

**IMPORTANCE OF THE BURDEN OF PROOF  
IN ENVIRONMENTAL LEGISLATION**

**Prepared By:**

Michael F. Sheehan  
Fisher, Sheehan and Colton  
Public Finance and General Economics  
33126 SW Callahan Road, Scappoose, OR 97056  
503-543-7172 \*\*\* 503-543-7172 (fax)  
mikesheehan@triax.com

Winter 1982

## Abstract

It is becoming increasingly evident that the nation is facing a health hazard of epidemic proportions caused by the proliferation of environmental carcinogens through the public air and waterways. Cancer rates are high and increasing, especially in areas of heavy industrial development. In New Jersey alone, for example, 14,000 cancer deaths occur each year and 24,000 new cancer cases are reported. Nationwide, one of four Americans will become a cancer victim and one in five of all Americans will die of cancer. Overall, it is estimated that 60 - 90% of all cancers are due to some form of environmental contamination. Though a strong effort has to be made to find cures for the various forms of cancer, it is also of vital importance that cancer causing contamination of the environment be brought under control. This paper considers the implications of one possible measure in this area: shifting the burden of proof in such a way that industry would have to make the substantial and convincing case for the non-hazardous nature of its discharges before being allowed to release any potentially hazardous substance to the environment. Separate sections of this paper deal with the policy, economic and legal aspects of such a reform; several case studies are described and policy recommendations are presented.

*Reprinted from: Environmental Professional, Vol. 4, pp. 75 - 83 (1982).*

On August 19, 1974, in response to the legal difficulties arising from the contamination of Lake Superior with carcinogenic fibers from the wastes of Reserve Mining Corporation's Silver Bay facility, Senators Hart of Michigan and Nelson of Wisconsin introduced legislation which would "shift the burden of proof to the party creating the grave risk to health and require that party to prove either that no threat to health exists, that the threat is negligible or that other considerations outweighed the health threat." (Schaumburg, 1976, p. 232).

Frank Schaumburg, in his recent book on the Reserve Mining controversy, strongly criticized the suggestion that the burden of proving the safety of the proposed discharge be shifted onto polluters who wish to utilize public waterways for the elimination of wastes.

Current legislation charges the government with proving that a serious health hazard *does* exist. This is in accord with the "innocent until proven guilty" dictum of law. Although shifting the burden of proof may seem to be a relatively simple legislative maneuver, the concept will prove in application to be ineffective and totally unworkable. (Schaumburg, 1976, p. 233).

This supposed unworkability is based on the impossibility of proving conclusively that a residual poses no hazard, "the scientific objection," the reluctance of the public to accept industry-sponsored studies as authoritative, "the industry credibility objection," and the argument that since everything is hazardous (according to Schaumburg, even sex, p 234), shifting the burden of proof would hinder production and seriously undermine our standard of living, "the universal hazard objection."

It will be argued in this paper that, contrary to Schaumburg, (1) a shift in the burden of proof is necessary; (2) several convincing precedents exist for such a change; (3) Schaumburg's "innocent until proven guilty" dictum is inapplicable in toxic substance regulation on legal, ethical and practical grounds; and finally (4) a pre-release safety substantiation requirement would result in a net improvement in the quality of life and not in a general ruination of the economy.

## THE RESERVE MINING CASE

Schaumburg based his arguments on his study of the celebrated case of *EPA et al. v. Reserve Mining Corporation of Minnesota* (1972). Reserve Mining Corporation has since 1948 mined taconite in the Mesabi Range of northern Minnesota, transporting the ore 47 miles by private railway to Silver Bay, Minnesota, for processing. At Silver Bay, the ore is finely ground to facilitate the magnetic separation of iron ore from tailings. One hundred thousand tons of ore were processed daily to produce 33,000 tons of beneficiated ore and 67,000 tons of tailings which were then dumped into Lake Superior along with half a billion gallons per day of waste water.

After a certain amount of controversy over lake dumping in the late 1960s, the Environmental Protection Agency convened a Federal Enforcement Conference to investigate charges that Reserve was polluting Lake Superior to the detriment of the health and welfare of other lake users. In due course, the conference report, critical of Reserve, was translated into a suit by EPA, the states of Wisconsin and Minnesota, and a small army of environmental groups in federal district court to prevent Reserve from further polluting the lake.

In the midst of this action, a new issue arose which overshadowed all the rest, and lent an aspect of urgency to the proceedings. The fine grinding process at Reserve's Silver Bay facility produced tailings which were so fine that, instead of falling to the lake bottom and staying there, they were dispersed by lake currents out of the immediate vicinity of Reserve's dumping area. On analysis, these fine tailings were found to contain very small and sharp asbestoid fibers, a substantial number of which were being carried into the water supplies of the towns and cities to the southwest of Silver Bay, most notably Duluth.

Because of the proven carcinogenic effects of airborne asbestos, the EPA moved in district court for an injunction which would shut down Reserve until an alternative, non-hazardous dumping ground arrangement could be developed. This was done under the authority of Section 504 of the Federal Water Pollution Control Act (PL 92-500), which allows:

the (EPA) administrator upon receipt of evidence that a pollution source or combination of sources is presenting an imminent and substantial endangerment to the health of persons or to the welfare of persons where such endangerment is to the livelihood of such persons, such as inability to market shell fish, may bring suit on behalf of the United States in the appropriate district court to immediately restrain any person causing or contributing to the alleged pollution to stop the discharge of pollutants causing or contributing to such pollution or to take such other action as may be necessary.

EPA presented a good deal of evidence in district court showing the carcinogenic nature of airborne asbestos. Reserve argued, however, that while airborne asbestos is a proven carcinogen, there is no proof that asbestos in drinking water poses a similar hazard.

This became the crux of the issue. The plaintiff's argued that "if dead bodies are to be required, and if

all uncertainties in proof are to be decided against protection of public health, we will be condemning untold numbers of people to death." (Schaumburg, 1976, p. 202). This assertion is generally supported by recent studies which have shown that "60 to 90 percent of all human cancers are caused by exposure to chemical substances present in our air, workplaces, or water, and the rest of our environmental" (Doniger, 1978, p. 10). It is already the case that one in four Americans will develop some form of cancer and one in five will die of cancer. (Doniger, 1978, p. 8).

The district court placed primary emphasis on the airborne asbestos studies and the potentially large risk to the public in Duluth and other lakeside towns in deciding that it would be unreasonable to allow Reserve to continue dumping while the government spent years gathering conclusive proof.<sup>11</sup> This district court issued an injunction ordering Reserve to cease its lake dumping operations. The effect of the order was to require Reserve to close down the Silver Bay operation in its entirety until an alternative on-land disposal plan could be brought into operation.

Reserve appealed immediately, and the circuit court of appeals obliged them by taking strong exception to the district court's decision. In staying the district court injunction, the Appeals Court concluded that "Although Reserve's discharge represents a possible medical danger, they (sic) have not in this case been proven to amount to a health hazard. We do not think that a bare risk of the unknown can amount to proof in this case." (Schaumburg, 1976, p. 196).<sup>12</sup>

Two different views of the burden of proof were thus represented at the district and appeals court levels. The district court held in effect that the commons is not a free resource open to all activities as a matter of right, but instead that access is on the basis of more or less demonstrable congeniality to the continuation of the commons as a public good. The appeals court took the (opposite) position historically associated with the industrial revolution and the imperative of "progress." As the law now stands, this latter position is still dominant.

#### **THE BURDEN OF PROOF UNDER A THEORY OF PUBLIC PROPRIETORSHIP.**

The wording of the emergency section of the Federal Water Pollution Control Act requires that the

---

<sup>11</sup> "The Selikoff testimony was supported by a number of other government witnesses. Dr. Thomas J. Mason, a statistician with the National Cancer Institute, reported that he had examined cancer mortality statistics for Duluth for the period 1965 - 1969 and had found 54 "excess" deaths as compared to the rate for the state of Minnesota. He also testified that rates for cancer of the rectum were increasing in Duluth while national rates have been declining. Although Dr. Mason could not state unequivocally that excess cancer deaths in Duluth were caused specifically by amphibole fibers, neither could he conclude "that there is no risk to the population (of Duluth). . . as a function of their exposure to waterborne asbestos particles." Dr. William J. Nicholson, biophysicist and associate of Dr. Selikoff at Mount Sinai, added: "If we wait until we see the bodies in the streets, we would then be certain that there would be another 30 to 40 years of mortality experience that would be before us. To wait for deaths would in fact be, from public health considerations, irresponsible." (Mitchell, 1975, p. 59).

<sup>12</sup> It should be noted that this same court eventually ordered Reserve to develop a plan within a "reasonable" period which would allow them to dump elsewhere, i.e., on land. As of this writing, Reserve has yet to reach full compliance.

administrator can act only upon "receipt of evidence" that a source of pollution "is presenting an imminent and substantial" threat to the public's health or welfare. It provides that the quality of the administrator's evidence is to be tested before a judge who will determine if the evidence constitutes "proof." In such a proceeding, there is no legal burden on the polluter; though, of course, he has an incentive to provide whatever information he has which would tend to cast doubt on the EPA's case.

Since the development of scientific method in the modern era has perfected our ability to protect ourselves from type II errors --accepting that which is false-- at the expense of leaving us particularly vulnerable to type I errors --rejecting that which is true-- it will usually be the case that the government will have the far more difficult task. In the United States, we have decided that such an organization of responsibilities is proper in the area of criminal procedure. Yet the question arises as to whether the criminal code is the proper analogy for the guidance of policy-making in the regulation of private corporations in their use of the public domain.

Schaumburg strongly argues that it is; his reading of the case implicitly assumes that Reserve has a right to exercise certain ownership prerogatives with respect to Lake Superior. If, in fact, a privately owned lake were substituted for Lake Superior, then the right of a government agency to legitimately reverse the burden of proof and force Reserve to either justify its use of the lake or forfeit its right to that use would be doubtful. This, however, is not the case. Lake Superior is a resource in the public domain; the public, represented by the various governmental agencies involved, is the owner of the lake. The issue in this light is not whether the government has the right to limit Reserve's use of a private resource, but instead whether the public ought to be able to control access to and utilization of a public resource.

#### **ECONOMIC EFFICIENCY, THE PUBLIC TRUST DOCTRINE, AND THE POLICE POWER.**

John Maurice Clark (1939, p. 150), in a section of his *The Social Control of Business* entitled "Grounds for Public Action Under Strict Individualism," listed as the third of five justifications for governmental action the regulation of the appropriation "of goods which are not yet private property." He gives as examples oil and natural gas, fisheries and game, and the entire administration of the public domain. The optimum allocation of public resources takes place, as with private resources, when the government performs a function analogous to that of the private proprietor.

The ideas of economic efficiency and governmental stewardship combine to form the public trust doctrine, which is the notion that "there are public rights in public resources, and what ever else happens, these rights should not be eroded, traded away or cheapened." (Rodgers, 1977, p. 181).

Public uses must be preserved; limited encroachments that are tolerated must be justified as an enhancement of what remains. It is not enough that the invasion be conducted with care and damage kept to a minimum. The encroachment must be justified by necessity and perhaps only upon the proffer of an adequate substitute. If there is no substitute for an irreplaceable resource, the invasion is unacceptable. The pattern that emerges comes very close to a doctrine that can be described as no

significant deterioration of public rights in public resources. (Rodgers, 1977, p. 182).

In this form, the doctrine has been effectively utilized to require applicants for the use of public domain to prove that their activities will not damage the public's interest before use is allowed.<sup>131</sup> Under the Michigan version of the trust doctrine, it was held, for example, that:

The defendant may find it necessary to bring forward filed studies, actual tests and analyses which support his contention that the environment has not or will not be polluted, impaired or destroyed by his conduct. Such proofs become necessary when the impact upon the environment resulting from a defendant's conduct cannot be ascertained within any reasonable degree of certainty absent empirical studies or tests. (Rodgers, 1977, p. 186).

The Michigan Supreme Court went on to imply that if "risks cannot be put to rest, justification for action may be lacking." (Rodgers, 1977, p. 186).

The use of state authority to reverse the burden of proof is well rooted in American practice. In the interests of health, safety and welfare, prospective drivers must accept the burden of demonstrating to the state's satisfaction that they are competent to drive before they are allowed to operate a vehicle on public thoroughfares. Radio operators must satisfy licensing requirements before they are allowed to use the public airways. Doctors must qualify initially, and continue their educations subsequently, to be allowed to practice. Travelers entering the United States from certain areas may be required to prove that they are not carriers of contagious diseases before they are allowed admittance. The precedents are many and in virtually every case it is the task of the person seeking access to the public domain upon whom the burden of proof falls.

The proper analogy, then, based upon theoretical analysis and settled practice, would seem to be that government, acting for its citizens, is the steward of the public domain. There is no constitutional obligation on the part of this steward, as there would be none on the equivalent proprietor in the purely private realm, to allow the use of the resources in his charge unless he is satisfied beforehand that its use will leave the public at least as well off as the next best alternative.

Having made the argument that government ought to more actively represent the general public's proprietary interests in the commons, it is necessary at this point to do an analysis of the economics of such a shift in the context of rising cancer rates and industrial necessity.

## **HEALTH, INDUSTRY AND THE BURDEN OF PROOF**

"In 1970, 330,840 Americans died of cancer. Of all the persons now (1971) alive in the United States, 52 million will die from cancer unless new methods of prevention or cure are found." (National Health Education Committee, 1971, p. 1 - 2). It has been estimated that 80 to 90% of all human cancers are

---

<sup>131</sup> *Gross Isle v. Dunbur and Sullivan Dredging Co.*, 15 Mich. App. 556, 167 N.W.2d 311 (1969), as quoted in Rodgers, 1977, p. 181n.

"introduced, maintained, or promoted by specific environmental factors." (HEW, 1970, p. 147). Many, if not most, of these factors are man-made chemicals or residues of industrial processes, which have entered the environment either via some avenue of the public domain or through the workplace.

Given the costs--social, human and economic--of absorbing this large a volume of casualties,<sup>4)</sup> it is clear that current policies need to be reevaluated. The accumulated evidence indicates that the number of cancer deaths could be sharply reduced through a reduction in the number and volume of carcinogenic substances discharged. A comparison of the economic and regulatory costs of restricting the access of carcinogens to the human environment to the costs of attempting to cure cancer victims (plus all the associated monetary costs like lost wages, disability payments, etc.) indicates that increased regulation of environmental access would arguably improve economic efficiency. (Doniger, 1978, p. 11).

Through the social costs of excessive cancer rates are very high, it has been very difficult to prove the causal link between specific industrial activities and elevated rates of cancer, especially in the general population, but also among workers. Because the burden of proof has heretofore rested on the representatives of the public,<sup>5)</sup> and because of the rapid proliferation of new chemicals and processes, the EPA, NIH, NIOSH and other agencies have been unable to successfully cope with the task of providing legally acceptable proof within a time span sufficiently circumscribed to prevent public injury.<sup>6)</sup>

Since manufacturers will internalize only those social costs which can be brought home to them within the time span of their planning horizon,<sup>7)</sup> they will adopt production processes producing socially excessive levels of pollution in any situation where they are not liable for all the social costs involved. To the extent that the burden of proof currently lies against the public, manufacturers are insulated from liability for a substantial fraction of the costs they create. The result is that they choose to operate at too high a level of hazard creation, with the public suffering an excessive level of direct and indirect damages from pollution contamination. Nationwide, insufficient investment is made in pollution

---

<sup>4)</sup> These statistics do not include mutagenic or teratogenic effects. These have been almost completely ignored in recent regulatory efforts.

<sup>5)</sup> With certain notable exceptions like the Food Additives and Medical Devices Amendments to the Food, Drug and Cosmetic Act.

<sup>6)</sup> The problem is complicated by the fact that many of the cancers caused by environmental pollutants have 30 to 40 year gestation periods, while mutagens and teratogens will only become evident in succeeding generations. Knowledge that a specific pollutant is causing a problem, much less the firm establishment of a causal link, may, and probably will, occur beyond the economic lifetime of a particular product. In such situations, the usual legal and economic feedback mechanisms are ineffectual.

<sup>7)</sup> Not to mention the fact that the corporations generally use a much higher discount factor than that utilized by the public. This means that even for those future costs which can be proven against the corporation, the current benefits in terms of profits will be weighed into the balance at a much greater weight than the public would use. This results in a misallocation of resources in favor of current profits and against future public damages which is sub-optimal from the public's point of view.

control equipment, and pollution intensive production is encouraged while the production of relatively clean substitute products suffers a comparative disadvantage in the marketplace. This is a classic case of market failure; it involves large, uncompensated social losses where internalization of these costs is not occurring through the market. In such situations, legislative action to make it easier to bring external costs home to their producers clearly meets the "market failure" threshold test for governmental action.

In addition, on practical and cost effectiveness grounds, industry may well be better suited to supporting the burden than the government. Because of the vast number of existing chemicals (2 to 4 million), the large number of new chemicals produced each year (about 300,000), and the substantial number which are introduced to the market place (about 2,000), it is virtually impossible for the government's research and testing apparatus, acting with limited funds in the teeth of industry opposition, to provide adequate production to the public. (Rodgers, 1977, p. 899). Placing the burden of proof on the producer both in terms of requiring a pre-market or pre-release showing that the product or pollutant is safe, and in terms of actions for damages (i.e., changing the standard for actions in tort from negligence to strict liability) should the product or pollutant not proved to be safe, would not only place the burden where the expertise and greatest knowledge is likely to exist, but would encourage firms to be surer of the results before endangering the public.

Since the identification of the costs and benefits associated with the operations of the firm has always been conceded to be one of the tasks of management, the shift in the burden of proof ought to result in an improvement in both corporate and public planning.

#### **THE CONSTITUTIONALITY OF ENVIRONMENTAL LEGISLATION REVERSING THE BURDEN OF PROOF.**

It has been argued that shifts in the burden of proof in the area of regulation have historically and philosophically been acceptable to the American people. In the postwar era, this willingness was indicated by the passage in 1958 of amendments to the Food, Drug and Cosmetic Act which required that producers of pharmaceuticals demonstrate that new drugs are both safe and efficacious before a permit could be issued allowing them to enter interstate commerce.

Before introducing a new drug into interstate commerce, manufacturers are required to submit a new drug application to the FDA containing: full disclosure of safety and efficacy tests; a full list of the drug's components and compositions; a complete description of the methods, facilities and controls used to manufacture, process and package the drug; drug and drug component samples; and specimens of proposed labeling. The FDA must approve all such applications before in-state distribution can begin. (Page and Blackburn, 1977, p. 814 and 814n).<sup>181</sup>

In the last decade, Congress seems to be gradually recognizing that the pre-existing institutional arrangement has been less than optimal in regulating substances outside the jurisdiction of the Food

---

<sup>181</sup> The relevant section is found in 21 U.S.C. § 355.



Drug and Cosmetic Act. In the Safe Drinking Water Act of 1974 (42 USC 300f-j-10), for example, the wording in the emergency powers section is somewhat more liberal than that of Section 504 of the Federal Water Pollution Control Act Amendments of 1972.

The Administrator, upon receipt of information that a contaminant which is present in or is likely to enter a public water system *may* present an imminent and substantial endangerment to the health of persons. . .may take such actions as he may deem necessary in order to protect the health of such persons. (42 USC 300(a)).

In 1976, just as the Appeals Court was handing down its ruling in the Reserve case, Congress was passing the Toxic Substances Control Act (TOSCA) (15 USC § 2601, et seq.), which embodied a new departure for EPA-administered legislation. In TOSCA, Congress empowered the EPA Administrator to require the equivalent of pre-marketing safety substantiation from manufacturers. Upon finding that data "is insufficient to permit a reasoned evaluation of the health or environmental impacts" (15 USCA § 26-4(e)(1)), the administrator can order a halt to the manufacture, distribution or use of the substances involved. If challenged in court, the administrator need only show that "the information available is insufficient to permit a reasoned evaluation of health and environmental effects. . ." (Committee of Conference, 1976). In addition to these powers, the language of Section 6 is also indicative of the new approach:

If the Administrator finds that there is a reasonable basis for concluding that manufacture, processing, distribution, use or disposal of a chemical substance presents or will present an unreasonable risk of injury to health or the environment, he may apply any one or more of a number of restrictions to the extent necessary to protect adequately against such risk using the least burdensome requirements. (Rodgers, 1977, p. 901).<sup>9\</sup>

These provisions, with their revised burden of proof, have been upheld in a number of important cases.<sup>10\</sup> Similar provisions in the Environmental Pesticide Control Act (1972) have been successfully defended<sup>11\</sup> in a number of cases involving registration, cancellation and re-registration (Rodgers, 1977, p. 861). TOSCA's revised burden of proof provisions have yet to undergo a serious challenge,

---

<sup>9\</sup> Based on 15 USCA § 2605(a).

<sup>10\</sup> Weinberger v. Hynson, Westcott & Dunning, Inc., 412 U.S. 609, 22 (1973); Cooper Laboratories Inc. v. Commission, FDC, 501 F.2d 772, 774 (1974); Ubiotica Corp. v. FDA, 427 F.2d 376, 378 (6th Cir. 1970); Upjohn Co. v. Finch, 422 F.2d 944, 955 (6th Cir. 1970); See Agri-Tech, Inc. v. Richardson, 482 F.2d 1148, 1154 (8th Cir. 1973); contra, Bell v. Goddard, 366 F.2d 177, 181 (7th Cir. 1966), as cited in Ames and McCracken, 1976.

<sup>11\</sup> (1) Environmental Defense Fund, Inc. v. Environmental Protection Agency (heptachlor/Chlordane), U.S. App. D.C. 548 F.2d 998, 1004, 7 ELR 20012, 20014 (1976); (2) Environmental Defense Fund Inc. v. Environmental Protection Agency (aldrin/dieldrin II), 167 U.S. App. D.C. 71, 81, 510 F.2d 1292, 1302, 5 ELR 20243, 20246-47 (1975); (3) Sterns Elec. Paste Co. v. Environmental Protection Agency, 461 F.2d 293, 304-05, 2 ELR 20368, 20371 (7th Cir. 1972), as cited in Rodgers, 1977, pp. 861 - 862.

but their close similarity to those of FEPCA and FDCA in form and substance should preserve them from constitutional problems.

On this basis, it would seem that shifting the burden of proof through the requirement of safety substantiation and product approval is constitutional, increasingly common, and from a regulatory point of view at least, feasible or at least not "impossible."

#### **CORPORATE COSTS.**

Schaumburg, along with apologists for other corporations in similar circumstances, has argued that more stringent regulations of hazardous substances would have serious, if not catastrophic, effects on the industries involved. From an ex ante perspective, these are difficult assertions to disprove. Affected corporations are often able to produce consultants' reports which forecast dire consequences as well as internally generated estimates of control costs which all too often turn out to be excessive.

From the historical or ex post perspective, however, it is fairly clear that industry predictions of substantial economic dislocation resulting from the application of new rules have often been exaggerated and occasionally even fanciful. Three cases are presented below to illustrate situations where new environmental regulations have been preceded by industry forecasts of this sort. In each case, the enforcement of the regulations has produced, at worst, absolutely minimal economic dislocations, while in the majority of cases it has resulted in an improvement in long-term profitability.

#### ***Polyvinyl Chloride***

In the spring of 1974, four workers at a B.F. Goodrich polyvinyl chloride (PVC) plant died of angiosarcoma, a rare form of cancer of the liver. Soon after, deaths from the same cause were announced at other PVC plants; by the summer of 1974, there were 25 deaths, one year later 38, and by the spring of 1978 there were 68. Studies were conducted which indicated that the incidence of angiosarcoma among plant workers was 400 to 3000 times greater than that found in the general public. And while the 68 deaths did not perhaps involve a catastrophic loss in absolute terms, they certainly argued ill for the future; angiosarcoma has an average gestation period of 20 years, which means that even if the exposure problems were corrected instantly, the number of deaths would continue to increase over the next two decades. (Doniger, 1978, p. 31).

Upon notification of the deaths of the workers and the elevated cancer rates among similar employees, the Occupational Health and Safety Administration (OSHA) moved quickly to set an emergency temporary standard for work exposure in vinyl chloride (VC) and PVC plants. This standard reduced the permissible level from 500 ppm to 50 ppm. By October 1974, tests conducted in laboratories in several countries had proven that 50 ppm exposure levels still produced cancer in animals; these findings prompted OSHA to adopt a one-part-per-million permanent standard.

In response to this reduction (which was itself shown to be inadequate in tests conducted a short time afterward), industry objected strenuously both to OSHA and in a case brought before a federal appeals

court.

The industries represented that it was technologically impossible for VC and PVC plants to meet the 1 ppm ceiling, and that the cost of approaching it would force the industries out of business. (Doniger, 1978, p. 53).

Allying itself with the PVC producers, General Motors "claimed that the substances' unavailability might force the layoff of 450,000 General Motors workers, with a ripple through the economy affecting 1.8 million other jobs." (Doniger, 1978, p. 54n). A study by the industrial consulting firm Arthur D. Little forecast the loss attributable to the implementation of the 1 ppm standard at between 1.7 and 2.2 million jobs with a concomitant loss of \$65 to \$90 billion in GNP. (Doniger, 1978, p. 54n).

Rejecting industry forecasts, the federal appeals court ruled that the 1 ppm standard was reasonable and allowed the standard to take effect. As soon as the ruling became final, it was manifest that the industry would be able to meet the new standard with little, if any, economic loss. "None of the threatened shutdowns had occurred, and it was stated that any future closings would be for other economic reasons." (Greek, 1975, pp. 8-9). It was also immediately evident that General Motors would survive and, Arthur D. Little et al. to the contrary notwithstanding, the national product did not fall by \$65 to \$90 billion.

### ***Dieldrin and Aldrin***

Dieldrin and Aldrin are members of the chlorinated hydrocarbon group of insecticides; this group also includes DDT, heptachlor and Chlordane. (Rodgers, 1977, p. 836). Until 1974, their most important use was against corn cutworms and rootworms in the cornbelt region of the United States. Van den Bosch estimates that nearly half of the 66 million acres under corn in an average year were being treated either by aldrin/dieldrin (A/D), heptachlor or chlordane. (Van den Bosch, 1978, p. 111).

Over the period of their long use in American agriculture, evidence has been accumulating that the use of A/D might entail a carcinogenic hazard to the exposed public. On the creation of the Environmental Protection Agency in 1970, one of the first actions of Administrator William Ruckelshaus was to begin proceedings for the cancellation of most uses of A/D. These proceedings dragged on through several years of "further studies" and continuing hearings, until in August 1974 Russell Train replaced Ruckelshaus as Administrator.

Immediately upon taking charge of the agency, Train moved to abort the cancellation proceedings against A/D and instead invoked the emergency powers provision of the Federal Environmental Pesticide Control Act (FEPCA) (7 USCA § 136d(c)(1)). Suspension of the A/D licenses was made final two months later, after the conclusion of an expedited hearing, and was affirmed by the Washington D.C. court of appeals in 1975. (Spector, 1976, p. 242). By the terms of the order, further production and sale was prohibited for all uses.

The decision to suspend A/D was vigorously contested by the manufacturer (Shell), the Secretary of

Agriculture (Earl Butz), and the pesticide lobby. Shell's position was virtually identical to that taken by Reserve Mining before Judge Lord. First, "that conclusions on human carcinogenicity should not be drawn until there was at least one (provable) incident of cancer developing in many because of the chemical" (EPA Administrator, 1979), and second, that until a direct causal link were to be established between A/D and human carcinogenesis, analogical and statistical evidence from animal tests (positive cancer responses occurring at every level of exposure) could not be considered proof of "imminent hazard to humans," the key to the emergency provision. Russell Train responded by rejecting the "body count" theory of proof in much the same way Judge Lord had rejected the "floating body" argument in the Reserve Mining Case.

Our knowledge of cancer mechanisms is still imperfect, and it may take many years before we understand the mechanisms with certainty. . . It is the carcinogenic effect of Aldrin-Dieldrin, not the mechanism, which concerns us here. (EPA Administrator, 1974).

In its assessment of economic impacts, the EPA was bombarded by a large number of industry-generated or inspired studies purporting to demonstrate that large losses in corn output and/or large reductions in net farm revenue would inevitably result if the use of aldrin-dieldrin were prohibited. (Van den Bosch, 1978, p. 112). The report prepared by a contractor commissioned by Shell showed estimated crop reductions 10 to 15 times as high as those presented by government economists. (Spector, 1976, p. 244).

Since the Administrator, under FEPCA, must base his or her final suspension decision on whether or not the pesticide in question presents "any reasonable risk to man or the environment, taking into account the economic, social and environmental costs and benefits. . ." (Spector, 1976, p. 235), he is obliged to give serious consideration to industry claims of economic hardship and assertions of large-scale adverse effects on output and/or prices.<sup>\12\</sup> In the case of aldrin and dieldrin, Train discounted the industry-USDA forecasts of serious losses. The outcome has borne out his negative assessment of the industry's predictions of heavy losses. Corn yields have not fallen, safer and less general substitutes have been found, and there has been no nationally perceivable impact of the suspension in economic terms.<sup>\13\</sup>

### ***Reserve Mining Corporation***

From the inception of Reserve's troubles over its Lake Superior dumping, the company has argued that any order forcing it to move its discharge of tailings out of the lake would eliminate its profit margin and force it to close down its operations, throwing 3000 local employees out of work and threatening the ability of ARMCO and Republic Steel Corporations, Reserve's owners, to continue production.

---

<sup>\12\</sup> Compare the provision of the 1958 amendments to the Food, Drug and Cosmetic Act (discussed in, inter alia, Doniger, 1978, p. 89ff) where no economic balancing is required or allowed.

<sup>\13\</sup> Conversation of the author with the Agricultural Extension Agent for Johnson County, Iowa. 9 March 1980.

Initially, Reserve objected that the cost of shifting from a lake disposal system to an on-land system would be prohibitively expensive. (Mitchell, 1975, p. 59). Government witnesses were able to demonstrate, however, that not only was the on-land alternative economically feasible, but it would, in fact, result in an increase in profits for the Reserve-ARMCO-Republic combine.<sup>14)</sup>

Once Reserve had been forced to accept the fact that an on-land tailings disposal system was economically feasible, it began to insist on a disposal site at a point known as milepost 7. When the state of Minnesota ruled that locating the dump at that point would be unsound for both ecological and engineering reasons, "Reserve reacted angrily to the ruling, and, as it has in the past, threatened to close the Silver Bay plant rather than invest in waste control programs that it says could result in an operating loss of \$2.8 million per year." (Deadline for Reserve, 1976, p. 56).

Matthew Bonovetz, executive vice president of Reserve, says that "if the milepost 7 plan is rejected by the state, the company will go out of business and its 3000 employees will have to look elsewhere for work." (McWethy, 1977, p. 63).

After a good deal of controversy, milepost 7 was rejected in favor of another, more environmentally suitable site. Reserve is still in the midst of the conversion process, but there seems to be general agreement that the firm will continue to thrive and may even be forced to tolerate increased profitability.

These three cases are not, of course, proof that a change in the placement of the burden of proof would produce a net improvement in the public's welfare. They do suggest, however, that industry objections to such a policy change should, perhaps, not be taken at face value.

## CONCLUSION

A major change in public policy has to justify itself in many ways. Initially, there should be a demonstrated need for the change in terms of some serious shortcomings in the ways things are currently being done. The proposed new policy should be acceptable in terms of society's conception of right and wrong, i.e., the change should fit within the public's sense of propriety, as well as being constitutional. Finally, the change should, in the judgment of the responsible policymakers, offer the best chance given the range of possibilities, of improving the welfare of the public at large.

In the preceding pages, it has been argued that the time has come for a change in the burden of proof in such a way that private corporations making use of the public domain for private ends would have to make a reasonably conclusive showing beforehand that such use would be in the public interest. Arguing from historical analogy, it is fairly clear that such a change would produce a net social benefit

---

<sup>14)</sup> Through a combination of decreases in operating costs and the opportunity to install improved techniques resulting in a better, more production-effective product. Testimony by economist R. Glenn Barryman, quoted in Mitchell, 1975, pp. 59-60.

over the likely outcome of a continuation of the current system; though, admittedly, it is also fairly clear that in a small fraction of cases, small or old firms would be unable to continue in operation if they were not allowed the implicit public subsidy that this change would eliminate. It will also be the case that where the concentration of market power is such that certain sorts of administered pricing are possible, corporations may use the revocation of the existing implicit public subsidy as an occasion to demand an equivalent one from consumers through the mechanism of price increases. Market power sufficiently concentrated to allow such an occurrence is a problem in itself and a proper topic for discussion in the area of antitrust legislation and enforcement.

There seems to be little question that a change in the burden of proof in the direction outlined above would be constitutional and historically commensurable as well, as is witnessed by the continued acceptance of the 1958 amendments to the Food, Drug, and Cosmetic Act. Already there have been changes reflecting a similar philosophy in some provisions of the Federal Environmental Pesticide Control Act (1972) and the Toxic Substances Control Act (1976). Given the rapid proliferation of new, complex and often hazardous chemicals and chemical and radioactive wastes into the environment, and the increasing suburbanization of the U.S. population into less densely populated areas, 19th century legal structures, born in a legal milieu reflecting thin populations, wide open spaces, and an agricultural mode of life and production, are no longer adequate to provide for the protection of the public interest. In times past, when wastes were simple and the commons vast, a complete and utter dilution could be counted on to minimize the human and ecological effects of pollution. Unfortunately, those times are gone forever, and the human impacts of contamination will not be mitigated by the legal equivalent of pretending otherwise.

## REFERENCES

Ames, C.C. and McCracken, S.C. 1976. Framing Regulatory Standards to Avoid Formal Adjudication, The FDA as a Case Study, *California Law Review*, 64(1):14-73.

Clark, J.M. 1939. *The Social Control of Business*, McGraw-Hill, New York.

Committee of Conference, 1976. Toxic Substances Control Act of 1976. Senate Report NO. 1302. 94th Congress, 2d Session, Quoted in Rogers, 1977, p. 900.

Deadline for Reserve. 1976. *Time*, July 26:56.

Doniger, D.D. 1978. *The Law and Policy of Toxic Substances Control*. John Hopkins University Press, Baltimore.

EPA Administrator. 1974. Opinion of the Administrator, EPA, on the Suspension of Aldrin-Dieldrin. 39 Fed. Reg., p. 37269. Quoted in Spector, 1976, p. 243.

Greek, B.F. 1975. Vinyl Chloride May Face Shortages by 1977. *Chemical and Engineering News*, 53(32):8-10. Quoted in Doniger, 1978, p. 62.

HEW, 1970. Man's Health and the Environment--Some Research Needs, Report of the Task Force on Research Planning in Environmental Health Science. National Institute of Environmental Health Sciences. Quoted in N.A. Ashford, 1976. Crisis in the Workplace,. MIT Press, Cambridge, p. 94.

McWethy, J. 1977. When Government and Industry Tangle Over the Environment. U.S. News and World Report. 82(1):63-65.

Mitchell, J.G. 1975. Corporate Responsibility in Silver Bay. Audubon. 77(2):46-61.

National Health Education Committee. 1971. Facts on the Major Killing and Crippling Diseases in the United States Today. Quoted in Charles H. Blank. 1974. The Delaney Clause: Technical Naivete and Scientific Advocacy in the Formulation of Public Health Policies. California Law Review. 62, p. 1086n.

Page, J.A. and Blackburn, K.A. 1977. Behind the Looking Glass, Administrative, Legislative and Private Approaches to Cosmetic Safety Substantiation. UCLA Law Review, 24:795-837.

Rodgers, W.H. 1977. Environmental Law. West Publishing Co., St. Paul.

Schaumburg, F. 1976. Judgment Reserved. Reston Publishing Co., Reston, Virginia.

Spector, P.L. 1976. Regulation of Pesticides by the Environmental Protection Agency, Ecology Law Quarterly. 5:233-263.

Van den Bosch. 1978. The Pesticide Conspiracy. Doubleday. Garden City, New Jersey.