5 workplace conditions

The last quarter of this century saw major improvements in worker safety and health in America's workplaces. While some problems remain, new and largely unforeseeable safety and health concerns will emerge in the workplaces of the next century. Although diminishing, employment discrimination has not been eradicated. Workers' personal health will increasingly be a workplace issue, potentially causing concern about rights to privacy. Both old and new problems present challenges—and opportunities for cooperation among employers, workers, labor unions, and policymakers. This chapter reviews the history of efforts to improve workplace conditions, assesses these conditions at the close of the century, and offers a glimpse of potential future concerns.

MINES, FACTORIES, AND OTHER WORKPLACES HAVE BECOME SAFER

Full-time workers typically spend more than one-third of their weekday waking hours at work. Clearly, the conditions under which they work can have a major effect on their lives. Thirty years ago, the federal government recognized the need to protect workers' safety and health: Congress passed and the President signed the Federal Coal Mine Health and Safety Act of 1969 and the Occupational Safety and Health Act of 1970. Both of these acts affirm that safe and healthy workplaces benefit not only working men and women, but also employers and society at large.

Today, American workers are healthier and more productive than ever. Young workers are better protected against workplace injuries. Families suffer fewer work-related tragedies. Employers can focus resources on increasing their competitive positions, rather than paying workers' compensation for preventable injuries and illnesses.

As the century concludes, it is appropriate to reflect on the many improvements that have kept American workers safer and healthier. The workplaces of the future, however, will bring new challenges. More Americans than ever work, and workplace risks are changing. As we continue to learn more—about chemicals and other workplace contaminants, the effects of poorly designed equipment and processes, and other workplace hazards—it is clear that workers continue to suffer from injuries and illnesses that can be prevented with knowledge, attention, and cooperation among governments, employers, workers, and unions.

Dramatic reductions in work-related fatalities

The first systematic survey of workplace fatalities early this century found that from July 1906 through June 1907, 526 workers died in "work accidents" in a single county, Allegheny County, Pennsylvania. Steelworkers accounted for nearly half (195) of these deaths. By contrast, 18 fatalities occurred in the blast furnace and steel industry in 1998. In 1913, the Bureau of Labor Statistics (BLS) documented 23,000 industrial deaths among the U.S. workforce of 38 million, equivalent to a rate of 61 deaths per 100,000 workers. By contrast, BLS reported 6,026 workplace fatalities in 1998, or fewer than 5 deaths per 100,000 workers. Workplace fatalities for teens (15- to 17-year-olds) are also declining: their fatality rate dropped 37 percent from 1992 to 1998.[1] According to the Centers for Disease Control, if today's workforce of approximately 130 million were subject to the same risk of dying from occupational injury as were workers in 1933, an additional 40,000 workers—nearly seven times as many—would have died in 1998 from preventable occupational hazards.

There has been a marked change in the safety and health of the workforce since the enactment of the Occupational Safety and Health Act. National Safety Council data show that the rate of decline in workplace fatalities has been more rapid since creation of the Occupational Safety and Health Administration (OSHA) within the Department of Labor. Work death rates dropped by 38 percent in the 22 year period prior to OSHA's existence, from 29 per 100,000 workers in 1948 to 18 per 100,000 in 1970. In the 22 years following the OSH Act, work death rates dropped by over 61 percent, from 18 per 100,000 in 1970 to 7 per 100,000 in 1992.

The story in mining is similarly significant. Early in the century, more than 2,000 miners were killed annually. In 1907, a single explosion in an underground coal mine in Monongah, West Virginia, killed 362 men and boys. Over the next decade, more than 3,000 coal miners lost their lives in gas or dust explosions. Sixty years later, during the decade when the Federal Coal Mine Health and Safety Act was enacted in 1969, the

average annual number of deaths in the mining industry still exceeded 400. But from 1990 through 1997, fewer than 25 coal miners died in explosions. By 1998, total fatalities in both coal and metal mines had plummeted to 80, for a rate of 27 per 100,000 workers.

RISKS VARY WITH INDUSTRY AND WORKPLACE SIZE

While the collective success during this century has been impressive, roughly 50,000 workers still die every year from occupational diseases. Unlike deaths due to injuries, fatalities from occupational diseases are frequently overlooked because they tend to occur long after workers are exposed to harmful chemical or physical agents. The latency period—the time between exposure to a hazardous chemical and the onset of disease—may be decades long. Shipyard jobs with exposure to asbestos during World War II, for example, were associated with cases of mesothelioma and lung cancer from the 1960s through the 1980s. Occupational cancer, silicosis, berylliosis, hepatitis, and many other occupational illnesses and diseases result in deaths that may occur many years after exposure.

The risks of occupational disease, injury, and fatality are not limited to a few industries. Although only 1 in 17 workers is in the construction industry, these workers account for fully 1 in 5 on-the-job fatalities. Nurses, too, face significant risks of injury on the job, with 38 percent of all nurses enduring back injuries during their career. Healthcare workers suffer nearly 600,000 needlestick injuries each year, with potentially debilitating or fatal results for those workers who contract hepatitis or HIV as a result. Workers in shipyards and in food processing have injury rates two to four times the national average. Overexposure to respirable dust containing silica, which causes silicosis, remains a serious threat to nearly two million workers in high-risk jobs such as abrasive blasting, foundry work, mining, stonecutting, rock drilling, quarry work, and tunneling. Coal miners continue to develop black lung disease, benefits for which now cost over $1 billion annually. Both silicosis and black lung are preventable, yet workers and their families continue to suffer from these disabling respiratory illnesses.

The most significant workplace health problem emerging in the late twentieth century is the array of musculoskeletal disorders caused by repetitive stress. More than 600,000 workers lose workdays each year because of work-related mus-

culoskeletal disorders, costing employers $15 to $20 billion per year in workers' compensation alone. About 60 percent of all such disorders occur in manufacturing industries or among workers engaged in jobs such as lifting patients, stocking shelves, or conducting other tasks that require significant handling of heavy material. One musculoskeletal disorder in particular—carpal tunnel syndrome—causes more days away from work, on average, than any other workplace injury, including amputations or fractures.

Work-related musculoskeletal disorders account for 34 percent of all lost-workday injuries and illnesses and for $1 out of every $3 spent on workers' compensation. Yet the National Academy of Sciences has found compelling evidence that ergonomic programs can prevent disabling injuries. Hundreds of employers have implemented ergonomics programs, protecting workers while simultaneously reducing workers' compensation costs.

Workers in small businesses experience a disproportionate number of fatalities. Although small businesses with 10 or fewer employees account for only about 15 percent of employees, 32 percent of all work-related fatalities reported to the BLS in 1998 occurred in such workplaces. By comparison, businesses with 100 or more employees accounted for approximately 45 percent of employees but experienced only 20 percent of all work-related fatalities that year. At the century's end, the risk of fatality in businesses with 10 or fewer employees was four to five times that of businesses with 100 or more employees.[2]

The situation in mining is similar. In many areas, such as the Appalachian region, small mining businesses are a main source of jobs and, consequently, a primary contributor to the local economy. However, small mines, like other small businesses, can present unique safety and health challenges. In 1998, metal and nonmetal mines employing 5 or fewer workers accounted for about 10 percent of the hours worked, yet almost one-third of metal and nonmetal mining deaths.

CHANGES IN WORK AND WORK PRACTICES BRING NEW RISKS

Regardless of the industry, occupation, or business, new technologies can create new problems as well as new solutions. Mechanization of coal mining, for example, brought higher levels of respirable dust, creating greater potential for cases of silicosis and black lung disease but fewer injuries from accidents such as mine collapses. Increased use

BOX 5.1 | ***elaws***

To help the employers and workers of America maintain healthy, safe, and fair workplaces, the Department of Labor has developed an innovative Internet-based tool called ***elaws***.

Short for Employment Laws Assistance for Workers and Small Businesses, ***elaws*** allows people to access and understand the rules and regulations that DOL enforces.

For small companies and individual employees, up-to-date regulatory information is often hard to obtain and, more frequently, complex and confusing. An ***elaws*** "advisor" explains a law or regulation, providing information tailored to an employee, employer, or enforcement perspective. Each "advisor" is a computer program capable of imitating the interaction a human expert might have with an individual by giving appropriate information based on the individual's response to questions.

Users can find ***elaws*** on the Web at http://www.dol.gov/elaws.

of diesel-powered equipment in underground mines can mitigate some safety problems associated with using electric equipment but poses a host of other health questions deserving examination. Increased mechanization also increases a miner's potential for work-related hearing loss.

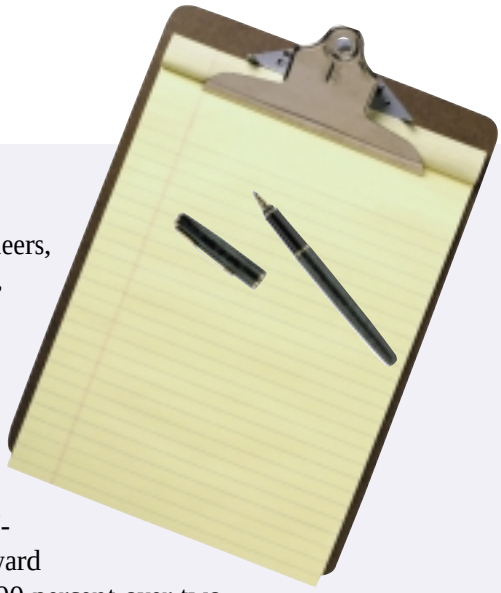
Workers in other settings experience analogous problems. Closed office buildings and modern cooling and ventilation systems allow for comfortable working conditions but they also contribute to indoor air quality problems ranging from Legionnaires' disease to illness caused by secondhand tobacco smoke. Computer-chip manufacturing may expose workers to many exotic chemicals whose long-term impact on workers is not yet known. These are but two examples of the health and safety issues needing attention—by employers, workers, and government—as work environments change and new technologies emerge.

Workplace fatalities have plummeted in this century. In some cases, specific occupational diseases—such as byssinosis (brown lung disease) in the cotton textile industry—have been virtually eliminated. Young workers are also safer than ever before. Cooperation among workers, employers, insurers, unions, and government has been a critical element in many of the successes in workplace protection. *(See box 5.2.)* But challenges remain.

Each year sees more than 6,000 fatalities, over 6 million new injuries or diagnoses of occupational illness, and tens of thousands of deaths from occupational diseases. While new technologies can give rise to new hazards, they can also help identify problems and provide solutions. Technology has already provided the workplace safety and health effort with tools that could not have been imagined 100, 50, or even 10 years ago. Future challenges may be more complex than those confronted in the past, requiring creative approaches and vigorous effort. There is no doubt that workplaces can be made safer and more healthful for workers in all industries—if we meet the considerable challenge of fostering workplace cultures that view safety and health as important.

BOX 5.2

Cooperation: A new kind of enforcement



The collective efforts of government, employers, workers, unions, safety engineers, safety and health professional groups, trade associations, insurance companies, academia, and others are central to sustaining the safety and health success of the past and effecting continued improvements in the future. Creating partnerships among these groups is part of the strategic approach that the Department of Labor's Occupational Safety and Health Administration (OSHA) has used successfully to address workplace conditions that may endanger worker safety and health.

One such initiative in Alabama's Bayou LaBatre area shipyards led to a 47-percent reduction in eye injuries and illnesses. A Calumet City, Illinois scrapyard operator reduced injuries, illnesses, and workers' compensation premiums by 90 percent over two years after working with OSHA. The Steel Erectors' Safety Association of Colorado saw dramatic improvements in safety and health: one member company reduced its workers' compensation costs by almost two-thirds and reduced its rate of injuries and illnesses by over 80 percent.

OSHA's Voluntary Protection Program (VPP) recognizes private companies with outstanding records in worker safety and health. VPP worksites achieve injury and illness rates as much as 60 percent lower than other firms in their industry because they implement safety and health programs—self-sustaining systems that are fully integrated into the day-to-day operations of their facility. Countless companies have succeeded with this approach, and 32 states have recognized its value by instituting some form of safety and health program provisions.

Education and outreach play an important role in protecting the American worker, in forms ranging from compliance assistance materials to help employers and workers understand new requirements, to state consultation programs, to electronic media that offer instant assistance in complying with standards.

Partnership alone, however, is not enough—experience shows it must be balanced with a targeted enforcement program. Research has shown that injuries and illnesses generally decline by about 22 percent during the three years after an OSHA inspection. OSHA's current enforcement strategy is to focus on the most dangerous workplaces. The agency is also rewriting standards in "plain language" to make them easier to understand.

Bringing all of these strategic approaches to bear can reduce the number of worker injuries, illnesses, and fatalities. Each approach can help focus nationwide attention on the most prevalent types of workplace injuries and illnesses—problems such as lead and silica exposures. These approaches are also being directed at selected industries and geographic areas where there are significant risks to workers, high rates of lost workdays, and high fatality rates—industries like food processing, nursing homes, logging, shipyards, and construction.

SOCIETAL PROBLEMS HAVE BECOME WORKPLACE PROBLEMS

One million workers suffer violent assaults each year, according to Department of Justice statistics. In a single year, the workplace total included 615,000 simple assaults, 264,000 aggravated assaults, 79,000 robberies, and more than 51,000 rapes and sexual assaults—a level of violence that greatly exceeds that of other countries. Robberies and other crimes are a primary motive for workplace homicide, accounting for 79 percent of the approximately 1,000 violent workplace deaths which take place yearly. Sales workers, taxi drivers, and law enforcement officers are particularly at risk. About 70 law enforcement officers are killed each year in the line of duty.[3] A much greater share of women than men are victims of workplace homicide.

While violent crimes are decreasing in the late 1990s, the overall level of workplace violence is still high, and it will not disappear in the near future. Workers and employers will continue to seek effective protective measures. The Department of Labor has published guidelines on workplace violence for healthcare and social service workers and recommendations for the prevention of violence in late-night retail establishments. These recommendations adapt the generic safety program approach to these occupations and workplaces. The Department encourages employers to include workplace violence in their ongoing safety and health program efforts.

Motor vehicle accidents also claim the lives of a large number of workers. These accidents are the leading source of work-related fatalities, accounting for 24 percent of all workplace fatalities in 1998. However, employers can implement seatbelt-use policies and offer training in safe driving techniques to help mitigate this problem. Employers who have control over vehicles at a worksite can also implement effective traffic control, maintain vehicles in safe operating condition, and ensure that warning signals, such as backup alarms, are fully functional. Road construction companies can install barriers and work with local law enforcement officials to encourage enforcement of speed limits in work areas. The government can also serve as a catalyst for change. OSHA's Parsippany, New Jersey, Area Office engaged in an award-winning partnership with the New Jersey State Police, the local and international Laborers Union,

and the New Jersey Department of Transportation to foster a series of activities at highway construction sites to reduce injuries and fatalities among highway construction workers.

DISCRIMINATION, THOUGH DIMINISHING, PERSISTS

As recently as 30 years ago, classified ads for employment were divided, "men wanted" in one section and "women wanted" in another. It was unusual to see women or minorities as television news anchors, and there were far fewer women and minorities in jobs as supervisors, firefighters, police officers, doctors, and college professors.

Since the passage of the Civil Rights Act of 1964, minorities and women have made real economic progress. Their wages and employment rates are up. Women are far more able to contribute to their families' incomes, and have become a major force in business and political life. The black middle class is growing. Hispanics and newer immigrant populations are emerging as strong contributors to the U.S. economy. A generation of professionals now provides role models for young women and minority youths.

But the evidence is clear that discrimination and exclusion persist in the workplaces of today. In 1998 alone, more than 12,500 claims of discrimination filed with the U.S. Equal Employment Opportunity Commission based on race/color, national origin, gender, religion, age, or disability, were found to be meritorious allegations or were resolved in favor of the complaining party.[4] In addition, it is not possible to know in how many instances other attitudes, such as discrimination based on sexual orientation, have not been remedied because current law does not reach them.

Discrimination in hiring is a continuing problem, as demonstrated by "audit" studies, in which white and minority—or male and female—

job seekers are given similar resumes and sent to the same set of firms to apply for a job. These studies often find that employers are less likely to interview or offer a job to a minority or female applicant.

- In one study, blacks were treated significantly worse than equally qualified whites 24 percent of the time, and Hispanics were treated worse than whites 22 percent of the time. For example, one black male "tester" asked about an ad for a sales

TABLE 5.1 **Percentage of employers who use drug testing, 1990–1998**

Type of testing	1990	1991	1992	1993	1994	1995	1996	1997	1998
Perform drug tests	52	63	73	78	76	78	81	74	74
Test new hires	34	48	57	65	61	63	68	64	62
Test employees	38	52	62	66	65	68	70	62	62

SOURCE: American Management Association's *Survey on Workplace Testing: Medical Testing,*1999

position at a car dealership. He was told that the way to enter the business would be to start by washing cars. His white counterpart, with identical credentials, was immediately interviewed for the sales job.[5]

- Another study found that Hispanic testers received 25 percent fewer job interviews and 34 percent fewer job offers than other testers. In one glaring example of discrimination, an Hispanic tester was told that a "counter help" job at a lunch service company had been filled. Two hours later, an Anglo tester was offered the job.[6]
- In a third study, researchers sent comparably matched resumes of men and women to restaurants. In high-priced establishments, men were more than twice as likely to receive an interview and five times as likely to receive a job offer as women.[7]

Discrimination also continues in the executive suite—in hiring, promotion, business, and education decisions. According to the 1995 report of the Glass Ceiling Commission, only six-tenths of one percent of senior management positions in the nation's largest companies were held by blacks, four-tenths of a percent by Hispanics, and three-tenths of a percent by Asian Americans. Women held between three and five percent of these positions. White males made up 43 percent of the work force but held 95 percent of the senior management jobs.

PERSONAL HEALTH IS BECOMING A WORKPLACE ISSUE

Law and custom separate work-related injuries and illnesses—those caused wholly or in part by exposures to risk on the job—from physical and mental illness due to nonjob causes. That distinction, however, is breaking down. As new perspectives emerge, worker rights to privacy may conflict with employers' legitimate needs to be sure that workers can function competently and safely in their jobs.

Though drug and alcohol use can be considered personal health matters, their use can also affect relationships with supervisors and coworkers, absentee rates, productivity, and quality of work.

TABLE 5.2

Percentage of workers ages 18 to 49 reporting heavy alcohol use,* 1985–1997

Employment status	1985	1988	1990	1991	1992	1993	1994	1995	1996	1997
All workers	8.5	6.5	6.8	7.6	7.0	7.0	8.3	7.5	7.4	7.7
Full-time	11.2	8.1	8.6	8.5	7.8	8.5	8.4	7.8	8.2	7.6
Part-time	7.4	7.3	6.8	6.9	6.9	6.4	7.0	6.5	5.9	6.3
Unemployed	6.9	7.8	6.4	11.1	10.7	11.5	10.8	11.1	11.1	11.7

**Heavy alcohol use is defined as drinking five or more drinks on five or more occasions during the previous 30 days*

SOURCE: Substance Abuse and Mental Health Services Administration, *Results from 1997 Household Survey on Drug Abuse*

TABLE 5.3

Percentage of workers ages 18 to 49 reporting current illicit drug use, 1985–1997

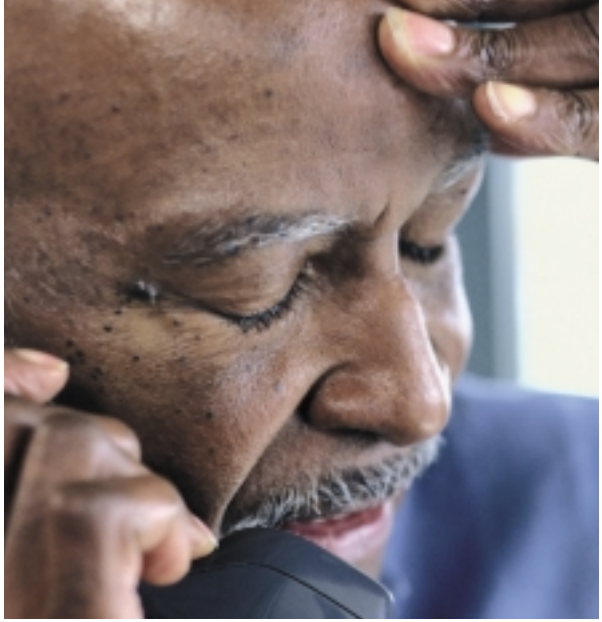
Employment status	1985	1988	1990	1991	1992	1993	1994	1995	1996	1997
All workers	16.5	10.2	8.9	8.9	8.0	8.1	8.4	7.9	8.4	8.6
Full-time	17.5	10.5	8.6	7.9	7.4	7.7	7.6	6.8	7.7	7.7
Part-time	15.8	12.1	10.6	10.8	8.7	10.6	9.0	10.2	9.7	9.3
Unemployed	27.6	20.5	15.5	18.7	16.6	14.0	16.2	15.7	15.1	16.5

SOURCE: Substance Abuse and Mental Health Services Administration, *Results from 1997 Household Survey on Drug Abuse*

They can lead, at the extreme, to workplace violence and to unsafe acts that may endanger coworkers and customers as well as the problem employee. The number of employers that subject their employees to drug and alcohol tests has increased steadily throughout the 1990s. *(See table 5.1.)*

Not withstanding a slight but somewhat troubling increase in 1977, the number of workers reporting current use of illicit drugs or heavy alcohol has declined significantly since 1985. *(See tables 5.2 and 5.3.)* Today, many employers recognize that by investing in intervention and treatment for employees with alcohol and drug addictions, they are able to retain qualified, trained workers who may be difficult to replace. Through its *Working Partners for an Alcohol- and Drug-Free Workplace* initiative, the Department encourages employers and unions to cooperate in developing policies and programs that enhance the safety of both workers and the public, provide help to employees with personal health problems, and also protect workers' rights.

Genetic testing, which may be used to determine a person's future health risks, poses concerns about potential discrimination when it is applied to employees. A variety of measures have been introduced in Congress and in state legislatures to ban genetic testing as a precondition of employment or health insurance coverage.



Workplace stress is also an emerging health issue. About 1 in 5 Americans works 49 hours or more a week. Studies indicate that three-fourths of workers believe there is more on-the-job stress than a generation ago. And researchers increasingly attribute a wide range of health effects to stress, including increased risk of cardiovascular disease, psychological disorders such as depression and burnout, gastrointestinal disorders, and workplace injuries.

The impact of sleep deprivation on the workplace and society is also beginning to enter the public consciousness. Adequate sleep is important to health and necessary for alertness at work. Americans average fewer hours sleeping than they should—an average of seven hours per night on weeknights, compared to the eight hours experts say is the average need. An astounding 37 percent of adults report being so sleepy during the day that it interferes with their daily activities. Estimates of the annual costs of sleep deprivation—from lost

productivity, absenteeism, illness, and injury—range up to $18 billion. In addition to those workers who do not get enough sleep due to the demands of balancing work and family, 20 percent of American employees work a night shift and must sleep when most human activity and interaction takes place.[8]

Because healthy employees are more productive employees, many employers have begun actively to promote personal health in the workplace. Wellness programs of varying scope are common in large firms and in some smaller ones. Other health initiatives—smoking cessation campaigns, health risk assessments, and employee assistance programs to deal with personal stress as well as substance abuse problems—can be found in 81 percent of workplaces.[9] However, employees in small workplaces are considerably less likely to have health promotion programs available to them than are employees in large workplaces.

THE FUTURE

Workplaces are safer and healthier than ever before, but both the intractable health and safety hazards of yesterday and the unknowable hazards of tomorrow will require continued vigilance and cooperation among workers, employers, unions, and governments. Preventing and resolving old problems—and recognizing new ones early on—will also require new efforts in research and development. New technologies, which can resolve many workplace health and safety concerns, can also create them. Some solutions, however, are simple ones: changing the way we work can help reduce many workplace injuries and illnesses, and training can create awareness to help recognize and avoid potential workplace hazards.

Workplaces are fairer than ever before, but here, too, much remains to be done. While women and minorities have made many advances—in educational attainment, employment, and earnings—there are still workplaces where they are not welcome, including many executive suites. Tomorrow's work will place even more of a premium on workers with education and skills. Employers can ill afford to shut out high performers based on race or color, disability, national origin, gender, religion, or age. What is right and legal—equality of workplace opportunity—is increasingly an economic necessity.

Workers deserve—and employers benefit from—safe, healthful, fair, and inclusive workplaces. With continued attention from and cooperation among policymakers, workers, unions, and employers, we can build on the considerable progress of the last three decades toward a future where workplaces are safer and workers are hired, developed, and promoted based solely on their abilities.