

# 1995

## Annual Epidemiologic Surveillance Report for Rocky Flats Environmental Technology Site



This report was prepared by the staff of the Center for Epidemiologic Research, within the Basic and Applied Research Program of the Oak Ridge Institute for Science and Education, in conjunction with the Office of Epidemiologic Studies, U.S. Department of Energy. Questions or comments may be directed to:

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Additional information about the Department of Energy's Office of Epidemiologic Studies, the Epidemiologic Surveillance Program, and annual reports for DOE sites participating in this program can be found at:

**<http://tis-nt.eh.doe.gov/epi>**

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## Introduction

The U.S. Department of Energy's (DOE) conduct of epidemiologic surveillance provides an early warning system for health problems among workers. This program monitors illnesses and health conditions that result in an absence of five or more consecutive workdays, occupational injuries and illnesses, and disabilities and deaths among current workers.

This report provides a summary of epidemiologic surveillance data collected from the Rocky Flats Environmental Technology Site (RFETS) from January 1, 1995 through December 31, 1995. The data were collected by a coordinator at Rocky Flats and submitted to the Epidemiologic Surveillance Data Center, located at Oak Ridge Institute for Science and Education, where quality control procedures and data analyses were carried out.

The annual report for 1995 has been redesigned from reports for previous years. Most of the information in the previous reports is also in this report, but some material now appears in the appendices instead of the main body of the report. The information presented in the main body of the report provides a descriptive analysis of the data collected from the site and the appendices provide more detail. A new section of the report presents trends in health over time. The Glossary and an Explanation of Diagnostic Categories have been expanded with more examples of health conditions to illustrate the content of each category.

The data presented here apply only to Rocky Flats. The DOE sites are varied, so comparisons of Rocky Flats with other DOE sites should be made with caution. It is important to keep in mind that many factors can affect the completeness and accuracy of health information collected at the sites as well as affect patterns of illness and injury observed.

## Rocky Flats Environmental Technology Site (RFETS) AT A GLANCE — 1995:

- ◆ The introduction of integrated contracting in July, 1995 had a significant impact on the reporting of health information to epidemiologic surveillance. This new contracting approach brought about new contractor policies specifying who should report to occupational medicine for return-to-work clearances. Many lower tier subcontractors stopped using the onsite occupational medicine facilities for this purpose. The integrated contract did not provide initially for the aggregation of health information from lower tier subcontractor workers, and the result was the exclusion of health data for many workers. Shortly after implementation of this contract, the number of return-to-work clearances reported monthly from RFETS declined by more than 50%. The reporting of OSHA-recordable injury data was affected as well. As a result, the interpretation of changes in both occupational and nonoccupational illness and injury rates is more difficult. The reader is cautioned that changes in illness and injury rates over time may indicate real changes associated with changing work or lifestyle practices, but they could also simply reflect incomplete capture of health events.
- ◆ Service workers and crafts and manual laborers had an overall occupational injury risk at least 3.7 times greater than that of other occupational groups. Service workers were at particularly high risk for back sprains and strains and open wounds. Crafts and manual laborers were also at significantly higher risk than other workers for open wounds or unspecified injuries.
- ◆ Rates of occupational injury were somewhat higher in women than in men in both 1994 (the first year for which Epidemiologic Surveillance included OSHA-recordable injuries) and 1995. Overall, occupational injury rates declined about 24% in women and 29% in men from 1994 to 1995.
- ◆ As in past years, many disease rates were higher among women than among men. Most occupational groups showed higher rates among workers over age 40, especially in men. Nuclear workers had the highest disease rates for both men and women.
- ◆ Cancer rates changed little over the four years covered in this report, and circulatory disease rates appear to have declined slightly in both men and women.
- ◆ From 1993 to 1995, women had consistently higher respiratory disease rates than men. Repeated absences by a few workers did not account completely for the higher rates among women. The rates reflected diagnoses involving long-term allergies and sinusitis and chronic respiratory diseases such as emphysema and asthma.
- ◆ Although the work force included in epidemiologic surveillance increased about 1.6% from 1994, the overall number of health events reported declined sharply. There were 30% fewer absences reported among women; 21% fewer among men. The reduction may in part reflect changing medical clearance policies that accompanied the arrival of integrated contracting in July, 1995.

## Site Overview

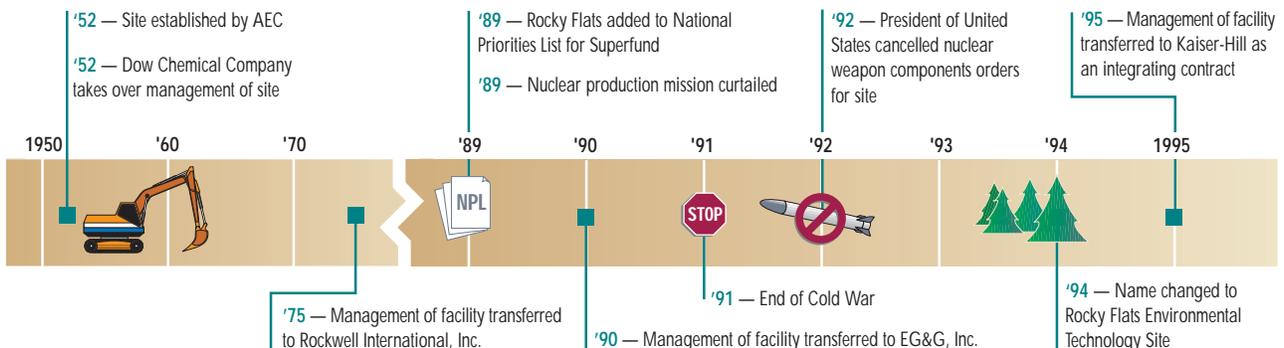
The Rocky Flats Environmental Technology Site, initially known as the Rocky Flats Plant, is situated on the western slopes of the Rocky Mountains near Golden, Colorado, 16 miles northwest of Denver. The site encompasses about 400 acres located on a 6,500 acre reserve that includes over 400 separate buildings and structures. The site was established in 1952 by the Atomic Energy Commission, early predecessor to the DOE, to serve as one of seven production plants in the national nuclear weapons complex. The operations included a multi-facility production complex involved in developing new technology necessary to manufacture and assemble nuclear weapons. During the Cold War, Rocky Flats was responsible for the fabrication of the hollow plutonium sphere, or “pit,” that serves as the trigger device for nuclear warheads.

For nearly 40 years, the Rocky Flats Plant was a key part of the Federal government’s nationwide complex for nuclear weapons research, development, and production. The Rocky Flats nuclear production mission was curtailed in 1989. With the end of the Cold War in 1991, the President of the United States announced in January 1992, the cancellation of nuclear weapon components orders for Rocky Flats. The plant’s mission changed from weapons production to environmental cleanup.

In 1989, Rocky Flats was added to the National Priorities List for Superfund, the national environmental cleanup program. The site has areas in which buried chemicals and nuclear materials have contaminated both the soil and groundwater. The buried chemicals and materials include thousands of cubic yards of wastes left over from the production era that someday must be removed for disposal. The cleanup of contaminated areas of the site in both the natural environment and the buildings will contribute to the already large waste volume. In July 1994, the name “Rocky Flats Plant” was changed to “Rocky Flats Environmental Technology Site” to more accurately reflect the current environmental restoration and cleanup mission.

The site was formerly managed by Dow Chemical Company (1952 – 1975), Rockwell International, Inc. (1975 – 1990), and EG&G, Inc. (1990 – 1995). Kaiser-Hill (a partnership between ICF-Kaiser and CH2M Hill) assumed responsibility as the integrating management contractor on July 1, 1995. As the integrating contractor, Kaiser-Hill manages subcontractors through one of the first contracts awarded under the DOE contract reform initiative.

With no future weapons production mission, the site’s current mission is to safely manage its existing nuclear wastes and materials until national repositories are established to accept them, clean up the areas of environmental contamination, and decontaminate and decommission the site. The ultimate goal is to close the site.



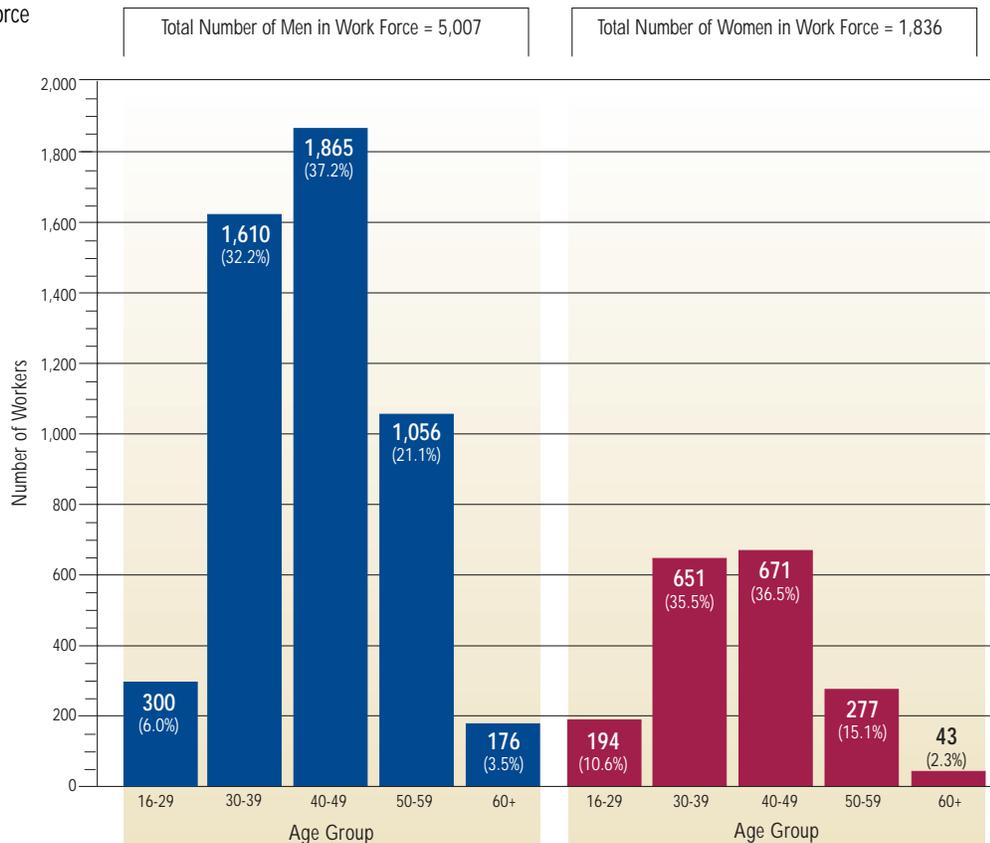
Timeline of Major Activities at Rocky Flats

## The Rocky Flats Work Force

A total of 6,843 Rocky Flats employees were included in epidemiologic surveillance in 1995, 110 more than were present in 1994. There were over two and a half times as many men (5,007) as women (1,836). The Rocky Flats work force was relatively young compared to the general population. The average age of male Rocky Flats workers was 43 years and 41 years among females (figure 1). The majority of the Rocky Flats workers was White (83%). Hispanics comprised about 10% of the work force; African Americans, Asians, and Native Americans made up the remainder (figures 2a and 2b).

Not all occupations pose equal risks for illness or injury, so we compared rates among broad occupational categories to determine whether some occupational groups are at greater risk than others for these health events. The number of illnesses or injuries reported in any specific occupation may be very small in a given year or the number of workers in a given occupation may be small. These small numbers limit the certainty with which illness and injury rates can be calculated and compared. The analyses in this report use broad occupational categories (figure 3) because there were not enough health events in many specific occupations to permit more detailed analyses. You can find which occupational category you are in by referring to figure 5, which lists many of the job titles that are grouped into each of the categories used for the analyses. Men and women were not distributed equally among the occupational groups. We noted the largest gender differences in the administrative, professional, and crafts and manual labor groups (figures 4a and 4b). Sixty-four percent of the women were employed in the administrative group while only 13% worked in technical and 11% in professional occupations. Appendix A contains a more detailed distribution of the work force by gender, age, and occupational group.

**Figure 1.** The Work Force by Gender and Age



Figures 2a and 2b. Racial Composition of the Work Force by Gender

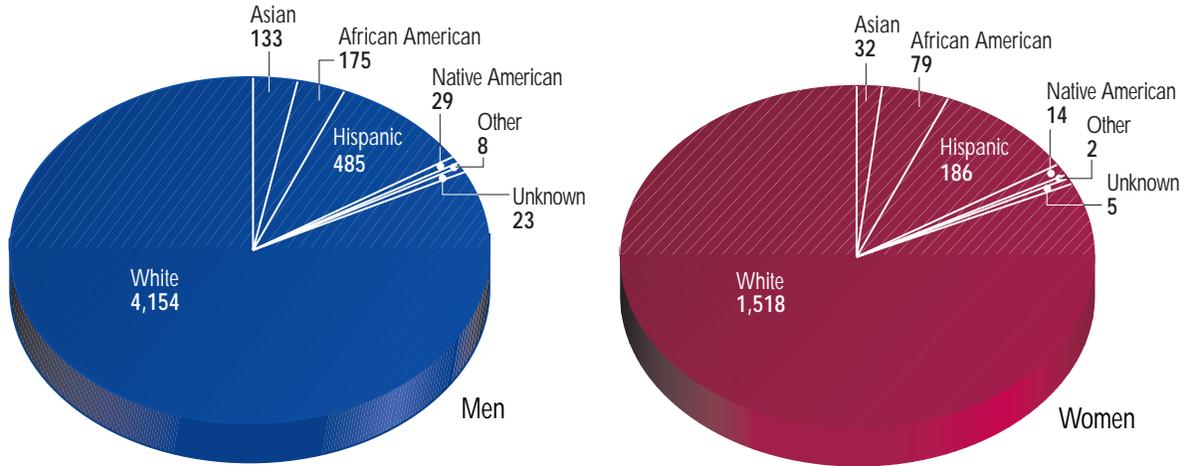
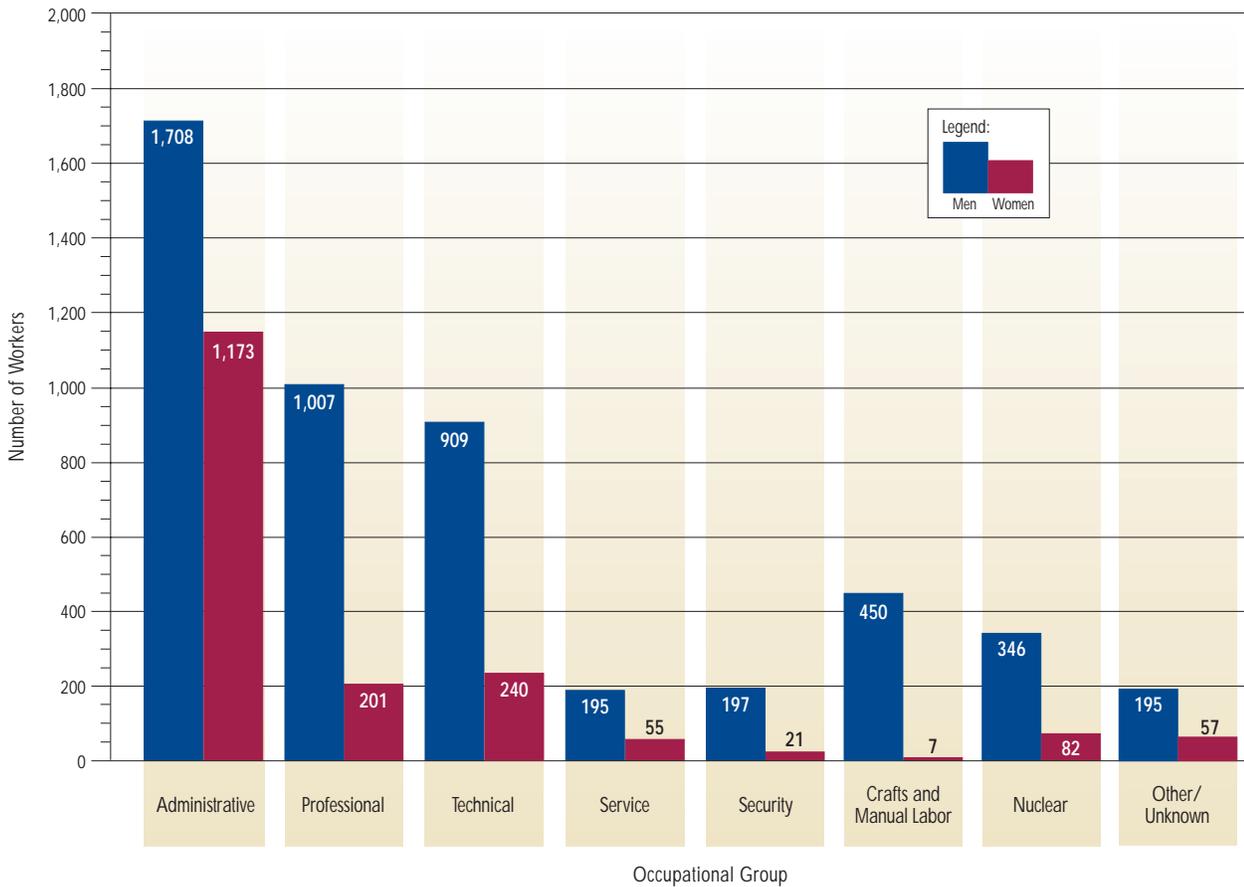


Figure 3. The Work Force by Gender and Occupation



Figures 4a and 4b. Percentage of Workers in Different Occupations by Gender

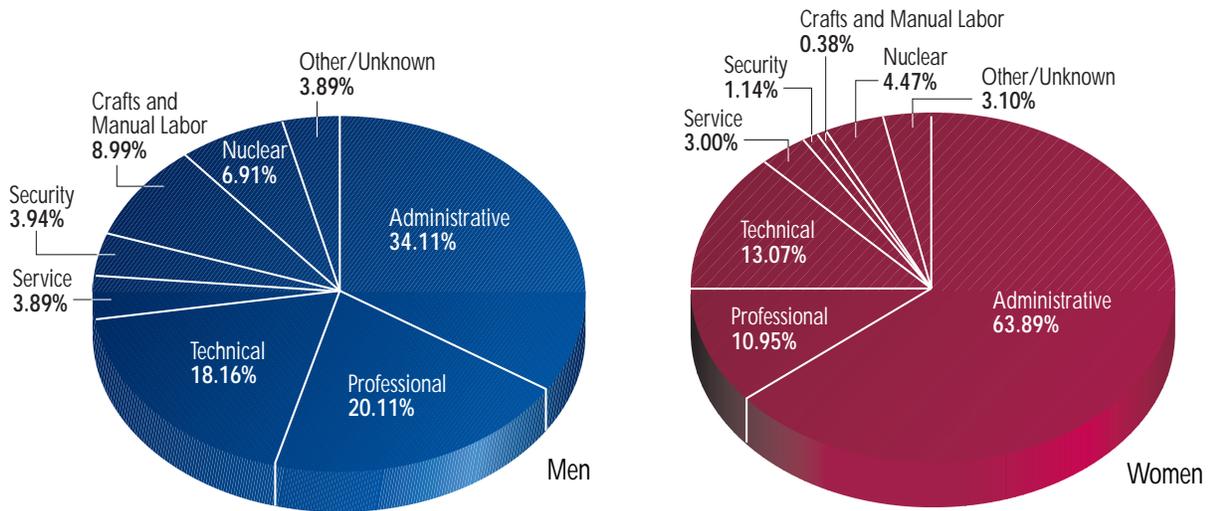


Figure 5. Most Common Job Titles in Each Occupational Group

<b>ADMINISTRATIVE</b>	ADM TECHNICAL WRITER	ASST COMPLIANCE SPECIALIST	CTO MGR DATA COMM
ACCOUNTANT	ADM TRANSPORTATION COORD	ASST COMPUTER SYSTEMS ANALYST	CTO MGR SOFTWARE SYSTEMS
ACCOUNTING MANAGER	ADM WAREHOUSE COORD	ASST COST ESTIMATOR/PLANNER	CTO MGR VOICE COMMUNICATIONS
ACCOUNTING TECHNICIAN	ADMINISTRATIVE ASSISTANT	ASST DOC CONTROL SPECIALIST	DATA SPECIALISTS
ADM ADMINISTRATOR	ADMINISTRATIVE LEAD	ASST HUMAN RESOURCE SPECIALIST	DEP DIR ENVIRONMENTAL PROG
ADM COMM ADMINISTRATOR	ADMINISTRATIVE TECHNICIAN	ASST PROCUREMENT SPECIALIST	DEP DIR PERF ASSURANCE
ADM COMM COORDINATOR	ADVANCED PRODUCTION SPEC	ASST SPECIALIST	DEP DIR WASTE STABILIZATION
ADM COORDINATOR	ASSOC ACCOUNTANT	ASST SUBCONTRACT SPECIALIST	DEP DIRECTOR SNM MANAGEMENT
ADM DOCUMENT ADMINISTRATOR	ASSOC ACCTNG TECHNICIAN	ASST TECHNICAL WRITER/EDITOR	DEPUTY DIRECTOR ERWM
ADM DOCUMENT CONTROL	ASSOC ADMIN TECHNICIAN	ASST TRAINING SPECIALIST	DEPUTY DIRECTOR PROJECT MGMT
ADM DOCUMENT CONTROL COORD	ASSOC BUYER	AUDITOR	DEPUTY GENERAL MANAGER
ADM LIBRARIAN	ASSOC COMMUNICATION SPECIALIST	BUDGET	DIR ADM
ADM LIBRARY SCIENCE	ASSOC COMPLIANCE SPECIALIST	BUYER	DIR COMM
ADM MAIL SERV COORDINATOR	ASSOC COMPUTER SYSTEMS ANALYST	CAPTAIN	DIR ENG & SAFETY SERVICES
ADM MEDIA COORDINATOR	ASSOC COST ESTIMATOR	CHEM ENGR, MGR	DIR ENVIR REMEDIATION
ADM MGR CENTRAL PLANNING	ASSOC DOCUMENT TECHNICIAN	CLERK	DIR ORG EFFECTIVENESS
ADM MGR COMMUNICATIONS	ASSOC HUMAN RESOURCE SPLST	CLERK ENGR	DIR PLANNING/INTERGRATION
ADM MGR COST ESTIMATING	ASSOC INSTRUCTOR DEVELOPER	CLERK MAIL	DIR PLNT SVCS
ADM MGR LEGAL DOCUMENTS	ASSOC PLANNER	COMMUNICATION SPECIALIST	DIR WASTE MANAGEMENT
ADM MGR MEDIA	ASSOC PROCUREMENT SPECIALIST	COMPLIANCE SPECIALIST	DIRECTOR ADMIN SERVICES
ADM MGR PRP MGT	ASSOC SAFETY/HEALTH TECHNICIAN	COMPUTER SYSTEMS ANALYST	DIRECTOR ANALYTICAL SERVICES
ADM MGR REC MG	ASSOC SAL ADM SPL	CONST COORDINATOR	DIRECTOR BLDG DEACTIVATION
ADM MGR SPECIAL PROJECTS	ASSOC SPECIALIST	CONTROLLER	DIRECTOR ECONOMIC DEVELOP
ADM MGR TRAFFIC	ASSOC SUBCONTRACT SPECIALIST	COST ESTIMATOR	DIRECTOR INTERNAL AUDIT
ADM MGR VERF/SAMP	ASSOC TECHNICAL WRITER/EDITOR	COUNSEL	DIRECTOR OPERATIONS
ADM PRINT SHOP COORDINATOR	ASSOC TRAINING SPECIALIST	COUNSEL COORDINATOR	DIRECTOR SNM MGMT/STORAGE
ADM PROCEDURE WRITER	ASSOC TRANSPORTATION SPECIALIST	COUNSEL DP GEN	DIRECTOR SUPPORT SERVICES
ADM PROG PLANNING ANALYST	ASSOCIATE ACCTNG. SPEC.	COUNSEL SENIOR	DIRECTOR WST STABILIZATION
ADM PROPERTY MANAGEMENT	ASST ACCOUNTANT	CTO CCF ANALYST	DOCUMENT CONTROL COORD
ADM PROPERTY MGMT COORD	ASST AUDITOR	CTO COORDINATOR	DR TRAIN
ADM PROS VLD	ASST BUYER	CTO DATA ENTRY COORDINATOR	EH&S ADMINISTRATOR
ADM STAFF ASSISTANT	ASST COMMUNICATION SPECIALIST	CTO DATA SECURITY ADMIN	EH&S COORDINATOR

(continued)

Figure 5. Most Common Job Titles in Each Occupational Group (continued)

EH&S ENVIRONMENTAL COORD	FIN MGR RSCR	MED ADMINISTRATOR	MTCE SCHEDULE COORDINATOR
EH&S MANAGER GEOSCIENCE	FIN MGR SUPPORT SERVICES	MED EAP COUNSELOR	MTCE TRAINING COORD
EH&S MGR EQS RECORDS/DOCUMENTS	FIN PAYROLL ADMINISTRATOR	MED MGR EAP	MTCE UTILITY SYSTEM ADMIN
EH&S MGR EXTERNAL DOSIMETERY	FIN PAYROLL ANALYST	MFG BUILDING MANAGER	OPERATION SUPPORT SPECIALIST
EH&S MGR HLTH PHY INSTRUMENTS	FIN PROPERTY ADMINISTRATOR	MFG MGR ASST OPS	OPNS ADMINISTRATOR
EH&S MGR NEUTRON STUDIES	FIN TAX ANALYST	MFG MGR BLD SP	OPNS BUILDING COORDINATOR
EH&S MGR PROG INTEG/REPORT	FIN TRAVEL COORDINATOR	MFG MGR MTL PROS	OPNS PROD COORDINATOR
EH&S MGR PROJECT	FINANCIAL ANALYST	MFG MGR OPS	OPNS SHIFT SUPERINTENDENT
EH&S MGR STAB/CLOSURE	FIRE BATTALION CHIEF	MFG MGR OPS COMPL	OPNS TOOL COORDINATOR
EH&S RAD ADMINISTRATOR	FIRE CAPTAIN	MFG MGR PC OPS	OPS MGR ALARM/COM
EH&S REGUL COMPL ANALYST	FIRE CRD EQP SVC	MFG MGR PFO/PO	OPS MGR DEACT MGMT
EH&S REGUL LEGAL ANALYST	FIRE DEPY MARSHALL	MFG MGR PRO PROC	OPS MGR FACILITY
EH&S SAFETY ADMINISTRATOR	FIRE MGR DEPT	MFG MGR PROD CNTL	PAYROLL
EH&S SURV INTERVIEWER	FIRE SAFETY CHIEF	MFG MGR PUFAB MTC	PAYROLL TECHNICIAN
EMP REL	GEN COUN ADM	MFG MGR SHIFT	PLANNER
ENG MGR CONST MGT	GEN COUN PATENT	MFG MGR TOOL ENG	PRIN ACCOUNTANT
ENG MGR COST EST	GEN MGR P	MFG PLANNING ANALYST	PRIN ADMIN TECHNICIAN
ENG MGR CRITICALITY SAFETY	GENERAL COUNSEL	MGR ADM DOC CONL	PRIN AUDITOR
ENG MGR DES VER	GM	MGR ADMIN RECORDS	PRIN BUYER
ENG MGR FAC PL	HLTH MGR EMER PREP	MGR ADMINISTRATIVE	PRIN COMPLIANCE SPECIALIST
ENG MGR FAC PROJ	HLTH MGR IH PRGM	MGR CENTRAL ENGINEERING	PRIN COMPUTER SYSTEMS ANALYST
ENG MGR IND ENG	HLTH MGR IND HYG	MGR DOC SERVICES	PRIN COST ESTIMATOR
ENG MGR MFG	HLTH MGR INT DOS	MGR ENG	PRIN HUMAN RESOURCE SPECIALIST
ENG MGR PROJ ADM	HLTH MGR OCC SFTY	MGR FPM SPT SERV	PRIN PLANNER
ENG MGR SA&RA	HLTH MGR RAD HLTH	MGR HEALTH EFFECTS	PRIN PROCUREMENT SPECIALIST
ENG MGR SERV CNTR	HLTH MGR RAD INST	MGR HS&E	PRIN SFGDS & SECURITY SPEC
ENG MGR SYS	HLTH MGR RAD OPS	MGR IND HYGIENE/SAFETY	PRIN SPECIALIST
ENG MGR TECH SYS	HLTH MGR SECTION	MGR INDEPENDENT SAFETY REV	PRIN SUBCONTRACT SPECIALIST
ENG MGR TECHNGY	HLTH MGR SFTY ANL	MGR LABOR RELATIONS	PRIN TECHNICAL WRITER/EDITOR
ENG MGR UTIL	HLTH MGR SVCS	MGR MAJOR PROJ	PRIN TRAINING SPECIALIST
ENGINEERING PROJECT ADM	HR	MGR MATL/MAT CONS	PROC ADMINISTRATOR
ERWM ADM	HR BENEFITS COORDINATOR	MGR MEASURE ANALYSIS	PROC BUYER
ERWM EQP ADM	HR CAREER ASSISTANCE ADMIN	MGR PLAN & INTERG	PROC COST ANALYST
ERWM MGR ADM/ASSR	HR CO-OP	MGR RAD CON MANUAL IMPLMT	PROC MGR PURCH
ERWM MGR AIR QUALITY	HR EEO REPRESENTATIVE	MGR SEC	PROC SUBCONTRACT ADMIN
ERWM MGR ASSISTANT OPERATIONS	HR EMPL RELATIONS	MGR SG CLASS OFC	PROC SUBCONTRACT COORD
ERWM MGR E&WM PRG	HR EMPLOYEE SERVICES REP	MGR SOPS	PROCESS SPECIALIST
ERWM MGR ECOLOGY/WATERSHED	HR EMPLOYMENT REP	MGR TECH ASSMT	PROCURE
ERWM MGR ENV POLICY IMPLEMENT	HR LABOR RELATIONS REP	MGR TECH SUPPORT	PROCUREMENT SPECIALIST
ERWM MGR ER FAC	HR MGR	MGR TRAINING SCHD/REPORTS	PRODUCTION SPECIALIST
ERWM MGR GUIDNC	HR MGR BEN ADM	MGR TRNG/QUAL SERVICES	PROG MGR DEACT PROGRAMS
ERWM MGR NEPA	HR MGR EMP REL	MGR UTIL GAS SERVICES	PROG MGR DEACT/INTERGRATION
ERWM MGR OPS ASST	HR MGR EMPLOYMENT	MGR UTILITY/BLDG SERVICES	PROG MGR ENVIRONMENTAL PROT
ERWM MGR PRG	HR MGR LABOR RELATIONS	MGR WASTE COLLECTION/TRAN	PROG MGR ENVIRONMENTAL QU
ERWM MGR PU REC	HR PROG MGR	MGR WORKFORCE RESTRUCTURING	PROG MGR INTERNAL AUDIT
ERWM MGR SHIFT	HR REPRESENTATIVE	MSI SPEC	PROG MGR PLANNING/BUDGET
ERWM MGR SMO	HR SALARIED COMP ANALYST	MTC MGR AREA	PROG MGR PLANT PROCEDURES
ERWM MGR SUPT PRG	HR SYSTEMS ANALYST	MTC MGR COMMC	PROG MGR WASTE STABILIZATION
ERWM MGR SURFACE WATER	HUMAN RESOURCE SPECIALIST	MTC MGR DPTY PLNT	PROG MGR WST/ENV COMPLIANCE
ERWM OPERATIONS MANAGER	INSTRUCTOR DEVELOPER	MTC MGR OPS SPT	PROGRAM MGR
EXECUTIVE ASSISTANT	IR MGR BUS SYS ANL/PGRMNG	MTC MGR PL/SC	PROGRAM MGR ANALYTICAL LABS
EXECUTIVE DIRECTOR	IR MGR INFO ENG/CONFIG	MTCE ADMINISTRATOR	PROGRAM MGR ANALYTICAL SERVICE
EXECUTIVE SECRETARY	IR MGR INFO SYS SERVICES	MTCE BLDG ADMINISTRATOR	PROGRAM MGR ANALYTICAL SUPPORT
FIN AUDIT EDP	IR MGR PC SUPPORT	MTCE COORDINATOR	PROGRAM MGR EMER PREPAREDNESS
FIN AUDITOR	IR MGR SCI ANL/PRGMNG	MTCE GARAGE ADMINISTRATOR	PROGRAM MGR ENG SAFETY SERV
FIN BUSINESS ANALYST	IR SYSTEMS ADMINISTRATOR	MTCE MATERIAL ADMINISTRATOR	PROGRAM MGR INFO MGMT
FIN COORDINATOR	IS MGR CCF	MTCE MATERIAL COORDINATOR	PROGRAM MGR INFO RESOURCES
FIN COST ADMINISTRATOR	LABOR RELATIONS SPECIALIST	MTCE MGR FILTERS	PROGRAM MGR LABOR RELATIONS
FIN COST ANALYST	MAINTENANCE MANAGER PLANNING	MTCE MGR OPS SYST	PROGRAM MGR LOGISTICS
FIN MGR ACTG	MANAGER OF NUCLEAR SAFETY	MTCE MGR PLNT SVCS	PROGRAM MGR MCPD
FIN MGR PAYROLL	MANAGER, PERSONNEL	MTCE PLANNING ANALYST	PROGRAM MGR MENTORS

(continued)

Figure 5. Most Common Job Titles in Each Occupational Group (continued)

PROGRAM MGR METROLOGY	SPEC ADMINISTRATIVE	TECH ADM ASSESSOR	ASSOC NUCLEAR ENGINEER
PROGRAM MGR MTCE/ENGINEERING	SPEC DATA ENTRY	TECH ADM CONSTRUCTION ADMIN	ASSOC NURSE
PROGRAM MGR NUCLEAR SAFETY	SPEC DOCUMENTATION	TECH ADM CONSTRUCTION COORD	ASSOC PETRO/MINE ENGINEER
PROGRAM MGR OCCUPATIONAL HLTH	SPEC EH&S	TECH ADM COORDINATOR	ASSOCIATE ENGINEER CHEMICAL
PROGRAM MGR RAD PROTECTION	SPEC EMERGENCY SERV	TECH ADM COST ENG ADMIN	ASSOCIATE ENGINEER CIVIL
PROGRAM MGR SFGD/SECURITY	SPEC HR BENEFITS	TECH ADM COST ENG COORD	ASSOCIATE ENGINEER DEVELOPMENT
PROGRAM MGR SOLAR PONDS	SPEC HR COMPENSATION	TECH ADM EH&S ADMINISTRATOR	ASSOCIATE ENGINEER SAFETY
PROGRAM MGR STANDARDS MGMT	SPEC HR EMPLOYMENT	TECH ADM EH&S COORDINATOR	ASSOCIATE ENGINEER SYSTEMS
PROGRAM MGR SUPPORT SERVICES	SPEC INFORMATION SYSTEMS	TECH ADM ENV COMPL ADMIN	ASSOCIATE SCIENTIST
PROGRAM MGR SYSTEMS ANALYSIS	SPEC LEGAL	TECH ADM ENV COMPL COORD	ASST ENGINEERING TECHNOLOGIST
PROGRAM MGR TECH DEVELOPMENT	SPEC LEGAL ADV	TECH ADM MENTOR	ASST HEALTH PHYSICIST
PROGRAM MGR TECH SUPPORT	SPEC LIBRARY INFO	TECH ADM MGR PROGRAM MGMT	CHEMIST
PROGRAM MGR TELECOMMUNICATIONS	SPEC MAINTENANCE & SPT	TECH ADM MOD CENTER ADMIN	CHIEF ENGINEER
PROGRAM MGR TQM	SPEC MEDICAL	TECH ADM OPERATIONS ADMIN	CTO SYSTEMS SOFTWARE ENG
PROGRAM MGR WASTE PROGRAMS	SPEC PAYROLL	TECH ADM PROGRAM ADMIN	CTO TELECOMM ENGINEER
PROJECT MANAGER	SPEC PROPERTY MGMT	TECH ADM PROGRAM COORD	DEV ASSOC ENG
PS ASST	SPEC PURCH	TECH ADM RISK ANALYST	DEVELOPMENT ANL CHEMIST
PS MGR BLD UTIL	SPEC SECURITY	TECH ADM SAFETY ANALYST	EH&S HEALTH PHYSICIST
PS MGR ELEC SVC	SPEC TELECOMMUNICATIONS	TECH ADM STANDARDS ANALYST	EH&S HYDRO GEOLOGIST
PS MGR SHPG/RCVG	SPEC TRAINING	TECH ADM TECH TRANSFER	EH&S RADIATION EPIDEMIOLOGIST
PS MGR TRUCK/LABR	SPEC WORD PROCESSOR	TECH ADMIN INT CONSULTANT	EH&S SAFEGUARDS ENGINEER
PS MGR UTIL ZONE	SPECIALIST	TECH ADMIN PROG CONSULT	ELECTRICAL ENGINEER
PS MGR VEHICLE FLEET	SR ACCOUNTANT	TECH ADMIN TQM	ENG ENVIRON SCIENTIST
QUAL ASSUR CRD	SR ACCTNG TECHNICIAN	TECH ADMINISTRATOR	ENG QUALITY
QUAL MGR	SR ADMIN TECHNICIAN	TECH FOREMAN	ENG SAFETY ANALYST
QUAL MGR ANAL	SR AUDITOR	TECH SPT COORD	ENG SYS
QUAL MGR ANL OPS	SR BUYER	TECHNICAL ADMINISTRATOR PA	ENGINEER
QUAL MGR ASST OPS	SR CLERK	TECHNICAL SUPERVISOR	ENGINEER ARCHITECT
QUAL MGR CAL LB	SR COMMUNICATION SPECIALIST	TECHNICAL WRITER/EDITOR	ENGINEER CHEMICAL
QUAL MGR ENG	SR COMPLIANCE SPECIALIST	TEMP UNARMED SECURITY GUARD	ENGINEER CIVIL
QUAL MGR FPOE	SR COMPUTER SYSTEMS ANALYST	TRAINING SPECIALIST	ENGINEER CONSTRUCTION
QUAL MGR INSP	SR COST ESTIMATOR	TRNG ADM DEV	ENGINEER DESIGN
QUAL MGR MET SUPT	SR COUNSEL	TRNG COORDINATOR	ENGINEER DEVELOPMENT
QUAL MGR NDT	SR HUMAN RESOURCE SPECIALIST	TRNG EVALUATOR	ENGINEER ENV AIR QUALITY
QUAL MGR OPS	SR INSTRUCTOR DEVELOPER	TRNG INSTRUCTOR DEVELOPER	ENGINEER ENV REG COMPL
REC CLK	SR PAYROLL TECHNICIAN	TRNG MGR CBT/TST	ENGINEER INDUSTRIAL
RESIDUE COMPLIANCE PROGRAM MGR	SR PLAN	TRNG MGR GEN	ENGINEER MECHANICAL
RISK REDUCTION MGR	SR PLANNER	TRNG MGR HEALTH & SAFETY	ENGINEER PROJECT
S1	SR PROCUREMENT SPECIALIST	TRNG MGR INNOVATIVE LEARNING	ENGINEER QUALITY
SAFETY/HEALTH TECHNICIAN	SR SECRETARY	TRNG MGR ORG DEV	ENGINEER SAFETY
SALARY COMP MGR	SR SFGDS & SECURITY SPECIALIST	TRNG MGR SUPT OPS	ENGINEER SAFETY ANALYST
SEC CLRK	SR SPECIALIST	TRNG MGR TRAINING SERV	ENGINEER SYSTEMS
SECRETARY	SR SUBCONTRACT SPECIALIST	TRNG MGR VERIF	ENGINEERING TECHNOLOGIST
SENIOR SPECIALIST	SR TECHNICAL WRITER/EDITOR	TRNG PROGRAM ADMINISTRATOR	ENGR PRIN
SFDG MGR MEASURE	SR TRAINING SPECIALIST	TRNG PROGRAM COORDINATOR	ENVIRONMENTAL ENGINEER
SFDG ACCESS ADMINISTRATOR	STOCK CLERK	TRNG PROGRAM DEVELOPER	ENVIRONMENTAL PROTECTION ENG
SFDG ADMINISTRATOR	SUBCONTRACT SPECIALIST	UNEVALUATED MANAGER	ENVIRONMENTAL SCIENTIST
SFDG COORDINATOR	SUPPLY	VP FOR STANDARDS	EXERCISE PHYSIOLOGIST
SFDG MGR INV/INTL	SUPPORT SUPERVISOR		EXPERIMENTAL OPERATOR
SFDG MGR OPS/PLNS	SUPT/BUS ADMIN MNGR	<b>PROFESSIONAL</b>	GEOLOGIST
SFDG MGR PERSONNEL SECURITY	TA MGR GRP MGT	ASSOC AIR QUALITY ENV ENGR	HEALTH PHYSICIST
SFDG MGR PRG/ASMT	TA MGR ISSUES MGT	ASSOC CHEMIST	IR INFORMATION CENTER
SFDG MGR S&S SYST	TA MGR LOG MTL	ASSOC CIVIL ENGINEER	IR STAFF SYSTEMS ENGINEER
SFDG MGR SS PROG	TA MGR OP/ENV COM	ASSOC ENGINEER	IR SYSTEMS ENGINEER
SFDG MGR TECH SEC	TA MGR PROG SUPT	ASSOC ENGINEERING TECHNOLOGIST	NUCLEAR ENGINEER
SFDG SECURITY ADMINISTRATOR	TA MGR REP/SYCH	ASSOC ENVIRON PROTECTION ENG	NURSE
SFGDS & SECURITY SPECIALIST	TA MGR SECT MGT	ASSOC ENVIRONMENTAL ENGINEER	PHYSICIAN
SFGDS MGR NMC	TA MGR SP PROG	ASSOC ENVIRONMENTAL SCIENTIST	PRIN AIR QUALITY ENV ENG
SNM MGR PROGRAM	TEC ADM TQM ADMINISTRATOR	ASSOC FELLOW ENGINEER	PRIN CHEMICAL ENGINEER
SNM MGR SAFETY ENVELOPE	TECH ADM	ASSOC HEALTH PHYSICIST	PRIN CHEMIST
SPEC ACCOUNTING	TECH ADM ADMINISTRATOR	ASSOC MECHANICAL ENGINEER	PRIN CIVIL ENGINEER

(continued)

Figure 5. Most Common Job Titles in Each Occupational Group (continued)

PRIN COMPUTER ENGINEER	SR PRIN QUALITY ENGINEER	SPEC EPM	<b>SECURITY</b>
PRIN ELECTRICAL ENGINEER	SR PRIN SAFETY ENGINEER	SPEC IND HYG	ACT SGT
PRIN ENGINEER	SR PRIN SCIENTIST	SPEC LABORATORY	ARMED SECURITY GUARD
PRIN ENGINEERING TECHNOLOGIST	SR PRINT REG COMPLIANCE ENG	SPEC MEDIA	ASSOC SFGDS & SECURITY SPLST
PRIN ENVIRON PROTECTION ENG	SR QUALITY ENGINEER	SPEC OPERATIONS	CAS OPERATOR
PRIN ENVIRONMENTAL ENGINEER	SR SAFETY ENGINEER	SPEC REPRODUCTION	CAS SRGT
PRIN ENVIRONMENTAL SCIENTIST	SR SCIENTIST	SPEC SUMMER	DIE SINKER
PRIN GEOLOGIST	SR SOCIAL SCIENTIST	SPEC TELECOMMUNICATIONS	DISPATCHER
PRIN HEALTH PHYSICIST	STAFF ENGINEER CHEMICAL	SR DRAFTER	EXTERNAL DOSIMETRY TECH
PRIN INDUSTRIAL ENGINEER	STAFF ENGINEER CIVIL	SR FIRE INSP TECHNICIAN	GUARD
PRIN LIFE SCIENTIST	STAFF ENGINEER DEVELOPMENT	SR INDUSTRIAL HYGIENIST	MAJOR
PRIN MATERIAL SCIENTIST	STAFF ENGINEER ELECTRICAL	SR MTCE TECHNICIAN	SECURITY INSP
PRIN MECHANICAL ENGINEER	STAFF ENGINEER ENVIRONMENTAL	SR PRIN INDUS HYGEN	SFGD FAC SECURITY OFFICER
PRIN NUCLEAR ENGINEER	STAFF ENGINEER INDUSTRIAL	SR PRIN SAFETY PROFESSIONAL	SI LT
PRIN QUALITY ENGINEER	STAFF ENGINEER MECHANICAL	SR SAFETY PROFESSIONAL	SI SGT
PRIN REG COMPLIANCE ENG	STAFF ENGINEER NUCLEAR	SR TECHNICIAN	SPEC SECURITY
PRIN SAFETY ENGINEER	STAFF ENGINEER PROJECT	ST. TECH. ADVISOR	SRT LT
PRIN SCIENTIST	STAFF ENGINEER SAFETY	TECH SPT EH&S	SRT SECURITY GUARD
PRIN SOCIAL SCIENTIST	STAFF ENGINEER SYSTEMS	TECH SPT ENGINEERING	SRT SGT
QUALITY ENGINEER		TECH SPT MAINTENANCE	UNARMED SECURITY GUARD
REGULATORY COMPLIANCE ENG		TECH SPT OPERATIONS	
SCIENTIST	<b>TECHNICAL</b>	TECH SPT PROJECT	<b>CRAFTS AND MANUAL LABOR</b>
SPEC ENGINEERING	ASSOC DRAFTER	TECH SPT QUALITY	AUTO MECHANIC
SPEC INFORMATION SYSTEMS	ASSOC FIRE INSP TECHNICIAN	TECH SPT SAFEGUARDS	CARPENTER
SR AIR QUALITY ENV ENG	ASSOC INDUSTRIAL HYGIENIST	TECH SPT SYSTEMS	DIE MAKER
SR CHEMICAL ENGINEER	ASSOC LABORATORY TECHNICIAN	TECH SUPPORT ENGINEERING	ELECTRICIAN
SR CHEMIST	ASSOC SAFETY PROFESSIONAL	TECH SUPPORT PROC	ELECTRICIAN APPR
SR ELECTRICAL ENGINEER	ASSOC TECHNICIAN	TECH SUPT	ELECTRICIAN TECH
SR ENGINEER	ASST FIRE INSP TECHNICIAN	TECH SUPT EH&S	EXPERIMENTAL MACHINIST
SR ENGINEERING TECHNOLOGIST	ASST INDUSTRIAL HYGIENIST	TECH SUPT ENGINEERING	HAMMER OPERATOR
SR ENVIRON PROTECTION ENG	ASST LABORATORY TECHNICIAN	TECH SUPT MTCE	HEAVY EQUIPMENT OPERATOR
SR ENVIRONMENTAL ENGINEER	CNC OP/SET UP	TECH SUPT WASTE	MACHINIST/PROGRMR
SR ENVIRONMENTAL SCIENTIST	DEVELOPMENT RESEARCHER	TECHNICAL LEAD	MAINTENANCE MACHINIST
SR GEOLOGIST	DRAFTER/DESIGNER	TECHNICIAN	PAINTER
SR HEALTH PHYSICIST	EH&S INDUSTRIAL HYGIENIST	V.P. TECH. ASSURANCE	PIPEFITTER
SR LIFE SCIENTIST	ELECTRONICS TECH	WASTE CERTIFICATION INSPECTOR	SHEETMETAL WORKER
SR MATERIAL SCIENTIST	EXTERNAL DOSIMETRY TECH	WASTE WATER TREATMENT OPER	STAT OPR ENG APPR
SR MECHANICAL ENGINEER	FILTER TECHNOLOGIST		STATIONARY OPERATING ENGINEER
SR NUCLEAR ENGINEER	FIRE INSP TECHNICIAN	<b>SERVICE</b>	STEEL CUTTER
SR PRIN AIR QUALITY ENV ENG	HEATER HELPER	ASSOC FIREFIGHTER	WELDING SPECIALIST
SR PRIN CHEMICAL ENGINEER	HLTH IND HYG	CABLE FABRICATOR	
SR PRIN CHEMIST	INDUSTRIAL HYGIENIST	COURIER	<b>NUCLEAR</b>
SR PRIN CIVIL ENGINEER	LABORATORY TECHNOLOGIST	EH&S EMERGENCY PLANNER	ADVANCED PRODUCTION SPEC
SR PRIN ELECTRICAL ENGINEER	LUBRICATION TECHNOLOGIST	FIRE COMMUNICATIONS OFFICER	ASSEMBLER
SR PRIN ENGINEER	MAINTENANCE TECHNOLOGIST	FIREFIGHTER	FAC REMEDIATION & WASTE TECH
SR PRIN ENVIRON PROTECTION ENG	NDT TECHNICIAN	KEY PERSONNEL	PRODUCTION SPECIALIST
SR PRIN ENVIRONMENT SCIENTIST	NON-DESTRUCTIVE TESTING TECH	LAUNDRY WORKER	RADIOLOGICAL CONTROL TECH
SR PRIN ENVIRONMENT SCIENTIST	OPERATION SUPPORT SPECIALIST	LINEMAN-ELECTRICIAN	
SR PRIN ENVIRONMENTAL ENG	PRIN INDUSTRIAL HYGIENIST	SPEC EMERGENCY SERV	<b>OTHER/UNKNOWN</b>
SR PRIN GEOLOGIST	PRIN SAFETY PROFESSIONAL	SPEC FIRE PREVENTION	UNEVALUATED EXEMPT PERSON
SR PRIN LIFE SCIENTIST	PROCESS SPECIALIST	SPEC MAINTENANCE & SPT	UNEVALUATED NON-EXEMPT PERSON
SR PRIN MATERIAL SCIENTIST	PROGRAM SUPPORT	SR FIREFIGHTER	
SR PRIN MECHANICAL ENGINEER	QUALITY ANALYST	UTILITY WORKER	
SR PRIN NUCLEAR ENGINEER	QUALITY STATISTICIAN	VEHICLE OPERATOR	
SR PRIN PETRO/MINE ENGINEER	SECURITY INSPECTOR	VEHICLE SERVICE ATTENDANT	
SR PRIN PHYSICIST	SPEC COMPUTER OPERATIONS		

## Work Force Demographics

Rocky Flats reported service and security categories as two separate categories for the first time in 1995. To look at time trends for 1993 to 1995, the two categories had to be combined for the 1995 data.

The Rocky Flats work force steadily increased to 6,843 workers in 1995 from 6,398 workers in 1993 and 6,733 in 1994. The percentage of men and women remained constant, with women making up about

Figure 6. Percentage of Men in Different Age Groups, 1993 to 1995

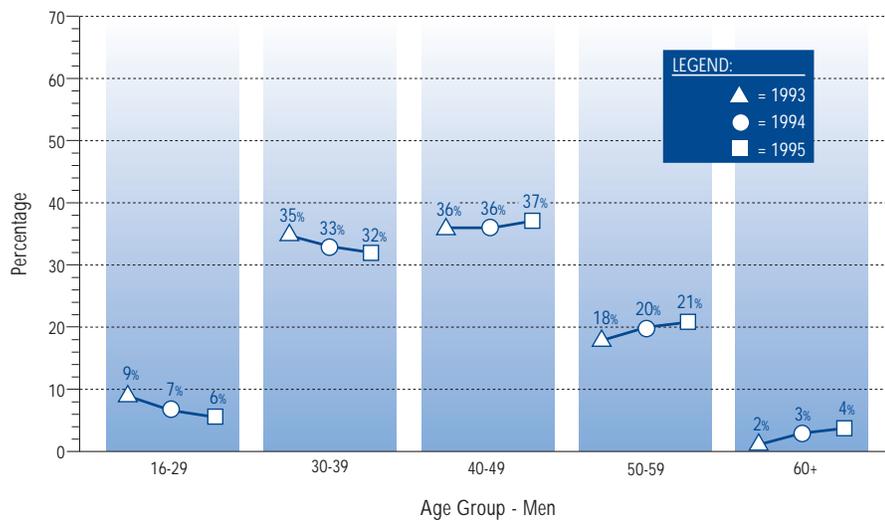
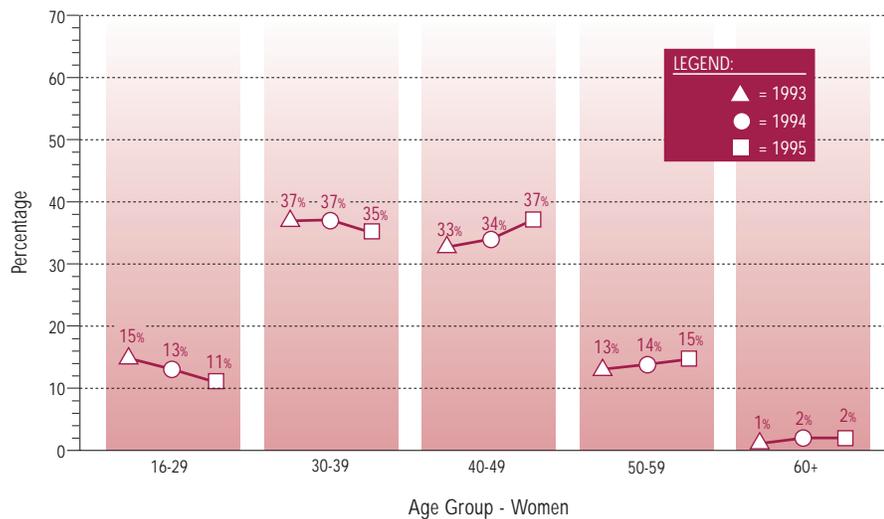
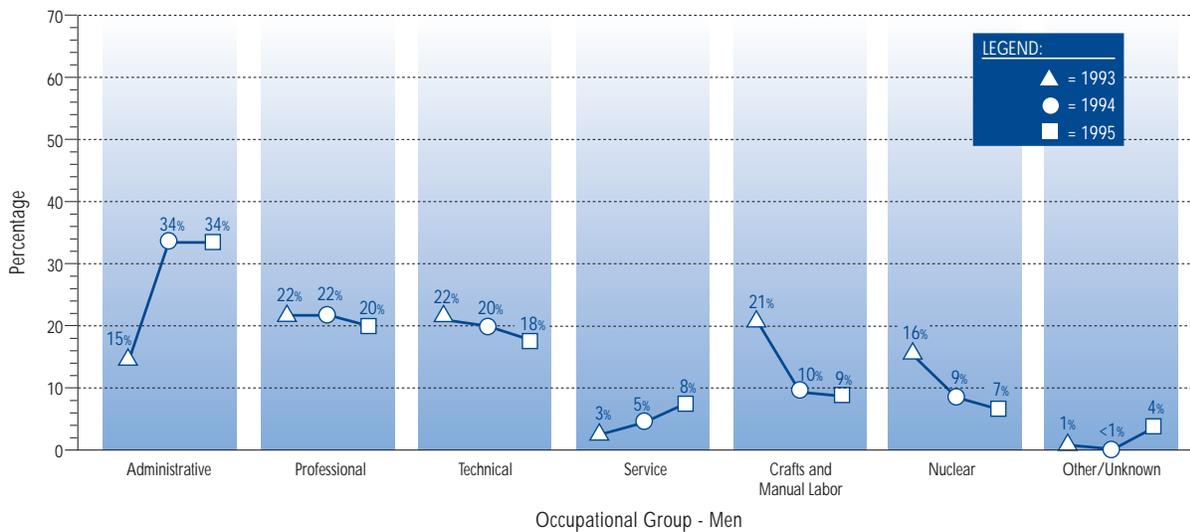


Figure 7. Percentage of Women in Different Age Groups, 1993 to 1995

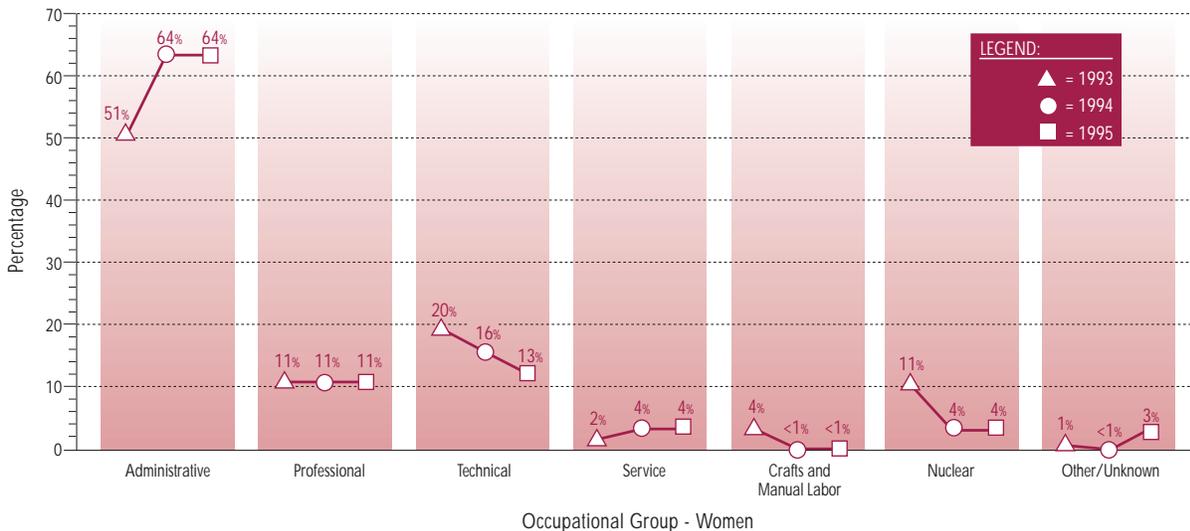


27% of the work force each year. The percentage of workers under age 40 decreased and the percentage of workers in all other age groups increased (figures 6 and 7). The predominant types of jobs also shifted from 1993 to 1995, with a substantial increase in the percentage of workers classified as administrative and more modest increases in workers in the service and other/unknown groups. We observed decreases in the technical, crafts and manual labor, and nuclear groups for both men and women (figures 8 and 9). These changes may indicate real shifts in the types of work being done at Rocky Flats or reflect changes in the way contractors classify their workers.

**Figure 8.** Percentage of Men in Different Occupational Groups, 1993 to 1995



**Figure 9.** Percentage of Women in Different Occupational Groups, 1993 to 1995



## Number and Length of Absences

As in past years, this report includes absences that lasted at least five consecutive workdays. Epidemiologic surveillance refers to absences for illness or injury as “health events” and uses the five-day length of absence because DOE Order 440.1 requires contractor management to notify Occupational Medicine when a worker has been absent for five or more consecutive workdays. Although occupational injuries and illnesses must be reported regardless of duration of absence, nonoccupational illnesses and injuries that involve absences shorter than five consecutive workdays do not routinely require a medical clearance for return-to-work. Throughout this report, the analyses take gender, age, and occupation into account because the risk of illness and injury varies by these factors. For analyses that examine duration of absence, the reported number of days absent includes weekends unless otherwise stated.

The percentage of men with at least one health event increased with age to a high of 15% of those aged 60 and over. Among women 30 years and older, approximately 20% to 22% had at least one nonoccupational absence of five or more workdays. The percentage was somewhat lower among younger women (14%). The percentage of women with at least one health event (20%) was more than twice that of men (9%) (figure 10). This gender difference seen at Rocky Flats every year since the site’s first Epidemiologic Surveillance report in 1992 is similar to the pattern observed at other sites. An explanation of how these percentages were calculated is in the shaded box accompanying figure 10.

The duration of absence was similar for men and women 40 or more years of age, but younger women had substantially longer absences (26.9 days for women versus 17.1 days for men). Maternity leave may have contributed to the longer average duration of absences observed among younger women. Pregnancy/childbirth accounted for 1,976 days of absence for women age 16 to 39 and was the second most frequently reported diagnostic category for women in the 16-29 age group (figure 17, appendices F and G).

Nuclear workers had the highest percentage of workers with a health event; 15% of the men (figure 11) and 37% of the women (figure 12) reported at least one absence. Workers in the service, technical, and crafts and manual labor groups had a high percentage of workers with at least one health event. For men and women combined, the average length of absence for each health event was among the highest for the crafts and manual labor (30.7 days), service (29.9 days), and nuclear (26.6 days) occupational groups (figure 14). The long average duration of absences among crafts and manual labor workers resulted from one of only two absences reported by women in this group. It lasted 227 days and resulted from injuries that occurred during a fall. A relatively long average duration of absence among women in service occupations reflected one absence of 243 days; all other absences in this group were shorter

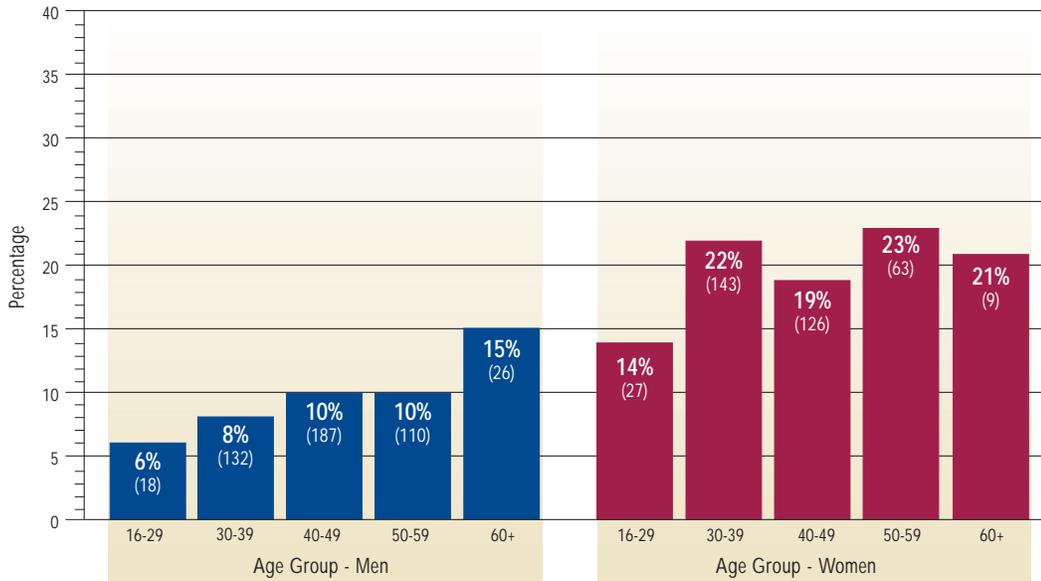
### How Are Percentages Calculated?

The percentages are calculated by dividing the number of workers with at least one health event in a given age and gender group by the number of employees in the same group. This number is multiplied by 100 to give a percent. The number of employees in each group is shown in figure 1. An example is given below:

$$\begin{array}{r}
 18 \text{ Number of men aged 16-29 with at least one health event from figure 10} \\
 \div 300 \text{ Number of men in the work force aged 16-29 from figure 1} \\
 \hline
 = .060 \times 100 = 6\%
 \end{array}$$

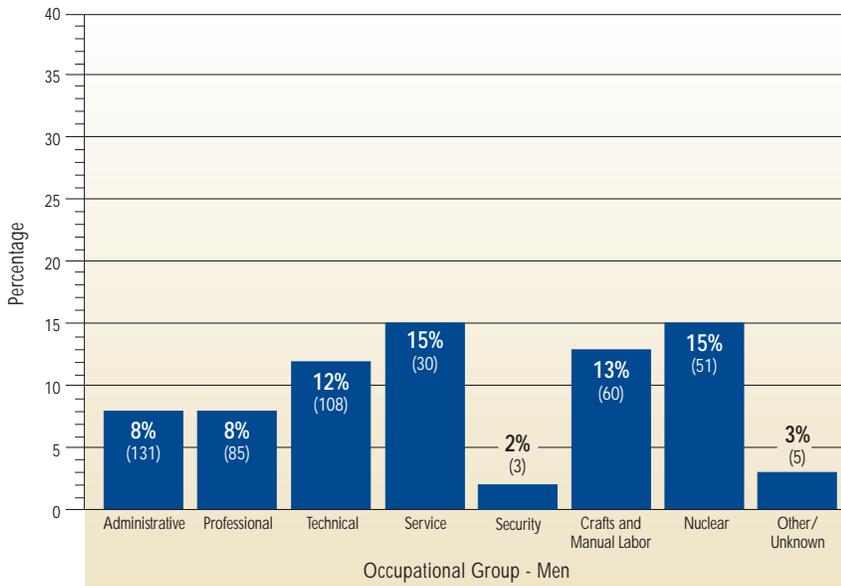
than 60 days. Additional information about the number and length of absences for men and women in different age and occupational groups is in appendices B-E. The Rates of Disease Occurrence section of this report, beginning on page 20, examines the diagnoses underlying these absences.

Figure 10. Percentage of Workers with at Least One Health Event by Gender and Age\*



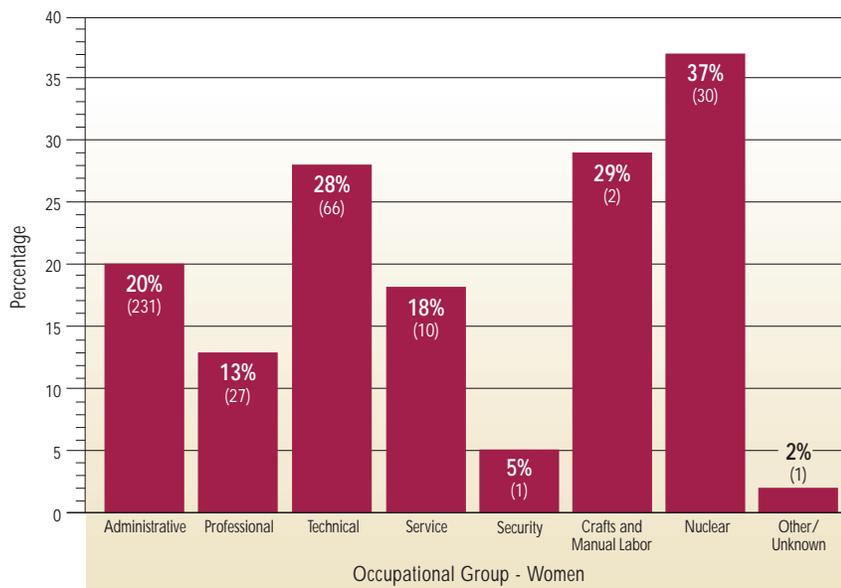
\*Numbers in parentheses represent the number of workers with at least one event.

Figure 11. Percentage of Men with at Least One Health Event by Occupation\*



\*Numbers in parentheses represent the number of men with at least one event.

Figure 12. Percentage of Women with at Least One Health Event by Occupation\*



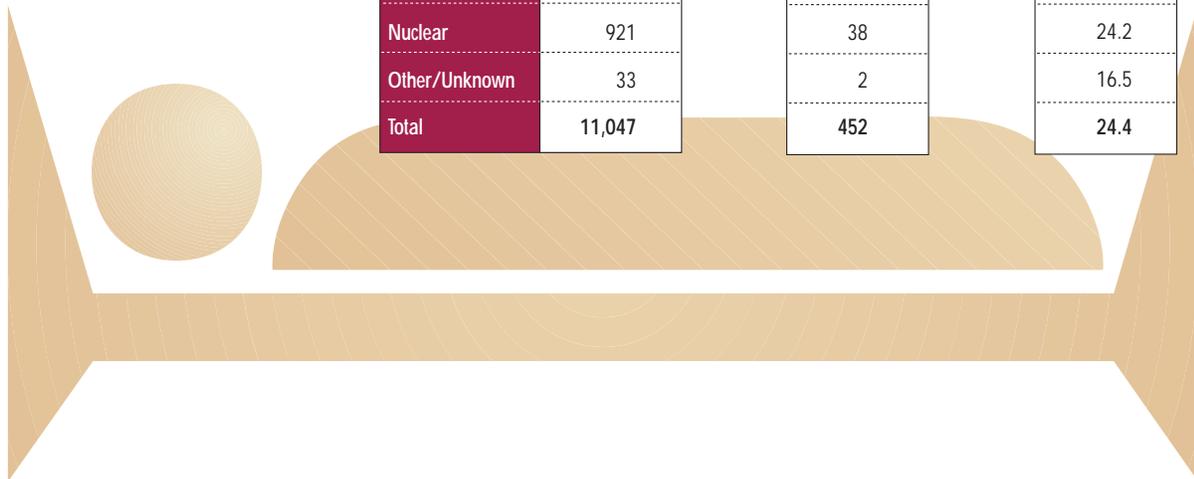
\*Numbers in parentheses represent the number of women with at least one event.

Figure 13. Number of Days Absent by Gender and Age

	Age Group	Total Number of Days Absent	Total Number of Health Events	Average Number of Days Absent
Men	16-29	318	20	15.9
	30-39	2,761	160	17.3
	40-49	5,431	223	24.4
	50-59	3,316	125	26.5
	60+	592	33	17.9
	<b>Total</b>	<b>12,418</b>	<b>561</b>	<b>22.1</b>
Women	16-29	938	31	30.3
	30-39	4,715	179	26.3
	40-49	3,384	151	22.4
	50-59	1,884	81	23.3
	60+	126	10	12.6
	<b>Total</b>	<b>11,047</b>	<b>452</b>	<b>24.4</b>

Figure 14. Number of Days Absent by Gender and Occupation

	Occupational Group	Total Number of Days Absent	Total Number of Health Events	Average Number of Days Absent
Men	Administrative	2,954	156	18.9
	Professional	1,552	87	17.8
	Technical	2,811	130	21.6
	Service	844	34	24.8
	Security	85	5	17.0
	Crafts and Manual Labor	2,131	75	28.4
	Nuclear	1,930	69	28.0
	Other/Unknown	111	5	22.2
	<b>Total</b>	<b>12,418</b>	<b>561</b>	<b>22.1</b>
	Women	Administrative	6,409	278
Professional		544	30	18.1
Technical		2,326	88	26.4
Service		563	13	43.3
Security		16	1	16.0
Crafts and Manual Labor		235	2	117.5
Nuclear		921	38	24.2
Other/Unknown		33	2	16.5
<b>Total</b>		<b>11,047</b>	<b>452</b>	<b>24.4</b>



## Diagnostic Categories

Epidemiologic surveillance monitors both occupational and nonoccupational illnesses and injuries among active workers. For many health conditions it is not possible to say with certainty what caused the health problem, so epidemiologic surveillance assesses the health of the work force by including both occupational injuries and illnesses and health problems that are not necessarily attributed to workplace exposures. Most of the diagnoses are reported by the workers when they visit their site's occupational medicine clinic for a return-to-work clearance following an absence. In contrast, health events are recorded on the OSHA 200 Log because they are occupationally related. We conduct separate analyses of the occupational injuries and illnesses recorded in the OSHA 200 Log because they have been designated as occupational, whether or not they involve an absence.

This report organizes diagnoses into categories based on the type of disease or condition (e.g., cancer) or body system (e.g., lung/respiratory) affected. Categories can be broken down into specific health conditions. For example, rheumatism is one health condition under the diagnostic category of muscles and skeleton. Bronchitis is a condition in the lung/respiratory category. You can find specific health conditions in the Explanation of Diagnostic Categories on pages 42-46 of this report. A health event can involve more than one diagnosis, and epidemiologic surveillance includes all diagnoses reported. If a worker reported more than one health condition for a single absence and all of these health conditions fell into the same diagnostic category, all of them were counted.

As in 1994, the three categories of health conditions reported most often in 1995 were the same for men and women. These categories, lung/respiratory, injury and poisoning, and muscles and skeleton, also tended to reflect the most calendar days of absence (figure 15). Some of the more common diagnoses within the frequently occurring categories are shown in figure 16. The more frequently reported health conditions varied little with age and gender (figure 17 and appendix F).

The types of diagnoses observed within the more common diagnostic categories were generally similar to those observed at other epidemiologic surveillance sites. At Rocky Flats, acute respiratory infections, flu, and pneumonia accounted for over half (52%) of the lung/respiratory conditions reported. Sinusitis and bronchitis made up another third of the diagnoses. Sprains and strains accounted for 31% of the injuries and poisonings. Fractures, dislocations, and unspecified injuries made up most of the remainder. Almost half (49%) of the diagnoses involving the muscles and skeleton were disorders of the back, disc, or neck and another 36% were arthritis and joint disorders. Among men under age 30, digestive and mental disorders were among the more common diagnoses. Four diagnoses for mental disorders were reported by two workers, all related to stress, anxiety, or depression. Three workers each reported one diagnosis for gastroenteritis or colitis.

Diagnoses associated with pregnancy/childbirth were among the more common reasons for absence by women under age 30 (figure 17). As with men, conditions of the lung/respiratory system was the top category reported for women of all ages. The types of conditions were similar to those reported by men; a larger percentage of women (46%) than men (33%) reported sinusitis and bronchitis. Conditions related to the muscles and skeleton were common in women in all age groups except 16-29. While the types of conditions were similar, women reported more rheumatism (32%) than did men (13%). Injury and poisoning was the third category frequently reported by women aged 30 to 59 years old, with sprains and strains the

most common condition (38%) followed by fractures (18%). Another frequently reported category among women under age 40 was infections and parasites, such as unspecified viral infections, intestinal infections, and strep throat.

Lung/respiratory conditions were common in all occupational groups except security and men in the other/unknown category. Diagnoses for injury and poisoning also occurred relatively frequently in this work force. Only 6 (2.4%) of the 245 diagnoses were related to poisoning; all were allergic reactions. Complications of medical care are also included in the injury and poisoning category; 12 (4.9%) such diagnoses were reported. Injury and poisoning was among the three most common diagnostic categories for men in all occupational groups and women in all groups except security workers (figure 18). Sprains and strains were a third of the injuries reported, with fractures, dislocations, and unspecified injuries making up an additional 42% (appendix H). It is clear that injuries, including both occupational and nonoccupational injuries, affect many occupational groups and are not confined to a narrow age range (figures 17 and 18). Other sections of this report focus specifically on job-related health events that are reported under the Occupational Safety and Health Administration (OSHA) guidelines.

Figure 15. Total Number of Health Conditions Reported and Total Number of Days Absent from Work by Gender and Diagnostic Category

Diagnostic Category	Men		Women	
	Total Number of Health Conditions Reported	Total Number of Days Absent	Total Number of Health Conditions Reported	Total Number of Days Absent
Benign Growths	2	23	13	317
Blood	1	9	0	0
Cancer	9	312	3	143
Digestive	65	901	30	580
Endocrine/Metabolic	5	78	5	75
Existing Birth Condition	0	0	1	138
Genitourinary	27	465	35	869
Heart/Circulatory	35	828	9	196
Infections/Parasites	50	615	58	703
Injury and Poisoning	2 150	1 3,219	2 95	1 2,259
Lung/Respiratory	1 250	3 2,340	1 230	2 2,200
Mental	31	750	21	421
Muscles and Skeleton	3 95	2 2,798	3 74	1,919
Nervous System	29	501	37	759
Pregnancy/Childbirth	0	0	24	3 1,976
Skin	16	296	4	63
Unspecified Symptoms	31	548	34	428

Figure 16. Health Conditions Reported Under Selected Diagnostic Categories by Gender

Men		Women	
<b>Cancer</b> <ul style="list-style-type: none"> <li>• Bladder</li> <li>• Lymphoma</li> <li>• Pancreas</li> <li>• Prostate</li> <li>• Skin</li> <li>• Tongue</li> </ul>	<b>Lung/Respiratory</b> <ul style="list-style-type: none"> <li>• Asthma</li> <li>• Bronchitis</li> <li>• Colds</li> <li>• Flu</li> <li>• Pneumonia</li> <li>• Sinusitis</li> <li>• Sore Throats</li> <li>• Upper Respiratory Infections</li> </ul>	<b>Cancer</b> <ul style="list-style-type: none"> <li>• Eye</li> <li>• Ovary</li> <li>• Thyroid Gland</li> </ul>	<ul style="list-style-type: none"> <li>• Flu</li> <li>• Pneumonia</li> <li>• Sinusitis</li> <li>• Upper Respiratory Infections</li> </ul>
<b>Injury and Poisoning</b> <ul style="list-style-type: none"> <li>• Bruises</li> <li>• Dislocations</li> <li>• Fractures</li> <li>• Internal Injuries</li> <li>• Open Wounds</li> <li>• Sprains and Strains</li> <li>• Unspecified Injuries</li> </ul>	<b>Muscles and Skeleton</b> <ul style="list-style-type: none"> <li>• Arthritis</li> <li>• Back Problems</li> <li>• Disc Disorders</li> <li>• Joint Disorders</li> <li>• Rheumatism</li> </ul>	<b>Injury and Poisoning</b> <ul style="list-style-type: none"> <li>• Fractures</li> <li>• Medical Care Complications</li> <li>• Open Wounds</li> <li>• Sprains and Strains</li> <li>• Unspecified Injuries</li> </ul>	<b>Muscles and Skeleton</b> <ul style="list-style-type: none"> <li>• Arthritis</li> <li>• Back Problems</li> <li>• Disc Disorders</li> <li>• Joint Disorders</li> <li>• Rheumatism</li> </ul>
		<b>Lung/Respiratory</b> <ul style="list-style-type: none"> <li>• Asthma</li> <li>• Bronchitis</li> <li>• Colds</li> </ul>	

Figure 17. Three Diagnostic Categories Reported Most Often by Gender and Age

		16-29	30-39	40-49	50-59	60+
Men	Most Common Diagnostic Category	Lung/Respiratory	Lung/Respiratory	Lung/Respiratory	Lung/Respiratory	Lung/Respiratory
	Second Most Common Diagnostic Category	Mental	Injury and Poisoning	Injury and Poisoning	Injury and Poisoning	Injury and Poisoning
	Third Most Common Diagnostic Category	Digestive; Injury and Poisoning	Muscles and Skeleton	Muscles and Skeleton	Muscles and Skeleton	Muscles and Skeleton
Women	Most Common Diagnostic Category	Lung/Respiratory	Lung/Respiratory	Lung/Respiratory	Lung/Respiratory	Lung/Respiratory
	Second Most Common Diagnostic Category	Pregnancy/Childbirth	Injury and Poisoning	Injury and Poisoning	Injury and Poisoning	Muscles and Skeleton
	Third Most Common Diagnostic Category	Infections/Parasites	Infections/Parasites; Muscles and Skeleton	Muscles and Skeleton	Muscles and Skeleton	(3)

(1) This diagnostic category was reported the same number of times as the one above it.  
 (2) No additional health conditions were reported.  
 (3) More than two diagnostic categories tied.

Figure 18. Three Diagnostic Categories Reported Most Often by Gender and Occupation

		Administrative	Professional	Technical	Service
Men	Most Common Diagnostic Category	Lung/Respiratory	Lung/Respiratory	Lung/Respiratory	Injury and Poisoning
	Second Most Common Diagnostic Category	Injury and Poisoning	Muscles and Skeleton	Injury and Poisoning	Lung/Respiratory
	Third Most Common Diagnostic Category	Muscles and Skeleton	Infections /Parasites; Injury and Poisoning	Muscles and Skeleton	Muscles and Skeleton
Women	Most Common Diagnostic Category	Lung/Respiratory	Lung/Respiratory	Lung/Respiratory	Injury and Poisoning
	Second Most Common Diagnostic Category	Injury and Poisoning	Muscles and Skeleton	Injury and Poisoning; Muscles and Skeleton	Lung/Respiratory
	Third Most Common Diagnostic Category	Infections /Parasites	Infections /Parasites; Injury and Poisoning	Infections /Parasites	(3)
		Security	Crafts and Manual Labor	Nuclear	Other/Unknown
Men	Most Common Diagnostic Category	Injury and Poisoning	Lung/Respiratory	Injury and Poisoning	Injury and Poisoning
	Second Most Common Diagnostic Category	Muscles and Skeleton (1)	Injury and Poisoning	Lung/Respiratory	Digestive; Genitourinary
	Third Most Common Diagnostic Category	(2)	Digestive	Muscles and Skeleton	Heart/Circulatory (1); Infections /Parasites (1)
Women	Most Common Diagnostic Category	Genitourinary	Injury and Poisoning	Lung/Respiratory	Injury and Poisoning
	Second Most Common Diagnostic Category	(2)	Lung/Respiratory (1)	Injury and Poisoning	Lung/Respiratory (1)
	Third Most Common Diagnostic Category	(2)	(2)	Muscles and Skeleton	(2)

(1) This diagnostic category was reported the same number of times as the one above it.  
 (2) No additional health conditions were reported.  
 (3) More than two diagnostic categories tied.

## Rates of Disease Occurrence

Some occupational groups had only a small number of workers who reported very few health events in 1995 (appendix H). Because events among a small number of workers can vary widely just by chance, the eight occupational groups were combined into six larger groups. The five age groups were also combined into two age groups for the same reasons (figures 19 and 20). The age groups, less than 40 years and 40 years and older, were chosen because the rates of many illnesses begin to change more rapidly among persons over 40 years of age.

The likelihood of getting cancer increases with age, and all but one of the cancer diagnoses were reported among older workers (appendix F). Although this report discusses rates of cancer diagnoses, one cancer diagnosis can be associated with several absences over a year. The rates are not comparable to incidence rates, which reflect the number of *new* cancer diagnoses in a population over a specified period of time (usually one year). Incidence rates count a cancer diagnosis only once, but a worker who is absent for a week on four different occasions during the same year could have four “diagnoses” recorded for epidemiologic surveillance. Cancer rates presented in this report are really absence rates related to cancer, and because a worker may experience many absences related to the same cancer diagnosis, the cancer rates in this report can appear substantially higher than the actual incidence of cancer. The 12 cancer diagnoses reported during 1995 included 3 diagnoses among women and 9 diagnoses among men. In 1994, 14 men reported 17 cancer diagnoses and 6 women reported 7 cancer diagnoses. Three men who reported cancer in 1994 also reported a cancer diagnosis in 1995, with two of the men reporting the same cancer diagnosis both years. There were no cancer diagnoses in 1995 among workers under age 30 (appendix F). The cancer rates were highest among professional/technical workers aged 40 and above. Nine workers reporting cancer were in this occupational group. Professional workers were over three times more likely to report cancer than workers in other occupational groups (appendix J). Five professional workers reported cancer: two women (ovary and thyroid) and three men (tongue, pancreas, and lymphoma). We found no evidence of an excess of any one type of cancer.

Of the 44 circulatory system diagnoses reported, all 9 that occurred among workers under

### A Word about Rates...

The previous discussion considered the **number** of health events among various groups, but comparing these numbers may be misleading. For example, figure 15 shows that during 1995 men reported 150 diagnoses involving injuries; women reported 95. You can honestly say that men reported over one and a half times as many injuries as women. Does this mean that men were at greater risk of injury in 1995? Comparing the number of injuries among men versus women will not answer this question.

To answer the question, the number of men and women in the work force must be considered. Since there are over two and a half times as many men as women at Rocky Flats, it is reasonable to expect more injuries among men than women. A more accurate way to compare men and women is to calculate the injury rate for each group. The rates are calculated by dividing the number of injuries in a given group by the number of employees in the same group. The number is multiplied by 1,000 to give a rate per 1,000 workers. For example:

$$(150 \text{ injuries} \div \text{among } 5,007 \text{ men}) = .0300 \times 1,000 = 30 \text{ injuries per } 1,000 \text{ men}$$

$$(95 \text{ injuries} \div \text{among } 1,836 \text{ women}) = .0517 \times 1,000 = 51.7 \text{ injuries per } 1,000 \text{ women}$$

These rates account for differences in the number of men and women in the work force, and comparing them suggests that the rate of reported injuries among women is over 50% higher than that of men. They are called crude rates because they do not account for possible differences between men and women with regard to age, occupation, and other factors that might affect the individual's risk of getting an injury. Not all age groups are equally susceptible to various diseases and injuries, so epidemiologists often take age into account when calculating rates. For example, figure 20 of this report shows that injury rates vary not only by occupation but also by both age and gender. Because these differences can be dramatic, age-specific rates for workers under age 40 and those age 40 and older are presented in this section of the report. Definitions of diagnostic rates and age-specific rates also appear in the Glossary of this report.

age 40 were women (figure 20, appendix F). The remaining 35 diagnoses were reported by men aged 40 and above; 15 were for ischemic disease (including restricted blood flow through an artery and heart attack) and 7 involved hemorrhoids or diseases of the veins or lymphatic channels. Among the 9 diagnoses reported by women, 1 was for cerebrovascular disease, 2 each were for high blood pressure and irregular heart beat, and 4 were for hemorrhoids or diseases of the lymphatic channels.

The respiratory system category contains very different kinds of diseases: acute infectious diseases such as colds, influenza, and pneumonia; allergies, sinusitis, and bronchitis; and chronic diseases like asthma and emphysema. Seventy percent of the respiratory diagnoses involved acute infections or sinusitis. Women had higher rates of lung/respiratory disease than men, but respiratory disease rates did not change consistently with age. Respiratory disease risk among nuclear workers was almost two times higher than other occupational groups (appendix J). This increased risk reflected an increase in all types of respiratory diseases, not any one in particular (appendix H).

Only 6 of the 245 injury and poisoning diagnoses involved poisoning, so this category really focuses on injuries. Most of these injuries were not occupational. In 1995, eight of the health events reported by the workers clearly resulted from an occupational injury that was reported as an OSHA-recordable event. Injury rates did not change consistently with age. The variation in the rates among the women was probably due to the small number of diagnoses reported in some of the occupational groups (appendix H). Among both men and women, about a third of the diagnoses were for sprains and strains. Nuclear workers were about 10 times more likely to sustain a back sprain or strain than were other workers (appendix J). Ten of the 26 back sprains and strains reported by men occurred among nuclear workers, which made up 7% of the men in the work force (appendix H). Nuclear workers were over three times more likely to report a nonoccupational injury than were workers in other occupational groups. Their risk of injury relative to other workers was not increased in 1994.

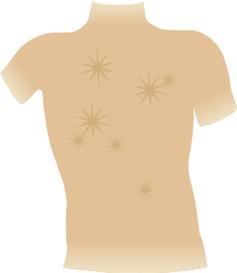
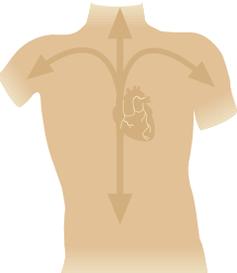
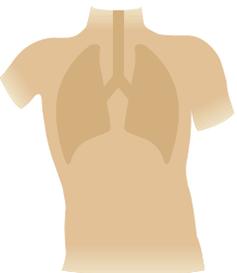
Similarly, service workers were about three times more likely to report an injury than were workers in other occupational groups. They were about five times more likely to sustain a dislocation and four times more likely to report a sprain or strain other than the back or an unspecified injury. Four (20%) of the 20 dislocations reported in 1995 occurred among service workers, who comprised 4% of the work force.

**Figure 19.** Rates per 1,000 for All Diagnostic Categories Combined by Gender, Age, and Occupation



Occupational Group	Age	Rate per 1,000	
		Men	Women
Administrative	<40	111	372
	40+	139	334
Professional/Technical	<40	143	346
	40+	161	457
Service/Security	<40	127	316
	40+	151	184
Crafts and Manual Labor	<40	148	0
	40+	275	400
Nuclear	<40	210	583
	40+	389	913
Other/Unknown	<40	27	57
	40+	48	0

**Figure 20.** Rates per 1,000 for Selected Diagnostic Categories by Gender, Age, and Occupation

Diagnostic Category	Occupational Group	Age	Rate per 1,000		
			Men	Women	
<p><b>Cancer</b></p> 	Administrative	<40	0	0	
		40+	2	0	
	Professional/Technical	<40	1	0	
		40+	4	14	
	Service/Security	<40	0	0	
		40+	0	0	
	Crafts and Manual Labor	<40	0	0	
		40+	3	0	
	Nuclear	<40	0	0	
		40+	0	0	
	Other/Unknown	<40	0	0	
		40+	0	0	
	<p><b>Heart/Circulatory</b></p> 	Administrative	<40	2	4
			40+	7	6
		Professional/Technical	<40	6	4
			40+	11	5
		Service/Security	<40	0	0
			40+	6	0
Crafts and Manual Labor		<40	0	0	
		40+	15	0	
Nuclear		<40	0	28	
		40+	10	0	
Other/Unknown		<40	0	0	
		40+	12	0	
<p><b>Lungs/Respiratory</b></p> 		Administrative	<40	37	153
			40+	54	127
		Professional/Technical	<40	39	74
			40+	62	133
		Service/Security	<40	36	105
			40+	23	26
	Crafts and Manual Labor	<40	0	0	
		40+	99	200	
	Nuclear	<40	63	139	
		40+	59	239	
	Other/Unknown	<40	0	29	
		40+	0	0	

(continued)

**Figure 20.** Rates per 1,000 for Selected Diagnostic Categories by Gender, Age, and Occupation (continued)

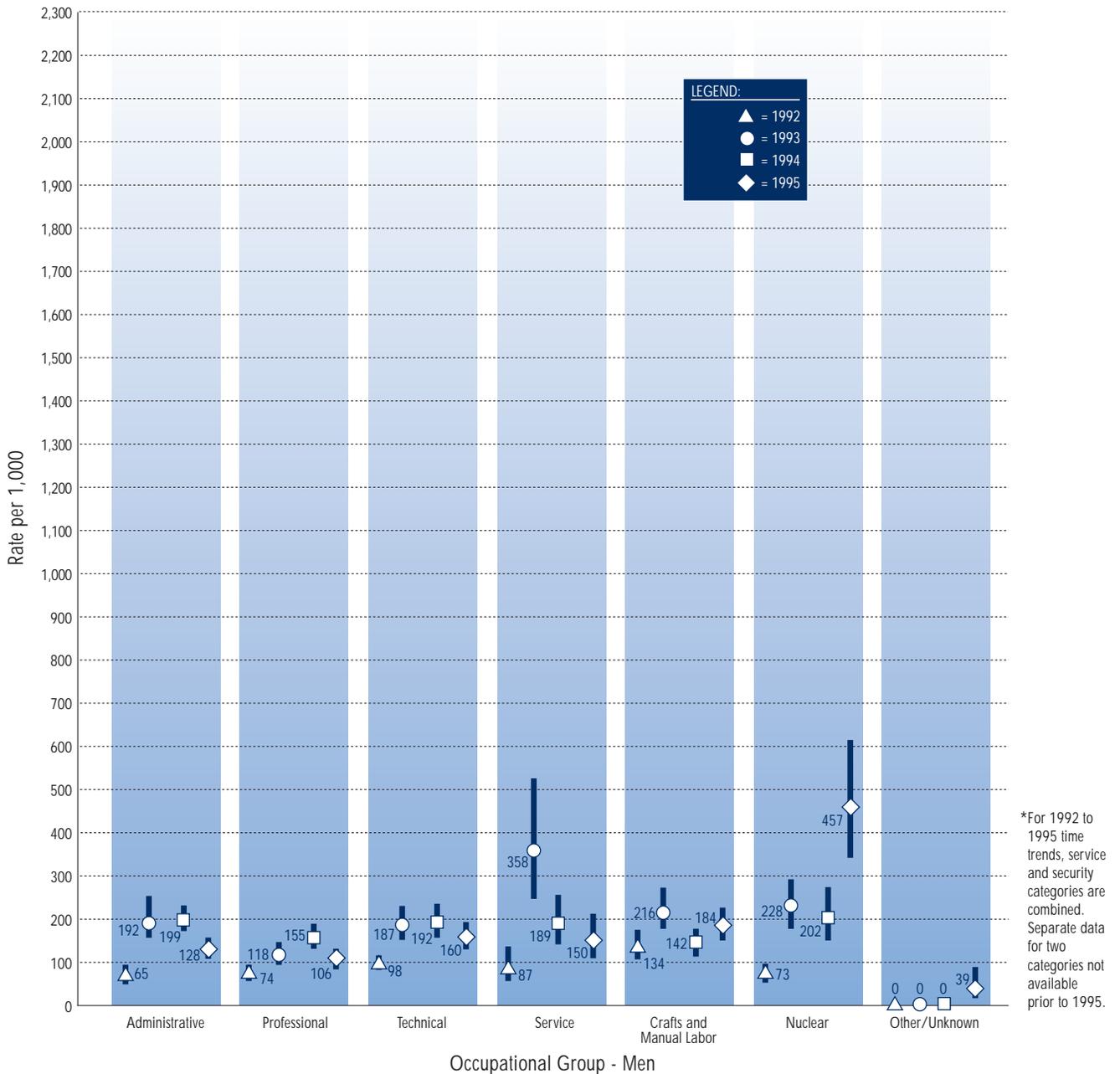
Diagnostic Category	Occupational Group	Age	Rate per 1,000	
			Men	Women
Injury and Poisoning	Administrative	<40	20	26
		40+	22	48
	Professional/Technical	<40	23	74
		40+	18	52
	Service/Security	<40	45	105
		40+	47	79
	Crafts and Manual Labor	<40	0	0
		40+	51	200
	Nuclear	<40	63	56
		40+	133	239
	Other/Unknown	<40	27	29
		40+	0	0



## Time Trends

Over the four-year period, the rates for all diagnostic categories combined remained fairly constant with two exceptions. Men and women in the service group and women in the professional group showed decreasing rates from 1993 through 1995. These decreases may reflect decreases in illness or changes in absence reporting requirements or administration of sick leave (figures 21 and 22). An apparently high diagnosis rate among women in the other/unknown occupational category reflected only four health events among two women (figure 22).

Figure 21. Age-Adjusted Rates for All Diagnostic Categories Combined for Men by Occupation, 1992 to 1995\*



Cancer rates changed little over the four-year period, and heart/circulatory disease rates declined slightly among women (figure 23). The higher lung/respiratory rates among women compared with men are due to many workers having one absence, not to a few workers having many repeated absences. They reflect two major categories of respiratory diagnoses: long-term allergies, sinusitis, sore throat, etc., and chronic respiratory diseases such as emphysema and asthma. Chronic sinusitis, bronchitis, and asthma are prominent in these diagnosis categories. Rates of these diagnoses have been at least 3 times higher in women than in men from 1993 to 1995. Influenza diagnoses also contributed to the high respiratory disease rates for women.

Figure 22. Age-Adjusted Rates for All Diagnostic Categories Combined for Women by Occupation, 1992 to 1995\*

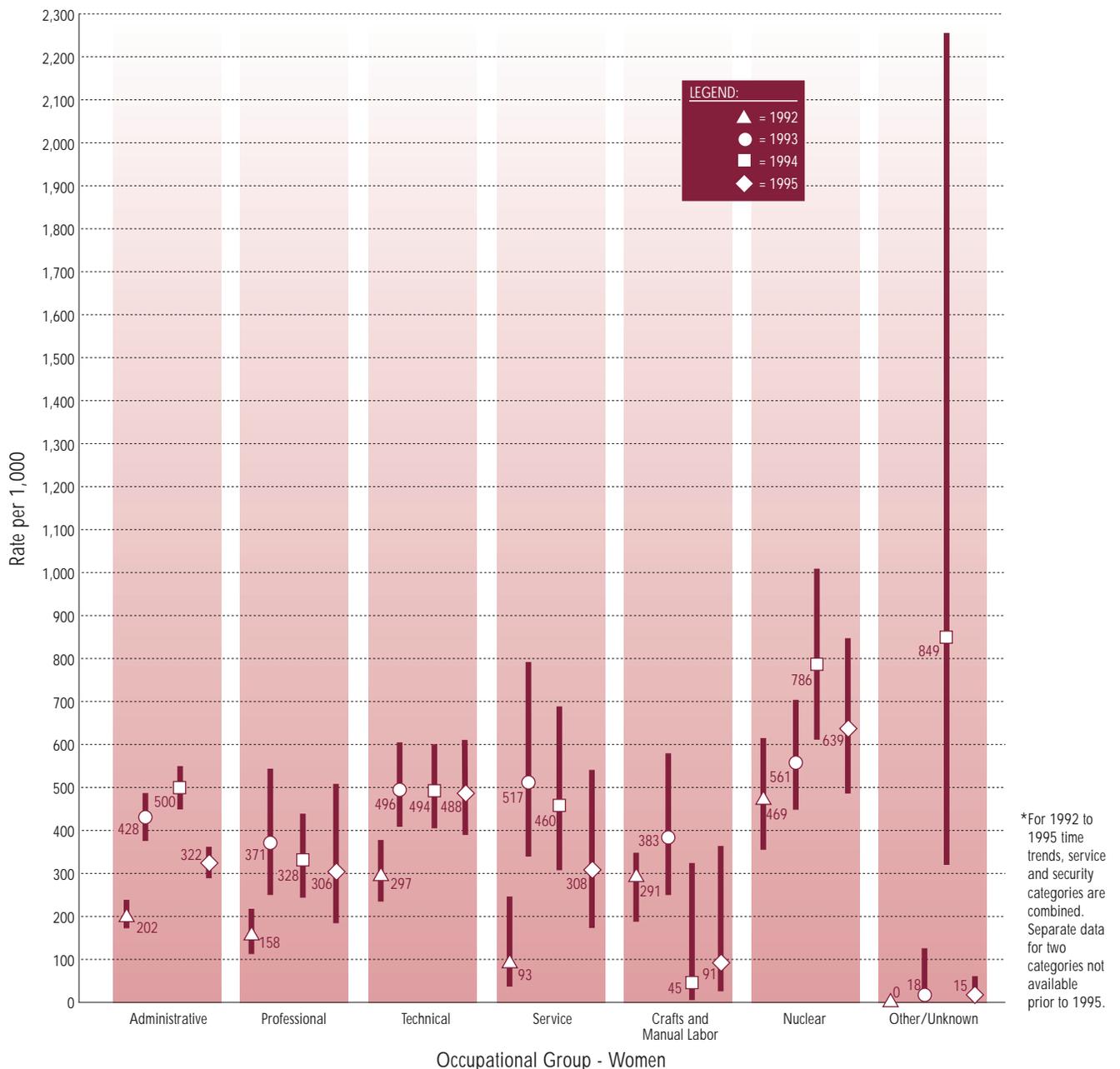
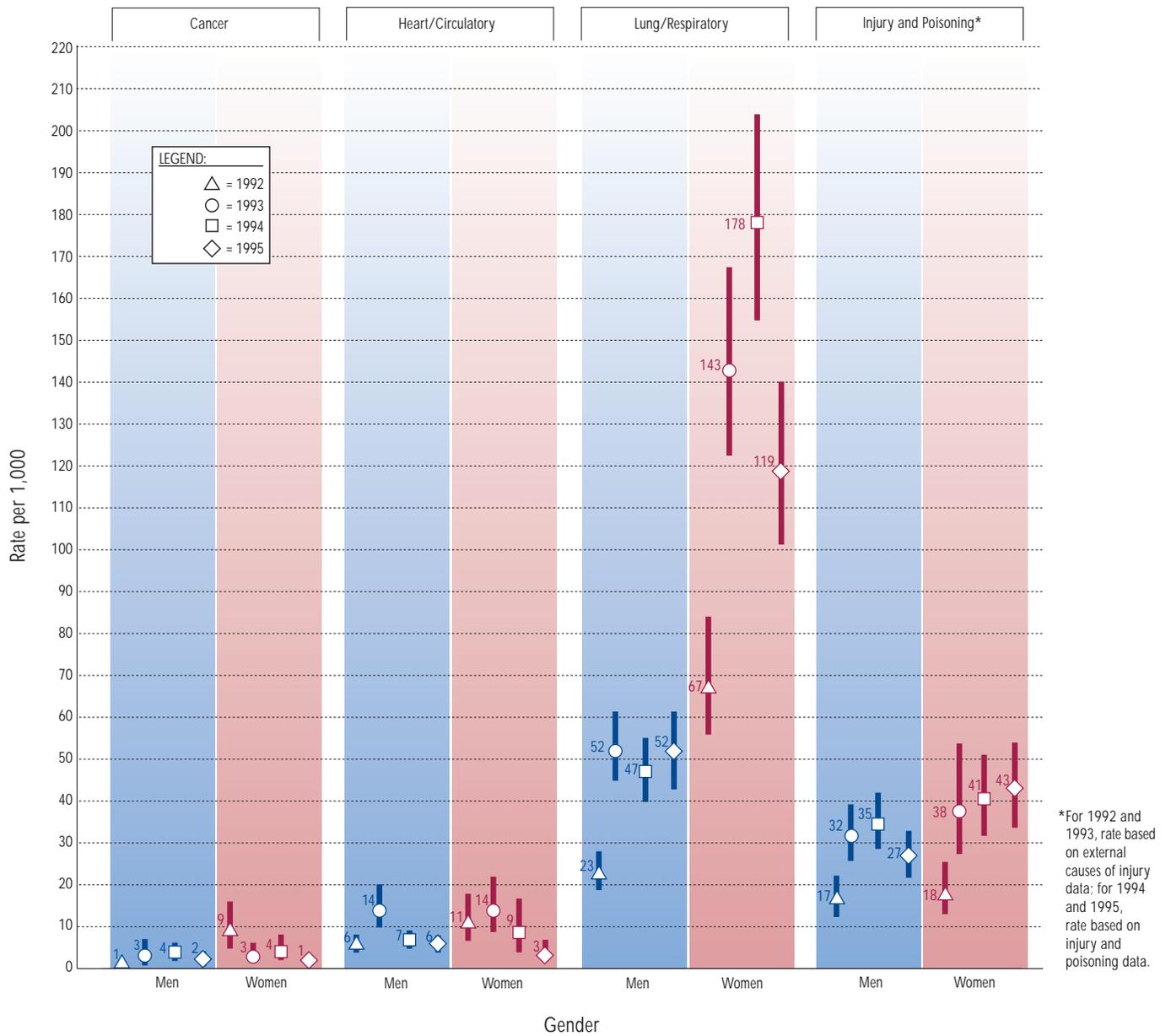


Figure 23. Age-Adjusted Rates for Selected Diagnostic Categories by Gender, 1992 to 1995



## Occupational Sentinel Health Events

An occupational sentinel health event (SHEO) is a disease, disability, or injury whose occurrence may serve as a warning signal that workplace conditions may need to be changed or additional attention may be required to reduce its occurrence. Injuries and poisonings resulting from accidents in the workplace and 64 disease conditions have been identified as SHEOs from studies of workplace exposures and disease in many different industries (appendix K). Although SHEOs may indicate an occupational exposure, many SHEOs can also result from nonoccupational exposures or may reflect the combined effects of both occupational and nonoccupational exposures. Because the occupational status of many SHEOs is uncertain, we assess them in the following three categories (appendix K has additional information about what diseases and conditions are included in each SHEO group).

**Definitely SHEOs:** Consists of diseases that are unlikely to occur in the absence of an occupational exposure. Asbestosis, a lung condition resulting from exposure to asbestos, is an example of this group.

**Possibly SHEOs:** Includes such conditions as lung cancer and carpal tunnel syndrome, which may or may not be related to occupation. Additional information about the person's hobbies, personal habits, and work history are required to establish a link between disease and occupation. For example, lung cancer can result from asbestos exposure as well as smoking. Carpal tunnel syndrome may result from a job requiring typing or from a hobby such as playing piano.

**Accidents:** Includes all types of on-the-job accidents and resulting health conditions. Accidents specifically identified as occurring in the home, on the farm, or during recreation are excluded.

We identified 79 of the 1,013 health events (8%) reported in 1995 as SHEOs, and 65 of the SHEOs involved accidents (figures 24 and 25). Only 11 of the accidents were specifically indicated as occurring in the workplace. Of the 14 SHEOs that did not result from a specific accident, 11 involved carpal tunnel syndrome diagnosed among 10 workers (6 women and 4 men). These 11 events accounted for 8.8% of the total number of days absent from SHEOs. Carpal tunnel syndrome cases were reported in all occupational groups except the technical, security, and other/unknown groups. Nine of the workers reporting this diagnosis were aged 30 to 49.

**Figure 24.** Characteristics of Health Events for SHEOs and Days Absent by Gender

		Total Number of Workers	Total Number of Health Events	Total Number of Health Conditions	Total Number of Days Absent
Men	Definite	8	8	17	413
	Possible	7	7	7	133
	Accident	32	32	58	1,188
	<b>TOTAL</b>	<b>47</b>	<b>47</b>	<b>82</b>	<b>1,734</b>
Women	Definite	3	3	3	132
	Possible	7	7	9	190
	Accident	22	22	50	709
	<b>TOTAL</b>	<b>32</b>	<b>32</b>	<b>62</b>	<b>1,031</b>

Figure 25. Number of Accidents by Gender, Age, and Occupation\*

Occupation	Age Group - Men					Age Group - Women				Total
	16-29	30-39	40-49	50-59	60+	30-39	40-49	50-59	60+	
Administrative		2	4	1	4	7	5	2	1	26
Professional		3	3			1				7
Technical		2	3			2	2	2		11
Service	1	3	2	1	1					8
Security										0
Crafts and Manual Labor		1	2	1			1			5
Nuclear			2	3			1	1		7
Other/Unknown		1								1
All Occupations	1	12	16	6	5	10	9	5	1	65

\*Blank space is equal to zero.

## OSHA-Recordable Events

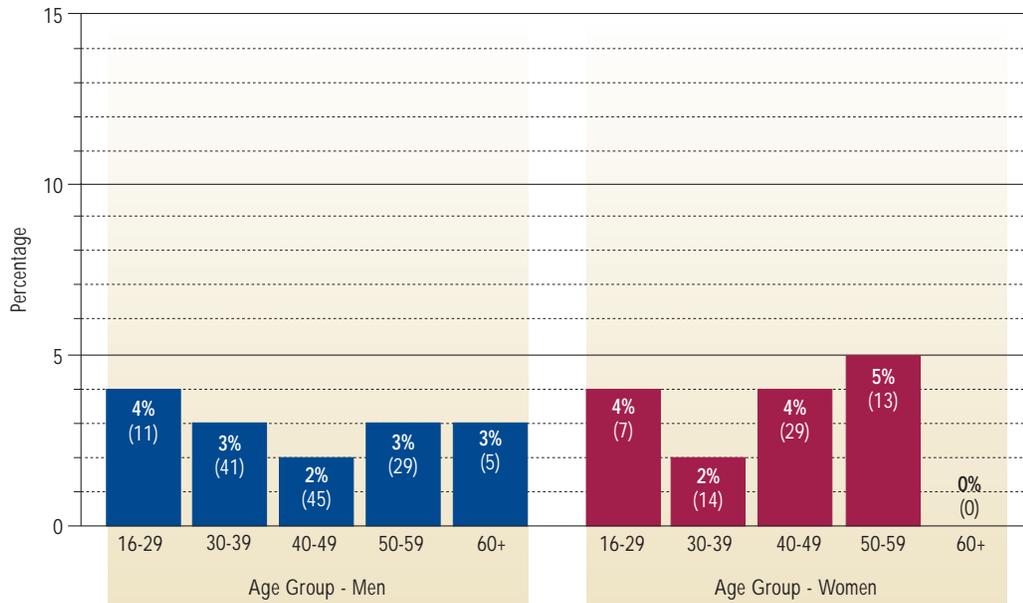
The Occupational Safety and Health Administration requires that employers maintain a record of occupational injuries and illnesses occurring among employees and to make that information available to OSHA on request. Employers maintain the information from these OSHA-recordable events in the OSHA 200 Log. OSHA-recordable events differ from health events captured through return-to-work clearances in at least two important respects: 1) they do not necessarily result in days lost from work, and 2) they are usually accompanied by a specific determination that they are job-related.

The 194 workers with at least one OSHA event in 1995 represented an approximate 30% decrease when compared to the number of workers with a recordable event in 1994. As in 1994, men reported over two times as many OSHA events as women, but the percentage of workers with an OSHA event was similar for men (2.6%) and women (3.4%). In 1994, about 4% of both men and women reported an OSHA-recordable event. The overall reduction in occupational injuries reported may reflect changes in the types of work being done at the site or changes in the availability of OSHA data on subcontractor workers following the implementation of integrated contracting at the site. This new approach to contracting did not initially require a roll-up of health and safety information from some tiers of subcontractors, potentially affecting completeness of reporting. The occurrence of OSHA-recordable injuries did not appear related to age (figure 26). The average number of workdays lost or with restricted activity was similar for women (11.0 days) and men (11.4 days) and did not appear related to age (figure 29).

For men and women combined, service (9.2%), crafts and manual labor (7.4%), and nuclear (6.1%) workers had the highest percentages of workers with an OSHA event (figures 27 and 28). Among men, the service group had the highest percentage of workers (8%) with at least one OSHA event. The crafts and manual labor group was the highest category for women (14%) but involved only one woman. Service

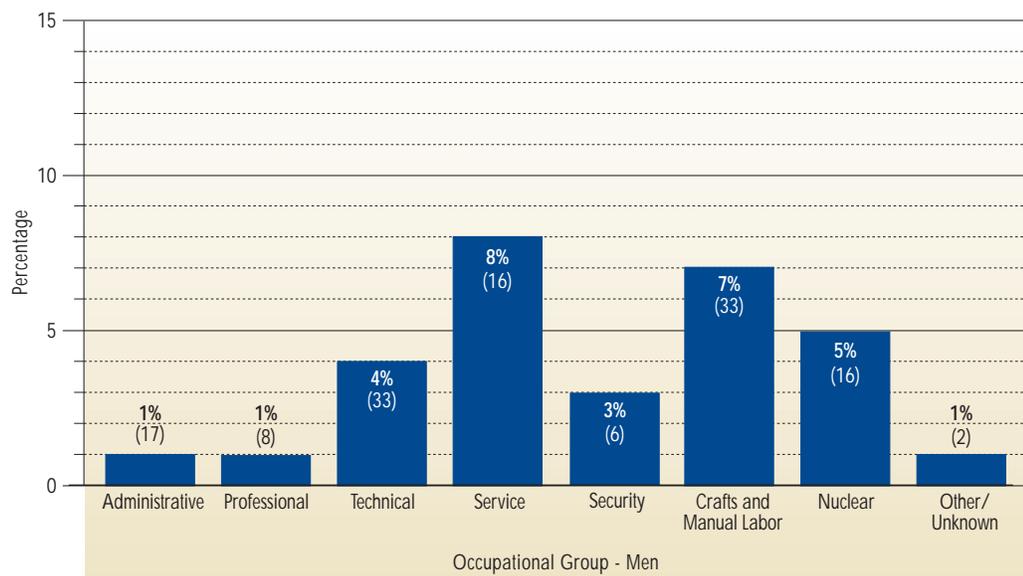
workers had the highest average number of workdays lost or with restricted activity for OSHA events (15.2 days for men and women combined; figure 30). No OSHA events were recorded among women 60 years and older. Appendices L-N contain more detailed data about the number of OSHA events and days of work lost or with restricted activity for men and women in different age and occupational groups.

**Figure 26.** Percentage of Workers with at Least One OSHA Event by Gender and Age\*



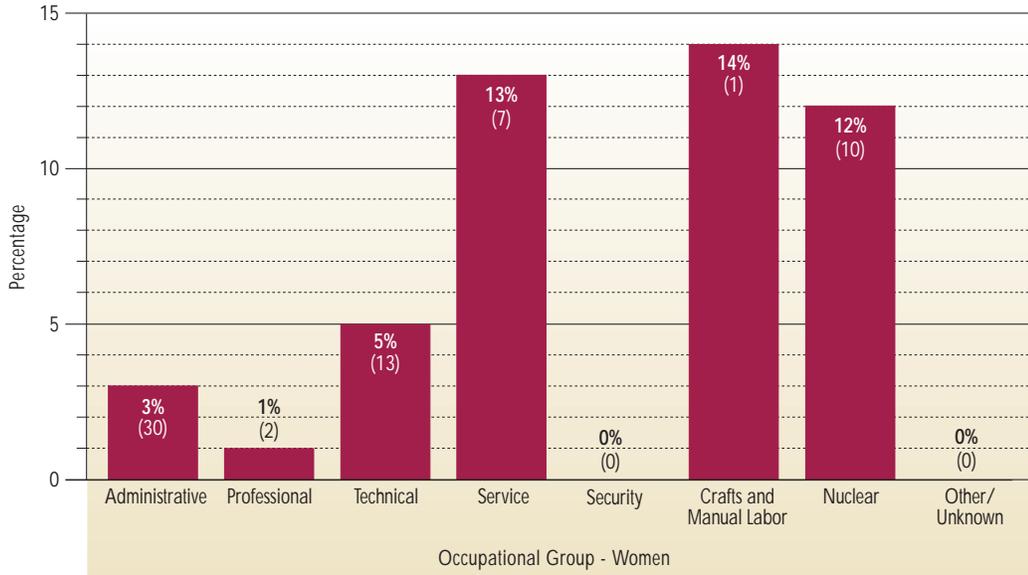
\*Numbers in parentheses represent number of workers with at least one event.

**Figure 27.** Percentage of Men with at Least One OSHA Event by Occupation\*



\*Numbers in parentheses represent number of men with at least one event.

Figure 28. Percentage of Women with at Least One OSHA Event by Occupation\*



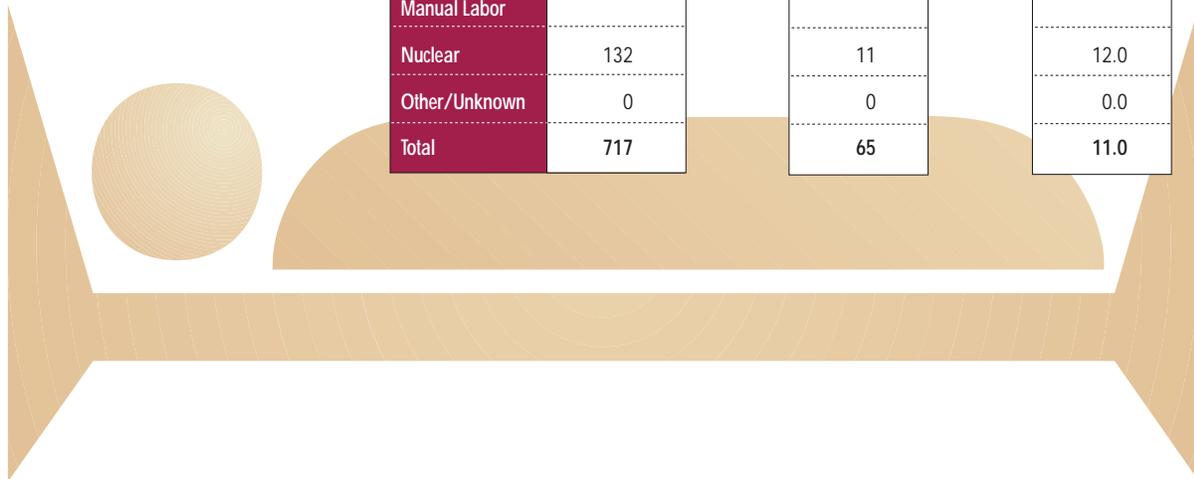
\*Numbers in parentheses represent number of women with at least one event.

Figure 29. Lost and Restricted Workdays by Gender and Age

	Age Group	Total Number of Days Lost/Restricted	Total Number of OSHA Events	Average Number of Days Lost/Restricted
Men	16-29	60	13	4.6
	30-39	531	42	12.6
	40-49	417	46	9.1
	50-59	451	31	14.5
	60+	102	5	20.4
	<b>Total</b>		<b>1,561</b>	<b>137</b>
Women	16-29	122	7	17.4
	30-39	180	15	12.0
	40-49	220	29	7.6
	50-59	195	14	13.9
	60+	0	0	0
	<b>Total</b>		<b>717</b>	<b>65</b>

Figure 30. Lost and Restricted Workdays by Gender and Occupation

	Occupational Group	Total Number of Days Lost/Restricted	Total Number of OSHA Events	Average Number of Days Lost/Restricted
Men	Administrative	214	17	12.6
	Professional	19	9	2.1
	Technical	407	33	12.3
	Service	262	19	13.8
	Security	48	6	8.0
	Crafts and Manual Labor	525	35	15.0
	Nuclear	86	16	5.4
	Other/Unknown	0	2	0.0
	<b>Total</b>	<b>1,561</b>	<b>137</b>	<b>11.4</b>
Women	Administrative	218	30	7.3
	Professional	120	2	60.0
	Technical	106	14	7.6
	Service	132	7	18.9
	Security	0	0	0.0
	Crafts and Manual Labor	9	1	9.0
	Nuclear	132	11	12.0
	Other/Unknown	0	0	0.0
	<b>Total</b>	<b>717</b>	<b>65</b>	<b>11.0</b>



## Diagnostic and Accident Categories for OSHA-Recordable Events

Seventy percent of the health conditions reported were for injury and poisoning. Sprains and strains, as well as unspecified injuries, were the most common types of OSHA-recordable injuries among both men and women. Sprains and strains accounted for 29% of all OSHA-recordable injuries in 1995 (56.9% in 1994); unspecified injuries accounted for 28%. Thirty-five percent of the unspecified injuries among men and 31% among women were associated with falls. Conditions related to the muscles and skeleton also occurred frequently. Age and occupation did not appear related to the type of accident or the type of injury sustained (figures 35, 36, 37, and 38; appendices O and S).

Forty-nine OSHA events were not the result of a specific accident. Among the events not

Figure 31. Health Conditions by Gender and Diagnostic Category\*

Diagnostic Category	Total Number of Health Conditions Reported	
	Men	Women
Lung/Respiratory	3	
Muscles and Skeleton	19	9
Nervous System	6	8
Skin	9	4
Unspecified Symptoms	8	1
Injury and Poisoning	101	53
• Upper Limb Fractures	1	
• Lower Limb Fractures	2	1
• Dislocations	4	
• Back Sprains and Strains	17	5
• Other Sprains and Strains	13	9
• Open Wounds - Head, Neck, Trunk	10	
• Open Wounds - Upper Limb	7	1
• Open Wounds - Lower Limb	2	
• Superficial Injuries	1	3
• Bruises	6	9
• Crushing Injuries	2	
• Foreign Bodies Entering Orifice	3	1
• Burns	1	
• Injury to Nerves and Spinal Cord	1	
• Unspecified Injuries	26	17
• Adverse Reaction to Nonmedical Substances	3	1
• Adverse Reaction to External Causes	2	6

\*Blank space is equal to zero.

attributed to a particular accident, 39% of the diagnoses were related to the muscles and skeleton and 27% each to disorders of the skin and nervous system. Over half of the nervous system disorders were carpal tunnel syndrome.

The type of accident was not reported for 55 of the 153 OSHA events that resulted from an accident. Among the 98 OSHA-recordable events that included a description of the accident, the types of accidents reported most often were “other accidents,” a broad category that includes being struck by an object, injuries from cutting or piercing objects, lifting, overexertion, and contact with hot or corrosive material (figures 32, 33, 36, and 38). Overexertion or strenuous movements accounted for 69.5% of these accidents. The injuries reported most often by men and women were unspecified injuries, followed by open wounds for men and sprains and strains for women (figures 34a and 34b).

Figure 32. Types of Accidents and the Number of Lost or Restricted Workdays by Gender\*

Accident Category	Men			Women		
	Number of Accidents	Number of Days Restricted	Number of Days Lost	Number of Accidents	Number of Days Restricted	Number of Days Lost
Motor Vehicle Traffic				1	120	
Motor Vehicle Nontraffic	2	12				
Other Road Vehicle	1					
Accidental Poisoning by Other Substances	2	1				
Falls	13	144		4	28	
Fire	1					
Natural/Environmental Factors	3		5	9		21
Submersion/Suffocation/Foreign Bodies	3			1		
Other Accidents	43	789	19	16	167	24

\*Blank space is equal to zero.

Figure 33. Types and Number of Accidents that Occurred within the Category of Other Accidents by Gender\*

Other Accidents Category	Men	Women
	Number of Accidents	Number of Accidents
Caught in or Between Objects	2	
Caused by Machinery	1	
Cutting/Piercing Instrument/Object	3	
Hot, Corrosive, or Caustic Material/Steam		1
Overexertion and Strenuous Movements	28	13
Struck by an Object	3	1

\*Blank space is equal to zero.

Figure 34a. Diagnoses Associated with Each Type of Accident by Gender\*

Type of Injury	Type of Accident – Men							Other Accidents
	Motor Vehicle Nontraffic	Other Road Vehicle	Accidental Poisoning by Other Substances	Falls	Fire	Natural/ Environmental Factors	Submersion/ Suffocation/ Foreign Bodies	
Musculoskeletal System				1				6
Symptoms, Signs & Ill-Defined Conditions				1				4
Injury and Poisoning	3	1	2	12	1	3	3	35
• Dislocations				1				
• Back Sprains and Strains				1				3
• Other Sprains and Strains								4
• Open Wounds — Head, Neck, Trunk				1				4
• Open Wounds — Upper Limb								4
• Open Wounds — Lower Limb								2
• Superficial Injuries								
• Bruises	1							2
• Crushing Injuries	1							1
• Foreign Bodies Entering Orifice							3	
• Burns					1			
• Unspecified Injuries	1	1		9				15
• Adverse Reaction to Nonmedical Substances			2			1		
• Adverse Reaction to External Causes						2		

\*Blank space is equal to zero.

Figure 34b. Diagnoses Associated with Each Type of Accident by Gender\*

Type of Injury	Type of Accident – Women				
	Motor Vehicle Nontraffic	Falls	Natural/ Environmental Factors	Submersion/ Suffocation/ Foreign Bodies	Other Accidents
Musculoskeletal System					1
Symptoms, Signs & Ill-Defined Conditions					1
Injury and Poisoning	1	5	10	1	17
• Dislocations					
• Back Sprains and Strains					1
• Other Sprains and Strains					4
• Open Wounds — Head, Neck, Trunk					
• Open Wounds — Upper Limb					
• Open Wounds — Lower Limb					
• Superficial Injuries			3		
• Bruises	1				1
• Crushing Injuries					
• Foreign Bodies Entering Orifice				1	
• Burns					
• Unspecified Injuries		5			11
• Adverse Reaction to Nonmedical Substances			1		
• Adverse Reaction to External Causes			6		

\*Blank space is equal to zero.

Figure 35. Three Diagnostic Categories Reported Most Often by Gender and Age

		16-29	30-39	40-49	50-59	60+
Men	Most Common Diagnostic Category	Open Wounds	Muscles and Skeleton	Sprains and Strains	Sprains and Strains	Sprains and Strains
	Second Most Common Diagnostic Category	Muscles and Skeleton; Sprains and Strains	Open Wounds; Unspecified Injuries	Unspecified Injuries	Unspecified Injuries	Unspecified Injuries (1)
	Third Most Common Diagnostic Category	Unspecified Injuries (1)	Sprains and Strains	Muscles and Skeleton	(3)	Open Wounds
Women	Most Common Diagnostic Category	Muscles and Skeleton; Superficial Injuries	Muscles and Skeleton	Sprains and Strains	Unspecified Injuries	(2)
	Second Most Common Diagnostic Category	Nervous System; Bruises	Unspecified Injuries (1)	Unspecified Injuries	Bruises	(2)
	Third Most Common Diagnostic Category	Unspecified Injuries (1); Adverse Reaction to Nonmedical Substances (1)	Nervous System	Nervous System	Sprains and Strains	(2)

(1) This diagnostic category was reported the same number of times as the one above it.  
 (2) No additional health conditions were reported.  
 (3) More than two diagnostic categories tied.

Figure 36. Three Accident Categories Reported Most Often by Gender and Age<sup>1</sup>

		16-29	30-39	40-49	50-59	60+
Men	Most Common Accident Category	Other Accidents	Other Accidents	Other Accidents	Other Accidents	Other Accidents
	Second Most Common Accident Category	Falls	Motor Vehicle Nontraffic; Submersion/ Suffocation/Foreign Bodies	Falls	Falls	(3)
	Third Most Common Accident Category	Accidental Poisoning by Other Substances	Accidental Poisoning by Other Substances; Falls	Natural/Environmental Factors	Natural/Environmental Factors	(3)
Women	Most Common Accident Category	Natural/Environmental Factors	Other Accidents	Other Accidents	Other Accidents	(3)
	Second Most Common Accident Category	Motor Vehicle Traffic	Natural/Environmental Factors	Natural/Environmental Factors	Natural/Environmental Factors	(3)
	Third Most Common Accident Category	Falls (2)	(3)	Falls	Falls	(3)

(1) Type of accident was not reported for 40 OSHA events among men and 14 OSHA events among women.  
 (2) This accident category was reported the same number of times as the one above it.  
 (3) No additional accident categories were reported.

Figure 37. Three Diagnostic Categories Reported Most Often by Gender and Occupation

		Administrative	Professional	Technical	Service
Men	Most Common Diagnostic Category	Open Wounds	Nervous System	Muscles and Skeleton	Sprains and Strains
	Second Most Common Diagnostic Category	Unspecified Injuries	Sprains and Strains	Sprains and Strains	Unspecified Injuries
	Third Most Common Diagnostic Category	Muscles and Skeleton; Sprains and Strains	(3)	Skin; Unspecified Injuries	Muscles and Skeleton; Open Wounds
Women	Most Common Diagnostic Category	Sprains and Strains	Bruises	Unspecified Injuries	Muscles and Skeleton
	Second Most Common Diagnostic Category	Unspecified Injuries	Adverse Reaction to Nonmedical Substances (1)	Sprains and Strains	Nervous System; Fractures
	Third Most Common Diagnostic Category	Bruises	(2)	Nervous System; Bruises	Sprains and Strains (1); Unspecified Injuries (1)

		Security	Crafts and Manual Labor	Nuclear	Other/Unknown
Men	Most Common Diagnostic Category	Muscles and Skeleton; Dislocations	Unspecified Injuries	Sprains and Strains	Muscles and Skeleton
	Second Most Common Diagnostic Category	Open Wounds (1); Crushing Injuries (1)	Open Wounds	Open Wounds; Unspecified Injuries	Unspecified Symptoms (1)
	Third Most Common Diagnostic Category	Foreign Bodies Entering Orifice (1); Unspecified Injuries (1)	Sprains and Strains	Adverse Reaction to External Causes (1)	Unspecified Injuries (1)
Women	Most Common Diagnostic Category	(2)	Unspecified Injuries	Unspecified Injuries	(2)
	Second Most Common Diagnostic Category	(2)	(2)	Muscles and Skeleton; Superficial Injuries	(2)
	Third Most Common Diagnostic Category	(2)	(2)	Adverse Reaction to External Causes (1)	(2)

(1) This diagnostic category was reported the same number of times as the one above it.  
 (2) No additional health conditions were reported.  
 (3) More than two diagnostic categories tied.

Figure 38. Three Accident Categories Reported Most Often by Gender and Occupation<sup>1</sup>

		Administrative	Professional	Technical	Service
Men	Most Common Accident Category	Other Accidents	Other Accidents	Other Accidents	Other Accidents
	Second Most Common Accident Category	Other Road Vehicle	(3)	Falls	Accidental Poisoning by Other Substances
	Third Most Common Accident Category	Falls (2)	(3)	Motor Vehicle Nontraffic; Natural/Environmental Factors	Submersion/Suffocation/Foreign Bodies (2)
Women	Most Common Accident Category	Other Accidents	Motor Vehicle Traffic	Other Accidents	(3)
	Second Most Common Accident Category	Natural/Environmental Factors	Natural/Environmental Factors (2)	Natural/Environmental Factors	(3)
	Third Most Common Accident Category	Falls	(3)	(3)	(3)

		Security	Crafts and Manual Labor	Nuclear	Other/Unknown
Men	Most Common Accident Category	Other Accidents	Other Accidents	Other Accidents	Falls
	Second Most Common Accident Category	Motor Vehicle Nontraffic; Falls	Falls	Natural/Environmental Factors	(3)
	Third Most Common Accident Category	Submersion/Suffocation/Foreign Bodies (2)	Fire; Submersion/Suffocation/Foreign Bodies	Accidental Poisoning by Other Substances; Falls	(3)
Women	Most Common Accident Category	(3)	Falls	Other Accidents	(3)
	Second Most Common Accident Category	(3)	(3)	Natural/Environmental Factors	(3)
	Third Most Common Accident Category	(3)	(3)	(3)	(3)

(1) Type of accident was not reported for 40 OSHA events among men and 14 OSHA events among women.

(2) This accident category was reported the same number of times as the one above it.

(3) No additional accident categories were reported.

## Rates of OSHA-Recordable Events

Workers in the service/security, crafts and manual labor, and nuclear groups had the highest rates for all occupational health conditions combined. Older workers tended to have higher rates of occupational health conditions, except for women in the service/security group and men in the crafts and manual labor and nuclear groups. Most of the OSHA health conditions involved occupational injury and poisoning (figures 39 and 40).

When the category of injury and poisoning was considered separately, high rates were noted among women in the nuclear group and men in the service/security group. Women aged 40 and older showed higher rates for injury and poisoning in all occupational groups except service/security; in men, this was true only among crafts and manual labor, nuclear, and other/unknown occupational groups. Some of this variation in injury rates for older versus younger workers may reflect the need to combine several occupational groups for analysis due to small numbers of health events in a given occupational category. It is also possible that within a given occupational group men and women may be performing duties with different injury risks. There does not appear to be a consistent relationship between the age of the worker and the risk of occupational injury at Rocky Flats.

Occupational injuries were responsible for substantial numbers of restricted and lost workdays. Workers in the technical, service, crafts and manual labor, and nuclear occupations were more likely to have an OSHA event than other groups. Service workers had the highest average number of lost or restricted workdays (15.2). This group of workers comprised 3.7% of the work force but had 42.9% of the days lost and 11.9% of the days restricted (appendix N). Crafts and manual laborers (6.7% of the work force) also contributed significantly to lost (25.1%) and restricted (23.1%) workdays. These two groups had an overall occupational injury risk at least 3.7 times greater than the other occupational groups.

Compared with other workers, service workers were almost 9 times more likely to suffer back sprains and strains; 6 times more likely to report an open wound to the head, neck, or trunk; and almost 4 times as likely to report an unspecified injury. Crafts and manual labor workers were also about 6 times as likely to sustain an open wound or unspecified injury as were other workers (appendix W). The magnitude of these risks suggests the need for additional attention concerning injuries among service workers and crafts and manual laborers. The 62 OSHA events among these workers resulted in 660 days of restricted activity and 268 lost workdays; a substantial loss of productivity.

In comparing occupational and nonoccupational injuries, nonoccupational injuries showed no apparent relationship to age, but occupational injuries tended to increase with age. We also noted that not all occupational groups were at similar risk for various types of injuries. Compared with other occupational groups, nuclear workers were at increased risk for both occupational and nonoccupational back sprains and strains and at higher risk for both occupational and nonoccupational injuries in general. Service workers were also at increased risk for occupational and nonoccupational injuries, but their work-related and nonoccupational injury risks differed. Their risks for injuries not related to work were higher for dislocations and sprains and strains other than those affecting the back, but back sprains and strains and wounds were more common on the job. Crafts and manual labor workers also had an increased risk of wounds at work. These observations suggest that certain occupational groups may benefit from additional assessment. Further investigation may identify opportunities for injury reduction efforts that can contribute to lower injury rates, reduced health care costs, and greater productivity among these workers.

Figure 39. Rates per 1,000 for all Diagnostic Categories Combined by Gender, Age, and Occupation

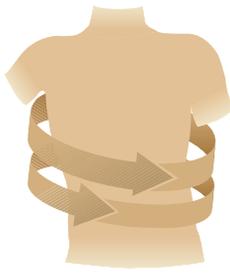
All Diagnostic Categories	Occupational Group	Age	Rate per 1,000	
			Men	Women
				
Administrative	<40	15	18	
	40+	8	42	
Professional/Technical	<40	29	17	
	40+	22	67	
Service/Security	<40	95	132	
	40+	29	53	
Crafts and Manual Labor	<40	35	0	
	40+	93	200	
Nuclear	<40	21	139	
	40+	69	152	
Other/Unknown	<40	18		
	40+	12		

Figure 40. Rates per 1,000 for Injury and Poisoning by Gender, Age, and Occupation

Injury and Poisoning	Occupational Group	Age	Rate per 1,000	
			Men	Women
				
Administrative	<40	10	8	
	40+	5	34	
Professional/Technical	<40	17	17	
	40+	9	48	
Service/Security	<40	77	53	
	40+	23	26	
Crafts and Manual Labor	<40	35	0	
	40+	69	200	
Nuclear	<40	21	83	
	40+	69	109	
Other/Unknown	<40	0		
	40+	12		

## Glossary

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

**Age-Adjusted Rate:** A rate that has been mathematically adjusted to account for the effects of differences in the age composition between groups. This allows one rate per group to be compared.

**Age-Specific Rate:** A rate that is calculated for a group that is a specific age (e.g., 16 to 29 years old). Only people in the specific age group are included in the calculation of the rate. The purpose of calculating age-specific rates is to identify differences in the rate that occur as the age changes. Any differences that are related to age can be seen by comparing age-specific rates for the different age groups.

**Confidence Interval:** A mathematical procedure used to determine in what range the true value of an event is likely to be. The width of the confidence interval (i.e., how wide the range is) is affected by the size of the group being studied and how often the event whose true value is sought occurs. Generally, as the size of the group or the frequency of the event increases, the width of the confidence interval decreases. The level of confidence, for example a 95% confidence level, indicates the percentage (e.g., 95%) of time that the true value is expected to fall within the confidence interval if the mathematical procedure is repeated 100 times.

**Demographics:** Characteristics of human populations related to their size, density, distribution, and health.

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

**Diagnosis Rate:** The number of occurrences of a given disease or health condition observed among DOE workers during a given time period per 1,000 DOE workers at risk of getting that disease during the time period. It is calculated as follows (using 1995 as the time period):

$$\text{Diagnosis rate for a disease during 1995 (per 1,000 DOE workers)} = \frac{\text{Number of occurrences of the disease reported during 1995}}{\text{Number of DOE workers at risk for the disease during 1995}} \times 1,000$$

**Diagnostic Category:** A particular type of disease, a group of related health conditions, or diseases that all affect the same organ system. Cancer is an example of a diagnostic category that contains a particular type of disease, and pregnancy/childbirth is an example of one that contains a group of related health conditions. Lung/respiratory is an example of a diagnostic category that contains diseases that all affect the same organ system.

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

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

**Health Condition:** A specific disease or medical condition. Health conditions are grouped together to form diagnostic categories. Tuberculosis is a specific disease that is part of the diagnostic category of infections/parasites. A fractured arm is a specific health condition included in the diagnostic category of injury and poisoning.

**Health Event:** An absence from work that lasted at least five consecutive workdays.

**ICD-9-CM Code:** An abbreviation for the *International Classification of Diseases, Ninth Revision, Clinical Modification*. It is internationally accepted as a standardized system for the classification of disease and health data collected from medical records and is useful to describe the disease and health characteristics of a 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 200 Log.

**Person-Year:** A unit of measurement combining the number of people being studied with the time that each was observed equivalent to one person followed for one year. For example, 5 persons followed for one year contribute five person-years, as do 10 people each followed for half a year. In the epidemiologic surveillance reports, rates are often expressed as the number of events per 1,000 person-years.

**Relative Risk:** The rate of occurrence of a disease or health condition in one group compared to the rate of occurrence of that same disease or health condition in another group.

## 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* (ICD-9-CM). For the text of this report the categories are abbreviated to make the report easier to read. In the appendixes a different set of abbreviations was used for the categories. These names are the same as the ones used in previous annual reports. The table that begins on the next page lists the categories in numeric order according to ICD-9-CM and gives examples of common diseases included in each category. The last column of the table below links the category names in the reports and the appendixes to the table that begins on the next page.

Diagnostic Categories Used in This Report	Diagnostic Categories Used in the Appendix and Previous Annual Reports	ICD-9-CM Codes
Benign Growths	Benign and Other Neoplasms	210-229,235-239
Blood	Blood and Blood Forming Organs	280-289
Cancer	Malignant Neoplasms	140-208,230-234
Digestive	Digestive System	520-579
Endocrine/Metabolic	Endocrine and Metabolic Diseases	240-279
Existing Birth Condition	Congenital Anomalies	740-759
Genitourinary	Genitourinary System	580-629
Heart/Circulatory	Circulatory System	390-459
Infections/Parasites	Infectious and Parasitic Diseases	001-139
Injury and Poisoning	Injury and Poisoning	800-999
Lung/Respiratory	Respiratory System	460-519
Mental	Mental Disorders	290-319
Muscles and Skeleton	Musculoskeletal System	710-739
Nervous System	Nervous System and Sense Organs	320-389
Pregnancy/Childbirth	Pregnancy and Childbirth	630-676
Skin	Skin and Subcutaneous Tissue	680-709
Unspecified Symptoms	Symptoms, Signs and Ill-Defined Conditions	780-799

Categories and Subcategories of Diagnoses	ICD-9-CM Codes	Diseases
<b>All conditions</b>	001-V82	All reported health events
<b>Infectious and parasitic diseases</b>	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 nonarthropod diseases of 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
• Helminthiasis	120-129	Pinworms, tapeworms, roundworms, 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
<b>Malignant neoplasms</b>	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	Cancers of the 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, and skin	170-173	Bone, muscle, ligament, tendon, blood vessels, fat, and skin
• Genitourinary organs	179-189	Cervix, uterus, prostate, kidney, and bladder
• Other and unspecified sites	190-199	Eye, brain, and thyroid
• 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)
<b>Benign neoplasms and neoplasms of uncertain behavior and unspecified nature</b>	210-229, 235-239	Tumors that are not cancerous or do not exhibit cancerous behavior, regardless of the part of the body affected
<b>Endocrine, nutritional, and metabolic diseases and disorders of the immune system</b>	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
<b>Disorders of the blood and blood forming organs</b>	280-289	Anemia and hemophilia (excludes leukemia)
<b>Mental disorders</b>	290-319	Psychiatric diagnoses - Nonpsychotic disorders: depression; anxiety, fear, and stress disorders; alcoholism; drug dependence; and eating disorders, such as anorexia; Psychotic disorders: dementia, schizophrenia, and manic depression
<b>Diseases of the nervous system and sense organs</b>	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

(continued)

Categories and Subcategories of Diagnoses	ICD-9-CM Codes	Diseases
<ul style="list-style-type: none"> <li>• Hereditary and degenerative diseases of the central nervous system</li> <li>• Other disorders of the central nervous system</li> <li>• Disorders of the peripheral nervous system</li> <li>• Disorders of the eye</li> <li>• Diseases of the ear and mastoid process</li> </ul>	<p>330-337</p> <p>340-349</p> <p>350-359</p> <p>360-379</p> <p>380-389</p>	<p>Alzheimer's and Parkinson's disease, tremors, and Huntington's chorea</p> <p>Multiple sclerosis (MS), cerebral palsy, epilepsy, and migraine</p> <p>Nerve disorders of the face, carpal tunnel syndrome, muscular dystrophy</p> <p>Inflammation and ulcers of the eye and eyelid; detached retina; pink eye; problems with tear ducts; glaucoma; and cataracts</p> <p>Infections of the outer, middle, or inner ear; ringing of the ears; hearing loss</p>
<p><b>Diseases of the circulatory system</b></p> <ul style="list-style-type: none"> <li>• Acute rheumatic fever</li> <li>• Chronic rheumatic heart disease</li> <li>• Hypertensive disease</li> <li>• Ischemic heart disease</li> <li>• Diseases of pulmonary circulation</li> <li>• Other forms of heart disease</li> <li>• Cerebrovascular disease</li> <li>• Diseases of the arteries and capillaries</li> <li>• Diseases of the veins, lymphatics, and other</li> </ul>	<p>390-459</p> <p>390-392</p> <p>393-398</p> <p>401-405</p> <p>410-414</p> <p>415-417</p> <p>420-429</p> <p>430-438</p> <p>440-448</p> <p>451-459</p>	<p>Rheumatic fever, heart murmurs, heart attacks, angina, hardening of the arteries, varicose veins, hemorrhoids, and phlebitis</p> <p>High fever and joint pain with possible heart damage</p> <p>Long lasting swelling and damage to the heart which results from rheumatic fever</p> <p>High blood pressure</p> <p>Heart attack and angina</p> <p>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)</p> <p>Swelling of the inner lining, middle lining, or sac enclosing the heart; heart failure; and irregular heartbeat</p> <p>Stroke, bleeding in the brain, and blockage or low blood flow in blood vessels of the brain</p> <p>Hardening of the arteries; aneurysm (bulge that develops in the walls of arteries); and blood clots</p> <p>Phlebitis (swelling of a vein) and thrombophlebitis (swelling of a vein which has a blood clot)</p>
<p><b>Diseases of the respiratory system</b></p> <ul style="list-style-type: none"> <li>• Acute respiratory infections</li> <li>• Other diseases of the upper respiratory tract</li> <li>• Pneumonia and influenza</li> <li>• Chronic obstructive pulmonary diseases and allied conditions</li> <li>• Pneumoconiosis and other lung diseases caused by external agents</li> <li>• Other diseases of respiratory system</li> </ul>	<p>460-519</p> <p>460-466</p> <p>470-478</p> <p>480-487</p> <p>490-496</p> <p>500-508</p> <p>510-519</p>	<p>Colds, sinusitis, laryngitis, pneumonia, influenza, chronic bronchitis, asthma, and emphysema</p> <p>Colds, sore throat, sinus infections, swollen tonsils, and bronchitis</p> <p>Allergies, hay fever, sinus infections, bronchitis, and sore throat that continue for a long time</p> <p>"The flu" and pneumonia caused by a bacteria or virus</p> <p>Emphysema and asthma</p> <p>Black lung; miners' asthma; asbestosis; silicosis; berylliosis; and conditions caused by chemical fumes and vapors</p> <p>Pleurisy (swelling of the lining of the lungs), collapsed lung, and respiratory failure</p>
<p><b>Diseases of the digestive system</b></p> <ul style="list-style-type: none"> <li>• Diseases of the oral cavity, salivary glands, and jaw</li> <li>• Diseases of the esophagus, stomach, and duodenum</li> <li>• Appendicitis</li> <li>• Hernia of the abdominal cavity</li> <li>• Noninfectious enteritis and colitis</li> <li>• Other diseases of the intestines and peritoneum</li> <li>• Other diseases of digestive system</li> </ul>	<p>520-579</p> <p>520-529</p> <p>530-537</p> <p>540-543</p> <p>550-553</p> <p>555-558</p> <p>560-569</p> <p>570-579</p>	<p>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</p> <p>Tooth problems (too many, too few, abnormal shape or size, cavities, bleeding gums, toothaches), and infections and swelling of the mouth, jaw, and tongue</p> <p>Ulcers of the esophagus (tube that transports food to the stomach), stomach, and small intestine; indigestion; and uncontrollable vomiting</p> <p>Swelling of the appendix (rupture, surgery, or both may result)</p> <p>Ruptures of the groin and diaphragm (muscle which separates the chest area from the lower part of the trunk)</p> <p>Crohn's disease and swelling of the intestine and colon</p> <p>Irritable bowel syndrome, blockage of the intestine, constipation, and diarrhea</p> <p>Diseases of the liver, gallbladder, and pancreas; hepatitis; blood in stool; and bleeding in the stomach and intestine</p>

(continued)

Categories and Subcategories of Diagnoses	ICD-9-CM Codes	Diseases
<b>Diseases of the genitourinary system</b>	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
<b>Complications of pregnancy, childbirth, and the puerperium</b>	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
<b>Diseases of the skin and subcutaneous tissue</b>	680-709	Acne, cellulitis, sunburn, psoriasis, and seborrhea
• 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
<b>Diseases of the musculoskeletal system and connective tissue</b>	710-739	Arthritis, systemic lupus erythematosus, ankylosing spondylitis, herniated intervertebral disc ("slipped disc"), 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; 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
<b>Congenital anomalies</b>	740-759	Spina bifida; cleft palate; harelip; and various chromosomal anomalies, such as Klinefelter's syndrome
<b>Certain conditions originating in the perinatal period</b>	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
<b>Symptoms, signs, and ill-defined conditions</b>	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
• Nonspecific abnormal findings	790-796	Abnormal x-ray, blood, stool, and urine test results

(continued)

Categories and Subcategories of Diagnoses	ICD-9-CM Codes	Diseases
<ul style="list-style-type: none"> <li>• Ill-defined and unknown causes of morbidity and mortality</li> </ul>	797-799	Senility; asphyxia; respiratory arrest; nervousness; and unexplained death within 24 hours of onset of symptoms
<b>Injury and poisoning</b>	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
<ul style="list-style-type: none"> <li>• Fractures, all sites</li> </ul>	800-829	Cracks or breaks of any bone
<ul style="list-style-type: none"> <li>• Dislocations</li> </ul>	830-839	Separation of a bone from its normal socket or joint
<ul style="list-style-type: none"> <li>• Sprains and strains of joints and adjacent muscles</li> </ul>	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
<ul style="list-style-type: none"> <li>• Intracranial injuries excluding those with skull fractures</li> </ul>	850-854	Concussions; internal bruises; and bleeding within the head without a fracture of the bones of the skull
<ul style="list-style-type: none"> <li>• Internal injuries of the thorax, abdomen, and pelvis</li> </ul>	860-869	Bruising, crushing, tearing, or rupturing the chest, abdomen, and pelvis and the organs within these areas of the body
<ul style="list-style-type: none"> <li>• Open wounds</li> </ul>	870-897	Animal bites; cuts; lacerations; punctures; and amputations, excluding the arteries and veins
<ul style="list-style-type: none"> <li>• Other injuries and late effects of external causes</li> </ul>	900-999	Miscellaneous injuries, including injuries to the arteries and veins; problems that occur an extended period of time after the injury has taken place ("late effects"); superficial bruises and abrasions; burns; post-injury shock; poisoning; toxic side effects of chemicals; heatstroke; electrocution; and altitude sickness
<b>Supplementary classifications related to personal or family history of disease</b>	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
<b>Supplementary classifications related to health care for reproduction and child development</b>	V20-V28	Problems related to pregnancy, postpartum care, contraception, outcome of delivery, and physical development of child
<b>Contact with health services for reasons other than illness or injury</b>	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

# Reader Response

To help us serve your information needs better, please take a moment to answer the following questions. Then fold this postage paid form into thirds along the dotted lines, **tape** (do not staple) it together, and return to us. Thank you for sharing your thoughts with us!

- 1) Overall, the information in this report was (circle one...)
- Too detailed                      About right                      Not detailed enough
- 2) Are there additional topics you would like to see covered in future reports?
- Yes                                      No

If yes, please list additional topics:

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- 3) Please list suggestions for improving the Epidemiologic Surveillance reports:

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- 4) Which of the following occupational categories best describes the type of work you do? (check one...)

- Management/Administrative
- Technical
- Professional/Scientific
- Crafts/Trades
- Clerical

- 5) I am employed by (check one...)

- U.S. Department of Energy (DOE)
- DOE contractor or subcontractor
- Other Federal agency
- Military
- State or Local government
- Other



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# Rocky Flats 1995 Appendices

<b>Appendix A.</b>	Work Force by Gender, Age, and Occupation
<b>Appendix B.</b>	Total Number of Workers Who Reported at Least One Health Event by Gender, Age, and Occupation
<b>Appendix C.</b>	Total Number of Health Events by Gender, Age, and Occupation
<b>Appendix D.</b>	Distribution of the Number of Calendar Days Absent/Health Event by Gender and Age
<b>Appendix E.</b>	Distribution of the Number of Calendar Days Absent/Health Event by Gender and Occupation
<b>Appendix F.</b>	Number of Health Conditions in Each Diagnostic Category by Gender and Age
<b>Appendix G.</b>	Total Number of Calendar Days Absent in Each Diagnostic Category by Gender and Age
<b>Appendix H.</b>	Number of Health Conditions in Each Diagnostic Category by Gender and Occupation
<b>Appendix I.</b>	Total Number of Calendar Days Absent in Each Diagnostic Category by Gender and Occupation
<b>Appendix J.</b>	Relative Risk Estimates for Selected Diagnostic Categories Among Five-Day Absences
<b>Appendix K.</b>	Occupational Sentinel Health Events (SHEO)
<b>Appendix L.</b>	Number of Workers with at Least One OSHA Event by Gender, Age, and Occupation
<b>Appendix M.</b>	Total Number of Workdays Lost or with Restricted Activity from OSHA Events by Gender and Age
<b>Appendix N.</b>	Total Number of Workdays Lost or with Restricted Activity from OSHA Events by Gender and Occupation
<b>Appendix O.</b>	Number of Health Conditions in Each Diagnostic Category by Gender and Age
<b>Appendix P.</b>	Number of Workdays Lost or with Restricted Activity in Each Diagnostic Category by Gender and Age
<b>Appendix Q.</b>	Number of Occurrences in Each Accident Category by Gender and Age
<b>Appendix R.</b>	Number of Workdays Lost or with Restricted Activity for Each Accident Category by Gender and Age
<b>Appendix S.</b>	Number of Health Conditions in Each Diagnostic Category by Gender and Occupation
<b>Appendix T.</b>	Number of Workdays Lost or with Restricted Activity in Each Diagnostic Category by Gender and Occupation
<b>Appendix U.</b>	Number of Occurrences in Each Accident Category by Gender and Occupation
<b>Appendix V.</b>	Number of Workdays Lost or with Restricted Activity in Each Accident Category by Gender and Occupation
<b>Appendix W.</b>	Relative Risk Estimates for Selected Diagnostic Categories Among OSHA Events