

## **8. OCCUPATIONAL SAFETY AND HEALTH**

<b>Number</b>	<b>Objective</b>
1	Deaths from work-related injuries
2	Work-related injuries
3	Workplace injury and illness surveillance
4	Overexertion or repetitive motion
5	Pneumoconiosis deaths
6	Work-related homicides
7	Workplace assaults
8	Noise-induced permanent threshold shift
9	Blood lead levels greater than 25 µg/dL
10	Blood lead levels greater than 10 µg/dL
11	Occupational skin diseases/disorders
12	Latex allergy
13	Tractor rollover protection systems
14	Worksite stress reduction programs
15	Hepatitis B infections
16	Hepatitis B vaccinations



## Occupational Safety and Health

### Goal

Promote worker health and safety through prevention.

### Terminology

(A listing of all acronyms used in this publication appears on page 27 of the Introduction.)

**Pneumoconiosis:** A major category of occupational lung disease in which inhalation of dusts results in inflammation and scarring in the lung, with subsequent respiratory symptoms, impairment, and disability.

**Work-related injury:** Any injury incurred by a worker while on or off employer premises but engaged in work-related activities. This includes work in apprenticeships, vocational training, work in a family business, and work as a volunteer firefighter or Emergency Medical Services (EMS) technician. Injuries incurred during work-related travel would be included, but injuries incurred while commuting to or from work would *not* be included. For a complete definition, see “Operational Guidelines for Determination of Injury at Work.”<sup>1</sup>

### Overview

This Nation is poised to make significant improvements in the quality of life for working Americans. We have not made the progress in reducing preventable occupational illness, injury, and death that we would like to have made over the past decade. However, as we approach the next century, we have in place a new national strategic plan for targeting research efforts to address the health and safety risks that are contributing most to unnecessary occupational illness, injury, and death in the United States. The National Occupational Research Agenda (NORA)—developed in partnership with more than 500 external groups and individuals—represents the prevention research priorities of labor, industry, academia, and national professional organizations. NORA, in addition to guiding the Nation’s occupational safety and health research agenda (public and private), will serve as a catalyst for advancing the objectives established for Healthy People 2010 over the next decade.<sup>2</sup>

Intervention effectiveness research, one of 21 specific priority areas identified by NORA partners, will result in knowledge about which prevention strategies effectively protect worker safety and health. This research will evaluate the impact of occupational prevention interventions, programs, and policies on safety and health outcomes across a broad spectrum of industries. Although there have been measurable improvements in worker safety and health over time, only a few interventions have been evaluated systematically.

Currently, managers of public and private sector occupational safety and health programs face increasing demands to document program cost-effectiveness and impact on worker health. The lack of clear answers about intervention effectiveness stymies the introduction of new programs and threatens the continuation of ongoing programs. Corporate safety and health programs, regulatory requirements and voluntary consensus standards, workers’ compensation policies and loss control programs, engineering controls, and educational campaigns are among the types of interventions that need to be developed, implemented, and evaluated. During the coming decade (2000-2010), information resulting from occupational safety and health intervention effectiveness research will be used by employers and the occupational health community to develop effective prevention strategies and programs that are scientifically proven to protect the safety and health of U.S. workers.

*Healthy People 2010 Objectives: Draft for Public Comment*

1 The toll of workplace injuries and illnesses continues to harm this country. Every 5 seconds a worker is  
2 injured. Every 10 seconds a worker is temporarily or permanently disabled. Each day, an average of 137  
3 persons die from work-related diseases, and an additional 17 die from workplace injuries on the job.  
4 Each year, about 70 youths under 18 years of age die from injuries at work and 70,000 require treatment  
5 in a hospital emergency room. In 1996, an estimated 11,000 workers were disabled each day due to  
6 work-related injuries. In 1996, the National Safety Council estimated that on-the-job injuries alone cost  
7 society \$121 billion, including lost wages, lost productivity, administrative expenses, health care, and  
8 other costs. A recent study published in July 1997 reports that the 1992 combined U.S. economic burden  
9 for occupational illnesses and injuries was an estimated \$171 billion.<sup>3</sup>

10  
11 A number of data systems and estimates exist to describe the nature and magnitude of occupational  
12 injuries and illnesses, all of which have advantages as well as limitations. In 1996, information from  
13 death certificates and other administrative records indicated that at least 6,112 workers died from work-  
14 related injuries. No national occupational chronic disease or mortality reporting system currently exists in  
15 this country. Therefore, scientists and policymakers must rely on estimates of the magnitude of  
16 occupational disease generated from a number of data sources and published epidemiologic (or  
17 population-based) studies. Estimates generated from these sources generally are thought to underestimate  
18 the true extent of occupational disease, but the scientific community recognizes them as the best available  
19 information. Such compilations indicate that an estimated 50,000 to 70,000 workers die each year from  
20 work-related diseases.

21  
22 Current data systems are not sufficient to monitor disparities in health related to occupational injury and  
23 illness. Efforts will be made over the coming decade to improve surveillance systems and data points that  
24 may allow evaluation of health disparities for work-related illness, injuries, and death.

25  
26 Data from the National Traumatic Occupational Fatalities Surveillance System (NTOF), based on death  
27 certificates from across the United States, demonstrate a general decrease in occupational mortality over  
28 the 15-year period from 1980 to 1994.\* However, the numbers and rates of fatal injuries from 1990  
29 through 1994 remained relatively stable—at over 5,000 deaths per year and about 4.4 deaths per 100,000  
30 workers. Motor vehicle-related fatalities at work, the leading cause of death for U.S. workers since 1980,  
31 accounted for 23 percent of deaths during the 15-year period. Workplace homicides became the second  
32 leading cause of death in 1990, surpassing machine-related deaths. While the rankings of individual  
33 industry divisions have varied across the years, the largest number of deaths consistently are found in  
34 construction, transportation and public utilities, and manufacturing, while those with the highest fatality  
35 rates per 100,000 workers are mining, agriculture/forestry/fishing, and construction.

36  
37 Data from the Bureau of Labor Statistics (BLS), Department of Labor, indicate that for nonfatal injuries  
38 and illnesses, incidence rates have been relatively stable since 1980.<sup>4</sup> The rate in 1980 was 8.7 per  
39 100,000 workers and 8.4 per 100,000 workers in 1994. Incidence varied between a low of 7.7 per  
40 100,000 workers (1982) and a high of 8.9 per 100,000 workers (1992) over the 14-year period of 1980 to  
41 1994.

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\* Data are available for 1992-96 from the Bureau of Labor Statistics' Census of Fatal Occupational Injuries (CFOI), which is based on multiple sources of information, including death certificates. As with NTOF, data from CFOI also do not show a clear trend in reductions in the incidence of fatal occupational injuries in the 1990s, although the lowest number of deaths since the surveillance system was instituted were recorded in 1996. CFOI reports comparable information on the industries with the highest numbers and rates of fatal injuries. Different coding systems used by NTOF and CFOI for cause of death make direct comparisons complicated, however, broad results on cause of death appear to be similar.

1 The growing U.S. workforce, projected to be 147 million by the year 2005, is changing.<sup>5</sup> The population  
2 is increasingly more diverse and is more and more rapidly exposed to innovative work restructuring and  
3 new technologies. There is growing evidence that the way work is organized may directly affect worker  
4 health. Work organization broadly addresses the health effects of conditions of employment. It also  
5 encompasses special risks related to the overall economy, including: (1) the demands for productivity; (2)  
6 the increasing presence in the workforce of children (2.1 percent increase projected each year from 1992  
7 to 2005), women (now 46 percent of the workforce), minorities (becoming more and more racially  
8 diverse), and older workers (the aging of Baby Boomers); and (3) the ongoing evolution from an  
9 industrial to a service sector economy. The NORA strategic plan will ensure that research will be  
10 undertaken to respond to the new, emerging work environment of the next century. Research translation,  
11 education, and outreach will ensure that labor, industry, academia, and national professional organizations  
12 have current information on how best to design prevention programs to protect worker safety and health.  
13

## 14 **Progress Toward Year 2000 Objectives**

15  
16 For work-related injury deaths and nonfatal injuries, progress has been made toward meeting Healthy  
17 People 2000 goals, including meeting several subobjectives (construction, mining). The goal for reducing  
18 cases of hepatitis B infection among occupationally exposed workers has been exceeded, while the related  
19 goal for immunizing workers for hepatitis B falls short of the 2000 target. For several objectives, the  
20 Nation appears to be moving in the wrong direction as it approaches the millennium. However, this is  
21 misleading and can be partly attributed to several confounding factors—improved surveillance, reporting  
22 changes, and improved diagnosis. Finally, there are some objectives that cannot be tracked reliably for  
23 progress and some with low relative value for monitoring improved outcomes in worker safety and health.  
24 These objectives will be revised, completely replaced, or dropped from Healthy People 2010 objectives.  
25

- 26 • For work-related fatalities (objective 10.1), the rate per 100,000 workers has dropped from an average  
27 of 6 per 100,000 to 5 per 100,000 (1996), compared to the objective of 4 per 100,000 workers by  
28 2000. The subobjective for the construction industry has been met.  
29
- 30 • For nonfatal injuries (objective 10.2), the average rate has fluctuated from the baseline of 7.7 per  
31 100,000 workers to 8.4 per 100,000 in 1994, then back to 7.4 per 100,000 in 1996. The subobjectives  
32 for the construction and mining industries have been met.  
33
- 34 • For cumulative trauma disorders (objective 10.3), rates cannot be tracked against the original baseline  
35 or year 2000 target. The BLS survey was redesigned in 1992 to capture more detailed information on  
36 injury and illnesses and the related risk factors for musculoskeletal disease (MSD).  
37
- 38 • For occupational skin disorders (objective 10.4), rates increased to 79 per 100,000 workers compared  
39 to the baseline of 64 per 100,000 workers. It is unlikely that the goal for 2000 will be achieved.  
40 These disorders are still believed to be significantly underreported.  
41
- 42 • For hepatitis B infection among occupationally exposed workers (objective 10.5), the number of cases  
43 reported dropped from the baseline of 3,090 cases to 407 cases in 1995, exceeding the revised year  
44 2000 goal of 623 cases per year.  
45
- 46 • For worksite occupant protection systems (objective 10.6), 1995 data show that 85 percent of  
47 worksites with 50 or more employees mandate occupant protection systems compared to the 2000  
48 goal of 95 percent.  
49

*Healthy People 2010 Objectives: Draft for Public Comment*

- 1 • For occupational average noise levels exceeding 85 dB (objective 10.7), 1993 data show an increase  
2 to 19.9 percent compared to the baseline of 16 percent and the 2000 goal of 15 percent.  
3
- 4 • For blood lead concentration levels for workers exceeding 25 µg/dL (objective 10.8), the number of  
5 cases has increased from the 1988 baseline of 4,804 cases to 12,672 in 1996, compared to a 2000  
6 target of 0 cases. This increase may be attributed mostly to the increased number of States reporting  
7 (7 States reporting in 1988 compared to 25 States reporting in 1996) and to better diagnosis and  
8 reporting. Rates will be reported in the future.  
9
- 10 • For hepatitis B immunizations for occupationally exposed workers (objective 10.9), the rate of 67  
11 percent was achieved in 1994 compared to the 2000 target of 90 percent.  
12
- 13 • For occupational safety and health plans (objective 10.10), 23 States had plans in 1992 compared to  
14 the 2000 target of 50.  
15
- 16 • For State exposure standards sufficient to prevent major occupational lung diseases (objective 10.11),  
17 pursuant to enactment of the Federal Coal Mine Health and Safety Act of 1969 and the Occupational  
18 Safety and Health Act of 1970, Federal standards have been established that apply in all 50 States and  
19 U.S. territories. This objective has been met.  
20
- 21 • For worker health and safety programs at worksites (objective 10.12), the baseline figure was  
22 established 15 years ago through the National Occupational Exposure Survey (NOES) and there are  
23 no plans to repeat the survey.  
24
- 25 • For worksite back injury prevention and rehabilitation programs (objective 10.13), 1995 data indicate  
26 that 26 percent of worksites with 50 or more employees offer back injury prevention and  
27 rehabilitation programs.  
28
- 29 • For small business safety and health program technical assistance (objective 10.14), all States plus the  
30 District of Columbia and three U.S. territories currently have small business assistance programs for  
31 occupational safety and health supported by the Department of Labor. This objective has been met.  
32
- 33 • For primary care providers eliciting occupational health exposures as part of patient history (objective  
34 10.15), there is no mechanism for tracking this objective.  
35
- 36 • For reducing deaths from work-related homicides (objective 10.16), the rate of deaths remains at 0.7  
37 per 100,000 in 1996, the same as the baseline (1980-89) for the objective when added in 1995.  
38
- 39 • For reducing overall age-adjusted mortality rate for four major preventable occupational lung diseases  
40 (objective 10.17), data are not tracked consistently with the objective as defined; however, the  
41 number of annual pneumoconiosis deaths among persons aged 15 years and older have dropped from  
42 3,783 deaths in 1985 to 3,126 deaths in 1994.  
43

1 **Draft 2010 Objectives**  
2

- 3 **1. (Former 10.1) Reduce deaths from work-related injuries to no more than 3.6 per 100,000**  
4 **workers.** (Baseline: During 1992-96, 5.1 per 100,000)  
5  
6 **a. Reduce deaths in the mining industry from work-related injuries to no more than 18.5 per**  
7 **100,000 workers.** (Baseline: During 1992-96, 26.4 per 100,000)  
8  
9 **b. Reduce deaths in the construction industry from work-related injuries to no more than 9.7**  
10 **per 100,000 workers.** (Baseline: During 1992-96, 13.9 per 100,000)  
11  
12 **c. Reduce deaths in the transportation industry from work-related injuries to no more than**  
13 **8.0 per 100,000 workers.** (Baseline: During 1992-96, 11.4 per 100,000)  
14  
15 **d. Reduce deaths in the agricultural, forestry, and fishing industries from work-related**  
16 **injuries to no more than 16.3 per 100,000 workers.** (Baseline: During 1992-96, 23.3 per  
17 100,000)  
18

19 **Note:** The methodology for calculating rates has changed since last 2000 update.  
20

21 **Target Setting Method:** 30 percent improvement.  
22

23 **Data Source:** Census of Fatal Occupational Injuries (CFOI), Bureau of Labor Statistics.  
24

25 Deaths from work-related injuries are a major public health problem. An average of 17 workers die from  
26 work-related injuries each year. These deaths are preventable. Public health efforts and resources should  
27 be targeted toward work-related injury prevention efforts, especially in those industries at greatest risk.  
28

29 The reduction of work-related injury deaths will require focused efforts to more fully identify and  
30 prioritize problems (injury surveillance), quantify and prioritize risk factors (analytic injury research),  
31 identify existing or develop new strategies to prevent occupational injuries (prevention and control),  
32 implement the most effective injury control measures (communication, dissemination, and technology  
33 transfer), and monitor the results of intervention efforts (evaluation). This will require the combined  
34 efforts of many groups and agencies encompassing educational and outreach efforts, the application of  
35 engineering controls, and the enforcement of workplace safety regulations.  
36

- 1 **2. (Former 10.2) Reduce work-related injuries resulting in medical treatment, lost time from**  
2 **work, or restricted work activity to no more than 5.2 cases per 100 full-time workers.** (Baseline:  
3 In 1996, 7.4 per 100 full-time workers)  
4  
5 **a. Reduce work-related injuries in the construction industry resulting in medical treatment,**  
6 **lost time from work, or restricted work activity to no more than 6.9 cases per 100 full-time**  
7 **workers.** (Baseline: In 1996, 9.9 per 100 full-time workers)  
8  
9 **b. Reduce work-related injuries in the health services industry resulting in medical treatment,**  
10 **lost time from work, or restricted work activity to no more than 6.4 cases per 100 full-time**  
11 **workers.** (Baseline: In 1996, 9.1 per 100 full-time workers)  
12  
13 **c. Reduce work-related injuries in the agricultural, forestry, and fishing industries resulting in**  
14 **medical treatment, lost time from work, or restricted work activity to no more than 6.1**  
15 **cases per 100 full-time workers.** (Baseline: In 1996, 8.7 per 100 full-time workers)  
16  
17 **d. Reduce work-related injuries in the transportation industry resulting in medical treatment,**  
18 **lost time from work, or restricted work activity to no more than 6.1 cases per 100 full-time**  
19 **workers.** (Baseline: In 1996, 8.7 per 100 full-time workers)  
20  
21 **e. Reduce work-related injuries in the mining industry resulting in medical treatment, lost**  
22 **time from work, or restricted-work activity to no more than 3.8 cases per 100 full-time**  
23 **workers.** (Baseline: In 1996, 5.4 per 100 full-time workers)  
24  
25 **f. Reduce work-related injuries among adolescent workers resulting in medical treatment, lost**  
26 **time from work, or restricted-work activity to no more than 3.4 cases per 100 full-time**  
27 **workers.** (Baseline: In 1996, 4.8 per 100 full-time workers) Note: Data source is National  
28 Electronic Information Surveillance System.

29  
30 **Note:** The methodology for calculating rates has changed since last 2000 update.

31  
32 **Target Setting Method:** 30 percent improvement.

33  
34 **Data Source:** Bureau of Labor Statistics annual survey.

35  
36 In 1996, nearly 5.8 million workers suffered injuries that resulted in either lost work time, medical  
37 treatment, or restricted work activity. This is clearly a public health and occupational safety and health  
38 problem of significant proportions. Prevention efforts must be heightened to reduce the tremendous  
39 burden of these injuries on both workers and society.

40  
41 The reduction of work-related injuries will require focused efforts to more fully identify and prioritize  
42 problems (injury surveillance), quantify and prioritize risk factors (analytic injury research), identify  
43 existing or develop new strategies to prevent occupational injuries (prevention and control), implement  
44 the most effective injury control measures (communication, dissemination, and technology transfer), and  
45 monitor the results of intervention efforts (evaluation). This will require the combined efforts of many  
46 groups and agencies encompassing educational and outreach efforts, the application of engineering  
47 controls, and the enforcement of workplace safety regulations.  
48

1 **3. (Developmental) Improve national workplace injury and illness surveillance by increasing the**  
2 **number of States that code work-relatedness of injuries and illnesses in:**

- 3  
4 **a. Cancer registries**  
5 **b. Trauma registries**  
6 **c. Risk factor surveys**  
7 **d. Medical encounter data (emergency department visits, clinic visits, hospital discharge**  
8 **records, etc.)**  
9

10 This objective will begin to address the significant gaps in national occupational injury and illness  
11 surveillance. These data are critical for helping to assess occupational injury and illness trends as well as  
12 for targeting prevention programs to where they will do the most good.

13  
14 The improved recording of work-relatedness of injuries and illnesses will require education and outreach  
15 efforts to the medical community to raise awareness of the importance of this information. It will also  
16 require the modification of existing data systems, whether they exist in hard-copy or electronic formats.  
17 The development of a consensus definition of work-relatedness that encompasses all kinds of injury,  
18 illness, and death will also be required (such a definition has been developed for occupational injury  
19 deaths, but it has not been applied to other kinds of data systems).

20  
21 **4. (Former 10.3 and 10.13) Reduce by 50 percent the injury and illness cases involving days away**  
22 **from work due to overexertion or repetitive motion, including injuries due to overexertion in**  
23 **lifting.** (Baseline: In 1994, 705,800 injuries from overexertion or repetitive motion; 367,424 from  
24 overexertion in lifting)

25  
26 **Target Setting Method:** 50 percent improvement.

27  
28 **Data Source:** Bureau of Labor Statistics annual survey.

29  
30 For cases of occupational injuries and illnesses involving days away from work, the BLS reports that in  
31 1994 approximately 705,800 cases (32 percent) were the result of overexertion or repetitive motion.  
32 Included within this total were 367,424 injuries due to overexertion in lifting (65 percent affected the  
33 back) and 92,576 injuries or illnesses due to repetitive motion, including typing or key entry, repetitive  
34 use of tools, and repetitive placing, grasping, or moving of objects other than tools. A substantial body of  
35 highly credible research provides evidence of an association between MSDs and certain work-related  
36 physical factors when levels of exposure are high and especially in combination with exposure to more  
37 than one physical factor (e.g., repetitive lifting of heavy objects in extreme or awkward postures).<sup>6</sup> BLS  
38 data indicate that total employment is over 3 million in the industries with the highest incidence rates of  
39 cases involving days away from work from overexertion in lifting and repetitive motion. By continuing  
40 to focus national attention on prevention of this problem, we can reduce the number of these disorders.

41  
42 Strategies for achieving this objective include: (1) fully supporting the OSHA regulatory process in  
43 developing an ergonomic standard; (2) increasing the number of States involved in related  
44 control/evaluation activities and surveillance of musculoskeletal disorders; (3) extending technical  
45 support and available engineering technology to industrial and service sectors to improve recognition and  
46 control of ergonomic hazards; (4) establishing health care management strategies, as well as developing  
47 and validating standardized diagnostic criteria for early detection and treatment of musculoskeletal  
48 disorders for preventing impairment and disability; (5) instituting proactive ergonomic approaches geared  
49 to emphasize efforts at the design stage of work processes to recognize needs for avoiding factors that can  
50 lead to musculoskeletal problems. This would be a primary push aimed at engineers and designers to  
51 devise operations that ensure proper selection and use of tools, job methods, workstation layouts, and

1 materials that reduce the level of exposure to physical factors (e.g., forceful, repetitive work) on the  
2 employee; and (6) increase public awareness through media campaigns (billboards, commercials, etc.)  
3 about the magnitude and severity of the problem and the need for early reporting and early intervention to  
4 reduce disability.

5  
6 **5. (Former 10.17) Reduce the annual number of deaths with any mention of pneumoconiosis to no**  
7 **more than 2,000 among persons aged 15 years and older.** (Baseline: In 1994, 3,127 deaths with  
8 pneumoconiosis among persons aged 15 years and older)

9  
10 **Target Setting Method:** 36 percent improvement.

11  
12 **Data Source:** National Vital Statistics System (NVSS), CDC, NCHS.

13  
14 Pneumoconiosis deaths are preventable through effective control of worker exposure to occupational  
15 dusts. The ultimate public health goal is to eliminate all pneumoconiosis among the Nation's current and  
16 former workers. Although progress toward this goal has been made in recent decades, the continuing  
17 occurrence of new cases of pneumoconiosis highlights the mistaken conclusion of many who have  
18 declared this a disease of the past. This objective will play an important role in maintaining and, as  
19 appropriate, enhancing control of occupational exposures to hazardous dusts. A revision of objective  
20 10.17 in Healthy People 2000, this revised objective targets deaths from all types of pneumoconiosis, not  
21 just the four types listed in the former objective 10.17. Also, this objective tracks death counts rather than  
22 age-adjusted death rates, emphasizing the preventability of each such event.

23  
24 The cause of pneumoconiosis is well known—it results from the inhalation of mineral dust particles,  
25 nearly always in occupational settings. Methods for pneumoconiosis prevention are likewise well known.  
26 Nevertheless, pneumoconiosis continues to plague American workers. An effective pneumoconiosis  
27 prevention strategy will necessitate a broad range of approaches. Disease and hazard surveillance, both at  
28 the Federal and State levels, are required to monitor progress toward prevention and to identify new and  
29 persisting high-risk problem areas. It would be desirable for pneumoconiosis to be a reportable condition  
30 for public health surveillance purposes. Effective dissemination of pneumoconiosis surveillance and  
31 prevention information would raise awareness and motivate preventive actions for high-risk worker  
32 populations. Informational materials could be specifically designed to target regulators, employers,  
33 employees, industrial hygiene professionals, health care professionals, legislators, and the general public.

34  
35 For some pneumoconiotic agents (e.g., crystalline silica), comprehensive occupational health standards  
36 could be developed to include requirements for hazard labeling, worker training, and medical monitoring,  
37 in addition to existing dust exposure limits. Also, existing permissible exposure limits for occupational  
38 dusts could be reduced where scientific evidence indicates that current limits are not adequate. State-of-  
39 the-art control technology could be used to control occupational dust exposures. Dry-drilling of rock  
40 could be banned, as could the use of silica sand for abrasive blasting.<sup>7-12</sup> Less hazardous substitute  
41 materials could be substituted whenever possible for silica, asbestos, and other agents that cause  
42 pneumoconiosis. Dust control plans could be mandated for all businesses in the dusty trades, as well as  
43 for asbestos removal projects, and could be required as a condition for receiving funds under government  
44 contracts. Existing regulations could be consistently enforced to ensure compliance of those who do not  
45 voluntarily take preventive actions, and worksites lacking controls could be shut down. Positive  
46 incentives could be developed to encourage employers to effectively control worker exposures to dust.  
47 Employers and employees alike could be persuaded that compliance with dust control limits is in their  
48 best interests.

1 **6. (Former 10.16) Reduce deaths from work-related homicides to no more than 0.5 per 100,000**  
2 **workers.** (Baseline: In 1996, 0.7 per 100,000)

3  
4 **Target Setting Method:** 30 percent improvement.

5  
6 **Data Source:** Census of Fatal Occupational Injuries (CFOI), Bureau of Labor Statistics.

7  
8 An average of 20 workers die as a result of workplace homicide each week in the United States. There  
9 are a number of clearly identified risk factors for workplace violence, including (but not limited to)  
10 interacting with the public, handling exchanges of money, working alone or in small numbers, and  
11 working late night or early morning hours. Workplace factors can be modified to reduce or eliminate the  
12 effects of these risk factors. Workers, employers, and others should launch workplace violence  
13 prevention efforts as a component of any comprehensive workplace safety and health initiatives.

14  
15 Significant reductions in this specific form of work-related injury death will require the application of  
16 improved surveillance and analytic epidemiologic research as well as research to assess the effectiveness  
17 of engineering and other control strategies in various high-risk work settings. Additional education and  
18 outreach efforts are also necessary to inform workers, employers, occupational safety and health  
19 professionals, and others of the nature and magnitude of this problem and steps that can be taken to  
20 reduce the risk of workplace homicide.

21  
22 **7. Reduce incidence of workplace assault to no more than 0.6 per 100 workers annually.**  
23 (Baseline: During 1985-92, 0.85 per 100)

24  
25 **Target Setting Method:** 30 percent improvement.

26  
27 **Data Source:** National Crime Victimization Survey (NCVS), Department of Justice.

28  
29 An average of 1 million workers are assaulted while at work or on duty annually. Monitoring workplace  
30 assaults in addition to homicides will help us to better understand and thus reduce levels of workplace  
31 violence.

32  
33 Reducing the incidence of workplace assaults will require improved data about the magnitude and  
34 distribution of this problem across industrial sectors as well as research to assess the effectiveness of  
35 engineering and other control strategies in various high-risk work settings. Similar to workplace  
36 homicides, additional education and outreach efforts are necessary to inform workers, employers,  
37 occupational safety and health professionals, and others of the nature and magnitude of this problem and  
38 steps that can be taken to reduce the risk of workplace violence.

39  
40 **8. (Developmental/Former 10.7) Reduce by \_\_ percent the incidence of new cases of noise-induced**  
41 **permanent threshold shift through reducing by half the number of workers exposed to noise**  
42 **levels that exceed 85 decibels (dBA).**

43  
44 The National Institute for Occupational Safety and Health (NIOSH) estimates that almost 30 million  
45 American workers are exposed to noise levels at work at or above 85 dBA, intense enough to cause a  
46 hearing impairment over a working life. Most recent estimates show that of workers exposed to noise  
47 levels of 85 dBA, 1 in 12 will develop hearing impairment. One in four will develop hearing impairment  
48 as the result of exposure to continuous or intermittent noise levels of 90 dBA or impulsive noise of 140  
49 dBA or greater. Workers exposed to occupational noise may not manifest noise-induced hearing loss  
50 severe enough to be considered an impairment for as many as 10 years after the onset of exposures.  
51 Current and accurate data must be collected to assess the scope of the problem and to monitor the

1 effectiveness of prevention and intervention efforts. NIOSH, in cooperation with its partners from  
2 industry, labor, academia, and government, will establish pilot databases for which the incidence of  
3 significant threshold shift and prevalence of occupational hearing loss can be monitored.  
4

5 **9. (Former 10.8) Reduce to 0 the rate of adults having blood lead concentrations greater than 25**  
6 **µg/dL of whole blood.** (Baseline: In 1996, rate of adults with blood lead levels greater than 25  
7 µg/dL of whole blood was 104 per million adults aged 15 to 64 in 25 States)  
8

9 **Target Setting Method:** Retain year 2000 target.

10  
11 **Data Source:** Adult Blood Lead Epidemiology and Surveillance Program.  
12

13 The 25 States in NIOSH's Adult Blood Lead Epidemiology Survey reported 12,672 adults with blood  
14 lead levels of 25 µg/dL or greater in 1996. Industries in which workers have been occupationally exposed  
15 to lead include battery manufacturing, nonferrous foundries, radiator repair shops, lead smelters,  
16 construction (including lead-based paint removal), demolition, and firing ranges. Lead taken home from  
17 the workplace also can harm children and spouses. Avocations in which lead exposures occur include  
18 pottery, stained glass, casting ammunition and fishing weights, renovating, and remodeling.  
19

20 In the 1978 general industry standard, the Occupational Safety and Health Administration (OSHA)  
21 advised that the maximum acceptable blood lead level was 40 µg/dL and that men and women planning  
22 on having children should limit their exposure to maintain a blood lead level less than 30 µg/dL (29 CFR  
23 1910.1025). Research studies on lead toxicity in humans indicate that compliance with the current OSHA  
24 lead standard should prevent clinical symptoms of lead poisoning and some adverse reproductive effects  
25 in exposed workers. Nonetheless, the current OSHA standards do not protect occupationally exposed  
26 men and women or their unborn children from all the adverse effects of lead.  
27

28 The target objective will be achieved by continuing efforts under way for adult blood lead prevention,  
29 including State participation in NIOSH's ABLES Program, Council of State and Territorial  
30 Epidemiologists (CSTE) lead initiatives, OSHA's lead initiatives, and voluntary industry initiatives such  
31 as those of the Lead Industries Association Incorporated, the Battery Council International.  
32

33 State ABLES programs (25 at this time) will continue to use their data to conduct followups with  
34 physicians, workers, and employers; target onsite inspections of worksites; provide referrals to  
35 cooperating agencies in the event regulatory action is necessary; and conduct hazard surveillance to  
36 identify workplace exposure problems and control technology solutions. Findings from ABLES data will  
37 aid in identifying high-risk industries and educational materials developed by the ABLES States will be  
38 distributed to employers, employees, and public health agencies within the States. These materials will  
39 continue to be available via the NIOSH home page to provide for wider dissemination and the ABLES  
40 program will continue to keep the issue of elevated adult blood lead levels before the public by reporting  
41 quarterly in CDC's *Morbidity and Mortality Weekly Report* and other publications.  
42

43 The Council of State and Territorial Epidemiologists (CSTE) and CDC are currently planning the  
44 implementation of improved surveillance and reporting of elevated blood lead levels among adults in all  
45 the States and territories. Special emphasis programs will be undertaken to reduce lead exposures in high  
46 risk occupations such as construction and for general industry as well. Voluntary initiatives by  
47 manufacturers will be encouraged to protect employees—by adopting use of engineering devices such as  
48 hoods, fans, and filters; providing protective gear such as gloves, uniforms, and respirator masks to  
49 employees; and offering educational training for workers to help lower lead exposures.  
50

1 **10. (Developmental) Reduce exposures that result in workers having blood lead concentrations**  
2 **greater than 10 µg/dL of whole blood.**  
3

4 Current research indicates that some of the adverse effects on the nervous, blood-forming, and  
5 cardiovascular systems that can be measured in exposed populations occur at blood lead levels as low as  
6 10 µg/dL. The Public Health Service previously established a national goal to eliminate, by the year  
7 2000, all occupational lead exposures that result in blood lead levels greater than 25 µg/dL. To minimize  
8 the risk of adverse health effects in workers and their children, employers should continually strive to  
9 reduce workplace lead exposures.

10  
11 Although this objective calls for a more stringent exposure level than the standard currently set by Federal  
12 regulation, it is based on the expectation that improvements in exposure control technology, coupled with  
13 industry commitment to ensure safety precautions for workers, will make safeguards at this lower level of  
14 exposure possible. Through joint efforts, virtually all cases of occupational lead exposure can be averted.

15  
16 The target objective will be achieved by continuing efforts under way for adult blood lead prevention,  
17 including: State participation in NIOSH's ABLES Program, Council of State and Territorial  
18 Epidemiologists (CSTE) lead initiatives, OSHA's lead initiatives, and voluntary industry initiatives such  
19 as those of the Lead Industries Association Incorporated, the Battery Council International. Strategy  
20 details are provided in objective 9.

21  
22 **11. (Former 10.4) Reduce occupational skin diseases or disorders to an incidence of no more than**  
23 **46 per 100,000 full-time workers.** (Baseline: In 1996, 69 per 100,000)  
24

25 **Target Setting Method:** 30 percent improvement.

26  
27 **Data Source:** Annual Survey of Occupational Injuries and Illnesses, Bureau of Labor Statistics.  
28

29 In 1996, occupational skin diseases or disorders (OSDs) constituted 13 percent of all occupational  
30 illnesses reported to the BLS, making OSDs the most common nontrauma-related occupational illness.  
31 NIOSH has designated research in allergic and irritant dermatitis, the most common OSD, as a priority for  
32 NORA. In 1996, BLS data estimated an incidence rate for OSDs of 69 per 100,000 workers or 58,100  
33 cases in the U.S. workforce. Because of survey limitations, it has been estimated that the number of  
34 actual OSDs may be on the order of 10 to 50 times higher than reported by BLS. The greatest number of  
35 cases of OSDs is seen in manufacturing, but the highest incidence rate is seen in  
36 agriculture/forestry/fishing. In the 1988 National Health Interview Survey (NHIS), the period prevalence  
37 rate was 1.7 percent for occupational contact dermatitis (OCD) occurring in the preceding year.  
38 Projecting these results to the U.S. working population resulted in an estimate of 1.87 million people with  
39 OCD. An analysis of workers' compensation claims reported an average annual claims rate for OSDs  
40 ranging from 12 to 108 per 100,000 employees. It is estimated that the total annual cost of OSDs may  
41 range from \$222 million to \$1 billion.<sup>13-18</sup>  
42

43 OSDs are preventable. Strategies in the prevention of OSDs include identifying allergens and irritants;  
44 substituting chemicals that are less irritating/allergenic; establishing engineering controls to reduce  
45 exposure; utilizing personal protective equipment such as gloves and special clothing; using barrier  
46 creams; emphasizing personal and occupational hygiene; establishing educational programs to increase  
47 awareness in the workplace; and providing health screening. A combination of several interventions,  
48 which included providing advice on personal protective equipment and educating the workforce about  
49 skin care and exposures, have proven to be beneficial for workers. Primary and secondary prevention  
50 programs that include health promotion/public awareness campaigns and education/disease awareness  
51 programs can successfully be directed toward workers in high-risk industries.<sup>19-21</sup>

1  
2 Increased awareness by health care personnel, early detection, and proper diagnosis and treatment are also  
3 important tools for achieving the objective. Over half a century ago, J.G. Downing, a Boston  
4 dermatologist noted: "...prevention and early detection are much cheaper than indifference and  
5 neglect...every outbreak should be thoroughly investigated, for the hypersensitive person may constitute  
6 the warning signal of a whole series of reactions, and careful study of his condition may be the means of  
7 preventing similar eruptions."<sup>22</sup> Continuing medical education programs for health care personnel would  
8 play an important role in increasing awareness and lead to early and proper diagnosis and correct  
9 treatment. Allergens for skin patch tests are important tools for the proper diagnoses of occupational  
10 allergic contact dermatitis. Although readily available in Europe, most of the allergens pertinent to  
11 occupational exposures have not gone through the Food and Drug Administration (FDA) approval  
12 process and are not available in the U.S. Resolution of this lack of availability could allow for proper  
13 diagnoses and serve to help to achieve the objective.

14  
15 **12. (Developmental) Increase to \_\_ percent the proportion of health care facilities appropriately**  
16 **protecting workers by instituting effective prevention practices to reduce latex allergy (e.g., low-**  
17 **protein, powder-free gloves; nonlatex gloves)**  
18

19 Natural rubber latex allergy has emerged as a serious occupational health problem. Recent reports  
20 indicate 8 percent to 12 percent of health care workers exhibit IgE-mediated hypersensitivity to natural  
21 latex proteins.<sup>23</sup> Exposure primarily occurs from use of latex gloves for barrier protection. Due to  
22 employment patterns, female workers are disproportionately exposed. Consequences for individuals who  
23 develop symptoms from exposure to natural rubber latex may be severe: Latex allergy results in serious  
24 health and socioeconomic concerns, as well as personal anxiety associated with obtaining and seeking  
25 medical and dental care and selecting safe foods and household products. Asthmatic or systemic  
26 reactions occur in up to half of allergic workers.<sup>24</sup> Highly trained professionals may be required to  
27 abandon their professions. In a preliminary survey, about 80 percent of health care facilities reported at  
28 least one current latex allergy prevention activity, although only 11 percent reported existing policies  
29 dealing with all four CDC recommendations.

30  
31 Attainment of this objective will primarily be accomplished by increasing, for health care workers and  
32 facility managers, awareness and availability of relevant information; formally assessing barriers to  
33 implementation of the recommended prevention practices and developing and disseminating strategies to  
34 overcome any identified barriers; and maintaining a high level of collaboration between Federal partners  
35 (e.g., NIOSH, NCID, FDA, OSHA) in addressing the latex allergy issue. Activities will include  
36 developing and disseminating targeted messages using various media, sponsoring and performing critical  
37 research studies including intervention effectiveness evaluations, sponsoring focused  
38 conferences/workshops/symposia, maintaining effective and ongoing contacts and interactions among  
39 Federal research, advisory, and regulatory agencies, and tracking the extent of adherence to recommended  
40 practices among health care facilities.

41  
42 **13. (Developmental) Increase to \_\_ percent the proportion of agricultural production tractors**  
43 **fitted with rollover protection systems.**  
44

45 In 1990, a NIOSH analysis indicated that agricultural machines were associated with the most frequent  
46 machine-related fatalities in the United States. This analysis showed that tractors were involved in 69  
47 percent of all fatalities related to agricultural machines and that tractors ranked fifth among machines in  
48 severity of injury in emergency rooms. A more recent NIOSH-supported study confirmed this problem as  
49 tractor-related incidents accounted for 68 percent of the machinery deaths. Of 31 rollover fatalities  
50 reported through the NIOSH Fatality Assessment and Control Evaluation program, the lack of rollover  
51 protective structures (ROPS) contributed to 27. NIOSH investigators estimate that of a total of 4.8

1 million tractors nationally in 1993, 3 million lacked ROPS. ROPS is a recognized technology for  
2 preventing nearly all rollover fatalities (about 95 percent) as demonstrated by their universal use in  
3 Sweden. All new tractors sold since 1985 have ROPS installed, and tractors built between 1970 and 1985  
4 are designed for the installation of ROPS. The challenge is to develop ways to install ROPS on all  
5 production tractors with a special emphasis on research to ensure that ROPS can be safely used on pre-  
6 1970 tractors. An active market exists for developing these ROPS, and recent cost analyses support the  
7 economic argument for their use. Public policy needs to support the universal adoption of ROPS. If  
8 ROPS were universally adopted in 1998, experts estimate that 3,000 lives could be saved over the next  
9 20 years.

10  
11 The strategy for ensuring the installation of ROPS on all agricultural production tractors has three  
12 elements: (1) to change social norms to improve attitudes toward the acceptance of ROPS; (2) to provide  
13 information that will change individual beliefs for the need to invest in ROPS on tractors; and (3) to make  
14 ROPS more affordable through both public and private research and infrastructures. The overall strategy  
15 is to ensure that a ROPS is placed on every tractor for which a design exists, facilitate new designs where  
16 they not exist, and develop options for retiring non-ROPS tractors from production.

17  
18 **14. (Former 6.11) Increase to at least 60 percent the proportion of worksites employing 50 or more**  
19 **people that provide programs to prevent or reduce employee stress.** (Baseline: In 1992, 37  
20 percent of worksites)

21  
22 **Target Setting Method:** 50 percent improvement.

23  
24 **Data Source:** National Survey of Worksite Health Promotion Activities, ODPHP.

25  
26 Job stress has been identified as a significant risk factor in a number of health problems, including  
27 cardiovascular disease, musculoskeletal disorders, and workplace injury. Current research indicates that  
28 up to one-third of all workers are reporting high levels of stress on the job.<sup>25,26</sup> Worksite programs to  
29 reduce stress have tended to adopt either a stress management (e.g., helping workers cope with current  
30 levels of stress) or primary prevention (e.g., altering sources of stress through job redesign) perspective.  
31 Although many of these programs have been found to be effective in reducing levels of stress, additional  
32 knowledge is needed regarding which occupations are especially prone to the effects of stress and  
33 methods of organizational change that contribute to the effectiveness of a stress reduction program.  
34 Responsibility for implementing worksite programs lies with industry and industry associations, although  
35 worker representatives and labor groups should be involved in the design and implementation of worksite  
36 stress reduction programs.

37  
38 **15. (Former 10.5) Reduce hepatitis B infections among occupationally exposed workers to an**  
39 **incidence of no more than 102 clinical cases.** (Baseline: In 1995, 407 cases)

40  
41 **Target Setting Method:** 75 percent improvement.

42  
43 **Data Source:** National Notifiable Disease Surveillance System (NNDSS), CDC, NCID.

44  
45 **16. (Former 10.9) Increase hepatitis B vaccination levels to 100 percent among persons at**  
46 **occupational risk of infection through exposure to blood (i.e., health care and public safety**  
47 **workers).** (Baseline: In 1994, 67 percent of workers were immunized)

48  
49 **Target Setting Method:** Consistent with projected trends (71 percent rate achieved in 1994).

50  
51 **Data Source:** Periodic vaccine coverage surveys, CDC, NCID.

1 Hepatitis B virus (HBV) is transmitted in the occupational setting through percutaneous or mucous  
2 membrane exposures to infected blood. Substantial progress has been made in increasing vaccination  
3 coverage among persons who have exposure to blood in the workplace, increasing from 46 percent in  
4 1990 to 71 percent in 1994. Corresponding with this increase in vaccine coverage, rates of acute hepatitis  
5 B among health care workers have declined substantially and are now lower than those in the general U.S.  
6 population. Continued emphasis on hepatitis B vaccination will be needed to eliminate HBV  
7 transmission in this high-risk group.

8  
9 The strategy for accomplishing this goal is to continue to support the OSHA bloodborne pathogen  
10 standard, including support of hepatitis B vaccine coverage for all health care workers at risk for  
11 occupational transmission of HBV.  
12

## 13 **Related Objectives From Other Focus Areas**

### 14 **Physical Activity and Fitness**

15 13 Worksite physical activity and fitness

### 16 **Nutrition**

17 17 Worksite nutrition education and weight management programs

### 18 **Tobacco Use**

19 15 Worksite smoking policies

20 16 Smoke-free air laws

### 21 **Educational and Community-Based Programs**

22 5 Worksite health promotion programs

23 6 Participation in employer-sponsored health promotion activities

### 24 **Disability and Secondary Conditions**

25 11 Environmental barriers

### 26 **Mental Health and Mental Health Disorders**

27 6 Employment of persons with serious mental illness

28 17 Comparability of mental health and physical health care coverage

### 29 **Respiratory Diseases**

30 5 School or work days lost (asthma)

### 31 **Substance Abuse**

32 20 Lost productivity

33 21 Community partnerships and coalitions

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