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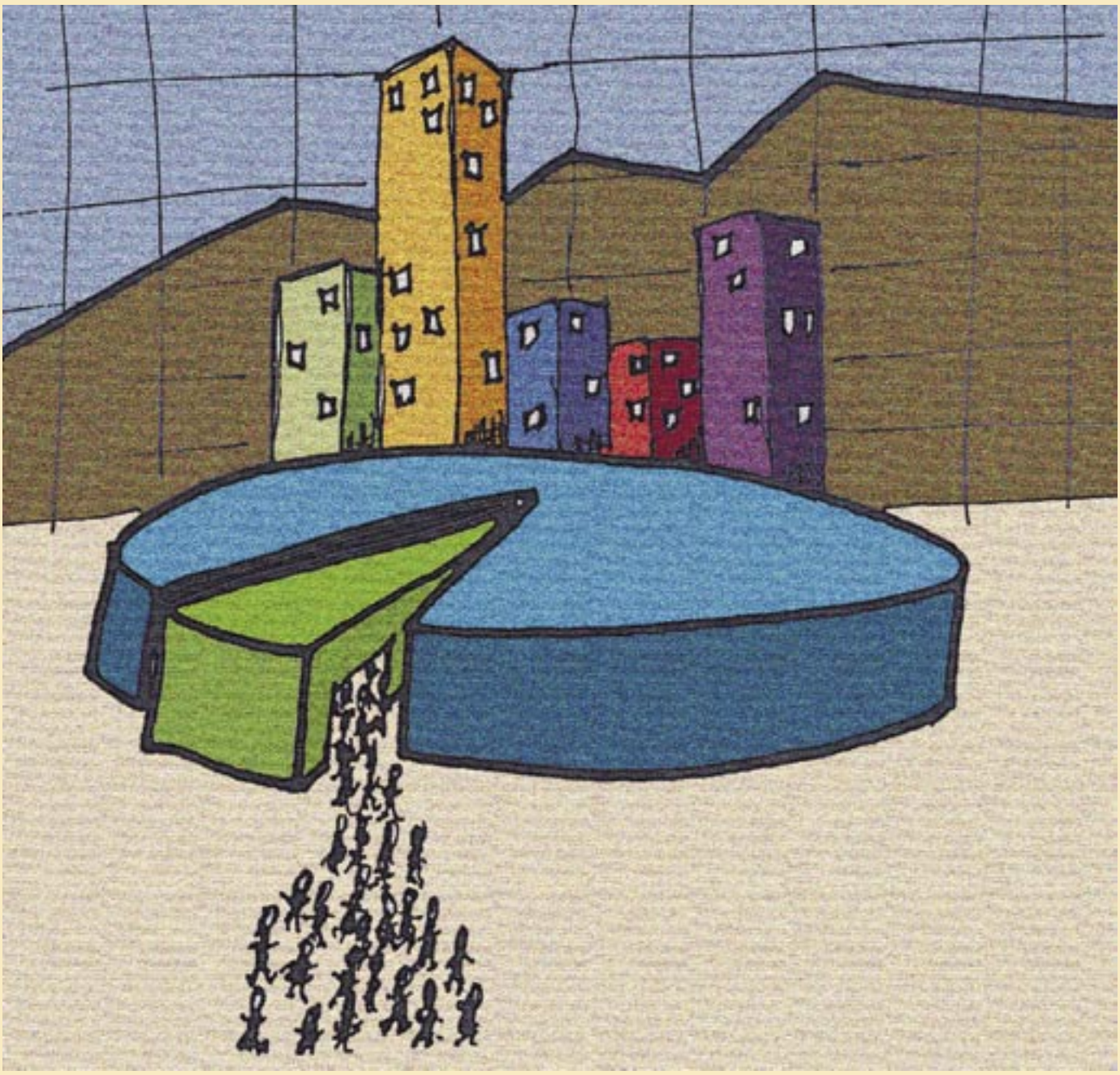
Worker Health Chartbook, 2000



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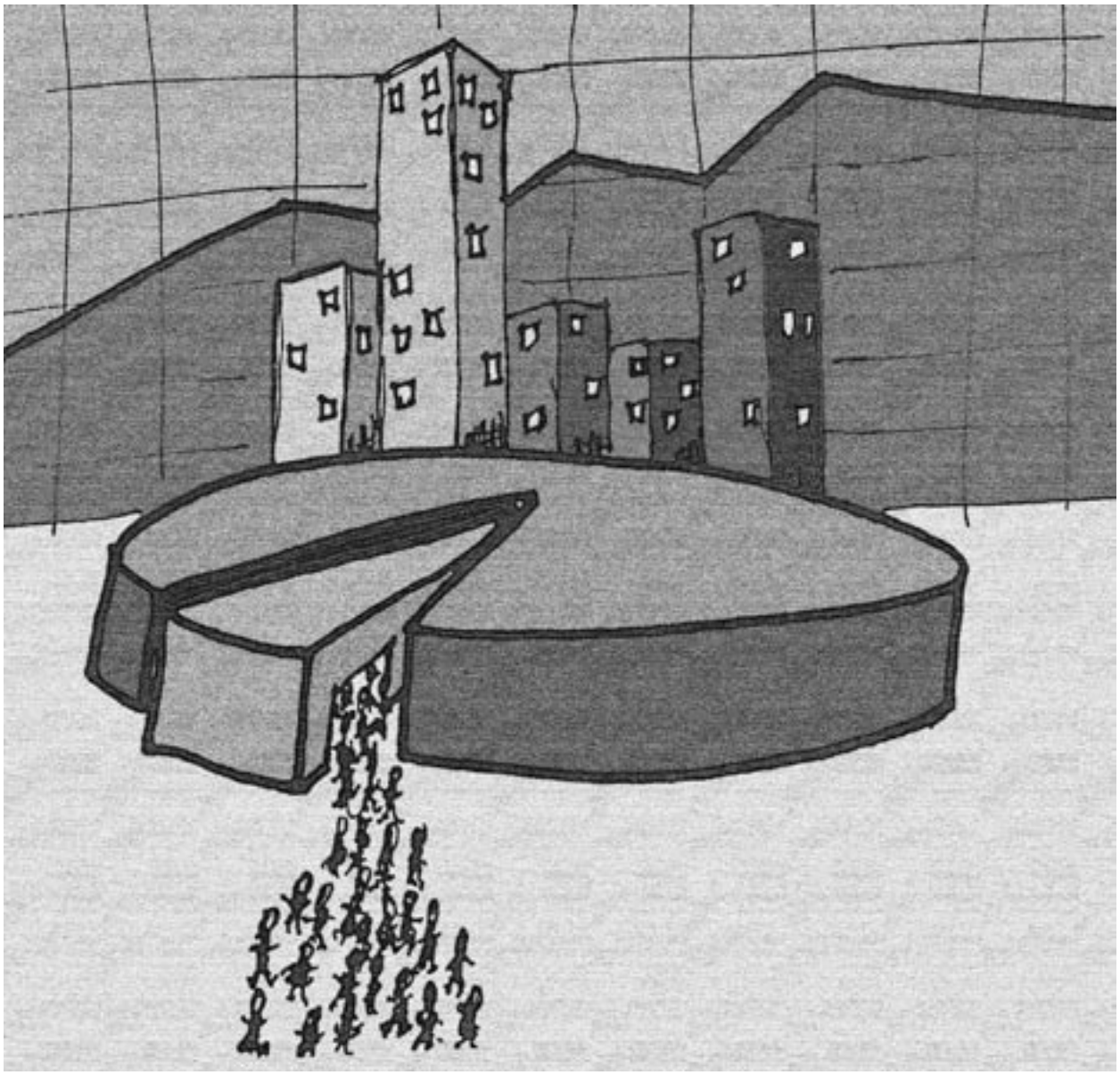

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FOREWORD

Surveillance is the cornerstone of prevention: It helps us identify new and emerging problems, track and monitor issues over time, target and evaluate the effectiveness of intervention efforts, and anticipate future needs and concerns. Those who have long struggled with these issues in the occupational setting will share my enthusiasm for this first edition of the *Worker Health Chartbook*. I am grateful to the authors and contributors for accomplishing what has not been accomplished before—bringing together the patchwork of systems that monitor occupational illness and injury into one comprehensive and *comprehensible* guide.

One of the primary goals in compiling the chartbook was to create a resource that could be used by anyone interested in workplace safety and health, including occupational safety and health practitioners, legislators and policy makers, health care providers, educators, researchers, and workers and their employers. In an attempt to reach the widest possible audience, we have made the chartbook available in printed and electronic form.

Several Federal agencies worked together to organize the surveillance data sources required to produce this document. This is an important step toward identifying and filling significant gaps in occupational illness and injury information. The success of this initial effort has provided a framework for increased surveillance coordination between NIOSH and our partners in the future.

The *Worker Health Chartbook* serves NIOSH and the occupational safety and health community well by placing surveillance in the hands of those who work to prevent occupational injuries and illnesses. The forethought and collaborative spirit that made all of this possible are commendable and bode well for future efforts to integrate Federal, State, and private-sector surveillance information.

Linda Rosenstock, M.D., M.P.H.
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EXECUTIVE SUMMARY

Understanding and preventing occupational injuries and illnesses require focused efforts to identify, quantify, and track both health outcomes and their associated workplace conditions. Occupational safety and health surveillance activities provide the ongoing and systematic collection, analysis, interpretation, and dissemination of data needed for prevention. Current occupational safety and health surveillance data reveal the staggering human and economic losses associated with occupational injuries and illnesses. Much work remains to be done to reduce those losses, despite overall decreases in occupational injuries and illnesses in recent years.

Our ability to survey and assess the state of occupational safety and health has improved over time. However, occupational safety and health surveillance data remain fragmented—collected for different purposes by different organizations using different definitions. We continue to have substantial gaps in surveillance information. Each surveillance system has limitations, particularly those that attempt to quantify occupational illness. Nonetheless, the data provide useful information for targeting and evaluating prevention efforts.

To make these data more accessible, the National Institute for Occupational Safety and Health (NIOSH) has assembled this chartbook, which provides occupational safety and health surveillance information from different sources in a single volume. This initial work focuses on injury and illness outcomes rather than on exposures or hazards. Included are contributions from several Federal agencies. Little information is included on public-sector employees or from State-based surveillance systems. Future editions of the chartbook will target additional data sources to provide a more comprehensive picture of occupational injury and illness for the U.S. workforce.

Trends Over Time

Recent overall decreases in occupational injuries and illnesses are apparent in the incidence rates for total recordable cases of injuries and illnesses in private industry reported by the U.S. Department of Labor in the Survey of Occupational Injuries and Illnesses (SOII). From 1973 to 1997, this rate declined from 11.0 to 7.1 cases per 100 full-time workers. The greatest

change occurred among cases without lost workdays,* which decreased from 7.5 to 3.8 cases per 100 full-time workers over the same period. For 1988–1997, the rate of cases with days away from work declined 40%, but there was a 140% increase in the rate of cases with restricted work activity only.

Occupational injury fatality rates recorded by NIOSH in the National Traumatic Occupational Fatalities Surveillance System (NTOF) decreased substantially (43%) between 1980 and 1995, from 7.5 to 4.3 deaths per 100,000 workers. Injury fatality rates recorded by the U.S. Department of Labor in the Census of Fatal Occupational Injuries (CFOI) declined by 7% from 1992 to 1997.

Losses attributable to occupational illness over time are more difficult to describe. Although efforts have been made to estimate the burden of occupational disease in the United States, no surveillance system describes the magnitude of fatal occupational illnesses other than the pneumoconioses (dust diseases of the lung). These illnesses can be described because they are attributable entirely to occupation. Since 1968, more than 113,000 deaths have occurred with pneumoconiosis diagnosed as the underlying or contributing cause—mostly coal workers' pneumoconiosis (CWP). Deaths with CWP have decreased in recent years, whereas deaths with asbestosis increased from 1968 to 1996 (from fewer than 100 to nearly 1,200).

Recent Data

Fatal Occupational Injuries

About 17 workers were fatally injured on the job each day during 1997. Of the 6,238 fatal occupational injuries that year, 42% (2,605) were associated with transportation, excluding incidents that occurred while traveling to or from work. Most motor-vehicle-related fatalities (nearly 1,400) resulted from highway crashes. Homicides were the second leading cause of death, accounting for 14% of the total. The leading causes of death varied by sex, with motor vehicles being the leading cause for men and homicide the leading cause for women. Workers aged 65 and older had the highest rates of occupational injury death. Workplaces with 1 to 10 workers had the highest fatality rate (8.6 deaths per 100,000 workers), and workplaces with 100 or more workers had the lowest fatality rate (2 deaths per 100,000 workers). The highest numbers of fatalities occurred in construction, transportation

*Lost-workday cases include cases with days away from work and cases with restricted work activity only (i.e., cases in which workers report to their jobs for limited duty).

and public utilities, and agriculture, forestry, and fishing industries. The highest fatality rates occurred in mining, construction, and agriculture, forestry, and fishing. The fatality rate in mining was more than five times the national average for all industries.

Fatal Occupational Illnesses

Deaths from diseases other than the pneumoconioses are difficult to attribute to the workplace for several reasons. For example, many diseases appear the same with or without occupational exposures; and some have latency periods of many years between exposure and disease development. Furthermore, health care professionals may not identify or consider occupational risk factors when making a diagnosis. Statistically elevated death rates for several diseases have been observed in a variety of occupations, but the degree to which these elevated rates can be directly associated with the workplace is not clear. However, these studies help set priorities for intervention and prevention as well as for future investigation. For example, death rates for persons with pneumoconiosis as an underlying or contributing cause varied by occupation and type of pneumoconiosis. Mining machine operators had high mortality rates from CWP and other/unspecified pneumoconiosis, and insulation workers and related occupations had high mortality rates from asbestosis. Various metalworking, plastic processing, and mining occupations had high mortality rates from silicosis, and textile machine operators and repairers had high mortality rates from byssinosis.

Nonfatal Injuries

Approximately 5.7 million injuries were reported in SOII in 1997. Those injuries represent 93% of the 6.1 million injuries and illnesses documented by employer records in the private sector. The nonfatal injury rate declined steadily in the 1990s. Agriculture, construction, manufacturing, and transportation reported rates above the average of 6.6 per 100 full-time workers for all industries. Sprains, strains, and tears accounted for a disproportionately large share of cases with days away from work (nearly 800,000 cases in 1997). Nearly half of those cases involved the back. Overexertion accounted for more than 60% of back injuries.

According to the National Electronic Injury Surveillance System (NEISS), occupational injuries treated in hospital emergency departments numbered 3.6 million in 1998. Rates for those injuries were highest among men and workers under age 25. Lacerations, punctures, sprains and strains, contusions, abrasions, and hematomas accounted for 70% of all injuries treated in emergency departments.

Nonfatal Illnesses

Nearly 430,000 nonfatal occupational illnesses were recorded in SOII in 1997. About 60% of those illnesses occurred in the manufacturing sector. The illness incidence rate for 1997 was 49.8 cases per 10,000 full-time workers. Illness incidence rates varied by industry, with the highest rate occurring in manufacturing. The rates in private industry increased with establishment size, with the highest rate occurring in establishments employing 1,000 or more workers.

Disorders related to repeated trauma (including carpal tunnel syndrome [CTS], tendinitis, and noise-induced hearing loss) accounted for 64% of the occupational illnesses recorded in SOII in 1997. CTS accounted for more than 29,000 cases with days away from work in 1997. Half of the CTS cases required 25 or more days away from work. Most noise-induced hearing loss cases with days away from work occurred in manufacturing.

Skin diseases or disorders represented 13% (approximately 58,000 cases) of work-related illnesses recorded in SOII in 1997. Dermatitis, a subcategory of skin diseases or disorders, resulted in more than 6,500 cases with time away from work. Half of these cases required 3 or more days away from work.

SOII relies on employer records to identify work-related injuries and illnesses. Illnesses reported to SOII are those most easily and directly related to workplace activity (e.g., contact dermatitis). Diseases that develop over a long period (e.g., cancers) or that have workplace associations that are not immediately obvious are overwhelmingly underrecorded in SOII. Consequently, other approaches and data sources have been developed to track occupational illnesses in a more active way. For example, the Sentinel Event Notification System for Occupational Risks (SENSOR) establishes a variety of simultaneous data sources to increase the chances of identifying a work-related illness in State surveillance systems. The California SENSOR program has specifically targeted surveillance of occupational CTS. Of the CTS cases identified in that program through physician first reports filed with the State compensation system in 1998, 30% occurred in the services industry and 17% occurred in manufacturing. Currently, the Michigan SENSOR program monitors noise-induced hearing loss. Manufacturing accounted for 51% of the noise-induced hearing loss cases reported by clinicians in 1998. Seven States have had active SENSOR programs for silicosis surveillance. From 1993 to 1995, 75% of silicosis cases occurred in manufacturing. In addition, four States have had active SENSOR programs for occupational asthma surveillance. The industry divisions

accounting for the most cases from 1993 to 1995 were manufacturing (42%) and services (31%).

Other public and private programs describe toxic exposures, pesticide poisonings, X-rays of working underground coal miners, infections in health care workers, and self-reported respiratory diseases among nonsmokers by industry. For example, the Adult Blood Lead Epidemiology and Surveillance Program (ABLES) monitors elevated blood lead levels (BLLs) in persons aged 16 and older. In 1998, a total of 10,501 adults in 25 States had high BLLs (25 µg/dL or greater).

Conclusions

The data provided in this chartbook indicate encouraging decreases in the frequency of some occupational fatalities, injuries, and illnesses. Surveillance has helped identify new and emerging problems and trends such as occupational musculoskeletal disorders and asthma. Although our ability to monitor these outcomes has improved over time, this chartbook illustrates the continued fragmentation of occupational health surveillance systems as well as the paucity (or even total absence) of data for certain occupational disorders and groups. The data suggest a compelling need to improve, expand, and coordinate occupational safety and health surveillance activities to develop and augment the data needed to guide illness and injury prevention efforts. Working with government and nongovernment partners, NIOSH will continue efforts to enhance occupational health surveillance in the coming years.

CONTENTS

ABBREVIATIONS

AAPCC.....American Association of Poison Control Centers
ABLES .....Adult Blood Lead Epidemiology and Surveillance Program
AIDS.....acquired immune deficiency syndrome
BLL.....blood lead level
BLS .....Bureau of Labor Statistics
CDC.....Centers for Disease Control and Prevention
CDPR.....California Department of Pesticide Regulation
CFOI .....Census of Fatal Occupational Injuries
CFR .....*Code of Federal Regulations*
CI .....confidence interval
COPD .....chronic obstructive pulmonary disease
CPS.....Current Population Survey
CPSC.....Consumer Product Safety Commission
CSTE.....Council of State and Territorial Epidemiologists
CTS .....carpal tunnel syndrome
CWP.....coal workers' pneumoconiosis
CWXSP .....Coal Workers' X-Ray Surveillance Program
dL .....deciliter(s)
DHHS .....U.S. Department of Health and Human Services
DNA.....deoxyribonucleic acid
ECPC .....U.S. Economic Classification Policy Committee
EPA.....U.S. Environmental Protection Agency
FACE.....Fatality Assessment and Control Evaluation
HARS .....HIV/AIDS Reporting System
HIV .....human immunodeficiency virus
ICD–8 .....International Classification of Diseases, Eighth Revision (World Health Organization)
ICD–9 .....International Classification of Diseases, Ninth Revision (World Health Organization)
IHD.....ischemic heart disease
ILO.....International Labour Organization or Office
ITCIC.....Interagency Technical Committee on Industrial Classification
MSHA .....Mine Safety and Health Administration

NAICS.....North American Industry Classification System

NAMCS .....National Ambulatory Medical Care Survey

NaSH.....National Surveillance System for Hospital Health Care Workers

NCHS .....National Center for Health Statistics

NCHSTP.....National Center for HIV, STD, and TB Prevention

NCI .....National Cancer Institute

NCID .....National Center for Infectious Diseases

n.e.c. .....not elsewhere classified

NEISS.....National Electronic Injury Surveillance System

NFPA.....National Fire Protection Association

NHAMCS .....National Hospital Ambulatory Medical Care Survey

NHANES .....National Health and Nutrition Examination Survey

NHANES III ....Third National Health and Nutrition Examination Survey

NOICC .....National Occupational Information Coordinating Committee

NIOSH.....National Institute for Occupational Safety and Health

NNIS.....National Nosocomial Infections Surveillance System

NOMS.....National Occupational Mortality Surveillance System

n.o.s. .....not otherwise specified

NTOF.....National Traumatic Occupational Fatalities Surveillance System

NSSPM.....National Surveillance System for Pneumoconiosis Mortality

OMB .....Office of Management and Budget

OSHA.....Occupational Safety and Health Administration

PEST .....Pesticide Exposure Surveillance in Texas Program

PMR.....proportionate mortality ratio

RADS .....reactive airways dysfunction syndrome

SENSOR .....Sentinel Event Notification System for Occupational Risk

SIC .....standard industrial classification

SOC.....standard occupational classification

SMR .....standardized mortality ratio

SOII.....Survey of Occupational Injuries and Illnesses

staffTRAK–TB...Surveillance for Tuberculosis Infection in Health Care Workers

STD.....sexually transmitted disease

SUDAAN .....Survey Data Analysis

TB .....tuberculosis
TESS.....Toxic Exposure Surveillance System
VHSP .....Viral Hepatitis Surveillance Program
WHO .....World Health Organization
WoRLD ..... *Work-Related Lung Disease Surveillance Report 1999*
µg.....microgram(s)

ACKNOWLEDGMENTS

This document was prepared by the staff of the National Institute for Occupational Safety and Health (NIOSH). All contributors are affiliated with NIOSH unless otherwise indicated. We extend special thanks to our technical reviewers for their constructive comments and suggestions.

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