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Disaster in Plastic

In 1964, the medical staff of BF Goodrich Company, embarrassed by reports of liver damage caused by vinylidene chloride (a chemical analogue of vinyl chloride), tested the liver function of workers in the Louisville, Kentucky plant. The readings of one worker, Earl Parks, were abnormal; nevertheless, Goodrich kept him working at the same deadly job—cleaning the interior of reactors in which molecules of vinyl chloride (VC) are linked to make the polymer, polyvinyl chloride (PVC). In October, 1964, Parks was hospitalized with what was initially diagnosed as a bleeding ulcer. Doctors treated the “ulcer” without surgery and Parks was
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released. He was rehospitalized in May, 1965 and operated on. Doctors found not an ulcer but severe liver damage; cancer was not mentioned. (1)

Parks filed a workman’s compensation claim for disability from liver damage caused by working with vinyl chloride. Goodrich contested the claim but acknowledged that Parks had finally been removed from contact with the chemical. During the hearing before the Kentucky workmen’s compensation board Parks tried to introduce evidence of liver ailments among his fellow workers, but Goodrich blocked him (despite their knowledge of Dow Company studies released in 1961 showing that VC was toxic to the liver). Still, state authorities were sufficiently convinced to order Goodrich to pay a partial claim. Parks’ condition worsened progressively and in March, 1973 he died—of angiosarcoma, a rare liver cancer. His was one of three angiosarcoma deaths that Goodrich reported on January 22, 1974. (2)

In all, between 1965 and 1973, Parks collected $6,000 in benefits from Goodrich. A worker’s life is still cheap in the U.S.

* * *

This article is about vinyl chloride—one of 20,000 chemicals in industrial use. It is known to cause several diseases, the most serious, angiosarcoma, has an estimated US mortality rate of .014 per 100,000 population. This is insignificant in comparison with all other US cancer deaths, which in 1973 were 167 per 100,000—20-30 angiosarcoma deaths per year in the US compared with 380,000 from all cancers. No one knows how many other industrial chemicals contribute to total cancer mortality, although it is estimated that as much as ninety percent of all cancers are environmentally induced. So far, 1,400 carcinogenic chemicals have been identified.

A lot of time and money has been expended on VC research. A 1975 scientific bibliography on the toxicology of VC contained 389 entries (3) and more research is currently being undertaken. The purpose of this article is not to add one more item to the list, but to use the VC story to illustrate the problems of identifying occupational hazards and to describe the new strategies for struggle that the VC experience suggests.

The Coverup

Polyvinyl plastics have been made in the US since 1927. The first scientific study of VC toxicity was a 1925 report of experiments in which it produced fatty degeneration of the liver and kidneys in animals. (4) The publication of articles accelerated with each succeeding decade and by 1970 the body of scientific literature was considerable. The most curious aspect of the studies is the persistent under-rating of the significance of the findings, often by the authors themselves. (5) And so the dangers of VC to workers were not fully acknowledged in the US and western Europe until the first deaths were disclosed in 1974.

All of the two dozen chemical firms that produce PVC in the US are equally at fault for failing to protect workers from this toxic, carcinogenic chemical. If BF Goodrich is singled out, it is only because the company is a case study of corporate irresponsibility. At an industrial health conference held in Chicago on April 30, 1959, two Goodrich employees—the corporate medical director and a company scientist—presented a paper on the harmless nature of vinyl chloride, contradicting 25 years of research. (6)

In their paper, Wilson and McCormick reviewed sixteen articles—a fraction of the available studies. Their selection was very curious: few of the articles appear in standard bibliographies on VC; two are merely
reviews extolling the applications of the new material; most of the European and all of the Soviet literature, dating from 1949, describing the toxic effects on workers, are ignored. (7) Of the sixteen articles, four strongly implicate VC as a carcinogen. Interestingly, these studies were supported by government, not industry. Against these results, Wilson and McCormick cite their own article on non-toxicity, which turns out to be another superficial review of the literature. (8) In other words, Goodrich supported no original research on VC. The results reported by Wilson and McCormick were not their own, but those of an unpublished, undated and unverifiable study.

One can only be outraged by Wilson and McCormick’s conclusion “that polyvinyl pyrrolidone is nontoxic and can be used in the human body. Polyvinyl chloride (PVC) has been stored with little reaction in the chest cavity. Some slight skin irritations have been observed in workers manufacturing PVC.” (6) On this unbelievably shoddy work, BF Goodrich based its VC safety and health policy [sic] for the next fourteen years. By 1973 twenty-one Goodrich VC workers had died.

In 1960, two workers were massively exposed to VC in the Goodrich plant in Niagara Falls, Canada, and died of vinyl chloride poisoning. (9) This prompted experimental laboratory studies of the toxicity of VC following acute exposure. (10) The experiments were then repeated and modified by Dow Chemical researchers, this time looking at toxicity following chronic, low-level exposure. (11) Dow found that VC had a “slight capacity” to cause liver and kidney damage to animals on repeated exposures. The cautious experimenters of this paternalistic company extrapolated their findings to assess the hazard to humans. They concluded that a time-weighted average, i.e., averaged over an eight hour day, for all exposures should not exceed fifty parts per million (ppm).

Dow acted on the advice of its scientists and in 1961 reduced exposure in its plants to 50 ppm—a level still too high to protect workers against cancer. Dow made no press announcement about its research findings, and this anti-union company never informed its workers of the dangers. Other companies, such as BF Goodrich, ignored the Dow results. When new and pressing evidence of the carcinogenicity of VC was presented in 1970, the chemical industry went further and actively suppressed the results of the studies.

The New Evidence

P.L. Viola, a medical director employed by Solvay, a Belgian chemical firm, presented his findings on the carcinogenic potential of VC to the 1970 X International Cancer Congress held in Houston, Texas. Immediately after the Congress he was contacted by another researcher, Cesare Maltoni, who had been working since 1967 on the toxicology of VC at the Instituto di Oncologia in Bologna. Using slides of Viola’s experiments, Maltoni began investigations to specify the type and degree of carcinogenic risk from vinyl chloride. (12) He found that rats exposed daily to as little as fifty ppm of vinyl chloride for one year developed cancer of the liver. Other cancers also developed in the lung, brain and lymphatic system.

As is common, Maltoni’s work was supported by industry: initially by Montedison of Italy, and later by ICI (Great Britain), Solvay (Belgium) and Rhone-Progil (France). The terms of the research contract were highly specific: the project’s proprietors controlled the results and any release of information was subject to their consent. (13)
The results were not generally available until May, 1974.

In 1972, the US Manufacturing Chemists Association, an industrial group, was aware of the European research, but maintained that it was under an injunction of confidentiality and therefore could not reveal Maltoni's findings. The ostensible purpose of this secrecy was to avoid premature release of unvalidated findings that might lead to unwarranted speculation.

In January, 1973, the National Institute of Occupational Safety and Health (NIOSH) made a general request for information about 23 chemicals, including vinyl chloride. On March 7, 1973, the Manufacturing Chemists Association recommended a precautionary label on VC containers that made no reference to toxic effects on animals or people—"in other words it appears to have deliberately deceived NIOSH regarding the true facts," according to a later report by Dr. J.T. Edsall of the American Association for the Advancement of Science. (14)

The company chemists continued to play games: in July, 1973 they met with NIOSH officials and representatives of the European chemical industry. The only public record of what transpired at that meeting is the chemists' account. It is not clear whether they informed NIOSH of the full import of Maltoni's findings, or whether they just reported that studies were underway. What is known is that NIOSH and the Occupational Safety and Health Administration (OSHA) did nothing as a result of the meeting. The industry standard remained unchanged until Goodrich announced the three worker deaths in January, 1974.

Government Regulation

A threshold limit value of 500 ppm (time-weighted average) was established in 1959 by the American Conference of Governmental Industrial Hygienists, a private group that set industrial standards until OSHA took over this task. After publication of the Dow results, the hygienists adjusted the standard from a maximum 500 ppm time-weighted average value to a maximum value of 500 ppm over any time period. (15) In other words, industry continued to block any real change. Even after the passage of the Occupational Safety and Health Act in 1970, the standard remained 500 ppm. The announcement of three deaths in January, 1974 prompted intense pressure from organized labor: OSHA set a temporary emergency standard of 50 ppm. The permanent standard, adopted in October, 1974, was still a compromise: industry defeated the "no detectable level"—the only level that affords protection against a known carcinogen—that was proposed by scientists and unions. The new standard was 1 ppm.

With tight standards in the US, industry may decide to shift operations to countries with less stringent laws or no control laws at all. Companies like Goodrich don't have far to go: the Quebec government has set no limit on VC. (16) Health and labor laws in Canada are not federal; each province drafts its own. The Canadians have no equivalent of OSHA and standards are not mandatory. Conditions in underdeveloped countries are worse; superexploited workers in South Korea, for example, enjoy no protection whatever.

Three other vinyl chloride scares involving the US Food and Drug Administration have flared up and died down in the last two years. The first involved the use of PVC in packaging: residual VC in plastic bottles was found to migrate—and had a special attraction for alcohol. This type of packaging was banned for all wines and liquors. PVC was also used in meat packaging, and the packers were suffering from the fumes released when heat was applied to seal the PVC film.
The Food and Drug Administration was again called up to correct the situation and to check that VC did not leach into meats and other foods packaged in this way. Thirdly, VC was a widely used propellant in aerosol sprays, and the Environmental Protection Agency calculated that in the typical windowless apartment bathroom, VC concentrations could reach 250 ppm after using an aerosol deodorant or hair spray. After Ralph Nader's Health Research Group applied intense pressure, these products were banned.

**New Threats**

For the last two years the Environmental Protection Agency has been dragging its feet on setting a standard to control air pollution near vinyl chloride production plants. It is estimated that some 4.6 million Americans live in areas around PVC plants and are exposed to this carcinogenic pollutant. Six percent of VC is lost during the process in which polyvinyl chloride is produced. Most of it escapes directly into the atmosphere as air emissions, with lesser amounts dissolved in effluent streams and entrapped in sludge and solid wastes. Industry takes the position that there is no risk because VC dissipates in the air. But readings around plants have shown concentrations as high as 33 ppm. (15)

The federal environment agency is concerned about this atmospheric contamination and, under the authority of the Clean Air Act, has proposed regulations that would limit air emissions to 10 ppm and would cut by ninety percent the amount of cancer-causing VC gas released into the atmosphere. (17) The proposal was made in December, 1975 and is still not approved. According to Environmental Protection Agency toxicologist, Dr. William Marcus, the delay is caused by the Administration's requirement that a study be made of the standard's technological implications and its inflationary effects, as well as a cost/benefit analysis of health risks. This is a familiar ploy used by the Ford Administration to delay standard setting—at least until after the November elections.

**VC Research**

In October, 1975, Dr. Joseph Wagoner, Director of Field Studies and Clinical Investigations for NIOSH, released to the press disturbing results of new epidemiological studies by Dr. Peter Infante on the effects of VC in the atmosphere. (18) Infante found that twice as many babies with birth defects were born to women living in three Ohio communities where PVC was produced as to women in other areas of the state. Three times the expected number of severely handicapping birth defects of the central nervous system were reported. Half again as many deaths from brain tumors as would be expected were found in the adult male population.

Infante's work was done in northeastern Ohio where General Tire, Goodrich and Uniroyal have plants that polymerize VC (Ashtabula, Avon Lake and Painesville). (19) With the caution common to scientists, he acknowledged that these findings do not constitute a direct link between VC and the increased occurrence of fetal deaths, birth defects or brain tumors. Like other carcinogenic chemicals, VC has been proved to induce mutations. (20) The problem is that

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**Three times the expected number of severely handicapping birth defects were reported.**

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Infante's technique was thought too crude to detect anything so fine as a link between a single chemical and birth defects; further studies were needed.

In April, 1976, Infante and co-workers at NIOSH, the Center for Disease Control and the University of North Carolina published the results of another study, this one carried out at the Firestone PVC plant in Pottstown, Pa. (21) All the VC-PVC workers and eight percent of rubber workers were interviewed (a total of 253 workers) to ascertain paternal age, pregnancy outcome and dates of conception. Job histories were obtained from company records. The analysis showed that wives of VC workers had more miscarriages after their husbands began working in VC units, and more miscarriages than women whose husbands were not exposed to VC.
The study suggests that the additional miscarriages may be due to direct VC exposure of fathers. This study underestimated damage because it relied on the recall of husbands rather than interviewing wives to get pregnancy data or consulting hospital records. Epidemiologists needed to obtain adequate occupational, residential and medical histories. Three new studies are attempting to do just that.

Current Studies

The Painesville, Ohio community, where Infante observed high rates of central nervous system birth defects, was restudied by the Center for Disease Control in Atlanta, the agency recently designated to supervise NIOSH, but a relative newcomer in occupational disease research. Hospital records were reviewed and all cases of nervous system birth defects were followed up. Parents were interviewed to obtain occupational and residential histories. These results found no association between birth defects and either residence near the Uniroyal PVC plant or employment in the plant. (22)

Infante has reviewed this study and found so many errors as to invalidate the results. For example, CDC included in the study two handicapped children whose mother lived in Ashtabula, 20 miles away; they used these cases to prove that the parents of children without birth defects live closer to the Painesville plant than those of children with birth defects, just the opposite of what would be expected if PVC from the Painesville plant was causing defects. But what the study didn’t note, Infante points out, is that this person lives close to the Ashtabula plant, which also makes PVC. (23)

A similar study is being carried out in South Charleston, West Virginia, by the Center for Disease Control using an improved and expanded methodology. A

The role of the Center for Disease Control raises a number of serious questions.

A third study is underway in Shawinigan, Canada, where nine VC workers at the Goodrich plant died of angiosarcoma. The site was chosen because Quebec Province keeps a central registry of all tumors and a rather complete record of fetal deaths. (The problem with comprehensive fetal death registration is that miscarriage in the first trimester is sometimes mistaken for a heavy menstrual cycle and not reported.) This three-month pilot study is supported by the American Public Health Association; Dr. Gilles Thériault of Laval University is the principal investigator. He will review all death certificates for the years 1960 to 1974 and consult the tumor registry for the town of Shawinigan and for the control town of Louiseville. He will be looking for the distribution of cancers and will plot the rates for each year against the Goodrich production profile. If the findings warrant it, a longer study may be undertaken on the etiology of cancer, which would involve interviewing to obtain occupational and residential histories. (25)
At the same time, Réjean Harvey, a biologist working with Thériault, will be studying air pollution and carrying out a geographic and topographic survey in Shawinigan, which is subject to temperature changes that create peculiar air inversions. What he is looking for in this town of 37,000 Québécois is the pattern of residential risk associated with fallout from the Goodrich PVC plant.

The Union Position

Occupational and medical records have long been a bone of contention between labor and management. Companies usually keep medical records compiled by doctors they employ and workers rarely have access to them. A worker's personal physician may not be trained in industrial medicine and may not see enough workers in the same occupation to be able to recognize any trends. In these circumstances, the link between VC and angiosarcoma went undetected for years.

Union spokesmen have demanded that the grossly inadequate data base revealed in the 1974 VC crisis be augmented by instituting comprehensive surveillance of workers exposed to toxic substances. Such a system must include provision for medical examination after the worker's exposure has ceased, since the latency period for most cancers is very long. For this provision to be effective, the federal government must administer it in order to ensure strict confidentiality for the individuals concerned and to evaluate and preserve individual records regardless of changes in employment. Employers should be required to establish registries of workers exposed to toxic chemicals and to give names of workers who leave their employ to NIOSH for that agency to conduct the subsequent medical surveillance and epidemiological studies. (26)

The problem of providing a safe working environment is not only a medical and technical one; occupational health is also an economic and political problem. The engineering controls that would eliminate worker exposure to toxic substances are expensive and companies have been resisting worker demands and government directives to provide them ever since the industrial revolution. The common practice is to take stopgap measures after an accident or illness has occurred because they are less expensive as a direct cost to the company and, in economic terms, more attractive to management. (27)

Better maintenance of machinery and equipment would help ensure a healthier and safer workplace, but companies persistently pare their costs by cutting payrolls. Adequate maintenance cannot be performed by a reduced workforce, increasing the dangers inside and outside the plant. (See BULLETIN, November/December, 1974) Communities are exposed to health hazards as a direct consequence of such management policies. In effect, workers and the community are subsidizing the companies—with their own health and safety.

However, state and federal agencies that regulate industry are less than aggressive in protecting workers and communities. OSHA, the Environmental Protection Agency and the Food and Drug Administration rarely take the initiative in prevention; more often they react to crises, usually under intense pressure from organized labor. Moreover, state administrations have failed to implement the 1970 OSHA Act. In these circumstances, workers must rely upon
collective bargaining to obtain the protection that is their right by law.

**Goodyear Strike**

Local 8-277 of the Oil, Chemical and Atomic Workers Union (OCAW) went out on strike at the Goodyear PVC plant in Niagara Falls on March 16, 1976 over a wage and contract dispute. Management kept the plant operating at one-third capacity by using supervisory personnel. Strikers, maintaining a 24-hour picket line, noticed that the alarm system had been turned off. The continuous monitoring system, installed in compliance with the OSHA standard on VC, was used to alert workers when VC concentrations exceeded allowable limits (not greater than 1 ppm averaged over any 8 hour period or 5 ppm averaged over 15 minutes). When operating, red lights located in ten strategic spots around the plant would flash. When the alarm went off no worker would enter the building without a protective respirator and workers inside would troubleshoot for the faulty valve that was the source of the leak. On a normal day the alarm would go off ten to fifteen times.

The strikers issued a bulletin alerting the community to the dangers of increased VC emissions in the already-polluted atmosphere of Niagara Falls. The local news media responded and so did environmentalists across the country. At the United Auto Workers Conference on environmental and economic justice and jobs, held in May, one hundred members of public interest research groups, unions and environmental organizations signed a petition condemning Goodyear for endangering lives. Addressing the conference, Dr. Barry Commoner of Washington University called for solidarity in the scientific community to stop the Goodyear violations. Other support came from the Scientists’ Institute for Public Information, which issued a protest, and from a coalition of environmental groups in California who released a statement condemning the company.

**Potential for Struggle**

The Goodyear strike sets a new precedent with far-reaching implications. According to Tony Mazzocchi, OCAW official, this is not an issue on which unions and environmentalists can take different sides. Everyone’s health is at stake. In the case of VC, he said, we learned the hard way—by losing 27 men. But what of those 15,000 industrial chemicals whose properties are unknown? Is the community going to wait for another crisis before insisting that industry act responsibly? (29)

Passage of the Toxic Substances Control Bill would make a difference. It would require industry to test every chemical before it is used in the workplace. This bill was first introduced in 1971 but languished in limbo between House and Senate versions that were never reconciled. Another draft was submitted in 1973 but died in the same deadlock. In 1975 a third attempt was made, but so far there has been no action. (30) And there won’t be any until public pressure proves stronger than industry’s lobby.

Workers must be trained in job safety and health so they can identify specific hazards and use legal resources to have them corrected. The OCAW strikers at Goodyear reacted to the switched-off monitoring system because they were aware of the dangers of VC. Only an informed workforce and community can fight effectively for their protection.

David Wegman and co-workers in Boston organized a successful project to train industrial workers in the detection, reporting and correction of hazards in their working environment.(27) In order for workers to exercise control they need the information, education and training that are too often the prerogative of health professionals. Usually the worker’s only source of information is management. Wegman admonishes health professionals to develop many more ways to aid workers in their efforts to protect their health.

**The Profit Motive**

Goodrich is one of the Big Four US rubber companies, but it ranked only 36th among the top 50 chemical producers in 1975 and (Continued on page 14)
Workers' Compensation

As the controversy over medical malpractice insurance swirls on in the courts and legislatures throughout the country, many have turned to workers' compensation as a model for resolving the crisis [See BULLETIN, January/February, 1976 and May/June, 1975] Under so-called medical liability compensation systems, state boards would award patients compensation on a "no-fault" basis, without trying to determine the extent of the attending physician's responsibility, but based solely on the degree of patient injury or disability. In the process, patients would in most cases lose their rights to sue for damages in the courts.

The following article by Dan Berman, long-time health and safety organizer and writer and San Francisco resident, looks at the granddaddy of no-fault insurance systems, the workmen's (now workers') compensation system. He shows how it was enacted to head off a growing wave of successful suits by workers against industry, and to create the public impression that injured workers were being well cared for. Workers' compensation was predictable, cheap, and removed companies from the embarrassment of open jury trials. Its basic structure has remained unchanged to this day.

In the first five years of this century public consciousness of workplace slaughter in the giant monopolies was a constant reproach to the consensus of "thoughtful men of all classes" which the new elite of big businessmen and bankers were trying to forge. The popular and socialist media were full of stories about atrocities at work, which directly or by implication questioned the legitimacy of capitalism.

Labor, badly beaten in a series of strikes in the late 1880s and early 1890s, was on the ascendancy by 1900, but unions were making almost no progress in organizing the new mass-production industries in the monopoly sector. Unions had been practically eliminated in the steel industry. There were bloody struggles in both the hard rock and coal mines, the only industries where industrial unions managed to make permanent inroads.
Between 1890 and 1914 both unionized craft workers and the mass of the unorganized saw all their wage increases negated by inflation, and many of their efforts to organize stymied by the open shop campaign of the National Association of Manufacturers. It is no wonder that thousands of workers turned to the Industrial Workers of the World, the famous “Wobblies,” and millions of voters to the Socialist party. (2, 6, 20).

Work in those days was hard and dangerous for most workers and hours were extremely long. A study reported in the labor press in 1904 estimated that 27,000 workers were killed on the job annually, (4) and a 1907 Bureau of Labor report put the toll at 15,000 to 17,500, of 26 million male workers. (9) Judging from contemporary accounts manual work in mining, manufacturing, and transportation was the most difficult. Mack Sennett, the inventor of the Keystone Cops, began work at the age of seventeen at the American Iron Works in East Berlin, Connecticut:

“...In my day it was common for four men to hoist a four-hundred-pound rail, place it on the shoulders of a single man, and expect him to tote it a hundred yards.” (5)

**Corporate Redistribution of Blame**

By 1908 the questions of workmen’s compensation and job accidents had become major items on corporate agendas. Existing common law doctrine made it almost impossible for workers to collect damages for injuries suffered on the job, because the worker had to prove the employer was at fault. This was particularly difficult for severely injured workers or for the families of workers killed on the job, who had to depend on the testimony of supervisors or co-workers subject to pressure from the boss. The employer could argue in defense that:

- the accident had resulted from the worker’s own carelessness,
- the worker “assumed the risks” of the job in taking it, or that
- a fellow employee of the injured worker had caused the accident.

These defenses were usually enough to prevent successful worker suits. (7, chapter 3)

The reaction of reformers in some states was to pass laws weakening the common law defenses of employers. In states where these

**Executive Action**

At the turn of the century new organizations sprang up among the corporate elite to help coordinate political activities, mold public opinion, deal with labor, and plan for the future. The National Civic Federation (NCF) was organized in 1900, and the American Association for Labor Legislation (AALL) in 1906. Their principle support came from the monopoly sector. The first NCF president was “Dollar Mark” Hanna, wealthy banker and manufacturer and manager of McKinley’s successful Republican campaign against William Jennings Bryan in 1896. The NCF also gained solid backing from men such as Andrew Carnegie and Judge Elbert H. Gary from the steel industry and Cyrus McCormack and George W. Perkins of International Harvester. Only the Rockefellers stayed aloof from active participation.

In the first five or six years of its life the National Civic Federation preached the mutuality of interests of capital and labor and the importance of dealing with organized labor through collective bargaining and a written contract. The NCF theorized that there was no such thing as class conflict, and tried to make arbitration substitute for strikes when unions did manage to organize. (21) Though most of its chief corporate supporters bitterly resisted unions in their own bailiwicks, the NCF was in principle pro-union. In practice this meant trying to “channelize the labor movement into conservative channels” wherever possible. (3, pp. 11, 12) Samuel Gompers, founder of the American Federation of Labor, had decided in the late 1890s that bread-and-butter trade unions had to work with the trusts; eventually he became a vice president of the NCF. (4) Both Gompers and John Mitchell of the United Mine Workers were personal friends of big business leaders of the organization, hunting and dining with them and
consulting with them for investment advice. (10, p. 168)

The American Association for Labor Legislation (AALL) was active in promoting uniform labor legislation on a state-by-state basis throughout the United States, on the theory that this would prevent companies from moving their operations to states with less restrictive legislation. The AALL made particular legislative efforts in the areas of industrial disease and industrial accidents and, later on, in workmen's compensation. It succeeded in passing federal legislation banning the use of white phosphorus in making matches, thus eliminating "phossy jaw," a disease which caused the victims' jaws to stink and rot away. (10, p. 168)

In addition to advocating specific programs for companies and government at the state and federal level, both the NCF and the AALL were concerned with more general "ideological and social problems," especially the threat of socialism, which was understood as the "only serious ideological alternative to... policies of social responsibility." (3, p. 117) A long letter from an executive of the Lackawanna Steel Company to his vice president recommended that he contribute to the National Civic Federation because "the socialists and extreme radicals are very distrustful of it"; because it gives lawmakers "a sought-for excuse" to resist anti-business legislation; and because it has been able to project an aura of civic-minded impartiality to its programs. Though it sometimes looked like the NCF got involved in programs which many employers would criticize, the organization's executive wrote that it "... only takes up a subject after it has assumed an important national aspect and it appears... that it... will be fought to an unfair conclusion.... Also there are many big men on the inside of the [NCF] who are able to inform and influence the action of legislators even after the [NCF] has been obliged to yield to popular clamor and let some subjects get away from them...." (22)

"employers' liability" laws were passed, workers began to win more and larger settlements. As costs spiraled and open jury trial became a public embarrassment, the National Civic Federation (NCF), a lobbying group founded to coordinate the political activities of monopoly sector corporations and banks, (See box, page ) began to lobby for a workmen's compensation system which would "substitute a fixed, but limited charge for a variable, potentially ruinous one." (8, pp. 259, 260)

In 1908 the federal Bureau of Labor began to make careful estimates of the number of industrial casualties,(9) and the new $10 million Russell Sage Foundation financed the Pittsburgh Survey, which paid a great deal of attention to working conditions. A whole book in the Pittsburgh Survey, Crystal Eastman's *Work-Accidents and the Law* (1910), was devoted to the wrongs of common law and "employers' liability" practices, and the necessity for replacing them with a system of workmen's compensation.

NCF led the forces for reform. Speakers on workers' compensation at the 1908 meeting of the NCF included leading bankers, lawyers, insurance company executives, and Russell Sage Foundation experts; everyone but workers and their unions seemed to be represented. By 1909 the NCF's Department of Compensation for Industrial Accidents and Their Prevention had become the center for lobbying and publicity. Experts from England and Germany (including a Major Piorkowski from Krupp) came to address the Federation. Model compensation laws written by both the NCF and the American Association for Labor Legislation (AALL), a similar group which concentrated more on occupational diseases and industrial inspection, began to be requested by states all over the country. Occupational diseases never merited much attention in the model laws (3, chapter 2; 10, chapter 6), and so it remained until the late 1960s (11, chapters 4, 5), despite a major flurry over silicosis during the 1930s after the Gauley Tunnel Disaster. (See BULLETIN, September, 1972).

By the time government and foundation studies were completed and the NCF and the AALL had completed their conferences and come to their conclusions, the only question left to be answered was whether or not compensation insurance would be carried by
private or state-owned companies. (3, p. 51; 10, chapter 6) Theodore Roosevelt's address to the NCF in 1911 included workmen's compensation as a major theme. Conservative court opposition was overcome within the next year, and with active promotion by the NCF's reorganized "Compensation Department" and the AALL all but six states had some kind of compensation law by 1920. (3, chapter)

The basic model for US "industrial safety" and "workers' compensation" programs was first developed in Bismarck's Germany by a conservative capitalist class under challenge by the fastest-growing socialist movement in Europe; it was first tried out systematically in the United States by US Steel. (1, pp. 325-330; 7; 12, p. 15; 13) This program, soon superseded by state workmen's compensation laws, paid workers or their families fixed amounts for job-related injuries causing disability or death without regard to fault. The plan, for all its purported liberality, stated explicitly that "No relief will be paid to any employee or his family if suit is brought against the company" and workers who received any "relief" from the plan were required to sign away any further remedies against US Steel. (13, p. 76)

Injured workers were supposed to receive partial compensation for lost wages and full compensation for medical expenses incurred as a result of the injury. In return for certain compensation at a low rate, the worker gave up all other "rights and remedies" against the employer, such as suits for negligence under the common law. Most employers bought private insurance against industrial injury losses, but large employers could insure themselves. Claims were administered through state industrial accident commissions, but premium rates were set through a private rating bureau, the National Council on Compensation Insurance, according to benefit levels set by state legislatures. From inception to enactment to enforcement, private business interests had total hegemony over the workmen's compensation system.

**Unions Stymied**

In the earliest period of lobbying and public relations around workmen's compensation, organized labor was conspicuous by its absence. In 1911 unions had only 2.3 million members in a workforce of over 30 million, and many were fighting for their very survival, having had little success in penetrating steel, meatpacking, oil or other big new industries.

Union reluctance to join the corporate-sponsored rush to write compensation laws was understandable. After all, workmen's compensation was first tried out by US Steel, in a context of union-busting and a corporate welfare paternalism designed to keep unions out. (13) Furthermore, the compensation programs were being propounded at a time when workers were beginning to win larger and more frequent negligence judgments against employers, as traditional common law defenses were weakened and juries became more sympathetic. As James Weinstein has written: "Compensation laws, in contrast, could be expected only to pension off the worker during his period of disablement at something less than his regular wages. In addition, almost all unionists, conservative or socialist, opposed government regulation of working conditions on the theory, often only implicit, that government was controlled by business, either directly or through conservative politicians or judges." (3, p. 43)

Later on, when Samuel Gompers, head of the AFL, had reluctantly endorsed the concept of workmen's compensation under pressure from his big business friends and from the belief in the inevitability of some kind of legislation, the labor movement and the Socialists each developed their own
positions on the issue of workmen's compensation. The programs of both labor and the Socialists called for compensation levels of 100 percent of lost wages (in contrast to 50 or 66 \( \frac{2}{3} \) percent), retention of the right to sue at common law before a jury, and for state-owned insurance companies to prevent the diversion of most premiums to insurance interests rather than injured workers. In 1910 Crystal Eastman showed that only 24 to 37 percent of employer premiums in "employers' liability" programs were paid out as benefits in some form by the insurance companies. (14, pp. 286-290) With the addition of reasonable presumptions concerning occupational disease liability, the labor/socialist proposals of sixty years ago would make a fine platform for a radical restructuring of workers' compensation today.

As labor and the Socialists had feared, almost all their demands were defeated. In no state were benefits close to 100 percent of lost wages. In New York State, organized labor's program banning private insurance companies was sacrificed for fairly high initial benefits, and a state-owned company was allowed to co-exist with private companies. (3, chapter 2) In Missouri the enactment of a workmen's compensation law was held up by a strong labor movement until 1926 over the issue of a state-owned fund, but the battle was lost. (15) Of the big industrial states, only Ohio totally excluded private insurance companies from the compensation business. (See box)

**A Century of Stagnation**

The private workmen's compensation system and the unenforced safety laws which passed in most states proved to be everything their corporate sponsors had wanted. Both management and insurance interests benefited by the shift from risky jury trials to controllable administrative agencies. Costs to companies were stable and averaged around one percent of payroll; occupational disease payments were almost non-existent; and companies were protected from negligence suits at common law. Physicians were hired to deal with work injuries and to represent the companies within the compensation bureaucracy, creating that institutional ghetto called "industrial medicine."

Despite some new scrutiny due to the renewed interest in the work environment, the compensation system has remained almost unchanged. The Occupational Safety and Health Act of 1970 set up a President's Commission on State Workmen's Compensation Laws chosen "from people inside the system," according to its business school director. (16) A bill introduced in 1973 by Senators Harrison A. Williams and Jacob

Only Ohio, of the big industrial states, totally excluded private insurance companies from its workmen's compensation plan. Today Ohio pays out 96 percent of its premium income as cash and medical benefits to victims, compared to 53 percent for private insurance companies nationally. Today workers' compensation benefits could be nearly doubled at no new cost to employers by eliminating the role of the private insurance companies. A good first step would be to investigate why it costs Ohio 4 cents and private insurance companies 89 cents to return a dollar of benefits to workers hurt on the job.


easier to obtain. Even so, its chances of passage are small. Management and insurance interests, frightened by the multi-billion dollar benefits for coal miners under the various black lung compensation laws, are eager to keep the federal government out of the compensation business. The corporate-dominated Occupational Safety and Health Administration has been quietly encouraging the reform of state compensation laws on a "voluntary" basis, to undermine pressure for federal action. (17)

With living standards falling for workers and with the OSHA law itself under strong business attack around the country, it is doubtful that important changes will occur in the near future in the compensation system. (18, 19) The old pattern of government and corporate-sponsored studies leading to cheap "reforms" seems to be repeating itself. In a general atmosphere of political conservatism, a holding action seems to be the order of the day. What happens in the workplace cannot be separated from what happens in the rest of society.

—Daniel M. Berman (This article is an excerpt from Death on the Job, to be published in 1977. Copyright © 1976 by Daniel M. Berman. Reprinted by permission of Monthly Review Press.)

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17. See papers given at Interdepartmental Workers' Compensation Task Force, co-sponsored by the Occupational Safety and Health Administration (Chicago, February 10-16, 1976).
18. Toxic Materials News (May 1, 1975) v.2, no. 9, citing speech by President Gerald Ford to US Chamber of Commerce.

Vinyl Chloride

(Continued from page 8)

chemicals account for only 27 percent of total company sales. (31) Of the 500 largest US industrial corporations, Goodrich ranked 107th in 1975, with total sales of $1.9 billion. (32) The profit margin was a mere 1.3 percent (net income as percentage of net sales), earning Goodrich a profitability rank of 267th out of 500.

Often relatively smaller companies with low profit margins invest least in research and development. (33) Dow Chemical, which carried out research on the toxicity of VC in 1959, ranks third in the top fifty chemical producers and chemicals account for 69 percent of total sales. With this total reaching $4.9 billion in 1975, Dow is two and one-half times as large as Goodrich; its profit margin is also much larger—12.6 percent in 1975, earning it the profitability rank of fourteenth in the first 500.

The conclusion to draw from this analysis is not that companies should be larger because big corporations can do more research, but that research should be nationalized. The protection of workers cannot be left to profit-hungry industries and all chemicals
should be tested before they are introduced into the workplace. R. Jaeger, a hysiologist attending a workshop on VC toxicity in May, 1974, in response to a presentation of recent studies undertaken at Dow, lamented, "it is a sad state when experimental toxicology must confirm the tumorigenicity of a chemical which is listed by Chemical and Engineering News as the compound ranking 22nd in their top 50 chemicals, with a production of 5.35 billion pounds in the US last year." (34)

**Other VC Diseases**

The story of slow and reluctant acknowledgement of the etiology of angiosarcoma is not an isolated event, even in the history of vinyl chloride. There was similar foot dragging in the diagnosis of acro-osteolysis and Raynaud’s syndrome, two diseases that affect the hands of VC autoclave cleaners, causing clubbing of the fingers, severe pain, and sores. The first incriminating reports appeared early, in 1939,(35) and were later confirmed in the Soviet and East European literature. (7, 36) Again the information was ignored—until 1967, when Goodrich announced 31 cases of acro-osteolysis among its workers. (37) Simultaneously, similar reports were published in England, Belgium and France.

NIOSH has conducted a retrospective survey of 1,294 vinyl chloride workers who had at least five years’ exposure; they found more than the expected number of deaths from cancer of the liver, lung and the lymphatic and central nervous system, and they pinpointed VC as the cause. (38)

Clinical reports of other disorders are still coming in. Dr. Fernand Delorme, the Canadian pathologist in Quebec Province who uncovered nine deaths from angiosarcoma at the Goodrich plant in Shawinigan, is concerned that VC may be responsible for other liver disorders. (39) Pulmonary fibrosis and other respiratory symptoms are being scrutinized for their incidence and prevalence among VC workers and for the role of VC exposure in their development. (40)

**Aftermath**

It’s a sad story. What is frightening about it is the possibility that equally ugly and deadly facts are buried under thousands of other unresearched industrial chemicals. The story of vinyl chloride must be understood so that action can be taken to prevent the introduction of new substances damaging to our health—and more needless deaths.

-Meredeth Turshen

Meredith Turshen is a health writer based in Washington, D.C.

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Dear Health/PAC:

A copy of your article published in the Health/PAC BULLETIN of November/December, 1974 has just been sent to me. You have done me and my colleagues at McGill a grave injustice. To expect that I can persuade you of this is beyond our reasonable hope but at least I believe you should be told the truth even though you may choose to ignore it. Time and space are not sufficient to review your paper fully; much is concerned with events and persons before my time. Some aspects, however, are well-known to me and I will describe just a few of them.

I came from Britain in 1964 as Chairman of the Department of Epidemiology and Health at McGill, having been Director of the Epidemiological Research Laboratory, a unit of the British Medical Research Council for which you express so much respect. In the autumn of that year I was persuaded by my friend, Dr. Christopher Wagner, the South African pathologist who discovered the association between asbestos exposure and mesothelioma, of the very great need for epidemiological studies of Quebec workers exposed to pure chrysotile. Later in the year I was invited by the Canadian Federal Government to undertake such a study and it was suggested we should seek the necessary funds from the mining industry. Coming from a country where scientists are generally considered, and usually are, honorable men, there seemed nothing particularly wrong in this somewhat strange North American way of doing things; nevertheless it took me two years to persuade the QAMA [Quebec Asbestos Mining Association—ed.] to support our work. Since then (October 1966) we have had research grants from the QAMA Institute of Occupational and Environmental Health over an 8-year period. At no time has there been any interference with our research programme or any requirement to see our reports prior to publication. During the same period our asbestos studies have also been supported by the Canadian Medical Research Council, the U.S. Public Health Service, the British Medical Research Council and the Canadian Federal Government. Never have I or our senior scientific staff received any part of our salaries or any funds for personal use from the asbestos industry. McGill University has subsidized our research, certainly not the reverse as you imply.

Under the heading, Prostitution Pays, you refer to the way I personally have benefited from all this. I came to McGill as a departmental chairman and resigned from that position in 1972 to prostitute myself to the International Planned Parenthood Federation (IPPF) for 2 years. My salary as a McGill professor was and still is less than that of an average general practitioner in the Province of Quebec; my salary with IPPF was a good deal less still. I am now about to move back to
England as Professor of Occupational Health and Director of the TUC Institute of Occupational Health at the London School of Hygiene and Tropical Medicine. My salary there will amount to less than $20,000 per annum. So much for successful prostitution! I mention these figures of my material gains during the past 12 years in case you care to compare them with those of the ‘independent’ scientists you hold in such high regard. Sometime you might also like to see whether our physical conditions of work even begin to compare with the frank luxury of the laboratories and offices in which some so-called independent investigators operate.

In concentrating on our prostitution to the asbestos industry you forgot to mention that during the same period we were also selling ourselves to the Canadian Department of Health and Welfare for developmental work on influenza vaccines, for studies of the cause and control of uterine cancer and the cause of neural tube defects; to the Quebec government for studies of urban air pollution and care of the mentally retarded, and to the US government for studies of the impact of universal health insurance in Quebec (something which even your country may get round to one day). We also managed a few small jobs like replanning the entire Quebec public health system and are now engaged in the same task for occupational health services in the Province. The prostitution business has been so good in fact that it would not have been of serious concern to us if the asbestos industry had taken its favours elsewhere.

We have gained nothing from it except the chance to do important work. We have been and are in asbestos research for one reason only and that is to understand its effects on man so that they can be prevented. We have worked hard at this and have never hidden or knowingly misrepresented our findings.

On page 22 you discuss our cohort mortality study in the Quebec mines at some length. Either you are ignorant of basic epidemiological method and have had no knowledgeable person to advise you or you have deliberately chosen to mislead your readers. The essence of a cohort study is the comparison between the experience of workers exposed for short periods and at low concentrations and those with long and heavy exposure. It is you who chose to draw a negative conclusion from our study and to downgrade our statement—in heavy type at the beginning of the article—that the lung cancer death rate in the heavily exposed was five times greater than normal. At the top of p 22 you deliberately misquote from p 684 of our paper in order to distort our findings. Because it is so important I give below exactly what we wrote:

"At face value, the findings suggest that our cohort of workers in the chrysotile mining industry had a lower mortality than the population of Quebec of the same age. This is generally true of employed persons, provided they are not subjected to an occupational hazard sufficient to offset the considerable selective advantage of being and remaining fit for work. This advantage was clearly lost by the men in the highest dust-index category whose standardized mortality was about 20% above that of the rest. Two thirds of the excess mortality in this group was probably due to pulmonary fibrosis, shown on the death certificate as either asbestosis or in the guise of various respiratory or cardiovascular diagnoses, and the remaining third to cancer, mainly of the respiratory tract."

You managed to convey exactly the opposite effect. I might add that Dr. Selikoff's group has since carried out a similar cohort mortality study in the Quebec chrysotile mines and mills with virtually identical findings to our own. He confirmed both the magnitude of risk of lung cancer and the fact that mesothelioma is very rare in this industry.

You say (page 26) that Selikoff et al reported an increase in gastro-intestinal cancer 'two years ago'. I don't know the date to which you refer but we reported it in 1971, at a time when he, at a public meeting, said he was unsure about such small increases! Indeed, we reported most of the findings I have mentioned at a public meeting to unions, employers and the press in Thetford Mines on February 27th, 1970.

You attempt to belittle the very important possibility—indeed probability—that the various types of asbestos fibre have different health effects (pp 23-26). It is this ostrich-like attitude that is probably condemning the American public and workers alike to continuing mortality from mesothelioma because certain 'independent' scientists refuse to accept that crocidolite and amosite are almost cer-
tainly very dangerous substances. You give much space to the financial interests of the chrysotile mining industry but ignore completely how delighted the South African producers of crocidolite and amosite must be at the attitude of NIOSH and its advisors. You ought to speak to Dr. Christopher Wagner some time about the biology, politics and prostitution connected with that.

Finally (page 24), to pick on Graham Gibbs for noting the interaction between asbestos fibre and polyethylene and to suggest this was aimed at diverting attention from asbestos is about as ridiculous as you can get! His astute observation, far from detracting from asbestos, prevented experimental pathologists all over the world from wasting time and resources on experiments which would have been invalidated by the presence of oil liberated from plastic by asbestos fibre. At no time did he or anyone else suggest these oils had anything to do with the effects of asbestos on man.

If you are still with me, I would like to finish on another note. During the past 3 years or so life for many honest medical scientists—of which our group at McGill is only one, has been made hell by people like you, Brodeur and the like. No doubt this is your intention; I suppose you believe that people like us should be driven out of their jobs or out of their minds. I would like you to know that you are being very successful. Competent and sensitive people cannot take this kind of abuse, why should they when there are more attractive and more rewarding opportunities open to them. My friends think I am a lunatic to accept yet another university position in occupational health. I think they are probably right and I would not do so in the USA. A climate is being created on this continent in which no objective scientist with any concern for survival will go into research of social importance. Why don’t you attack the real problems in industrial health and research in your country? Where are your comments on the fact that in the USA (unlike Europe) the worker has virtually no say or control in the safety of his working environment? Why no demands that research policy and resources be directed jointly by worker and management? Why make it well nigh impossible for honest and objective investigators to work in this continent rather than help protect them and publicize their findings?

If you plan to visit Montreal in the next few months I shall be happy to discuss any of these questions as fully as you wish.

- Corbett McDonald, MD

The author replies

As further evidenced by your letter, our disagreements are indeed profound. First, I would like to respond to a number of statements in your letter that are either false or misleading.

You conclude the second paragraph with the statement, "McGill University has subsidized our research, certainly not the reverse as you imply." Yet in February of this year you stated before a government commission, the Beau-dry Commission, that of the $1.5 million spent on your asbestos research program over the last ten years, $1.1 million came from grants by agencies outside the University. Of this $1.1 million, $975,000 came from the Quebec Asbestos Mining Association (QAMA) via its Institute of Occupational and Environmental Health.

The remaining $400,000, for salaries of senior scientific staff, you further testified, was paid in part by the Canadian Medical Research Council and in part by McGill University (the proportions were not specified). If receiving roughly $3 for every $1 the University spends isn’t a subsidy, then I don’t know what a subsidy is. The University’s contribution pales even further with the realization that senior staff salaries are a relatively fixed obligation for any university and, short of a financial crisis, must be paid regardless of faculty research activities. It is outside funds, not faculty salaries, of course, that establish such a major scientific program.

Three paragraphs later you charge that I “deliberately misquote” you in order to distort your findings. The quote as it appears in my article—"The findings suggest that our cohort of workers in the chrysotile mining industry had a lower mortality than the population of Quebec of the same age"—is the same as the version given in your letter. I did not misquote you. Your apparent objection is that, by isolating the quote from its context, I have, in your opinion, distorted its intended meaning. The longer quote, however, illustrates equally well my contention that you consistently minimize the dangers of asbestos. Let us examine this quote in detail.
That asbestos miners had a lower mortality rate than the population of Quebec of the same age is the first evaluative sentence in the abstract preceding the article, and the lead sentence in the article’s final section—the summary and evaluation of findings. In both instances the sentence sets the tone for the discussion which follows and, as authors of scientific papers well know, is the kind of easily understood summary statement that is picked up by the news media and by casual readers of the article.

The problem with the sentence is that it is misleading—there is less to it than meets the eye. In the original Health/PAC BULLETIN article I argued that by including in your study many workers with limited and/or recent exposure to asbestos you underestimated asbestos-related deaths. But even in the absence of such shortcomings, the statement that asbestos workers have a lower mortality from all causes than that for the Quebec population of similar age does not rule out the presence of serious, widespread hazards in the industry. Industries tend to select the healthiest, most active adults for employment, excluding the less healthy, the chronically ill and the handicapped. Thus mortality rates for industrial workers are lower than those for the general population, as you acknowledge in the second sentence of your quote. In quantitative terms, for workers in industries generally considered less hazardous, it is not unusual to find a ratio of mortality of workers to the general population of less than 75 percent for all ages from 40 to 64 years, as observed, for example, among telephone company workers. (Journal of Occupational Medicine, 18, 166 (1976)) Retired industrial workers show evidence of even lower ratios at ages in their early 60’s, which is near the median age of the asbestos miners you examined.

However, using the data presented in your article (p. 683), one finds that asbestos workers have a mortality rate exceeding that of most other industrial workers—nearly 92 percent of the general rate. (Curiously, although you presented the necessary raw data, you did not compute this figure anywhere in your paper.) The figure gains significance when one considers that asbestos miners should presumably be healthier than the average worker since they are selected to do heavy physical labor (and would be expected to have a mortality rate toward the low end of the usual industrial range). Many scientists would have found this fact a cause for concern; you chose not to present it.

In the next sentence you acknowledge the customarily lower mortality rate for industrial workers. Then you go on, “This advantage was clearly lost by the men in the highest dust-index category whose standardized mortality was about 20% above that of the rest.” (Was the advantage lost by the men? Or, more accurately, was it lost to them?) You might have stated that you found a death rate from cancers of the bronchus, trachea and lung five times greater among workers in the highest dust-index category compared to those in the lowest dust-index category—and that you found a death rate from all other respiratory diseases four times greater in the highest category compared to the lowest. You found these results, but you didn’t choose to express them in these terms. (Indeed, just as with the death rate from all causes, you didn’t calculate the death rate from respiratory diseases anywhere in your paper—although the data needed to do so was present in your Table 6.)

You did calculate the five-fold increase in death rate from respiratory cancer. As you note in your letter, it is presented in heavy type at the beginning of the article. (What you don’t mention is that the entire abstract in which it appears is presented in boldface type.) More important, let’s look at what you actually say in your paper about the increased death rate: “The difference in rates for respiratory cancer between those maximally and minimally exposed may well be closer to threefold than fivefold.” So why don’t you just say that asbestos miners suffer a three to fivefold increase in death rate from respiratory cancers rather than gratuitously referring to a possible exaggeration? Isn’t a three to fivefold increase a matter of serious concern? This is another example among many of the point that I argued in the BULLETIN article, that you consistently minimized the dangers of asbestos in your paper.

You insist, however, that I distort your arguments in order to show that you minimize the hazards of asbestos. (You say, “It is you who chose to draw a negative conclusion from our study and to downgrade our statements.”—your emphasis.) The concluding sentences of your original article again make my case “It is clear that the Quebec
chrysotile workers have had nothing like the experiences of American insulation workers or the London factory workers with respect to malignant mesothelioma, and it seems unlikely that they are compatible with respect to lung cancer. These findings strongly suggest either that chrysotile is less likely to cause malignant disease of the lung and pleura than other forms of asbestos, such as crocidolite, or that workers engaged in insulation and processing are exposed to additional factors which explain the difference.’’ This indeed minimizes the dangers. It is you not I who draw a negative conclusion when what was needed was a clarion call to act on the dangers to asbestos miners which you yourself have found.

Next you go on to assert that when Dr. Selikoff’s group carried out a similar study on Quebec asbestos miners his findings were “virtually identical” to your own. Since the results of the Mt. Sinai study have not yet been published, I called Dr. Selikoff to confirm, if I could, whether this is a proper characterization of the relation between your results. Apparently it is not. We shall have to await publication of the paper by Dr. Selikoff and associates for them to explain this in their own words.

Finally, accusing me of being “as ridiculous as you can get,’’ you deny that your associate Graham Gibbs studied the interaction of asbestos fibers with oils from their polyethylene storage bags as a possible way to shift blame from asbestos as a carcinogenic agent. “At no time,’’ you say, “did he or anyone else suggest these oils had anything to do with the effects of asbestos on man.’’ This statement is simply not true.

In 1968, Graham Gibbs, after having demonstrated the presence of the polyethylene oils in asbestos fibers, concluded: “Four possibilities need to be considered. The adsorbed compounds from polyethylene, whether present as the original additive or as new compounds, may (1) themselves act as carcinogens; (2) enhance the carcinogenic activity of other substances such as trace metals, asbestos itself, or associated oils; (3) inhibit the action of carcinogens present in the fiber; or (4) have no influence on the biological action whatsoever.’’ (American Industrial Hygiene Journal, 30:463 (1969). These four possibilities were repeated nearly verbatim at the 1969 Johannesburg international conference on asbestos. (Proceedings, p. 167) If Graham Gibbs at no time suggested that these oils had anything to do with the effects of asbestos on man, then why was he so concerned about their carcinogenic activity? Of course he was interested in their effects on humans.

I too would like to finish up on another note. I started my article on asbestos research as a case study to answer two questions: (1) Do the results of industry-sponsored studies in the field of occupational health differ from those of studies not funded by industry? (2) If they do, what is the nature of these differences?

Because so many papers have been published on asbestos, much of the Health/PAC BULLETIN article of November/December, 1974 was devoted to answering the first question mentioned above.

I decided early in the study to restrict my attention to published scientific papers and not to personally interview scientists about their work. I did this both because the papers are a good representation of the authors’ thoughts at the time of writing and because I think the contending parties’ justifications for their roles after the fact are less reliable and less important than their actions during the heat of controversy. I should also mention that I was aided in my work by Robert Phillips, then a student at Mt. Sinai Medical School and several years before a summer intern at Health/PAC. We discussed the research papers at length, but in the end I wrote the article and am solely responsible for the analysis presented there. As the analysis showed, studies sponsored by industry have consistently over half a century come to polar opposite conclusions about the health hazards of asbestos than those not so funded.

Because of length and time limitations I was only able to address the second question descriptively. I observed that studies sponsored by industry have followed a pattern—first denying that asbestos causes disease, then minimizing its dangers (as you did in your 1971 study) and finally shifting blame (as Graham Gibbs and Paul Gross did). But the more interesting and important problem, especially for occupational health scientists, is to seek out the differences in scientific method that could give rise to the different lines of research and the different conclusions. I summarized these fairly explicitly in a later article, published in the September, 1975 issue of Science For The People magazine. Since it bears on some of the
points raised in your letter, e.g. that you "have not hidden or knowingly misrepresented" your findings, I reproduce one relevant passage below:

"Today industry still seeks to dominate asbestos research. This is done by supporting individuals whose scientific practice demonstrates built-in biases useful to industry. These biases usually are the result of scientific and social values rather than dishonesty or conspiracy on the part of scientists. A critical examination of industry-funded asbestos research does not reveal overt falsification of data. In fact in many of the large-scale industry experiments (for example the Metropolitan Life study in 1935 and the McDonald studies in the 1970's) data indicating asbestos dangers is circumspectly presented in the reports themselves.

"It is clear that the critical difference between industry- and worker-oriented research does not lie in the experimental methods employed, but in the questions that scientists try to answer and in the assumptions made when they analyze and present their data. If a scientist suspects that workers are often harmed on the job, he or she will adopt this as an implicit hypothesis and will focus attention on older, heavily exposed workers, who are more likely to show signs of disease. Data will be presented that are designed to illuminate the hazard to this group of workers, and summary and conclusions will typically begin with a statement about the most serious hazard uncovered by the study.

"On the other hand, a scientist who designs a study with the assumption that workers are not often harmed on the job is more likely to study a much larger, more heterogeneous group of workers in a given plant or industry. In this case, data will first be presented lumping the workers together into a single group, which tends to bury the effect of unhealthy subgroups within the larger group.

"Summary and conclusions will usually open with a statement about the similarity in the mortality pattern of the entire group of workers as contrasted to that of the general population. A comparison of the papers of Selikoff and McDonald, for example, illustrates these differences clearly."

In brief, the problem is not one of falsification of data or misrepresentation, but of the biases which all of us bring to our studies that profoundly influence the questions that we ask and the conclusions that we draw.

You end your letter with a cry that "a climate is being created on this continent in which no objective scientist with any concern for survival will go into research of social importance." Again this stands reality on its head. For the first time in recent decades, in the United States at least, scientists who favor the interests of management are no longer able to shape occupational health policy and practice unchallenged. Occupational health scientists whose concerns are first and foremost the health and safety of workers are now able to join with them in the struggle for improved conditions and make some headway. (And it is a struggle, I assure you.)

But because you can still view yourself as an objective scientist, and can't or won't see your deep-seated, pro-industry bias, you can only view the criticisms made of your study as a personal attack. They are not. They are the first waves of long-overdue change. The question is whether you will welcome them, as I do, as an important advance for working people or whether, like Canute, you will try to order them back on behalf of an industry that consistently puts its own well-being before its workers very lives.

—David Kotelchuck

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YOUR JOB
OR YOUR FERTILITY

... That's how the question is posed for many women of childbearing age working in hazardous environments. Exemplifying the problem is Norma James, a 34-year-old single mother working in a General Motors battery plant near Toronto, Canada. Mrs. James was forced out of her job because of the dangers of lead exposure to unborn children. After waiting for a month for a comparable job, Mrs. James had herself sterilized in order to maintain her former job on the night shift which allows her to care for her four children during the day.

The policy of not allowing women of childbearing age to work in potentially hazardous areas is a widespread one. Fighting this practice, which results in job discrimination against women, are women's groups and some trade unions including the United Steelworkers. Their position is that women should be afforded equal access to all jobs, and that work environments should be made safe for both men and women. On their side they have the Equal Employment Opportunities Act, Title VII of the Civil Rights Act and, in the case of lead, mounting evidence that exposure affects male fertility and the health of the sperm as well.

(Medical World News, June 14, 1976)

BESIEGING THE COURTS

Plaintiffs will have to stand in line if challenges to PL 93-641, the new planning law, keep mounting (See BULLE-

TIN, May/June, 1976) As it is, lawsuits number ten and challenge the constitutionality of the law, and the designations of Health Service Agencies, Health Service Areas and public regional planning councils. According to Washington Developments (June 12, 1976), HEW, the administering agency, has won one suit and lost another; two have been dismissed and six have yet to be decided.

REDUCING CHARITY TO BUSINESS AS USUAL

The Supreme Court, on technical grounds, has just refused to hear an appeal by the Eastern Kentucky Welfare Rights Organization concerning the tax-exempt status of non-profit hospitals. To qualify for tax-exempt status, hospitals traditionally had to provide charity services. Responding to intense pressure by the hospitals, however, the Internal Revenue Service in 1969 changed the regulations, making it sufficient for a hospital to maintain an open door policy in its emergency room and to participate in Medicare and Medicaid. Poverty groups brought suit, arguing that the IRS ruling would discourage the provision of charity services, but lost in the lower courts.

(Wall Street Journal, June 9, 1976; Hospital Week, June 4, 1976)

TO LATIN AMERICA WITH LOVE

Adorning the cover of a birth control comic book, written in Spanish and distributed by the Agency for International Development throughout largely-Catholic Latin America, is the Virgin...
Mary with the caption, "Little Virgin, you who conceived without sinning, help me to sin without conceiving."

CRIME PAYS.....
... Or, at least that's the message from New York Courts in sentencing Bernard Bergman and Eugene Hollander, New York City nursing home czars convicted of defrauding Medicaid of millions of dollars. Bergman, who admitted to stealing $1.2 million, was sentenced to four months in prison and Hollander, pleading guilty to heisting $1.2 million, was sentenced to spend five nights a week in a halfway house for a period of up to six months. Both agreed to make partial restitution, although authorities claim the sums stolen were actually $2.5 million and $7 million respectively.

Avoiding any consideration of deplorable conditions in the homes and those who suffered or died as a result, Marvin Frankel, the judge sentencing Bergman, characterized the four-month term as a "stern one" that would deter nursing home wrongdoing. Among the mitigating factors he cited were Bergman's "illustrious public life and works." Few are the people who could not conduct an illustrious public life and works on a $2.5 million free ticket from the State.

Another mitigating factor may have been Judge Frankel's relationship to Bergman's lawyer, Dean Monroe Freedman of Hofstra Law School, under whom Frankel teaches a course in (you guessed it) legal ethics, according to Jack Newfield in the July 19, 1976 issue of the Village Voice.

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