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Labor Union Involvement in Occupational Safety and Health, 1957–1987

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Abstract. Right-to-know policies and related market-oriented occupational health policies require an institutionalized means through which workers can interpret and act on information about quality differences among jobs. In principle, labor unions could play this role. However, union coverage has been declining since the 1950s, and the decline has accelerated in recent years. This paper documents the growth in occupational health and safety activities in unionized workplaces from 1957 to 1987 and the decline in union representation in hazardous workplaces from 1971 to 1986. It also analyzes the relationship between right-to-know and right-to-refuse-hazardous-work guarantees under industrial relations and occupational health law.

Governmental policies aimed at reducing rates of occupation-related injury and illness have been plagued with difficulties and limited in effectiveness. Critics on both sides of the political spectrum have called for novel approaches that involve increasing worker participation in monitoring working conditions, in deciding what environmental and work process changes should be instituted, and in ensuring compliance with new standards. This “worker-oriented” or “market-oriented” approach to occupational health and safety suffers from its own major weakness, however—a weakness that characterizes many market-oriented policy strategies. In order to participate intelligently in complex decisions regarding production technology and its uses, workers must have access to information on the health effects of products and processes found in the workplace, and they must be able to interpret the arcane form in which this epidemiological, toxicological, and industrial hygiene information is often presented. The first component of a worker-oriented strategy—access to information—has been addressed in the past decade with the passage of right-to-know statutes and regulations at various levels

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of government. The second component—gaining the ability to interpret and act upon this information—has not been effectively confronted.

With their structure of shop-floor stewards, local union officials, and national union health professionals, labor unions have the ability both to interpret information on workplace health and safety and to act on that information. This paper documents the current and historical extent of labor union involvement in occupational safety and health in the United States using information on collective bargaining, union/management safety committees, and arbitration rulings from a variety of sources. It then uses Census Bureau employment data and Bureau of Labor Statistics injury rate data to track the precipitous decline of unionization in hazardous industries and occupations during the past fifteen years. The paper concludes with a discussion of the difficulties besetting market-oriented occupational safety and health strategies in an era of increasingly unequal distribution of economic and political power between management and labor.

Bargaining for job safety and health

The overriding priority for labor unions in the U.S. is to establish themselves in a contractual and hence legally enforceable relationship with employers as representatives of the work force. In any given worksite, a union typically undergoes initial organization and signs a first contract covering a restricted number of topics; as the bargaining relationship matures, it then gradually extends the reach of the contract to new topics.

With the exception of certain unions representing workers in especially hazardous industries (such as coal mining), unions in the United States have been slow to adopt health and safety conditions as a major area of concern. Prior to 1966, companies could claim that the issue of occupational safety and health was an area of management prerogative outside the scope of the union's legitimate concerns, and hence refuse to discuss the matter at all. Some unions did, of course, insist on bargaining over working conditions. In the 1966 *Gulf Light v. International Brotherhood of Electrical Workers* decision,¹ the National Labor Relations Board ruled that safety is a mandatory bargaining issue and not one of management prerogative. Under the terms of federal labor law, firms were henceforth obliged to at least discuss safety and health with the union(s) representing their employees, although they were not obliged to accede to any union demands in the area.

It is difficult to measure the extent of collective bargaining over job safety and health issues, much less to assess the trends in bargaining. Two complementary data sources were analyzed for this study. The Bureau of National Affairs (BNA), a private Washington-based organization, has maintained a file of collectively

1. 384 F.2d 822 (5th Cir. 1967).

Table 1. Percentage of Union Contracts Covering Selected Issues in Workplace Health and Safety: Bureau of National Affairs Sample

	1957	1961	1966	1971	1979	1983	1987
Any safety clause							
Manufacturing	69%	71%	69%	71%	87%	87%	89%
Nonmanufacturing	38	48	48	52	73	72	77
General-duty clause							
Manufacturing	43	39	43	48	58	64	66
Nonmanufacturing	12	20	19	28	36	38	43
Joint safety committee							
Manufacturing	31	34	35	38	55	57	62
Nonmanufacturing	12	14	18	19	24	26	27
Ongoing physical exams	12	14	10	17	22	23	22

bargained contracts and monitored the topics they cover since the 1940s. The file contains over 5,000 contracts and is updated with new contract changes. Contracts are deleted from the file when the bargaining relationship is terminated, as in the case of a plant closure. A sample of approximately 400 contracts, chosen to cover a cross-section of industries and unions, is analyzed periodically. Seven reports spanning the period between 1957 and 1987 were obtained for this study (Bureau of National Affairs 1957–1987). The second data source is the series of analyses performed by the Bureau of Labor Statistics (BLS) between 1970 and 1980 of union contracts covering 1,000 or more workers, supplemented with occasional earlier studies (U.S. Bureau of Labor Statistics 1971–1981). This series of reports was terminated in 1981 due to cutbacks in BLS funding. Tables 1 and 2 present the percentage of surveyed contracts in the BNA and BLS files with various types of health- and safety-related clauses.

There has been a clear growth in collective bargaining activity over health and safety since the 1950s. While 69 percent of BNA manufacturing contracts and 38 percent of BNA nonmanufacturing contracts made some mention of safety in 1957, 89 percent of manufacturing contracts and 77 percent of nonmanufacturing contracts made some mention of safety in 1987 (Table 1). These figures must be treated with caution, however, since they are based on contracts representing fairly large numbers of workers. It is to be expected that contracts covering small worker groups would be less elaborate and leave more to be adjudicated informally between the employer and the employees. Nevertheless, the upward trend in union activity is clear, with the major increase occurring during the 1970s in tandem with the general growth of public interest in occupational safety and health.

The degree of confidence that may be placed in the BNA data is enhanced by their comparability with several isolated studies conducted during the 1950s. A

Table 2. Percentage of Union Contracts Covering Selected Issues in Workplace Health and Safety: Bureau of Labor Statistics Sample

	1970	1971	1972	1973	1974	1975	1976	1978	1980
Environmental protections									
Manufacturing	NA	11.7%	12.6%	10.0%	11.5%	14.0%	14.0%	15.1%	16.4%
Nonmanufacturing	NA	7.9	4.6	4.7	5.7	6.7	6.0	5.9	6.3
Safety equipment									
Manufacturing	47.6%	52.3	51.7	51.8	52.8	56.3	56.5	58.0	58.7
Nonmanufacturing	35.0	35.3	42.9	43.8	47.0	48.0	46.1	51.0	49.5
Joint safety committee									
Manufacturing	39.6	39.2	36.5	39.0	38.2	40.6	44.7	47.6	55.0
Nonmanufacturing	16.7	18.2	15.8	15.3	16.6	16.7	16.3	18.1	19.9
Right to refuse hazardous work									
Manufacturing	NA	NA	NA	NA	14.8	16.7	16.6	17.3	26.3
Nonmanufacturing	NA	NA	NA	NA	25.0	26.1	24.7	26.5	24.9
Hazard pay									
Manufacturing	NA	9.4	10.7	11.6	11.0	9.6	10.2	10.0	9.8
Nonmanufacturing	NA	30.3	29.4	28.8	28.7	31.0	29.8	29.8	31.2

NA = not available

national survey of 2,411 contracts performed in 1950 by the BLS (U.S. Bureau of Labor Statistics 1951) found that 56 percent of manufacturing contracts and 40 percent of nonmanufacturing contracts contained safety provisions. In 1951, the California State Department of Industrial Relations surveyed 1,928 contracts from that state (California Department of Industrial Relations 1952); 47 percent contained some type of safety clause.

The most common type of safety clause in collectively bargained contracts is the general statement of management's responsibility for providing a safe work environment. In the BNA data, general-duty clauses were found in 66 percent of manufacturing contracts and in 43 percent of nonmanufacturing contracts in 1987, up from 43 percent and 12 percent, respectively, in 1957 (Table 1). The general-duty clause may or may not make some reference to cooperation with the union or consistency with governmental safety laws and standards. While in some cases these statements are just pro forma acknowledgements of the issue and carry no real content, in other instances they play very significant roles. They bring all safety-related issues under the purview of the contract and thus, in principle, under the purview of the grievance and arbitration system that enforces the contract. Workers and their union representatives have the right to raise safety issues through these latter channels, where some amount of equity is ensured, rather than being open to summary rejection by lower-level management personnel.

While the general-duty clause guarantees workers and unions the right to use the grievance and arbitration system, it does not ensure a favorable outcome from that process. Thus, many contracts include clauses specifying particular safeguards that must be employed or harmful products or processes that must be eliminated. These clauses cover environmental conditions such as lighting, temperature, noise, radiation, fire, and exposure to noxious gases and dusts. For example, the 1974 agreement between U.S. Steel and the United Steelworkers union specified precise engineering controls that were to be installed to limit carcinogenic emissions from coke ovens at the Clairton, Pennsylvania, plant (Bacow 1980). By 1980, 16.4 percent of manufacturing contracts and 6.3 percent of nonmanufacturing contracts in the BLS sample mandated some kind of environmental protection (Table 2). Far more common are clauses that require management to supply safety clothes and equipment such as gloves, steel-toed shoes, and respiratory devices. By 1980, 59 percent of manufacturing contracts and 50 percent of nonmanufacturing contracts required management to supply employees with safety equipment of one kind or another (Table 2). Some contract clauses specify minimum crew sizes for particular hazardous operations or prohibit work in isolation.

Some unions have found it desirable to bargain for wage compensation for hazardous exposures. During 1970s, hazard-pay clauses were found in approximately 10 percent of large manufacturing contracts and in 30 percent of large nonmanufacturing contracts, mostly in the construction and transportation in-

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dustries (Table 2). During the 1970s no trend was observed in the prevalence of hazard-pay clauses. Other contract clauses focus on the financial impacts of job-related accidents and illnesses. Of particular importance are rate retention, job transfer, and seniority rights for workers who are unable to do their former jobs due to accident or illness but who are able to do some other kind of work. Other clauses guarantee the retention of benefits and accrual of seniority for workers who are unable to do any work for a certain period of time due to a job-related accident or illness (U.S. Bureau of Labor Statistics 1976).

Access to hazard information

A major component of the occupational safety and health problem is the lack of adequate information. Scientists are in many cases unsure of the biological effects of agents used in production, and even those effects that are known are often not conveyed to the workers on the shop floor. Some contract clauses require management to provide to the union and the workers any safety information it possesses. In its 1974–1975 special survey, the BLS found that 16 percent of contracts had such clauses (U.S. Bureau of Labor Statistics 1976). Chown (1980) provides examples of clauses guaranteeing to the union information on toxic materials being used, the results of workplace monitoring performed by the company, reports on lost-time accidents, and copies of worker's compensation data.

Access to existing information is only a first step, however. Innovative unions bargain for programs that increase the amount of knowledge about the particular hazards found in particular work settings and promote a general understanding of the health effects of various toxins. Some contracts require management to monitor exposure levels or provide monitoring equipment to the joint health and safety committee. Others guarantee regular medical surveillance and health checkups to catch problems in their early stages. Particular types of safety and health training, sometimes with active union participation, are guaranteed in some contracts. The United Auto Workers union has developed an epidemiological program to evaluate patterns of mortality among specific subgroups of its membership (Silverstein et al. 1985).

A particularly interesting contract clause concerns periodic employee health screening. Many companies routinely require health examinations before employment to reduce the possibility that a prospective employee will become an immediate burden on the employer's health insurance plan and/or to guarantee that the prospective employee is physically able to perform the required tasks. Of more immediate interest to this analysis, however, are the physical exams that take place at periodic intervals after hiring, since these exams can in principle detect the effects of work-related changes in health status. These examinations have become a topic of intense interest in policy circles, since they increasingly include tests that measure biological markers of exposure, such as chromosomal changes that may eventually result in cancer (Ashford et al. 1984). While unions

are worried that positive results from these tests may be used as the basis for discharge or other forms of discrimination against workers, they are increasingly bargaining to have these tests performed. In the BNA sample, 22 percent of all contracts required ongoing physical exams in 1987, up from 12 percent in 1957 (it was not possible to separate manufacturing from nonmanufacturing industries for this item).

The most important way in which labor unions increase worker access to hazard information may stem from the National Labor Relations Board's interpretation of the employer's obligation to divulge hazard information to the union as part of the employer's duty to bargain in good faith. The cornerstone of industrial relations policy in the United States, the National Labor Relations Act of 1935,² requires that employers bargain in good faith over the terms of employment with the recognized representatives of their employees. As early as 1936 the National Labor Relations Board (NLRB), which enforces the act, affirmed that this duty to bargain in good faith entailed a duty to provide the union with relevant information. The years since 1936 have been marked by a steady accumulation of precedent-setting cases in which the NLRB has extended the obligations of employers to provide more and different types of information to unions. These cases have concerned information on wages; time and motion studies; insurance, pension, and health plans; job classifications and job descriptions; overtime hours; layoffs; seniority lists; probation policies; and equal opportunity programs.³ While the NLRB has consistently affirmed the general principle that adequate information is a necessary prerequisite for good faith collective bargaining, it has taken a cautious attitude towards information that employers claim constitutes trade secrets of interest to competitors. In these situations the NLRB has taken the position that the union's need to know the information in question must be balanced against the firm's fear that the information might be disclosed to competitors, to the detriment of the firm's economic prospects.

The issue of union access to employer information on workplace hazards and worker medical status came to a head in the late 1970s and early 1980s as a result of the efforts of two labor unions to assess the dangers to which their members were exposed. In 1977, as a result of a work-related sterility case in California,⁴ the Oil, Chemical, and Atomic Workers (OCAW) union initiated a campaign to obtain disclosure of hazard information at most of the chemical plants throughout the country where the union had members. The national union provided local unions with a prototype letter to be sent to the local employers requesting a variety

2. 29 U.S.C. §151–169 (1976).

3. For a full set of references to the legal literature on the employer's duty to divulge information as part of its obligation to bargain in good faith, see Mentzer (1983).

4. The details of the DBCP pesticide poisoning case, which was to exert an important influence on occupational health and industrial relations policy, may be found in Ben-Horin (1979), Yonay (1981), and Trost (1984).

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of information on hazard exposures and documented medical effects. One hundred ten of the local unions sent versions of this prototype letter to employers.

Over half of the employers responded positively to the union's requests and provided the information in some form or other. A number of employers adopted an intransigent attitude, however, and refused to supply any information at all. OCAW focused its efforts on two firms, Minnesota Mining and Manufacturing and Colgate Palmolive Company, filing claims with the NLRB that the two companies were violating their legal obligation to bargain in good faith. The union requested the chemical names of all substances used and produced in the plant; the results of clinical and laboratory studies of any employee undertaken by the company, including the results of toxicological investigations regarding agents to which employees might be exposed; a listing of contaminants monitored by the company, along with a sample protocol; morbidity and mortality statistics on all past and present employees, to the extent that these data were available; and other information related to radiation exposures, extremes of heat, noise levels, and worker's compensation claims. The International Chemical Workers Union (ICWU) adopted the OCAW strategy and encountered similar resistance. The ICWU filed a duty-to-bargain claim with the NLRB concerning Borden Chemical. Since the three cases raised similar issues, the NLRB reviewed them as a group.

The legal proceedings dragged on over the next several years. Finally, in April 1982, the NLRB settled the three cases in favor of the unions. The three employers were found to be violating their duty to bargain in good faith, and were required to provide the unions with the requested information. The NLRB did, however, make an exception for those chemicals that the employers considered to be trade secrets. While rejecting the employers' claims that their entire inventories of chemicals were trade secrets, the NLRB did accept as legitimate the employers' concerns for a small handful of chemicals whose very identity conveyed valuable information to competitors. Rather than rule that the employers were either required or not required to provide the unions with information on these chemicals, the NLRB instructed the two parties to bargain with each other as to the precise obligations employers had to provide sensitive information of this type.

The NLRB ruling in the three hazard information cases was important for occupational health policy as a whole, not just for the role to be played by labor unions, since it affirmed the compatibility of industrial relations legislation with public health legislation in the area of occupation-related injury and illness. In their legal briefs, the defendants had argued that they were not obligated to provide the labor unions with hazard information because the existence of the Occupational Safety and Health Administration guaranteed workers a safe and healthy workplace.⁵ The NLRB rejected this argument by stressing the com-

5. See Mentzer (1983) for an analysis of this argument.

patibility of collective bargaining over working conditions with direct governmental regulation. U.S. labor law includes both process-oriented laws designed to further workers' abilities to pursue self-help strategies and outcome-oriented laws designed to directly change working conditions. Examples of the first tradition include the National Labor Relations Act of 1935⁶ and the Landrum-Griffin Act of 1959;⁷ examples of the second tradition include the Fair Labor Standards Act of 1938⁸ and the Occupational Safety and Health Act of 1970.⁹ This issue arose from the other direction when OSHA considered excluding unionized work-sites from coverage under its hazard communication standard, but rejected the notion based on the compatibility of purpose of the NLRA and the Occupational Safety and Health Act.

Joint union/management committees

The primary mechanism for union participation in day-to-day workplace health and safety matters is the joint union/management health and safety committee. These committees meet regularly (at least in principle) to discuss safety problems and propose remedies. They give the union a continuous platform from which to deliver its demands, and provide the firm with an ongoing means of canvassing the opinions of its employees, as filtered by the union. Joint committees may be established by a contract clause but need not be.

Contract clauses mandating joint union/management safety committees have become very common, doubling between 1957 and 1987 from 31 percent to 62 percent in manufacturing contracts and from 12 percent to 27 percent in non-manufacturing contracts (Table 1). Safety committees were mandated in 14 percent of the contracts surveyed by the BLS in 1950, in 7 percent of the California contracts surveyed by the California Department of Industrial Relations in 1951, and in 22 percent of the contracts surveyed by the BLS in 1954–1955 (U.S. Bureau of Labor Statistics 1956). In the BLS sample of large contracts, safety committee clauses grew over the course of the 1970s from 40 percent to 55 percent in manufacturing and from 17 percent to 20 percent in nonmanufacturing (Table 2). The influence of OSHA on management's willingness to establish joint committees was evidenced in a 1975 survey of approximately 50 firms in New York State whose employees were represented by the International Association of Machinists: Half of the 42 existing committees had been established in the four years since the passage of the Occupational Safety and Health Act (Kochan et al. 1977).

A key characteristic of the joint committees is that they cannot make any binding decisions on their own; they are only advisory bodies that can investigate

6. 29 U.S.C. §151–169 (1976).

7. 29 U.S.C. §401–531 (1976).

8. 29 U.S.C. §201–219 (1976).

9. 29 U.S.C. §651–678 (1976).

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conditions and make recommendations to management (Drapkin and Davis 1981). Their advisory nature deprives the committees of any direct power, which in turn reduces the motivation for individual workers to participate. Many of the Machinist Union committees studied had a checkered pattern of activity. In contrast, joint committees in Canada and Sweden are invested by law with substantial powers (Witt and Early 1980).

Another important characteristic of the joint committees is their orientation toward day-to-day fluctuations in working conditions rather than toward the major technological determinants of accidents and illnesses. Both management and union respondents to the survey conducted in New York State felt that while OSHA had made a major impact on the adoption of safer technologies, the joint committees had not. The committees were seen as generating recommendations concerning general housekeeping, temperature, dust, and fire protection. That joint committees can deal in some cases with complex and elusive hazards is evidenced by a study of the New York City joint health and safety committee between the hospital workers union and the various city hospitals (Stellman et al. 1978). That study documents the way in which the union members of the committee distributed a survey of exposures to hospital hazards, most notably to viral hepatitis. The contacts between the union leadership and the rank-and-file workers obtained a response rate and list of proposed improvements that probably would not have been achieved by management alone.

The right to refuse hazardous work

The bottom line in many disagreements over working conditions is whether or not employees will continue working in the presence of particular hazardous conditions. The extent to which workers have the right to refuse hazardous work assignments without being fired or otherwise disciplined has been the focus of important policy initiatives in both occupational health and industrial relations. The original Occupational Safety and Health Act of 1970, a 1973 OSHA standard, the National Labor Relations Act, and collective bargaining agreements made by labor unions with individual employers all provide partial protection for workers engaging in hazardous work refusals.

The Occupational Safety and Health Act of 1970 included a mechanism to deal with imminent hazards to life and limb. If an OSHA inspection revealed conditions posing an immediate threat of death or serious bodily harm, OSHA could petition a federal district court for an injunction to stop the work process in question. Individual workers could set this mechanism into motion by calling for an OSHA inspection. No protection was given, however, to workers who themselves refused to work in the presence of an immediate danger. The reliance on the findings of an OSHA inspection also placed stringent limitations on the effectiveness of the remedy for imminent hazards, since it often took considerable time for such inspections to be scheduled and conducted.

In 1973 OSHA promulgated a standard designed to protect workers who refused to work in the face of hazardous conditions.¹⁰ It stated that workers walking off the job in response to health and safety hazards would be protected from management reprisals if the work refusal satisfies three criteria: first, the worker must have a "reasonable" fear that the working conditions present a danger of death or serious injury; second, there must be insufficient time to utilize the normal remedies existing under the 1970 Occupational Safety and Health Act (workplace inspection and court-ordered injunction); and third, the worker must have attempted to remedy the hazard through consultation with the employer. It turned out that the most contentious part of the OSHA standard concerned the definition of the "reasonable" nature of the fear that prompted the worker's action. Employers were concerned that a liberal interpretation of this clause would allow workers to participate to a heretofore unimagined extent in decisions over how work processes are to be conducted. The 1973 regulation was quickly contested by management, and the issue eventually found its way to the Supreme Court. In the 1980 *Whirlpool* case, the Court upheld OSHA's standard.¹¹

While the Supreme Court's ruling in the *Whirlpool* case seems to offer considerable protection to workers refusing to work in the face of imminent dangers, it actually leaves a considerable residue of uncertainty and risk. The OSHA hazardous work refusal standard only applies to situations where the worker's fear of death or bodily harm is "reasonable." In practice, this means that if subsequent evidence shows that the working conditions were not actually hazardous, then the work refusal is not protected. At the time he or she is contemplating a work refusal, therefore, the worker cannot be sure of being protected by the OSHA standard. This poses particularly severe problems when the worker's concern is over long-term risks of cancer or birth defects related to chemical exposures. Here the worker is at the mercy of any reinterpretation of the scientific evidence that shows his or her fears to be unfounded.

The weaknesses of OSHA's hazardous work refusal standard are in part compensated for by a body of case law that has evolved in interpretations of the National Labor Relations Act. This act explicitly protects workers who are pursuing improvements in working conditions through concerted action such as strikes. Collective refusals to work in the face of hazardous conditions have been interpreted by the NLRB to be concerted self-help actions on the part of workers, and as such they are protected by the National Labor Relations Act. Workers engaging in such an action may not be reprimanded, disciplined, or fired (Ashford and Katz 1977).

10. 29 CFR §1977.12 (1979), *Federal Register* 2681, 2683 (1973), as corrected, 38 *Federal Register* 4577 (1973).

11. For an analysis of the legal background and implications of the *Whirlpool* case, see Drapkin (1980).

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The protection of hazardous work refusals by the NLRB is important, since no proof is required that the conditions are in fact hazardous. If the workers believe in good faith that conditions are hazardous, then their action falls under the provisions of the act. This second layer of legal protection for hazardous work refusals has its own limitations, however. First, it is limited to collective rather than individual refusals to work. Work refusals by individual workers are not protected unless they can be interpreted as furthering group interests. More importantly, however, the worker's right to protection under the National Labor Relations Act can be bargained away by unions who agree to a no-strike clause in the union/management contract. Management has been successful in inserting no-strike clauses in many contracts in order to prevent shop floor discontent from interrupting the production process. Hazardous work refusals can be exempted from the prohibitions on strikes via a contract clause expressly permitting such refusals. By 1980, approximately one-fourth of union contracts had hazardous work refusal clauses (Table 2).

The decline of unionism in hazardous industries

The overall level of union organization in U.S. industry has varied dramatically throughout the twentieth century. Major growth was achieved up through World War I as a result of socialist and progressive agitation. The postwar conservative backlash and the uneven economic performance of the 1920s almost destroyed unionism, especially in basic manufacturing. Unions took advantage of changing social and political attitudes during the Depression and war years to recoup their losses and to further extend their reach during the turbulent decades between 1934 and 1954. By 1954 unions had reached their high-water mark, representing 39 percent of private-sector nonagricultural workers (Dickens and Leonard 1985). For the next two decades union membership generally continued to grow, but at a slower pace than overall employment, causing a slow but steady erosion in the fraction of the total work force covered by collective bargaining. Increasing employer hostility and the severe recession of 1981–1982 changed the relative decline in union coverage into an absolute decline in union membership. By 1986, less than 17 percent of private-sector nonagricultural workers were represented by unions (Farber 1987).

Although they are important for evaluating the overall role of unions in the U.S. economy, these figures do not provide direct insights into the changes over time in union coverage of the more hazardous sectors of the economy. A number of studies using data from the mid-1970s found that unions were much stronger in hazardous industries than in safe industries (Hirsch and Berger 1984; Leigh 1982; Worrall and Butler 1983). No study to date, however, has sought to document trends in union representation across different jobs and industries according to the level of hazard present.

To accomplish this task for the most recent period, this study examined data on the extent of union membership across the U.S. economy in 1971, 1977, and

Table 3. Percentage of Workers Belonging to Unions by Level of Hazard in Job: Current Population Survey 1971–1986

	1971	1977	1986
Most hazardous jobs	39.7%	44.0%	27.6%
Moderately hazardous jobs	36.9	30.6	17.2
Slightly hazardous jobs	20.3	14.8	9.2
Safest jobs	11.7	19.6	14.2
All jobs	25.6	24.8	17.6
<i>N</i>	38,599	43,866	14,959

1986 using the Current Population Survey (CPS) of the Census Bureau. (Prior to 1971, the CPS data tapes do not code whether or not the respondent is a union member.) These data permit a documentation of trends over the past fifteen years, when overall unionization witnessed its most substantial decline. An advantage of the CPS data is the relatively large sample sizes the data provide (between 15,000 and 44,000 observations, depending on the year).

The CPS data do not provide direct information on working conditions. They do, however, code the industry and occupation in which each respondent is employed. These industry and occupation codes were used to assign individual workers to different categories of hazard exposure based on information from other sources. Each worker was assigned the risk of injury and acute occupational illness prevalent for his or her three-digit industry classification, based on lost work-day injury and illness rates published each year by the BLS (U.S. Bureau of Labor Statistics 1972–1986). These industry rates were then weighted by within-industry occupational risk indexes derived from worker's compensation data from 25 states, and matched to the CPS data using three-digit occupation codes (Root and Sebastian 1981).

The resulting industry-occupation matrix gives a reasonably accurate measure of the overall risk of work-related injury and acute illness faced by each CPS respondent. However, these data do not take into account differences among jobs in the risk of chronic diseases such as cancer or asbestosis, except in the relatively infrequent cases when these illnesses are compensated by the worker's compensation system. Once the risk level of each individual CPS worker was ascertained, each year's sample was sorted into four subsamples based on level of risk. Extent of union membership was then calculated within each subsample, permitting an overview of unionization levels across different types of jobs at one point in time and across different time periods in each type of job.

Table 3 presents the percentages of workers in each year and in each category of job that belonged to a union, plus the overall extent of union membership in all jobs in each year. The patterns are clear. Union membership is much higher in hazardous jobs than in safe jobs in each year studied. The trend over time in union membership in hazardous jobs is generally downward. After rising slightly

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between 1971 and 1977, union membership in the highest quartile of risk levels collapsed by 37 percent between 1977 and 1986. Declines of similar magnitudes occurred in the two intermediate categories of jobs, and although the decline in the category of safest jobs was the smallest, it still measured 28 percent. In summary, unions continue to be stronger in hazardous jobs than in safe jobs, but they have suffered major erosions of their strength even in the most dangerous employments.

Conclusion

Fifteen years of governmental regulation and heightened public awareness have profoundly changed the issues at stake in occupational safety and health, but not in the anticipated direction. Early policy initiatives were motivated by a desire to directly reduce exposure in the most hazardous industries and occupations and thus to narrow the range of health and safety risks across different sectors of the economy. While some gains have been made, they have been of modest proportions (Viscusi 1986) and have been overshadowed by increasing risks due to other causes (Robinson 1988). What has occurred is an explosion in the quantity and quality of information highlighting possible health effects in particular jobs. Workers have gained the right of access to medical records kept by their employers (Ashford and Caldart 1985). Local, state, and federal right-to-know statutes guarantee access to information on exposures (Baram 1984). Biological and genetic monitoring is generating information about bodily responses to toxic exposures in workers without clinical symptoms of disease (Ashford 1986). Workers who have been the subject of epidemiological studies with positive findings are increasingly being notified of their elevated level of risk (Schultze and Ringen 1984).

This new wealth of information needs to be correctly processed if it is to play a fruitful role in occupational health policy. Raw numbers on cancer risks in a given industry are of no greater value to workers than raw numbers on hospital-specific mortality rates are to prospective patients (Luft and Hunt 1986). Institutional mechanisms are required to analyze the data and interpret their significance. In the health care field, this institutional role is quickly being filled by quality assessment and assurance bodies, utilization review panels, health maintenance organizations, professional review organizations, and related institutions. In occupational health, the vacuum is growing. Labor unions are the obvious organizations that could fill this role. While union health and safety activities have been growing in organized worksites (as documented in Tables 1 and 2), this effect has been swamped by a more powerful decline in the fraction of worksites that are unionized. The aroused and cost-conscious employer, who plays the hero's role in market-oriented strategies to reform the health care system (Enthoven 1986; McClure 1985), is undermining the possibilities for a comprehensive market-oriented approach to reducing rates of occupational injuries and illnesses.

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