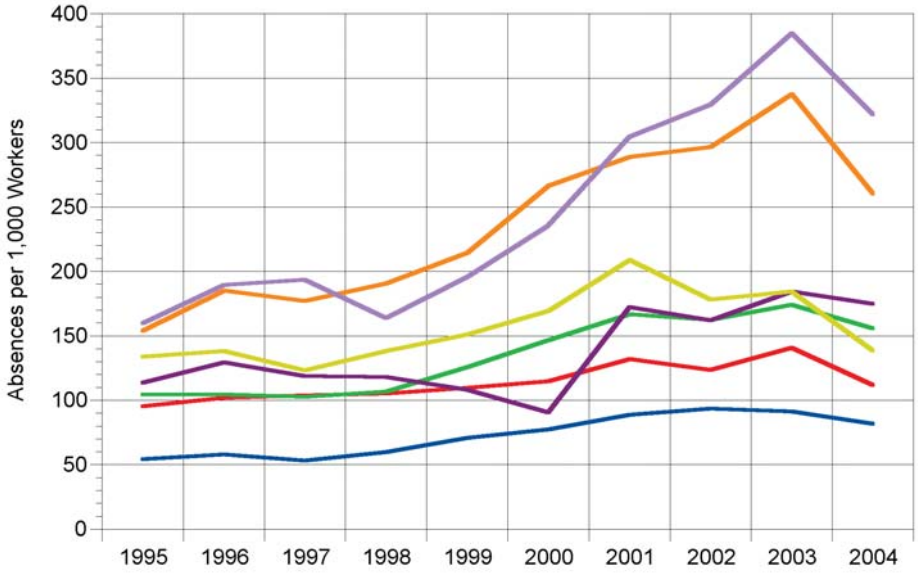


Figure 12. Absence Rates by Occupational Group, 1995-2004

The absence rate increased for all occupational groups from 1995 through 2003. The greatest increases were seen among Line Operators and Service workers. These 2 groups had the highest absence rates in each of the 10 years.

Characteristics of Illness and Injury Diagnoses

This report summarizes data from absences of 5 or more consecutive calendar days; data include length of time away from work and the medical conditions responsible for the absences. An absence is a period measured in days of incapacity or inability of a worker to perform normal work duties due to illness or injury. The period of incapacity may include the diagnosis, treatment, or recovery from an illness or injury. A diagnosis is the identification of a disease or health condition based on signs and symptoms. The absence of a worker can be due to 1 or more medical conditions or diagnoses. In the previous section, the focus was on absences. This section focuses on the medical conditions that caused the worker to be absent.

The 75,541 absences reported by workers included 104,962 medical diagnoses or 1.4 medical diagnoses per reported absence **(Figure 13)**. Diagnoses outnumbered absences each year by 32 percent to 44 percent.

Three disease categories accounted for over half of all the diagnoses reported: respiratory diseases (20 percent), musculoskeletal conditions (17 percent), and injuries (13 percent). Among the diagnoses for respiratory diseases, 58 percent were acute respiratory conditions, 21 percent flu and pneumonia, and 18 percent chronic obstructive conditions or lung conditions resulting from exposure to external agents.

Forty-three percent of musculoskeletal conditions were disk and back disorders, and 29 percent were joint disorders. In the injuries category, the most common diagnoses were sprains and strains (38 percent), fractures (19 percent), and dislocations (12 percent).

In addition to the 3 most commonly reported diagnosis categories, 5 others are of special interest to the IISP because they include medical conditions that are preventable or manageable with changes in the workplace environment or in lifestyle habits. These 5 diagnosis categories, which accounted for 19 percent of all diagnoses reported by workers, are cancer, endocrine and metabolic conditions, mental health conditions, disorders of the nervous system, and circulatory diseases. Over the 10-year period, the rates for 7 of the 8 diagnosis categories increased **(Figure 14)**. Respiratory diseases, musculoskeletal conditions, and injuries had the highest rates throughout the 10-year period.

An absence is a period measured in days of incapacity or inability of a worker to perform normal work duties due to illness or injury. The period of incapacity may include the diagnosis, treatment, or recovery from an illness or injury. A diagnosis is the identification of a disease or health condition based on signs and symptoms.

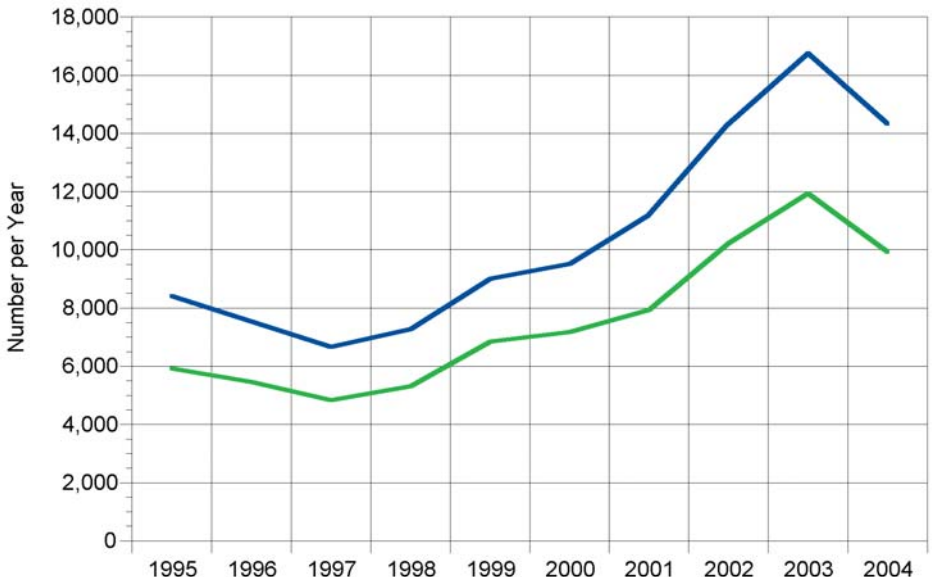


Figure 13. Number of Absences Versus Diagnoses, 1995-2004

The number of absences and diagnoses reported exhibited similar trends throughout the 10 years. Each year, workers experienced at least 1,800 more diagnoses than absences. Many absences involved more than 1 diagnosis.

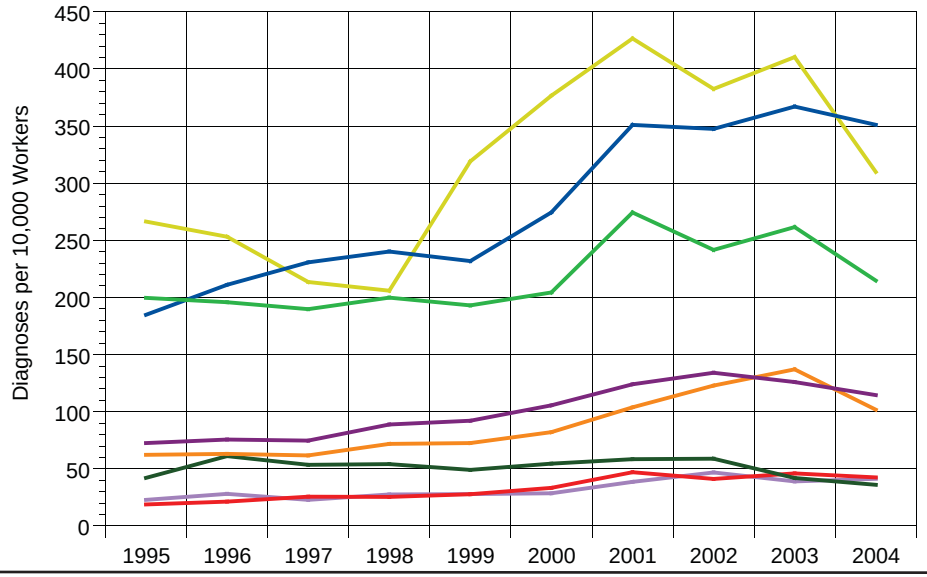
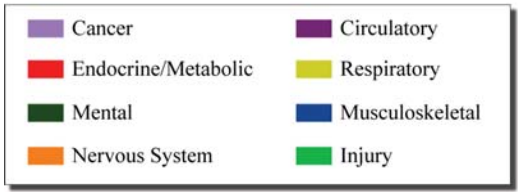


Figure 14. Diagnosis Rates for Selected Disease Categories, 1995-2004

The rates for 7 of the 8 disease categories increased from 1995 through 2004. This trend suggests that the overall increase in diagnosis rates over the 10-year period was not due to an increase in a particular kind of disease or injury. Respiratory diseases, musculoskeletal conditions, and injuries had the highest rates throughout the 10-year period.



Chapter 3 • Selected Illnesses and Conditions

Overview

This chapter describes the magnitude, distribution, and demographic characteristics of several diagnosis categories and a number of more specific diagnoses of particular importance to the health of the DOE work force. All medical conditions within the categories of cancer, mental health, and the circulatory, respiratory, and musculoskeletal systems are of interest. Conditions of special interest include: diabetes, carpal tunnel syndrome, high blood pressure, and all injuries except those due to medical interventions.

Several types of illnesses and conditions were selected based on the potential for prevention or management. High blood pressure and diabetes are conditions which often can be managed successfully through a combination of medical care and lifestyle changes. Injuries, musculoskeletal conditions, and carpal tunnel syndrome can be reduced or prevented through better education, adherence to safety procedures, and sound ergonomic practices. The successful management of mental health conditions is important to the safety and security of the DOE work force. Cancer is of widespread concern, and education can be valuable in the prevention and early detection of the disease.

Cancer

Cancer was reported rarely among the 137,698 workers included in the DOE IISP from 1995 through 2004. Only 1,406 workers reported the disease during the 10-year period. Cancer occurrence was clearly related to age in the work force, and some workers reported more than 1 type of cancer over the 10 years. Counting only the first time a given worker reported a particular type of cancer, we found 1,650 such cases. Over 60 percent (1,040/1,650) of these cases were reported by workers aged 50 years or older, although workers in this age group comprised an average 32 percent of the work force. Workers under 30 years old reported 16 cases, workers 30-39 years old reported 142 cases, and workers 40-49 years old reported 452 cases.

The most commonly occurring cancers in the DOE IISP work force were the same as the U.S. population: prostate cancer in men and breast cancer in women **(Figure 15)**. Comparing the next 9 most common cancer sites in the U.S. and DOE populations, 7 were the same for both men and women, although the frequency of occurrence varied. One of the most striking differences was cancer of the bronchus and lung. In the U.S. population, this was the second most frequent cancer diagnosed among men and women; among the DOE workers, it was the fifth most frequent for men and the eighth most frequent for women. From 1995 through 2004, 10 women and 44 men in the IISP reported lung cancer, accounting for 2 percent and 4 percent

of reported cases in the DOE IISP work force compared with 12 percent and 13 percent in the U.S. population among women and men, respectively.

The rate of cancer occurrence increased with age in this worker population, as would be expected. From one age group to the next, the average cancer rate at least doubled among the workers **(Figure 16)**. The average rate among workers under age 30 was 4 cancers per 10,000 workers, increasing to 10 cancers per 10,000 workers among 30-39 year olds, to 20 cancers per 10,000 workers among 40-49 year olds, and to 56 cancers per 10,000 workers aged 50 or older. Among workers aged 50 or older, the cancer rate increased from 46 cancers per 10,000 workers in 1995 to 56 cancers per 10,000 workers in 2004. The rate increase did not begin until 2000, rising to a peak of 71 per 10,000 in 2002 and declining thereafter. The cancer rate varied little over the 10-year period among the other 3 age groups.

The cancer rate was higher in women than men each year **(Figure 17)**. Among both men and women, the rate increased from 1995 through 2004, increasing about 50 percent for men (from 18 to 28 cancers per 10,000 workers) and increasing about 60 percent (from 25 to 40 cancers per 10,000 workers) for women.

Over the 10 years of surveillance, the NNSA workers had the highest average cancer rate by program office, 33 cancers per 10,000 workers. The cancer rate increased at least 35 percent in each program office over the 10-year period **(Figure 18)**. The rate for the Science workers was lowest each year except 1996. In 1995, the rate among Science workers, 11 cancers per 10,000 workers, was about half that of EM and NNSA workers. In 2003, the Science rate peaked at 28 cancers per 10,000 workers. The rate among EM workers peaked in 2002 with 46 cancers per 10,000 workers and among NNSA workers in 2001 with 45 cancers per 10,000 workers. The reason for the differences in trends between different program offices has not been determined.

An analysis of cancer rates by occupational group showed few clear trends, in part because most groups reported few cancers over the 10 years. Small numbers contributed to substantial fluctuation in rates. We found little overall change among Professional and Technical Support groups. Line Operators displayed a threefold increase in cancer rates over 10 years. The rate among Crafts workers also increased through 1999 but has remained stable in more recent years **(Figure 19)**.

Following the same trends seen in the U.S. population, the overall occurrence of prostate cancer increased among men in the DOE work force and the rates increased with increasing age from 1995 through 2004 **(Figure 20)**. Of the 356 cases of prostate cancer reported for DOE men, 317 were in workers 50 years of age or older; only 2 cases were reported by men under age 40. The 10-year average rate among men aged 50 or older was 20 cases per 10,000 men or 10 times higher than the rate among men aged 40-49 **(Figure 21)**.

The occurrence of breast cancer increased with age in the U.S. population, a trend also seen among women in the DOE work force **(Figure 22)**. Women under the age of 30 reported no cases of breast cancer. Women aged 50 or older reported 134 cases.

The average rate over the 10-year period was 5 cases per 10,000 women aged 30-39, 15 cases per 10,000 women aged 40-49, and 29 cases per 10,000 women aged 50 or older **(Figure 23)**. While the rate varied little over this period for women under 50, the rate among women aged 50 or older increased from 18 cases per 10,000 women in 1995 to 34 cases per 10,000 women in 2004. A portion of this increase may reflect increased emphasis on screening programs for early detection and improved survivorship in recent years.

Figure 15. Distribution of the 10 Most Frequently Reported Cancers for the U.S. Population (2004) Compared with the IISP Population, 1995-2004*

Eight of the 10 most frequently reported cancers among both men and women were the same for the DOE workers and the U.S. population. As in the U.S. population, breast cancer and prostate cancer were the most frequently reported cancers among women and men, respectively. One of the more striking differences was that lung cancer in the DOE work force accounted for less than 5 percent of all cancers compared with at least 12 percent among the U.S. population. The difference is probably due to the lower percentage of DOE workers who smoke.

US Population**		Illness and Injury Surveillance Program
Men		
Prostate		Prostate
Lung & Bronchus		Colon & Rectum
Colon & Rectum		Non-Hodgkin's Lymphoma
Urinary Bladder		Melanoma of the Skin
Melanoma of the Skin		Lung & Bronchus
Non-Hodgkin's Lymphoma		Kidney
Kidney		Urinary Bladder
Leukemia		Thyroid
Oral Cavity		Oral Cavity
Pancreas		Testis
Women		
Breast		Breast
Lung & Bronchus		Colon & Rectum
Colon & Rectum		Ovary
Uterus		Thyroid
Ovary		Uterus
Non-Hodgkin's Lymphoma		Cervix
Melanoma of the Skin		Non-Hodgkin's Lymphoma
Thyroid		Lung & Bronchus
Pancreas		Melanoma of the Skin
Urinary Bladder		Kidney

**Excludes basal and squamous cell skin cancers and in situ carcinoma except urinary bladder.*

***American Cancer Society estimates of new cancer cases by gender, U.S. 2004. Source: American Cancer Society. Cancer Facts and Figures, 2004. p10.*

Figure 16. Cancer Rates by Age Group, 1995-2004

Cancer occurrence increases with age in most populations, and DOE's work force is no different. Cancer rates increased consistently with age in each year from 1995 through 2004. Over the 10-year period, the cancer rates increased slightly, if at all, in all age groups.

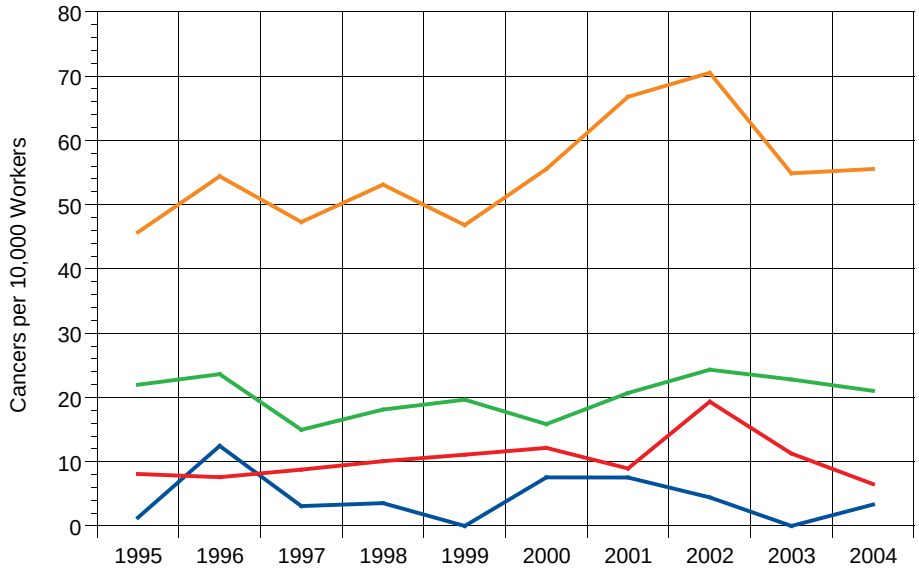
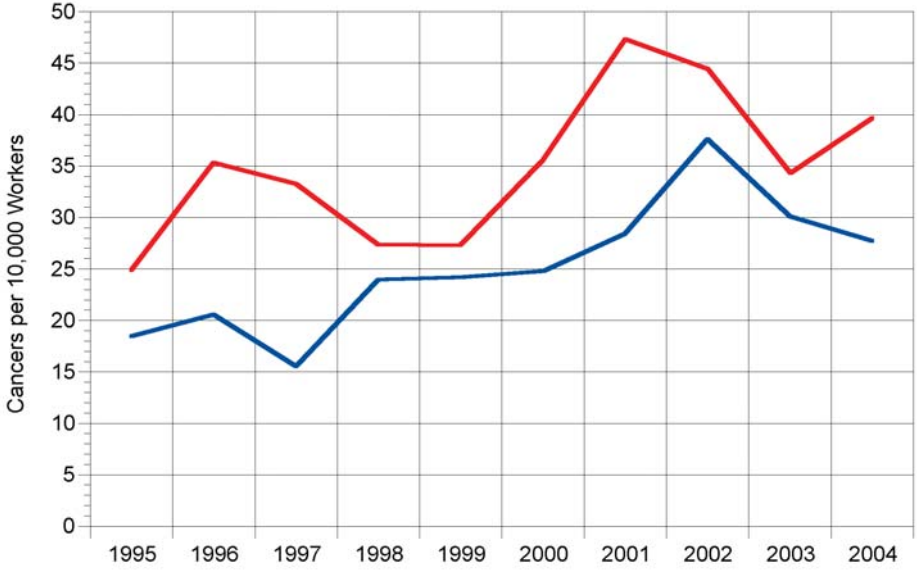


Figure 17. Cancer Rates by Gender, 1995-2004

From 1995 through 2004, the cancer rate increased for both men and women. Each year, the rate for women was higher than the rate for men.



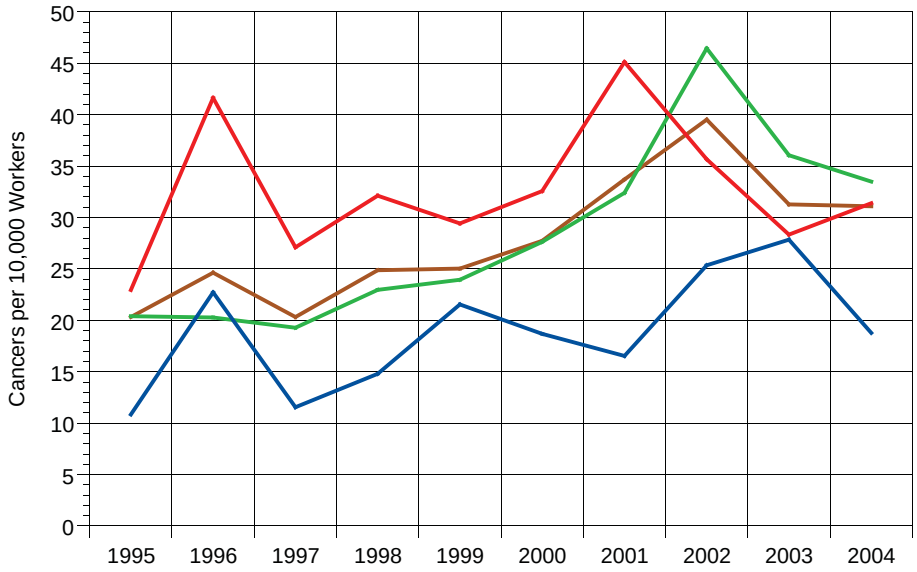


Figure 18. Cancer Rates by Program Office, 1995-2004

Over the period, the cancer rate steadily increased among all DOE workers included in the IISP. The rates among EM workers were very similar to the rates among all DOE workers. In contrast, the rates among NNSA workers were generally greater and among Science workers were always less than the rate for all DOE workers. The significance of this observation has not been determined.

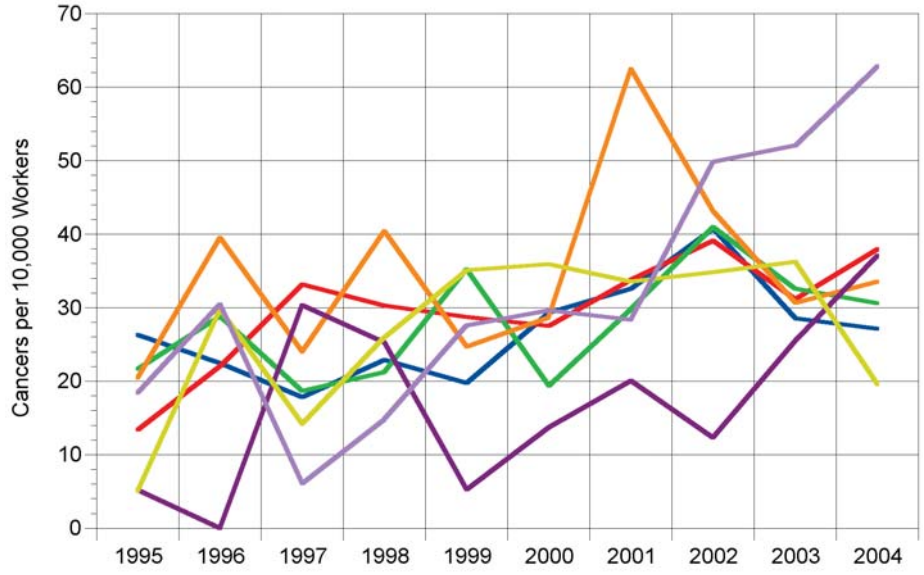


Figure 19. Cancer Rates by Occupational Group, 1995-2004

Cancer rates varied considerably among the occupational groups during the 10-year period. Little change in the rate over the 10-year period was seen among the Technical Support and Professional groups. The rate varied at least threefold over the period for the remaining 5 occupational groups. Most occupational groups reported few cancer cases over the 10 years, leading to substantial fluctuation in the rates based on small numbers.

Figure 20. Prostate Cancer Rates, 1995-2004

The rate of prostate cancer increased steadily from 1995 through 2004.

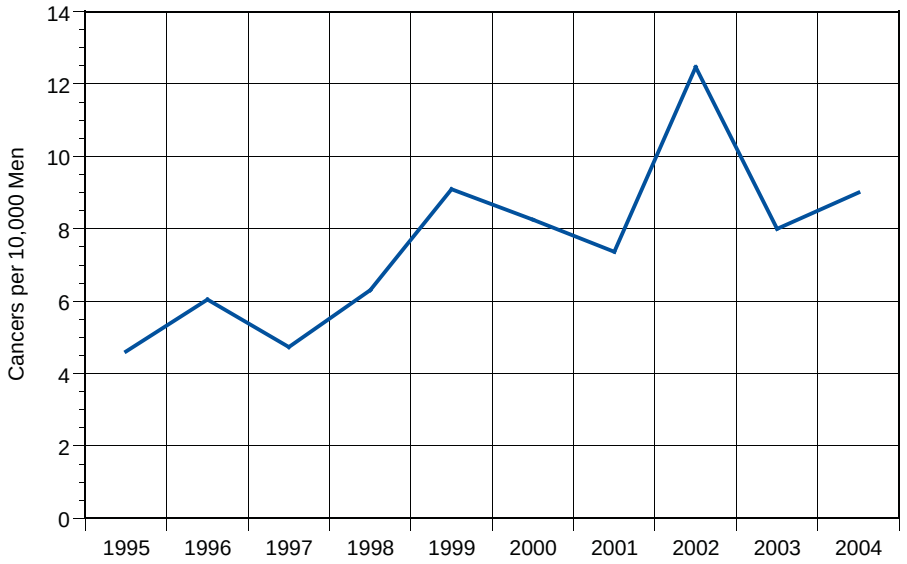
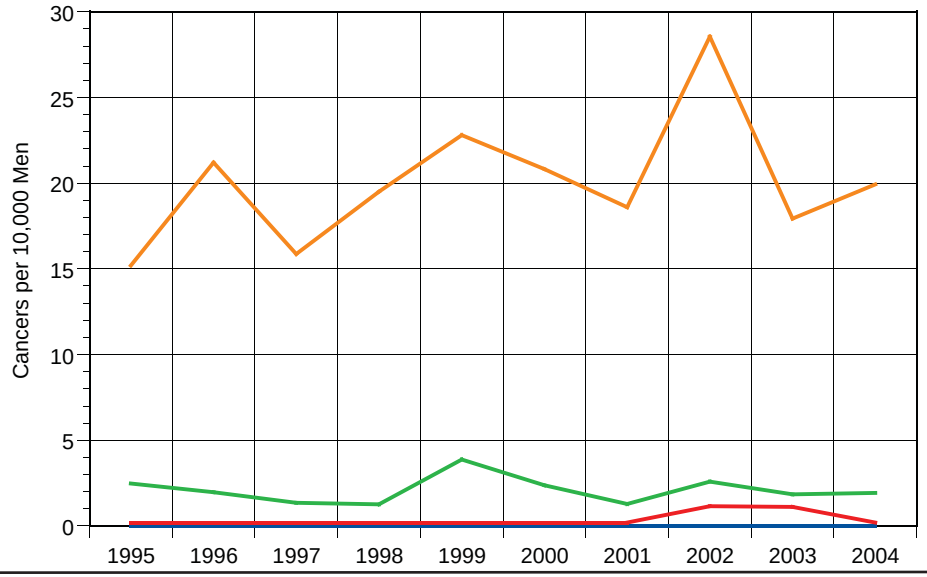


Figure 21. Prostate Cancer Rates by Age Group, 1995-2004

As in the U.S. population, the rate of prostate cancer increased rapidly after men reached 50 years of age. Part of this dramatic increase with age may be related to increased screening for prostate cancer after age 50. As cancer screening increases, the number of cancers found increases as well.



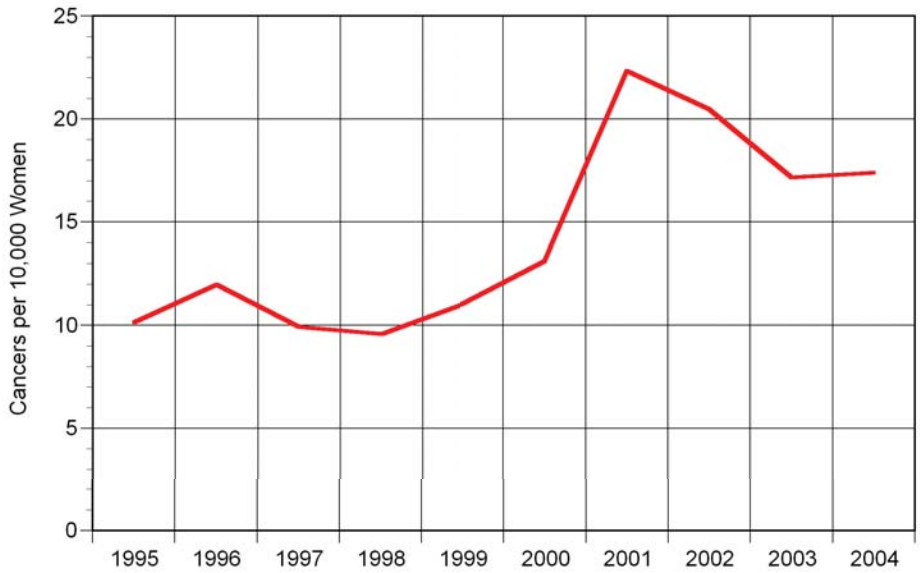


Figure 22. Breast Cancer Rates, 1995-2004

The breast cancer rate increased steadily over the time period.

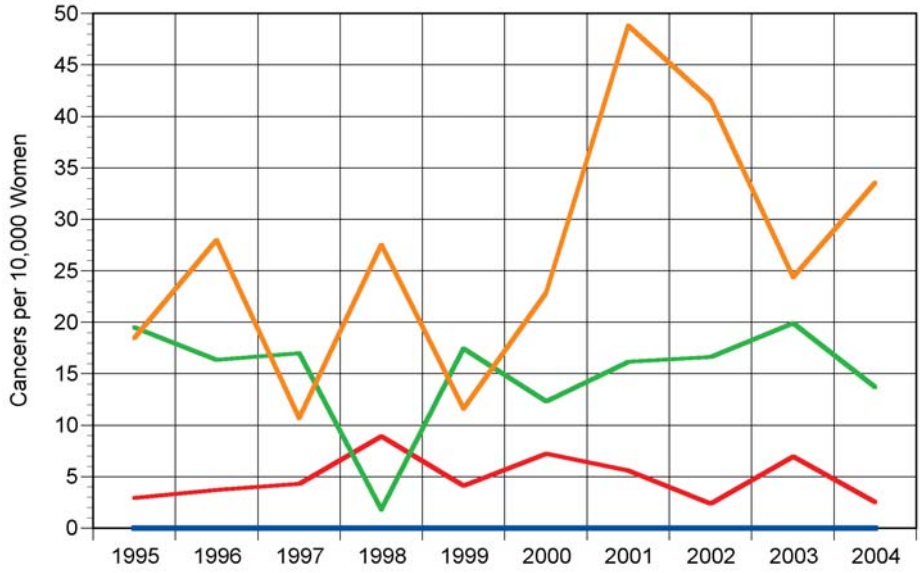


Figure 23. Breast Cancer Rates by Age Group, 1995-2004

Over the 10-year period, the rates among women younger than 50 years old were constant. From 1999 through 2001, the rate increased steadily among women 50 years or older. The increase may be due, at least in part, to greater emphasis on screening for breast cancer.

Circulatory Conditions

Some of the more common disorders of the circulatory system are hypertension; disorders of the arteries, including arteriosclerosis and atherosclerosis; and disorders of the veins, including hemorrhoids and varicose veins **(Table 3)**.

The risk factors for circulatory disorders include heredity, obesity, physical inactivity, a high-fat diet, and smoking. Many times, lifestyle changes, such as diet, exercise, and smoking cessation, can help in the treatment of circulatory disease. Medications are often part of the treatment plan, along with surgery for more severe cases.

In general, the occurrence of heart disease increases with age and heart disease occurs most often in men. The absence rates for circulatory disease in DOE workers are consistent with these observations in other populations. The absence rates due to circulatory disease were highest for workers aged 50 or older **(Figure 24)**. Absence rates for circulatory problems in both men and women increased from 1995 through 2004, but the rates for men remained higher than the women's rates throughout the period **(Figure 25)**.

Circulatory disease absence rates increased among workers in all program offices **(Figure 26)**. The rates for all three groups increased similarly until 2002 when the NNSA rate decreased. This decrease resulted from the addition of 4 new NNSA sites to the IISP in 2002 and 2003. The addition of these 4 sites increased the number of workers in this group by 64 percent but increased the number of absences for circulatory disease by only 36 percent.

Table 3. Circulatory Disease Categories and Examples

Circulatory Conditions	Examples of Conditions
Hypertensive Disease	• High blood pressure
Ischemic Heart Disease (restricted blood flow to the heart)	• Heart attack • Angina (chest pain)
Diseases of Pulmonary (lung) Circulation	• Blood clots in the lung • Pulmonary hypertension • Aneurysm of pulmonary artery
Cerebrovascular Disease	• Stroke • Bleeding in the brain • Reduced blood flow in the blood vessels of the brain
Diseases of Arteries and Capillaries	• Hardening of the arteries • Aneurysm (bulge in artery wall) • Blood clots
Diseases of Veins, Lymphatics, and Other Diseases	• Phlebitis (inflammation of a vein) • Varicose veins • Hemorrhoids
Other Heart Disease	• Inflammation of the sac around the heart • Heart failure • Irregular heartbeat

The absence rates for circulatory disease increased in all occupational groups over the 10-year period, but the increase was not uniform across all groups **(Figure 27)**. Workers in the Professional, Administrative Support, and Security and Fire groups had the lowest rates. The 1995 rates for these groups were less than 60 absences per 10,000 workers and increased to no greater than 93 absences per 10,000 workers by 2004. In contrast, the 1995 rates among workers in the Service, Crafts, and Line Operators groups were at least as high as the 2004 rates in the 3 previously mentioned groups, and their rates increased much more rapidly. The differences in the rates between the 3 occupational groups with high rates compared with the 3 groups with lower rates may be a reflection of factors such as gender, education, access to wellness programs, tobacco use, and physical fitness requirements for the job (i.e., Security and Fire). All occupational groups experienced at least a 40 percent increase in absence rates from 1995 through 2004.

The absence rates for ischemic heart disease, hypertensive disease, and other heart disease increased steadily over the 10 years **(Figure 28)**. Ischemic heart disease was responsible for the highest absence rates. For the 5 remaining types of circulatory disease, the 1995 rate was similar to the 2004 rate.

Figure 24. Absence Rates for Circulatory Conditions by Age Group, 1995-2004

The absence rates for circulatory conditions steadily increased with age. Workers aged 50 years or over experienced the highest absence rates due to circulatory conditions throughout the surveillance period. Rates for 16-29 year olds generally remained below 20 absences per 10,000 workers.

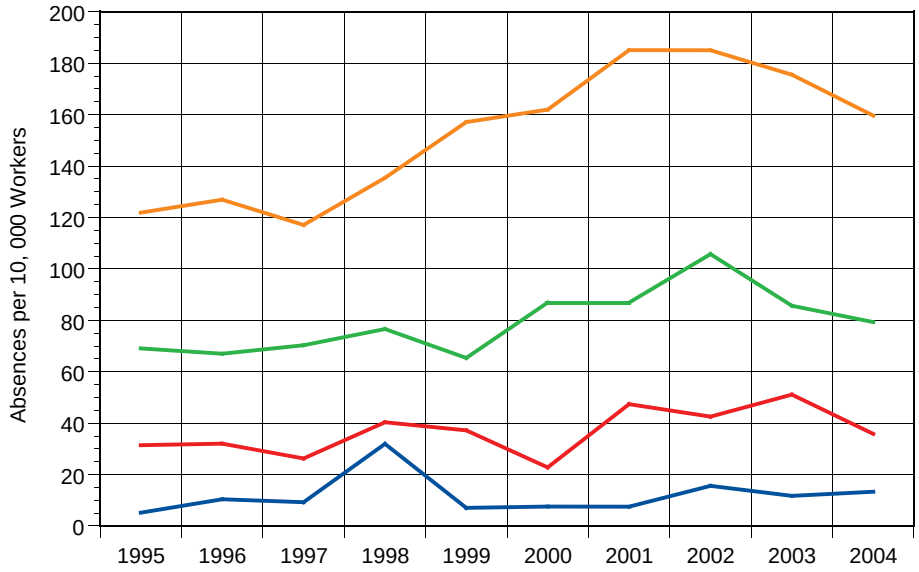
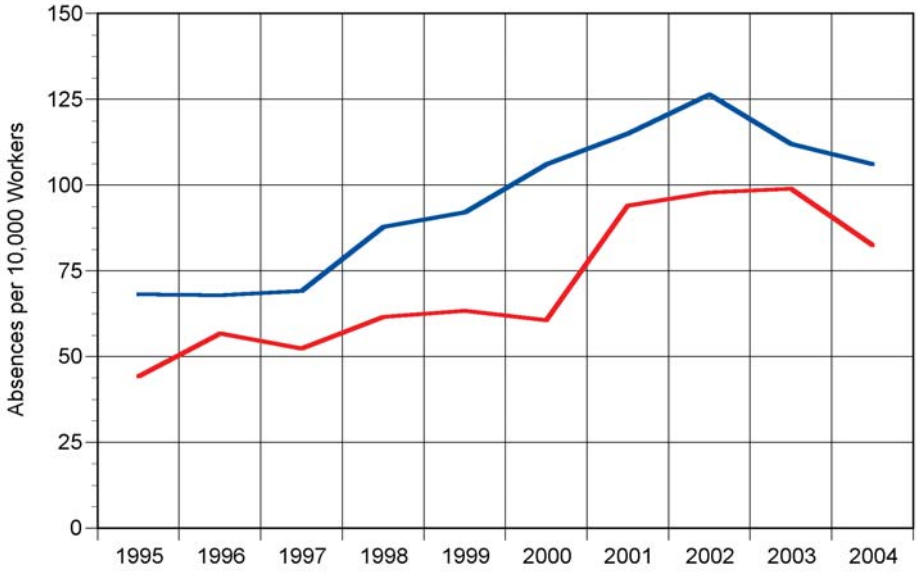


Figure 25. Absence Rates for Circulatory Conditions by Gender, 1995-2004

Men experienced higher absence rates for circulatory conditions than did women throughout the 10-year surveillance period. Absence rates for both genders nearly doubled their 1995 level over the period.



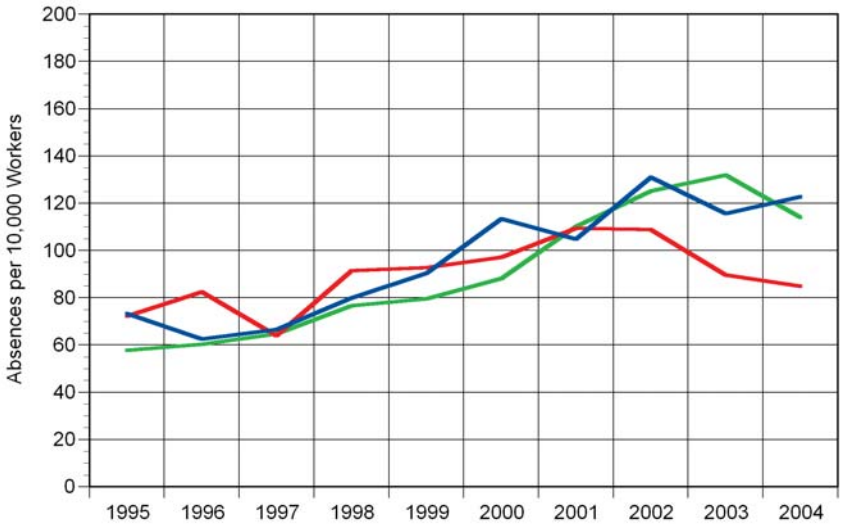


Figure 26. Absence Rates for Circulatory Conditions by Program Office, 1995-2004

The absence rates for circulatory disease increased steadily for workers in all program offices. The rates were similar in all 3 groups until 2002 when the NNSA rate began to decline. This decline resulted from the addition of 4 new NNSA sites in 2002 and 2003. The number of workers in this group increased 64 percent but the number of circulatory disease absences increased only 36 percent, lowering their rate.

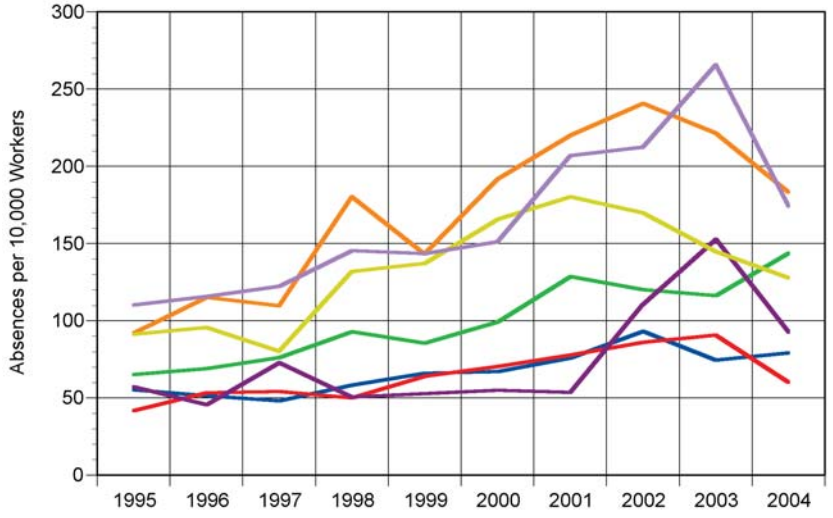
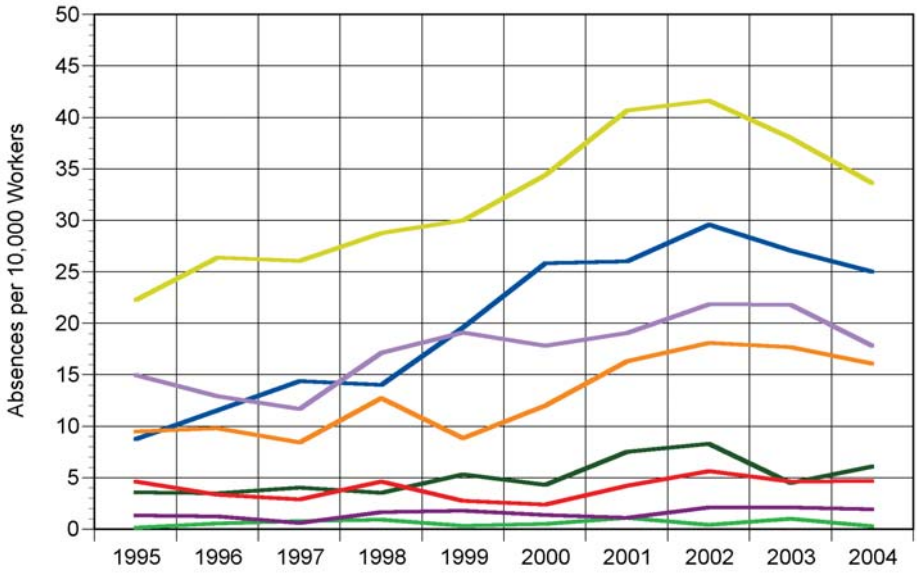


Figure 27. Absence Rates for Circulatory Conditions by Occupational Group, 1995-2004

Absence rates for circulatory conditions increased at least 40 percent in all occupational groups over the 10-year period. Workers in the Line Operators and Service groups had rates twice those of workers in the Administrative Support and Professional groups for 9 of the 10 years. The lower rates in the presumably more sedentary, office-based occupational groups may reflect factors such as education, gender, and tobacco use.

Figure 28. Absence Rates by Type of Circulatory Condition, 1995-2004

Ischemic heart disease (restricted blood flow to the heart) absence rates accounted for the majority of absences due to circulatory conditions. The absence rates for ischemic heart disease increased from 22 absences per 10,000 workers in 1995 to 33 absences per 10,000 workers in 2004. Absence rates due to hypertensive disease (high blood pressure) also increased throughout the period, almost tripling from 1995 through 2004. Rates of hypertension would be expected to be greater than rates of ischemic heart disease, but hypertension is less likely to result in a 5-day absence.



Hypertension

Hypertension is the term used for elevated or high blood pressure. It can increase the risk for other conditions such as congestive heart failure, kidney disease, blindness, and stroke. High blood pressure is a common treatable condition, affecting about 1 in 3 adults. People tend to develop hypertension as they get older. Other risk factors include a family history of high blood pressure and being overweight.

Among the workers included in the IISP from 1995 through 2004, a total of 1,055 workers reported a diagnosis of hypertension. These workers reported higher absence rates each year compared with workers who did not report hypertension **(Figure 29)**. The absence rates among workers reporting hypertension increased steadily over the period, while the rates for other workers were stable.

For all age groups, absence rates for workers who reported hypertension increased over the 10-year period **(Figure 30)**. The increase was steady for all groups except the youngest, whose rates fluctuated widely due to small numbers of affected workers. The 16-29 year old workers represented approximately 2 percent of the workers reporting hypertension but experienced only 1 percent of the absences. In 1995, the rates for all age groups were less than 400 absences per 1,000 workers. By 2004, the rates were at least 900 absences per 1,000 workers for all workers 30 or older. Given the tendency for hypertension to develop with age, one would expect the oldest workers to have the highest rates during the period. However, workers aged 50 or older had the highest absence rate only in 1995. Workers in the 30-39 and 40-49 age groups experienced absence rates higher than those of workers 50 or older in most years. The dramatic increase in absence rates for workers 30 years of age or older is of interest and deserves further evaluation.

The rates for men and women reporting hypertension were similar in 1995, with women reporting about 400 absences per 1,000 workers and rates for men only slightly lower **(Figure 31)**. Over the 10 years, the rates for both men and women increased rapidly, but rates among women remained higher than those of men throughout the period.

The absence rate among workers reporting hypertension was similar among the 3 program offices **(Figure 32)**. The rate increased steadily for all 3 program offices over the period. Although the Science group had the highest rate (478 absences per 1,000 workers) in 1995, the rate in this group was lowest in 2004 (834 absences per 1,000 workers). Among EM and NNSA workers, the absence rate more than doubled from 1995 to 2004.

The absence rates for all occupational groups increased steadily **(Figure 33)**. Line Operators and Service workers had high absence rates for most years. Over the 10-year period, the absence rates in these 2 groups averaged 759 absences per 1,000 workers and 735 absences per 1,000 workers, respectively. In contrast, the average rate in the Professional group was 479 absences per 1,000 workers.

Workers reporting hypertension had a greater number of absences and averaged longer absences than workers not reporting hypertension. More than 75 percent of workers not reporting hypertension had no absences during the 10 years, while 49 percent of those reporting hypertension had 4 or more absences **(Figure 34)**. Workers reporting hypertension lost more days from work; they averaged over 8 times more days lost than did workers not reporting hypertension **(Figure 35)**. Even when considering only those workers who had at least 1 absence, the average days absent was more than double for workers who reported hypertension.

Compared with workers not reporting hypertension, workers reporting hypertension also reported a substantially higher percentage of disorders in 3 other diagnostic groups: endocrine/metabolic, circulatory, and unspecified symptoms **(Figure 36)**. Among the workers reporting hypertension, the percentages of endocrine/metabolic disorders and unspecified symptoms reported were more than double those of workers not reporting hypertension. In the endocrine/metabolic system, the majority of diagnoses were for diabetes. Among the 1,055 workers reporting hypertension, 123 workers also had diabetes, a prevalence rate of 117 per 1,000 workers. The prevalence of diabetes among workers not reporting hypertension was only 3 per 1,000 workers (386 diabetic workers among 136,643 workers not reporting hypertension). The increased diagnoses of circulatory disease resulted from cerebrovascular disorders and other heart diseases. Cardiac dysrhythmias (a serious disease in which the heartbeat rhythm is disrupted) and heart failure were the most common diagnoses among other heart diseases. The category "Unspecified Symptoms" included all diagnoses too vague for specific classification. Twelve hypertensive workers reported kidney disease, a prevalence of 11 per 1,000 workers, compared with 87 reports of kidney disease among workers not reporting hypertension, a prevalence rate of less than 1 per 1,000 workers. The data clearly indicate the additional health risks associated with hypertension.

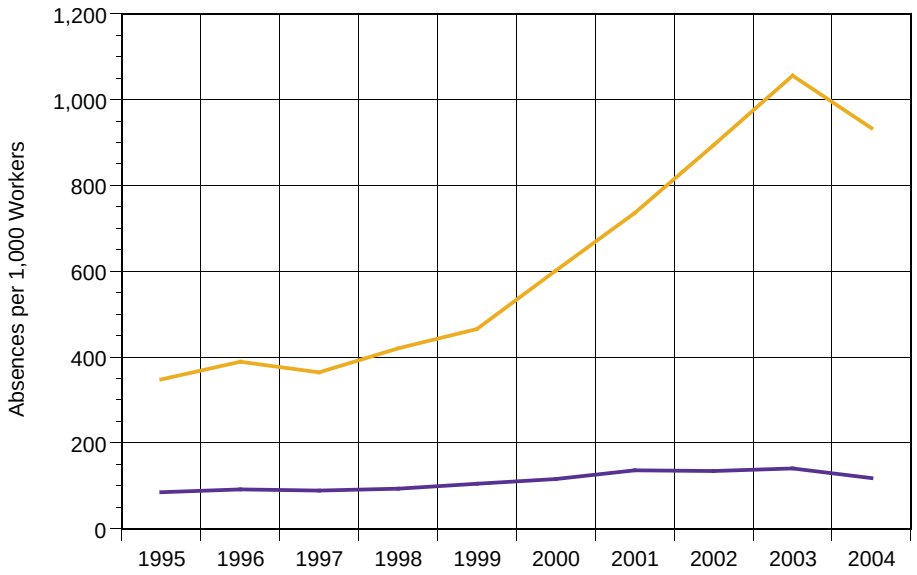


Figure 29. Absence Rates Among Workers Reporting Hypertension Versus Workers Not Reporting Hypertension, 1995-2004

While the absence rate for workers not reporting hypertension remained relatively stable throughout the 10-year period at 100 absences per 1,000 workers, absence rates for workers reporting hypertension dramatically increased from 348 absences per 1,000 workers in 1995 to over 900 absences per 1,000 workers in 2004.

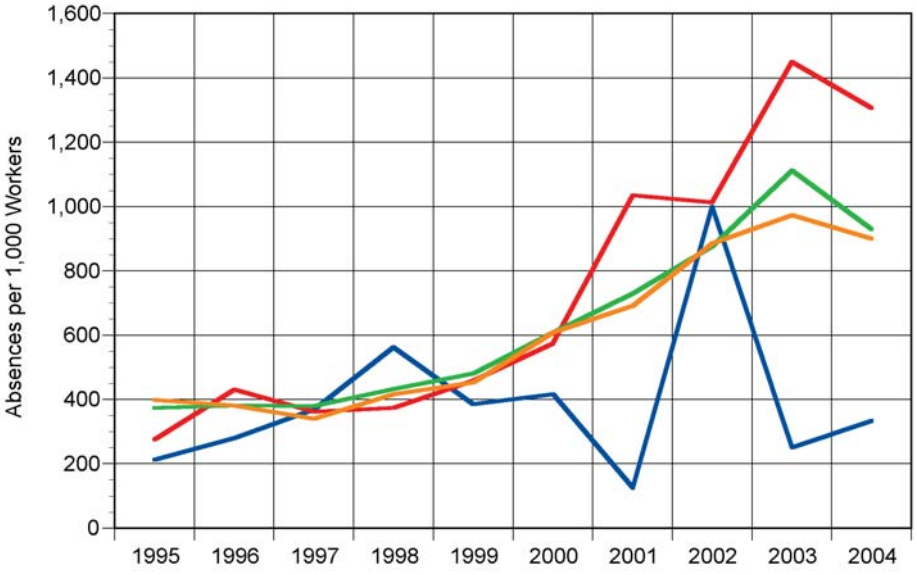


Figure 30. Absence Rates by Age Group Among Workers Reporting Hypertension, 1995-2004

Absence rates increased steadily over the period for all age groups except 16-29 year olds. In 1995, the 4 age groups experienced rates of 400 absences per 1,000 workers or less. By 2004, the rates were 900 per 1,000 workers or more for all age groups except workers younger than 30. The dramatic increase among workers 30 or older is of interest and deserves further evaluation.

Figure 31. Absence Rates by Gender Among Workers Reporting Hypertension, 1995-2004

Women reporting hypertension had higher absence rates than did men reporting hypertension. In 1995, women's absence rates were at 400 absences per 1,000 workers, with men only slightly lower. By 2004, absence rates among women and men had more than doubled.

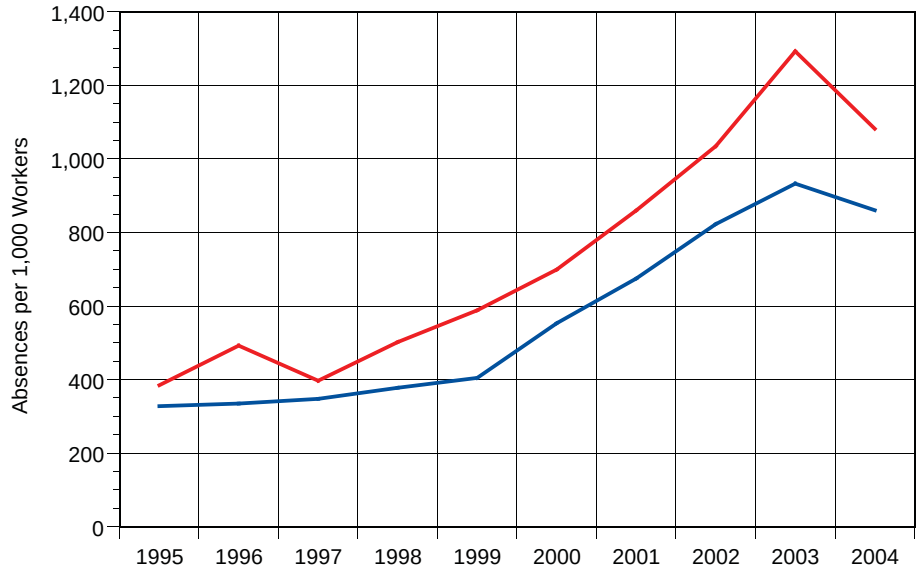
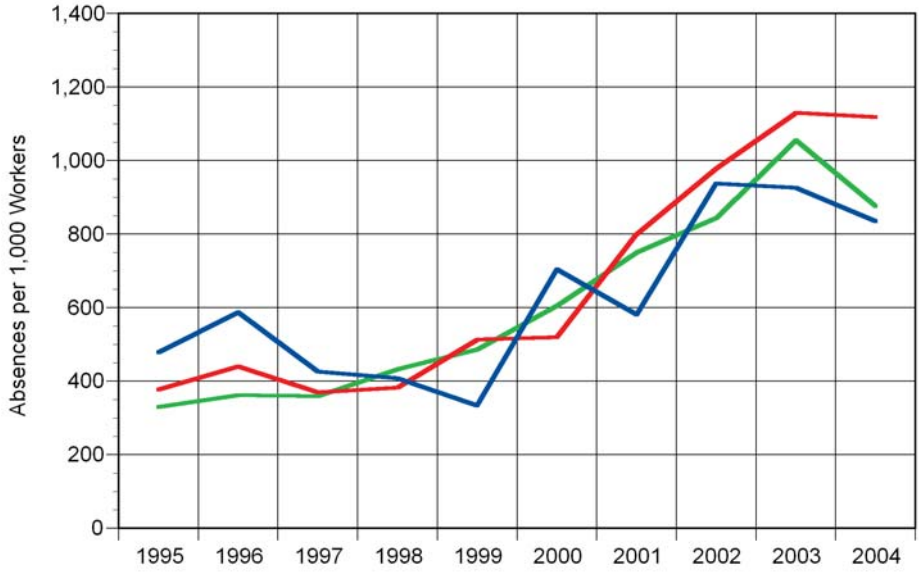


Figure 32. Absence Rates by Program Office Among Workers Reporting Hypertension, 1995-2004

The absence rates for hypertension were very similar among the 3 program offices. The rates increased steadily throughout the surveillance period. Among the EM and NNSA workers, the rates more than doubled from 1995 to 2004. The IISP lacks sufficient detail to explain the changes in these rates.



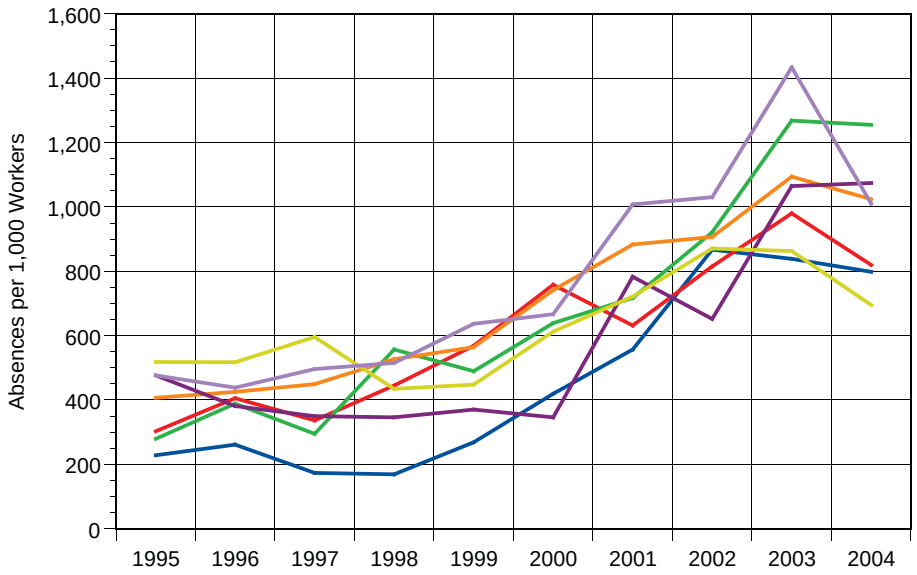
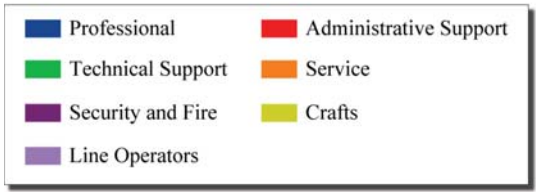


Figure 33. Absence Rates by Occupational Group Among Workers Reporting Hypertension, 1995-2004

Absence rates for all occupational groups increased over the 10 years. Line Operators and Service workers reporting hypertension exhibited high rates for the majority of the years. Absence rates in 2004 had more than doubled from 1995 rates in every occupational group except Crafts. Crafts had the highest rate in 1995 but the lowest by 2004.



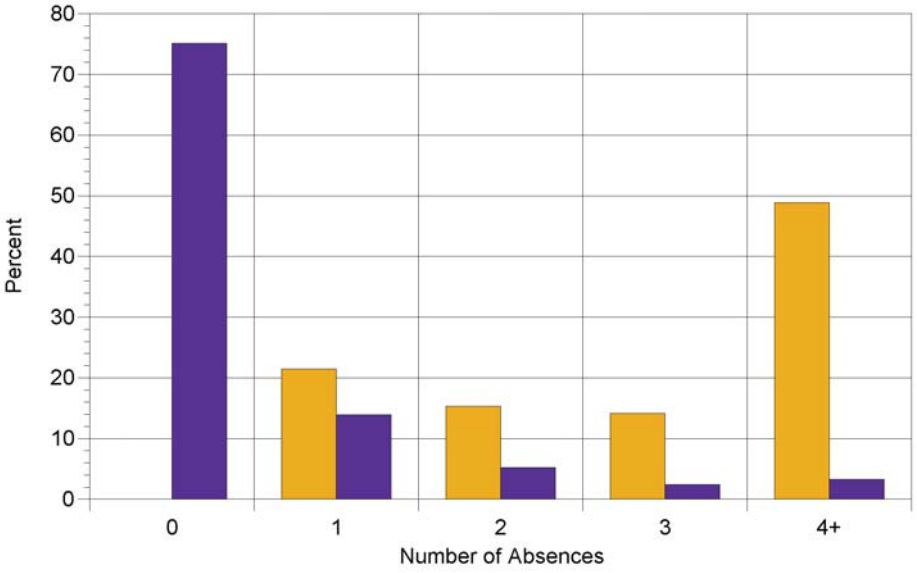


Figure 34. Number of Absences Among Workers Reporting Hypertension Versus Workers Not Reporting Hypertension, 1995-2004

Workers reporting hypertension had far more absences than workers not reporting hypertension, with 49 percent having 4 or more absences compared with only 3 percent of workers not reporting hypertension.

Figure 35. Average Number of Calendar Days Absent Among Workers Reporting Hypertension Versus Workers Not Reporting Hypertension, 1995-2004

Workers reporting hypertension averaged substantially more calendar days absent than did workers not reporting hypertension. Hypertensive workers averaged over 8 times as many calendar days absent as workers not reporting hypertension. Among workers with at least 1 absence, the average was more than double.

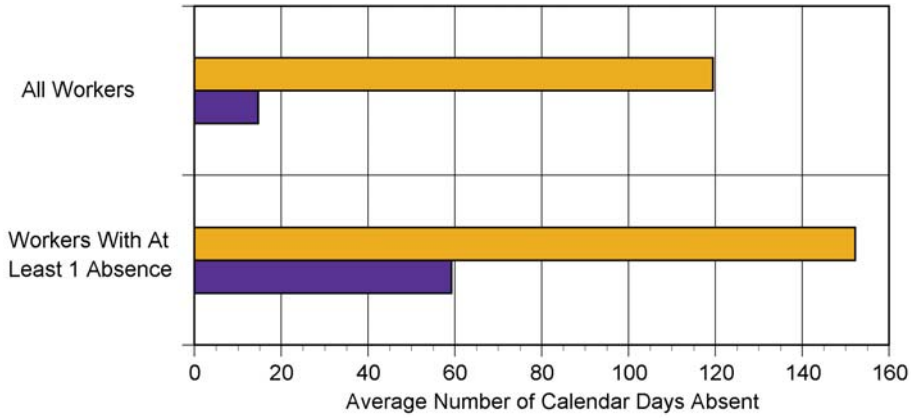
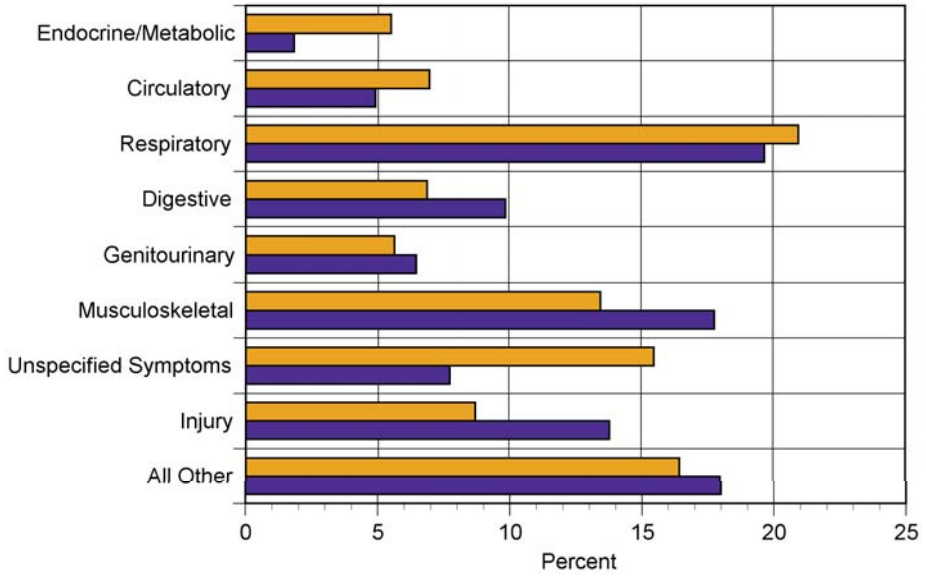


Figure 36. Selected Diagnostic Categories Among Workers Reporting Hypertension Versus Workers Not Reporting Hypertension, 1995-2004

Workers reporting hypertension had a substantially greater percentage of diagnoses in 3 disease categories compared with other workers: endocrine/metabolic, circulatory, and unspecified symptoms. The percentage of diagnoses for endocrine/metabolic conditions and unspecified symptoms reported by hypertensive workers was more than double the percentage reported by other workers.



Diabetes

Diabetes is a serious, chronic disease in which the body does not produce insulin or the cells ignore the insulin produced. In many instances, this disease can be prevented or controlled through healthy lifestyle choices. Diabetes can lead to other health problems such as heart disease, blindness, nerve damage, and kidney damage. The absence data in this report revealed that a higher percentage of workers reporting diabetes compared with workers not reporting diabetes had disorders of the endocrine/metabolic, nervous, and circulatory systems. A higher percentage of workers reporting diabetes also reported unspecified symptoms.

The occurrence of diabetes and its effects among the DOE work force are of interest because of their negative impact on worker health and productivity. A diagnosis of diabetes was reported by 509 workers in the IISP during the years 1995 through 2004. These workers were employed an average of 7 years in this report period. Over the 10 years, the absence rates among workers reporting diabetes steadily increased from about 4 times to more than 7 times higher than the rate among workers not reporting diabetes **(Figure 37)**.

Both the occurrence of diabetes and its complications increase with age. The absence rate increased most consistently among workers in the 30 to 39 age group, but the rate among older workers increased as well. The absence rate fluctuated most among workers younger than 30, probably due to the instability of rates calculated using such a small population (6 or fewer absences per year) **(Figure 38)**. Workers aged 16 to 29 reported no absences after 2000, in marked contrast to the highest absence rates for all other age groups observed during the same period. Women had a higher absence rate than men in all but 1 year, but the overall absence rate increased among both men and women from 1995 through 2004 **(Figure 39)**.

The absence rates were very similar among the 3 program offices through 2000 **(Figure 40)**. In 2001, the absence rates among the NNSA and Science groups began to increase more rapidly than the rate for the EM group. The sharp increase in the Science rate for 2002 and 2003 resulted from a doubling of the number of reported absences with no increase in the number of diabetic workers at 1 of the 2 Science sites. The reason for this increase in the number of absences is unclear, but it appears to have been temporary; the Science group's rate declined sharply by 2004.

Absence rates among workers reporting diabetes over the 10 years at least doubled for all occupational groups except Crafts workers, whose rate increased by less than 50 percent **(Figure 41)**. Unlike the gradual increase observed among other occupational groups, almost all of the increase among Security and Fire workers occurred in 2003 and 2004. This fluctuation was most likely a result of the small number of absences in this occupational group (only 27 absences over 10 years).

The impact of diabetes is evident in comparisons of the number of absences and absence rates among workers reporting diabetes and those not reporting diabetes over the 10 years **(Figure 42)**. Among the 509 workers reporting diabetes, less than 25 percent had only the single absence that identified them as diabetics, while over 40 percent reported 4 or more absences during the period. The absence distribution among workers not reporting diabetes is quite different. Seventy-five percent of these workers reported no absences from 1995 through 2004, and less than 4 percent of the workers not reporting diabetes had 4 or more absences. Workers reporting diabetes also had longer absences than did other workers **(Figure 43)**. Over the 10 years, the average number of calendar days absent among workers reporting diabetes was 118 days compared with the average of 15 days absent among workers not reporting diabetes.

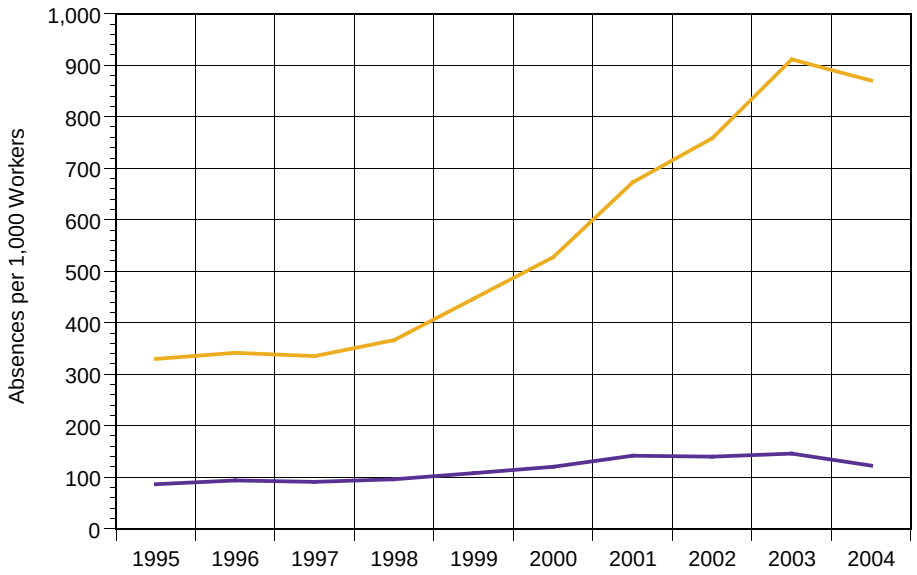


Figure 37. Absence Rates Among Workers Reporting Diabetes Versus Workers Not Reporting Diabetes, 1995-2004

The absence rates for the workers reporting diabetes increased, while the absence rates for other workers remained stable for the 10-year period. Workers reporting diabetes had absence rates 4 to over 7 times higher than other workers.

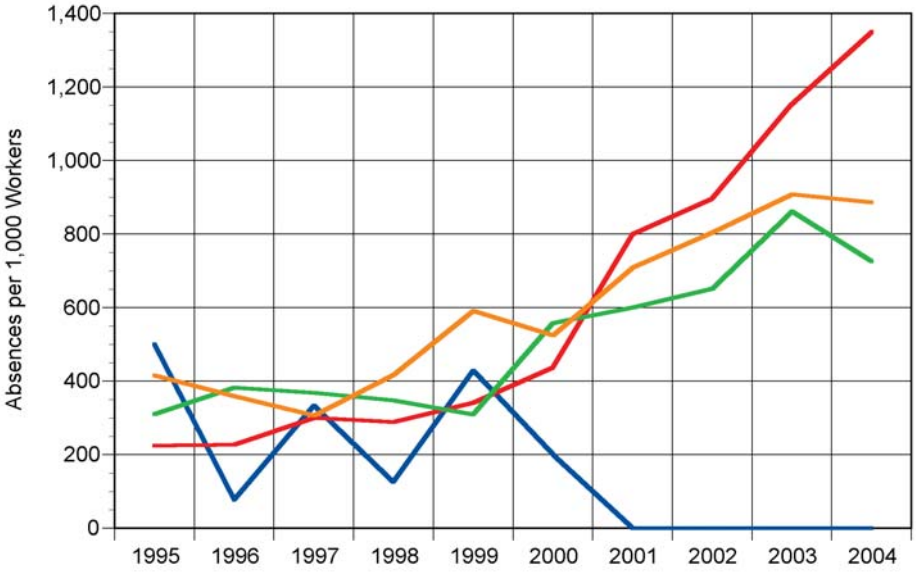


Figure 38. Absence Rates by Age Group Among Workers Reporting Diabetes, 1995-2004

Absence rates among workers reporting diabetes increased over the period for all age groups except those aged 16 to 29. Workers aged 30 to 39 had the largest increase in rates over the 10 years.

Figure 39. Absence Rates by Gender Among Workers Reporting Diabetes, 1995-2004

Among workers reporting diabetes, women experienced higher absence rates than men in all but 1 year of the reporting period. The rates for both women and men were similar for the first 4 years. Rates increased for both genders during the final 6 years of the period, with the rates for women increasing faster. There was no evidence that any 1 site, age group, or occupational category was responsible for the increase.

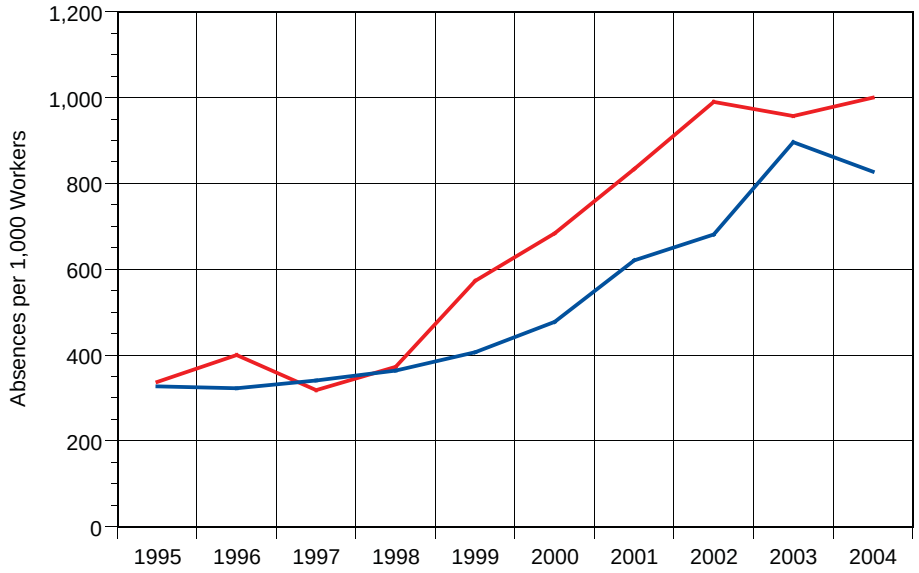
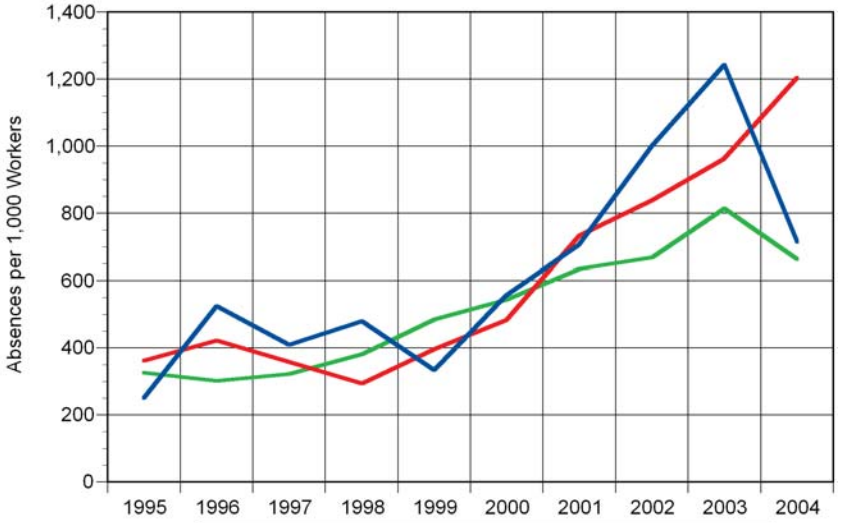


Figure 40. Absence Rates by Program Office Among Workers Reporting Diabetes, 1995-2004

The rates among the 3 program offices were similar until 2001, when the rates for the NNSA and Science groups increased more rapidly than the rate for the EM group. The number of absences at 1 of the 2 Science sites doubled in 2002 and 2003 with no increase in the number of diabetic workers. The reason for this increase is unclear.



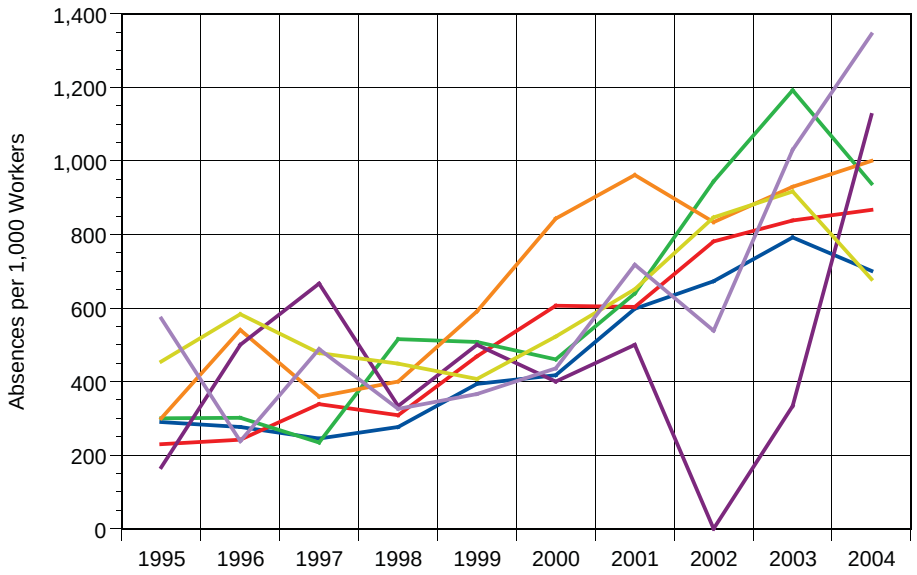


Figure 41. Absence Rates by Occupational Group Among Workers Reporting Diabetes, 1995-2004

Absence rates for workers reporting diabetes in all occupational groups except Crafts doubled over the 10-year period. The rates for Security and Fire workers fluctuated.

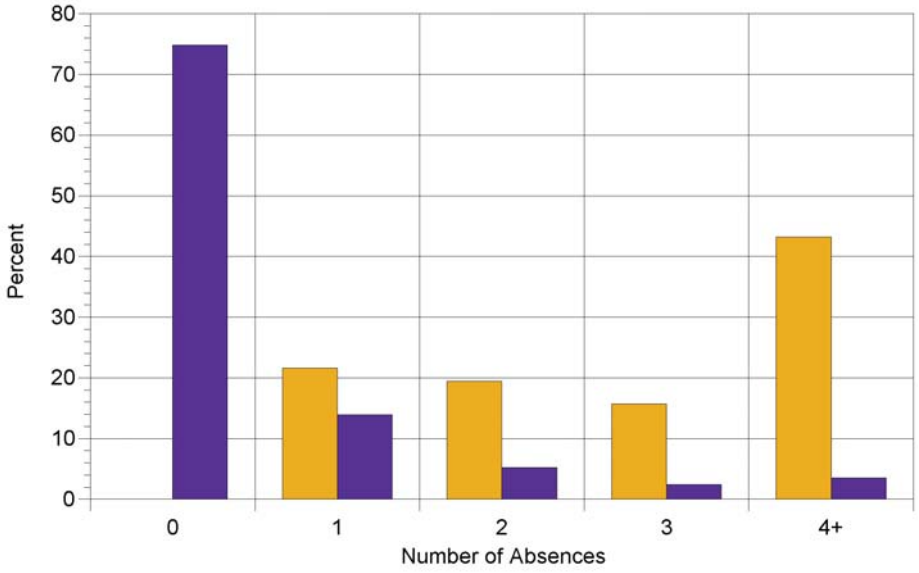
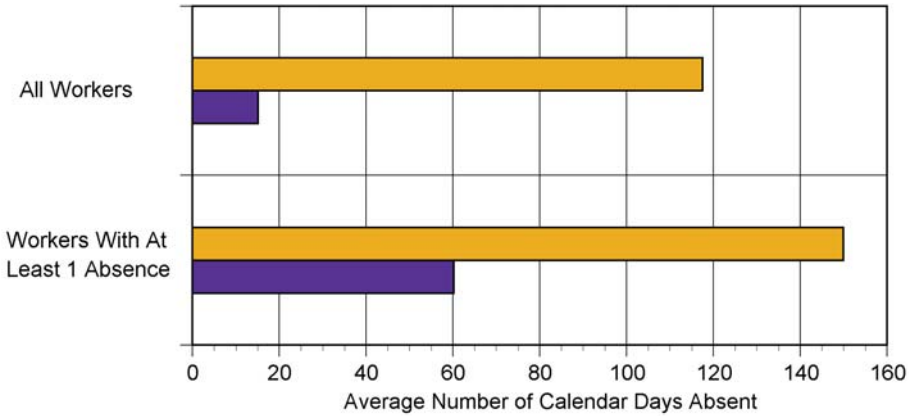


Figure 42. Number of Absences Among Workers Reporting Diabetes Versus Workers Not Reporting Diabetes, 1995-2004

Over 40 percent of workers reporting diabetes reported at least 4 absences during the 10-year period, while less than 4 percent of other workers reported 4 or more absences.

Figure 43. Average Number of Calendar Days Absent Among Workers Reporting Diabetes Versus Workers Not Reporting Diabetes, 1995-2004

Absences for workers reporting diabetes were longer than those for other workers. Among all workers from 1995 through 2004, workers reporting diabetes were absent an average of 118 days, approximately 8 times longer than the average of 15 days for other workers. When considering only workers with 1 or more absences during this period, workers reporting diabetes were absent an average of 150 days, more than twice the average of 60 days for workers not reporting diabetes.



Respiratory Conditions

Disorders of the respiratory system range from acute disorders such as the common cold to chronic, life-threatening diseases like emphysema and chronic beryllium disease. The respiratory system is also subject to allergic reactions such as hay fever and asthma when exposed to pollen, dust, and other environmental irritants such as tobacco smoke.

Respiratory disorders were the most common reason for an absence among workers. Over the 10-year period, 10,755 workers reported 16,519 absences related to respiratory diseases. Fifty-eight of the absences resulted from exposure to various external agents that appear to have been occupational. For 41 of these absences, the external factor was beryllium, and the resulting diagnosis was chronic beryllium disease. The other 17 absences were associated with 8 different, external factors such as asbestos and fumes.

Absence rates for respiratory disorders in each age group were similar, declining slightly from 1995 through 1998, when the rates for all but the youngest workers began to substantially increase **(Figure 44)**. Absence rates increased for both genders from 1998 through 2001 **(Figure 45)**. Women had absence rates at least 70 percent higher than those of men for all years of the reporting period.

Absence rates for respiratory problems showed different trends by program office **(Figure 46)**. However, the average rates for the 3 groups over the period were similar: 230 absences per 10,000 workers for NNSA, 246 absences per 10,000 workers for Science, and 287 absences per 10,000 workers for EM. The rates for EM and Science workers steadily increased through 2003, then declined substantially in 2004. The rate among NNSA workers declined slightly over the period.

Service workers and Line Operators had the highest absence rates due to respiratory conditions during the surveillance period **(Figure 47)**. Their rates increased beginning in 1999. Further investigation of the sharp increase in rates after 1998 and the decline in 2004 showed that a contributor to the rate changes involved Service workers and Line Operators at 1 of the EM sites. In these occupational groups, the number of absences reported for upper respiratory infections and pneumonia and influenza changed in the same direction as the overall rate change. Moreover, modification of sick leave policy and changes in the way the site submitted absence data might have contributed to the increased rates.

The distribution of types of respiratory diseases varied considerably over the 10 years **(Figure 48)**. The percentage of absences due to upper respiratory infections increased from 49 percent to 67 percent with a corresponding decrease in the percentage of both pneumonia and influenza and chronic obstructive diseases. Trends in the absence rates for specific respiratory disorders reflect these changes. Upper respiratory infections had the highest absence rates each year, rapidly increasing after 1998. Absence rates for pneumonia and influenza and for chronic respiratory diseases, primarily bronchitis, fluctuated over the period; the 2004 rates were lower than the 1995 rates. The lowest absence rates were for all other respiratory diseases, a varied category including less common diagnoses such as pleurisy, collapsed lung, and respiratory failure.

Figure 44. Absence Rates for Respiratory Conditions by Age Group, 1995-2004

All age groups other than 16-29 year olds experienced similar rates and trends throughout the surveillance period. In 1999, all age groups experienced an increase in rates due to respiratory conditions that continued through 2001.

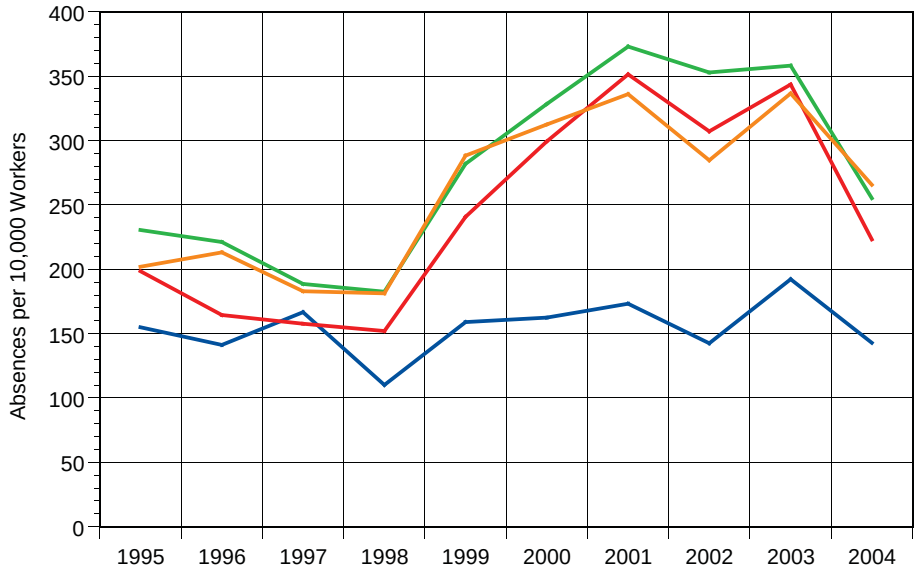
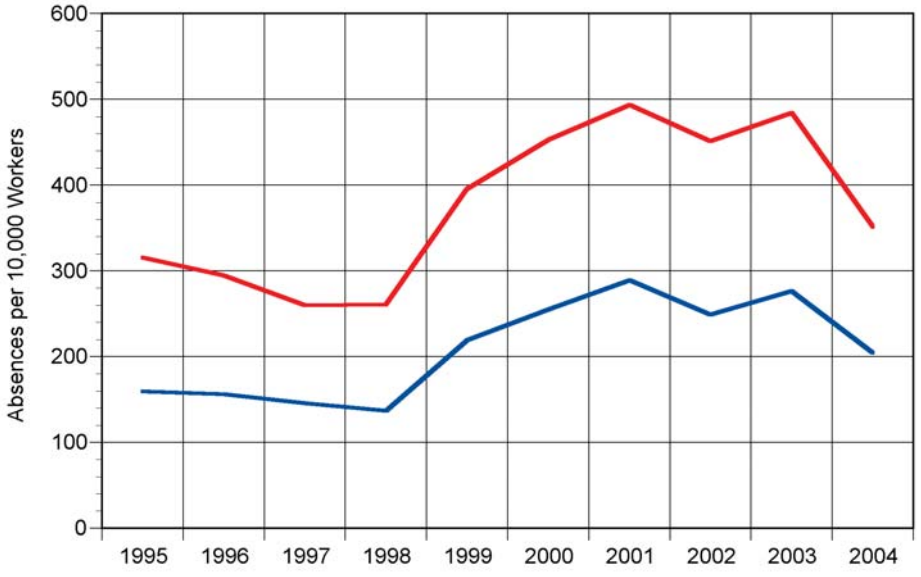


Figure 45. Absence Rates for Respiratory Conditions by Gender, 1995-2004

Women experienced higher absence rates than did men due to respiratory conditions. Absence rates for both men and women increased steadily from 1998 through 2001. The highest rates occurred in 2001.



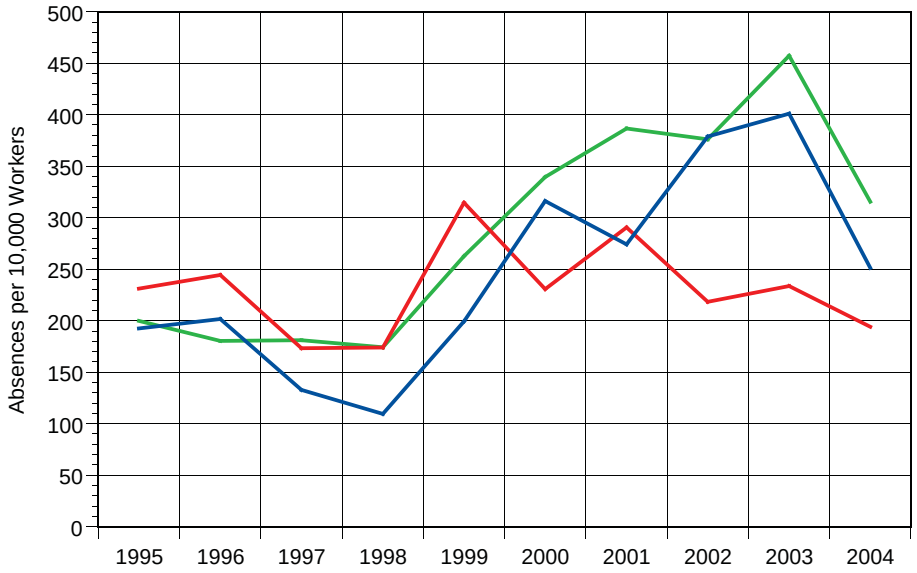


Figure 46. Absence Rates for Respiratory Conditions by Program Office, 1995-2004

Absence rates for respiratory problems showed different trends by program office. The rates for EM and Science workers steadily increased through 2003, then declined substantially in 2004. The rate among NNSA workers varied over the period but was only slightly less in 2004 than in 1995.

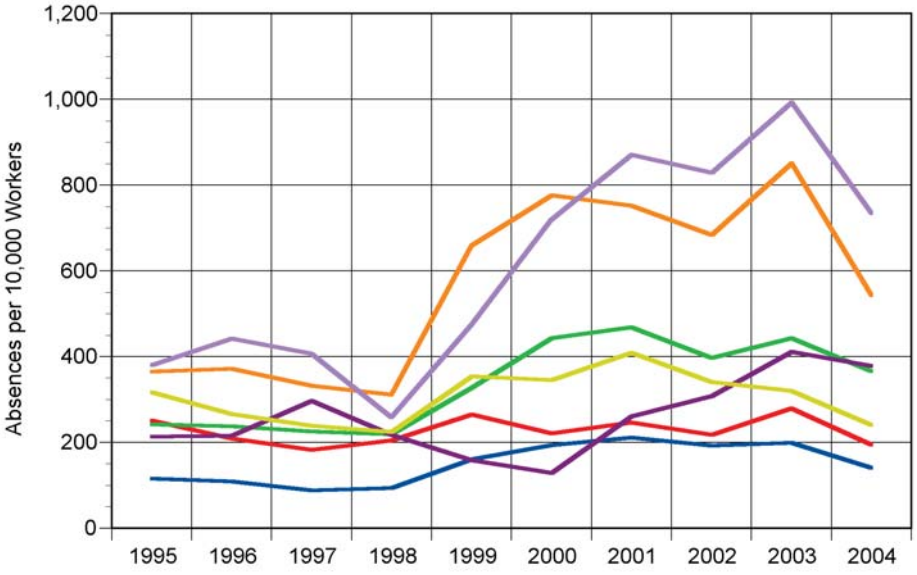
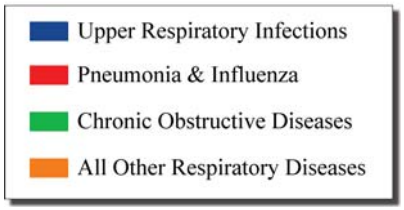


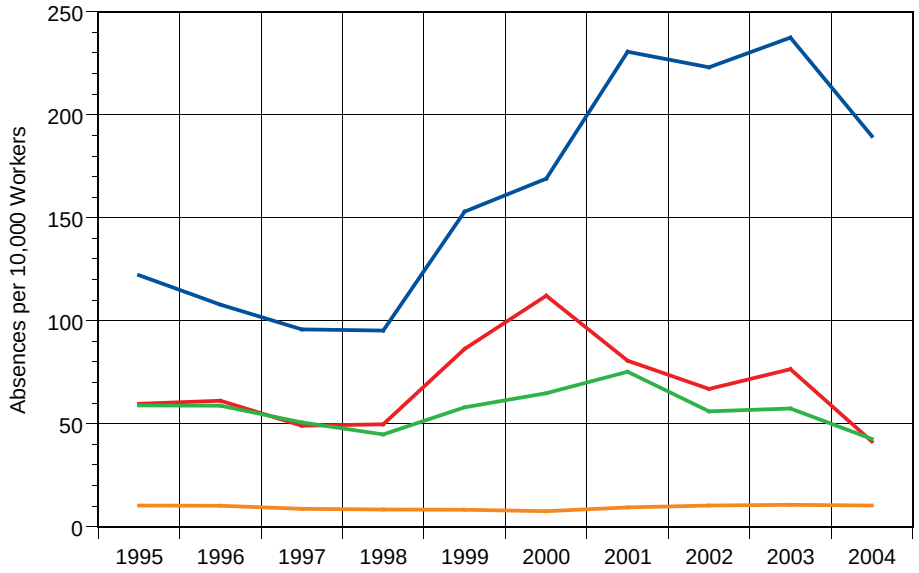
Figure 47. Absence Rates for Respiratory Conditions by Occupational Group, 1995-2004

Line Operators and Service workers experienced the highest absence rates throughout the period. Absence rates for Service workers and Line Operators began a dramatic increase in 1999 and continued to increase through 2003.

Figure 48. Absence Rates by Selected Respiratory Conditions, 1995-2004

Upper respiratory infections accounted for the highest absence rates throughout the surveillance period. A striking increase in upper respiratory infections was noted from 1998 through 2003. By contrast, the rates for pneumonia and influenza and chronic obstructive diseases experienced an overall decrease.





Injuries

Injury diagnoses include fractures, dislocations, sprains and strains, open wounds, intracranial and internal injuries, burns, crushing injuries, and foreign objects entering the body. Injuries can have a major impact on productivity, even if the injuries occur outside the workplace. High injury rates cause employees to lose time from work or restrict their ability to do their job. Knowledge of injury rates can be helpful in developing safety education and injury prevention programs. The injuries considered in this chapter were identified through the return-to-work clearance process. Many of them are not considered occupational. Injuries identified from OSHA 300 Logs, considered occupational, are addressed in Chapter 4 of this report.

The injuries considered in this chapter were identified through the return-to-work clearance process. Many of them are not considered occupational. Injuries identified from OSHA 300 Logs, considered occupational, are addressed in Chapter 4 of this report.

Injuries were the third most common reason for an absence from work and accounted for 11,580 absences reported from 1995 through 2004. Each absence lasted an average of 34 calendar days. From 1995 through 2000, the absence rate was stable and similar for all age groups **(Figure 49)**. The rates sharply increased for workers 30 years of age or older in 2001. Among workers under 30 years old, the rate decreased steadily from 2002 and by 2004 was less than half that of older workers. Over the 10-year period, the trends in injury rates were similar for men and women **(Figure 50)**. The rate for women (185 absences per 10,000 workers) was greater than for men (147 absences per 10,000 workers) in 1995, but the difference decreased over time. By 2004 the rates were almost the same (180 absences per 10,000 workers).

Over the period, the Science workers had the highest average injury rate, 198 absences per 10,000 workers **(Figure 51)**. The rates among workers at the EM and NNSA sites were only slightly less, 189 absences per 10,000 workers and 175 absences per 10,000 workers, respectively. Although the rate increased for all program offices from 1995 to 2004, the increase in the rate was less than 25 percent. The decline in the NNSA rate after 2001 resulted from the addition of 4 new sites to this group in 2002 and 2003.

The occupational groups with the lowest absence rates for injuries were the Professional, Administrative Support, and Technical Support workers. Their rates remained largely unchanged over the reporting period **(Figure 52)**. The other 4 occupational groups began the first year with almost identical absence rates (300 absences per 10,000 workers) that were more than double the rates for the Professional and Administrative Support workers. Except for the Crafts group, rates for the remaining 3 groups increased over the 10-year period. Line Operators and Service workers had the highest rates of absence for injuries.

Several types of injuries were selected for more in-depth analysis. These included fractures, dislocations, back and other sprains and strains, and open wounds. The lowest absence rates were for open wounds, and the highest rates were for other sprains and strains **(Figure 53)**. Absence rates for the specific

injury categories showed similar trends over the 10 years. There were no differences noted by gender.

Thirty-six percent of the reports of absences due to an injury included information about the circumstances leading up to that injury. Transportation accidents, primarily motor vehicle accidents, were the most common type of accident (1,083) and resulted in the highest average number of calendar days lost, 40 days **(Figure 54)**. Falls (825), primarily due to slips and trips, were the second most common type of accident, resulting in an average of 35 calendar days lost. Other accidents reported frequently were overexertion, striking or being struck by an object, and adverse reactions to external factors such as medicines and biological and toxic substances. Fractures, sprains and strains, and bruises were the most common injuries reported for both falls and transportation accidents **(Figures 55 and 56)**.

The sharp increase in injury rates in 2001 was observed for all age groups, both genders, and many occupational categories. The increased 2001 absence rates may have been the result of 1 site leaving the program, better case management, more complete reporting by the sites, or some combination of these factors.

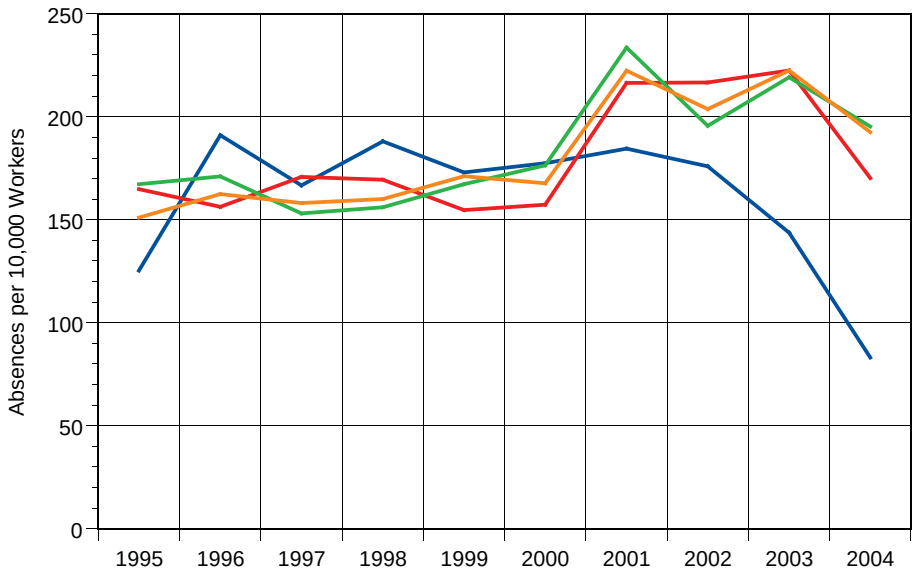


Figure 49. Absence Rates for Injuries by Age Group, 1995-2004

Absence rates were similar for workers 30 or older throughout the 10 years. Rates for each age group were relatively stable through 2000, when rates among 16-29 year olds began to decrease and those of all other age groups began to increase.

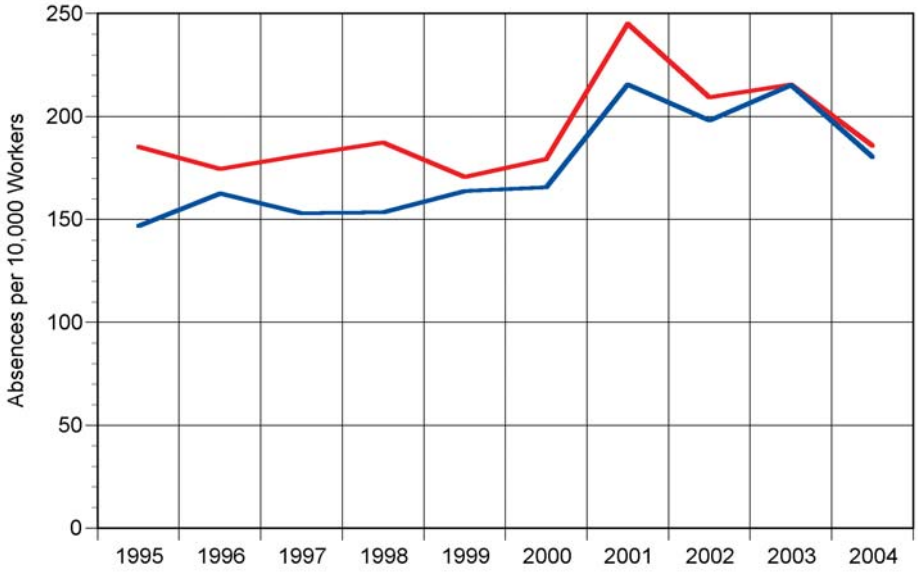


Figure 50. Absence Rates for Injuries by Gender, 1995-2004

Absence rates for men and women were similar and relatively stable throughout the period. Women experienced slightly higher absence rates than men. Injury absence rates by gender also exhibited a spike in 2001.

Figure 51. Absence Rates for Injuries by Program Office, 1995-2004

The absence rates for injuries had somewhat different trends over the period, but the overall average was similar for each program office, ranging from 175 absences per 10,000 workers for NNSA sites to 198 absences per 10,000 workers for Science sites. The overall rate of injury absences increased less than 25 percent from 1995 to 2004.

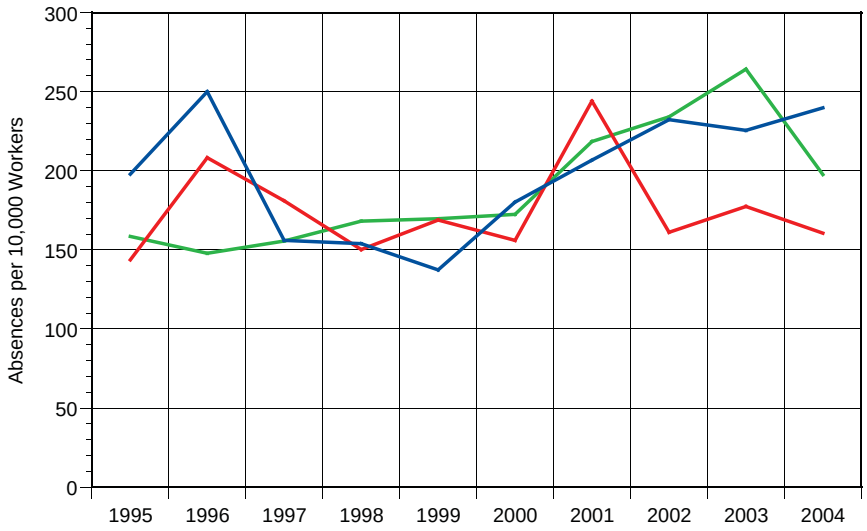
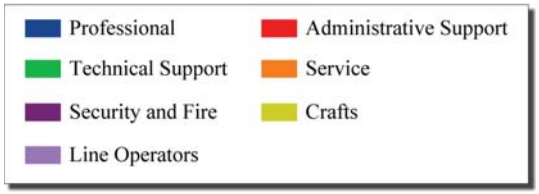
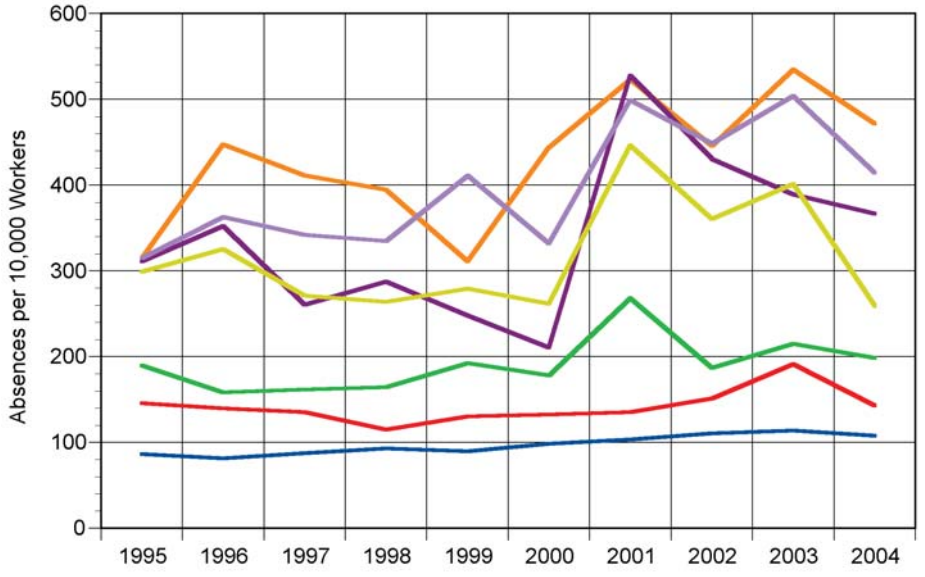


Figure 52. Absence Rates for Injuries by Occupational Group, 1995-2004

Absence rates were lowest among Professional, Administrative Support, and Technical Support workers throughout the surveillance period. While the rates for these 3 groups remained stable, rates for all other groups fluctuated over the 10 years, increasing notably in 2001. Service workers and Line Operators experienced the highest rates for most of the 10-year period.





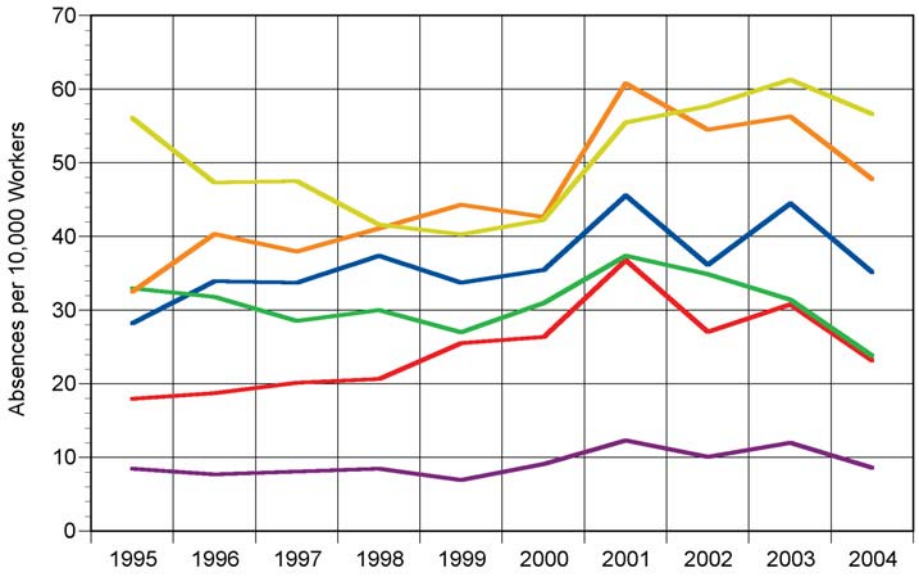


Figure 53. Absence Rates for Selected Types of Injuries, 1995-2004

With the exception of the category "All Other," sprains and strains (excluding those affecting the back) had the highest absence rates of all injuries throughout the surveillance period. The lowest absence rates throughout the period were due to open wounds.

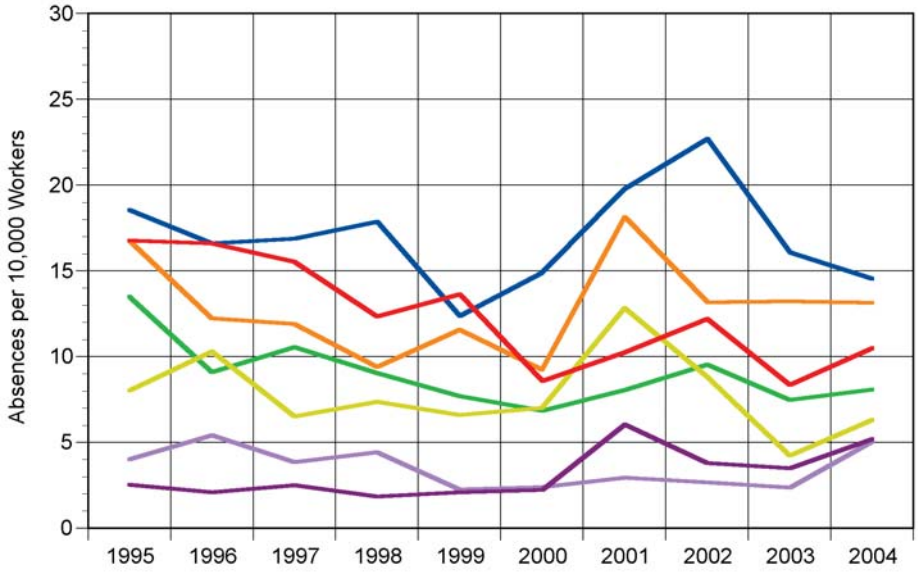


Figure 54. Absence Rates for Selected Types of Accidents Resulting in Injuries, 1995-2004

Absence rates for injuries due to transportation accidents were the highest throughout the surveillance period. Most accident types did not show a consistent trend over the 10 years.

Figure 55. Distribution of Injuries Resulting From Falls, 1995-2004

Fractures as a result of falls were the leading type of injury. There were 401 reported fractures, almost twice as many as other sprains and strains (excluding the back).

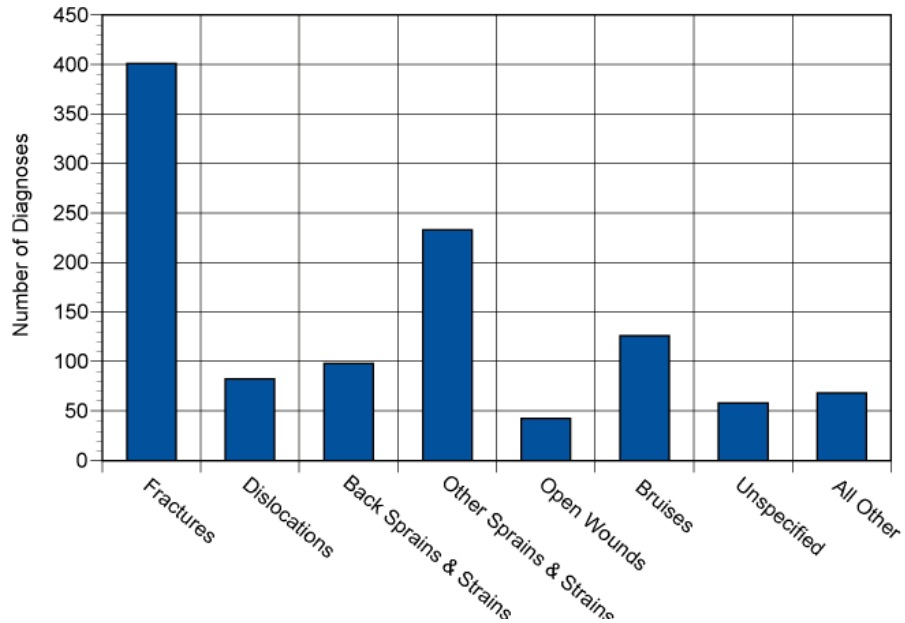
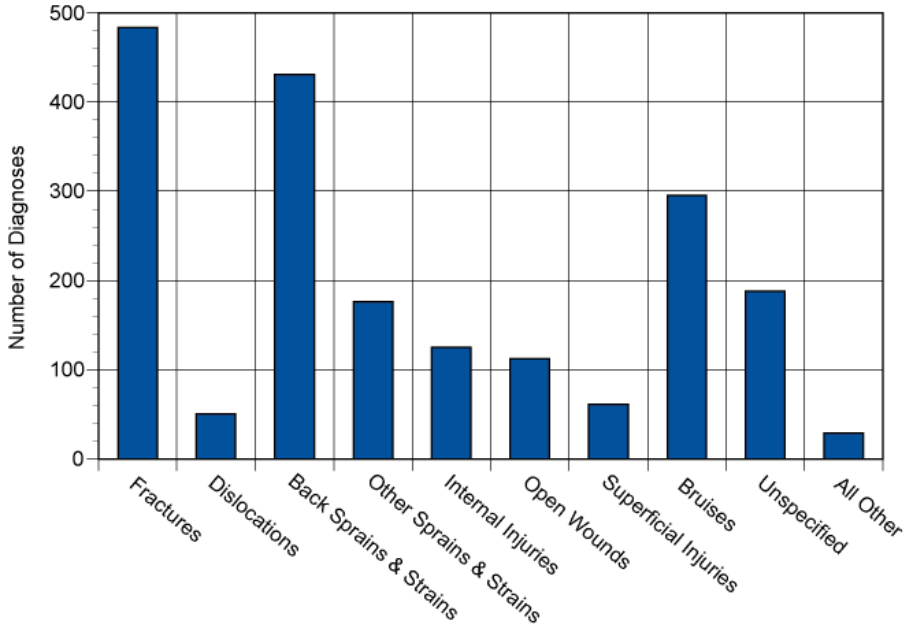


Figure 56. Distribution of Injuries Resulting From Transportation Accidents, 1995-2004

Fractures were the leading type of injury resulting from transportation accidents. There were 484 fractures reported, followed closely by 431 back sprains and strains.



Musculoskeletal Conditions

The musculoskeletal system includes bones, muscles, tendons (attach muscle to bone), ligaments (attach bone to bone), and cartilage. This system provides support for the body, protects the internal organs, and permits movement. Disorders of this system include problems with the components listed above plus the joints (point where 2 or more bones come together) **(Table 4)**.

During the reporting period, 10,325 workers reported a total of 15,135 absences for musculoskeletal disorders. Seventy-three percent of the workers with a musculoskeletal disorder reported only 1 absence during the 10-year period.

The average length of absence due to musculoskeletal disorders was 40 days. The average length of absence was longest (42 days) for back disorders and shortest for absences due to rheumatism (34 days).

From 1995 through 2004, workers aged 40 or older had the highest absence rates and the largest increase in rates **(Figure 57)**. Absence rates for musculoskeletal disorders increased over the 10 years among both men and women, with the rates for women higher than the rates for men **(Figure 58)**.

The absence rates for musculoskeletal conditions increased for all 3 program offices over the period **(Figure 59)**. The average rate for the 10-year period was about 240 absences per 10,000 workers for each program office. The decrease in the NNSA rate after 2001 resulted from the addition of 4 new sites to this group in 2002 and 2003.

Table 4. Musculoskeletal Disease Categories and Examples

Diagnosis Group	Examples of Conditions
Arthropathies Any disease that affects the joints	• Lupus • Rheumatoid arthritis • Osteoarthritis • Joint dislocations • Swelling • Pain • Stiffness
Rheumatism Conditions that affect muscles, ligaments, and tendons, including those around the joints	• Rotator cuff syndrome • Tennis elbow • Synovitis • Bunions • Muscle weakness and spasms • Fibromyalgia • Neuralgia
Dorsopathies Disorders of the back and spine	• Ankylosing spondylitis (rheumatoid arthritis of the spine) • Slipped disk • Herniated disk • Stiff neck • Lumbago • Sciatica
Acquired Deformities Deformities resulting from infections and diseases of the bone and connective tissue	• Osteoporosis • Flat feet • Hammer toes • Knock-knees • Joints displaced at an angle • Curvatures of the spine (hunchback, swayback, and scoliosis)

Disorders of the back (mainly displaced disks, back pain, and sciatica) were responsible for the largest percentage (41 percent) of the absences due to a musculoskeletal diagnosis. Both men and women experienced higher absence rates for back problems than for other disorders. Diagnoses of "acquired deformities" were the lowest absence rates for both men and women and mainly involved deformities of the toes (hammer toes). Back problems were most common among workers in each program office **(Figure 60)**.

Service workers and Line Operators had the highest absence rates for the 10-year period; the lowest rates were among Professional, Administrative Support, and Technical Support workers **(Figure 61)**.

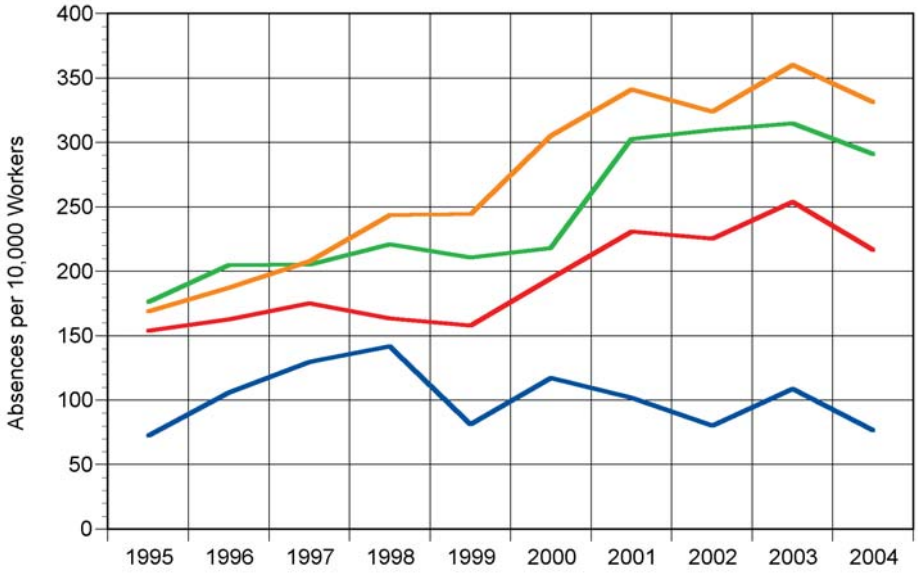
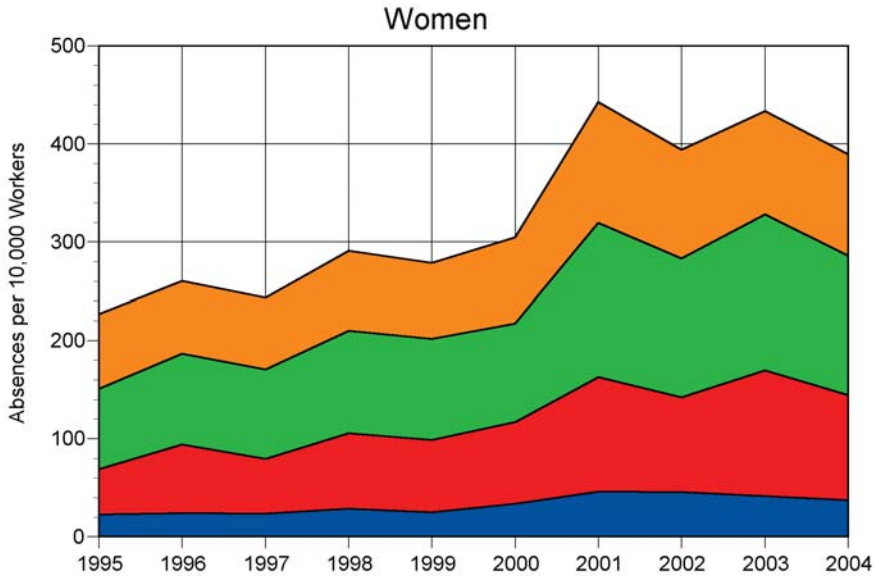


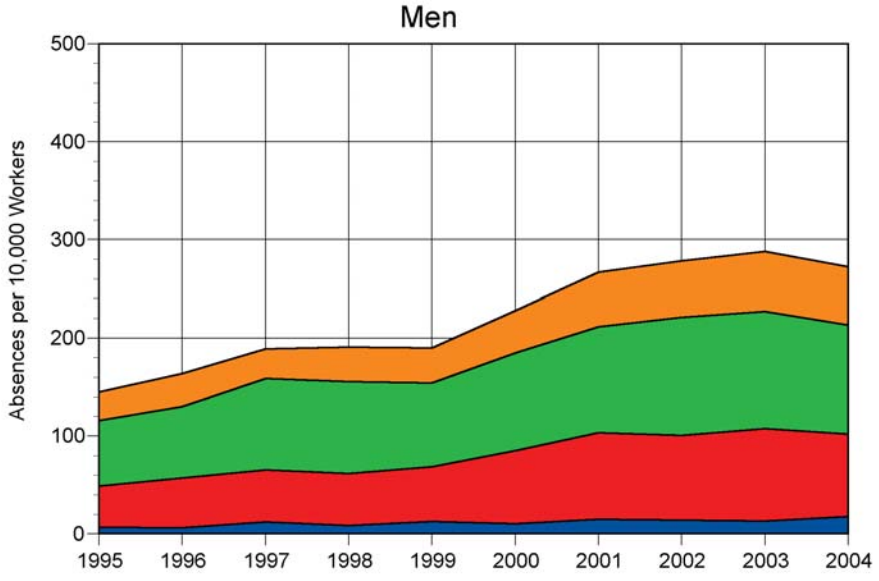
Figure 57. Absence Rates for Musculoskeletal Conditions by Age Group, 1995-2004

Absence rates increased by at least 40 percent during the 10-year period for workers aged 30 or older.

Figure 58. Absence Rates for Selected Groups of Musculoskeletal Conditions by Gender, 1995-2004

Women had higher absence rates than men for all musculoskeletal conditions. For each gender, absence rates due to acquired deformities were the lowest for all 10 years, while absence rates for back conditions were the highest.





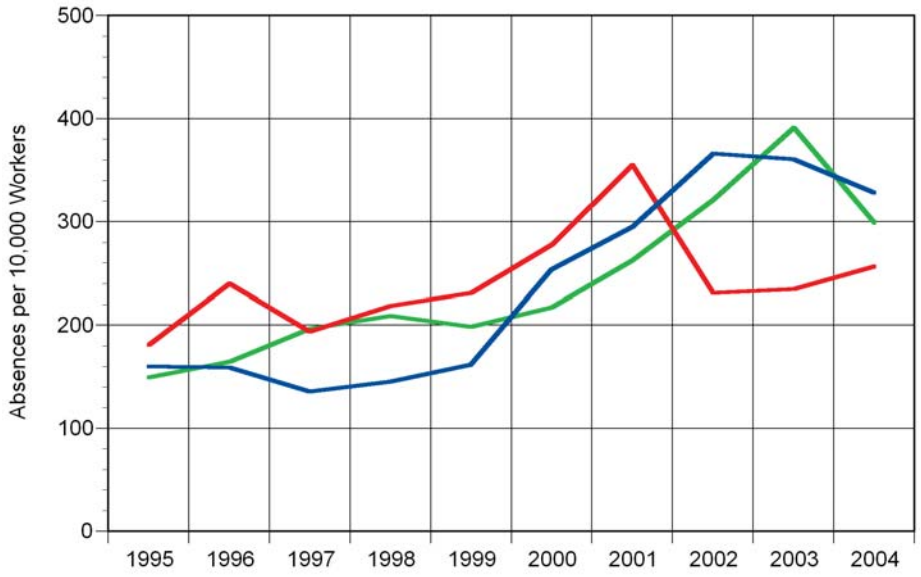


Figure 59. Absence Rates for Musculoskeletal Conditions by Program Office, 1995-2004

For each program office, the rates increased over the period with the 10-year average rate about 240 absences per 10,000 workers. The decrease in the NNSA rate after 2001 resulted from the addition of 4 new sites to this group in 2002 and 2003.

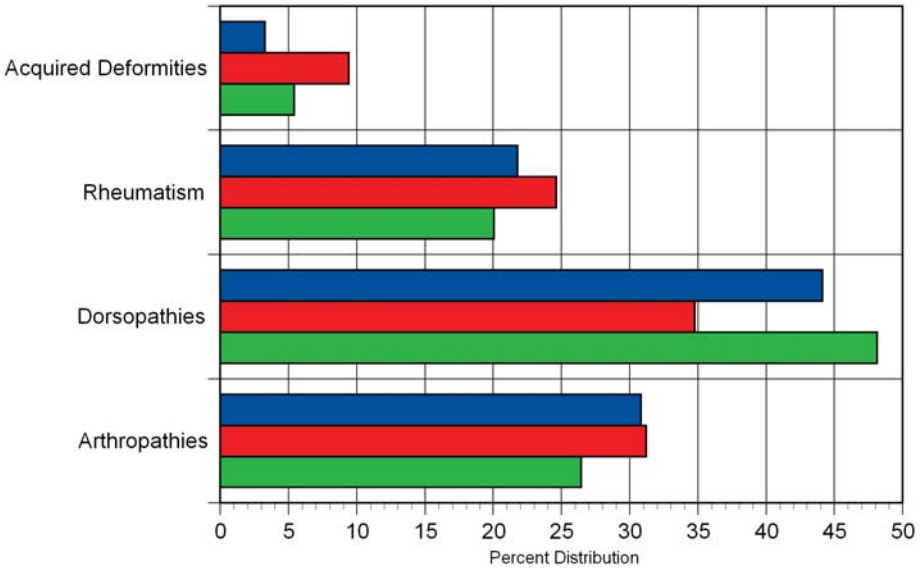
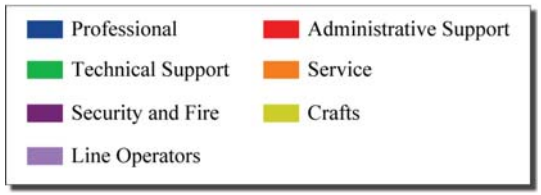


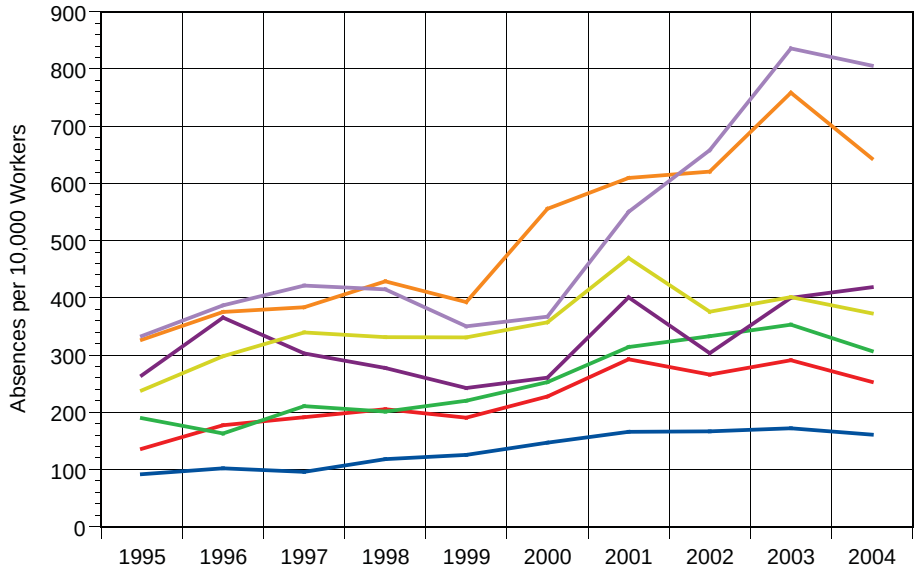
Figure 60. Distribution of Musculoskeletal Diagnoses by Program Office, 1995-2004

Dorsopathies (back problems) were the most common diagnoses reported for musculoskeletal absences in each program office.

Figure 61. Absence Rates for Musculoskeletal Conditions by Occupational Group, 1995-2004

Service workers and Line Operators had the highest absence rates of all occupational groups, while rates for Professionals remained lowest. The 2004 rate was at least 55 percent higher than the 1995 rate in each occupational group.





Carpal Tunnel Syndrome

Carpal tunnel syndrome (CTS) occurs as a result of the median nerve becoming pressed or squeezed at the wrist. Pressure on the nerve may result in chronic or recurring pain, weakness, and numbness in the hand, wrist, or arm. CTS can be prevented or reduced through better education about safe work habits and greater attention to ergonomic factors such as changing work station layouts, rotating workers across jobs, redesigning tools and processes, stretching, taking rest breaks, and using correct wrist posture when performing repetitive duties.

From 1995 through 2004, 1,065 CTS diagnoses were reported in the DOE IISP. The number of CTS cases more than tripled from 72 in 1995 to 219 in 2003 before falling to 125 in 2004. CTS typically involves a long absence; the average length of absence for CTS was 38 days. However, 76 percent of CTS cases involved only 1 absence. CTS seldom recurs once treated.

The absence rate due to CTS increased for each age group other than 16-29 year olds during the reporting period **(Figure 62)**. Workers aged 40 or over had the highest rates and accounted for 883 (83 percent) of the 1,065 cases. Women had CTS absence rates averaging about 3 times higher than those for men **(Figure 63)**. This gender difference is similar to findings reported by the National Institute of Neurological Disorders and Stroke (NINDS), which notes that women are 3 times more likely than men to develop CTS, a difference that may be partly attributable to genetics. The smaller wrists of women may be more likely to press on the nerves within the smaller carpal tunnel.

Rates at NNSA sites were low and remained stable compared with the increasing trend observed for the other program offices **(Figure 64)**. Women comprised a higher percentage of the NNSA work force compared with other program offices, contrary to expectation because the occurrence of CTS is higher among women. The Science sites had the lowest rate in 1995 but their rates steadily increased over the period. The 2004 rate for this group was 6 times higher than its 1995 rate. The EM sites had the highest rate every year except 2000. The rate for these sites doubled over the period, although their workers were younger than the workers in other program offices. Again, this is contrary to what was expected because CTS increased with age.

The CTS annual absence rates by occupational group differed greatly by gender **(Figure 65)**. Men's rates by occupational group remained relatively low and stable throughout the 10-year period. The fluctuation in CTS rates among women is probably instability resulting from the small number of reported cases in some occupational groups. Women Service workers sustained a high rate throughout most of the 10-year period, and increasing rates were noted for Line Operators.

Figure 62. Absence Rates for Carpal Tunnel Syndrome by Age Group, 1995-2004

Absence rates due to CTS increased for each age group except 16-29 year olds. The rate for the youngest workers peaked in 1998 and declined rapidly thereafter. Workers aged 40 or over had the highest rates and accounted for 883 (83 percent) of 1,065 total cases.

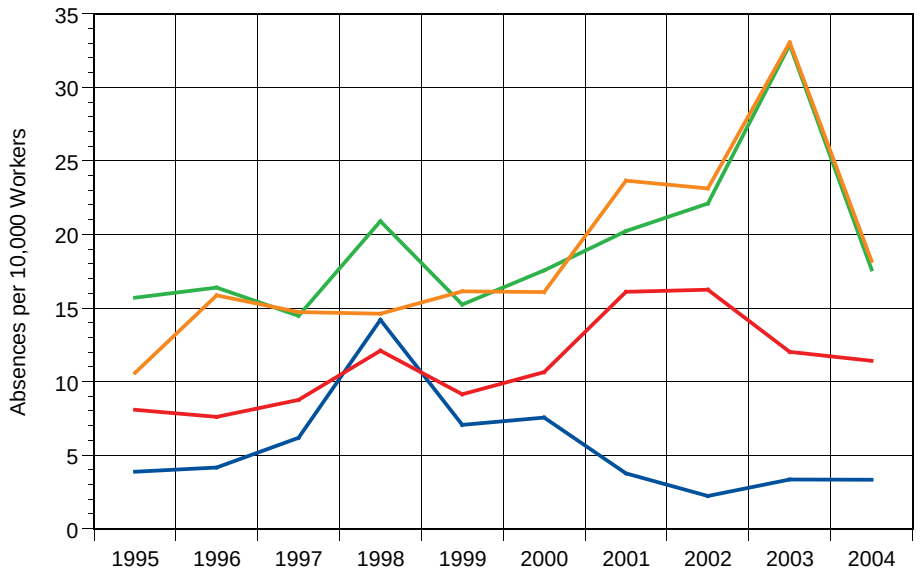
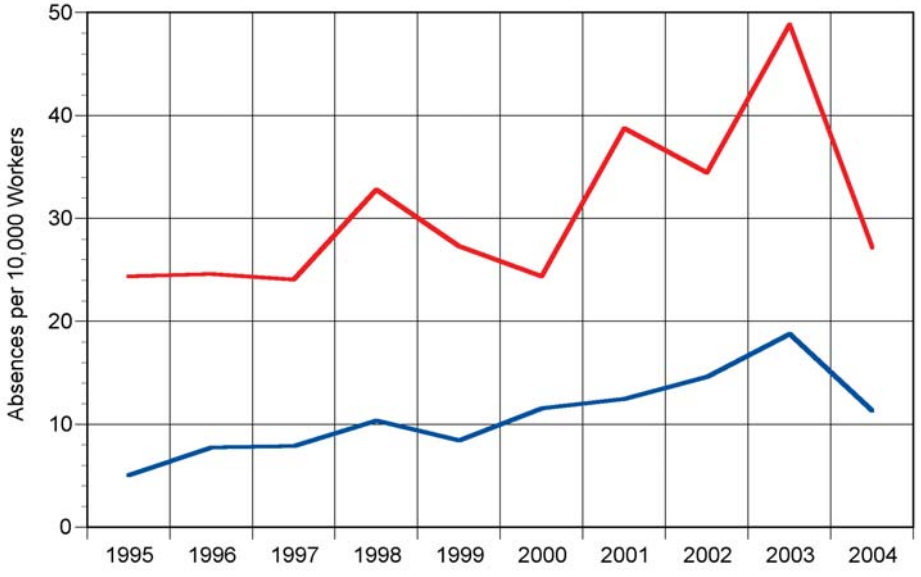


Figure 63. Absence Rates for Carpal Tunnel Syndrome by Gender, 1995-2004

Women had consistently higher CTS absence rates than did men for all 10 years.



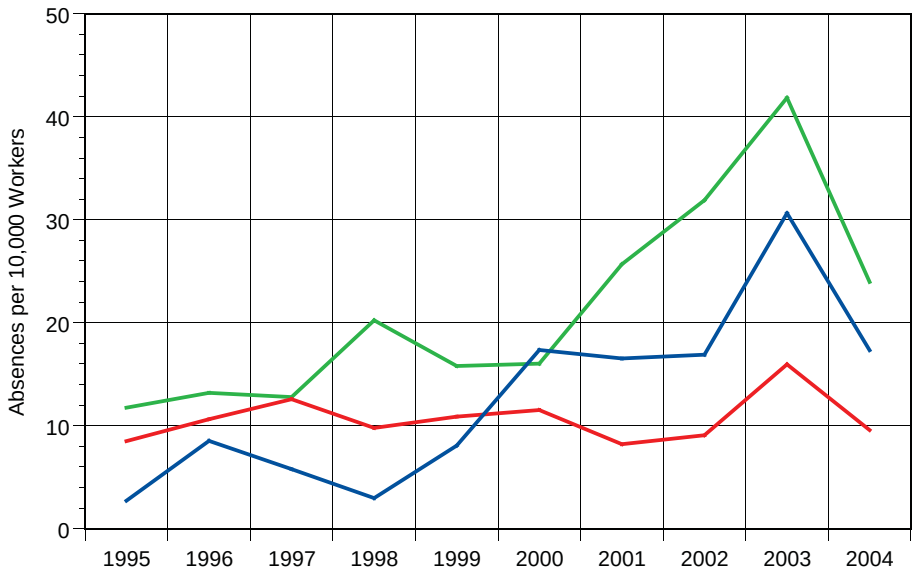
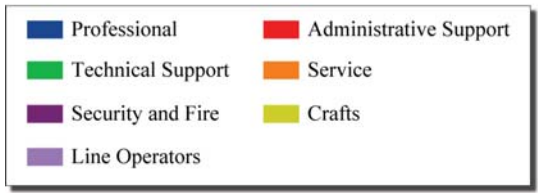


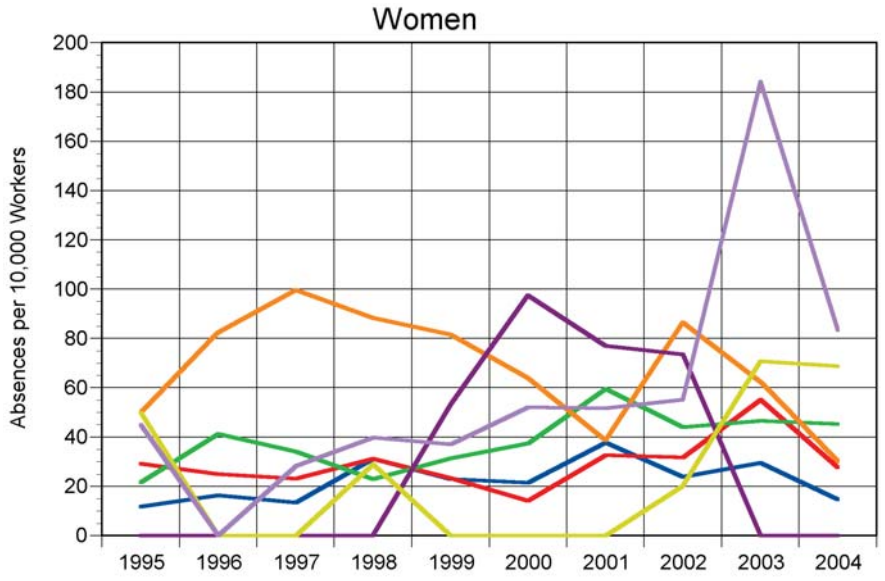
Figure 64. Absence Rates for Carpal Tunnel Syndrome by Program Office, 1995-2004

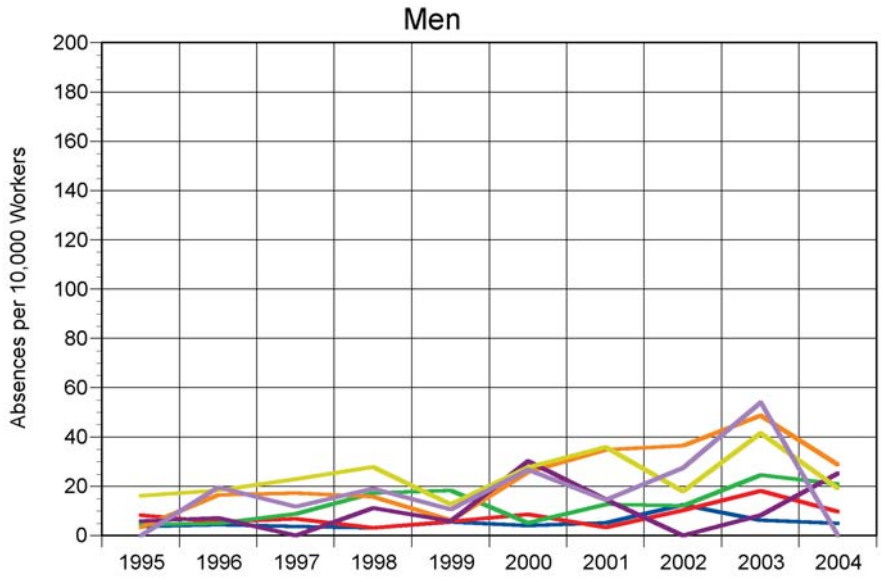
CTS rates varied among the program offices. The NNSA sites had low rates that remained relatively stable throughout the period. Both the EM and Science sites experienced an increase in rates. The rates at EM sites were the highest for every year except 2000.

Figure 65. Absence Rates for Carpal Tunnel Syndrome by Gender and Occupational Group, 1995-2004

CTS absence rates in the various occupational groups differed greatly by gender. Men's rates remained relatively low and stable, while women exhibited overall higher absence rates for CTS with greater year-to-year variation.







Mental Health Conditions

Mental health conditions encompass a wide range of psychological and behavioral disturbances **(Table 5)**. Mental health conditions are common in the United States, with about 1 in 5 adults reporting a disorder in a given year. These conditions can cause mild to severe disturbances in thoughts and behavior with the most severe resulting in the inability to cope with the activities of daily living. Mental health conditions may be the result of excessive stress from a particular situation, genetic factors, biochemical imbalances, or a combination of these factors.

This report examines 3 types of conditions: alcohol and drug abuse; stress, anxiety and depression; and all other mental conditions. Among these conditions, stress, anxiety and depression were the most frequently reported throughout the period **(Figure 66)**. The rates for alcohol and drug abuse and all other mental health conditions were much lower and showed little change over the 10 years. The average length of absence for all types of mental health conditions was 48 calendar days. The average length of absence varied by type of condition: 38 days for alcohol and drug abuse, 49 days for stress, anxiety and depression, and 58 days for all other mental conditions.

Table 5. Mental Health Disease Categories and Examples

Diagnosis Group	Examples of Conditions
Alcohol and Drug Disorders Disorders stemming from the abuse of and dependence on alcohol and various types of drugs, including tranquilizers, cocaine, amphetamines	• Intoxication • Dementia • Hallucinations • Paranoia • Problems associated with withdrawal from substances
Stress, Anxiety, and Depression Disorders including reaction (adjustment) to chronic stress, anxiety and avoidance behavior, and depression (sadness, low self-esteem, guilt feelings)	• Anxiety • Brief and prolonged depressive reactions • Panic disorder • Major depressive disorder • Adjustment disorders
All Other Mental Health Conditions Mental conditions that do not involve alcohol and drugs or stress, anxiety, and depression	• Schizophrenia • Bipolar disorder • Paranoia and delusions • Obsessive-compulsive disorders

Workers younger than 30 years old exhibited the greatest fluctuation in absence rates due to mental health conditions **(Figure 67)**. Older workers had relatively stable absence rates. Workers aged 50 or older had the lowest absence rates due to these conditions. Absence rates for mental health conditions were higher among women than men, primarily due to stress, anxiety, and depression **(Figure 68)**. Rates for alcohol and drug abuse were similar among men and women.

EM workers had the highest absence rates due to mental health conditions over the period. Absence rates for workers with alcohol and drug conditions and all other mental health conditions were similar for the 3 program offices **(Figure 69)**. Stress, anxiety, and depression had the highest absence rates each year for all 3 program office groups. These rates were similar throughout the period for EM and NNSA sites. The rates among the Science sites increased dramatically in 2000 and remained high through 2002. The rates declined for all 3 program office groups in 2003 and 2004. Site closures or changes in contractor management may have contributed to the stress, anxiety, and depression experienced by workers. A report issued by NIOSH, "Prevention of Stress and Health Consequences of Downsizing and Reorganization," assessed this issue in detail (http://www.cdc.gov/niosh/2001-133g.html).

Two occupational groups, Service workers and Line Operators, generally had the highest absence rates for mental health conditions, but their rates declined toward the end of the period **(Figure 70)**. Absence rates for the remaining groups were generally stable, although Crafts workers exhibited a sharp but short-lived increase in 2001.

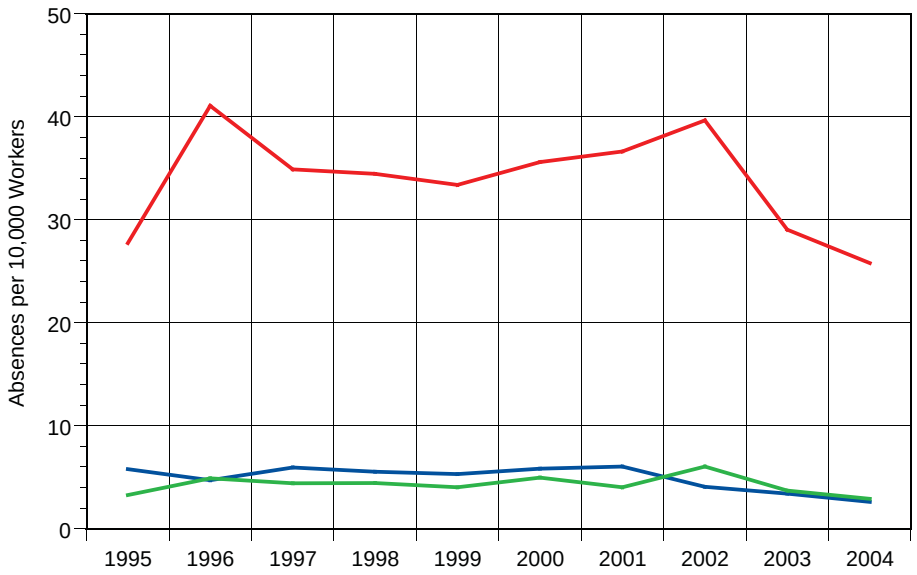


Figure 66. Absence Rates for Types of Mental Health Conditions, 1995-2004

Absence rates for alcohol and drug conditions and all other mental health conditions were low and stable compared with stress, anxiety, and depression. Absence rates for stress, anxiety, and depression were typically 4 times higher than rates for alcohol and drug conditions and all other mental health conditions each year. Absence rates for stress, anxiety, and depression were highest in 1996 and 2002 at about 40 absences per 10,000 workers.

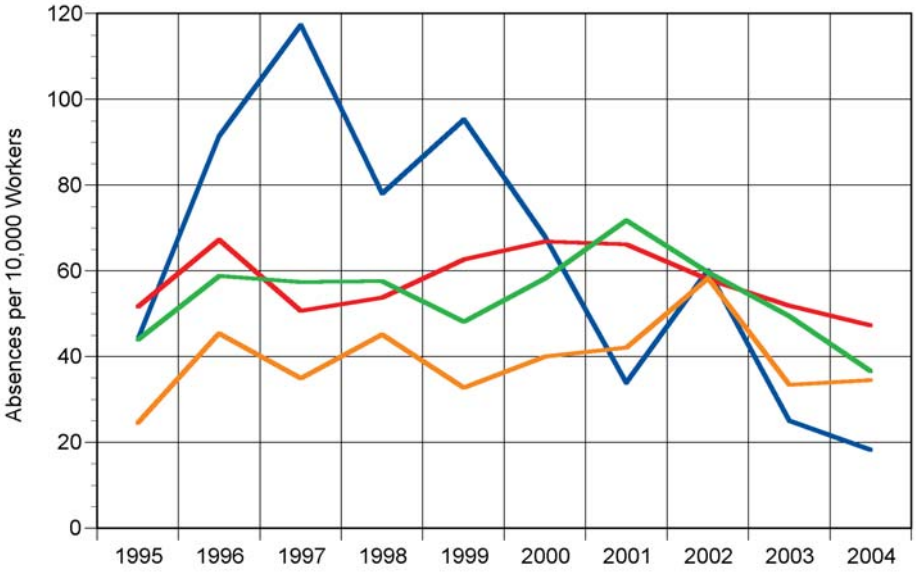
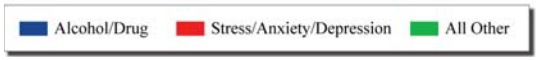


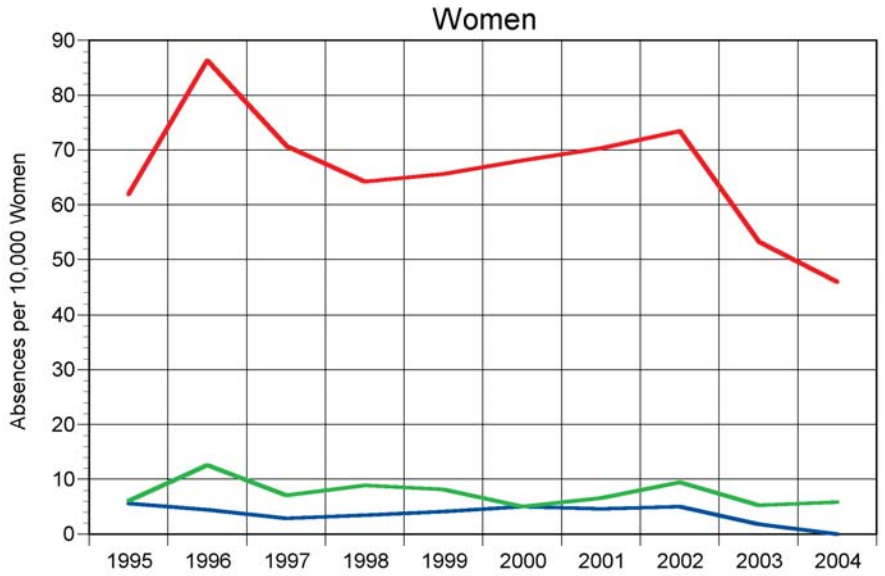
Figure 67. Absence Rates for Mental Health Conditions by Age Group, 1995-2004

The number of absences due to mental health conditions declined as age increased. Workers 16-29 years old reported the highest absence rates for mental health conditions. However, the trend was highly variable because of the very small number of absences in a small population. The rates for all other age groups remained moderately stable.

Figure 68. Absence Rates for Types of Mental Health Conditions by Gender, 1995-2004

Women were at least twice as likely as men to be absent with a mental health condition. Stress, anxiety, and depression accounted for the majority of absences for both genders.





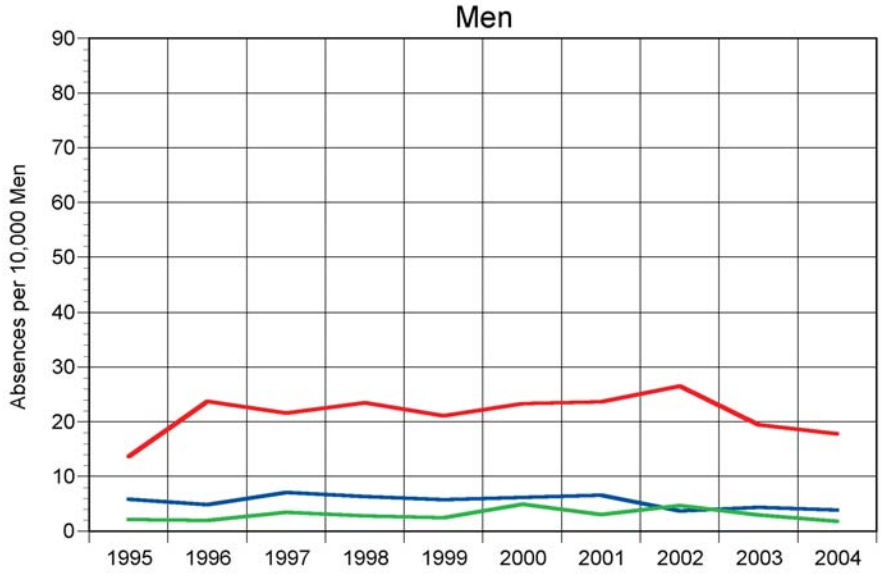
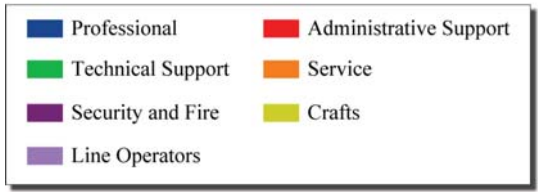


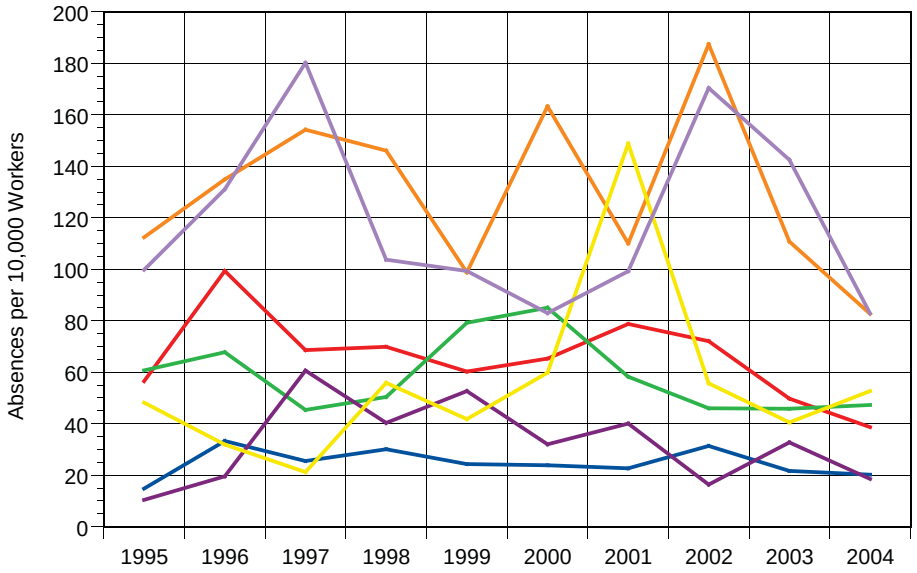
Figure 69. Absence Rates for Types of Mental Health Conditions by Program Office, 1995-2004

Absence rates for workers with alcohol and drug conditions and all other mental health conditions were less than 10 absences per 10,000 workers each year except 1996 for the 3 program office groups. In contrast, the rates for stress, anxiety, and depression were typically greater than 30 absences per 10,000 workers each year. These rates were similar throughout the period for EM and NNSA sites. The rates among the Science sites increased dramatically in 2000 and remained high through 2002. Numerous factors may have contributed to the high rates and disparities seen between program office groups. Stressors such as the impact of downsizing, contractor changes and their accompanying employment uncertainties, and changes in worksite policies may have varied among sites.

Figure 70. Absence Rates for Mental Health Conditions by Occupational Group, 1995-2004

Service workers and Line Operators had the highest rates throughout most of the 10-year period. While most occupational groups had absence rates from 10 to 80 absences per 10,000 workers, Service workers and Line Operators exhibited absence rates over 3 times higher, ranging from 80 to almost 190 absences per 10,000 workers.





Chapter 4 • OSHA-Recordable Event Data

Overview

The Occupational Safety and Health Administration (OSHA) requires employers to maintain a record of occupational illnesses and injuries occurring among employees and to make that information available to OSHA on request. These are referred to as OSHA-recordable data and include: all illnesses and injuries that occur on the job; cases that result in lost workdays or fatalities; and cases that do not result in lost workdays but do result in transfer to another job or termination of employment, require medical treatment (other than first aid), or involve loss of consciousness or restriction of work or motion. Employers maintain the information from these OSHA-recordable events in the OSHA 300 Log.

OSHA-recordable events differ from health events captured through return-to-work clearances in at least 3 important respects. OSHA events:

- do not necessarily result in days lost from work,
- are usually accompanied by a specific determination that they are work related, and
- pertain only to occupational illnesses and injuries.

In addition, the days lost or restricted in the OSHA data are the actual number of workdays absent from work or with restricted activity; in contrast, the days absent for the return-to-work events are calendar days, which include weekends and holidays.

Characteristics of OSHA-Recordable Events

Over the 10 years, 10,578 workers were involved in 13,620 OSHA-recordable events. Their impact on overall productivity was a total of 70,111 workdays lost and 166,778 workdays of restricted activity. Over 80 percent of these workers were involved in only 1 event, while 4 percent were involved in 3 or more. The rate of OSHA events decreased from 227 events per 10,000 workers in 1995 to 155 events per 10,000 workers in 2004. This decline followed a similar decline seen in the rates for a comparable group of workers in private industry (Chemicals and Allied Products workers), as reported by the Bureau of Labor Statistics (BLS). The rate among DOE workers for a given year was about half the rate among the chemical workers **(Figure 71)**.

The decline among the DOE workers was particularly apparent after 1998 in all age groups and for both men and women. Age had little effect on the rate of OSHA events **(Figures 72)**. Men and women were equally likely to experience an OSHA-recordable event; women, who made up 29 percent of the work force, had 31 percent of the OSHA events **(Figures 73)**. The increase in the rate in 2004 among women was due to a large increase in the number of OSHA events at an NNSA and a Science site. While a similar increase in the number of 2004

… the days lost or restricted in the OSHA data are the actual number of workdays absent from work or with restricted activity. In contrast, the days absent for the return-to-work events are calendar days, which include weekends and holidays.

OSHA events was also seen among men at these 2 sites, decreases in the number of OSHA events at other sites negated this increase. Among women, the number of OSHA events reported at other sites did not decrease.

The rate of OSHA events declined over time in all 3 program offices, but at varying rates **(Figure 74)**. The NNSA and Science sites maintained the highest rates over the period, and their rates were very similar each year. The average rate over the period for these 2 program offices was about 300 events per 10,000 workers. Among workers at the EM sites, the 10-year average rate was significantly lower, 173 events per 10,000 workers. The increase in the Science rate in 2004 resulted from 1 site reporting more than 2.5 times more OSHA events in 2004 than in 2003. The increase in the number of OSHA events was not confined to any particular diagnosis or type of accident.

Overall, OSHA event rates declined over time in all occupational groups except Professionals and Administrative Support groups, whose rates remained essentially unchanged and among the lowest of the groups throughout the 10 years **(Figure 75)**. Rates among Professionals were less than half of those reported for workers in the other 6 occupational groups. The rates for Crafts, Service, Security and Fire, and Line Operators showed the largest decline. Crafts workers had the highest rates throughout most of the period.

The 13,620 OSHA events involved 18,537 illness and injury diagnoses, of which 63 percent were injuries. Diagnoses for musculoskeletal disorders (24 percent), unspecified symptoms (6 percent), nervous system disorders (4 percent), and skin conditions (2 percent) followed.

Among the 11,672 injury diagnoses, sprains and strains (38 percent), open wounds (17 percent), bruises (11 percent), and fractures (6 percent) were the more common types. The 4,407 musculoskeletal diagnoses were divided among joint disorders (40 percent), back problems (27 percent), and disorders to the soft tissues of the joints (32 percent). Carpal tunnel syndrome accounted for 52 percent of the 730 diagnoses for nervous system disorders. Repetitive motion was the most common type of accident associated with carpal tunnel syndrome. Other common nervous system diagnoses were disorders of the eye (21 percent) and hearing loss (12 percent). Disorders of the conjunctiva and keratitis (inflammation of the cornea) were among the more common eye disorders. The keratitis resulted from flash burns. Contact dermatitis accounted for 67 percent of the 308 diagnoses for skin conditions. Unspecified symptoms reflected vague diagnostic information that prevented identification of a specific illness or injury. Among the 1,027 diagnoses of

unspecified symptoms, the more common types were skin rashes and sensations (34 percent), headaches (16 percent), fainting and dizziness (10 percent), and nausea and vomiting (10 percent).

The rates for injuries were higher than the rates for other types of OSHA-recordable diagnoses throughout the entire reporting period **(Figure 76)**. The next highest rates involved musculoskeletal disorders. Rates for OSHA events other than injuries were stable over the period.

Occupational injury rates declined from 1998 to 2004, a trend largely attributable to reductions in sprains and strains and open wounds **(Figure 77)**. Other sprains and strains had the highest rates most years, followed by back sprains and strains, and open wounds. Rates for both types of sprains and strains decreased over the 10-year period. The greatest decline was in back sprains and strains, with a rate of 43 events per 10,000 workers in 1995 falling to less than a third of that rate (13 events per 10,000 workers) in 2004. The rates for all other types of injuries tended to remain more stable.

For 9,679 (71 percent) of the 13,620 OSHA events, the type of accident that resulted in the illness or injury was also reported. Overexertion was the most common type of accident each year, with a rate about twice that seen for the next two most common types of accidents, falls and repetitive motion **(Figure 78)**. Among the OSHA events that reported the type of accident, 34 percent listed overexertion as the type of accident. The other 2 types of accidents combined accounted for an additional 30 percent. Overexertion rates increased from 1995 to 2002, followed by a reduction in rates in 2003 and 2004. The rates for falls and repetitive motion were similar from 1995 through 1999, after which rates for falls increased, while rates for repetitive motion decreased. Rates for most of the remaining types of accidents were stable throughout the period.

The average number of workdays lost or restricted as a result of an accident was the highest for repetitive motion, overexertion, and falls. Although not as frequent as these three accident types, transportation accidents resulted in a high number of workdays lost or restricted. For these four types of accidents, the number of lost workdays ranged from 6 to 8 days, and the number of days with restricted activity ranged from 10 to 14 days.

The types of injury and illness diagnoses varied by kind of accident. Seventy-five percent of the diagnoses associated with transportation accidents were injuries, predominantly all types of sprains and strains and bruises **(Figure 79)**. Falls were mostly tripping, slipping, and stumbling on the same level; 67 percent of the diagnoses were injuries described as sprains and strains, bruises, and fractures **(Figure 80)**. About half the time, overexertion resulted in injuries, mainly sprains and strains. In contrast to the previous 3 types of accidents, diagnoses resulting from repetitive motion were predominantly musculoskeletal disorders (51 percent). Injuries accounted for an additional 26 percent, but the specific type of injury was not provided for most of the diagnoses; carpal tunnel syndrome accounted for another 11 percent.

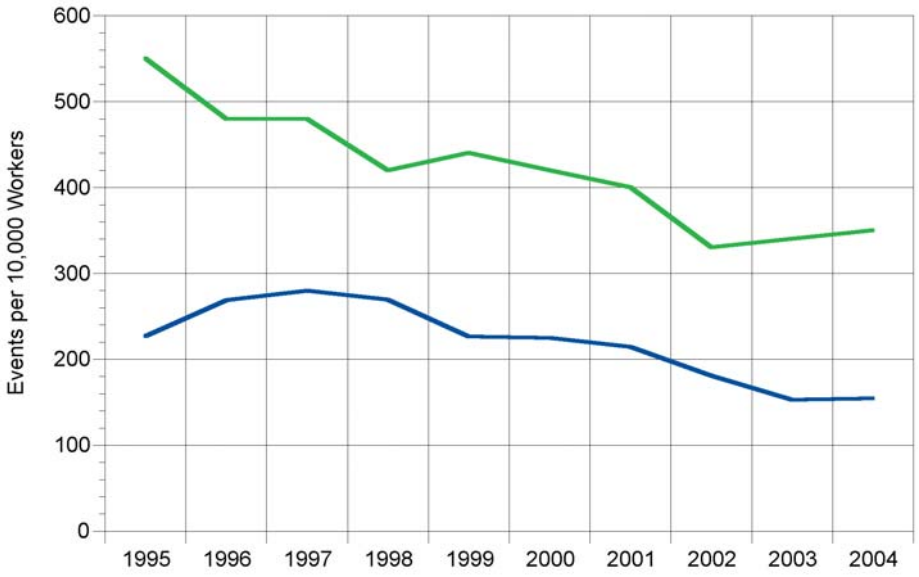


Figure 71. Rates of OSHA Events by Industry Type, 1995-2004

The rates of OSHA events declined over the 10-year period. This trend is similar to the trend seen among workers in the Chemicals and Allied Products industry in the private sector. The DOE rates were about half of the private sector rates.

Source: U.S. Department of Labor, Bureau of Labor Statistics

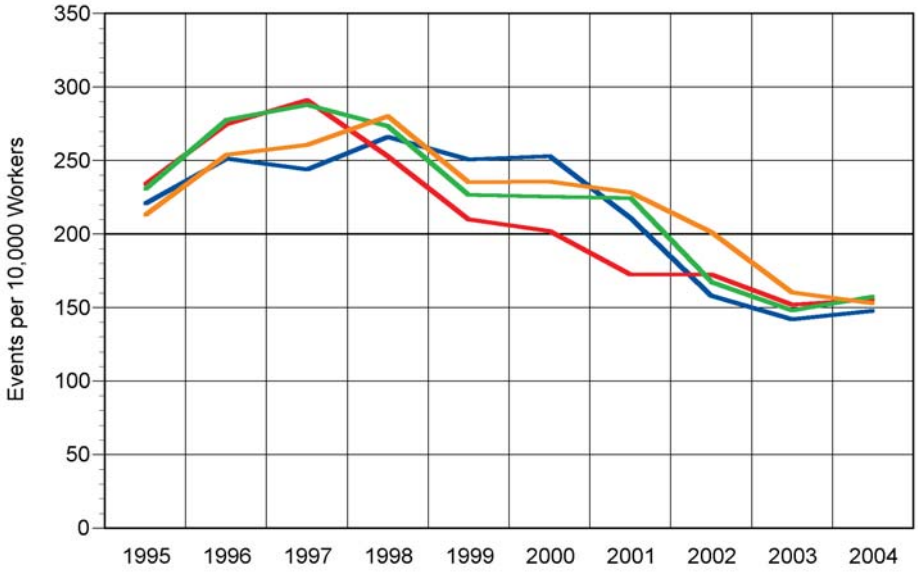


Figure 72. Rates of OSHA Events by Age Group, 1995-2004

OSHA event rates were similar for all age groups throughout the 10-year surveillance period. OSHA event rates in all age groups began to decline in 1999; the 2004 rates were at least 25 percent lower than the 1995 rates.

Figure 73. Rates of OSHA Events by Gender, 1995-2004

Events rates for men and women were similar throughout the 10 years, with women exhibiting slightly higher OSHA event rates than men. The increase in the rate in 2004 among women was due to a large increase in the number of OSHA events at an NNSA and a Science site.

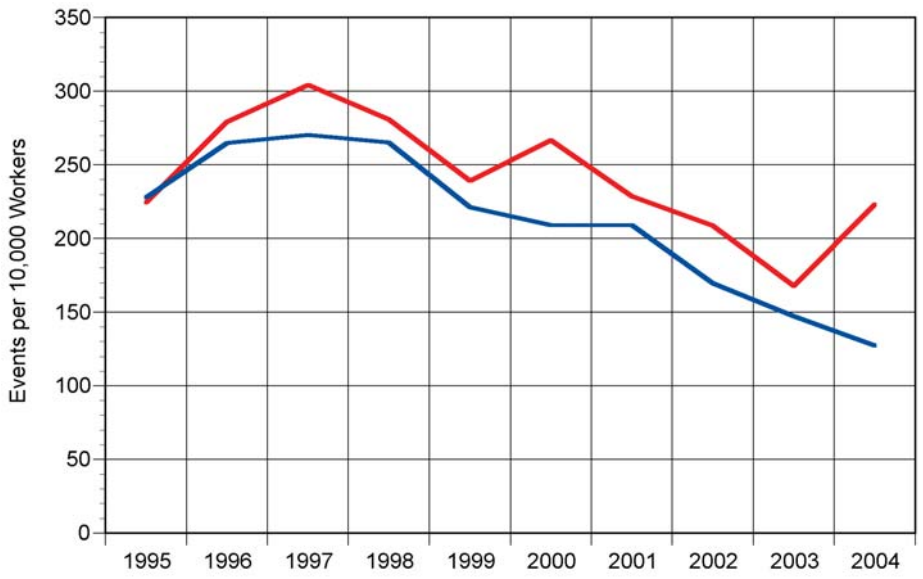
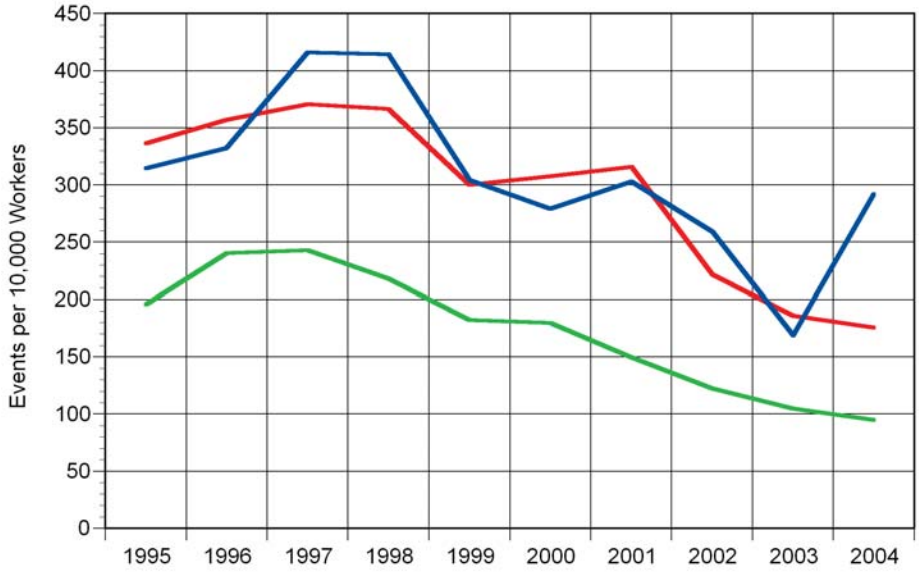


Figure 74. Rates of OSHA Events by Program Office, 1995-2004

The rate of OSHA events declined over time in all 3 program offices but at varying rates. The NNSA and Science sites had the highest and very similar rates over the period. EM sites had the lowest rate each year. The increase in the 2004 rate for Science sites resulted from 1 site reporting more than twice as many OSHA events in that year compared with the previous year.



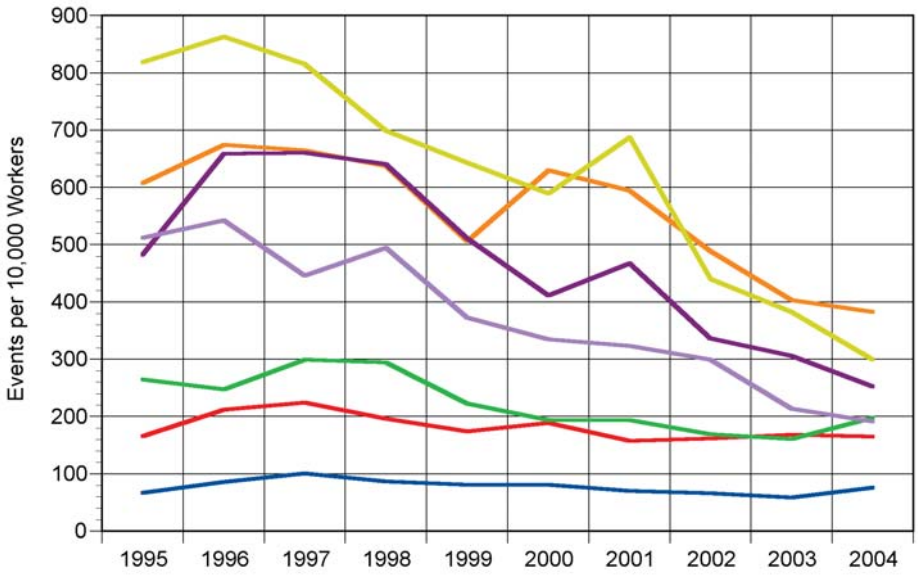
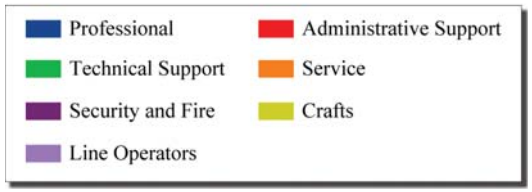


Figure 75. Rates of OSHA Events by Occupational Group, 1995-2004

Crafts workers had the highest event rates throughout most of the period, followed by Service and Security and Fire workers. While the OSHA event rates for Professional and Administrative Support workers remained relatively low and stable, the rates in all other occupational groups declined throughout the surveillance period. In 2004, the Crafts workers' OSHA event rate was less than half of their rate in 1995.



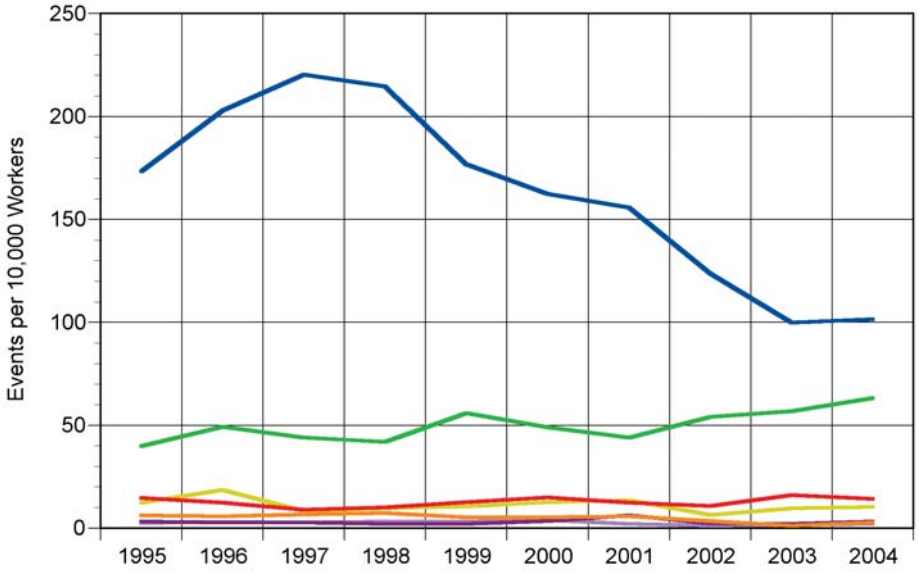


Figure 76. Rates of OSHA Events by Diagnosis Group, 1995-2004

Rates of OSHA events resulting in injuries were the highest of all diagnosis groups throughout the period, despite dropping by half between 1998 and 2004.

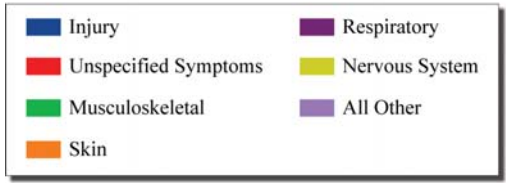
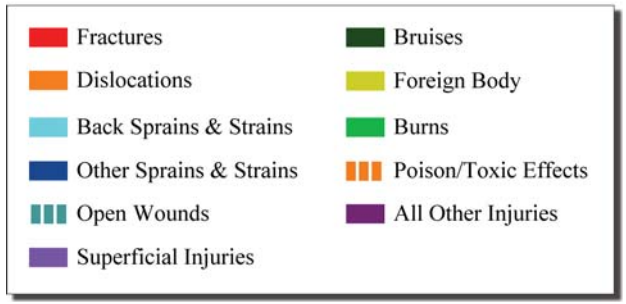
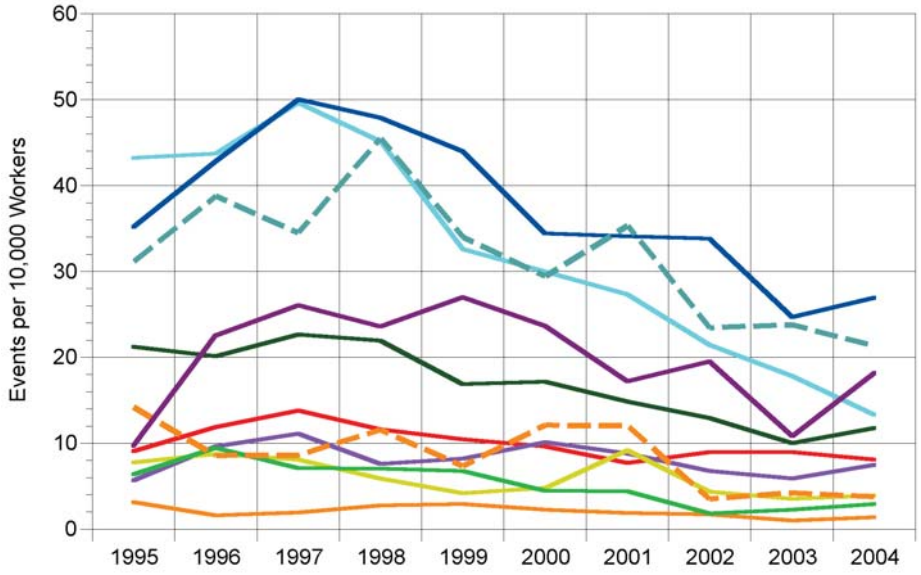


Figure 77. Rates of OSHA Events by Injury Type, 1995-2004

When categorized by injury type, event rates were the highest for back sprains and strains, other sprains and strains, and open wounds throughout the 10 years. The rates for each of the 3 highest OSHA injury types began to decline by 1999. Event rates associated with other types of injury were lower and much more stable over the 10-year period.





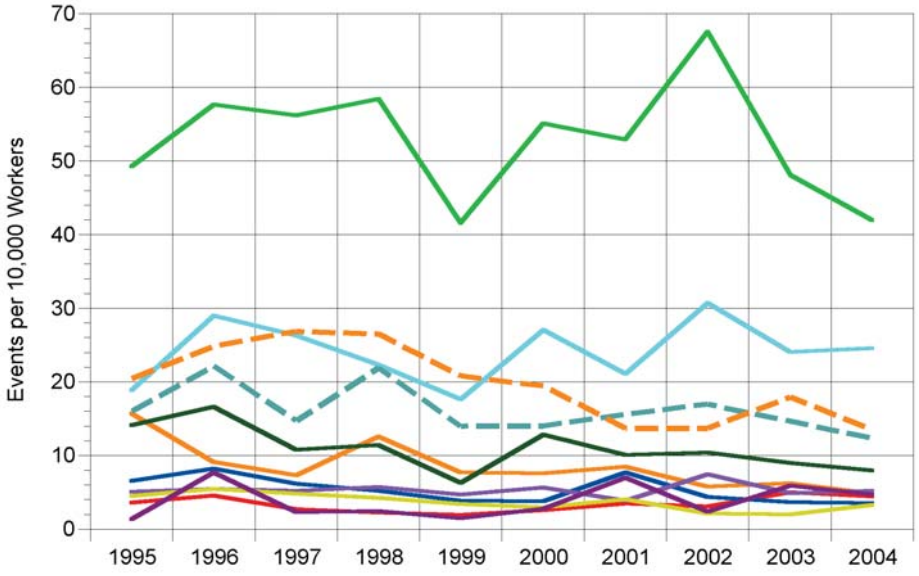


Figure 78. Rates of OSHA Events by Accident Type, 1995-2004

Accidents due to overexertion accounted for the majority of OSHA injury-related events throughout the 10 years. Despite year-to-year changes in the rates, the rates for most types of accidents were lower in 2004 than in 1995.

Figure 79. Distribution of OSHA Injuries Resulting From Transportation Accidents, 1995-2004

Bruises and all types of sprains and strains were the leading types of OSHA injuries resulting from transportation accidents. These 3 categories accounted for over 60 percent of the injuries associated with transportation accidents.

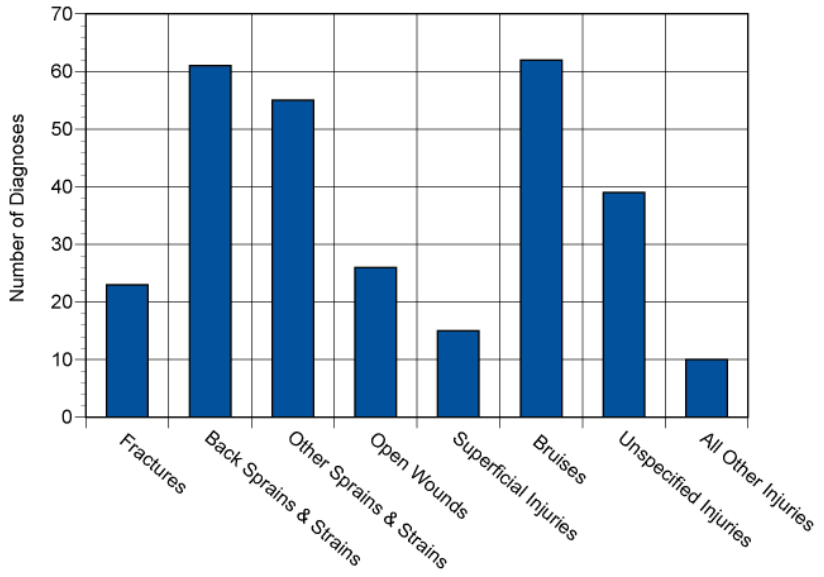
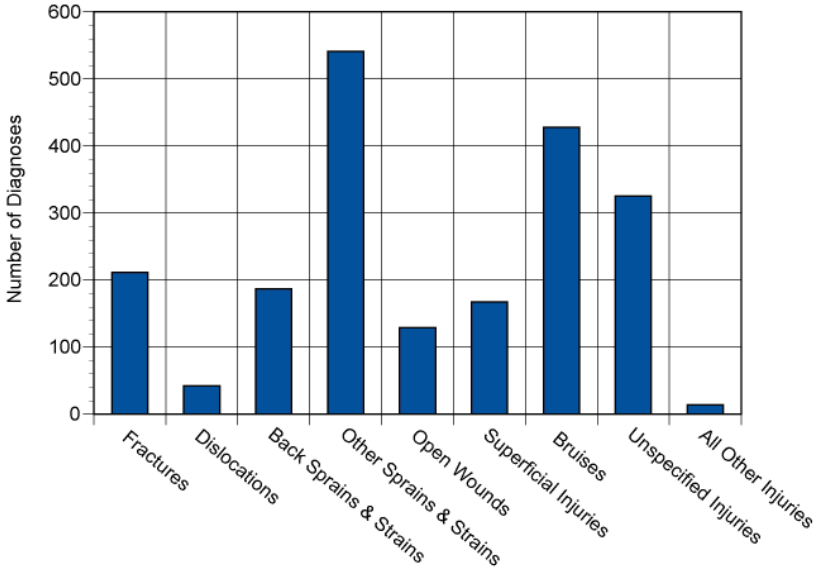


Figure 80. Distribution of OSHA Injuries Resulting From Falls, 1995-2004

Sprains and strains to parts of the body other than the back were the leading type of OSHA injury resulting from falls. Over 500 such sprains and strains were reported.



CHAPTER FOUR

Glossary

Absence: A period of incapacity or inability of a worker to perform their normal work duties (measured in days) due to illness or injury. Illness and injury surveillance examines absences of 5 or more consecutive calendar days.

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

Demographics: The characteristics of human populations and population segments. These characteristics may include age, gender, occupation, socioeconomic status, and education. For this report we considered age, gender, and occupation.

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

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

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

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

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

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

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

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

OSHA-Recordable Event: An accident that occurs on the job and involves fatalities (regardless of time between injury and death), time lost from work, transfer of employment, medical treatment other than first aid, loss of consciousness, or restriction of work or motion. Also included is any diagnosed occupational health event reported to the employer that is neither fatal nor results in workdays lost. By law, these events are recordable in the OSHA 300 Log.

Rate: A fraction in which the number of specified health events is divided by the number of persons at risk in a defined population over a specified period of time. A multiplier, a power of 10, converts the fraction or decimal to a whole number.

GLOSSARY

Occupational Group Definitions

Occupational Group	Type of Work	Typical Types of Jobs	Potential Occupational Hazards
Management	Predominately office work at a desk with supervisory responsibilities	First level supervisor and above	Ergonomic
Administrative Support	**Predominately office work at a desk; heavy computer usage**	**Programmer, Clerk, Administrative Assistant**	**Ergonomic**
In-House Professional	Predominately office work at a desk without supervisory responsibilities	Accountant, Lawyer, Purchasing Agent, Benefits Coordinator, Systems Analyst	Ergonomic
Field Professional	**Frequently work outside of an office in areas such as laboratories, testing areas, and construction sites**	**Engineer, Health Physicist, Industrial Hygienist, Scientist**	**Chemical and radiation**
Technical Support	Typically support Field Professionals and work in hands-on situations	Technician, Research Associate/Assistant	Chemical and radiation; potential for exposure greater than Field Professionals in most cases
Biohazard	**Work in situations with possible exposure to biological hazards**	**Medical Technician, Nurse, Biotechnical Laboratory Staff, Physician, Emergency Medical Technician, Animal Handler, Veterinarian**	**Biological**
Service	Maintain the facility's basic support functions; perform low to moderately skilled work independently or in support of Craft , Technical, Professional, and Administrative staff	Custodian, Driver, Laborer, Laundry Worker, Lineman, Mail Clerk, Pilot, Railroad Engineer, Records Center Staff, Stationary Engineer, Utility Worker, Water Plant Operator	Broad range depending on specific type of job
Security and Fire	**Provide security and fire protection for the facility; typically requires maintaining a certain level of physical fitness**	**Guard, Patrolman, Firefighter**	**Broad range, including smoke inhalation, chemical, radiation, physical exertion, noise**
Crafts	Directly involved in the support of physical plant infrastructure	Bargaining Unit employee such as Carpenter, Painter, Welder	Broad range depending on specific craft
Line Operators	**Directly work in or provide support to nuclear or chemical process, operation, or line activities**	**Chemical Worker, Process Operator, Material Handler, Reactor Operator**	**Chemical and radiation on a regular basis, ergonomic**

Explanation of Diagnostic Categories

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

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

ICD-9-CM Codes:

*Conditions in **Bold Print** are Major Categories*

Conditions	Codes	Examples
All Conditions	**001-V82**	**All reported health events**
Infectious and parasitic diseases	**001-139**	**Diseases caused by bacteria, viruses, and parasites**
Intestinal infections	001-009	Infections of the bowel or gut
Tuberculosis	010-018	TB in the lungs and other organs
Zoonotic bacterial diseases	020-027	Bacterial diseases that animals transmit to humans
Other bacterial diseases	030-041	Whooping cough, diphtheria, strep throat, and gangrene
Human Immunodeficiency Virus (HIV) infection	042	AIDS
Poliomyelitis and other non-arthropod diseases of the central nervous system	045-049	Viral meningitis (swelling of the layers covering the brain and spinal cord); viral encephalitis (swelling of the brain); and polio
Viral diseases accompanied by exanthem	050-057	Diseases accompanied by rashes or blisters like chickenpox, measles, shingles, and herpes
Arthropod-borne viral diseases	060-066	Encephalitis (swelling of the brain) caused by bites from virus-carrying ticks or mosquitoes
Other diseases caused by viruses and chlamydiae	070-079	Viral hepatitis, mumps, rabies, and mononucleosis
Rickettsioses and other arthropod-borne diseases	080-088	Rocky Mountain spotted fever, malaria, and lyme disease
Other spirochetal diseases	100-104	Trench mouth and Weil's disease (jaundice caused by coil-shaped bacteria)
Mycoses	110-118	Athlete's foot; fungal infections of fingernails and toenails; and thrush
Helminthiases	120-129	Pinworms, tapeworms, roundworms, and whipworms
Other infectious and parasitic diseases	130-136	Lice, chiggers, scabies, and mites
Late effects of infectious or parasitic diseases	137-139	Side effects of TB, chickenpox, or polio even though the disease is no longer active
Malignant neoplasms	**140-208, 230-234**	**All cancers, regardless of the part of the body affected**
Lip, oral cavity, and pharynx	140-149	Lip, mouth, throat, and tongue
Digestive organs and peritoneum	150-159	Stomach, esophagus (tube that transports food to the stomach), intestines, colon, rectum, anus, liver, pancreas, and gallbladder
Respiratory system and intrathoracic organs	160-165	Sinuses, throat, voice box, lungs, and heart
Bone, connective tissue, skin, and breast	170-176	Bone, muscle, ligament, tendon, blood vessels, fat, skin, and breast
Genitourinary organs	179-189	Kidney, bladder, and cervix, ovary, uterus, and prostate
Other and unspecified sites	190-199	Eye, brain, and thyroid

Conditions	Codes	Examples
Lymphatic and hematopoietic tissue	200-208	Leukemia, lymphoma, Hodgkin's disease, multiple myeloma, lymphosarcoma, and reticulum cell sarcoma
Carcinoma in situ	230-234	A cancer that is confined to the site of origin (has not spread to neighboring tissue)
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature	**210-229 235-239**	**Tumors that are not cancerous or do not exhibit cancerous behavior, regardless of the part of the body affected**
Endocrine, nutritional, and metabolic diseases and disorders of the immune system	**240-279**	**Diseases affecting the hormone secreting glands and organs. Overactive thyroid; underactive thyroid; vitamin deficiency; diabetes; gout; and problems affecting the antibody producing system**
Disorders of the blood and blood forming organs	**280-289**	**Anemia and hemophilia (excludes leukemia)**
Mental disorders	**290-319**	**Psychiatric diagnoses - Non-psychotic disorders: depression; anxiety, fear, and stress disorders; alcoholism; drug dependence; and eating disorders, such as anorexia; Psychotic disorders: dementia, schizophrenia, and manic depression**

Conditions	Codes	Examples
Diseases of the nervous system and sense organs	**320-389**	**Huntington's chorea; Alzheimer's and Parkinson's disease; epilepsy; multiple sclerosis; migraine; diseases of the eye, such as cataract and glaucoma**
Inflammatory diseases of the central nervous system	320-326	Bacterial meningitis (swelling of the layers covering the brain and spine); bacterial encephalitis (swelling of the brain); and brain and spinal abscesses
Hereditary and degenerative diseases of the central nervous system	330-337	Alzheimer's and Parkinson's disease, tremors, and Huntington's chorea
Other disorders of the central nervous system	340-349	Multiple sclerosis (MS), cerebral palsy, epilepsy, and migraine
Disorders of the peripheral nervous system	350-359	Nerve disorders of the face, carpal tunnel syndrome, muscular dystrophy
Disorders of the eye	360-379	Inflammation and ulcers of the eye and eyelid; detached retina; pink eye; problems with tear ducts; glaucoma; and cataracts
Diseases of the ear and mastoid process	380-389	Infections of the outer, middle, or inner ear; ringing of the ears; hearing loss
Diseases of the circulatory system	**390-459**	**Rheumatic fever, heart murmurs, heart attacks, angina, hardening of the arteries, varicose veins, hemorrhoids, and phlebitis**
Acute rheumatic fever	390-392	High fever and joint pain with possible heart damage

Conditions	Codes	Examples
Chronic rheumatic heart disease	393-398	Long lasting swelling and damage to the heart which results from rheumatic fever
Hypertensive disease	401-405	High blood pressure
Ischemic heart disease (Restricted blood flow to the heart)	410-414	Heart attack and angina
Diseases of pulmonary circulation	415-417	Blood clots in the lung and pulmonary aneurysm (bulge that develops in the wall of the pulmonary artery, which is the artery that carries blood to the lungs)
Other forms of heart disease	420-429	Swelling of the inner lining, middle lining, or sac enclosing the heart; heart failure; and irregular heartbeat
Cerebrovascular disease	430-438	Stroke, bleeding in the brain, and blockage or low blood flow in blood vessels of the brain
Diseases of the arteries and capillaries	440-448	Hardening of the arteries; aneurysm (bulge that develops in the walls of arteries); and blood clots
Diseases of the veins, lymphatics, and other circulatory system diseases	451-459	Phlebitis (swelling of a vein), thrombophlebitis (swelling of a vein which has a blood clot), varicose veins, and hemorrhoids
Diseases of the respiratory system	**460-519**	**Colds, sinusitis, laryngitis, pneumonia, influenza, chronic bronchitis, asthma, and emphysema**
Acute respiratory infections	460-466	Colds, sore throat, sinus infections, swollen tonsils, and bronchitis
Other diseases of the upper respiratory tract	470-478	Allergies, hay fever, sinus infections, bronchitis, and sore throat that continue for a long time
Pneumonia and influenza	480-487	"The flu" and pneumonia caused by a bacteria or virus
Chronic obstructive pulmonary diseases and allied conditions	490-496	Emphysema and asthma
Pneumoconiosis and other lung diseases caused by external agents	500-508	Black lung; miners' asthma; asbestosis; silicosis; berylliosis; and conditions caused by chemical fumes and vapors
Other diseases of the respiratory system	510-519	Pleurisy (swelling of the lining of the lungs), collapsed lung, and respiratory failure
Diseases of the digestive system	**520-579**	**Diseases affecting the teeth and mouth, salivary glands, digestive tract, and the abdominal cavity. Examples include dental abscess, ulcers, appendicitis, hepatitis (excluding viral hepatitis), cirrhosis of the liver, gallstones, pancreatitis, abdominal hernia, and intestinal polyps**
Diseases of the oral cavity, salivary glands, and jaw	520-529	Tooth problems (too many, too few, abnormal shape or size, cavities, bleeding gums, toothaches), and infections and swelling of the mouth, jaw, and tongue
Diseases of the esophagus, stomach, and duodenum	530-537	Ulcers of the esophagus (tube that transports food to the stomach), stomach, and small intestine; indigestion; and uncontrollable vomiting

Conditions	Codes	Examples
Appendicitis	540-543	Swelling of the appendix (rupture, surgery, or both may result)
Hernia of the abdominal cavity	550-553	Ruptures of the groin and diaphragm (muscle which separates the chest area from the lower part of the trunk)
Non-infectious enteritis and colitis	555-558	Crohn's disease and swelling of the intestine and colon
Other diseases of the intestines and peritoneum	560-569	Irritable bowel syndrome, blockage of the intestine, constipation, and diarrhea
Other diseases of the digestive system	570-579	Diseases of the liver, gallbladder, and pancreas; hepatitis; blood in stool; and bleeding in the stomach and intestine
Diseases of the genitourinary system	**580-629**	**Diseases affecting the kidneys, the prostate, and testes; benign breast diseases; infertility (male and female); diseases of the ovary; pelvic inflammatory disease; and menstrual disorders**
Nephritis, nephrotic syndrome, and nephrosis	580-589	Swelling of the kidney; swelling of the small blood vessels in the kidney; and kidney failure
Other diseases of the urinary system	590-599	Swelling and infection of the kidney and bladder; kidney stones; and difficulty urinating
Diseases of the male genital organs	600-608	Enlarged prostate; swelling of the scrotum and prostate; and abscess of the prostate
Disorders of the breast	610-611	Benign tumors, cysts, and infections of the breast
Inflammatory disease of the female pelvic organs	614-616	Swelling of the uterus, ovary, fallopian tubes, or cervix
Other diseases of the female genital tract	617-629	Conditions associated with menopause and postmenopause; PMS; infertility; and cramps
Complications of pregnancy, childbirth, and the puerperium	**630-676**	**Miscarriage; complications of pregnancy, such as hemorrhage; pregnancy-related high blood pressure; preeclampsia; and premature labor or other complications of labor**
Ectopic and molar pregnancy	630-633	Development of fetus outside the uterus and growth of cysts
Other pregnancy with abortive outcome	634-639	Miscarriage and complications associated with miscarriage
Complications mainly related to pregnancy	640-648	Abnormal bleeding and possible miscarriage; infections; high blood pressure caused by pregnancy; and premature labor
Normal delivery, and other indications for care in pregnancy, labor, and delivery	650-659	Delivery requiring little or no assistance; multiple births; breech birth; and problems of the fetus or placenta which affect care of mother
Complications occurring mainly in the course of labor and delivery	660-669	Long labor; unusually fast delivery; and abnormal bleeding after delivery
Complications of the puerperium	670-676	Infections of the breast; blood clot in lung; and varicose veins
Diseases of the skin and subcutaneous tissue	**680-709**	**Acne, cellulitis, sunburn, psoriasis, and seborrhea**

Conditions	Codes	Examples
Infections of the skin and subcutaneous tissue	680-686	Abscesses, boils, hair-containing cysts, and pus-filled blisters
Other inflammatory conditions of skin and subcutaneous tissue	690-698	Skin rashes caused by detergents, oils, greases, solvents, sun, food, drugs, or medicine
Other diseases of the skin and subcutaneous tissue	700-709	Corns, calluses, heat rash, swollen hair follicles, acne, and ingrown fingernails and toenails
Diseases of the musculoskeletal system and connective tissue	**710-739**	**Arthritis, systemic lupus erythematosus, ankylosing spondylitis, herniated intervertebral disk ("slipped disk"), lumbago, sciatica, rheumatism, tendonitis, and osteoporosis**
Arthropathies and related disorders	710-719	Arthritis; joint pain and stiffness; and other diseases of the connective tissue which supports and connects internal organs, forms bones and blood vessel walls, and attaches to bones
Dorsopathies	720-724	Swelling of the spine; herniated, slipped, and ruptured disk; rheumatoid arthritis of the spine; lumbago; and sciatica
Rheumatism, excluding the back	725-729	Swelling and degeneration of joints, muscles, tendons; tennis elbow; and bursitis
Osteopathies, chondropathies, and acquired musculoskeletal deformities	730-739	Fracture caused by bone disease; osteoporosis; curvature of the spine; flat foot; hammer toe; and development of deformities of the nose, toes, feet, legs, arms, and hands

Conditions	Codes	Examples
Congenital anomalies	**740-759**	**Spina bifida; cleft palate; harelip; and various chromosomal anomalies, such as Klinefelter's syndrome**
Certain conditions originating in the perinatal period	**760-779**	**Maternal high blood pressure; maternal malnutrition; ectopic pregnancy; breech birth; fetal malnutrition or slow growth; injuries related to birth trauma; and perinatal jaundice**
Symptoms, signs, and ill-defined conditions	**780-799**	**Blackout, chills, dizziness, fatigue, pallor, abnormal weight loss, undiagnosed chest pain, and heartburn**
Symptoms	780-789	Hallucinations, fainting, convulsions, dizziness, fatigue, fever, sleep disturbance, rash, headache, sore throat, chest pain, nausea, vomiting, and heartburn
Non-specific abnormal findings	790-796	Abnormal x-ray, blood, stool, and urine test results
Ill-defined and unknown causes of morbidity and mortality	797-799	Senility; asphyxia; respiratory arrest; nervousness; and unexplained death within 24 hours of onset of symptoms
Injury and poisoning	**800-999**	**Dislocation of joints; sprains and strains of associated muscles; concussions; bruises; cuts; internal injuries from crushing, puncture, tearing, or blunt impact; burns; blisters; poisoning; frostbite; heatstroke; and complications of medical or surgical care**
Fractures, all sites	800-829	Cracks or breaks of any bone

Conditions	Codes	Examples
Dislocations	830-839	Separation of a bone from its normal socket or joint
Sprains and strains of joints and adjacent muscles	840-848	Strains are injuries to muscle from overuse or stretching the muscle beyond its normal limit; sprains are injuries involving tearing or overextending the ligaments of a joint
Intracranial injuries excluding those with skull fractures	850-854	Concussions; internal bruises; and bleeding within the head without a fracture of the bones of the skull
Internal injuries of the thorax, abdomen, and pelvis	860-869	Bruising, crushing, tearing, or rupturing the chest, abdomen, and pelvis and the organs within these areas of the body
Open wounds	870-897	Animal bites; cuts; lacerations; punctures; and amputations, excluding the arteries and veins
Other injuries and late effects of external causes	900-999	Miscellaneous injuries, including injuries to the arteries and veins; problems that occur over an extended period of time after the injury has taken place ("late effects"); superficial bruises and abrasions; burns; postinjury shock; poisoning; toxic side effects of chemicals; heatstroke; electrocution; and altitude sickness
Supplementary classifications related to personal or family history of disease	**V10-V19**	**Covers situations in which the person is not ill or injured but has a personal or family history of problems, such as cancer, mental illness, allergies, or arthritis that may affect his or her risk of illness**
Supplementary classifications related to health care for reproduction and child development	**V20-V28**	**Problems related to pregnancy, postpartum care, contraception, outcome of delivery, and physical development of child**
Contact with health services for reasons other than illness or injury	**V50-V59**	**Care for workers who have been treated previously for an illness or injury that is no longer present but who receive care to complete treatment or prevent recurrence**