

Public Health Then and Now

Italian Occupational Health: Concepts, Conflicts, Implications

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Abstract: This paper examines Italy's worker-based model for occupational health, especially its key concepts and its relation to social conflict. It briefly reviews the history of three approaches to occupational health in Italy: university-based, industry-based, and government-based. It then analyzes the worker-based approach, which emerged in the late 1960s and early 1970s as worker groups and trade unions mobilized around new concepts of occupational health. Five key concepts are discussed: the workers' homogeneous group; workers' subjectivity; the use of contract language; the development of local occupational health institutions; and the use of occupational hazard risk maps. The analysis illustrates how the

social processes of mobilization and institutionalization affected the ideas and structures of Italian occupational health. Worker mobilization in Italy produced ideological changes in the nation's occupational health system, institutional changes in universities and governments, and legislative changes at national and local levels. The institutionalization of reforms, however, created new conflicts and problems and tended to restrict worker participation and promote expert intervention. The paper concludes with a brief outline of the history of occupational health approaches in the United States and then discusses the implications of the five Italian concepts for US occupational health policy. (*Am J Public Health* 1984; 74:1031-1041.)

Introduction

Over the past two decades, the field of occupational health in Italy evolved rapidly and dramatically. In the late 1960s and early 1970s, worker groups and trade unions mobilized around new concepts of occupational health, compelling the adaptation of old institutions and the creation of new institutions. As the concepts became institutionalized, however, new problems and conflicts arose, especially with the decline of worker mobilization in the late 1970s.

This paper examines key concepts of the worker-based approach to occupational health in Italy, and analyzes changes in the ideas and structures of occupational health policy which depended on a redistribution of power. The paper shows how worker participation contributed to the improvement of occupational health in Italy but created tensions between workers and experts. It concludes with an exploration of the implications of the Italian workers' model for American circumstances. As Francesco Carnevale noted, in his introduction to Olivier Targowla's book on French occupational medicine,¹ Italy and the United States have some similar institutional structures, and more comparative studies are needed.

Historical Background

Italy's concern with occupational illness dates back to the late 1600s when the great Italian physician Ramazzini published the first methodical description of occupational illness.²

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Editor's Note: See also related editorial p 964 this issue.

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In the early twentieth century as Italy was industrializing, three institutional approaches to occupational health began to take shape in Italy: university-based, industry-based, and government-based.³ University physicians created university clinics that provided health services to workers. Italy's first occupational health clinic, established in 1910 at the University of Milan, was known as the *Clinica del Lavoro*, or Clinic of Work, stressing (even in its name) the causes of disease in work as well as the effects of disease in workers. This academic tradition of Italian occupational medicine was based on a combination of scientific research and political reformism.¹

The Italian state had begun its efforts in occupational health and safety in the late 1800s with a law that required accident insurance. New laws in the early twentieth century included restrictions on child labor and regulations for mining, explosives manufacturing, and construction. During Italy's fascist period, the state expanded government-based efforts, by adding to the earlier laws on occupational accidents. In May 1929, as policies on occupational health spread in Europe, Italy adopted its first law to require insurance for occupational illnesses (*malattie professionali*), in agreement with the International Labor Organization's Convention of 1925.

Around the turn of the century, industries created medical services for their workers, to provide physical examinations required by accident insurance and to reduce absenteeism related to illness.¹ The industries also responded to governmental legislation that regulated the workplace, as mentioned above.

After World War II, in Italy's period of rapid economic growth and industrial expansion, experiments started in worker-based approaches to occupational health.⁴ In the late 1960s, militant worker groups and trade unions actively promoted a worker-based model. Many medical students and young physicians who joined the new left and student movements of the late 1960s assisted the worker mobiliza-

tion by becoming activists on occupational health issues. The mobilization produced ideological changes in Italy's occupational health system, institutional changes in universities and governments, and legislative changes at national and local levels.

We identified five key concepts for understanding the evolution, tensions, and implications of the Italian worker-based model: 1) the workers' homogeneous group (*gruppo omogeneo*); 2) workers' subjectivity as an essential factor in recognizing workplace hazards, choosing problems to research, and establishing a new relationship with experts; 3) the incorporation of specific occupational health regulations into contract language; 4) the need for local occupational health institutions to provide workers with expert assistance; and 5) the use of occupational hazard risk maps.

The Workers' Homogeneous Group

The fundamental concept of Italy's worker-based model for occupational health is the homogeneous group of workers. It is defined, in theory, by workers who perform a similar task in a single section (*reparto*) and are therefore assumed to have similar exposures to occupational hazards and to experience similar work-related health problems, a notion resembling the epidemiological concept of a cohort of workers who experience similar exposure(s). The concept of a homogeneous group is not a group studied by outside experts, however. Rather it is a group that uses its own experience to gain knowledge about occupational health problems, interacts with outside experts, and acts inside and outside the factory to correct hazardous conditions. The homogeneous group both acquires knowledge and exercises power.

Prior to the emergence of the homogeneous group, unionists and physicians in the 1950s proposed a "union medicine" to counter company experts. That effort reflected the tradition of political reformism among some Italian physicians, who often had ties to either the Socialist or Communist parties as well as to the unions. But the notion of union medicine stressed the dominant role of physician consultants and did not recognize the value of workers' own experience. Until the 1960s, most worker interventions were delegated to state agencies or to the union *patronato* (the union agency for obtaining compensation), and unions maintained ties with relatively few experts for technical advice on preventive occupational health measures.⁵ Moreover, the relationship between unions and doctors tended to focus on compensation.⁶

During the 1950s, the inadequacy of Italy's occupational safety and health system was officially recognized. A parliamentary committee of investigation (*Commissione Parlamentare di Inchiesta sulle Condizioni dei Lavoratori in Italia*) was formed in 1955 and subsequently published a series of reports that criticized factory safety committees, company medical services, and public regulatory agencies for safety and prevention.⁶

The concept of a homogeneous group originated in an unusual group of unionists and doctors who gathered at the Camera del Lavoro (Chamber of Labor)* in Turin in 1961 and organized a study of worker health at the Farmitalia pharmaceutical factory in Settimo Torinese. That study sought to change work conditions and prevent occupational

hazards, rather than to obtain compensation for risk or injury. Notably, the report used workers' experiences at the section level to evaluate workplace hazards and to design improvements in the work process.⁵ The collaboration in Turin among experts, unionists, and workers was the first step in changing the workers' role in occupational health for the entire labor movement.

In 1964, the Turin group introduced the principle of non-delegation in an effort to redefine the relations among workers, experts, and unionists. That principle proposed that workers should not delegate to others (outside experts or management appointees) the responsibility for studying or changing the work environment. The principle provided a foundation for the concept of the homogeneous group by asserting the central role of workers in the two realms of acquiring knowledge and exercising power on occupational health problems. In 1965, that principle became the basis for an occupational health strategy designed by a new National Center for Occupational Risks and Injuries within the *patronato* of the union confederation CGIL.**

The emergence and spread of the homogeneous group coincided with an upheaval in Italian factories and unions. The voice of workers grew stronger, as their representative organization in the factory changed from a small restricted Shop Committee (*Commissione Interna*) to a broadly based Factory Council (*Consiglio di Fabbrica*). In a large factory like FIAT-Mirafiori (in Turin), for example, the Shop Committee in 1967 had about 20 members to represent 60,000 workers, while the Factory Council in 1977 had approximately 800 delegates for 50,000 workers.⁴ Workers in each section of a factory elected a delegate to the Factory Council, and each section came to be considered equivalent to the workers' homogeneous group. In this way, the concept of the homogeneous group was integrated into the radical redistribution of power in Italian factories.

In 1969, the worker movement erupted into the "Hot Autumn," a turning point in Italian industrial relations. That mobilization promoted the Factory Council as a new form of local worker power—in a sharp contrast to the 1950s, when union activity and collective bargaining were highly centralized and none of the three national labor confederations were organized at the factory level.⁷ The radical mobilization of the Hot Autumn produced an "incipient new worker culture" and overturned "long-established shop floor institutions and practices."⁸

From 1968 to 1972, Italian factories experienced a surge of confrontations, often with tension between the central union organization and the factory worker militants. "For the first time, plants and shops became the main centres around which union activity and bargaining were built. Plant-level agreements in industry rose from 3,870 in 1968 to an estimated figure of 7,567 in 1971." The local strikes and worker actions often were not controlled by the central union organizations, producing a period known as "permanent conflictuality" in which little central coordination appeared to exist.⁷ Through the 1970s, the numbers of councils, delegates, and involved workers continued to grow (Table 1). As part of the factory-level mobilization, workers protested dangerous work environments.

**The Confederazione Generale Italiana del Lavoro (CGIL) is Italy's major labor confederation and has mostly communists, but also socialists and independents. The two other main labor confederations are Confederazione Italiana Sindacati dei Lavoratori (CISL), the predominantly Catholic organization, and Unione Italiana del Lavoro (UIL), including socialists, social democrats, and republicans. For additional information, see references 7 and 8.

*The Chamber of Labor is a geographically based organization of trade unions, at the provincial and local levels, that engages in broader political issues as well as labor problems.

TABLE 1—Councils of Delegates

Time of Study	Number of Councils of Delegates	Number of Delegates	Number of Involved Workers
1972*	9,813	97,161	2,567,709
April 1974**	16,000	150,000	4,000,000
January 1977***	32,000	206,336	5,188,818

*Responses of 83 provincial federations.

**Estimates based on data from 55 provincial federations.

***Data provided by all the provincial federations.

SOURCE: Oddone *et al.*,⁴ p 91.

Also in 1969, the concept of a homogeneous group became integrated into a comprehensive workers' strategy on occupational health, in a manual, *Work Environment (Ambiente di Lavoro)*, published by the Federation of Metal Workers (FLM). The pamphlet identified four groups of risk factors in the occupational environment (physical environment, chemical environment, physical fatigue, and mental fatigue) and four methods for information gathering (individual risk and health cards; and group registries of environmental and biostatistical data).⁴ The FLM manual became the basic text for worker education and mobilization on occupational health problems. The manual was adopted throughout Italy in the worker education programs known as "150 hours" that were organized by union federations and supported by company funds.^{***}

Using the homogeneous group model, workers and unions initiated their own research on many topics, including worker health problems in the food industry, silicosis in various industries, and environmental hazards in the rubber industry.⁵ Different forms of collaborative research appeared among workers, unionists, and experts, ranging from almost complete control by workers to near total delegation to experts.⁹ These decentralized efforts at research and action culminated in a major national conference in 1972 in Rimini (sponsored by the federation of Italy's three main union confederations CGIL-CISL-UIL), where thousands of worker delegates, trade unionists, and occupational health experts met to design a national strategy for occupational health.¹⁰

These research efforts were also recognized and debated by the established experts in occupational medicine, as indicated by topics discussed from 1969 to 1980 at the annual meetings of the Società Italiana di Medicina del Lavoro e Igiene Industriale.⁵ One reason for the change was that more occupational health physicians associated with unions joined the Society and shifted the balance of power. In the 1980s, however, company doctors began to reassert their influence in the organization. A survey of papers published in the academic journal *La Medicina del Lavoro* showed that papers using the workers' model increased from none in 1969, to 6 out of 58 (10 per cent) in 1973, to a peak of 24 out of 63 (38 per cent) in 1975, and then declined.¹¹

Conflicts and Problems

While the concept of a homogeneous group stimulated worker research and worker mobilization, it also gave rise to conflicts and problems. Not surprisingly, the worker-based

***Biocca M, Conti P, *et al*: Workers' education in occupational health and safety in Italy: 150 hours. Presented at the Conference on Direct Workers' Participation in Matters of Work Safety and Health. Castel Grandolfo, Italy, November 4-7, 1982.

approach was strongly opposed by individual firms and by Italy's major business association, *Confindustria*. But other conflicts, inherent in the model, also arose.

One difficulty was maintaining the definition of a homogeneous group. The concept originated with metal workers, who usually worked in similar environments on an assembly line. But the group became less homogeneous when the concept was applied to industrial settings with different production processes and exposures, or with workers who rotated through many different jobs, or with larger (even 50-100 persons) and thus more diverse groups.¹² Such lack of homogeneity would reduce a group's ability to use its collective experience to identify common health problems caused by shared work conditions.

A second conflict was the extraordinary time commitment demanded of outside experts who sought to involve workers in all aspects of study design, collection and analysis of data, and implementation of changes. This long and complex process also placed high demands on new public institutions for occupational health, as discussed below.

A third problem was that workers tended to gather more information than could be organized, analyzed, and used and to rely on different methods of data collection, thus making it difficult to compare studies in different factories or industries.

A final problem was the high level of participation demanded of individual workers and unions to gather information and enforce regulations. While both workers and unions showed strong commitments in the early 1970s, their participation declined at the end of the decade, when unfavorable political and economic conditions shifted labor's emphasis to other issues.¹²

Workers' Subjectivity

The concept of workers' subjectivity proposes that workers, through questionnaires and group discussion, can achieve a shared sense of subjective reactions to workplace exposures and can identify common symptoms and workplace hazards. This approach to the subjective investigation of health problems requires group consensus to decide on both the diagnosis and remedy for a problem. In the Italian model, workers' subjectivity became equally as important as statistical and experimental verification of health conditions.

The concept of workers' subjectivity has been used in several hundred cases of research since the late 1960s. According to epidemiologist Giorgio Duca, the emphasis on subjectivity was effective in preventing health problems in the workplace.¹³ Epidemiologists Franco Berrino and Pier Luigi Morosini, however, pointed out several limitations on the use of group subjectivity in scientific research. Latent or subclinical health effects do not create immediate subjective disturbances and therefore cannot be perceived or sensed by individuals. Some exposures or processes may not be sensed as dangerous (such as non-odorous toxic gases); the nature of other exposures or processes may not be known to the workers. Worker research tends to be less accurate and less well planned and conducted than conventional medical-epidemiological studies. "The objection raised most frequently about studies based on worker subjectivity is perhaps that workers, for political reasons or due to suggestibility, tend to report more disturbances than actually exist or to exaggerate the importance of the disturbances."¹⁴

Berrino and Morosini¹⁴ argued that the success of worker-based research has depended on relatively clear situations with highly hazardous conditions. They suggested

that worker-based research utilize epidemiological approaches, and recommended that conventional epidemiological research use the group subjectivity of workers to identify previously unknown occupational risk factors, indicate the presence of known risk factors, and provide indications for solutions. They noted that group subjectivity could serve as a "memory" of information about past workers and past exposures, and could increase the sensitivity of epidemiological methods.

The concept of group subjectivity also reflected a political dimension of the worker movement. An activist group of workers in the Prevention and Environmental Hygiene Group of the Factory Council at the Montedison chemical company (at Castellanza) considered workers' subjectivity as an expression of class consciousness. The Castellanza group urged workers to assert the knowledge of group subjectivity and the power of group action to change the nature of epidemiology. Workers needed to make epidemiology recognize subjectivity as legitimate and thereby make epidemiology part of a "new science" in which workers would be the hegemonic and leading class.¹⁵

This concept of workers' subjectivity, in stressing the limitations of expert knowledge and the legitimacy of worker knowledge, promoted prevention in the workplace but also created tensions. Even some experts sympathetic to the worker movement felt that the concept did not adequately recognize the scientific limits of subjectivity or the scientific contributions of expertise. While supporting the importance of workers' subjectivity, those experts argued that science cannot be simply reduced to a class phenomenon of worker science versus expert or bourgeois science. They called for a mutual recognition of the contributions and limits of both workers and experts in understanding and correcting occupational health problems.

Contracts

Until the mid-1960s, the main role of contracts for occupational safety and health was in the "monetization of risk" or hazard wages. The 1966 contract for chemical workers, for example, provided an additional 41.30 lire per hour for workers exposed to high levels of toxicity, and proportionally less for medium and weak levels of toxicity. Those "hazard wages" reached 10–15 per cent of a worker's total wages.⁶

Beginning in 1968 and 1969, unions achieved a series of significant changes in contracts. Clauses on hazard wages were canceled or reduced. Contracts affirmed the need to monitor or improve work conditions that posed dangers or produced illness. Workers received the right to intervene in all aspects of work that threatened their psycho-physical health. Contracts stipulated that hazardous conditions which could not be eliminated would be compensated with more money and less exposure. Finally, contracts for some industries (especially chemical workers) provided specific values for maximum acceptable concentrations (MACs) for hazardous gases, vapors, and dusts in the workplace, in some cases based on tables of the American Conference of Governmental Industrial Hygienists.¹⁶ This last aspect of contractual negotiations on occupational health reflected a particular institutional vacuum in Italy: the weakness in national legislation and regulations to provide MACs at the workplace.⁶

The surge of worker mobilization in the late 1960s affected not only negotiations over private contracts, but

TABLE 2—Data on Contracts Collected by FLM National Conference on Fight for Health and Environment Held at Modena, 1974

Contract Agreements	Per Cent
Right of workers to perform studies on the environment	47.5
Request for preventive medical action	28.0
Commitment by company for environment	20.0
Presence of <i>patronato</i> in factory	17.5
Intervention to improve environment	17.0
Medical examinations for particular workers	15.0
Pauses in work cycle	5.5
New equipment	4.5
Antipollution investments	2.0
Compensation for hazardous work ("hazard wages")	1.0
Elimination of shifts	0.5

SOURCE: Oddone *et al.*,⁴ pp 89–90.

also bargaining over social contracts, especially national legislation. The clearest legislative victory was the Workers Statute (law no. 300) passed on May 20, 1970.[†] That law was one of the most important reforms enacted during the period of the center-left coalition government in Italy (between Christian Democratic and Socialist parties, 1963–70). Two articles of the law especially enhanced the workers' power on health and safety issues, power that was reflected subsequently in contract negotiations. Article 5 required employers to arrange for medical examinations of workers through public institutions and not through company doctors. Article 9 granted workers the right to bring their own experts into the factory to assess workplace conditions and hazards, to conduct research in the workplace, and to assure the application of health and safety measures.⁶

During the early 1970s, workers and unions continued to make gains in contracts for occupational health and safety. More industrial sectors, including railways, services and public employees, won contractual obligations for health and safety. Contracts provided additional requirements for MACs. Bilateral worker-management safety committees, which were considered ineffective and subordinate to management, were replaced by worker-controlled occupational environment committees. Contracts also instituted union-sponsored information systems (group registries of environmental and biostatistical data, and individual booklets of health and risk data). In addition to affirming the right of investigation (Article 9 of the Workers Statute), contracts provided workers with funds to carry out studies, access to names of hazardous substances used, control over types of medical examinations, and decisions over equipment for industrial hygiene.⁴ A survey carried out in 1974 by the FLM on contract agreements reflected the change that was occurring in worker consciousness, toward prevention and away from compensation (Table 2).

By the end of 1976, then, in both national and company contracts, workers had won advances in three areas: 1) rights for knowledge and measurement of occupational risks and damages; 2) rights for action to reduce risks and limit effects; and 3) rights for workers and unions to intervene and modify production processes and work organization.⁴

[†]The full name of the law is: Norme sulla tutela della libertà e dignità dei lavoratori, della libertà sindacale e dell'attività sindacale nei luoghi di lavoro e norme sul collocamento.

New Institutions

From 1968 to 1973 some adjustments occurred in existing public health organizations.^{††} No major new institutions were created for occupational health and safety, however.[‡] The next five years, on the other hand, saw the emergence of new institutions at all levels of government in response to worker and union demands.

A major turning point in this process was the national convention on occupational health held at Rimini in 1972.¹⁰ That conference formalized the worker-based model and called on local governments to create preventive occupational medicine services, *Servizio di Medicina del Lavoro* (SML).^{†††} Several months after the conference, the first SML was formed in the Emilia-Romagna region, followed by Toscana and Lombardia, then gradually by other regions in northern and central Italy.^{4,17} These regional institutions preceded changes at the national level and represented a positive political response to labor demands about factory hazards. Most of the new public services used the worker-based model in their approach to occupational health problems.¹²

The new institutions at first suffered from various weaknesses. The services were usually staffed by young physicians, who often acted out of political and social commitments but lacked adequate occupational health training or experience. The services also lacked other technical experts, such as toxicologists and industrial hygienists. In using the workers' model, the services tried to respond to every request rather than plan rationally and select priorities. Finally, the services lacked a clear statutory authority of their own. They depended on Article 9 of the Workers Statute which allowed experts to enter the factory at the request of the Factory Council¹² and thus became dependent on the invitation of the workers and a favorable political situation.

During the mid-1970s, social and political conditions improved gradually for these local services. Regional governments provided more organization, coordination, and legislation for the SML. The medical staff of the SML gained a new professionalism and added technical staff and equipment assisted by a national organization of the services. As part of Italy's decentralization in the 1970s, local governments gained new legal authority and responsibility to prevent occupational illnesses and to protect health, hygiene and safety in work and living environments.^{‡12}

In December 1978, the Italian parliament passed the National Health Reform Law (law no. 833). The major institutional reform of the law was to create Local Health Units (from 50–200,000 inhabitants) both within and across municipalities. The new Local Health Units were supposed to unify preventive and curative services and close gaps. While the central government would establish national norms, and the regional government would do health planning (based on regional legislation), the Local Health Units would provide unified health services. A major objective of

the Health Reform Law was the prevention of disease and accidents in the workplace (Article 2).

To unify occupational health services at the local level, the law disbanded three existing national agencies and distributed their functions and personnel to the new Local Health Units. The Inspectorate of Labor (a regulatory agency of the Labor Ministry) was supposed to transfer its responsibilities for prevention and hygiene and for control of workers' health to the new Local Units on January 1, 1980 (Article 21). Two other regulatory agencies, the National Agency for the Prevention of Accidents (ENPI) and the National Association for Control of Combustion (ANCC), were to do the same (Articles 71 and 72). The law also created a new national organization, the National Institute for Prevention and Occupational Safety, for research and design of national standards. The SML of the Local Health Unit continued to provide technical and health expertise to workers and to carry out preventive programs and epidemiological studies, but also became responsible for functioning as an official inspection and regulatory body. While these new responsibilities added authority to the SML, they also created new conflicts between the commitment to worker participation and the requirement of official duties.

A central conflict in the new SML was the method of operation. What role should the workers' homogeneous group play? What role should worker participation play? Some regions (such as Lazio and Emilia-Romagna) sought to deal with these ambiguities in the National Health Reform Law by stating in regional laws that the homogeneous group provided a non-substitutable but non-exclusive basis for prevention and that workers' subjectivity formed the basis for the information system on occupational risks. Those regional laws defined worker participation as the central element of preventive action. But the laws did not resolve the conflict, since investigating the health problems of several large factories with the worker-based model could consume all the capabilities of one SML, leaving no resources for other problems or activities, such as routine surveillance and attention to the hazards of small and medium-sized factories.¹²

As of July 1, 1982, Local Health Units became legally responsible for the duties of inspection and enforcement but still had not received the necessary personnel. The transfer of personnel from the old national agencies remained a messy organizational problem. Some SML personnel were reluctant to accept the new regulatory responsibilities without proper personnel or means to carry out the duties, because SML members could then be held legally responsible for the omission of official acts.^{‡‡} As a result, many workplaces were left without effective public controls.¹²

External organizational conflicts also resulted from the Health Reform Law. Occupational health services, which previously were relatively autonomous, found themselves in the larger organization of the Local Health Unit, often dominated by curative-oriented and politically conservative hospitals. The particular balance of power has varied, however, among Health Units and among regions.

The demands on the SML for both preventive and regulatory activities also made research more difficult to perform. Nevertheless, according to a recent bibliographical survey, local SML services (often in collaboration with university experts) represent an important source of pub-

^{††}Provincial Laboratories for Hygiene and Prophylaxis began to develop capabilities for measuring occupational hazards. And the Provincial Consortia for Anti-Tuberculosis began to develop services to diagnose occupational lung disease. Municipal health officials sought to improve their regulation and control of the factory environment.

^{†††}These local services are known by various names in different Italian regions. In Lombardia, they are called SMAL or Servizio Medicina Ambiente di Lavoro; in Emilia-Romagna, Servizio di Medicina Preventiva e Igiene del Lavoro. We use the simplest name, occupational medicine service, or SML.

[‡]Granted by DPR n.616 of 1977.

^{‡‡}Interview with Dr. Lorenzo Arduini, Servizio Medicina Ambiente di Lavoro, Legnano (Lombardia), July 16, 1981.

lished scientific articles on occupational health, especially in certain regions.¹⁸

A final difficulty was the establishment of new institutions in itself. Although hundreds of Local Health Units existed in Italy in 1980, only about 200 SMLs existed, most of which derived from previously operating services in the northern and central regions.¹² New services are being created, however, with a total in 1982 of about 400 SMLs. The distribution of SML services reflects the general pattern in Italy of greater development of public institutions in the northern and central regions than in the southern regions.¹⁹ Problems of implementation exist also at the national level, demonstrated by the delay in establishing the new National Institute for Prevention and Occupational Safety.²⁰

Risk Maps

A risk map is a profile of the occupational hazards or risks of a defined area. In Italy, it has been applied to a single factory, to a community (maps of factories), a region, and the nation. The concept emerged in the mid-1970s in areas of many small and medium-sized factories as an alternative to the single-factory model of "global intervention." That is, rather than examine all occupational health risks in one factory through the homogeneous group, a risk map made it possible to study the distribution of several specific hazards in many factories in a particular geographic area. That risk map could then be used to organize priorities for the SML.

The concept of a risk map received official approval in the Health Reform Law of 1978. Article 20 requires the preventive services of the Local Health Unit to prepare risk maps for factories and for communities, and also requires companies to provide information about substances used in production (including toxicological characteristics and possible effects on humans and the environment) so that the local health services can construct risk maps.

Conflicts over risk maps have concentrated on whether a map should be a precise technical instrument prepared by experts or a rough indicative instrument prepared through participation of workers or residents.

Two Italian specialists on occupational health recommended that risk maps become part of a planning process to define priorities of intervention, use available resources more efficiently, and evaluate the consequences of actions taken.¹² But the specialists also warned that a risk map would not contribute to prevention if it became only a technical procedure or a bureaucratic exercise. A pamphlet prepared for the Health Department of the Lombardia region similarly argued that risk maps should both promote planning and provide concrete information to the population, thereby increasing the chances for meaningful participation.²¹

But risk maps must be interpreted with caution. As noted in the pamphlet from Lombardia, there are difficulties in drawing a causal connection between a map of risks or presumed exposures and a distribution of adverse health effects.²¹ The maps also raise the complex questions of how to define risk and how to choose the risks for the map.

In the late 1970s, worker organizations tended not to take the initiative in the mapping process, because of their shifting concerns to economic issues.¹² As a result, risk maps often became part of the institutional processes of the SML and lost many of their participative aspects. Concerns

†††Based on an unofficial list maintained by the Laboratorio degli Ambienti Confinati, Istituto Superiore di Sanità.

were then raised that without worker participation risk maps would emphasize data collection more than risk reduction and would not serve the interests of workers or citizens.

Nevertheless, risk maps became increasingly popular for local occupational health services in the late 1970s. An interregional conference on preventive services in 1977 placed the preparation of risk maps as a central function of the SML, reflecting efforts to coordinate the services in different regions and a recognition of the limits of existing services and methods.²¹ In 1980, the Third National Conference of Local Occupational Health Service Employees prepared a national bibliography of proposals and experiences with risk maps.

Summary

Our assessment of Italian occupational health has shown that the unions' strategy to combine aggressive protests for immediate change at the factory level with long-term demands for structural changes at the societal level was more successful than others have reported. A study by two political scientists made an "initial evaluation" that was "necessarily negative. Few, if any of the structural reforms sought by the unions have been accomplished or even undertaken."⁷ Yet that study did not even mention occupational health as an arena of conflict and reform at the factory level or in state structures. Neither did that study consider the major structural reform of the Italian health system, in which unions played an important role.

Our analysis has also illustrated a limit and a dilemma that Italian unions confronted: Unions tried first to introduce new concepts of analysis and to expand the acceptance of those concepts among workers and society. As those ideas became linked to the worker movement of the late 1960s and early 1970s, they became concepts of mobilization, with an ability to influence both state institutions and union organizations. Unions adopted and adapted the concepts of mobilization into a strategy to pressure state institutions to reform. But when the concepts became integrated into the state structures, as concepts of institutions, the ideas became redefined in ways that tended to decrease worker participation and increase expert intervention. At that point, the cycle could start again, with the union's search for new concepts of analysis that could be transformed into concepts of mobilization—as occurred with the concept of risk maps.

Historical Background in the US

The United States lacks the long historical tradition of occupational health found in Italy and, in the twentieth century, has lagged behind Italy in developing the university-based approach. While industrial medicine was a recognized branch of medical sciences in Italy of the early 1900s, this specialty was virtually nonexistent in the United States.²² Somewhat later, US physicians or occupational health "experts" tended to look for "accident-prone" workers as the cause of high injury rates, focusing more on work habits, character flaws, and poor personal health than on the working conditions.^{23,24} But the American Association for Labor Legislation, a group of university economists and political scientists, did initiate investigations into industrial poisoning, organizing in 1908 a National Commission on Industrial Hygiene and in 1910 the first American Conference on Industrial Disease.

Perhaps the most famous US physician to direct attention to toxic workplace exposures in the early 1900s was Dr.

Alice Hamilton, who became nationally known for her studies of lead poisoning. In 1919, Hamilton joined the faculty at Harvard University (as that institution's first female professor), thereby strengthening the university-based approach to occupational health in the United States. Hamilton clearly recognized the obstacles to her efforts. She recalled that the subject of occupational safety and health in the United States was "tainted with Socialism or with feminine sentimentality for the poor. . . . There was little or nothing in American medical journals and textbooks, and the American Medical Association never had a meeting devoted to the subject."²²

An industry-based form of occupational medicine emerged at the turn of the century and the American Occupational Medicine Association was founded in 1916. According to recent estimates by the American Medical Association, 50 per cent of occupational medicine physicians practice directly in the industrial setting, with the majority found in the largest industrial corporations. Company physicians frequently focus on such personnel issues as pre-employment examinations, promotion and transfer decisions, workers' compensation, and absenteeism. More recently, some industry-based physicians have become involved in occupational medicine research, programs to eliminate hazards, and health promotion programs for employees.

The government-based efforts in occupational health are divided into two distinct periods in the United States: the state-oriented period (before 1969) and the federally-oriented period (after 1969).

By 1900, most of the heavily industrialized states had rudimentary forms of legislation that required employers to reduce or eliminate certain workplace hazards. But as more toxic exposures and hazardous machinery were introduced into the workplace, health and safety problems increased and injured workers sought compensation by suing their employers. State workers' compensation laws were enacted in the early 1900s with the support of manufacturers who hoped to avoid the unpredictability and large awards of liability suits, and through activities of social reformers who were concerned about the plight of uncompensated accident victims and hoped the laws would lead indirectly to accident prevention. The labor movement had serious reservations about the adequacy of the state workers' compensation laws.²³ Coverage tended to be fragmentary, limited, and inequitable.^{24,25} Once these state workers' compensation laws were passed, however, public interest declined in the general issue of worker safety.²⁶

Significant federal involvement in occupational health and safety was remarkably limited in the United States until the late 1960s. In the 1890s, the US Congress passed rudimentary legislation on coal mine and railway safety. In 1914, the Office of Industrial Hygiene and Sanitation was organized within the Public Health Service to carry out research and investigations. The Walsh-Healy Public Contracts Act of 1936 required employers with large government contracts to comply with certain safety and health standards, but that law was not backed up with effective enforcement.

The 1938 Fair Labor Standards Act set maximum hours and minimum wages for industries in interstate commerce. The Federal Bureau of Mines, initially established in 1910, first received authority to conduct inspections in 1941, but was not allowed to promulgate and enforce safety and health standards until 1952.

In the late 1960s, the inadequacies of state programs for

occupational health and the poor control of industrial disease set the stage for stronger federal intervention. A series of important laws were passed: the Federal Coal Mine Health and Safety Act of 1969; the Occupational Safety and Health Act of 1970, which stated that "every worker has a right to a safe and healthy workplace" and created the Occupational Safety and Health Administration (OSHA) within the Department of Labor to set and enforce standards, as well as the National Institute for Occupational Safety and Health (NIOSH) for research; the Black Lung Benefits Act of 1972; and the Toxic Substances Control Act of 1976.

As in Italy, a worker-based approach to issues of occupational health and safety did not emerge until the 1960s and 1970s. Historically, many obstacles blocked US worker participation in occupational health. The earliest trade unions of the 1800s were organizations of skilled craftsmen engaged in struggles to establish the basic rights of collective bargaining: higher wages and shorter working days. In the late 1800s, some US labor organizations (such as the Knights of Labor) took up social issues like health but most unions emphasized economics. The craft nature of the early mining systems (1900-30) enabled miners to define for themselves certain workplace rights, such as setting the pace of work and monitoring the level of methane. These experiences later led to the development of the right to refuse hazardous work assignments and to the election of worker committees to negotiate with management about working conditions.²³

As the organization of work changed from highly skilled craftsmen performing a total job, to large numbers of unskilled workers performing discrete tasks in large industrial organizations, workers lost much control over the work process and over input into issues of health and safety. American unions, such as the American Federation of Labor under Samuel Gompers, emphasized economics rather than politics and in general gave a relatively low priority to demands for health and safety.²³

In the 1960s, coal miners were among the most active US workers for occupational health and safety. The miners' occupational health movement was closely connected to the struggle by rank-and-file members for democratic rights in the centrally controlled United Mine Workers Union,²⁷ a struggle that resembled the conflicts in Italian unions between local factory groups and central union organizations. On November 20, 1968, a mining disaster in Farmington, West Virginia caused the deaths of 78 workers and intensified the debate over safety. In 1969, hundreds of coal miners, including many members of the Black Lung Association, demanded compensation for coal workers' pneumoconiosis, first in a protest demonstration, then in a wildcat strike (opposed by the national union leaders). These events stimulated union leaders to lobby for a Black Lung law and prompted Congress to pass the Federal Coal Mine Health and Safety Act of 1969.

Whereas in Italy the occupational health movement was propelled by a groundswell of worker mobilization at the factory level, in the United States a combination of factors led to the resurgence of public and union interest in occupational health in the late 1960s and 1970s.²⁴ For example, public consciousness was aroused by the environmental movement, which was voicing concerns about the effects of toxins in the general environment, and by the rise in the reported injury rate in industry (increasing 29 per cent from 1961 to 1970). Lobbying efforts by organized labor supported and helped shape the Occupational Safety and Health Act of 1970.

Union activities in the 1970s on occupational health took various forms. "New Directions" grants from the Occupational Safety and Health Administration enabled them to build health and safety departments, and to educate rank-and-file members. Labor groups and unions pressured OSHA to promulgate new standards. Work-related health problems became issues for organizing; unions began to bargain and strike over occupational hazards, and to put more occupational health and safety language into contracts. In the mid-1970s, 82 per cent of all union contracts contained some provision on safety, and 42 per cent required the company to provide safety equipment.²⁸

In the late 1970s, US government activities on occupational health lessened as a result of economic crisis and political change. In 1980, the newly elected Reagan Administration appointed an industrialist as the Secretary of Labor, a position traditionally held by a friend and spokesperson for labor. The director of OSHA, formerly an occupational health professional, became another industrialist with no training in occupational health and safety. Federal funding was cut for occupational health and safety research, education, and training. OSHA standard-setting and enforcement activities were reduced. Instead of these activities, the federal government sought to encourage more cooperative ventures between labor and management around occupational safety and health. Despite this decline of government activities, a number of major labor unions continued to support health and safety departments and to remain active in recognizing and correcting workplace hazards and in educating rank-and-file members.

The United States thus showed some similarities to Italy in the development of occupational health. One difference was that US occupational health policy moved from an emphasis on state to federal regulations and from decentralized to centralized controls, while Italian activities moved from national to regional and from centralized to decentralized controls. The most striking difference between the two countries' experiences, however, was the lack of a clearly articulated workers' model in the American occupational health movement and the establishment of that model in Italy.

Implications for the US

To suggest that concepts from Italy's worker-based approach to occupational health could be applied to the United States today may seem risky. The two countries differ in many respects. For example, Italy has active political parties that represent working class interests, while the United States has no labor political party in the same sense. American unions have emphasized economic issues over class-based politics and currently lack a socialist tradition, although US unions tend to back and influence the Democratic party. Most importantly, a smaller percentage of the US workforce is unionized (about 15 per cent compared to 50-55 per cent in Italy).

Nevertheless, both Italy and the United States share similar problems in occupational health policy and show some similarities in the way workers have participated in occupational health in recent years. For example, in 1970, Urban Planning Aid, a Boston-based organization, initiated an occupational health and safety project which trained workers to conduct investigations, developed contacts between workers and occupational health specialists, and set up worker-run health hazard reporting systems.²⁹ Similar

examples suggest that the concepts of Italy's nationally used model could be applied to the US context.

In the United States, health and safety committees vary markedly in structure, function and effectiveness. Some are management, some are union committees; others are joint committees with varying degrees of worker input. One study found that effective health and safety committees would result from building continuous programs over time and from expanding the involvement of rank-and-file workers.³⁰ The concept of the homogeneous group could be applied to the election of workers to health and safety committees as representatives of work units that perform similar tasks. If these units were allotted time to meet regularly, then the committee member could voice the group's concerns at health and safety meetings and at union meetings. That process could improve worker input and enhance worker power on occupational health, as occurred in Italy.

The homogeneous group concept can also lead to expansion of worker and union involvement in research. For example, a three-way agreement was arranged between specialists at Harvard University, several rubber companies, and the United Rubber Workers to study causes of possible occupational disease in the rubber industry and to propose ways to prevent the health problems.³¹ The research staff met with management and with union personnel to learn about worker concerns. In a later study, workers were divided into "occupational title" groups, each representing a "homogeneous group for study."³² This three-way agreement represented a relatively unusual approach in the United States, and resulted in the discovery of important health problems in the rubber industry.³¹ Rank-and-file worker groups, however, appeared to have less direct input in the study than might have been the case in Italy.

Other US unions are also active in evaluating the worksite and performing occupational epidemiological research. The United Auto Workers (UAW) has published a manual on worker epidemiology, and trains local union members to collect health data for research on occupational cancer.³³ The effectiveness of this approach was demonstrated when formal epidemiological analysis confirmed a UAW local union's finding of an apparent excess of lung cancer deaths based on a review of members' death certificates.³⁴ The International Ladies Garment Workers' Union and the Amalgamated Clothing and Textile Workers' Union have been working with public health experts to study musculoskeletal problems among garment and textile workers. Other active unions include the Steelworkers, the Oil Chemical and Atomic Workers, and the United Mine Workers. The "prospective" establishment of homogeneous groups as health and safety units would encourage the ongoing collection of data for research and provide a stimulus to improve workplace health conditions.

The model of the homogeneous group also provides a way to organize information about the exposure of workers. Large companies in the US are developing computer-based systems to store and integrate information on worker exposures and medical illnesses.³⁵ A basic component of these systems is the definition of worker exposure groups, "to define cohorts with relatively homogeneous or uniform exposures to occupational hazards."³⁶ These are sophisticated computer systems in which "all users, including industrial hygienists, epidemiologists, physicians, information scientists, programmers, system analysts, toxicologists and nurses have been involved in the system's design."³⁷ Noticeably absent from this statement is any mention of

workers—the most intimately involved persons in the work process, whose experience could contribute significantly to the development of systems for gathering and using the data.

These industry-based computer systems raise many questions about tracking the exposures of workers. What happens to the information gathered on a particular worker when that worker transfers to another company? Would the worker be given a computer printout of personal exposure data to take away from the company, like an Italian risk card? Would it be compatible with another company's computer system and exposure groupings? A modification of Italy's health risk cards might be more applicable for smaller companies that lack computer systems. Whatever system is employed, it is important that workers have input and access to the data, and be able to bring their own data with them when changing jobs, in order to maintain an ongoing personal history of exposures. Furthermore, it would seem advisable to develop certain standard exposure group titles, formats for data collection, and a standard computer software program, possibly through NIOSH or OSHA.

The concept of workers' subjectivity is also reflected in occupational safety and health problems in the United States. In one US case, a number of employees in a polyurethane foam factory noted difficulties with urination. Each worker went individually to different doctors and received various diagnoses. The workers as a group sensed that the problem was related to the workplace, but no adequate mechanism existed in that plant to express and act on the workers' shared subjectivity. Eventually, 11 workers went simultaneously to a hospital emergency room with their complaints, and the local Board of Health notified the state's occupational hygiene physician. A subsequent study showed that a newly introduced catalyst (dimethylaminopropionitrile, or DMAPN) damaged the nerves of the urinary bladder.³⁸ In the United States, as in Italy, methods for articulating workers' subjectivity (like meetings of homogeneous groups) could help identify hazardous exposures that need further investigation.

Recognition of a subjective sense of discomfort can lead to improvements in workplace conditions even without the identification of a specific precipitating chemical exposure. For example, complaints about headache, nasal stuffiness, cough, and other disorders which could be related to indoor air pollution may turn out to be due to an inadequate or unbalanced ventilation system, or to insufficient humidity (when no specific chemical can be measured).³⁹ Sweden recognizes workers' subjectivity in this larger sense by defining the "working environment" to include "not only physical or chemical environmental factors, but also psychosociological factors."⁴⁰ A similar approach in the United States could be used to improve the workers' subjective sense of the working conditions as a whole.

The use of contract language to protect worker safety and health also deserves greater attention in the United States. Unions in the United States have recently increased their use of contract language for health and safety, mainly on such issues as the institution and function of health and safety committees, provision of protective clothing and equipment, rate (of pay) retention due to illness or injury, industrial hygiene monitoring programs, and right of access to health and safety-related information. Some US contracts include a clause that requires the company to comply with all OSHA standards.

But in general, contract language in the United States has not specified health standards (as occurred in Italy)

because of the presence of national OSHA standards.⁴¹ This may be changing, however. The United Steel Workers, for example, has encouraged local unions to incorporate the requirements of the current lead standard into contract language, to ensure protection if the standard is overturned or weakened. By including standards in contracts, unions gain an additional method of enforcement: through the process of grievance and arbitration. In some cases, that process may be faster and more efficient in correcting a health hazard than calling an OSHA inspection. Contracts can also specify hazard control programs that best meet the needs of particular work processes and employees. Contract mechanisms for controlling toxic substances could become increasingly important if OSHA lags behind in updating old standards and passing new standards.

Nevertheless, the use of contract language also creates problems. The inclusion of specific standards requires updating, which involves considerable time and review of scientific data. Different factories could set different allowable levels, thus giving competitive economic advantages to companies with weaker controls for health and safety. In addition, the overall effectiveness of contract language for health and safety in the United States will remain limited because the majority of workplaces are not unionized.

The concept of preventive occupational medicine services at the local or regional level exists to some degree in the United States. State agencies in departments of public health or labor have a great awareness of local problems and, with proper funding, staff and orientation, those agencies could work in conjunction with NIOSH and local unions to conduct hazard evaluations.

The concept of a risk map could be applied in the United States at the national and state levels, as well as in communities, factories, and health centers. At the national level, NIOSH has already moved in the direction of risk maps with the preparation of national and state computer-generated maps of hazards by industries and potentially exposed workers.⁴² Juxtaposing those maps with maps that show causes of mortality may suggest new hypotheses for study. Hazard maps could also be related to a surveillance system based on "sentinel" health events (including occupational diseases, disabilities, and untimely deaths) to indicate areas for improved preventive or therapeutic action.⁴³⁻⁴⁴

Risk maps could be composed for individual factories, with hazards, exposures, and procedures at different work stations outlined and described. The risk maps could be organized by a factory's health and safety committee and then distributed to different work stations. The Italian concept of a risk map thus fits with the US concept of the workers' right-to-know, and could be incorporated into contract language on that issue.

Risk maps could also raise awareness among health professionals about work-related illnesses that go unrecognized but can be treated or prevented. Risk maps could help physicians and other health workers learn about potential occupational diseases in their patient populations.

Communities could be interested in obtaining risk maps of the local environment, to prepare for emergencies (such as chemical spills, fires, and explosions) and to assist in regulating local sources of environmental contamination. For example, in preparing community right-to-know legislation in Cincinnati, a profile was made of potentially hazardous industries in that city, including the factory's name, the number of workers, and the hazardous substances in use.⁴⁵ Risk maps could be incorporated more into the US right-to-

know movement, which boasts a growing number of local ordinances and state laws, to provide more information to physicians who treat workers, to workers themselves, and to community residents and officials.⁴⁶⁻⁴⁷

In conclusion, the Italian experience demonstrates that worker participation is a key element in improving health and safety at the workplace and in compelling changes in public and private institutions. It suggests that conflicts and politics are inherent in solving problems of occupational health. The lack of a clearly expressed worker-based model for occupational health in the United States reminds us of the historical and political differences from Italy, especially in worker mobilization and union strategy.

Despite our differences, the Italian experience with the worker-based model exemplifies general themes in occupational health and safety; the Italian worker concepts express occupational health issues found in the United States. Some American specialists have worked successfully with labor unions and workers on epidemiological and service projects, which have resulted in improvements in health and safety at the workplace. That approach needs to be pursued still further to strengthen worker awareness and control over the hazards of the occupational environment. One way to accomplish that goal might be to expand discussions of the principles of worker participation in occupational health in the United States, learning from the Italian experience how to develop and improve methods of worker involvement.

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ACKNOWLEDGMENTS

Information for this paper was obtained from primary and secondary Italian sources on occupational health policy and from interviews with union activists in health and safety, occupational health physicians (both university-

based and government-affiliated), and government officials. Persons were selected for interviews to provide a diversity of perspectives, based on different occupational health roles and on different geographical locations (since Italian regions vary in social development and political forces). The authors conducted the interviews from June to August 1981 in Milan, Rome, Perugia, Bologna, Naples, and Castellanza. The authors thank the kind hospitality of many persons in Italy, who gave time, materials, and often much more during our stay there in 1981. Marco Biocca, Giovanni Creton, and Walter Pieroni were especially generous and helpful. The writing of this paper was partially supported by the Interdisciplinary Programs in Health, Harvard School of Public Health, under a grant from the US Environmental Protection Agency (#CR807809), and by the Takemi Program in International Health, Harvard School of Public Health. We thank the following persons for their thoughtful comments on the paper: Elio Riboli, Marco Biocca, Barbara Rosenkrantz, Les Boden, and two anonymous reviewers. An earlier version of the paper was presented at the Annual Meeting of the American Public Health Association, in Montreal, Canada, November 14-18, 1982.

Wiley Acquires Health Education Journal

John Wiley & Sons has become the publisher of *Health Education Quarterly*, the official journal of the Society for Public Health Education, formerly published by Human Sciences Press of New York City. The journal will continue to be edited by Marshall Becker, PhD, MPH, and Noreen Clark, PhD, both of the University of Michigan, and a distinguished editorial board composed of leading public health educators from academia, industry, and the non-profit sector.

Under the Wiley imprint, *Health Education Quarterly* will be redesigned to an expanded 7" × 10" format. The first issue published by Wiley will be Volume 11, No. 1 in September 1984. The remaining three issues of Volume 11 will be published in October, November, and December 1984. Publication will resume on a quarterly basis in 1985. Journal subscriptions are priced at \$75 for Volume 11.

For over 10 years, *Health Education Quarterly* has served as a forum for high-level primary research and program evaluation in public health education. Articles discuss the promotion of health through elevating the quality of health education, improving medical practice and stimulating research. The journal regularly publishes book reviews, as well as special theme issues dedicated to areas of current interest. Upcoming theme issues will cover: Health Education and Media, Social Supports and Social Networks in Health Education; and Occupant Safety in Automobiles. Future highlights include articles on: Multi-Matrix Sampling: An Approach to Evaluation of Health Education Programs; Preschool Health Program (PHEP): Analysis of Educational and Behavioral Outcome; and Social Networks among Elderly Women: Implications for Health Education Practice.

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