

Commentary

Notification of Workers at High Risk: An Emerging Public Health Problem

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Abstract: During the last two decades, an increasing number of epidemiologic studies have found cohorts of workers to be at high risk of work-related chronic diseases, especially cancers. These studies frequently have led to the broad recognition of occupational hazards and eventually to the prevention of exposures to such hazards. Generally, however, the individual cohort members found to be at high risk have not been notified of study results, and programs of medical intervention or of palliative services directed at these individual workers have not been developed. Recently, the issue of whether or not workers have a right to be notified more

directly about known health hazards to which they may have been exposed has emerged as a major, unresolved question in public health policy. Issues of concern include the criteria that should guide notifications; whom, when, and how to notify; and who should pay for notification and follow-up services. This commentary discusses the scientific, ethical, economic, and institutional aspects of worker notification, and describes three new demonstration projects that have provided notification and intervention for workers at high risk of bladder, colon, and lung cancer. (*Am J Public Health* 1984; 74:485-491.)

Introduction

Epidemiologic investigations conducted during the past several decades have identified numerous cohorts of industrial workers as being at high risk of work-related diseases, especially occupational cancers.^{1,2} Most of these studies have employed the historical (retrospective) cohort methodology, and have therefore been based on the linking of personnel, tax, and social security records with records of mortality. Because such studies have involved no direct contact with subjects and there were no procedural risks, they have traditionally required no informed consent.³

As a matter of policy, the results of epidemiologic studies on occupational cohorts have been made available to employers, employee representatives, and the scientific community. There has, however, been no statutory requirement or systematic attempt by researchers to provide results to study subjects, and, in general, this has not been done.

In the past decade, a major controversy has arisen in the media and the courts over the question of the rights of individual study participants and of the public to be notified about epidemiologic study results.⁴ This controversy has developed against a background of change in public philosophy in the United States. Common law doctrines of caveat emptor in the sales contract and of acceptance of risk (*volenti non fit injuria*) in the employment contract have been altered significantly by a broad range of statutes enacted to protect workers and consumers.⁵ Among the policy changes of importance to worker notification are:

- *The recognition that the right to self-determination is a fundamental democratic principle.*⁶⁻⁸ In this view, individuals are considered to be best able to protect their lives and interests if they are informed about a known risk.
- *The public acceptance of the right to informed consent by patients and research subjects.*⁹ The Nuremberg Code and the Helsinki Convention affirm and reaffirm the right of individuals to be given full disclosure about potential risks and benefits of experimental biomedical procedures. These principles might be extendable to cases where health authorities are in command of information on health risks to identifiable population groups.¹⁰
- *The passage of the Occupational Safety and Health Act of 1970 and of the Mine Safety and Health Act of 1977.* These Acts established in law the principle that workers have the right to be protected from workplace hazards. Subsequently, attempts have been made to extend this principle so that workers can be provided full knowledge of potential hazards and their consequences.¹¹
- *The passage of other federal statutes, such as the Freedom of Information Act and the Toxic Substances Control Act.* These Acts are indicative of a climate where disclosure of information to affected parties and to the public is considered a general objective.¹²
- *The passage of the Health Services Research, Health Statistics and Health Care Technology Act of 1978 (PL 95-62).* This Act indicates a Congressional desire to promote notification and intervention programs for individuals found to be at high risk.¹³
- *The broad acceptance of many public health principles.* Provision of early detection and treatment for high-risk groups and education to reduce exposure to interacting risk factors have gained widespread support in the health community.^{14,15} However, this support has been tempered by critical analysis of the scientific and clinical merit of interventions directed at asymptomatic populations.¹⁶

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TABLE 1—Examples of Notifications for Health or Safety Risks

Description	Action	Basis
Recall notification Consumer products regulated by the FDA	Notify retailer and in some cases consumer-product recall	21CFR, Part 7
Automobile recalls	Notify retailer and consumer and repair defect	15 U.S.C., 1411
Biomedical research	Informed consent	National Research Act of 1974
Patient Package Inserts	Written information	FDA requirement
Notifications of health risks due to accidents, inadvertent procedures, or medical screening: Firemaster Incident- Polybrominated biphenyl exposure	Public notification, animal quarantine and destruction	State authority (Michigan)
Thyroid cancer risk due to irradiation of thymus or scalp	Personal notification and screening	Institutional concern
Genetic screening	Personal notification	Sought by potential parents
Diethylstilbesterol use	Public notification	Surgeon General
Notification of the toxicity of new chemicals	Pre-market notification of purchaser	Toxic Substances Control Act
Cigarettes	Warning label on product	Surgeon General

The Public Health Tradition in Notification

The history of public health does not provide a consistent guideline with regard to notification of disease risk. In part, this may be attributed to the fact that notification and isolation of the person at risk is an individual-oriented intervention component of the overall framework of public health. During 18th century mercantilism, the thrust of health policy was the establishment of quarantines to control infectious disease, which initiated a fairly routine use of notifications.¹⁷ However, due in part to the opposition of special interests, such measures played a less significant role in the wide range of sanitary reforms in the 19th century public health movement.¹⁸ And while most of today's communicable disease legislation requires reporting of infectious disease cases and notification of risks where known—such as for food or drug contamination¹⁹—hospital law in the US has held that there is no affirmative duty to warn prospective patients of the presence of infectious or contagious diseases within the hospital. This principle of law is based on the hospital's duty to isolate infectious patients and the assumption that patients are aware of such risks when they enter the hospital.²⁰

The current concern about notification for chronic disease risks is more complicated than the case of infectious disease risks because of the complex etiologies and long latency periods involved, particularly for cancers. Exposure to a carcinogen (or other chronic disease precursor) may occur decades before the onset of the disease. Notification of exposed persons of their increased risk can occur at various times on the continuum between exposure and onset of the disease, often with the majority of a cohort being asymptomatic upon notification.

Examples of different types of notifications for health and safety risks are shown in Table 1. Much of the history of notification has concerned warnings for defective and hazardous consumer products.

Previous Notification Efforts

The history of notification of chronic disease risks, in general, and of workers, in particular, is sparse. An early milestone came when the Surgeon General, in 1964, notified cigarette smokers of their risk of cancer and heart disease by means of a national report and, subsequently, a package labeling requirement.²¹ Since then the public has been informed of other acquired risks, such as bladder cancer from saccharin,²² but specific groups or individuals have usually not been informed directly.

One of the earliest attempts at individual notification occurred in 1959 when an effort was made to locate, notify, and examine patients treated in a particular hospital for thyroid abnormalities indicative of cancer related to irradiation.²³ Eventually, other hospitals began notification programs.²⁴ Upon identification by the appropriate hospital, the former patients were notified by letter, provided with a photocopy of their original treatment records, and advised to consult their physician or utilize screening clinics set up for them.

Prior to the 1970s, it was not general practice to disseminate risk information to workers,²⁵ and state-initiated occupational disease measures were blocked or delayed during most of this century.²⁶ The United Mine Workers of America initiated the first comprehensive program for notification of workers about a disease risk, coal workers' pneumoconiosis (black lung). The UMWA also developed the first support programs with the formation of a Welfare Fund for pneumoconiosis victims. In 1969, this program was adopted by the federal government under Title IV of the Federal Coal Mine Safety and Health Act.²⁷

More recently, a number of efforts to notify high-risk workers have been made by government, unions, and industry:

- In the mid-1970s, federal agencies sponsored pilot programs of notification and intervention for individual asbestos-exposed workers in Tyler, Texas²⁸ and

San Francisco, California²⁹ and for vinyl chloride workers in Louisville, Kentucky.³⁰ These programs failed to provide continuity when the federal funding was exhausted, because the organizers had been unable to build the local community base required to sustain them.³¹

- In 1978, the federal government also sponsored a general occupational health alert for asbestos.³² This was a mass public notification program relying on media, letters to physicians, and notices accompanying social security checks. This program probably increased the general awareness about environmental health hazards. However, with the exception of a medical surveillance program established by the US Navy for its personnel, this federal initiative does not appear to have resulted in the development of targeted intervention programs for high-risk groups exposed to asbestos.
- A notable union-sponsored program has been developed by the International Association of Heat and Frost Insulators and Asbestos Workers, AFL-CIO.³³ It consists of education and information about preventing occupational exposures and smoking cessation, as well as special medical tests, mainly for lung diseases. This program tends to vary from district to district, and is by no means a comprehensive, standardized, or continuous response to this problem. It has been more oriented to providing general information to the broad membership of the union than to provide personal notification.
- Several industries have initiated programs for workers who are known to be or potentially at risk of brain cancer (petrochemical),³⁴ lung cancer (bis-chloromethylether), and bladder cancer (aromatic amines).³⁵ Samuels has reviewed these programs, and has drawn the following conclusion concerning their effectiveness: Past programs in notification and intervention have been subject to four major deficiencies:
 - Failure to use existing networks of communication, particularly those of the appropriate labor organizations;
 - Re-enforcement of attitudes and activities that perpetuate dependence on others to make vital, personal decisions in health maintenance;
 - Ignorance of the long-established fact that where behavioral control is justified, it will occur most effectively through peer groups removed from the hostility of the workplace and with family involvement and community support;
 - Failure to enhance the ability of the worker and his family to manage the legal, financial, and psychological problems of lifelong surveillance, intervention, and treatment, and premature death.³¹

The Notification Process—A Proposed Model

Worker notification consists of three major stages: 1) ascertainment of notifiable populations and individuals at risk; 2) the actual process of notification; and 3) post-notification support and intervention. These stages need not be the responsibility of a single agency or institution, but all three should be addressed if notification is to be comprehensive and effective.

From the demonstration projects conducted to date (see

next section), the following criteria appear to be central to the development of successful notification programs:

- *A sound scientific data base* (e.g., acceptable methodology and risk assessment) *and clinical management plan*—These are prerequisites to the development of program credibility among workers, employers, and the community-at-large.
- *A strong organizational base in the community*—This is essential in order to provide outreach to and tracking of participants, as well as educational, counseling, and referral services. For organized workers, the union forms the organizational nucleus; for non-union workers, the nucleus can be developed within the existing social networks and community structure of the workers.
- *Linkage of medical services and the community base*—Recognition of the interdependence and equal importance of medical services and community support is critical to the institutionalization of self-sufficient and successful programs.
- *Recognition that a worker notification program is a health education program for the entire community*—Various groups in the community will have different concerns and need different types of information.

Ascertainment of Risk

Criteria for establishing whether a cohort is "at notifiable risk" remain elusive. Failure to establish such criteria can lead to groups being falsely notified or not notified at all. In some cases, decisions about whether to notify become especially difficult, as when epidemiologic studies determine that a particular occupation has an elevated disease risk, but where the cause of the elevation is not known. This was the case with regard to brain cancer among petrochemical workers.^{34,36}

Determining exposure depends on specific data about a cohort of workers at a specific plant. Sometimes it is possible to reconstruct exposure levels from industrial hygiene records maintained by companies and inspection agencies. Often, dose-response data from past studies of workers who have been similarly exposed make it possible to anticipate the number of disease cases (numerator) and the time when they will become manifest clinically (latency).

The further in the past the exposure, the less likely the exposure information is to be accurate. Often, it is necessary to rely on observations or even historical anecdotes. Even when information is minimal, it still may be possible to differentiate a work force on the basis of high and low risk, and to notify accordingly. However, in such cases, it is likely that the notification will include individuals who have been misclassified in one form or another. Because of the uncertainty of available data, the construction of the cohort should be conservative in order to include all possible members at the appropriate risk levels, and the notification message should make clear the uncertainty and the possibility of "false positive" or "false negative" classification.¹¹

Occupational high-risk cohorts often can be reconstructed with a high degree of accuracy once the risk has been determined. This is a key rationale of notification programs. Records maintained by company personnel departments, union membership rolls, the social security system, Internal Revenue Service, and insurance companies can be used to reconstruct cohorts employed in a specific workplace.^{37,38} While this information may be somewhat

irregular, incomplete, and non-specific, it is more likely to be retrievable than for non-occupational exposures.

The decision of whom to notify should be made on a case-by-case basis. It should have a sound epidemiologic basis and also make common sense. Monson has elaborated on the criteria for disease-exposure association in epidemiologic studies which also can serve as criteria for a notifiable high risk.³⁹ These include: consistency, specificity, strength of association, dose-response relationship, biologic plausibility, temporal relationship, and statistical significance.

Ideally, prior to notification, the impact of performing or not performing it should be considered, and the validity of the information available should be evaluated in light of the potential impacts. The validity of the data necessary to trigger a notification may be viewed as dependent on four parameters: the extent and seriousness of the risk, the consequences of notification; the implications of erroneous notification; and the consequences of the failure to notify. These parameters need to be considered and balanced. Failure to do so could result in, at least, four major types of effects: 1) excessive demand for medical and legal services when this is not warranted; 2) increased risk of morbidity or mortality from interventions (such as screening) in a groups not needing them, or not accurately defined; 3) increased risk of more serious disease prognosis due to delayed intervention; and 4) lack of public confidence as a result of failing to balance notification and impact variables.

Methods of Notification

Table 1 illustrates the variety of methods that have been used in notifications. Notifications may be personal (informed consent or letter) or public (labeling or media publication). Either (or a combination) may apply to worker notification, depending on the extent of exposure and the reliability of reconstructing the exposed cohorts. Worker notification is both a personal communication to the individual at risk and a public act with widespread consequences. The impact on the individual, the family, employer, union, and community can be large, explosive, and unpredictable. For this reason, the notification message and manner of presentation need careful consideration, and education programs for a cohort and its community are important components of a notification.^{25,31} With chronic occupational diseases, such as cancer, it is necessary to communicate the concepts of latency and risk. It is important that medical personnel and the community-at-large be informed of the situation so they may respond accordingly.

One of the greatest problems in performing individual notifications is updating the vital status and address information. One previous study failed to correctly identify the address of 33 per cent of the cohort to be notified.^{38,40}

Effective cohort tracing and notification will depend on cooperation on the part of the researcher-notifier and the appropriate companies and unions. Further, locating cohort members may require broadening access, already held by some government agencies but not available to private researchers, to Social Security, Internal Revenue Service, and Bureau of Motor Vehicle records. For government agencies, the requirements of the Privacy Act may need to be broadened to allow for public disclosure of the names of people at risk but who are unable to be located by routine methods.¹³

Based on current demonstration projects (see next section), a sizable percentage of former employees (usually 15–25 per cent) may have emigrated from the region where

the exposure took place. In the absence of support networks, their needs are likely to be different from the needs of those who still reside in communities near the plant where the exposure occurred.

In some cases, the harmful agent may contaminate household residents and the neighborhood surrounding a plant, as has been found for asbestos^{41,42} and suggested for beta-naphthylamine.⁴³ When this is the case, the considerations underlying notification of workers must be extended to the broader population at risk, with the realization that the exact population at risk may never be determined accurately.

Where appropriate, the notification program should be transmitted through organizations that are already in place and prepared to take on the development of follow-up services, such as the unions, employers, state or local health agencies, voluntary agencies, or churches. This type of arrangement serves two critical purposes. First, by relying on existing structures and networks, the potential for acceptance of the conveyed message is enhanced; however, the delegation of these functions does not relieve the initiating agency from appropriate quality control, which may require a long-term commitment. Second, reliance on existing structures enhances the potential long-term continuity vital to effective secondary and tertiary disease prevention in the future.

Medical Support Services

To minimize potential adverse effects of notification programs, all members of a notified cohort may need to have access to ongoing medical surveillance, counseling, education, and legal services, regardless of whether or not they develop the disease. Given the pluralistic nature of medical care and social services in the United States, the programs must be developed cooperatively and be community-based, relying on the mobilization of available resources.

With some diseases, early detection by screening may enhance survival and the quality of life in high-risk groups.^{20,44,45} Screening may be effective for diseases such as high blood pressure and cancers of the colon,⁴⁶ bladder,⁴⁷ cervix,⁴⁸ and thyroid.²⁵ Usually, the need for repeated screening will last for the rest of the person's life.⁴⁹ Those being notified will need services of many types, some of which they will be able to acquire on their own and some of which will need to be instituted on a categorical basis. An agency or organization developing a notification program should be prepared to interact with service providers so that relevant information about the risks to the cohort can be delivered.

For some diseases, early detection by screening has not resulted in better prognoses than detection by symptomatology.⁵⁰ In these cases, the notification may be directed toward making the individuals at risk aware of key medical signs and symptoms, and making medical providers aware of the risk status of the cohort members. The medical provider could then recognize the disease earlier, and apply the least drastic and most effective clinical decision criteria to the case.

Current Demonstration Projects

At present, three demonstration projects in worker notification are being conducted by the National Institute for Occupational Safety and Health (NIOSH) or the Workers' Institute for Safety and Health. Together, these three proj-

TABLE 2—Comparative Characteristics of the Cohorts Notified in Demonstration Projects

Comparative Characteristics of Cohorts									
Cohort	Location	Size/ Race/ Sex	Type of Work	Carcinogen	Target Cancer	Average Period of Exposure	Latency Period	Relative Risk	Medical Intervention Potential
Augusta Chemical Workers	Augusta, GA	1,150/70% Black/Male	Unskilled Industrial Non-union Low pay	Beta-naphthyl- amine	Bladder	1949–1974	18.6 yrs.	4–111	Good
Pattern Makers	Nationwide	10,000 cur- rent, 2,000 former/All White/Male	Skilled Industrial Craft Union High pay	Undetermined	Colon- Rectal	Unknown	Unknown	2	Good
Flint Glass Workers	Port Allegany, PA	1,200/All White/Male	Unskilled Industrial Union Medium pay	Asbestos	Lung	1964–1972	20 yrs	10–53	Poor

Sources: References 40, 54–57.

ects give a cross-sectional picture of possible approaches to notification and intervention (Table 2). Although it is generally too early to evaluate the impacts of these projects, they represent an opportunity to give a cross-sectional view of characteristics of three different potential notification situations:

- The first project involves 1,113 living, predominately Black, male workers, some of whom face an estimated 111-fold increase in relative risk for bladder cancer due to workplace exposure to beta-naphthylamine from 1949 to 1972. Occupation is the greatest risk factor established for bladder cancer,⁵¹ and beta-naphthylamine is one of the most powerful workplace carcinogens known.⁵² The plant in Augusta, Georgia was one of several identified by NIOSH to be producing this type of chemical in the early 1970s.⁵³ In 1981, NIOSH sent letters notifying these workers of their risk status, encouraging them to obtain medical advice, and advising them to learn the warning signs of bladder cancer. A particularly noteworthy feature of this pilot program has been the active involvement of a local health department and the interaction of diverse community groups as the keystone for organizing a continuing program of medical surveillance, counseling, and education.⁴⁰
- In the 1980s, three independent epidemiologic studies were published^{54–56} that indicated that pattern and model makers, most of whom are members of the Pattern Makers' League of North America, may have a doubled risk of colon and rectal cancer. There are about 10,000 current and 2,000 former members of the League. They are almost entirely White males, highly skilled, and well paid. They are employed in about 700 workplaces in 27 states. Notification of risk was conducted by the League (in consultation with the Workers' Institute and NIOSH) using League newsletters and booklets sent to the membership. Plans for implementation of efforts to reduce potentially hazardous workplace exposures and for uniform medical surveillance provided by local community physicians were negotiated between the League and several hundred employers.
- In Port Allegany, Pennsylvania, approximately 1,200 members (all White male) of the Flint Glass Workers' Union are at high risk of developing cancers associat-

ed with workplace exposure to asbestos.⁵⁷ NIOSH identified this asbestos hazard in 1971 and informed the company and the union. Subsequently, after lengthy discussions, a non-profit community program was established with representation from the union, management, community groups, and medical providers, to provide notification, medical examinations, outreach, counseling, and education. This program has been extended to family members as a result of potential risk due to secondary exposure. Observers have characterized this program as a model of community collaboration to address a serious work-related health problem.⁵⁸

Unresolved Issues and Questions

Many of the issues and questions concerning worker notification are unresolved as the demonstration projects now in progress have revealed. There is practically no literature on the subject.

The fundamental issue of whether or not workers are entitled to be notified about known health risks to which they may have been exposed even where exposure took place in the past has been raised in the public health community and in legislatures, but not resolved. The magnitude of the problem is vast. Lawsuits stemming from the failure to warn workers are threatening to undermine the structure of major industrial sectors.^{59,60}

Notification programs will probably often result in litigation as employees seek redress for injuries or illnesses relating to the alleged violation of three common-law duties of employers: the duty to maintain safe working conditions, the duty to warn about dangerous workplace conditions, and the duty to inform workers about adverse results of medical tests. Another possible ground that has been considered is for an employee to seek redress under the product liability doctrine. This doctrine makes a manufacturer liable to a user of his product if the product is defective, if the manufacturer has knowledge of the defect, and if the defect causes injury.⁶¹ The US government also has been sued as a supplier of asbestos without providing adequate warnings or health protection.⁶²

Litigation is generally a measure of last resort to workers, and it is a poor approach because it fails to provide comprehensive programs to deal with the numerous and

varied needs of high-risk workers.⁶³ No common-law remedies are available where the responsible company goes out of business or files for bankruptcy.

To date, no agency or researchers have been held liable for failure to notify members of cohorts they find to be at high risk. However, it is not unlikely that claims for redress may be sought in the future, particularly where failure to notify can be linked to failure to detect a disease at a treatable state.

Even if there is a general decision to notify, many other critical questions remain. When to notify? What level of risk is required to initiate the notification, and what degree of confidence is required in the risk estimate? These are clearly important questions in light of the massive cost involved in initiating follow-up support programs.

Individual or mass notification? Should notification be directed at the identified individual worker at risk, or should notifications be directed at the broader community? Should the level of risk involved determine the type of notification approach selected? Or, should the size of the population at risk determine the approach? If a mass notification approach is used, does a responsibility exist to evaluate the extent to which it reached the population at risk, and if found to be ineffective, is there a further responsibility for follow-up?

Who should be notified? The complexity of sorting out past exposure histories is known to most occupational health researchers. Should all employees at a plant during the period when the hazard was present be included, or should only those most likely to have been exposed be considered? How is that likelihood determined? Should populations with potential secondary exposures be included? How should unstudied populations with possibly similar exposures (and risks) be treated?

What level of effort? In a mobile society like ours, workers move within and between communities. What level of effort is required to reconstruct a cohort, update addresses, and make sure the notification message is received and understood? What level of effort is appropriate to ensure that cohort members avail themselves of the follow-up services? When does notification become harassment?

Who is responsible? Should the principal investigator on a study identifying a risk be responsible for initiating notification of results to all individuals at risk? Who should initiate the organization of follow-up services, particularly for dispersed cohorts whose members are located in all regions of the nation?

Who should pay? Implementation of notification and follow-up programs is costly. Should the cost of updating cohort addresses and subsequent notification about results be built into the budget for conducting research programs? The development of specialized follow-up service delivery systems is at present not covered by public and private sources. Is it reasonable to expect that cohort members, who have been placed at risk through no fault of their own, should bear these costs? Should the company which, under the Occupational Safety and Health Act, ultimately is responsible for providing a safe and healthful workplace, or the supplier which is responsible for providing a safe product, bear the costs, and if so, who should pay when the company has gone out of business after the time of hazardous exposures?

The psychological impacts and socioeconomic consequences of notifications have not been studied adequately. Various authors, however, have described the impact of labeling, categorizing, or stigmatizing individuals who are at high risk.^{64,65} Haynes, *et al*,⁶⁵ found that labeling a person ill

may result in reduced work attendance, regardless of whether the person is actually ill. Little research has been conducted on the prevalence or severity of such problems, and at present it is not possible to rule out that the stress of notification could lead to untoward psychological and medical effects.

It is not likely that the potential for adverse psychological effects would repudiate the rights of workers at high risk to be notified.^{6,8} However, notification efforts should be sensitive to the potential psychological impacts, and provisions should be made to minimize them.

The socioeconomic consequences of being notified are potentially severe. As systematic data are collected on the associations between work history, exposure, severity of risk, and disability and medical claims, and as this information becomes disseminated, it could have a chilling impact on economic opportunities available to members of high-risk groups. At least one major computer information firm offers employers a special "workers' compensation information" service,⁶⁶ the purpose of which is to help the employer place "injury prone" workers in jobs where they will not be at high risk of injury. Often, however, the result may be to deny an equal opportunity in the job market to workers who have ever filed claims. Workers who are members of high-risk cohorts also are likely to be "tainted" in this fashion.

The insurability of the individual cohort member also may be impaired. Eligibility for health and life insurance coverage could cease and, because the disease risk is work-related, the individual could fall into the gap between health insurance and workers' compensation programs. Health insurance specifically excludes payment for work-related medical expenses, because these expenses are supposed to be covered by workers' compensation. However, workers' compensation covers only manifest diseases that are unequivocally work-related, and only within very specified time limits from the date the hazardous exposure took place.⁶⁷ Workers' compensation laws vary from state to state but, as a general rule, they specify that, to be covered, a disease must have been a consequence of work and not of anything else, and this often precludes compensation of chronic diseases that are multifactorial in terms of etiology. Many states have statutes of limitation on filing claims that exclude most cases of long-latent chronic diseases.⁶⁸

In summary, the identification of cohorts at high risks brings into focus an emerging public health problem. At this time, a large number of these cohorts exists. Their members have generally not been notified, and so there is a "backlog" of substantial magnitude. Policies and procedures for responding to cohorts identified in the future have yet to be developed. Although public health concepts derived from years of experience in infectious disease control and in chronic disease detection and management form a framework for evaluating this new problem and developing solutions, many complex policy issues remain to be resolved.

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