Office of Illness and Injury Prevention Programs

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U.S. Department of Energy

Illness and Injury Surveillance Program

Worker Health At A Glance, 1995-2004

U.S. Department of Energy
Illness and Injury Surveillance Program

Worker Health At A Glance

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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

HSS
Office of Health, Safety and Security

2007

Foreword

The Department of Energy's (DOE) Illness and Injury Surveillance Program (IISP) has monitored the health of contractor workers at selected DOE sites since 1990. For the first time, the IISP has sufficient data to describe, in a collective manner, the health trends occurring among workers at a number of DOE sites during a 10-year period. This brief report and the more detailed *Worker Health Summary* assess illness and injury trends of DOE workers according to gender, age, occupational group, and program office over the 10-year period, 1995 through 2004. During this time, over 137,000 individual contractor workers were employed at the 15 DOE sites participating in the IISP. Previous reports are available online at:

http://www.hss.energy.gov/healthsafety/WSHP/epi/surv/index.html

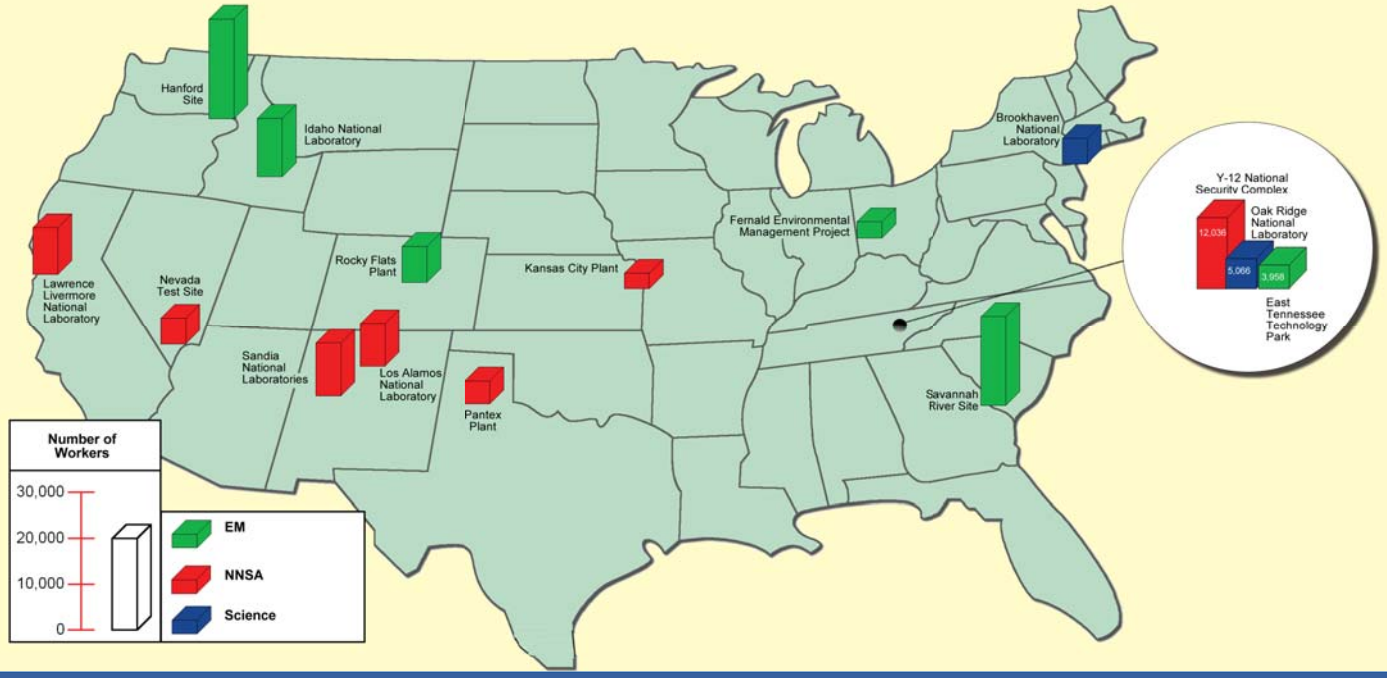
Worker Health At A Glance provides a quick overview of the health patterns that have emerged over the past decade. The increasing age of the work force may be a contributor to several health trends observed. With the increasing number of absences due to chronic health conditions such as hypertension, diabetes, and musculoskeletal conditions, particular attention should be focused on preventive

measures and wellness programs for these conditions. Preventive health care programs that reduce illness and injury can result in lowered health care costs, reduced absence rates, and an overall increase in worker productivity. DOE's IISP is committed to the continued protection of the health of the DOE work force by identifying those areas that may benefit most from a public health focus on prevention.

This report presents an overview of the health of the DOE work force at 15 sites from 1995 through 2004.

- Each site is assigned to 1 of 3 categories based on the program office responsible for the site.
- *Environmental Management* (EM) sites are involved in cleanup and facility closure.
- *Science* facilities manage basic research programs.
- *National Nuclear Security Administration* (NNSA) facilities ensure that the nation's nuclear weapons remain secure and prepared for use.

Distribution Of Contractor Work Force By Program Office At Sites Participating In The IISP



Fifteen sites participated from 1995 through 2004, 7 of which participated for the full 10 years.

- The Illness and Injury Surveillance Program (IISP) was established at DOE Headquarters in 1990.
- Participation in the IISP is voluntary; however, the program assists sites in fulfilling certain DOE regulatory requirements.

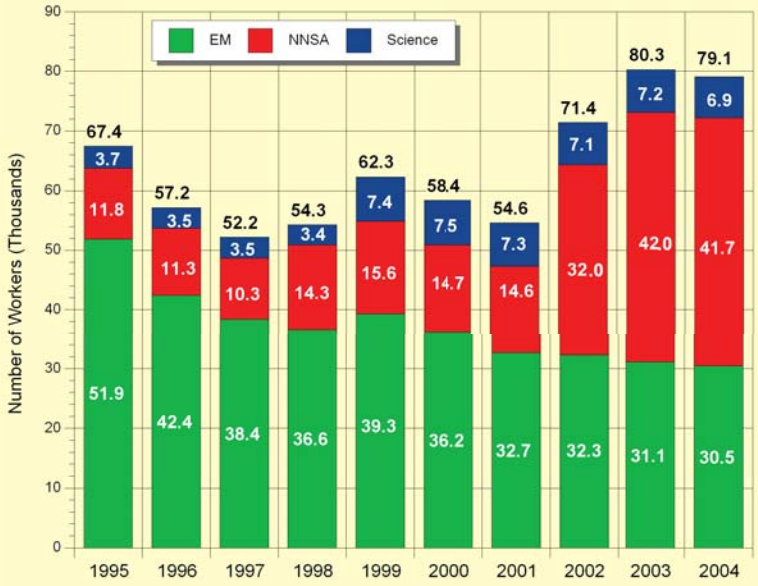
Site Assignment by Program Office and Years of Participation

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

The IISP examined health information for over 137,000 workers.

- The size of the work force covered by the IISP ranged from 52,000 to 80,000 individuals per year.
- EM facilities had the most workers, averaging over 37,000 workers per year, while Science sites had the fewest, averaging about 5,700 workers each year.
- Four additional NNSA sites were added in 2002 and 2003, dramatically increasing the percentage of NNSA workers in the covered work force.

Total Number of Workers

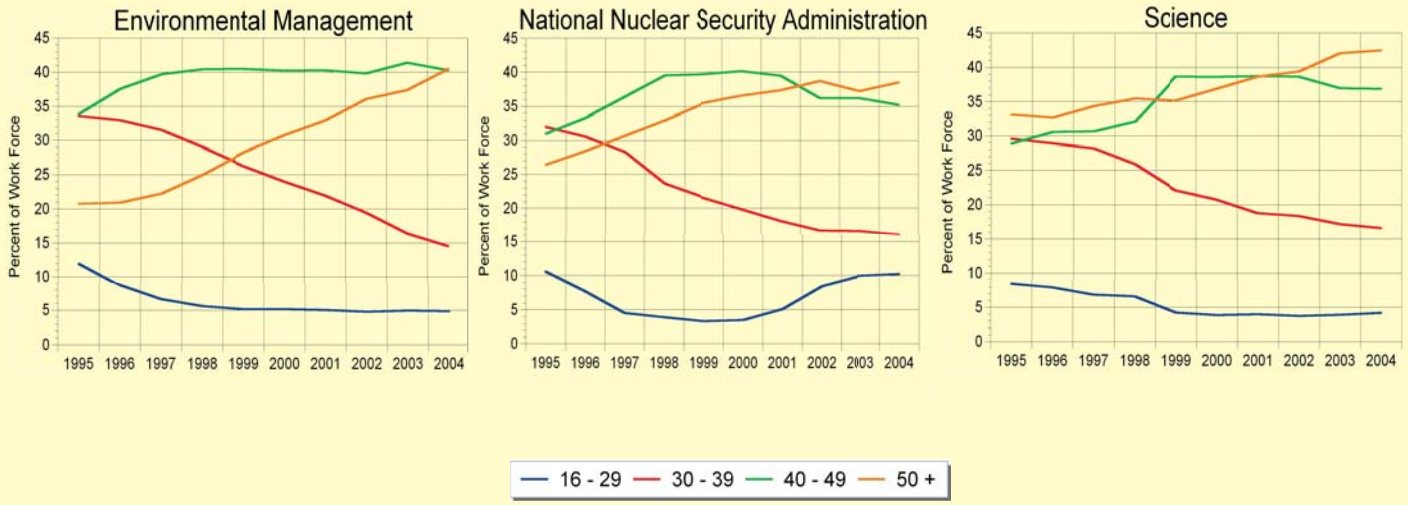


The DOE work force is growing older, and thousands of workers will reach retirement age during the next decade.

- The work force had low turnover and did not add many younger workers. As a result, the number of workers 50 or older doubled, increasing the average age of the work force.

- The aging of the work force was similar across all program office groups. The percentage of workers aged 50 or older increased steadily, while workers aged 30-39 decreased by about half over the period.

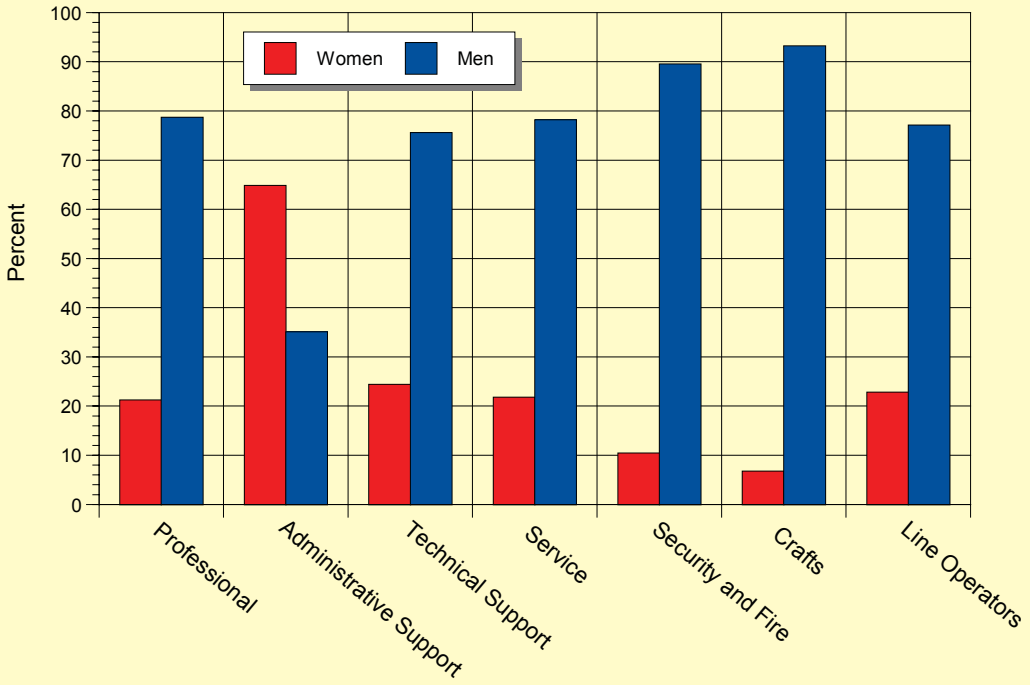
Age Distribution by Program Office



Males represented about 70 percent of the work force.

- The overall percentage of men stayed about the same over the 10 years.
- Most occupational groups had more men than women. Workers in Administrative Support were the exception, where 2 out of 3 workers were women.

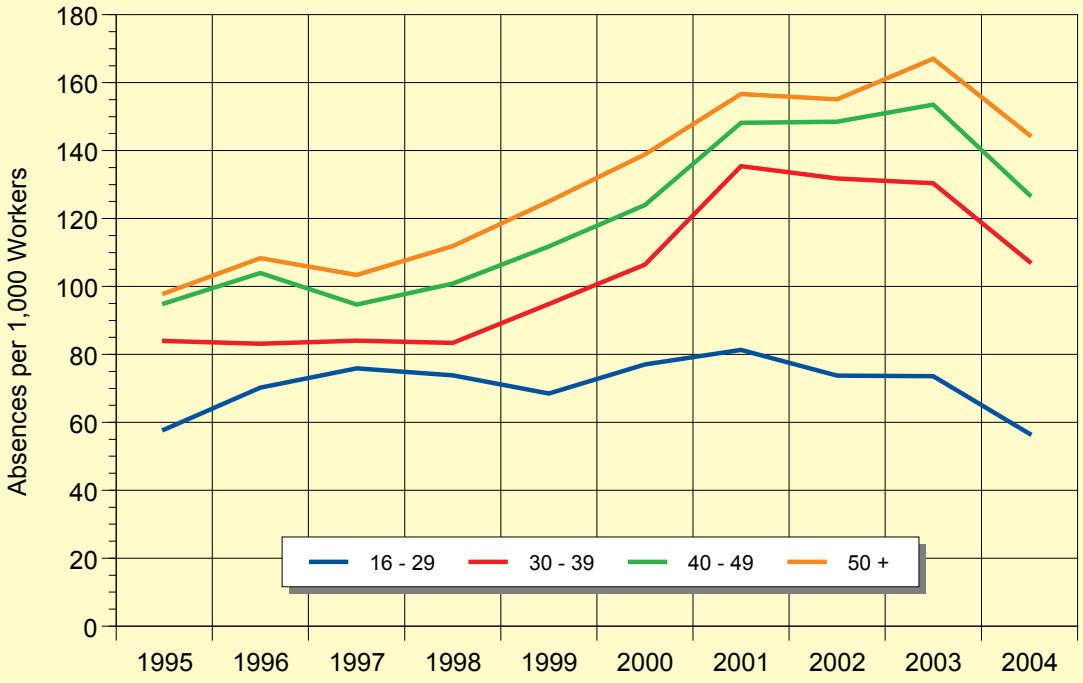
Gender Distribution by Occupational Group



Absence rates increased by more than 40 percent among workers aged 30 or older.

- In this report, an *absence* is defined as 40 or more consecutive work hours (5+ workdays) off the job. Shorter absences were not counted.
- The absence rate for workers less than 30 years old was the lowest and changed the least. Absence rates increased similarly for all age groups 30 or over.

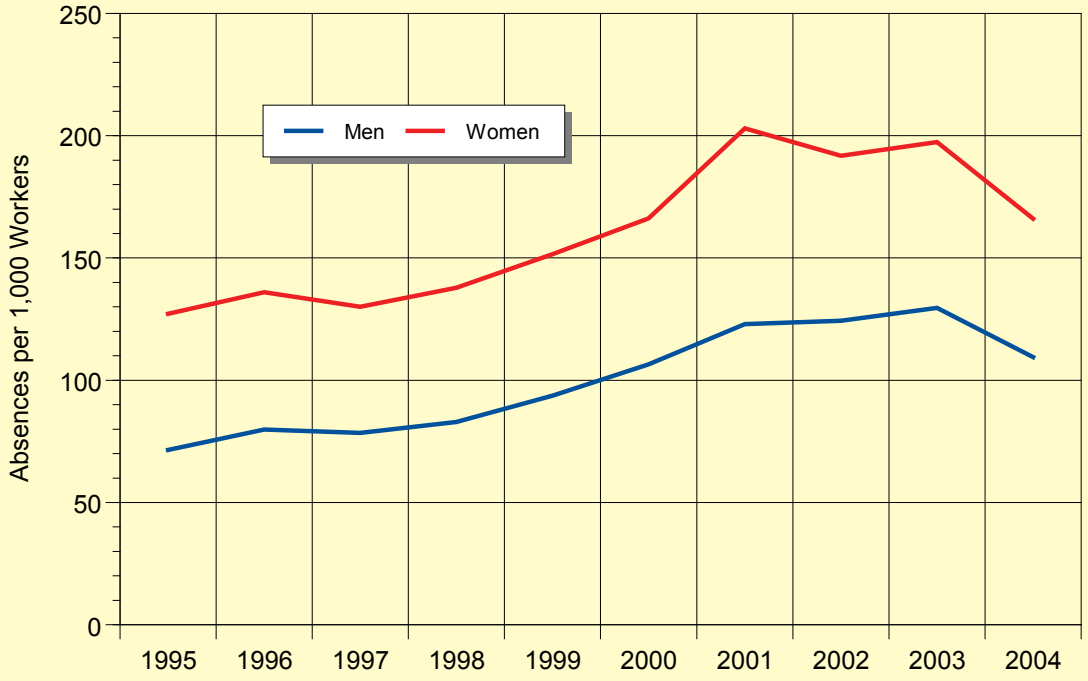
Absence Rates by Age Group



The absence rate for women was about 50 percent higher than for men.

- Of the 75,541 absences reported, women reported 38 percent, and men reported 62 percent.
- The rate for both men and women decreased in 2004.

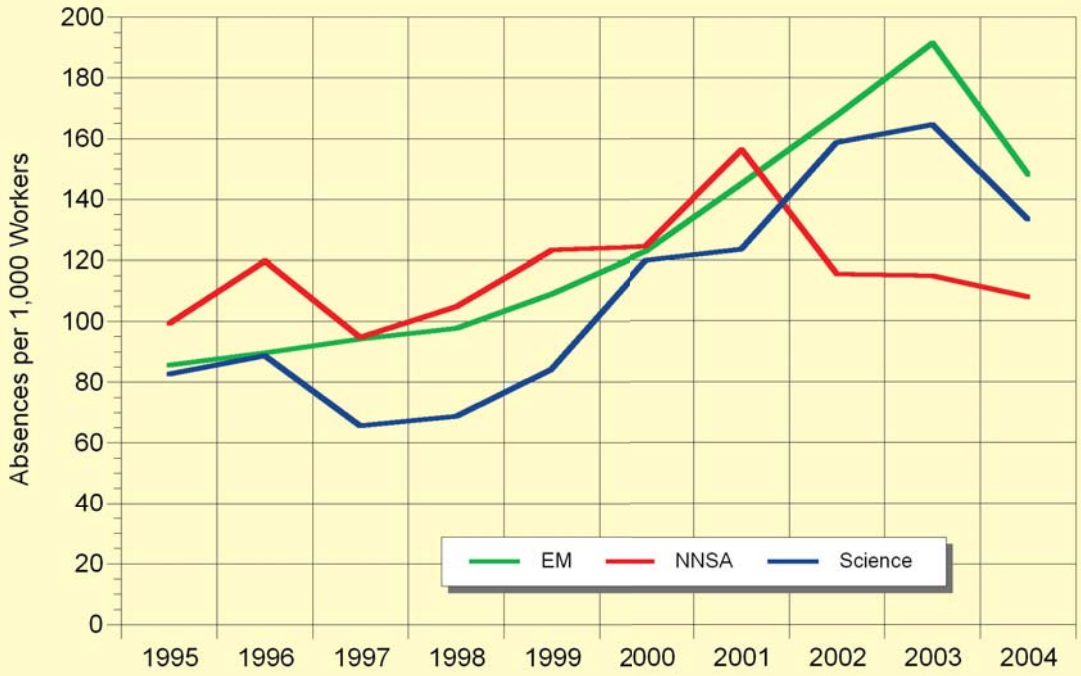
Absence Rates by Gender



The absence rates for EM and Science sites steadily increased over the period, while the rates at NNSA sites varied less.

- NNSA workers, who had the highest absence rates in 1995, had the lowest rates after 2001.
- Workers at EM and Science sites had similarly low absence rates in 1995 but had the highest rates after 2001.

Absence Rates by Program Office

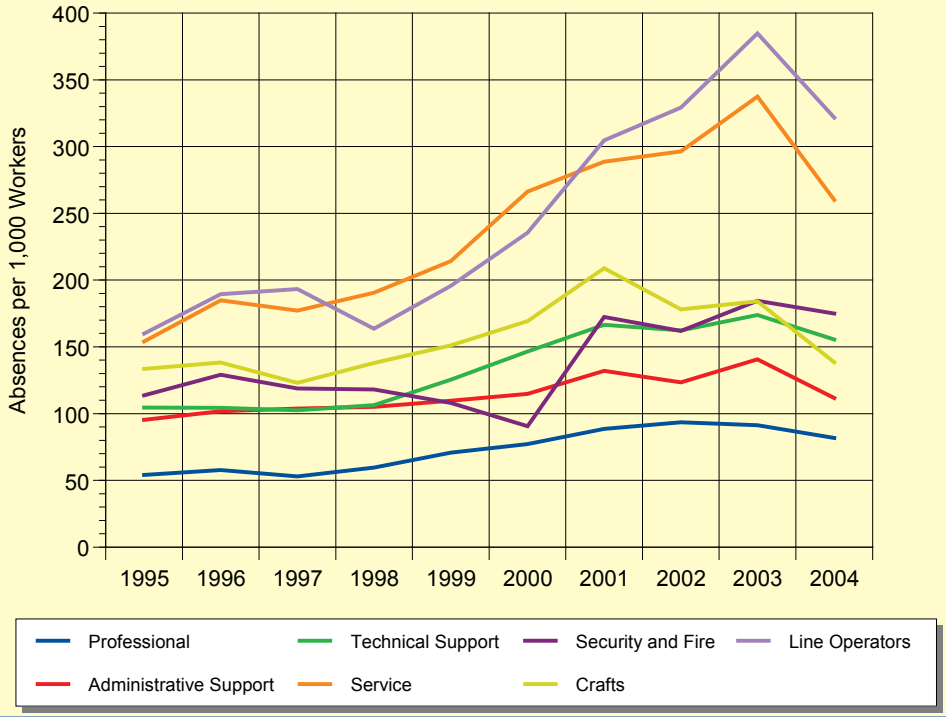


Absence rates increased for all occupational groups.

- Line Operators and Service workers were distinctive in having both the highest absence rates and the largest increase over time. Rates for both groups more than doubled.

- Administrative Support and Crafts groups increased the least. The Crafts' absence rate has recently declined to the level at which it began. The decline may, in part, reflect a significant decrease in the number of occupational illnesses and injuries in this group.

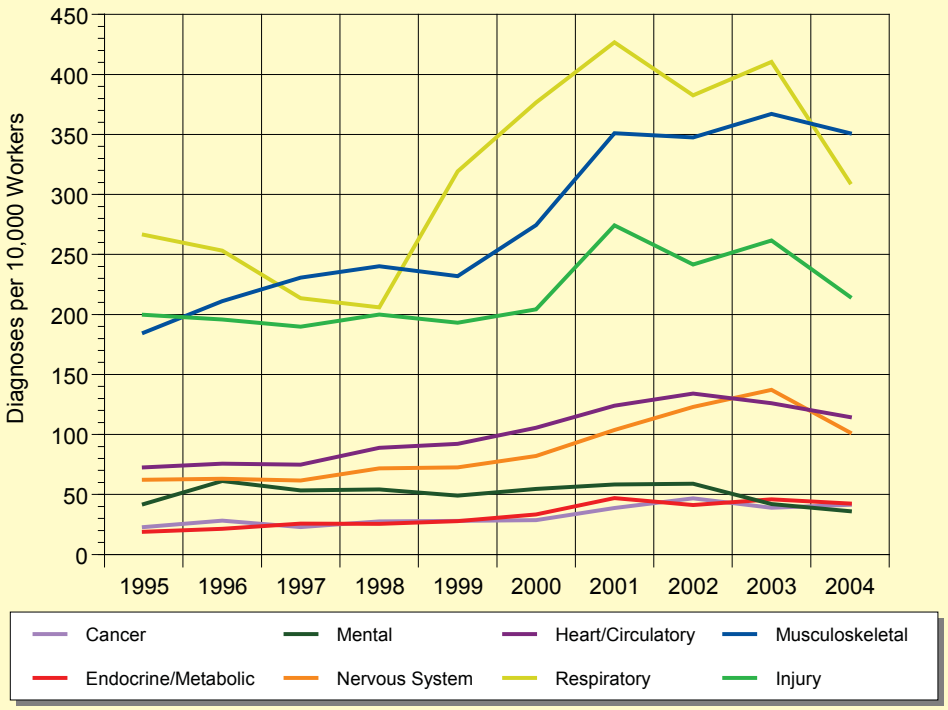
Absence Rates by Occupational Group



All occupational groups experienced at least a 40 percent increase in absence rates from 1995 to 2004.

- Upon returning to work, workers must provide a diagnosis when clearing through the site's medical clinic. More than 1 diagnosis may be reported for each absence. Diagnoses outnumbered absences each year by up to 44 percent.
- Slightly more than half of all reported diagnoses were for respiratory diseases, musculoskeletal conditions, and injuries.
- Acute respiratory conditions made up the majority of diagnoses for respiratory diseases, disk and back disorders for musculoskeletal conditions, and sprains and strains for injuries.

Diagnosis Rates for Selected Disease Categories



The DOE work force and the U.S. population had similar patterns of cancer; prostate cancer was the most common cancer among men, and breast cancer was the most common among women.

- Lung cancer was much less common among DOE workers than in the U.S. population, perhaps in part because DOE workers are less likely to be smokers.
- Colorectal cancers were ranked as the second most common cancer for both men and women in the work force; it was third for men and women in the U.S. population.

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

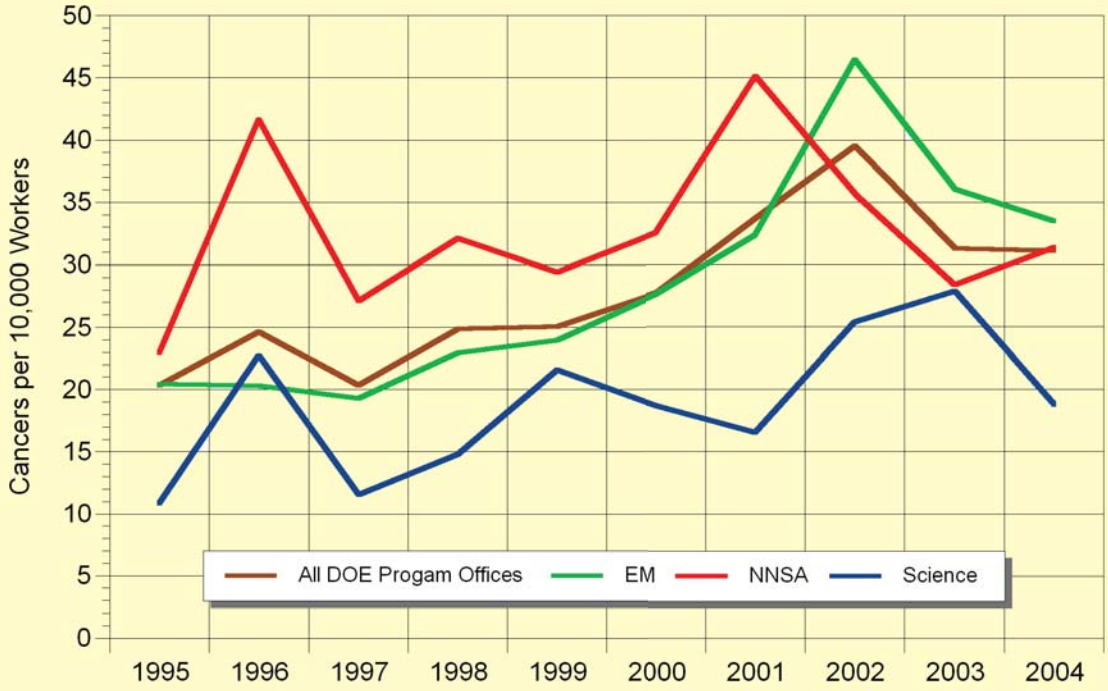
US Population**		Illness and Injury Surveillance Program
Men		
Prostate		Prostate
Lung & Bronchus		Colon & Rectum
Colon & Rectum		Non-Hodgkin's Lymphoma
Urinary Bladder		Melanoma of the Skin
Melanoma of the Skin		Lung & Bronchus
Non-Hodgkin's Lymphoma		Kidney
Kidney		Urinary Bladder
Leukemia		Thyroid
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.*

Cancer was reported rarely among the DOE work force. Only about 1 percent of workers reported cancer diagnoses.

- The cancer rate for all DOE sites participating in the IISP increased more than 50% over the period.
- The average annual cancer rate was highest for NNSA sites (33 cancers per 10,000 workers) and lowest for Science sites (19 cancers per 10,000 workers).

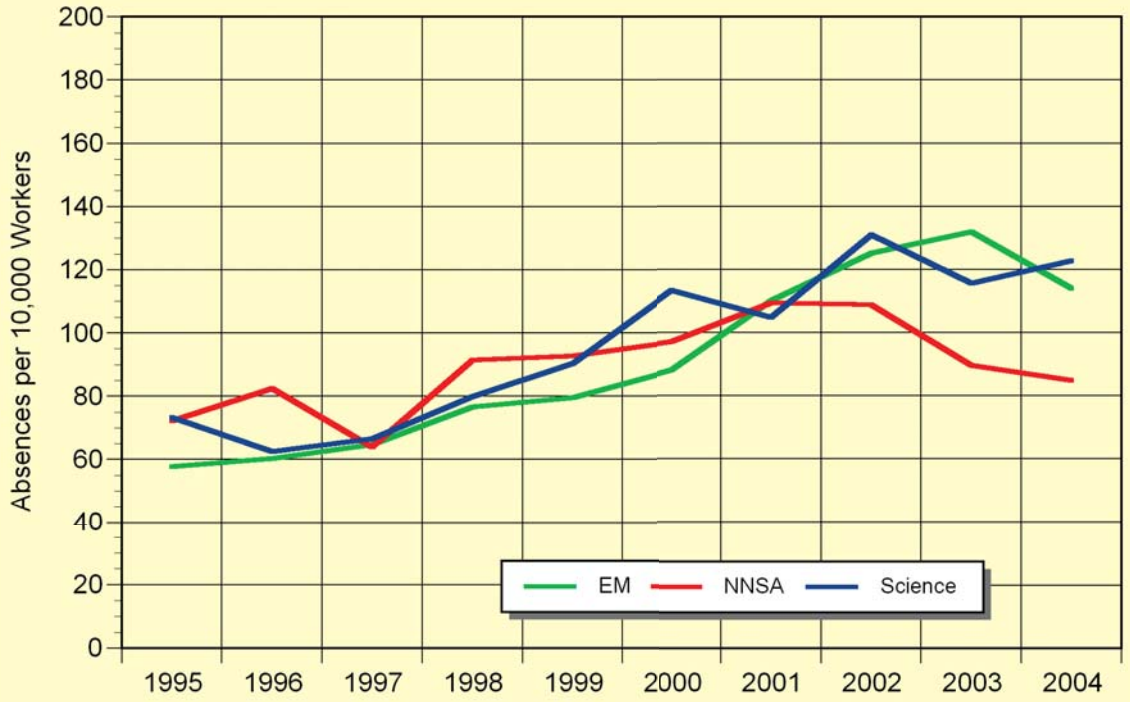
Cancer Rates by Program Office



Circulatory disease occurred most often in men and increased with age.

- Circulatory disease absence rates increased steadily for EM and Science sites over the 10 years.
- The rates fluctuated at NNSA sites but changed very little over the period.
- The decline in the NNSA rates after 2001 resulted from the addition of 4 new NNSA sites in 2002 and 2003.

Absence Rates for Circulatory Conditions by Program Office

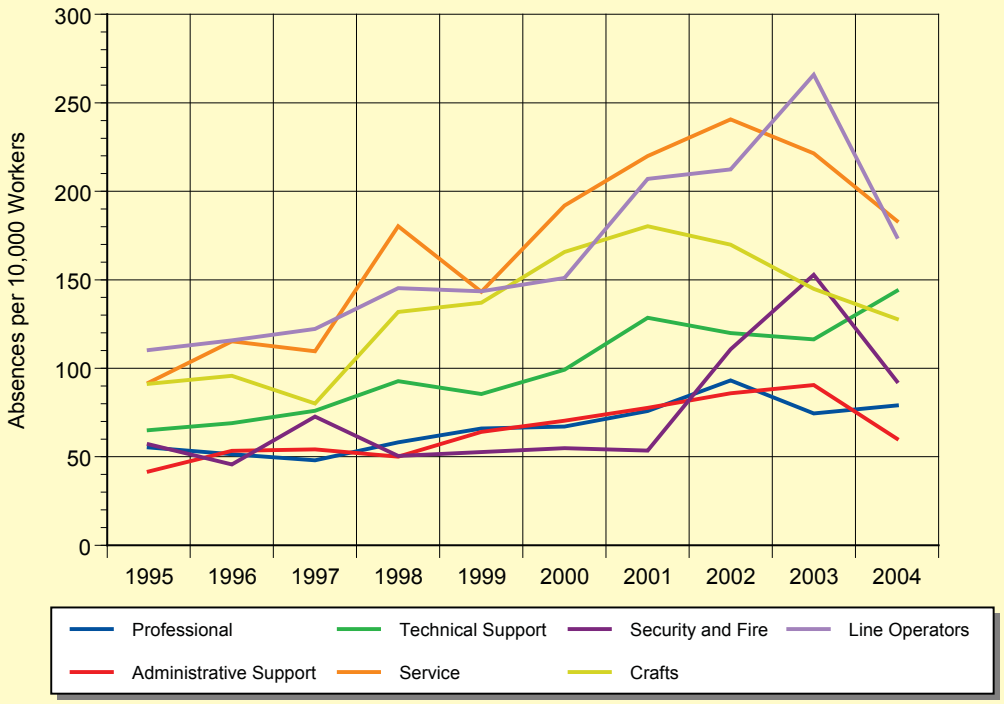


Circulatory disease absence rates increased at least 40 percent in all of the occupational groups.

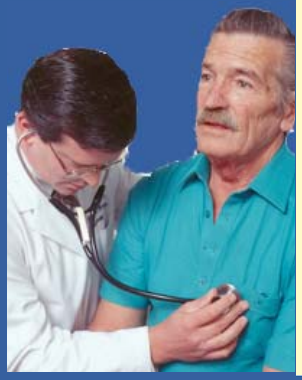
- The highest absence rates due to circulatory disease were among Service and Crafts workers and Line Operators. Until recently, the rates increased steadily in these groups. Professional, Administrative Support, and Security and Fire workers had the lowest rates.

- It is possible that circulatory disease rates have peaked and are now going down among workers in many occupations, but it is too soon to be certain about this change. Analysis of more recent years of data will help clarify whether the trend is changing.

Absence Rates for Circulatory Conditions by Occupational Group

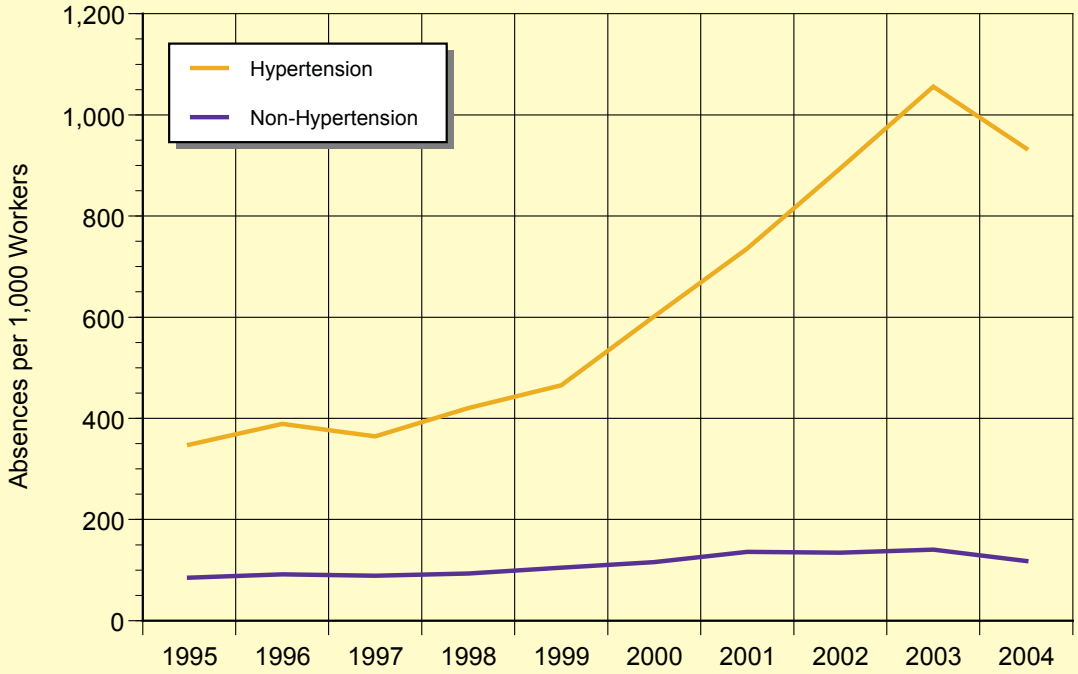


Absence rates were 3 times higher among workers with hypertension (high blood pressure) than among workers without a reported diagnosis of hypertension.



- Absence rates increased dramatically among workers *with* hypertension and remained constant for workers *without* hypertension.
- Professional, Administrative Support, and Security and Fire workers had the lowest absence rates. The highest rates were among Technical Support and Service workers and Line Operators.

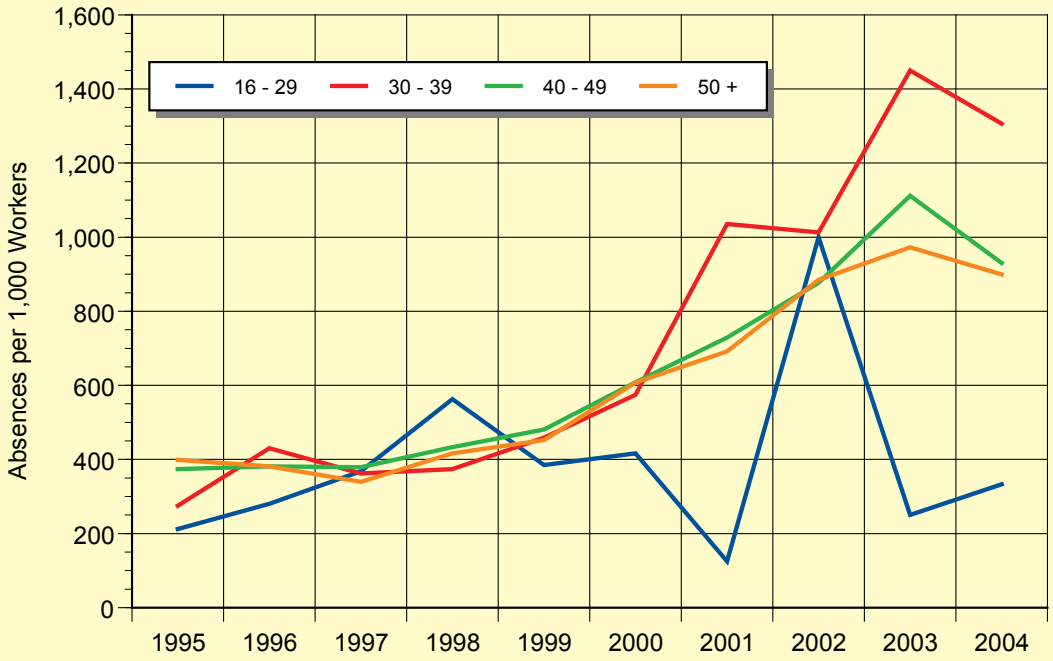
Absence Rates Among Workers Reporting Hypertension Versus Workers Not Reporting Hypertension



Workers aged 30-39 reporting hypertension had the highest overall absence rates.

- Workers aged 30-39 who reported hypertension also had the most dramatic increase in absence rates, increasing over 400 percent during the 10-year period.
- Absence rates increased in all age groups for workers with hypertension.

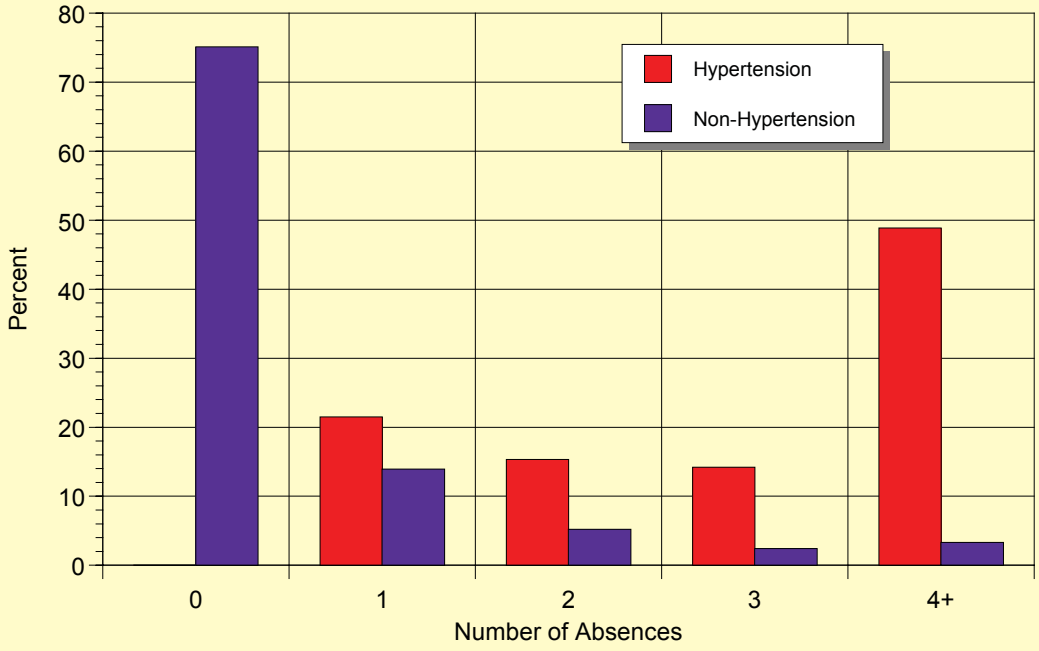
Absence Rates by Age Group Among Workers Reporting Hypertension



Total days off for workers with hypertension were 8 times more than the number of days off for workers not reporting hypertension.

- More than 75 percent of workers without hypertension reported no absences during the 10 years, while almost half of all workers with hypertension reported 4 or more absences.
- Workers with hypertension were also more likely to report diagnoses of diabetes, circulatory disease, and kidney disease.

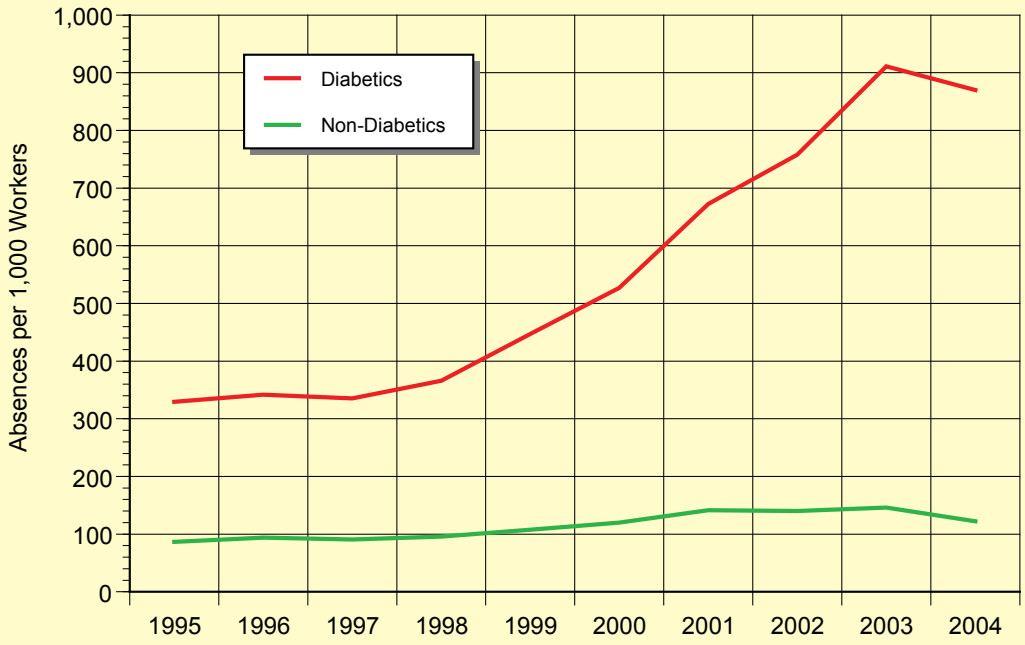
Number of Absences Among Workers Reporting Hypertension Versus Workers Not Reporting Hypertension



Absence rates ranged from 4 to 7 times higher for diabetics than for workers not reporting diabetes.

- Diabetics also had a higher percentage of disorders of the endocrine/metabolic, nervous, and circulatory systems.

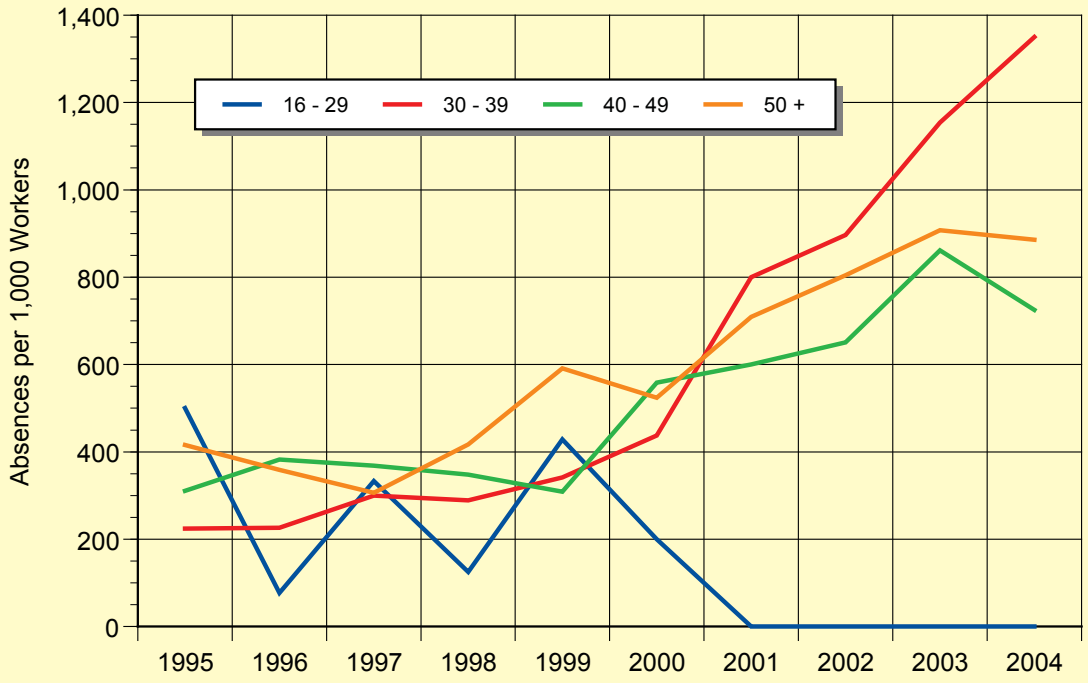
Absence Rates Among Workers Reporting Diabetes Versus Workers Not Reporting Diabetes



While absence rates among workers reporting diabetes increased for all workers over the age of 30, workers aged 30-39 had the highest increase.

- Similar to absence rates among workers with hypertension, the absence rates for workers with diabetes aged 30-39 were unexpectedly higher than those of older workers.
- Both diabetes and hypertension involve similar risk factors, such as being overweight. Wellness programs targeting diet and exercise may help affected workers to control these diseases and may decrease absence rates.

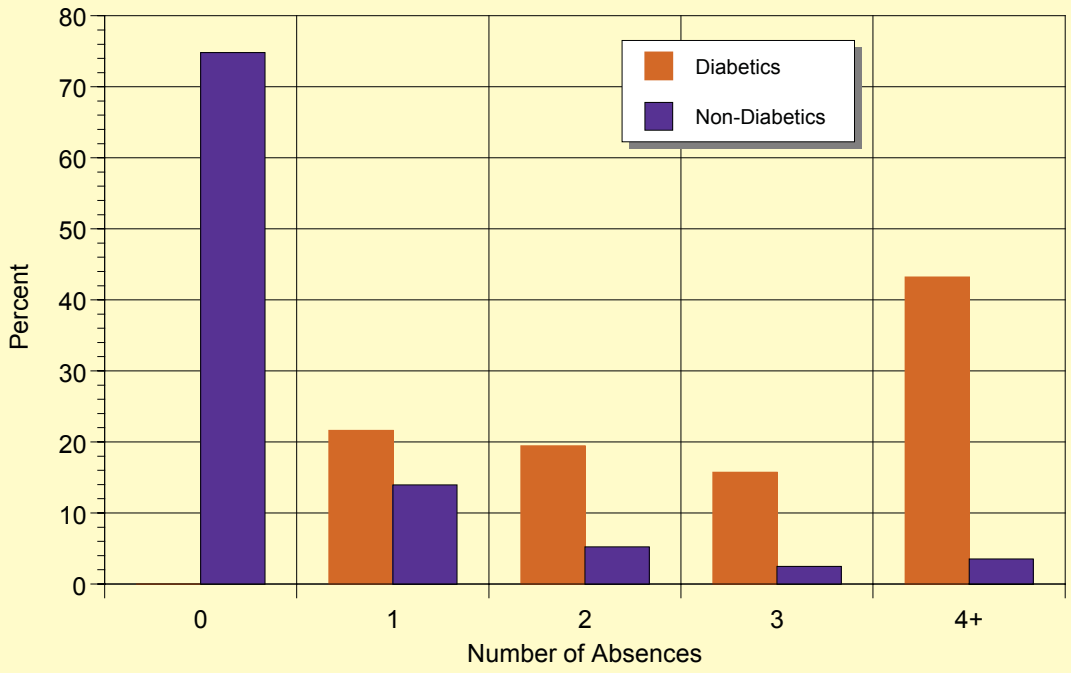
Absence Rates by Age Group Among Workers Reporting Diabetes



Diabetics averaged 118 days absent from work compared with 15 days absent among workers not reporting diabetes.

- Seventy-five percent of workers not reporting diabetes reported no absences, while more than 40 percent of workers with diabetes reported 4 or more absences. Workers with diabetes had a significantly greater number of absences compared with workers without diabetes.

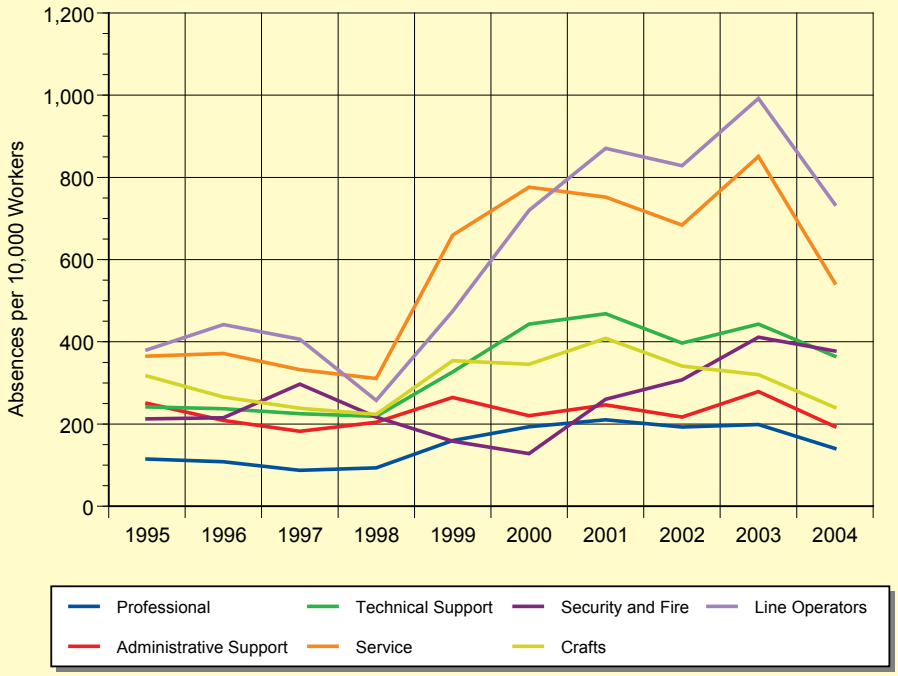
Number of Absences Among Workers Reporting Diabetes Versus Workers Not Reporting Diabetes



Respiratory disorders were the cause of about 22 percent of all absences.

- Service workers and Line Operators had the highest absence rates related to respiratory conditions.
- The majority of respiratory disorders involved upper respiratory infections, followed by pneumonia and influenza.
- Other respiratory absences were caused by exposure to various external agents thought to be occupational. Forty-one cases listed beryllium as the external agent, resulting in chronic beryllium disease.

Absence Rates for Respiratory Conditions by Occupational Group

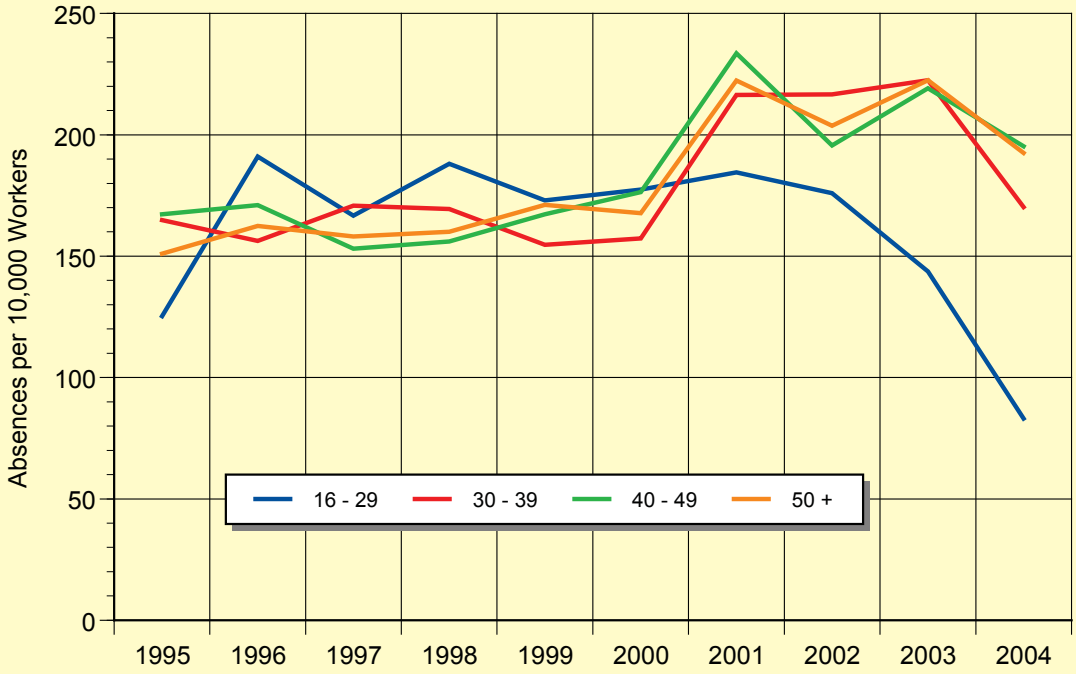


Injuries were the third most common reason for absences.

- Unlike injuries from the OSHA 300 log, these injuries are considered to be non-occupational. However, they still have a significant impact on productivity. Injuries not only cause employees to lose time from work but can also restrict their ability to do their job.

- Each injury absence lasted an average of 34 days. Absence rates for injuries were similar for all workers over the age of 30, with each age category's rate beginning to increase in 2001.

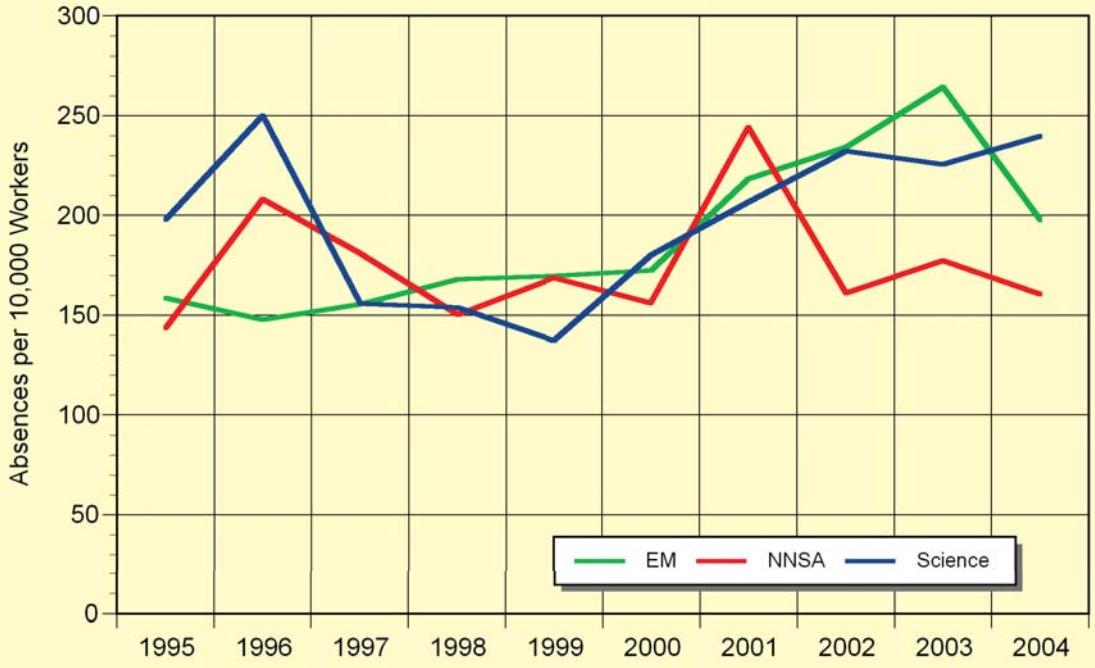
Absence Rates for Injuries by Age Group



The average absence rate for injuries was similar for each program office, about 185 absences per 10,000 workers, but their trends differed somewhat over the period.

- The absence rates at NNSA sites remained low and relatively unchanged.
- In 1995, the rate at Science sites was higher than at EM sites, but both had similar rates by 2004.

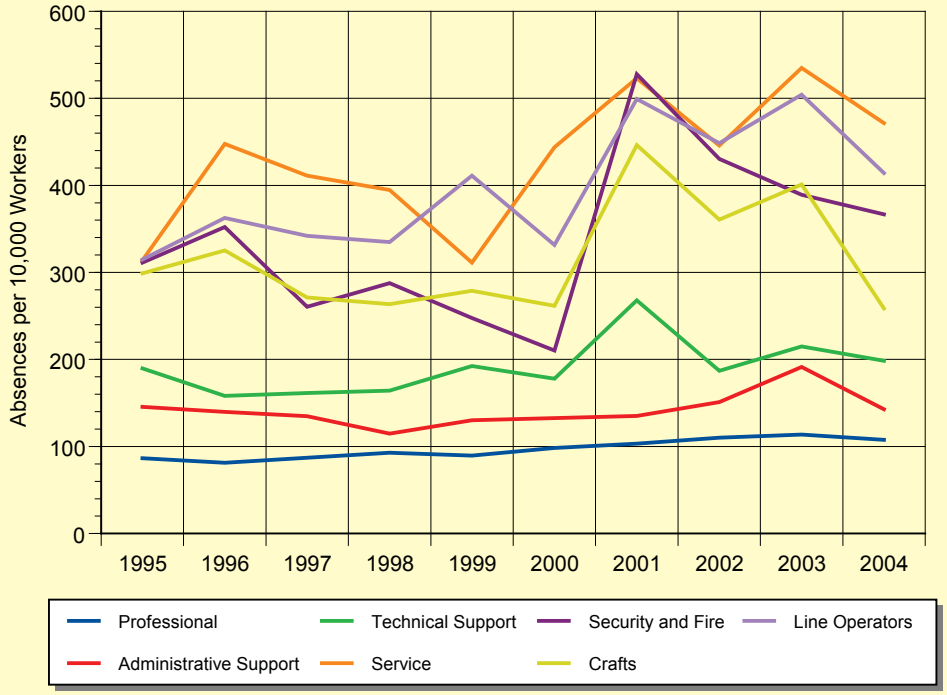
Absence Rates for Injuries by Program Office



Service workers and Line Operators had the highest absence rates for injuries.

- Professional and Administrative Support workers maintained the lowest absence rates. Absence rates for the groups with the lowest rates remained stable.

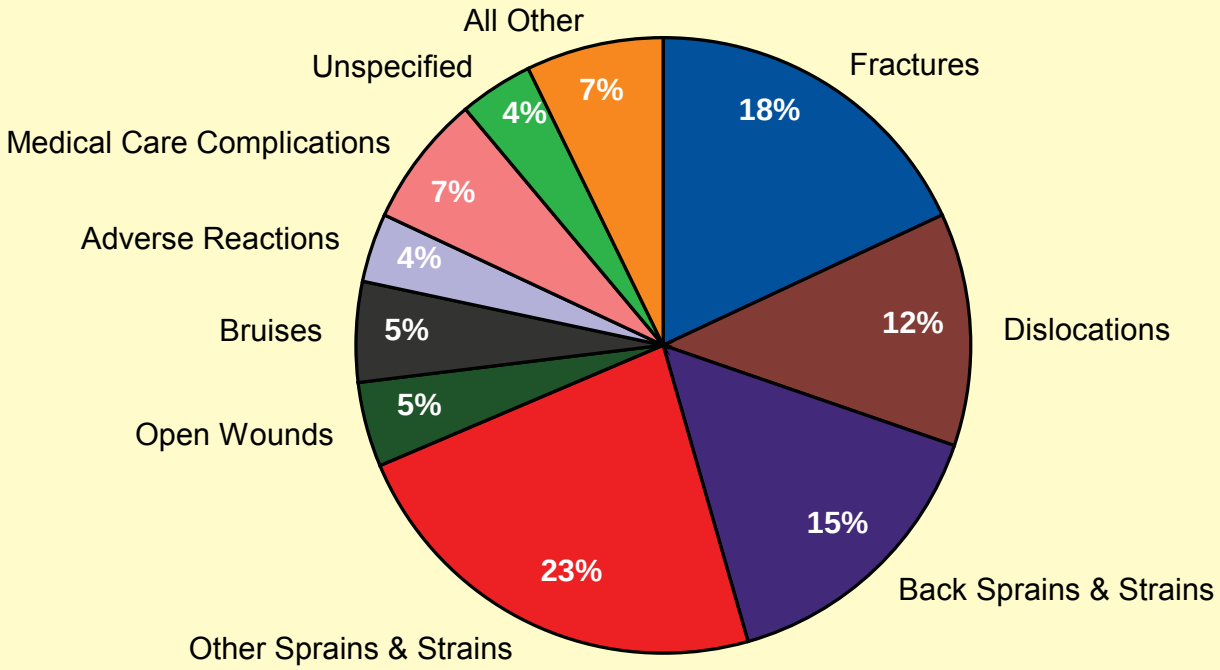
Absence Rates for Injuries by Occupational Group



Sprains and strains were the most common types of injuries.

- About 38 percent of the injuries were sprains and strains. Almost 40 percent of the sprains and strains involved the back.
- The absence rate for back sprains and strains decreased over time, but the rate for other sprains and strains increased slightly.

Distribution of Selected Types of Injuries



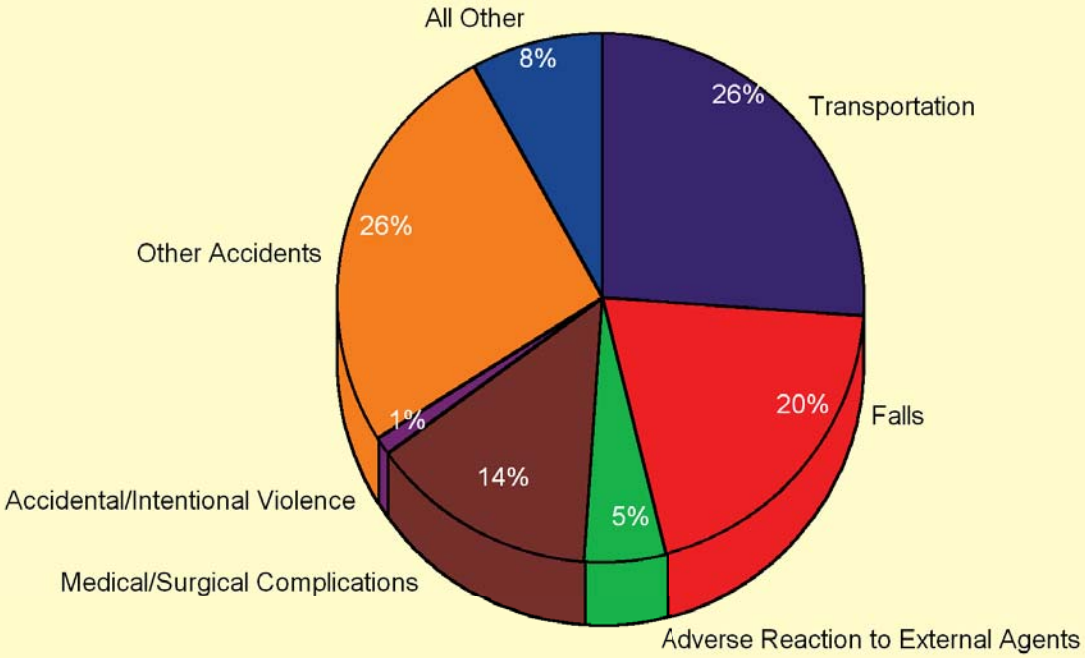
Transportation accidents, falls, and other accidents such as overexertion were the most common causes of injuries.

- Absence rates were highest for injuries due to transportation accidents. Absences due to the injuries from these accidents were also the longest, averaging 40 calendar days lost.
- Eighty-six percent of the transportation accidents involved motor vehicles.

20%

26%

Distribution of Types of Accidents Resulting in Injuries

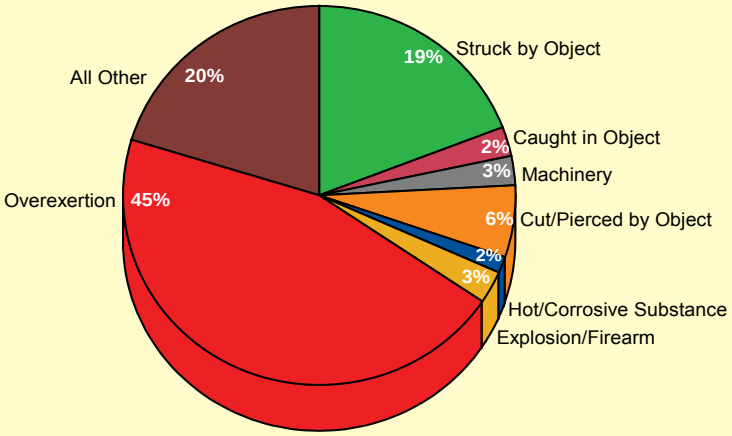


Almost half of the accidents causing injury were other types of accidents and falls.

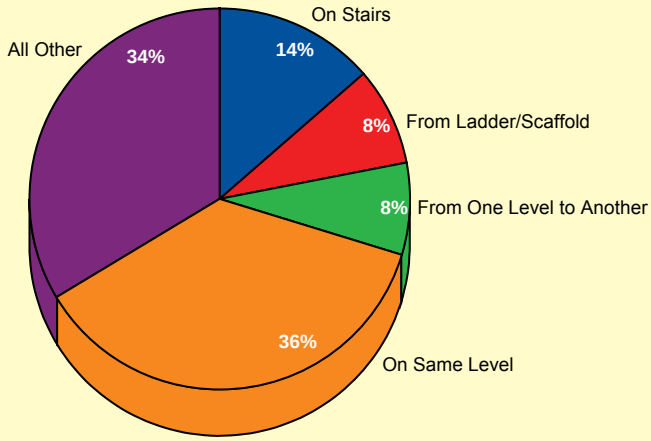
- Falls were the second most common type of accident. Most falls resulted from slips and trips and averaged 35 calendar days lost.
- Fractures and sprains and strains were the most frequent injuries from falls.
- Overexertion was the most common type of “other accident.”

Distribution of Types of Accidents Resulting in Injuries

Other Accidents



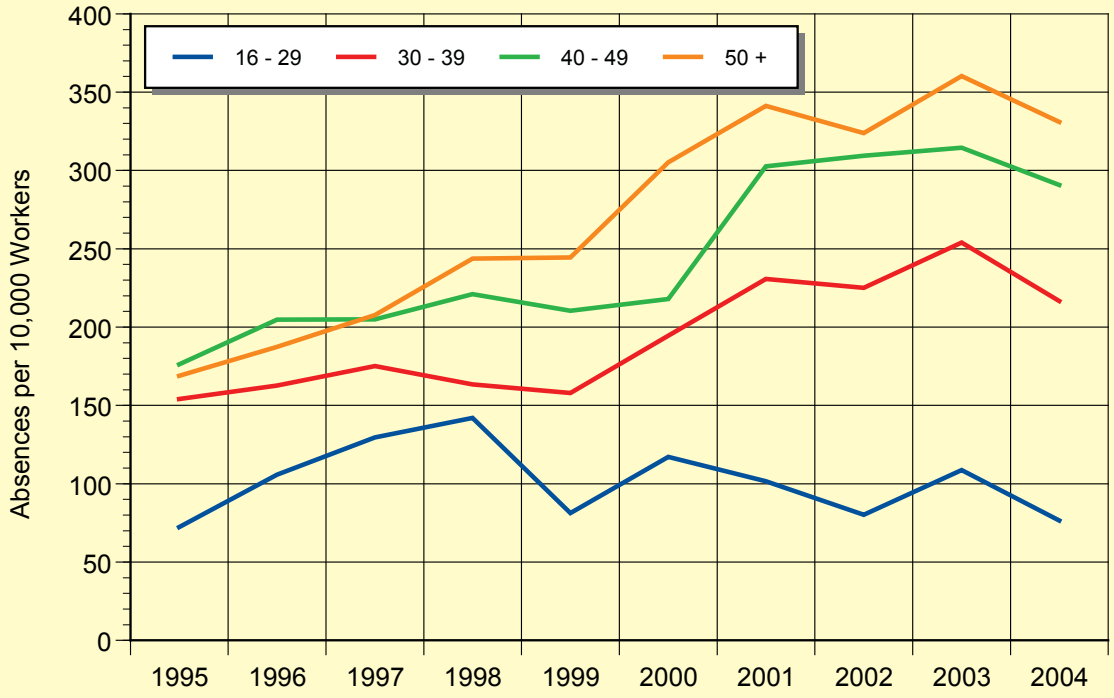
Falls



Absence rates for musculoskeletal conditions increased by at least 40 percent for workers aged 30 or older.

- Unlike other age groups, workers under 30 showed no absence rate increase over time. The absence rate doubled among workers age 50 or older.
- Back problems were the most common musculoskeletal conditions for workers in all 3 program office groups.
- The rates for all 3 program offices were similar and increased from 1995-2001.
- The addition of 4 new sites to the NNSA after 2001 resulted in no overall change in the rate for this program office; the rate continued to increase for the other 2 program offices after 2001.

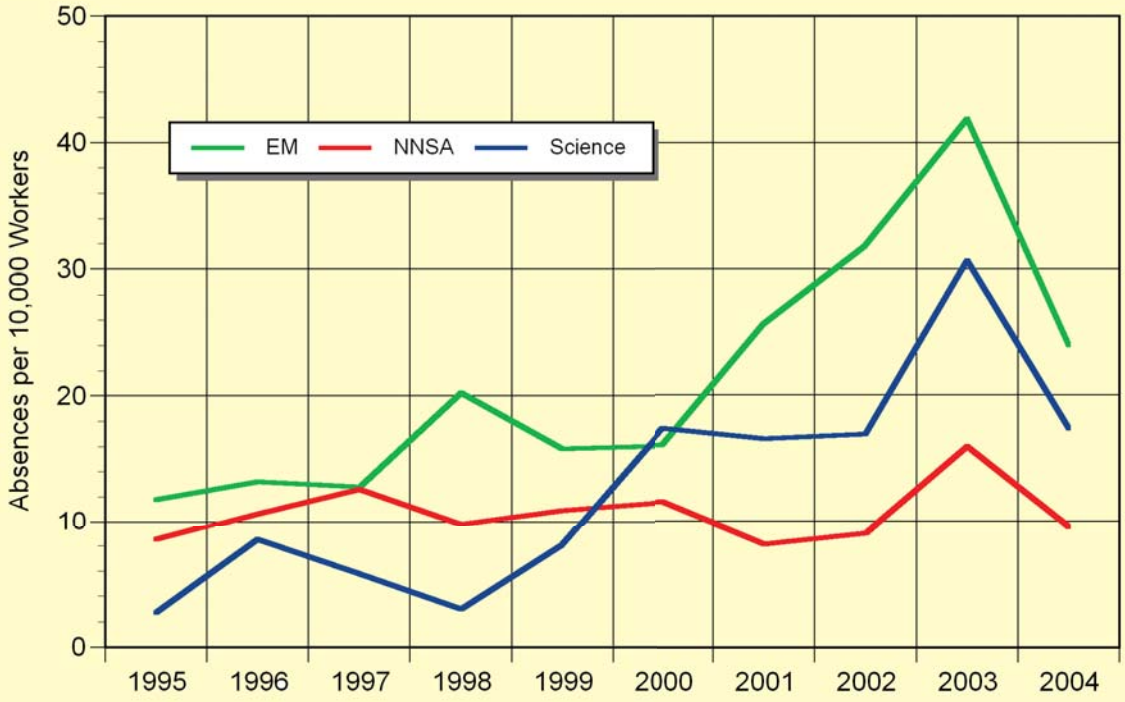
Absence Rates for Musculoskeletal Conditions by Age Group



Workers aged 40 or older had the highest absence rates and accounted for 83 percent of the carpal tunnel syndrome (CTS) cases.

- Carpal tunnel syndrome (CTS) results from the median nerve in the wrist becoming pressed or squeezed due to swelling of the nerve or nearby tendons. It can be caused by or made worse by repeated motion or a stressful wrist position during activity over time. CTS can cause pain and weakness in the muscles of the forearm and hand.
- EM facilities had the sharpest increase in CTS absence rates over the period, followed by Science sites. NNSA absence rates remained low and steady.
- The rate in women was about 3 times higher than in men, which is in line with national statistics. Carpal tunnel syndrome is another health condition that can be affected by better education to increase awareness of safe work habits and ergonomic factors.

Absence Rates for Carpal Tunnel Syndrome by Program Office



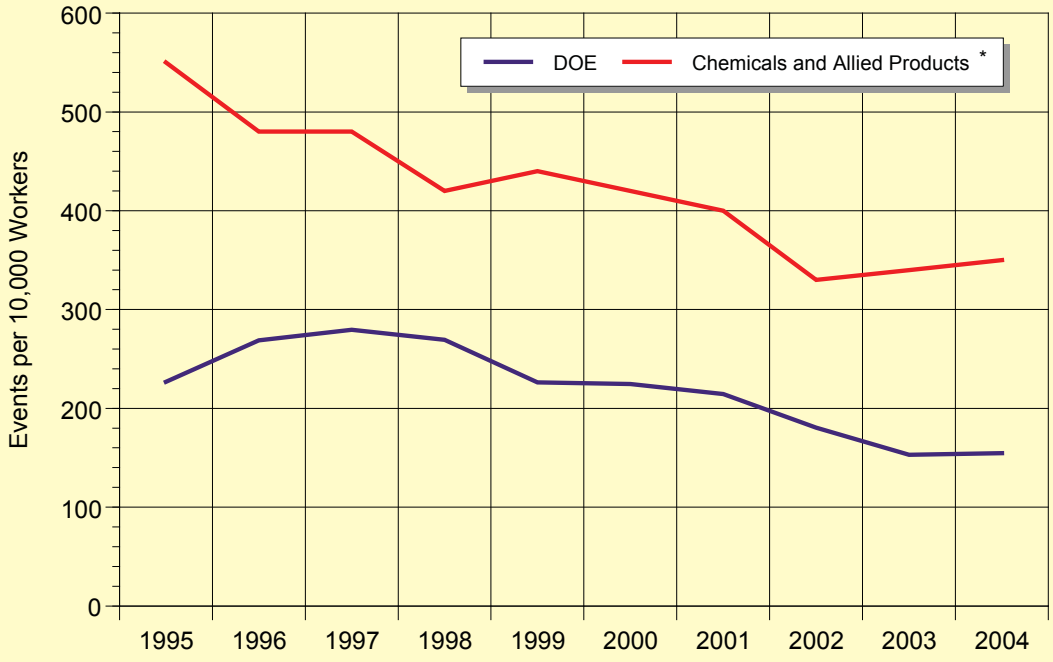
DOE workers had rates of OSHA events that were about half the rate of the private sector.

- Unlike the absences discussed previously, OSHA-recordable events:

  a) are determined to be work-related,
  b) are counted even when no days are lost from work, and
  c) days lost or restricted are workdays, not calendar days (which include weekends and holidays) as with return-to-work data.

- DOE's OSHA rate declined 32 percent, similar to the decline seen in the private sector.

Rates of OSHA Events by Industry Type

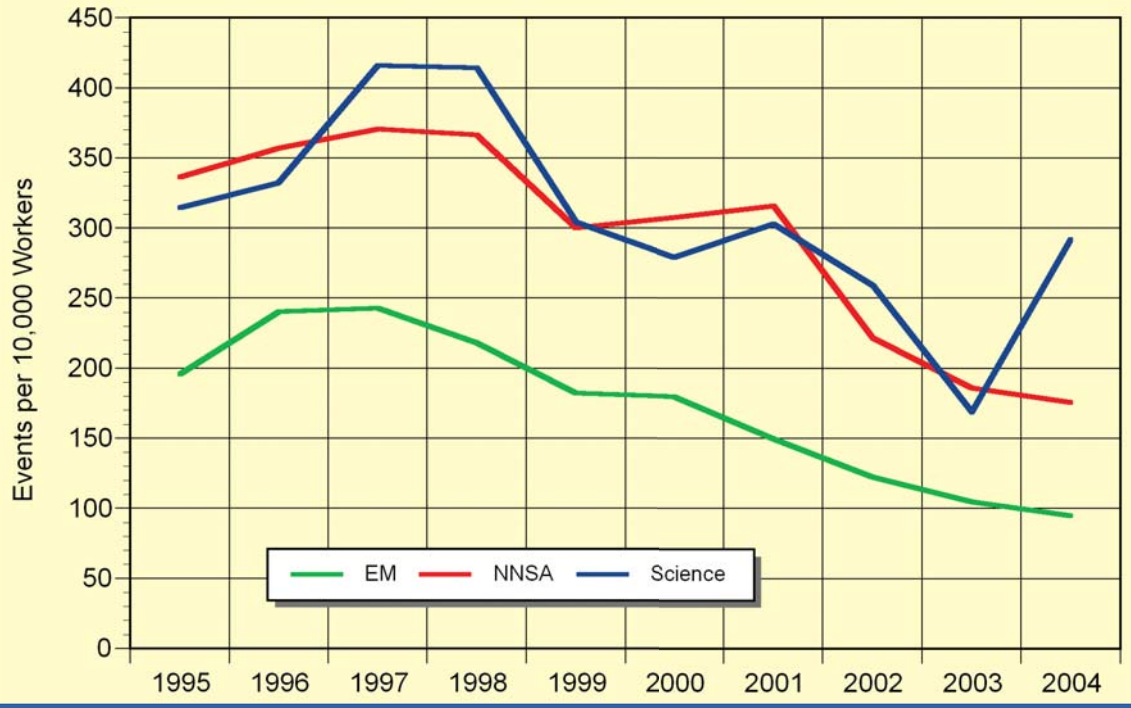


* Source: U.S. Department of Labor, Bureau of Labor Statistics.

OSHA event rates declined at all program offices.

- The NNSA and Science sites experienced the highest and very similar rates over the period. The rate for these 2 program office groups averaged about 300 events per 10,000 workers.
- EM sites had the lowest rates each year, with an average of 173 events per 10,000 workers. The annual rates for EM sites were generally 50 percent less than for NNSA and Science sites.

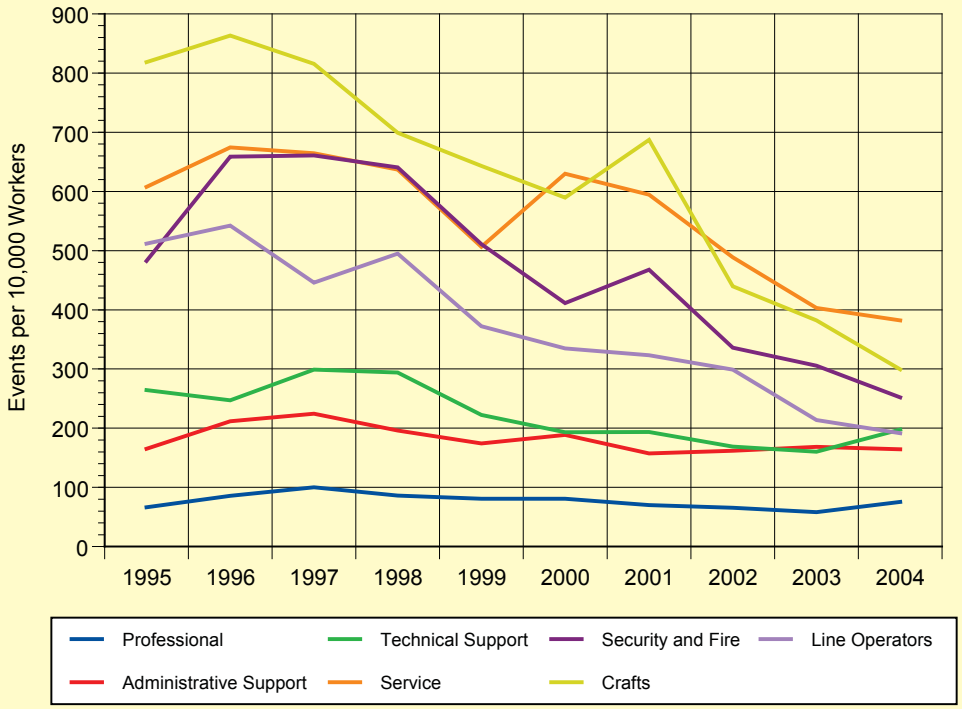
Rates of OSHA Events by Program Office



OSHA event rates declined in all occupational groups except Professional and Administrative Support.

- Professional and Administrative Support workers' OSHA rates stayed the lowest. Rates for these workers may be lower because of the nature of assigned job tasks.
- Crafts workers maintained the highest rates, but they also declined by over half.

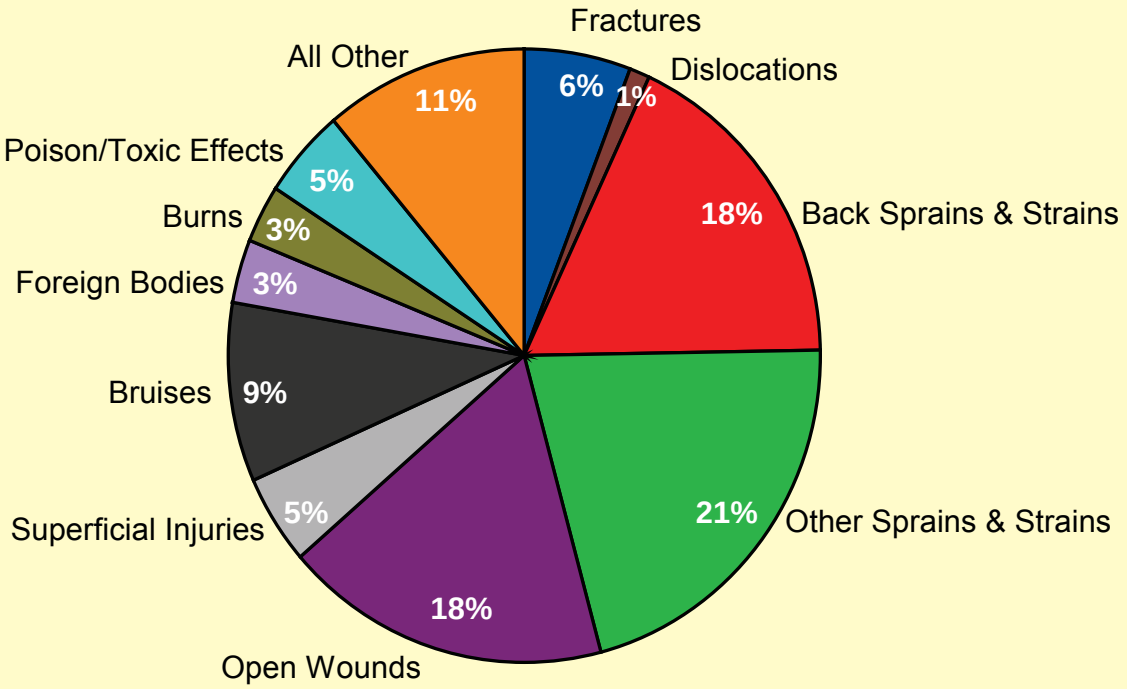
Rates of OSHA Events by Occupational Group



Injuries accounted for 63 percent of all OSHA event diagnoses. Sprains and strains and wounds made up over half of these injuries.

- Occupational injury rates went down mainly because of declines in all kinds of sprains and strains and open wounds. Back sprains and strains had the largest decline.

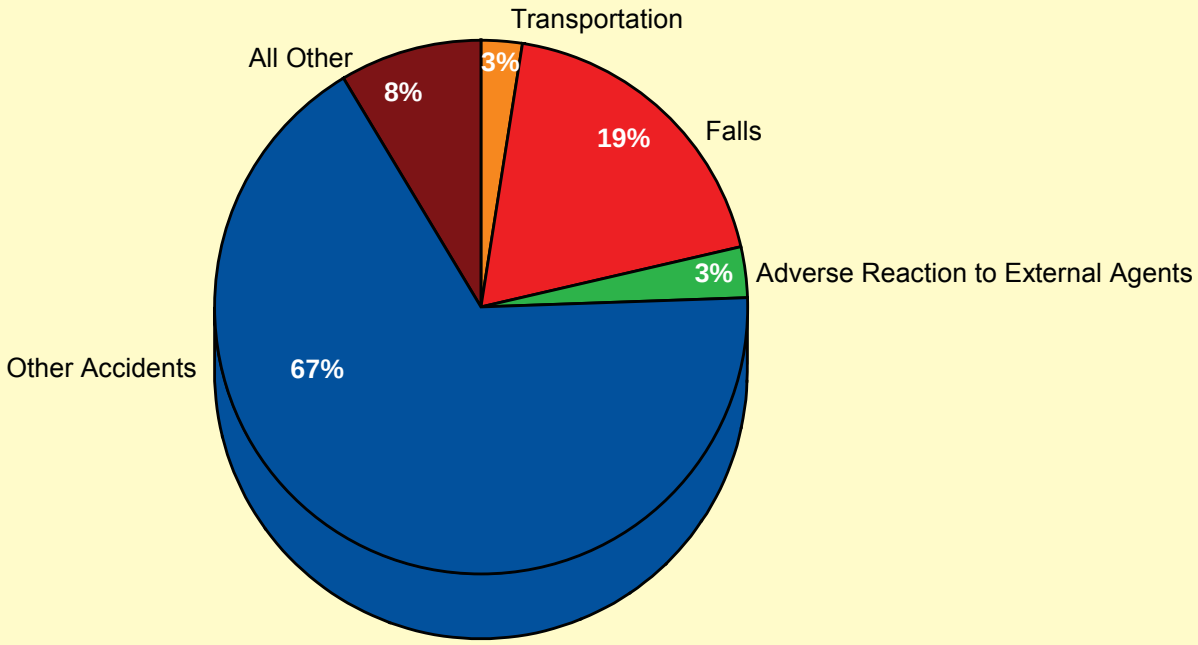
Distribution of Injuries Reported in OSHA Events



Two-thirds of the accidents resulting in occupational injuries came from "other accidents," such as overexertion or being struck by an object.

- Falls were the second most common type of accident. Most falls resulted from slipping, tripping, or stumbling.
- OSHA transportation accidents most commonly led to sprains and strains or bruises. Non-OSHA transportation accidents most commonly resulted in fractures and back sprains and strains.

Distribution of Types of Accidents Resulting in Injuries Among OSHA Events

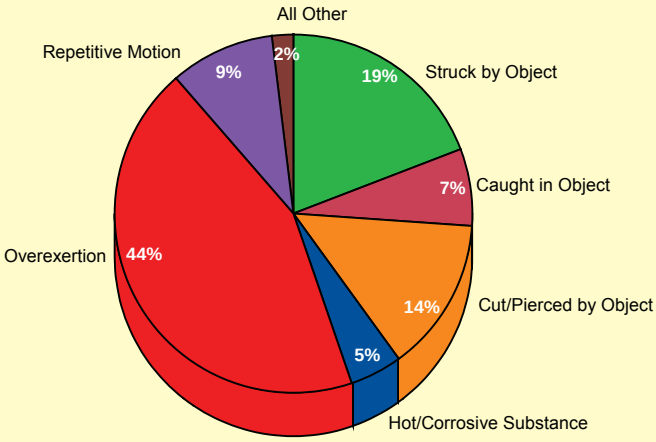


Overexertion was the most common type of occupational accident.

- The rate of overexertion accidents was twice that of the next 2 most common types of accident, falls and repetitive motion.
- The highest average number of workdays lost or restricted was due to accidents caused by repetitive motion, overexertion, and falls.
- Falls and overexertion tended to cause an injury, but repetitive motion most often caused a musculoskeletal disorder.

Distribution of Types of Accidents Resulting in Injuries Among OSHA Events

Other Accidents



Falls