

Control of Toxic Chemicals in Canada: An Analysis of Law and Policy

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CONTROL OF TOXIC CHEMICALS IN CANADA: AN ANALYSIS OF LAW AND POLICY*

By J.F. CASTRILLI**

<i>Part</i>	<i>Page</i>
I. INTRODUCTION	324
II. THE EXISTING CONTROL REGIME AND ITS ADEQUACY	324
A. <i>The Role of the Federal Government</i>	328
1. Before the Environmental Contaminants Act: The Impetus For Increased Government Control of Chemicals	328
2. The Environmental Contaminants Act	335
a. Significant Danger	335
b. Information-Gathering: Government Notices and Testing Requirements	340
c. Mandatory Industry Reporting of First Time Manufacture or Import	343
d. Protection of Confidential Industry Information	346
e. Advisory Committees and Boards of Review: The Roles of the Public and Industry in the Regulation-Making Process	349
f. Inspections, Record-Keeping and Enforcement	356
g. The Special Jurisdictional Problems of Storage, Disposal and Related Matters	357
3. Other Federal Laws	359
4. Non-Statutory Programs	363
a. The Socio-Economic Impact Analysis Requirements	363
b. Drinking Water, Waste Management and Related Guidelines	367
c. Accords with the Provinces	368

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* This paper is accurate to March 31, 1981.

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those of Environment Canada.

<i>Part</i>	<i>Page</i>
B. <i>The Role of the Provincial Governments</i>	369
1. Application of General Pollution Control Programs to the Problem of Toxic Chemicals	369
a. Control of Air and Water Discharges of Toxic Chemicals	370
b. Control of Toxic Chemicals Pollution from Landfill Sites	372
c. Spills and Emergencies: Regulatory Controls and Victim Compensation	376
d. Information Access, Regulation-Making and the Role of the Public	378
2. Emerging Initiatives	379
C. <i>The Role of Municipal Governments</i>	380
D. <i>The Role of the Courts in Control of Toxic Chemicals: Common Law Restraints</i>	382
 III. INTERNATIONAL PROGRAMS AND CONCERNS	 384
A. <i>Protection of Major Natural Resources From Toxic Chemicals Contamination</i>	385
1. The Canada-United States Great Lakes Water Quality Agreement	385
B. <i>Standardization of Procedures and Protocols</i>	388
1. Testing	389
2. Information Confidentiality	391
3. Timing of Notification, Control Options and Public Participation	393
 IV. PROSPECTIVE GOVERNMENT INITIATIVES IN TOXIC CHEMICAL CONTROL LAW AND POLICY IN CANADA	 394
 V. RECOMMENDATIONS FOR ADDITIONAL REFORMS	 396
 VI. CONCLUSIONS	 400

I. INTRODUCTION

The introduction of many new chemicals into the Canadian environment each year and the continued use of many existing substances has frequently proceeded without adequate knowledge of possible adverse environmental or human health effects. While many of these products have proven beneficial to society, others, such as PCBs, mercury, and chlorofluorocarbons have been shown to have the potential for causing serious ecological or human health damage.¹ This paper briefly examines the nature and magnitude of the threat posed by toxic chemicals to human health and the environment. It will outline existing legislation and policy, describe international developments in the area and their implications for Canada and investigate possible improvements in toxic chemical control strategies.

Because of the relatively new regulatory attention that has been paid to industrial toxic chemical control, and also because of major new legislation expected in this area, the focus of this paper will not include such other matters as food additives, pesticides, radioactive substances, occupational health, consumer product safety, and dangerous goods transport or related areas of concern that have generally evolved a separate body of law and policy.² Hazardous wastes control, which could be partly construed as the back-end of the toxic chemicals problem, is also developing a separate body of law and policy that has been examined elsewhere and therefore will not be reviewed here.³

II. THE EXISTING CONTROL REGIME AND ITS ADEQUACY

The federal government defines toxic chemicals as those chemical substances which, when released to the environment, or thereafter if chemically transformed through combination or otherwise, could pose a significant threat to natural ecosystems or to human health or well-being. Chemical substances under this definition have characteristics which include: the ability to become widely dispersed in air, land and water, great distances from their sources and avenues of entry to the environment; the ability to remain highly

¹ See, e.g., "Organic compounds pose threat without controls, biologist says," *The Globe and Mail* (Toronto), Apr. 24, 1974 at 2, col. 1.

² The Canadian Environmental Advisory Council, a body established in 1972 by the federal cabinet to advise the federal Environment Minister on environmental threats, priorities for Government action and the effectiveness of controls, notes that while certain categories of chemicals, drugs and pesticides have been regulated for some time, about ninety percent of all manufactured chemicals did not fall into any regulated or potentially regulated category until the coming into force of the *Environmental Contaminants Act*, S.C. 1974-75-76, c. 72 in 1976. See Hall and Chant, *Ecotoxicity: Responsibilities and Opportunities* (Ottawa: Canadian Environmental Advisory Council, Report No. 8, Aug. 1979) at 2.

Such other federal laws include: *Food and Drugs Act*, R.S.C. 1970, c. F-27 as am.; *Pest Control Products Act*, R.S.C. 1970, c. P-10; *Atomic Energy Control Act*, R.S.C. 1970, c. A-19 as am.; *Canada Labour Code*, R.S.C. 1970, c. L-1 as am.; *Hazardous Products Act*, R.S.C. 1970, c. H-3 as am.; and *Transportation of Dangerous Goods Act*, S.C. 1980-81, c. 36.

³ See, e.g., Castrilli, "Hazardous Wastes Law in Canada and Ontario: At the Skull and Crossroads" (1980), 9 C.E.L.R. 152.

resistant to natural degradation; the capability of causing biological changes at trace concentrations; the ability to bio-accumulate and pass through food chains; the ability to become more toxic when combined in the environment with other chemicals; and the ability to become irretrievable once released into the environment with effects that are largely irreversible.⁴ Recent reports indicate that human health and environmental damage from toxic chemicals has been threatened in different geographic regions of Canada, through different environmental media, and from both artificial and elemental chemicals.⁵ Each year new manufactured or imported substances join an already

⁴ Environment Canada, *Toxic Chemicals Management Program* (Ottawa: Env. Cda., Feb. 1980).

⁵ (i) A 1978 report to the International Joint Commission concluded that substances that are toxic, have widespread use, bioaccumulate and which are environmentally persistent are now restricting multiple use of the Great Lakes. The report noted restrictions on the use of Great Lakes fisheries because of contamination from toxic substances such as PCBs, mirex and mercury. Increasing concern was noted regarding the health effects of using the Lakes as sources of drinking water although they have long been described as containing approximately twenty percent of the world's supply of fresh surface water. The study group found that major problems are being created by past point source discharges, urban runoff from which toxic substances have accumulated in lake sediments, atmospheric inputs and usage of persistent pesticides; International Joint Commission (IJC) Pollution from Land Use Activities Reference Group, (PLUARG) *Environmental Management Strategy for the Great Lakes System* (Windsor: I.J.C., July 1978). More recently the IJC's Great Lakes Water Quality Board (GLWQB) concluded that "there is evidence that the Great Lakes ecosystem is responding to the controls already in place." It noted that "substantial reduction in organochlorine residues have been found in small fish from Lakes Ontario and Erie. Similarly, PCB, DDT and Mirex residues declined in herring gull eggs from both lower lakes in 1979. Declines also reported for herring gull eggs from Lake Huron and Lake Michigan while declines in eggs from Lake Superior were not as significant as from the other lakes. These declines represent decreased loads of contaminants into the ecosystem." See Great Lakes Water Quality Board, *Report on Great Lakes Water Quality to the International Joint Commission* (Toronto: GLWQB, Nov. 1980) at 2. However, the IJC appears to disagree to some extent with the GLWQB. The Board's conclusions are based on reduced concentrations of banned or severely restricted chemicals (e.g., PCB, DDT, Mirex). While the IJC acknowledges that data from many of these "traditional" toxic substances show that these substances are generally declining in the Great Lakes ecosystem in response to control programmes, it suggests that it would be misleading to stop the analysis at that point. The IJC notes that "[o]n the other hand, a number of other substances (often with unknown effects) have been identified or detected only recently in the Great Lakes Basin ecosystem. Trace levels of dioxin, for example, were identified in 1978 in fish taken from Lake Ontario and Saginaw Bay. PCTs (polychlorinated terphenyls) have now been identified in Lake Erie herring gulls eggs, despite the fact that these compounds have not been manufactured in the United States since 1971. PCB levels in fish continue to exceed Agreement objectives in many areas throughout the Basin." International Joint Commission, *Seventh Annual Report on Great Lakes Water Quality to Canada and the United States* (Ottawa and Washington: IJC, Oct. 1980) at 16.

(ii) Between 1960 and 1972, a chlor-alkali plant at Dryden in Northwestern Ontario, discharged an estimated nine thousand kilograms of mercury into the English-Wabigoon river system. Sediments immediately downstream from the plant showed mean mercury concentrations of above one part per million

large pool of existing chemicals, resulting in the potential for ecological and human health problems to develop.⁶ These problems may arise because many

(ppm) in the mid-1970's. While the Canadian safety guideline for mercury in commercial fish is 0.5 ppm, certain fish species taken from lakes directly downstream from the plant showed mean mercury concentrations of 7.8 ppm as late as 1976. [Environment Canada, Environmental Protection Service, *Mercury in the Canadian Environment* (Ottawa: Env. Cda., Apr. 1979)]. United Nations Environment Programme (UNEP) reports indicate that inorganic mercury can be converted by micro-organisms in the sediments into methyl mercury, an organic form of mercury that is a strong human nerve poison, and can be readily bioaccumulated. [United Nations Environment Programme, "Environmental Health: Heavy Metal Hazards," *The State of the World Environment* (Nairobi, Kenya: UNEP 1980)]. The Science Council of Canada concluded that exposure of native people in the area to methyl mercury through the eating of fish caught in water contaminated by the industrial mercury represented a serious long term hazard to the people involved. [Science Council of Canada, *Policies and Poisons: The Containment of Long-term Hazards to Human Health in the Environment and in the Workplace*, Report No. 28 (Ottawa, October 1977)].

- (iii) A 1969 federal health study released in 1975 found unusual health disorders, including skin lesions, respiratory diseases and other related problems in mill-workers and residents of Yellowknife, North West Territories. One possible explanation given was the higher than average levels of arsenic in the air, soils and water in the area. Arsenic, a toxic substance and carcinogen, is used in the industrial smelting of gold in the region. [See, e.g., "Arsenic danger in Yellowknife hinted in Ottawa study," *The Globe and Mail* (Toronto), Jan. 9, 1975 at 4 col. 4. See also National Research Council, *Effects of Arsenic in the Canadian Environment* (Ottawa: Gov't of Cda., 1978)].
- (iv) The potential for damage to the earth's stratospheric ozone layer by chloro-fluorocarbon emissions may be much greater than previously suspected. If emission of these chemicals, which have been widely used as refrigerants and spray-can propellants, continues at the 1973 release rates, a fifteen percent reduction in the ozone layer could be expected by the year 2000. Federal atmospheric researchers have concluded that continuous release of such substances will have an effect on climate of uncertain magnitude; cause an increase in skin cancer incidence; have mutagenic (mutation causing) effects on plants and animals that cannot be protected from increased ultra-violet radiation; and possibly cause ecosystem changes. [Environment Canada, Atmospheric Environment Service, *Anthropogenic Modification of the Ozone Layer: The CFM Effect* (Downsview, Ont.: Env. Cda., 1971); Environment Canada, *Current Status of the CFM Depletion of the Ozone Layer*, Atmospheric Environment Service Bulletin, (February 1979). See also Dotto, "Scientist urges quick end to use of most-used aerosol propellants," *The Globe and Mail* (Toronto), March 29, 1975 at 15, col. 7].
- (v) Federal environmental researchers have recently discovered that toxic chemicals used by industry and by agriculture are causing significant numbers of mutations in some animal life in a major Saskatchewan lake. The high incidence of mutations in one species of insect in the lake indicates that the impact of contaminants on the lake's ecosystem is substantial and suggests possible future environmental problems in the Prairies. [Environment Canada, Environmental Protection Service, *Tobin Lake Study: Background Information* (Regina: Env. Cda., Feb. 17, 1981). See also von Stackelberg, "Tests find mutations in lake animal life," *The Regina Leader Post*, Feb. 18, 1981 at A3, col. 2].

⁶Federal government advisors indicate that since the end of World War II, the growth in numbers and volume of chemicals has "exploded". [Hall and Chant. *supra* note 2, at 3. One European commentator notes that organic chemical production increased 800 percent in the western world between 1950 and 1970 (7 million tons to 63

of these substances are new to nature which has had no time to evolve defense mechanisms, or new to the human species whose enzyme system has had no previous experience with them.⁷ Compared with the rapidity and quantity of chemical development, human and animal biochemistry is only "carefully developed over many centuries."⁸

Bound up in the problems of the rapid growth of numbers and quantities of chemicals, their multiple pathways of contamination and the often protracted latency periods before damage may be revealed, are related public concerns respecting notions of risk, extrapolation of animal testing data to humans and whether thresholds exist for carcinogens.⁹ These are among the many environmental and human health issues facing a government agency once it embarks on a programme of toxic substance control.

Federal and provincial regulatory initiatives regarding the many problems created by the presence of toxic chemicals in the environment have been both positive and negative. More recent actions appear to be promising but they are coupled with others that offer only partial solutions or that are vague or unsystematic in their execution. Although it is clear that federal and provincial constitutional jurisdictions overlap, no agreement on co-ordinated

million tons). By 1985, production volume was expected to increase approximately 300 percent more to 250 million tons. See Rehbinder, "Control of Environmental Chemicals", in *Trends in Environmental Policy and Law* (Berlin, Erich Schmidt Verlag, 1980)]. The federal government itself estimates that between 2 and 4 million chemicals have been synthesized with some 50-100,000 in commercial production worldwide. Approximately 10,000 of these chemicals have an annual production rate of greater than 100 pounds and 9,000 are produced in quantities greater than one ton per year. [An address by Jacques Gerin, Senior Assistant Deputy Minister, Environment Canada, "The Significance of Toxic Substances — Canadian Concerns and Controls," presented at "A Short Course on the Significance, Analysis and Control of Toxic Substances in Wastewater" (Edmonton, Oct. 18-19, 1980)]. More than 160 billion pounds of synthetic chemicals were produced in North America alone in 1977 with a 7 percent annual rate of increase. [*Id.*]. While estimates have been made that between several hundred [United Nations Environment Programme, *Annual Review* (Nairobi, Kenya: U.N.E.P., 1978)] to 1,000 [Hall and Chant, *supra* note 2, at 16] new chemicals are brought into commercial use every year, federal officials argue that in Canada only a small number of new chemicals are developed annually with much larger numbers imported for the first time each year. [R.M. Robinson, Assistant Deputy Minister, Environmental Protection Service, Environment Canada. Speech to the 10th Annual Canadian Science Writers' Association Seminar (Toronto, Apr. 13-16, 1980). See also address by J.E. Brydon, Director, Contaminants Control Branch, Environment Canada, "Environmental Contaminants Act — A 1978 Progress Report," to the annual meeting of the Canadian Manufacturers of Chemical Specialties Association (Ottawa, Oct. 1978). Dr. Brydon notes that of the 356 chemical compounds reported to the federal government between April 1976 and September 1978, only 2 or 3 were new to world commerce though chemicals new to the country through import were suspected of being more numerous. Dr. Brydon added that: "The low number of new chemical compounds is surprising to us, given the prediction in the U.S. that there are some 500 to 1,000 new chemicals introduced into the market place each year. . . ."]].

⁷ Hall and Chant, *supra* note 2, at 4.

⁸ Kayden, "Opening Remarks at the New York Academy of Science Conferences," in Hammond and Selikoff, eds, 329 *Public Control of Environmental Health Hazards* (New York City: New York Academy of Science, 1979).

⁹ See generally, *supra* notes 2 and 8.

measures has been reached. Therefore, there are gaps in statutory and regulatory measures.¹⁰

A. *The Role of the Federal Government*

1. Before the *Environmental Contaminants Act*: The Impetus for Increased Government Control of Chemicals

One of the principal origins of federal interest in toxic chemicals legislation can be traced to the early 1970's when several governments, including Canada, Sweden and the United States became concerned that the possible massive use of a synthetic organic chemical, nitrilotriacetate (NTA) as a substitute for detergent phosphates might contaminate major bodies of fresh-water. At that time there were no standardized test procedures for screening new substances such as NTA. Accordingly, all three governments required that this compound be thoroughly tested and evaluated for possible environmental health hazards.¹¹ Due to the lack of testing precedents, however, difficulties in testing and evaluating NTA eventually led to the view that there were generally few existing satisfactory test procedures to evaluate most substances for possible environmental hazards prior to their marketing and release into the environment. As a result, the federal government formed several interdepartmental committees and task forces and proceeded to consider what was needed to create systematic programmes of testing and control procedures.¹²

As a result of the above and related concerns, a federal task force was

¹⁰ Though not explicitly mentioned in the *British North America Act, 1867*, environmental affairs are frequently areas of overlapping jurisdiction. This is no less true in the area of toxic chemicals control, with federal constitutional authority being derived from such heads of power, under section 91, as peace, order and good government and the criminal law power and provincial constitutional authority arising from such heads of power under section 92 as property and civil rights and matters of a local or private nature. However, proper chemical controls must often proceed from manufacture through to disposal and re-use. As a result, authority for one government to legislate for control and management of the full range of such activities through which a substance might cause problems, has long been treated within governments as a gray area.

¹¹ MacLeod, *Historical Development of Policy for Environmental Contaminants Legislation, Appendix D*, Can., *Task Force Report on Environmental Contaminants Legislation (Cross-Mission)* (Ottawa: Gov't. of Cda., Sept. 1972) [hereinafter *Cross-Mission Report*]. See also *Appendix A: Report of the Scientific Sub-Committee: Scientific and Technical Aspects of the Environmental Contaminants Problem, Cross-Mission Report*.

¹² *Id.* Other contaminants appear to have provided a concurrent stimulus to federal government investigation of possible toxic substance control initiatives. These include toxic metals such as mercury, cadmium and lead as well as other synthetic organic chemicals such as DDT and PCBs. *Id.*, Appendix A.

The scientific sub-committee noted various instances of contamination in Canada arising from the use of substances such as mercury as well as the economic costs associated with this damage. For example, approximately 10 percent of the Canadian freshwater fish catch could not be marketed in 1970 and 1971 because of lake closures arising from unacceptable levels of mercury in some fish species. Government compensation and related special programs to fishermen were reported to cost several millions of dollars in this period. Additional costs, estimated in the millions, were also reported for possible remedial clean-up measures, such as those associated with dredging and disposing of mercury contaminated sediments in the St. Clair River system. *Id.*

formed in 1972 to report on the need for environmental contaminants legislation.¹³ Reporting in September 1972, the Task Force made several findings that were to be significant in subsequent government control efforts. In the first place, it defined as well as characterized the common elements of environmental contaminants.¹⁴ Second, it re-affirmed the basis for previous government concerns about the nature and magnitude of the potential threat posed by such substances to health and environment.¹⁵ Third, it confirmed the frequent lack of data to assess the environmental effects of new chemicals, although it noted that information about certain existing substances was sufficient to illustrate the need for action.¹⁶ Fourth, it highlighted the need for pre-testing new substances and screening existing substances.¹⁷ Fifth, it found existing federal and provincial law to be inadequate.¹⁸ And finally, it found that there were multiple constitutional powers which could be used to support new federal legislation.¹⁹

¹³ *Id.*, *Cross-Mission Report* at 1. In particular the Task Force was required to define "environmental contaminants" for legislative purposes; identify regulatory strategies and legislative approaches (for example, development of new law or amendment of existing law); report on constitutional aspects; and consider socio-economic and policy issues in relation to environmental contaminants control. *Id.* at 2.

¹⁴ *Id.* at 4. This definition and characterization is substantially the same as that found at note 4 and accompanying text with respect to toxic chemicals. However, in neither its definition nor its characterization, did the Task Force appear to explicitly identify the possibility of a substance combining or becoming transformed into a toxic or more toxic substance. *Appendix A* to the Task Force's report did note though that "... scientific information on cause/effect relationships should be available, not only on separate substances but also on substances in combination."

¹⁵ *Id.* and *Appendix A*. Previous inter-departmental committee reports were also appended to the final report of the Task Force. See *Appendix C: The Management of Chemicals of Ecological Consequence* (Protocol Supervisory Comm., Apr. 1971). This earlier research group concluded, for example, that humans and the environment were "being exposed to and challenged by a large number of novel chemical substances, an unknown proportion of which may have unanticipated deleterious effects."

¹⁶ *Supra* note 11, *Cross-Mission Report, Appendix A*.

¹⁷ *Supra* note 11, *Cross-Mission Report* and *Appendices A, C, and D*. In *Appendix C*, the 1971 interdepartmental committee stated that while it appeared to be a "monumental task" there appeared to be "no real reason why all chemicals of ecological consequence cannot be identified, as well as tested and registered if necessary." In *Appendix D* several background statements, including those of Ministers and senior government technical experts, underscored "the need for test protocols for screening products which are potential environmental contaminants, before they reached the market place."

¹⁸ *Id.*, *Cross-Mission Report* at 5-6. The Task Force stated in part: "The need to screen substances systematically to establish their potential for causing damage to ecological systems is, to some extent, responded to in the case of pesticides and radioactive materials. But federal legislation fails to address the need for a comprehensive policy to prevent damage deemed unacceptable to ecological systems by screening substances which are known or potential environmental contaminants. Generally, the existing legislation reflects a single factor concern, for example the deposit of wastes in water or the discharge of contaminants to the air. It is reactive rather than preventive and essentially *ad hoc* in its approach. The foregoing comments also apply to the approach taken by provincial legislation." This aspect of the Task Force's report had a separate survey of existing legislation. See *Appendix B: Report of the Legal Sub-Committee: Legal Aspects of the Environmental Contaminants Problem*.

¹⁹ *Id.*, *Cross-Mission Report* at 6-7. The report concluded that federal controls were justified because of: the national or transboundary effects of many environmental con-

The Task Force recommended the enactment of an *Environmental Contaminants Act* which would contain certain key features including: a requirement that persons manufacturing or importing substances that are prescribed in a regulation furnish the government with certain information²⁰ and screen such substances according to government developed testing protocols,²¹ the incorporation of provisions to encourage the public to identify substances of concern, a provision for public access to data on quantity and distribution of environmental contaminants, test results and evaluations²² and the vesting in the Minister of authority to appoint independent advisory groups to report on substance restriction proposals.²³ Also recommended was the establishment of an agency with authority to recommend which substances should be prescribed; to develop testing protocols; to gather relevant information; to evaluate screening process results; and to recommend substance prohibitions and restrictions to Cabinet for action.²⁴

In concluding its report, the Task Force argued that it was essentially proposing legislation that would complement, not supplant, existing federal and provincial law. The proposed *Environmental Contaminants Act's* enforcement mechanisms were residual, to be used "only where such other authorities fail or neglect to implement appropriate controls."²⁵ Legislative proposals arising out of the work of the Task Force and its predecessors were eventually submitted to Parliament in early 1974.²⁶

The House of Commons considered the federal government's proposals for an environmental contaminants bill extensively during the 29th and 30th

taminants; the need for multiple stress evaluations and the concern over total exposure; the import, export and interprovincial trade in substances which may become environmental contaminants; and the potential danger, albeit indirect, to human health and well-being. *Appendix B* concluded that several heads of power under the *British North America Act, 1867* provided a basis for developing a substance-oriented piece of federal legislation. These included: section 91(27), the criminal law power and section 91, the peace, order and good government power. The report was careful to note that provincial legislatures, through such powers as section 92(13) property and civil rights and related *BNA Act* authorities, would also have a substantial claim to controlling such environmental hazards released in their environment.

²⁰ *Id.*, *Cross-Mission Report* at 7. The type of information the Task Force argued was necessary included: trade name of substance or product containing substance; chemical composition and molecular structure; known and intended use; amounts produced, processed or so intended; amounts released in effluents and emissions; by-product description and disposition; inventories of amounts released or which escaped accidentally to the environment; transportation; and testing protocols results. *Id.* at 8.

²¹ *Id.* at 8.

²² *Id.* at 11-12. The Task Force argued that "an informed and actively participating public will support and contribute to the effectiveness of a comprehensive environmental contaminants policy and process "and that restriction recommendations should take into account public views."

²³ *Id.* at 12.

²⁴ *Id.* at 8-9. The Task Force noted that for those substances new to Canadian commerce, manufacturers or importers might be required to notify the Minister of intent "so many months in advance of manufacture or import" and to provide the agency with appropriate information.

²⁵ *Id.* at 12-13.

²⁶ *Environmental Contaminants Act*, Bill C-3, 1974 (29th Parl. 2nd Sess.).

Parliaments in 1974-75.²⁷ The main features of the federal bill, introduced for first reading in March 1974, paralleled the earlier recommendations of the Task Force in many respects. Bill C-3 gave the departments of Environment and National Health and Welfare information-gathering, testing and regulation-making authority with respect to substances they suspected might be dangerous to health or to the environment and that they were satisfied would not be controlled adequately by other federal or provincial laws after consultation with the provinces and other federal departments.²⁸

In principle, there was general all party support for Bill C-3, and its successor Bill C-25, but one of the major objections to its early passage quickly emerged during the debates on second reading—the lack of an explicit pre-market screening or notification provision, particularly for new chemicals. The Opposition argued that the lack of such an early warning provision would make it difficult, if not impossible, for the Government to know what substances to suspect for purposes of activating the operative provisions of the Bill.²⁹ The Government responded that it could not require

²⁷ The background to Bill C-3's and its successor's passage through Parliament is somewhat complex and deserves brief mention of the principal phases here. Introduced for first reading in March 1974 during the 29th Parliament as Bill C-3, it was debated at second reading in April 1974 and then referred to the Standing Committee on Fisheries and Forestry. However, an intervening summer 1974 federal election resulted in the Bill dying on the order paper. The legislation was re-introduced in October 1974 for first reading as Bill C-25 and was debated in Parliament at second reading in November and December of 1974 and again in March 1975 at the opening of the 30th Parliament. It was then referred to the Standing Committee on Fisheries and Forestry which this time was able to commence overview hearings on the Bill in April and May 1975 and then clause-by-clause review and modification until the end of June 1975. The House gave the Bill third reading in October 1975 and assented to it on December 2, 1975. The Act came into force April 1, 1976.

²⁸ *Environmental Contaminants Act*, Bill C-3, 1974 (29th Parl. 2nd Sess.). In particular, Bill C-3 and its successor Bill C-25, included provision for the departments of the Environment and National Health and Welfare to gather information on substances either department suspects are being or are likely to be released to the environment in quantities or concentrations that may be dangerous to health or to the environment; to consult with the provinces and other federal departments on actions possible under their laws in order to eliminate the danger; to issue notices requiring persons engaged in commercial, manufacturing or processing activity involving the substance to furnish specified information; to require those engaged in manufacture or import of the substance to conduct specified tests; to appoint advisory committees to collect and review data and receive representations from interested persons or concerned members of the public on any substance; to recommend that regulations or orders be made under the *Act* for controlling the substance where no other federal or provincial law will eliminate the danger; to publish a draft of the recommended regulation or order in the *Canada Gazette*, and; if a notice of objection is filed by an "interested person" within 60 days of publication, to establish an Environmental Contaminants Board of Review to inquire into the extent of the danger posed by the substance and related matters. Protection for trade secrets, sales or production information was also authorized as well as requirements for: emergency abrogation of procedures where immediate action is needed to prevent significant danger; inspections; seizures and detentions, and; offences for releasing to the environment beyond maximum quantities and concentrations substances specified in a schedule to be authorized under the *Act*.

²⁹ John A. Fraser (Vancouver South) on Bill C-3, *Can. H. of C. Deb.* Apr. 24, 1974, at 1731. See also comments on Bill C-25 by Fraser *Can. H. of C. Deb.* Dec. 12, 1974 at 2213-15, 2221 and Joe Clark (Rocky Mountain) March 21, 1975, at 4386-90.

information in advance on all chemicals manufactured in the country. The large technical staff needed and the administrative work load that would be created to advise industry within a reasonable time frame, would make such a program unworkable.³⁰ Moreover, the government argued that industry already undertook pre-market testing and could be expected to continue to do so, thus avoiding government restrictions after substantial financial investments had been made or major damage suits commenced.³¹

Ironically, when introducing Bill C-3 for second reading, the federal Environment Minister described it as if it would provide a pre-market screening mechanism. Mr. Davis said in part:

Bill C-3 . . . will set up a screening process. It will ensure that man-made substances will be checked out thoroughly before they are produced in this country and sold to an unsuspecting public . . . Government will call for certain kinds of tests to be made and industry must make them. Industry must pay for the testing procedures and it must produce information on the environmental consequences of these . . . products which government will be insisting upon before they become commercially marketable . . . [A]n early screening process makes a lot of sense, not only from an environmental point of view but also from an economic point of view . . . Bill C-3 is not unprecedented in the sense that we have similar screening arrangements in respect to food and drugs and other hazardous substances.³²

This interpretation of what the bill authorized was strongly disputed by the Opposition and would appear to have been subsequently rejected by the government itself. These policy differences were still unresolved when Bill C-25 was sent to standing committee at which time additional concerns were raised by industry and environmental groups.

Industry groups were principally concerned that better protection should be afforded for confidential information, such as trade secrets, that cannot otherwise be protected by patent;³³ that unwarranted delay in production

³⁰ Hon. Jeanne Sauvé, Min of the Env. on Bill C-25, *Can. H. of C. Deb.* March 24, 1975, at 4421-22. At the commencement of the standing committee hearings on the Bill, Madame Sauvé underscored this concern:

We investigated a blanket requirement that the government be kept informed of all intentions of industry. There was also the choice of a registration scheme, like the one written into the Pest Control Products Act. A registration system would carry with it a duty for the government to respond with a carefully considered assessment of each notification from industry. A very large number of highly trained experts would have to be found and added to the government to handle these assessments . . . it is almost impossible to do this within a reasonable time frame . . . We should be able to identify some really toxic chemicals with the means at our disposal, but we should not require information on all new chemicals."

Can. H. of C. Standing Comm. on Fisheries and Forestry, *Proceedings*, No. 16, (April 11, 1975) at 8. See also at 24 and 25, comments of Dr. J.E. Brydon, Director, Environmental Contaminants Control Branch, Environment Canada on the same point.

³¹ Comments of Madame Sauvé, *id.* at 8 and 9.

³² The Hon. Jack Davis, Min. of the Env., *Can. H. of C. Deb.* Apr. 24, 1974, at 1728-30.

³³ Wilbur L. Canniff, Technical Director, Cdn. Chemical Producers Assn. and Dr. B.B. Hillary, Manager, Corp. Services, Dow Chemical of Cda. Ltd., *Can. H. of C. Standing Comm. on Fisheries and Forestry, Proceedings*, No. 18 (Apr. 17, 1975) at 5 and 6.

start-up could be caused if prior substance or product registration were required,³⁴ particularly since industry already did pre-market testing;³⁵ and, that criminal sanctions in the bill should provide industry with a due diligence defence when dangerous substances were released into the environment.³⁶

Environmental groups were mainly concerned that the bill did not require industry to perform tests or report to government before manufacturing new substances.³⁷ Its provisions failed to encourage public participation, such as allowing public initiation of review board proceedings or greater access to information.³⁸ It did not require that the government be notified when industry learned that an existing substance might be dangerous to health or to the environment.³⁹ Finally, it was feared that since no time limit was placed on consultation with the provinces and other federal departments, few, if any, substances would be designated for control.⁴⁰

Issues of contention that eventually saw some compromise in the final version of the bill included the acceptance by government of a modified mandatory industry reporting requirement,⁴¹ a time limitation on provincial and federal agency consultation,⁴² greater government authority to require,

³⁴ *Id.* at 10, testimony of Mr. Canniff. However, industry did support the Bill as legislation that could provide a distant early warning system of possible ecological hazards. See correspondence from K.H. Rapsey, Exec. Dir., Cdn. Man. Assn. to the Hon. Albert Bechard, Chairman, Can. H. of C. Standing Comm. on Fisheries and Forestry (Jan. 20, 1975).

³⁵ *Id.* at 17, testimony of Dr. Hillary.

³⁶ K.H. Rapsey, Exec. Dir., and Graham Hughes, Leg. Dir., Cdn. Man. Assn., Can. H. of C. Standing Comm. on Fisheries and Forestry, *Proceedings*, No. 19 (Apr. 24, 1975) at 21. See also "CMA director highly critical of environment bill," *The Ottawa Citizen*, April 26, 1975 at 39, col. 1.

³⁷ Heather Mitchell, Counsel, and J.F. Castrilli, Research Dir., Cdn. Env. L. Assn., Can. H. of C. Standing Comm. on Fisheries and Forestry, *Proceedings*, No. 24 (May 8, 1975).

³⁸ *Id.*

³⁹ John Bee, Researcher, Pollution Probe, Can. H. of C. Standing Comm. on Fisheries and Forestry, *Proceedings*, No. 38 (June 17, 1975).

⁴⁰ *Supra* note 37. See also "Federal Environmental Contaminants Legislation Given First Reading", (1974) 3 *Cdn. Env. Law News* 64 at 67 where it is noted that: "The consultative process required with the provinces before any substances are designated to make this Act effective is reminiscent of the consultative constraints contained in the *Canada Water Act*. It is perhaps relevant to note that the *Canada Water Act*, although enacted in 1970, has been used only once to make any particular contaminant illegal."

⁴¹ *Environmental Contaminants Act*, S.C. 1974-75-76, c. 72, s. 4(6). The amendment required that the manufacturer or importer of any chemical compound in excess of 500 kilograms, manufactured or imported for the first time, must report to the Minister within three months of manufacturing or importing of the compound, the name and quantity of the compound and any information in his possession regarding its danger to health or environment. See generally Can. H. of C. Standing Committee on Fisheries and Forestry, *Proceedings* Nos. 36 and 41 (June 10 and June 26, 1975 respectively).

⁴² S. 5(2). The amendment required the Ministers to offer to consult but if the offer was not acted upon within 30 days, consultation would be deemed to have occurred. See generally Can. H. of C. Standing Comm. on Fisheries and Forestry, *Proceedings*, No. 42 (June 27, 1975).

upon notification, industry information respecting quantities of substances deemed to be of concern,⁴³ and the modification of criminal sanctions.⁴⁴

An Opposition amendment that would have required industry to report on dangers with existing chemicals of which it became aware was rejected by the Government,⁴⁵ as was one that would have permitted any concerned member of the public to file a notice of objection to a proposed order or regulation and have a board of review empaneled to hear the matter.⁴⁶ Other

⁴³ S. 3(1). See generally Can. H. of C. Standing Comm. on Fisheries and Forestry, *Proceedings*, No. 39 (June 19, 1975).

⁴⁴ S. 8(5). The maximum fine for violation of the section was raised from \$10,000 to \$100,000 but the possibility of imprisonment for up to six months, upon summary conviction, was removed. See generally Can. H. of C. Standing Comm. on Fisheries and Forestry, *Proceedings*, No. 42 (June 27, 1975).

⁴⁵ Stu Leggatt (New Westminster) moved an amendment that read: "Any person or corporation engaged in any commercial, manufacturing or processing activity dealing with chemical substances already in existence, where such person or corporation has reason to believe that such substance constitutes a danger to human health or the environment, shall notify the Minister of the probable effects of such manufacturing or processing and shall not distribute or emit such substance until approval is granted by the Minister." Can. H. of C. Standing Committee on Fisheries and Forestry, *Proceedings*, No. 40 (June 25, 1975) at 25. Amendment negated No. 41 (June 26, 1975) at 16. A similar amendment respecting new chemicals was also negated the same day.

Mr. Leggatt, in describing the advantages of an industry requirement to report existing and new chemicals of concern noted in part that: "If a chemical company has a report in its files from one of its own chemists that says, we have reason to suspect this substance may be carcinogenic, then the onus should transfer to the company to report that to [the Minister]." No. 36 (June 10, 1975) at 13. According to Mr. Leggatt, such a provision would: make industry very careful in terms of its scientific assessments; fill gaps in government information while preventing a potentially harmful substance from being released to the environment; and reduce the administrative burden on government by not having to register everything but placing the onus on industry to report primarily existing substances it has reason to believe are of concern. No. 36 at 13 and 14 and No. 40 at 25-29.

While agreeing in principle with the proposal, government officials characterized it as arguably unworkable because it: placed great reliance on industry to decide when to report; raised the spectre of the new provision's circumvention by companies that simply took care not to have such information in their possession, and; amounted to a de facto registration system because it required that such substances not be emitted until government approval. J.E. Brydon, Dir., Environmental Contaminants Control Branch, Env. Cda., No. 40 at 27.

⁴⁶ Robert Wenman (Fraser Valley West) moved the amendment arguing that the government provision in the Bill would likely be construed by the courts to only allow an "interested person", in the sense of one having a proprietary or financial interest that would be effected by a proposed regulation, to file a notice of objection and have a board of review established. Environment Canada's Legal Advisor, C.S. Alexander, substantially agreed with this assessment of the government provision in the Bill and its likely judicial interpretation. He added that the reason for limiting the phrase in this manner was to permit the Minister discretion to refuse to set up a board where "somebody who really knew nothing about the subject . . . would file a notice of objection. . . ." Madame Sauvé argued that the amendment was unnecessary because regardless of how the courts might interpret the word "interest" she would include in this category "ordinary citizens who have a clear interest in the substances entering their environments" as well as public interest groups. *Id.*, No. 42 (June 27, 1975) at 19-25.

Interestingly, when the Bill was debated in Parliament at second reading in 1974 (when it was Bill C-3) the Hon. Jack Davis, then federal environment minister, stated

comparatively minor amendments were incorporated at second and third readings and the bill passed in December 1975. The Act came into force April 1, 1976.

2. *The Environmental Contaminants Act*

The purpose of the Act is "to protect human health and the environment from substances that contaminate the environment."⁴⁷ Under the Act the Environment and National Health and Welfare Ministers are given the authority to ban or restrict the import, manufacture, processing, sale, commercial use or release of a substance (or class of substances) that they are satisfied does or will constitute "a significant danger . . . to human health or the environment."⁴⁸ In keeping with the supplementary or residual role of the Act the Ministers, before acting, must also be satisfied that the problem will not be eliminated by use of other federal or provincial laws after undertaking consultation, or making offers to consult, with the provinces and other federal departments.⁴⁹ The Ministers' authority does not explicitly include the authority to address such matters as the disposal of substances that are to be scheduled for control under the Act.

The Act has several key provisions to complement the Ministers' basic regulatory authority. The Ministers may publish notices in order to gather information on and to require testing of certain substances from industry.⁵⁰ There is a provision requiring mandatory reporting by any person within three months of the first time manufacture or import of a chemical compound in excess of 500 kilograms.⁵¹ Further, the Ministers may require record-keeping and inspections.⁵² These provisions and related matters are reviewed below.

a) *Significant Danger*

Any action by the Ministers to recommend regulation of a substance (or class of substances) must be based on a finding that they are "satisfied" that the substance "does or will constitute a significant danger . . . to human

that the review board provision "was included at the request of industry. It will give any company or individual affected by this legislation an opportunity to state his or her case. Producers, importers, etc. will therefore have an avenue of appeal open to them. These industry-oriented boards of review will have powers and responsibilities similar to those already enjoyed by the board of review under our . . . Hazardous Products Act." *Supra* note 32, Davis at 1730.

⁴⁷ S.C. 1974-75-76, c. 72.

⁴⁸ This authority is actually exercised by the federal cabinet on the advice of the two Ministers. It is based on the ability to place substances by order in a schedule under the Act and to restrict them by regulations which must first be published in draft form in the *Canada Gazette* 60 days prior to promulgation. Objections to the draft regulation or order may be lodged during this period by "any person having an interest therein" at which time an Environmental Contaminants Board of Review must be empaneled to hear the objections and related matters and make recommendations to the two Ministers. See generally ss. 5, 6, 7, 8 and 18.

⁴⁹ S. 5(2).

⁵⁰ See generally ss. 3, 4, and 18.

⁵¹ S. 4(6).

⁵² Ss. 10 and 18.

health or the environment."⁵³ As a result of this and related sections, commentators argue that the burden of proof is generally on the Ministers,⁵⁴ notwithstanding other sections of the Act, such as the mandatory first time reporting requirement⁵⁵ or notice of quantities requirement,⁵⁶ which could be used to shift at least a significant evidentiary burden onto industry with respect to particular substances.⁵⁷ Moreover, because the Ministers' statutory standard of proof is so vague (they must be "satisfied"), it is arguable that in fact the Ministers set the standard they will themselves have to meet. As Franson and Lucas note:

It does not indicate what factors the Minister[s] [are] to consider, nor does it indicate how [they are] to weigh the various factors. It is not clear what method of testing should be used to determine 'danger to human health or the environment'. Should humans be tested? Should various components of the physical or biological environment be monitored? How should testing be carried out? What levels of particular contaminant substances should be regarded as significant?

Considerable latitude is left for exercise of discretion. . . . Within the general terms of the statutory standard or test, regulation and enforcement may range from vigorous to feeble and accommodating. It all depends on internally generated policies.⁵⁸

The Act contains no definition of "significant danger." In practice, scientific and technical uncertainty creates a problem in determining whether a particular substance poses, or may pose, a significant danger to health or to the environment. In addition, competing socio-economic concerns may serve to lessen the degree of control that might be imposed.⁵⁹ Currently, through the development of several lists of priority and candidate chemicals,⁶⁰ the Minis-

⁵³ S. 5.

⁵⁴ Franson and Lucas, "Part I—Legal Control of Hazardous Products in Canada" in Sc. Council of Cda. *Canadian Law and the Control of Exposure to Hazards*. Background Study No. 39 (Ottawa: Supply & Services, Oct. 1977) at 67. Other examples of the burden substantially being on the Ministers can be found in s. 3 where the Ministers must "suspect" a danger to human health or the environment before they can collect data or conduct investigations on a substance. See also s. 4 where the Ministers must have "reason to believe" that a substance will constitute a significant danger to human health or the environment before industry can be required to furnish specified information or conduct tests on a substance.

⁵⁵ S. 4(6).

⁵⁶ S. 3(1).

⁵⁷ *Supra* note 54.

⁵⁸ *Id.*

⁵⁹ See generally Leah, "Hazard Assessment for Purposes of Federal Legislation in Canada: The Fisheries Act, The Clean Air Act and The Environmental Contaminants Act," in International Joint Commission, Great Lakes Water Quality Board *Workshop on Hazard Assessment*, (Windsor, Ontario: I.J.C., Dec. 1977) at 9 and 22.

⁶⁰ Since 1978, the Ministers have published three priority chemicals lists in the *Canada Gazette* covering approximately 20 substances or classes of substances. These have been divided into 3 categories of concern based upon the level of information available regarding environmental and human health effects. Category I chemicals are those which the government is satisfied pose a "significant danger" and for which regulations are being developed. Category II chemicals are those which the government has reason to believe pose a "significant danger" and which are being further investigated to determine the nature and extent of the problem and what should be done. Category III chemicals are those which the government believes may pose a "significant danger" or for which more information, including toxicology and amounts used, is required. To

ters concentrate on obtaining and assessing hazard risk information on selected substances as a prerequisite to possible implementation of controls.⁶¹ Once regulation development is deemed to be warranted, a 1977 federal government directive requires that a socio-economic impact analysis of the proposed regulation be prepared so that the costs and benefits and related matters associated with the regulation may be considered.⁶²

It is foreseeable that scientific uncertainty and problems of proof may lead to successful industry challenges that a "significant danger" does not exist. To date, regulations have been promulgated to ban or restrict the use of five substances about which substantial scientific and public opinion existed as to the dangers presented.⁶³ However, federal advisors note that

date regulations banning three of the substances (Mirex, PBBs and PCTs) and restricting the use of two others (PCBs and chlorofluorocarbons) have been promulgated. Six other substances on the priority list have been dropped because the government viewed them as being more properly controlled under other federal or provincial laws (e.g. arsenic, asbestos, benzene, lead, nitrogen and sulphide oxides). Substances that are primarily in Categories II and III include cadmium, chlorophenols, chlorobenzenes, HCBD, mercury, phthalic acid esters and related substances.

In 1979, a list of candidate chemicals was created in order to obtain data and evaluate potential environmental problems. Some of these eight substances or classes of substances may eventually be placed on the priority chemicals list or dropped from further investigation. They include aromatic amines and the chlorinated naphthalenes, paraffins and styrenes. See generally Environmental Protection Service, Env. Cda., *Canada Gazette Announcements—Environmental Contaminants Act* (Ottawa: Env. Cda., Dec. 1980).

⁶¹ The types of criteria or information used in assessments of hazard risk include: carcinogenicity, mutagenicity, teratogenicity, toxicity, volatility, solubility, routes of entry into the environment, dispersion and distribution throughout the environment, nature of transformation products, impurities, persistence, accumulation in tissues and amounts imported, manufactured or processed. See *Canada Gazette*. Part I. Departments of the Environment and National Health and Welfare—*Environmental Contaminants Act* Priority Chemicals—1979 (Dec. 1, 1979) at 7366. See also Leah, *supra* note 59 at 20-22; and Toft, "Health Hazard Assessment in the Bureau of Chemical Hazards" in *Workshop on Hazard Assessment*, *id.* at 131-139.

⁶² Treasury Board and Consumer and Corporate Affairs Canada, "Regulatory Review System Announced," *News Release* (Ottawa: Gov't of Cda., Dec. 14, 1977). This directive, which came into force in August 1978, requires that all new major federal regulations in the areas of health, safety and fairness must undergo this analysis not only in relation to direct costs and benefits, but also in relation to such considerations as effects on costs and prices, distribution of income (who pays and who benefits), international competitiveness and related concerns.

⁶³ See, e.g., Schedule to the Act, amendment, S.O.R./77-733 and Chlorobiphenyl (PCB) Regulations No. 1, CRC, Vol. 5, c. 564 at 3843; S.O.R./78-153; 80-461 as am. During testimony before the PCB Board of Review in 1979, Dr. J.E. Brydon, Director of Environment Canada's Contaminants Control Branch, set out the background of scientific and international opinion with respect to PCBs which helped spur government action: "In 1973 . . . the Council of the Organization for Economic Co-operation and Development (OECD) made a major decision that all member countries should limit the use of PCBs to enclosed uses and should develop control mechanisms to eliminate the release of PCBs into the environment. The 'OECD decision,' establishing co-ordinated environmental regulatory action among OECD countries, laid stress on the ultimate need to entirely eliminate the dispersal of PCBs." Testimony of Dr. Jim Brydon before PCB Board of Review (Ottawa: Gov't. of Cda., Dec. 10, 1979, Transcript Vol. 1) at 10.

these initial priority substances were some of the more visible contaminants in the Canadian environment. They query whether the Act will be able to cope with other less well-known substances or combinations of substances.⁶⁴ Moreover, federal officials themselves acknowledge that they are now investigating many substances "whose hazardous nature is not so obvious."⁶⁵ Under our legal system, the greater the scientific uncertainty and problems of proof, the greater is the likelihood of a successful court challenge to a government decision by an industry with a substantial proprietary or pecuniary interest in the substance or activity to be regulated.⁶⁶ As commentators have noted:

A subsequent federal/provincial Task Force recommended phasing out, by regulation, all uses of those PCBs that were highly persistent in the environment. See *Background to the Regulation of PCB in Canada. Report of the Task Force on PCB to the Joint Department of Environment and National Health and Welfare Committee on Environmental Contaminants* (Ottawa: Gov't. of Cda., Apr. 1976). Dr. Brydon, in his 1979 testimony to the Board of Review, indicated that in fact the federal government intends to phase out all uses of PCBs. *Id.*

All uses of three other substances (Mirex, PBBs and PCTs) which in recent years had been produced in small quantities in Canada, have been prohibited by regulations under the Act. Certain uses of other substances (chlorofluorocarbons) have been restricted by regulation. In most cases such prohibitions or restrictions were preceded by reports which documented the quantities of the substances in Canada, determined the levels of the substances in different ecosystems, determined the routes by which the substances were entering the environment and recommended appropriate controls to be prescribed by regulations under the Act. See, for example, *Mirex in Canada. Report of the Task Force on Mirex to the Joint Department of Environment and National Health and Welfare Committee on Environmental Contaminants* (Ottawa: Gov't. of Cda., Apr. 1977); Jamieson, Environmental Protection Service, Env. Cda., *Polychlorinated Terphenyls in the Environment*. A report prepared for the Joint Department of Environment and National Health and Welfare Committee on Environmental Contaminants (Ottawa: Gov't. of Cda., Sept. 1977).

It would appear that in certain cases, notorious pollution incidents in other jurisdictions involving substances, such as PBBs, that had relatively little production volume or use in Canada, may have made it feasible for the Ministers to restrict or prohibit their use in this country. For example, in 1973 cattle feed inadvertently contaminated with PBBs in Michigan and distributed across the state, subsequently resulted in government decisions to destroy at least 9,000 dairy and beef cattle, swine, goats and sheep; 700,000 chickens; and 3,000,000 eggs. PBBs had been shown to cause such problems as cleft palates, liver tumours and brain outside the skull in tests by Michigan medical researchers on mice offspring. Farmers testifying at state legislative committee hearings reported a high incidence of abortions, stillbirths, deformed calves and mortality in new-born cattle. Human health problems such as liver ailments, severe fatigue, deformities, loss of hair and eyesight were also linked to PBB contamination. See *PBB (polybrominated biphenyls) Pollution Problem in Michigan: Hearings Before the Subcomm. on Water Resources of the Comm. on Public Works and Transportation, 96th Cong., 1st Sess.* (Alma, Michigan, Nov. 19, 1979).

⁶⁴ Hall and Chant, *supra* note 2, at 13 and 14. Indeed, Professors Hall and Chant argue that the Act is inadequate to meet the realities of chemical contamination because its procedures "are better adapted to coping with single chemical-single effect relationships than with the often subtle and indirect effects of chemical complexes, often acting in minute quantities over long periods of exposure." *Id.* at 19.

⁶⁵ Leah, *supra* note 59, at 9.

⁶⁶ See, e.g., *Re Canada Metal Company Limited and MacFarlane* (1973), 1 O.R. (2d) 577 (H.C.), 41 D.L.R. (3d) 161. A stop order issued to a secondary lead smelter in the Toronto area, was quashed by the court after a finding that the Ontario Environment Ministry, Air Management Branch Director had acted "arbitrarily and not judi-

Hazardous substance issues can often be characterized as situations in which there is some evidence of a risk of damage, but the likelihood of the risk culminating in damage cannot be demonstrated with objective certainty. It is largely or entirely speculative.⁶⁷

The possibility of a court challenge by industry may serve, therefore, to limit the number of substances the Ministers deem a "significant danger" deserving of regulation, or may serve to lessen the level of regulation imposed on a particular substance or class of substances.

Increased administrative requirements respecting cost-benefit or risk-benefit analysis as a basis for regulatory decision-making,⁶⁸ may also restrict the Ministers' ability or willingness to make a finding of "significant danger" for certain substances or to regulate them to a particular level. Federal officials themselves admit that "[w]hile the absolute hazard posed by a substance will remain constant, the degree of acceptable hazard will likely fluctuate as a result of . . . cost-benefit analysis."⁶⁹

Overall, some positive initiatives on better-known toxics have been undertaken to date. The above factors, however, in conjunction with others discussed below, could have a substantial limiting effect on the Act's systematic control of lesser-known toxic chemicals that could, eventually, present equally great environmental impacts.⁷⁰

cially" by adopting a subjective and not an objective test of the danger to health alleged to be caused by the company's operation. The provision of the *Environmental Protection Act* (R.S.O. 1981, c. 141) under which the Director acted, authorized him to issue stop orders where he is of the opinion "upon reasonable and probable grounds" that a contaminant source is discharging into the environment a contaminant that constitutes "an immediate danger to human life, the health of any persons, or to property. . . ." The Director acted after data was obtained showing high levels of lead in the blood of several area residents. The Court found the Ministry's affidavit evidence was inadequate and that there was no necessary cause and effect relationship between the company's lead emissions and the elevated blood lead levels in area residents as opposed to other possible sources or explanations. The court also noted that the evidence of the company's lead expert "pointed up the greater danger of jumping to a conclusion without proper study." *Id.* at 591 (O.R.), 175 (D.L.R.).

Manufacturing chemists have expressed reservations about the scientific basis of environmental legislation generally. For example, the Chemical Institute of Canada recently stated that: "Any meaningful examination of environmental hazards must be based on cause and effect. Current knowledge of dose-response relationships is limited and inadequate. Epidemiological data is also limited. We may know the lethal dose of a contaminant; we may even know the dose at which morbidity is observed; we know little of the dosages and synergisms which produce chronic or sub-acute effects. This is the weakness in the basis for most environmental legislation today and the cause for much of the controversy between apparent experts." See Chemical Institute of Canada. Board of Environmental Affairs. Comments on the Science Council Studies "Policies and Poisons" (Ottawa: Chem. Inst. of Cda., Apr. 1976).

⁶⁷ Franson and Lucas, *supra* note 54, at 55 and 56.

⁶⁸ For a discussion of the federal socio-economic impact analysis requirements (SEIA) and notions of cost-benefit analysis generally, see *infra* notes 200-220 and accompanying text.

⁶⁹ Leah, *supra* note 59, at 9.

⁷⁰ In 1978, for example, the International Joint Commission's Great Lakes Research (now Science) Advisory Board expressed its "concern on the possible limitations of current Canadian Federal legislation to control and to prevent future manifestation

b) *Information-Gathering: Government Notices and Testing Requirements*

Four interrelated notice provisions under the Act authorize the Ministers to obtain information from industry regarding selected commercial substances and substances being released into the environment. The Ministers may place notices in the *Canada Gazette* to "ascertain" from persons engaged in commercial, manufacturing or processing activity involving selected substances, the quantities of these substances being released into the environment;⁷¹ to obtain the names of those engaged in the above mentioned activities who are using substances the Ministers are particularly concerned about;⁷² to send written notices directly to companies requiring them to furnish information;⁷³ and to conduct tests⁷⁴ specified in the notice.

Generally, these provisions can be used by the Ministers if they have insufficient information to examine adequately whether a substance or class of substances presents a "significant danger."⁷⁵ Environment Canada regional offices also can undertake more extensive surveys in conjunction with the Act's notice-gathering provisions where known substances of concern, such as PCBs, present potentially greater environmental risks because of the types and extent of uses involved.⁷⁶

of man-made chemicals within Canada and the Great Lakes ecosystem." The concern was expressed, in part, as a result of the fact that since 1975, regulations for only a few chemicals such as PCBs, mercury, Mirex, PBBs and PCTs had been passed or considered under federal legislation. See International Joint Commission, Great Lakes Research Advisory Board. *Annual Report* (Windsor, Ont.: I.J.C., July 1978) at 10.

⁷¹ *Environmental Contaminants Act*, S.C. 1974-75-76, c. 72, s. 3(1). Section 3(2) requires any person who has engaged or will engage in import, manufacture or processing of the substance 12 months prior or subsequent to the notice, to provide the government with data respecting such quantities upon the notice's publication.

⁷² S. 4(1)(a). In order to use any of the notice provisions of s. 4, the Ministers must have "reason to believe" that a substance is entering or will enter the environment in quantities or concentrations or under conditions that they believe constitutes or will constitute a "significant danger to human health or the environment."

⁷³ S. 4(1)(b).

⁷⁴ S. 4(1)(c). Such notice may only be sent to those engaged in importation or manufacture of the substance or any product containing the substance.

⁷⁵ For example, to December 1980, s. 3(1) has been used to ascertain the quantities of four substances or classes of substances in use in Canada. *Canada Gazette Announcements*, *supra* note 73. The substances or classes of substances and the quantities of use above which companies were required to report during the specified periods included: mercury (10 kilograms); chlorobenzenes (500 kilograms); aromatic amines and halogenated hydrocarbons (1 kilogram). By January 1982 polyelectrolytes and brominated fire retardants may also be the subject of s. 3(1) notices. [Interview with T.D. Leah, Contaminants Control Branch, Env. Cda., (March 4, 1981, Ottawa)], s. 4(1)(a) has been used to obtain the names of those persons using four other substances or classes of substances [*Id.* These included: Mirex, PCBs, PBBs and PCTs. In each case use of more than 1 kilogram of the substance in a calendar year necessitated reporting to government]; and s. 4(1)(b) has been used to obtain information from companies respecting production, import, export, sales distribution, end-use patterns and related matters for eight substances or classes of substances. [*Id.* These included: PCBs; chlorofluorocarbons; chlorophenols; chlorobenzenes; aromatic amines; and halogenated methanes, ethanes and ethylenes].

⁷⁶ A 1977 questionnaire, eventually sent to over 1,000 companies, was designed to gather information from companies using PCBs directly, such as in plasticizers and

While the Act has provided some valuable information, it appears deficient, on its face and as it has been applied, in several key respects. First, without sufficient information to demonstrate concern for a chemical (necessary to satisfy the "reason to believe" requirement), the Ministers cannot invoke provisions such as sections 4(1) (b) or (c) to demand additional data or to require testing. As a result, preliminary assessments are often based on insufficient data.⁷⁷ This presents particular problems with respect to chemicals that are reported to the government by industry for the first time pursuant to section 4(6), discussed below. Second, section 4(1) (c) requires testing only by manufacturers and importers, and not by those using or processing the substance commercially. Commentators argue that all those who use, process, manufacture, or import the substance should be required to test or to share in testing a substance to ensure its safety and to reduce the cost burdens of testing.⁷⁸ Third, the Ministers have never invoked section 4(1) (c). This is partly explained by the fact that there is no departmental policy or statutory guidance as to who, among several importers or manufacturers of an existing chemical, should be required by the Ministers to conduct tests. An-

adhesives; indirectly such as in transformers, capacitors or other mechanical devices; and from firms engaged in the disposal or transportation of PCB wastes. The information sought included: the use, type and quantity of PCB at each location; past servicing and maintenance carried out on PCB containing equipment; disposal practices used for PCB containing wastes and equipment; and an indication as to whether plans had been made within each plant to phase-out PCB use. The survey helped contribute to findings which showed that as of January 1979 the bulk of the approximately 17.5 million kilograms of PCBs in use, or in storage for use or disposal in Canada are located in Ontario and Quebec (app. 70%). See generally Environmental Protection Service, Ont. Region, Env. Cda., *PCB Inventory Report* (Toronto: Env. Cda., Jan. 1979).

⁷⁷ Memorandum from R. Demayo, Hazard Assessment Division, to J.R. Monteith, Acting Director, Contaminants Control Branch, Env. Cda. (March 4, 1981, Ottawa).

⁷⁸ Heather Mitchell, Research Fellow, International Council of Environmental Law, *Federal Control of Toxic Substances in Canada* (unpublished paper presented to the International Institute for Environment and Society, March 14, 1978, Berlin, Federal Republic of Germany).

In other jurisdictions, such as the United States, pursuant to the *Toxic Substances Control Act of 1976* (15 U.S.C. §2601) (TSCA) once a test rule for a chemical substance is promulgated by the U.S. Environmental Protection Agency, it applies to all manufacturers, importers and processors. To avoid duplicate testing of a substance and needless expense by many firms, TSCA allows U.S. EPA to exempt from testing, a manufacturer or processor of a chemical that is "equivalent" to one for which testing is already required. The company then shares the cost with those doing the testing (§4(c), 15 U.S.C. §2603(b), (c)). While the U.S. EPA is seeking voluntary industry arrangements for cost allocation or third party responsibility for testing, TSCA requires that if no agreement can be reached among the parties, U.S. EPA must determine the proper amount of reimbursement, considering all relevant factors, including relative competitive positions of the parties. These provisions were included to also ensure that small businesses are not assessed an undue percentage of testing costs.

Some concerns that have been raised with this approach include: how and when "equivalent" is to be defined; how a company's "market share" should be determined so that test costs can be fairly allocated and reimbursement disputes settled; and how confidential information can be protected in communications concerning what company shall test chemicals and how test costs should be allocated. See generally U.S. Council on Environmental Quality, *Eleventh Annual Report* (Washington, D.C.: C.E.Q., Dec. 1980) at 239.

other reason behind the non-use of section 4(1) (c) is that the departments lack the methodology to determine whether chemicals are entering the environment in quantities, concentrations or under conditions that constitute an environmental or human health danger. As a result, no regulations pursuant to section 18(h) respecting tests required under section 4(1) (c) have been promulgated.⁷⁹ Finally, industry concern about the potential expense associated with testing existing chemicals has arguably influenced government decisions not to require testing.⁸⁰

Testing was regarded as a key issue by the 1972 Cross-Mission Task Force and during House of Commons consideration of the bill. It is also considered a cornerstone of environmental legislation in other jurisdictions.⁸¹ The failure to develop and apply systematic testing requirements is a major gap in the Act and its implementation in Canada.⁸²

⁷⁹ Interview with Dr. J.E. Brydon, Director, Toxic Chemicals Management Centre and Dr. M.F. Millson, Chief Toxicologist, Contaminants Control Branch, Env. Cda. (March 4, 1981, Ottawa).

In the U.S., where most test rules under TSCA are also expected to be developed for one or a group of existing chemical substances, the U.S. CEQ reports that U.S. EPA efforts to develop policies for issuing test rules have been circumscribed by disagreement which has "centered on how chemicals are selected for testing, how detailed an evaluation must precede issuance of a test rule, and what kinds of tests should be conducted by whom." *CEQ Report, supra* note 78, at 235-36.

⁸⁰ For example, at 1980 hazardous waste hearings in Alberta, the Canadian Chemical Producers Association described the costs and possible range of tests needed for testing existing chemicals as a "horrendous" problem. See testimony of William A. Neff, Technical Dir., Cdn. Chem. Producers Assn., Environment Council of Alberta, *Public Hearings on the Management of Hazardous Wastes in Alberta*, Transcript, Vol. 15 (Red Deer, Alta.: June 5, 1980) at 153-54.

⁸¹ Steven D. Jellinek, Assistant Administrator for toxic substances with the U.S. EPA, testified before a U.S. Senate subcommittee in May 1979 as to the importance of testing under TSCA, saying: "The chemical testing program is one of two major provisions of TSCA—the other being the pre-manufacture review program for new chemicals—that are largely unique to the law and provided much of the impetus for its enactment." United States Senate, *Toxic Substances Control Act of 1976: Hearing Before the Subcomm. on Science, Technology and Space of the Comm. on Commerce, Science and Transportation*, 96th Cong., 1st Sess. (May 4, 1979) at 3.

The West German *Federal Chemicals Law*, enacted in July 1980 (came into force, January 1982) has been described as breaking new ground, from the standpoint of European toxic substances regulation, primarily in the area of controls on existing chemicals. The federal government has been authorized to identify particular existing substances for which there are real indications of hazard and to demand that these be subjected to any tests that are deemed appropriate. See Jasanoff, "German Law to Control Toxic Substances," *Toxic Substances Control Newsletter*, Nov.-Dec. 1980 at 1.

⁸² This failure is also a problem in other jurisdictions. For example, a U.S. General Accounting Office review of U.S. EPA's testing program recently concluded that the agency has been slow to assess the risks of existing chemicals (such assessment being a key pre-requisite to use of TSCA's testing requirements). It also found that no test standards describing how specific tests should be performed or test rules requiring manufacturers or processors to test a chemical have been issued. The review also found the agency dilatory in responding to an advisory committee's recommendations that selected priority chemicals should be tested. See United States General Accounting Office, *EPA Is Slow To Carry Out Its Responsibility To Control Harmful Chemicals*. Report to the Congress By The Comptroller General of the United States, CED-81-1. (Washington, D.C.: Oct. 28, 1980).

c) *Mandatory Industry Reporting of First-Time Manufacture or Import*

Section 4(6) of the Act makes it mandatory for industry to report information without first being requested by the Ministers. This section requires that where, during a calendar year, a person manufactures or imports a chemical compound in excess of 500 kilograms for the first time, he must, within three months of reaching that amount, notify the Minister of the name and quantity of the compound and of any information he possesses regarding any danger it poses to human health or to the environment.

This reporting requirement was one of the main compromise provisions that resulted from concerns expressed during the 1974-75 House of Commons and public debates arising from the fact that the bill contained no early warning system of possible problem substances to the environment. Thus, in drafting section 4(6), it was the government's intent to identify major new uses of chemicals in order to be in a position to know what chemicals are being introduced into commerce for the first time or what new uses of existing chemicals are being planned.⁸³ Indeed, between April 1, 1976 and December 30, 1980, approximately 1,273 substances were reported to the Minister pursuant to this section.⁸⁴

In practice, however, section 4(6) has been of little aid in helping the federal government determine which substances are, in fact, new to Canadian commerce. This is so partly because no inventory of existing chemicals in Canada is required under the Act.⁸⁵ Federal officials have noted further that:

All we know definitely is that a chemical compound reported under section 4(6) is new to the reporting company. We rely on information in the trade journals and on intelligence obtained from... an officer of the reporting company to indicate whether a given compound is indeed new in Canadian commerce, or whether there is a major new use projected for it, or whether there is to be a significant increase in its consumption in the future... One of our stumbling blocks in the identification of new chemicals is the absence of a comprehensive inventory of existing chemicals in use in Canada. We have no immediate plans to develop one for several reasons. At the moment we plan to make use of the equivalent U.S. inventory in identifying new chemical compounds in Canada. We

⁸³ Dr. J.E. Brydon, Director, Contaminants Control Branch, Env. Cda. *Notes for a Talk to the Chemical Industry* (March 25, 1976, Ottawa). Dr. Brydon also observed that generally there are three categories of problems that an early warning system must address: First, new chemicals because we have no experience with their properties; second, existing chemicals used for new purposes which may lead to major new releases to the environment in amounts which it cannot accommodate; and third, existing chemicals about which we suddenly obtain new knowledge with respect to long-term adverse effects, such as carcinogenesis. See Address to the Canadian Chemical Producers Association, *Notes on the Environmental Contaminants Act* (Apr. 8, 1976, Ottawa).

⁸⁴ Demayo, *supra* note 77. However, not all these substances would be considered "chemical compounds". For example, between April 1976 and September 1978, 839 substances were reported, but only 356 could be described as chemical compounds, according to federal officials. During this 1976-78 period approximately 69 of these compounds required more detailed follow-up, through the notice and related information-gathering mechanisms discussed above. See Brydon, *supra* note 6.

⁸⁵ Interview with Ruth Demayo, Hazard Assessment Division, Contaminants Control Branch, Env. Cda. (March 4, 1981, Ottawa).

believe that is a reasonable approach, given the close relationship of the chemical industry and the manufacturing industry in the U.S. and Canada.⁸⁶

Section 4(6) and related information-gathering limitations under the Act have also been criticized by International Great Lakes research bodies:

It is...feasible that the two Canadian Departments with responsibilities under the Environmental Contaminants Act are not aware of many compounds manufactured, processed or imported within Canada, while two other Departments with no obligations to the Act do have such information, namely Statistics Canada (production and usage) and Revenue Canada - Customs and Excise (importation). However, the continually updated data of the latter two Departments is by Canadian law, confidential and inaccessible to any other Federal Departments. Without such information, it is difficult for the [Research Advisory] Board to comprehend how the Departments with responsibility for the Contaminants Act can confirm which compounds are being produced or imported for a first time, and henceforth, determine whether importers or manufacturers are complying with section 4(6) of the Act. The Board feels that it is most essential for jurisdictions with responsibilities for toxic substance control to have a continually updated inventory which identifies substances in use, manufactured or imported within a country. The Canada Environmental Contaminants Act does not assure such information even on a confidential basis to the Canadian Departments responsible for enforcement of the Act.⁸⁷

A federal environmental contaminants board of review also found that section 4(6) was drafted too narrowly to require the reporting of elemental chemicals which may be potentially hazardous to health and to the environment. It recommended that amendments be considered to correct this deficiency.⁸⁸

Quite apart from not necessarily knowing which chemicals are new to Canadian commerce, the federal government has not been receiving adequate information from industry about chemicals reported under the section 4(6) requirement. Federal officials indicate that even with the issuance of 1978 reporting guidelines which list the type of data that should accompany, even voluntarily, a section 4(6) notification,⁸⁹ Environment Canada has been receiving very little toxicity information from industry and almost nothing on environmental effects. The Department often requests further information on notified chemicals, if for no other purpose than to determine formally, in writing, which data are not available.⁹⁰

While the government's experience has been that companies are cooper-

⁸⁶ Brydon, *supra* note 6.

⁸⁷ Findings and conclusions of the IJC-Great Lakes Research Advisory Board, *supra* note 70 at 9-10.

⁸⁸ Environmental Contaminants Board of Review, *Report on PCBs* (Ottawa: Gov't of Canada, March 1980). This Board was established as a result of objections to proposed PCB regulations issued pursuant to the Act in 1978.

⁸⁹ See *Canada Gazette*, Part I (Oct. 14, 1978) at 6217-6219. The Reporting Guidelines request such information be filed as: chemical identification; specification (i.e. composition, packaging and name and address of foreign supplier); properties (e.g. melting point, degradability, solubility); toxicity data; amounts and uses. The guidelines also address confidentiality matters. Because under section 4(6) only the chemical name, quantity and availability of information on danger can be required, all other information requested in the guidelines would be submitted voluntarily.

⁹⁰ *Supra* note 85.

ative in responding to such requests, frequently the data does not exist or is not available to Canadian companies (for example, when the chemical is an import). This problem can only be solved by a testing requirement. But, as noted above, without sufficient information to demonstrate concern for a notified chemical, other sections of the Act such as 4(1)(b) and (c) cannot be used to require additional data or testing. In essence, "section 4(1)(b) does not seem to provide a suitable tool for obtaining information about new chemicals and section 4(6) does not demand sufficient data in the original notification."⁹¹

Because of the deficiencies in section 4(6) and also because of the perceived need to achieve harmony in the international control of chemicals,⁹² Environment Canada has determined that substantive amendments to the Act in the area of data collection and testing are necessary.⁹³ They recommend the incorporation of provisions, by statute or regulation, to establish a list of existing chemicals so that a new chemical can be defined by its absence from the list; to require that all new chemicals imported, manufactured or used in Canada be subject to a sixty day pre-market notification and moratorium; to specify a minimum pre-market set of data to accompany the notice, with opportunity to extend the marketing moratorium a further sixty days while hazard assessment is undertaken; to prohibit marketing of the chemical; to allow specified uses; to defer permission to market the chemical pending results of further testing or to require testing after the chemical is marketed; to issue special orders (for example, orders relating to labelling, packaging, handling and disposal) to ensure safety in its use; to issue general orders respecting control of manufacture, use, export, handling and disposal of reported chemicals; to require maintenance of records of amounts used, transported, sold, or disposed of; and to require reporting of such records to the government.⁹⁴

With respect to the special problems of testing new chemicals, Environment Minister John Roberts has supported the "value of a system which

⁹¹ *Supra* note 77. The problem of inadequate data and testing, particularly for new chemicals, has also plagued toxic substance control programs in other countries. During 1980 testimony before a Congressional subcommittee, for example, Steven D. Jellinek, assistant administrator for toxic substances with U.S. EPA, stated that: "Since the July 1, 1979, inception of the TSCA section 5 premanufacture notification program, EPA has received 105 notices from companies intending to manufacture new chemicals in the United States. The notices we have received to date have been characterized by a very significant lack of health effects testing data. . . . There is no doubt that this general lack of adequate risk related information runs contrary to congressional intent in passing section 5 of TSCA and that it also contradicts industry's own oft-expressed view of how it conducts testing of new chemicals." *Toxic Substances Control Act Amendments of 1980. Hearings on H.R. 7003 before the Subcommittee on Consumer Protection and Finance of the Committee on Interstate and Foreign Commerce*, 96th Cong., 2nd Sess. (Washington, D.C.: Apr. 17, 1980) at 281.

⁹² International developments will be discussed *infra*.

⁹³ Memorandum from Dr. J.E. Brydon, Dir., Toxic Chemicals Management Centre to George Cornwall, Acting Dir., Planning, Policy and Assessment Directorate. Env. Cda. (Oct. 14, 1980, Ottawa).

⁹⁴ *Id.*

would give us good data on the implications of these chemicals before they enter the commercial world."⁹⁵ Whether this authority to test would be systematically employed remains to be seen; however, given the relatively small number of new chemicals produced or imported into Canada each year,⁹⁶ it would appear that systematic use of such provisions is feasible. Industry has been a cautious supporter of a prospectively greater federal capacity under the Act to require selective pre-market testing of chemicals, with the precondition that industry should be involved in assessing the tests to be used in determining the degree of hazard.⁹⁷

Should the Environment Canada proposals be implemented, they would mark a substantial improvement in the government's ability to control new chemicals. As with the current provision of the Act on this point, however, there is a danger that any testing will come too late in the process to be effective, because notice is required only at the pre-marketing stage of a chemical's development. Statutes like the *Toxic Substances Control Act*, while they have also had their difficulties in being implemented,⁹⁸ require pre-manufacture notice. To the extent that testing can be required at this earlier stage, sounder decision-making is likely to result because large sums of industry development money will not have been irretrievably committed.⁹⁹

d) *Protection of Confidential Industry Information.*

The Act provides for confidentiality of information gathered under its authority that "relates to a formula or process by which anything is manu-

⁹⁵ Hon. John Roberts, Min. of the Env. Speech Notes for an address to a Joint Meeting of the Canadian and American Bar Associations (March 19, 1981, Banff, Alta.). See also "Guidelines co-ordinate toxic testing," *The Globe and Mail* (Toronto), March 19, 1981 at 8, col. 5.

⁹⁶ Robinson and Brydon, *supra* note 6.

⁹⁷ Canadian Manufacturers Association, *Position Statements on Environmental Quality Control* (unpublished, Dec. 1, 1980, Toronto) at 11.

⁹⁸ In late 1980 the U.S. GAO reported that U.S. EPA had not implemented the premanufacture notice requirements of TSCA in a timely manner. It noted that while EPA was developing review procedures it was not actively working on establishing criteria upon which to base decisions. Moreover, it noted that experience to date indicated that EPA was not receiving adequate toxicity or exposure data from industry, thus hampering government reviews. *Supra* note 82. These problems could adversely influence development of Canada's control programmes as well.

⁹⁹ Mitchell, *supra* note 78. Under section 5 of TSCA, any person who intends to manufacture or process a new chemical, or an existing chemical for a significant new use, must give the U.S. EPA 90 days' notice before manufacturing or processing the chemical. Notices submitted must include the name of the chemical, its chemical identity and molecular structure, proposed categories of use, an estimate of the amount to be manufactured, the by-products resulting from the manufacture, processing and disposal of the chemical, and any test data related to the health and environmental effects in the manufacturer's possession. The manufacturer must also do new tests, and submit the resulting data if, the testing of the chemical or members of its chemical class is required by a rule promulgated by the U.S. EPA, or if, the U.S. EPA has included the chemical on a published list of new chemicals or classes of new chemicals which present or may present an unreasonable risk of injury to health or the environment if they are introduced into commerce. Other mechanisms under the section are available to U.S. EPA to delay manufacturing where necessary.

factured or processed, whether patented or not, or to other trade secrets or that is sales or production information.”¹⁰⁰ Such information which is specified in writing by the company as confidential cannot be disclosed by the Ministers, “except as may be necessary,” for the Act’s purposes.

While this non-disclosure provision is meant to protect a legitimate industry concern regarding release of confidential data to competitors, it may impinge on another important societal interest: the need to have access to environmental health and safety studies on toxic chemicals. The tension inherent in the provision is essentially resolved in favour of industry, as there are no affirmative duties in the Act that require the Ministers to release information to other agencies or the public. Indeed, during House consideration of the environmental contaminants bill, industry groups, while expressing some reservations about the section, were generally satisfied with the provision.¹⁰¹ Environmental groups, on the other hand, argued that the section did not give the public the right to know what the identity of a substance was, let alone what its environmental health and safety effects might be.¹⁰²

Federal officials have been cognizant of these competing interests in administration of the Act. They note that, in addition to protecting trade secrets and related data, they are attempting to develop a system that would permit the sharing of confidential information by a number of government agencies as well as meet the increasing public demand for detailed knowledge about chemicals which are in, or are likely to be in, the environment.¹⁰³

Presently, however, there are constraints, or certainly delays, in the timely release of information obtained under the Act. For example, because of problems of confidentiality, the names of notified substances under section 4(6) have yet to be made public. Federal officials indicate that, in most cases, an industrial chemical name or trademark name is not confidential; however, its association with section 4(6) may disclose to competitors a trade secret such as the “hidden” ingredient of a catalyst, a paint formulation

¹⁰⁰ *Environmental Contaminants Act*, S.C. 1974-75-76, c. 72, s. 4(4).

¹⁰¹ *Supra* note 33, at 9.

¹⁰² *Supra* note 37.

¹⁰³ Brydon, *supra* note 6. Similar initiatives have been recommended in other jurisdictions. For example, eighteen federal agencies in the U.S. recommended in mid-1980 that legislation should be prepared to facilitate sharing of confidential data between health and environmental agencies and to permit sharing data with contractors and subcontractors with appropriate security safeguards. The group also recommended that statutes allowing public disclosure of health, safety and efficacy data should remain unchanged, but legislation should be prepared enabling agencies to give the public access to confidential data “on a good cause-public interest basis so that there can be public participation in decision-making and independent evaluation of the data.” Such legislation would define the standard for disclosure and include security precautions, sanctions against unauthorized disclosure and notice to the data submitter. See *Toxic Chemicals and Public Protection. A Report to the President by the Toxic Substances Strategy Committee* (Wash., D.C.: U.S. Gov’t Printers Office, May 1980). TSCA explicitly exempts health and safety studies and data from the prohibitions not to disclose trade secrets found elsewhere in the U.S. law. §14(b), 15 U.S.C. §2613(b)(A).

or a dye. As a result, a list of 374 unique chemical compound names included in section 4(6) notifications between April 1976 and December 1978 were released for the first time in 1981. Other lists for subsequent years will follow.¹⁰⁴

Such delays can effectively reduce the possible role of public scrutiny of the section 4(6) program by allowing potentially harmful substances to enter Canadian markets and the environment long before the public is aware of a problem. This could also occur if, unlike in Japan's *Chemical Substances Control Law*, the public is not permitted to know the chemical structure of new chemicals.¹⁰⁵ Industry has been known to claim as confidential the chemical identity of new chemicals, although such identification has been described as perhaps the single most important piece of information for judging the possible health and environmental effects of a substance.¹⁰⁶

Canadian industry has argued that if data has been developed by a company it is the company's intellectual property. Such data should then be protected because principles of confidentiality ought not to be overridden by the broad wording characteristic of the last part of section 4(4), which permits disclosure "for the purposes of the Act."¹⁰⁷ In particular, industry has pressed for government acceptance, supported by legislation, if necessary, of a number of principles, including the limitation of government requests for information to those which are necessary to protect human health and the environment; the maintenance by government of an adequate security system for confidential data; the designation by industry of what is, and what is not, confidential; the prohibition of agencies sharing such data, unless

¹⁰⁴ *Supra* note 77.

¹⁰⁵ Under Japanese law, the chemical structure of all new chemicals must be published. Law No. 117 of 1973, *Concerning the Examination, Screening and Regulation of Manufacture (etc.) of Chemical Substances*. See also Ministry of International Trade and Industry, *The Chemical Substances Control Law in Japan* (Tokyo: Min. Int'l Trade and Ind., 1977).

¹⁰⁶ Of the first 183 pre-manufacture notices for new chemicals filed by industry with U.S. EPA under TSCA to July 16, 1980, 70% of the notices (123) claimed chemical identity as confidential business information. *Supra* note 82. For U.S. EPA's conclusions respecting the importance of knowing chemical identity for judging a substance's possible environmental health effects, see 44 Fed. Reg. 2242 (1979). "Proposed Regulations for the Submission and Review of Premanufacture Notices under TSCA, s. 5 and support documents." U.S. environmental groups argue that in the absence of knowing chemical identity, one cannot independently determine structure-activity relationships; assess the appropriateness of the tests and test methods used; replicate the test or conduct additional testing. They also argue that a generic description of the chemical would not be an adequate substitute. See Jacqueline M. Warren, staff attorney, Environmental Defense Fund, *Authorization and Oversight of the Toxic Substances Control Act. Hearings on H.R. 2606 before the Subcomm. on Consumer Protection and Finance of the Comm. on Interstate and Foreign Commerce, 96th Cong., 1st Sess.* (Wash., D.C.: March 8, 1979). Industry has argued that an informed evaluation of the test data for new chemicals can be based as effectively on a chemical's generic class as on its specific identity. Testimony of Curtis W. Smith, Manufacturing Chemists, Association. *Id.* at 40-41.

¹⁰⁷ CMA, *supra* note 97. See also Canadian Chemical Producers, Association, *Position Paper on Confidentiality* (Aug. 1980, Ottawa).

authorized by law or with company consent; no disclosure of confidential data, except where necessary, and only with company approval, including a company opportunity to prepare the initial draft of any release; and the imposition of liability on government for damages resulting from wrongful disclosure.¹⁰⁸

The federal government agrees that legitimate confidential data should not be released but takes issue with the industry view that there should be no interagency sharing of such information:

Industry holds the view that it, not government, should determine what information should be treated as confidential and that governments should not be allowed to transfer such information to other governments for whatever purpose. It is further contended that if other governments wish that information they should approach industry directly for it. A policy based on this view of confidentiality runs the risk of placing industrial or corporate interest ahead of the public interest through adoption of overly broad confidential categories. It could also make more difficult federal-provincial and international cooperation in the management of toxic chemicals and could result in costly duplication of information-gathering activities.¹⁰⁹

From the public's perspective, the principal difficulty with the Act is that it does not require disclosure of health and safety studies to the public. In principle, Environment Canada officials agree with the concept of aggregating the confidential data collected by notices under the Act and of presenting for release to the public the non-confidential sections of a report or summaries.¹¹⁰ In practice, because of frequent industry assertions that such data are confidential, or inextricably linked to confidential information,¹¹¹ it is likely that only statutory amendments will guarantee public access to health and safety data.

e) *Advisory Committees and Boards of Review: The Roles of the Public and Industry in the Regulation-Making Process*

Two mechanisms under the Act may permit both the general public and industry to influence the development of regulations: the provisions for establishment of advisory committees and boards of review.

The Ministers are authorized to appoint advisory committees to review and assess data collected under other sections of the Act; to advise the Ministers on possible substance control measures; to receive representations from "interested parties or concerned members of the public"; and to publish reports and recommendations.¹¹² The Act also requires prior publication in

¹⁰⁸ *Id.*

¹⁰⁹ *Supra* note 4, at 9.

¹¹⁰ *Supra* note 79.

¹¹¹ Of the first 183 TSCA premanufacture notices for new chemicals industry filed with U.S. EPA to July 16, 1980, 19% claimed health and/or safety data as confidential. This percentage was regarded as understated because not all the notices contained health and safety information. *Supra* note 82. U.S. GAO report.

¹¹² S.C. 1974-75-76, c. 72, ss. 3(4) and (5).

draft form of contaminants regulations in the *Canada Gazette*, sixty days before promulgation. An opportunity for objection and a hearing before an Environmental Contaminants Board of Review is also afforded "any person having an interest." Once such a Board of Review is empanelled, "other interested or knowledgeable persons" may also appear before it to present evidence and make representations.¹¹³

The distinctions, as well as interrelationships, between the two types of bodies are summarized in a recent report of the first Board of Review:

The function of an advisory committee is very different from that of a board of review. The former is concerned with the collection and assessment of data as well as, possibly, the shape of control measures, all leading to the *formulation* of regulations and hence should make its contribution before government officials have developed any commitments to particular control strategies or even the necessity for them in relation to a particular substance. The latter—a board of review—is concerned with the *review* of the control policy which the Government has specifically proposed as being appropriate. The former may include government officials who will be involved in advising the Minister. The latter must be independent and be seen to be independent.¹¹⁴ [emphasis in original]

There have been positive and negative experiences with both processes to date. The principal concerns expressed during Parliament's consideration of the environmental contaminants bill in 1975 with respect to advisory committees were that they might be neither sufficiently representative of various professional perspectives or interests, nor sufficiently visible in their activities to attract submissions from the public.¹¹⁵ A further concern is that the Act contains no mandatory duty on the Ministers to establish advisory committees.¹¹⁶ Since April 1976, only one advisory committee has been established—respecting mutagenesis—under the direction of Health and Welfare Canada.¹¹⁷ Before April 1981 this committee, which was established in 1978, had not sought public input.¹¹⁸ In 1980, the PCB Board of Review drew

¹¹³ S.C. 1974-75-76, c. 72, ss. 5 and 6. The Board's inquiry must address not only the proposed regulation and any objections to it but also the nature and extent of any danger posed by the substance to be regulated. In addition, it must also address such matters as the substance's presence in the environment and any possible human health or environmental effects; the extent of its dispersal and persistence in the environment; its ability to bioaccumulate and cause biological change; and control methods. [s. 6(5)].

¹¹⁴ Environmental Contaminants Board of Review, *Outside Review and Public Participation* (Ottawa: Environmental Contaminants Board of Review, July 1980) at 71. This was the second report of the board established as a result of objections to proposed PCB regulations published in the *Canada Gazette*, Part I in December 1978.

¹¹⁵ See generally Can. H. of C. Standing Comm. on Fisheries and Forestry, *Proceedings*, No. 40 (June 25, 1975).

¹¹⁶ Science Council of Canada, *supra* note 5 at 47.

¹¹⁷ *Supra* note 79. According to Environment Canada officials, a second committee on dioxins may be proposed. The Mutagenesis Committee's terms of reference include reviewing data relating to the mutagenicity of chemicals; and advising on the evaluation of mutagenicity tests and the significance of such tests in terms of human health or environmental hazard.

¹¹⁸ See *Info Letter* IL 599 DNH & W/DOE, Advisory Committee on Mutagenesis (Apr. 15, 1981); *Criteria for Selection of Chemical Substances for Mutagenicity Testing*, Min. NH & W/Min. of Envir. (March 11, 1982).

attention to the lack of public knowledge about the mutagenesis committee, despite its then two-year existence and its completion of several reports.¹¹⁹

In 1980 the PCB Board of Review recommended that the Ministers consider the use of section 3(4) whenever a new regulation is being contemplated to control a toxic chemical. The Board further recommended that, pursuant to section 18(j), a regulation be drafted respecting the procedure to be followed by advisory committees to facilitate their more systematic use.¹²⁰

Yet another concern is that the Board of Review process has been used sparingly when objections to draft regulations are made. This is exemplified by events surrounding a 1977 proposed regulation in the *Canada Gazette* respecting the control of PCBs.¹²¹ The purpose of the regulation was to prevent the use of PCBs in any new goods other than electrical capacitors and transformers.

However, Environment Canada, in effect, acknowledged that the regulation simply recognized the status quo because industry had already eliminated most non-electrical uses of the substance.¹²² The National Indian Brotherhood (NIB) filed a notice of objection to the proposed regulation arguing that it did not go far enough towards eliminating the PCB problem.¹²³ The NIB also argued that if this regulation was only the first of several, there ought to be a firm timetable for the promulgation of the subsequent regulations since a piecemeal approach could lead to unwarranted delays. No such timetable existed in the proposed regulation.¹²⁴ Environment Canada did not acknowledge in the *Canada Gazette* that a notice of objection had been

¹¹⁹ *Supra* note 114, at 69. In August 1979, the Mutagenesis Committee recommended that "mutagenicity data should be included as a part of the toxicological evaluation that may lead to regulatory decisions." Memorandum from the Advisory Committee on Mutagenesis to the Ministers of National Health and Welfare and Environment (August 2, 1979). The committee has also investigated the mutagenicity of pulp mill effluents and epoxy resins and developed position papers on criteria for selecting chemical substances for mutagenicity testing. These will eventually lead to federal guidelines.

¹²⁰ While the use of other mechanisms, such as the 1976 PCB Task Force, was said by federal officials to be the equivalent of the section 3(4) advisory committee, the Board of Review disagreed. It observed that using the section 3(4) process would encourage public involvement that could later reduce both the number of objections to regulations and the length and scope of Board hearings. *Supra* note 114, at 70 and 72.

¹²¹ *Canada Gazette*, Pt. 1, Vol. 111 (February 26, 1977) at 977.

¹²² Env. Cda. "Proposed Initial Regulation on PCB Published," *News Release* (Ottawa: Env. Cda., Apr. 1977).

¹²³ Notice of Objection filed by Richard Phaneuf, NIB, Ottawa, to the Hon. Romeo LeBlanc, Min. of Fisheries and Environment (April 12, 1977, Ottawa).

¹²⁴ The NIB cited the example of *Clean Air Act* emission standards for mercury, which were first expected in 1972 but which were not promulgated until 1978. [Correspondence from Noel V. Starblanket, Pres., NIB to the Hon. Romeo LeBlanc, Min. of Fisheries and Environment (July 18, 1977, Ottawa)].

filed;¹²⁵ nor did it empanel a Board of Review to hear the matter as required by section 6(1) when a "person having an interest" files an objection. The rationale given by the Minister was that the Department did not regard the NIB notice as an objection and that the Department should not be obliged to establish a Board of Review everytime someone argues, on "general grounds," that a proposed regulation does not go far enough or goes too far.¹²⁶

In contrast, in 1979, when two companies filed notices of objection¹²⁷ to a proposed government amendment to the first PCB regulation,¹²⁸ the Ministers did establish a Board of Review to hear the "first challenge to the Environmental Contaminants Act."¹²⁹ The amended regulation's purpose was to prohibit the use of PCBs as new filling or as make-up fluid in the servicing of electrical transformers. Interestingly, at least one corporate objector was reported as saying it did not object to the amendment itself, but was simply concerned because "we have lots of transformers filled with PCB and we just want to use up what we have on hand."¹³⁰ Moreover, a government spokesman noted that as a result of earlier deliberations held to determine if PCBs were needed as make-up fluid in electrical equipment, it had been concluded that "PCB was not necessary and that *we should have included this amendment in the original regulations.*"¹³¹ [emphasis added]

The differences in the government's treatment of the two cases are cause for concern. In the case of the NIB objection, the government refused to hold a hearing for a group who clearly indicated that it was objecting to the adequacy of a proposed regulation. In the case of the companies' objections, the government, in first instance, decided to hold a hearing despite some indication that at least one of the objectors was not really objecting to the adequacy of the proposed regulation. Ironically, the Board of Review empanelled to hear the companies' objections eventually recommended amend-

¹²⁵ *Canada Gazette*, Pt. II, Vol. 111 (September 28, 1977) at 4228 states that "no notice of objection was filed with the Minister." Subsequently, the Department amended the *Canada Gazette* notice to read "... the only notice received pursuant to subsection 5(3) of the *Environmental Contaminants Act* was a notice from the National Indian Brotherhood purporting to be an objection but not objecting to what was being proposed but urging that further action be taken." See *Canada Gazette*, Part II, Vol. 112 (March 8, 1978) at 700.

¹²⁶ Correspondence from the Hon. Len Marchand, Min. of State, Env. Cda. to Noel V. Starblanket, NIB (October 25, 1977, Ottawa).

¹²⁷ Notices of Objection filed by Iron Ore Company of Canada, Labrador City, Nfld. (January 31, 1979) and Eurocan Pulp and Paper Company of Kitimat, B.C. (January 24, 1979) with the Hon. Len Marchand, Min. of State, Env. Cda., Ottawa.

¹²⁸ *Canada Gazette*, Part I, Vol. 112 (Dec. 2, 1978) at 7117.

¹²⁹ Env. Cda. and National Health and Welfare. "First Challenge to Environmental Contaminants Act to be Investigated by Board of Review," *Joint News Release* (Oct. 9, 1979, Ottawa). *Canada Gazette*, Part I, Vol. 113 (Oct. 6, 1979) at 6286.

¹³⁰ "Objections made by two companies to PCB restrictions," *The Globe and Mail* (Toronto), Oct. 10, 1979, at 50 col. 2.

¹³¹ *Id.* These findings were based on a 1978 consultant-government workshop on the subject.

ments to the Act to allow "any interested or knowledgeable person" to file a notice of objection. The proposals, if adopted, would remove the argument that objections are limited to persons having pecuniary or proprietary interests.¹³²

Perhaps the traditional regulation-development process the federal government employs has contributed to a reluctance or inability to use advisory committees and boards of review to achieve greater public involvement and influence in decision-making. A prominent part of federal regulation-development has been industry consultation,¹³³ both through questionnaires and federal-provincial task forces.¹³⁴ Such consultation has generally been observed to be a major vehicle for inducing industry support for, and compliance with, regulations¹³⁵ as well as familiarizing government with the technical details of the industry to be regulated. For example, in 1978, a two-day seminar involving forty-two industry and thirteen government participants had a major influence on the subsequent government regulation that prohibited the use of PCBs as new filling or as make-up fluid in transformers. It also had a major influence in the establishment of the federal policy to phase-out the approximately twenty million gallons of PCBs in transformers by attrition.¹³⁶ The PCB Board of Review later questioned the wisdom of the attrition policy, arguing that such an approach "is not one that promises a reasonably early resolution of the PCB problem in Canada." The Board proposed an annual fixed percentage retirement of such equipment, which it argued would reduce the time-scale from forty to one hundred years down to twenty years; achieve greater public credibility at acceptable financial cost to industry; and be a spur to resolution of other key aspects of the problem, such as the manufacture of PCB replacement fluids and development of disposal facilities.¹³⁷ The government has not, to date, accepted this approach as a basis for future regulation of PCBs in transformers and capacitors, partly because of the lack of disposal facilities, but also because of the earlier agreement reached with industry that one of the safest places for PCBs in the interim is in well-supervised transformers.¹³⁸

¹³² *Supra* note 114. When considering the 1975 Environmental Contaminants Bill, Members of Parliament had feared limitations on who might be able to file notices of objection. *Supra* note 46.

¹³³ Environment Canada's "Policy [is] to develop regulations through consultation with the industry concerned." See Environmental Protection Service, Env. Cda., *Preliminary Study of Socio-Economic Impact of the Proposed Regulation of Chlorofluoromethanes under the Environmental Contaminants Act* (Ottawa: Env. Cda., Apr. 1979).

¹³⁴ Raymond M. Robinson, Assistant Deputy Minister, Environmental Protection Service, Env. Cda. Text of an address given at the Canadian Environmental Law Research Foundation Regulation Conference (January 22, 1980, Toronto).

¹³⁵ See, e.g., P. Nemetz, J. Sturdy, D. Urens, P. Vertinsky and A. Vining, *Regulation of Toxic Chemicals in the Environment* (unpublished study, Toronto, May 1978) *Working Paper, No. 20, (Regulation Reference)* (Ottawa: Economic Council of Canada, 1981).

¹³⁶ See Dillon Consultant *PCB in Transformers*.

¹³⁷ *Supra* note 88.

¹³⁸ *Supra* note 136. See generally the testimony of federal officials during the 1979 PCB Board of Review hearing, *supra* note 63. To facilitate the maintenance of trans-

While increased public participation in a board of review or related procedure could upset traditional industry-government consensus and lead to arguments for more stringent regulation, industry concern can also be expected regarding release of information arising from such a process. In the past, industry has argued that government, in its information-gathering activities leading to regulation-development, has not always exhibited an understanding of the need to protect commercially sensitive information, or even of the range of information that industry regards as confidential.¹³⁹ Thus, despite government intentions to open up the regulation-development process to more participants,¹⁴⁰ there may be serious limitations on how meaningful the exercise will be if substantial restrictions are placed on information access.

There is also the prospect, as the PCB Board of Review noted, that neither advisory committees nor boards of review are, by themselves, adequate or timely public consultation mechanisms:

The difficulty which is perceived with the present board of review process under this Act, as a completely satisfactory mechanism for consultation through public hearings, relates to . . . the question of timing. By appearing at a very late stage in regulation-making, it may deprive government of the full potential benefit of

formers the federal government has developed guidelines. See Environmental Protection Service, Env. Cda., *Handbook on PCBs in Electrical Equipment* (March 1981, Ottawa).

That transformer safety and supervision can be ensured has not necessarily been an accepted tenet in other jurisdictions. Interestingly, 1979-80 U.S. Congressional hearings reported numerous incidents involving leaks and spills from transformers and related equipment. The consensus that emerged was that many transformers could not be considered "totally enclosed uses" despite proposed U.S. EPA regulations permitting such continued use on that basis. U.S. EPA studies themselves estimated that approximately 78,000 pounds of PCBs "will be released into the U.S. environment each year from utility transformers and capacitors." United States House of Representatives, *PCBs: Dangers Associated With Their Storage and Use. Hearings before the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce, 96th Cong., 1st and 2nd Sess., at 552.*

A U.S. Court of Appeals decision subsequently set aside the proposed U.S. rules, holding that they fell "far short of the mark" in carrying out the U.S. Congress' specific mandate in TSCA to protect the public from the chemical. See Phillip Shabecoff, "Court of Appeals Acts to Restrict Toxic Chemical; Federal EPA Ordered to Tighten Regulations on PCB Use," *The New York Times* (Nov. 1, 1980) at 12, col. 1. See also *Environmental Defense Fund, Inc. v. Environmental Protection Agency* (1980), 10 ELR 20972 (D.C. Cir.).

¹³⁹ The chemical industry has given the following as examples of commercially sensitive information: formulations and process know-how; catalysts; process efficiencies; production and sales volumes; customer lists; some specific uses, and; exact chemical nomenclature. See William A. Neff, Technical Director, Canadian Chemical Producers' Association, "Early Industrial Input An Essential Element In Rule-Making." An address presented to the 63rd Chemical Conference and Exhibition, The Chemical Institute of Canada, Environment Division (June 1980, Ottawa).

¹⁴⁰ Environment Canada argues that there is a need to encourage greater public involvement at an earlier stage in the process. As a result it is currently attempting to establish a departmental policy on public participation that would include opportunities for interest groups to participate throughout the development of regulations. *Supra* note 134. See also Environment Canada, *Draft Policy for Public Consultation and Information Availability* (Ottawa: Env. Cda., June 1980).

public consultation and may generate frustration in seeking to influence decisions to which a firm commitment had already been made.

The advisory committee system can assist but it is not an ideal vehicle for early public consultation. As discussed previously, it is not required by law to be established. Even when established, the committee may be restricted in its deliberations and consultations by the scope of the mandate given to it by the Ministers. Moreover, the advisory committee may be *too* early a stage since there will not yet be in existence a public document which might form the basis for submissions and debate. . . .¹⁴¹ [emphasis in original]

The Board concluded that it would be preferable to provide for a public hearing or similar process that would occur at a much earlier stage in regulation-making. Consultative and educative benefits would result, including greater public support for decisions taken, while retaining a residual opportunity to use the existing board of review process when necessary.¹⁴² The Board also supported the views of the Economic Council of Canada which emphasized the need for funding those individuals or groups otherwise unable to participate in regulation-making activity.¹⁴³

It is too early to determine whether the Board's early hearing proposals will meet with federal approval in any new contaminants legislation or policy. Certainly, approaches supported by federal regulators respecting advance notice, prior consultation and improved information access with respect to regulation development¹⁴⁴ are, in principle, a step in the right direction. It is not clear, however, to what extent this Act will be amended to effect these goals.¹⁴⁵

¹⁴¹ *Supra* note 114, at 98 and 99.

¹⁴² *Id.* at 102 and 103. The question of timing and the role of the public was also taken up by the chairman of the PCB Board of Review, Maxwell Cohen, at subsequent Parliamentary hearings: "In our report on PCBs . . . we saw that there are two stages [to outside review and public participation]. Stage one is before the minister and his civil servant advisors have made up their minds: hold public hearings when they say, we are going into the PCB area, let us decide how far we want to go and let us throw this out to the public for comment and hold public hearings. . . . In the case of PCBs, what they did in the preliminary sense . . . was to have a seminar. The seminar was organized by industry, by a consultant firm. It was a good seminar on PCBs, but it was organized for the needs of the department by an outside consultant and it did not have the flavour, therefore, of an impartial review board at which the total public invitation was there to act as kind of both a conscience and an input of great variety. . . . A preliminary hearing process has another great virtue, if you do it at the stage before the minister's mind has been made up and he has a draft order, he gets material information points of view which are likely to lead him to an improved order and . . . your second hearing process may not really be as trying and as difficult and as slow going. . . . So, you have the two-stage process. If you have a good stage one process then your stage-two process need not be too complicated and too lengthy, but it still serves a valuable purpose in going into depth on how the public sees the minister's proposed order." Can. H. of C. Special Comm. on Regulatory Reform, *Proceedings*, No. 25 (Nov. 14, 1980) at 14-15.

¹⁴³ *Supra* note 114, at 93-94. A special Parliamentary Committee also recently supported the concept of public interest group funding. *Infra* note 217, at 30-33.

¹⁴⁴ *Supra* note 134, Robinson.

¹⁴⁵ It has been indicated that generally Environment Canada's policy review of how to better involve the public in the regulation-making process does not anticipate any changes in federal environmental statutes. Correspondence to author from George M. Cornwall, Acting Director, Planning, Policy and Analysis Branch, Environmental Pro-

f) *Inspections, Record-Keeping and Enforcement*

Integral to the Ministers' basic responsibilities under the Act is the capacity to inspect, to require record-keeping and to undertake enforcement. The powers of inspection under the Act grant authority to designated inspectors to enter and search premises respecting use and records of scheduled substances; to enlist the assistance of owners or those in charge of such premises in obtaining information; and to seize and detain scheduled substances where they believe, on reasonable grounds, that a contravention of the Act has occurred.¹⁴⁶ Regulations can also be promulgated requiring the maintenance of records by persons involved in the import, manufacture or processing of scheduled substances.¹⁴⁷

Major offences under the Act include: the wilful release or permitting of release of scheduled substances during commercial, manufacturing or processing activity beyond an authorized quantity or concentration or contrary to prescribed conditions; the import, manufacture, processing, offer for sale or knowing use of scheduled substances for prescribed commercial, manufacturing or processing uses; and the import, manufacture or knowing offer for sale of a product that contains a scheduled substance beyond authorized conditions.¹⁴⁸

The authority of inspectors has been described as one consistent with the general prohibitory, as opposed to managerial, nature of the Act. Accordingly, inspections are limited to situations where the inspector has "reason to believe" the Act is being contravened. Because of a lack of statutory authority, inspectors will be frequently constrained in directing that more preventive and planning action be taken.¹⁴⁹

Presently, despite suggestions for reform,^{149a} provincial governments are not agents under the Act. Although federal officials argue that adequate inspection is accorded to some chemicals that are also provincially regulated,¹⁵⁰ such as PCBs,¹⁵¹ still, for less geographically concentrated substances, a change designating provincial governments as agents would provide for more comprehensive inspections.

tection Service, Env. Cda. (Dec. 3, 1979, Ottawa). Environment Canada views the non-statutory approach as being advantageous in that it allows the department to implement the process in a shorter time frame and provides more flexibility so that changes can be made when necessary to ensure a more effective process. Correspondence to author from Raymond M. Robinson, Assistant Deputy Minister, Environmental Protection Service, Env. Cda. (Sept. 15, 1980, Ottawa). While such flexibility can be an advantage, the argument does not respond to the concern that an in-house process cannot be enforced by the public should future, less enlightened governments, for whatever reasons, wish to make the procedures less effective or no longer support the policy at all.

¹⁴⁶ See generally S.C. 1974-75-76, c. 72, ss. 9, 10 and 11.

¹⁴⁷ S.C. 1974-75-76, c. 72, s. 18(i).

¹⁴⁸ S.C. 1974-75-76, c. 72, s. 8.

¹⁴⁹ *Supra* note 88, at 32.

^{149a} *Id.* at 29 and 30.

¹⁵⁰ Interview with J.R. Monteith, Acting Director, Contaminants Control Branch, Env. Cda. (March 4, 1981, Ottawa).

¹⁵¹ Approximately 70% of the PCBs in the country are in Ontario and Quebec. *Supra* note 76.

Statutory constraints on record-keeping may also impede inspections and the narrowness of the major offence categories may encourage non-compliance with other important provisions of the Act. In the former regard, federal officials note that they cannot require the maintenance of records by persons engaged in commercial activity relating to a scheduled substance that may later need to be reviewed by inspectors.¹⁵² Moreover, the record-keeping requirement is limited to scheduled substances and does not include other toxic chemicals.¹⁵³ With respect to offences, commentators have noted, for example, that a failure to test, or a delay in conducting tests, required by notice is only subject to a minimal fine. Nor is there apparent statutory authority to seek suspension of activities in the interim.¹⁵⁴ The PCB Board of Review, in recommending a re-examination of the offence sections of the Act, noted that:

For offences under Sections of the Act other than Section 8, Section 17 states that the offender shall be punishable on summary conviction which carries a comparatively low maximum fine or six months imprisonment. It would appear that a polluter could choose summary conviction as a penalty for barring entry to an inspector who has reason to believe that an offence under Section 8 is being committed and in this way avoid the higher penalty provided under Section 8.¹⁵⁵

Environment Canada argues that it has experienced greater enforcement difficulties with federal crown corporations, such as the National Harbours Board and the Canadian Grain Commission, than with industry. In several instances, continued use of PCB filled electromagnets for grain movement by the crown corporations was allowed after regulations came into force prohibiting this use. While no charges were laid by the department, the crown corporations complied with the regulations only after being ordered by the department to replace the PCB equipment.¹⁵⁶ To date, no prosecutions have been launched. There is therefore no information on what defences will be raised by defendants or accepted by the courts.

g) *The Special Jurisdictional Problems of Storage, Disposal and Related Matters*

The proper management of toxic chemicals includes control of manufacture through to disposal or re-use. While the regulatory authority available to the Ministers under the Act is significant, it does not specifically include the control of storage or the disposal of scheduled substances. The PCB Board of Review, in examining this problem, attributed the omissions to

¹⁵² *Supra* note 150.

¹⁵³ Under TSCA, U.S. EPA is authorized to require manufacturers and processors to submit reports and maintain records respecting their commercially produced chemical substances and mixtures, to maintain records respecting adverse health or environmental effects of such substances and mixtures, and to provide available health and safety data on them. §8, 15 U.S.C. §2607.

¹⁵⁴ *Supra* note 78, Mitchell.

¹⁵⁵ *Supra* note 88, at 35.

¹⁵⁶ *Supra* note 150. Electromagnets have been known to fail and leak PCBs over grain conveyors. Such incidents took place at wheat pool elevators in Prince Rupert in 1974 and in Vancouver in 1978, respectively. Such electromagnet use in related food and animal feed industries is now specifically prohibited by section 3(b) of the amended PCB regulation which came into force on July 1, 1980.

"political realities" and "accepted constitutional notions however debatable" of the division of federal and provincial powers under *The British North America Act*.¹⁵⁷ Federal officials indicate that there has been a reluctance to use the *Act* as a waste management tool since no explicit statutory reference to disposal is made and also because the *Act* is viewed as being restricted to prohibitions consistent with the criminal law power.¹⁵⁸

Leaving aside, for the moment, the question of whether disposal may be addressed at the federal level, it is arguable that contaminants legislation is not only within criminal law power, but also falls under the power "to make laws for the peace, order and good government of Canada."¹⁵⁹ The courts have held this general power capable of supporting federal legislation where the subject matter has attained "national dimensions"¹⁶⁰ or become a matter of "national concern."¹⁶¹ The national scope of the toxic chemicals problem in Canada should permit it to fall under the general power, thus providing a broader basis for action. Interestingly, background documents to the Cross-Mission Task Force Report suggest that the federal government recognized the need to address disposal requirements,¹⁶² although the Bill never included this category within its ambit.

¹⁵⁷ *Supra* note 88, at 17.

¹⁵⁸ *Supra* note 150. The PCB Board of Review itself observed that: "The Environmental Contaminants Act may be regarded as legislation designed essentially to prohibit various forms of individual or corporate behavior. The language of the Act . . . is very largely prohibitory rather than managerial." *Id.*

¹⁵⁹ See, e.g., *Cross Mission Report*, *supra* note 19 and accompanying text. Professors Franson and Lucas note that the "general power" includes several theoretical bases for federal jurisdiction—a residual power, an emergency power and a power to deal with questions of national dimensions or of national interest. "Of these," they argue, "the last probably offers the most important basis of federal jurisdiction over hazardous substances, but it is not yet clear how broad this basis is. It has been the subject of controversy, and was restrictively interpreted at first but has been relied on more frequently in recent years." *Supra* note 54, at 17 and cases cited therein.

In the related area of dangerous goods movement, the Hon. Jean-Luc Pepin, federal transport minister, testified before a Parliamentary Committee in 1980 that the heads of power under which the *Transportation of Dangerous Goods Act*, S.C. 1980, c. 36, is founded include peace, order and good government and the criminal law power so as to cover both manufacturers and carriers. Reliance on the head of power relating to undertakings of an interprovincial nature would only permit the federal government to impose responsibilities on carriers in matters relating to public safety that require that manufacturers be controlled as well. See Can. H. of C. Standing Comm. on Transport Respecting Bill C-18, *Proceedings*, No. 1 (May 29, 1980) at 1A-3.

¹⁶⁰ *Attorney-General of Ontario v. Attorney-General of Canada*, [1896] A.C. 348, 5 Cart. B.N.A. 295.

¹⁶¹ *Johannesan v. West St. Paul*, [1952] 1 S.C.R. 292, [1951] 4 D.L.R. 609, 69 C.R.T.C. 105 (federal power over aviation); *Munro v. National Capital Commission*, [1966] S.C.R. 663, 57 O.L.R. (2d) 753 (national capital commission); *Reference re Offshore Mineral Rights*, [1967] S.C.R. 792, 62 W.W.R. 21, 65 D.L.R. (2d) 353 (minerals off the shore of British Columbia); and *The Queen v. Hauser*, [1979] 1 S.C.R. 984, [1979] 5 W.W.R. 1, 46 C.C.C. (2d) 481 (control of narcotics).

¹⁶² A 1971 descriptive paper appended to the *Cross Mission Report* respecting anticipated environmental contaminants legislation, noted that authority was needed "restricting the release of any substance causing or likely to cause environmental damage, through appropriate restrictions on import, manufacture, distribution, sale, use, disposal, or any other means of release." *Supra* note 11, at D5, *Cross Mission Report*, Appendix D.

Hearings before the PCB Board of Review in 1979 revealed the problems and uncertainties associated with the bifurcation of scheduled substance control between federal manufacturing control and general provincial disposal control responsibilities.¹⁶³ The Board's Report observed that:

While all governments seem to have concluded that manufacture, use, transportation, imports and exports . . . are within federal jurisdiction . . . with storage and disposal within provincial jurisdiction, the Board is not satisfied that this is the end of the story. For the effect of such a division is to leave the question of storage and disposal, its monitoring and policing, to local governments (provincial, regional and municipal) and there may be great variations between provinces, regions, cities and towns in their approach to the difficult issues involved.¹⁶⁴

Because of these concerns, and despite the existence of federal waste guidelines and general federal-provincial accords,¹⁶⁵ the Board recommended replacing such guidelines, where possible, with federal regulations agreed to by the provinces. "The effect of this recommendation," concluded the Board, "would result in a national system of rules but delegating to the provinces the administration and implementation of those regulations dealing with storage and the disposal of PCB wastes."¹⁶⁶

3. Other Federal Laws

The *Environmental Contaminants Act*¹⁶⁷ is the principal statute that permits the federal government to undertake relatively comprehensive control of toxic substances.¹⁶⁸ Other laws, however, while not directly relating to toxics, allow federal control of a particular media (for example, water or air). The *Fisheries Act* authorizes the development of national effluent limit regulations to control industry discharge into water of contaminants that are deleterious to fish.¹⁶⁹ This Act also contains general prohibition¹⁷⁰ and selec-

¹⁶³ For example, the following is an exchange between the PCB Board of Review Chairman, Maxwell Cohen and Raymond M. Robinson, Assistant Deputy Minister, Environmental Protection Service, Environment Canada on this issue:

Chairman: But there is no question . . . when it comes to the manufacture of new PCB fluid, that that is clearly a federal control?

Mr. Robinson: That is very definitely our view and it's upon that that the Environmental Contaminants Act is based.

Chairman: And when it comes to the waste product, you have both provincial [control] plus grey areas?

Mr. Robinson: I think that's a fair comment.
Supra note 63, at 76-77.

¹⁶⁴ *Supra* note 88, at 17.

¹⁶⁵ Federal waste management guidelines and accords with the provinces will be discussed *infra*.

¹⁶⁶ *Supra* note 88, at 17.

¹⁶⁷ S.C. 1974-75-76, c. 72.

¹⁶⁸ Madame Sauvé, federal Environment Minister during the *Act's* 1975 passage through Parliament, indicated during Standing Committee hearings that the *Act* "is our main approach to a problem that is being tackled in many of the world's industrial nations at this time. That problem is the contamination of the environment by chemical substances." *Supra* note 30, at 6.

¹⁶⁹ R.S.C. 1970, c. F-14, ss. 33 and 34.

¹⁷⁰ R.S.C. 1970, c. F-14, s. 33(2).

tive new works control sections¹⁷¹ which authorize prosecution and mitigation measures, respectively, for deposits into the water of substances deleterious to fish, even if a regulation is not in place. Inspections are authorized¹⁷² as is the development of mandatory spill reporting regulations that are consistent with provincial requirements.¹⁷³ The *Clean Air Act* authorizes information-gathering¹⁷⁴ and development of standards to control emissions to air. The Act regulates particular industries that might release contaminants either dangerous to human health or in violation of an international agreement.¹⁷⁵ This Act goes further than the *Fisheries Act* by requiring publication of draft national air emission standards in the *Canada Gazette* sixty days before promulgation.¹⁷⁶

The regulation-development processes which Environment Canada has utilized under these Acts to establish both water effluent discharge regulations and national air emission standards are quite similar to each other (although the levels of control differ).¹⁷⁷ The first step, apart from identification of a potential environmental problem, is the setting of priorities, given limited resources, among the various industrial contaminants for which regulations should be developed. Other factors which enter into the setting of priorities include: the magnitude of the emissions from the industrial sector concerned; the degree to which the industrial sector is spread out across the country; the degree to which the emissions from the industrial sector are perceived to be an environmental and health hazard, based on Canadian and foreign information reviews; and the technological and political feasibility of control.

Once the government determines that there is an initial basis for action, the particular industry is asked through questionnaires for further information on related industrial processes and emissions. Environment Canada also seeks advice from other government departments (for example, the Department of National Health and Welfare may be consulted on possible health effects). If this information indicates the desirability of reducing the emissions of a particular substance but the experts cannot determine the appropriate or "safe" release levels—a frequent problem—the government proceeds to evaluate the socio-economic and technical factors which would be affected by the contaminant's control.

The traditional mechanism that both the air and water pollution control directorates of Environment Canada have used is the establishment of a federal-provincial-industry task force. The task force's responsibility is to identify pollution controls for the particular industry, using the industry study

¹⁷¹ R.S.C. 1970, c. F-14, s. 33.1.

¹⁷² R.S.C. 1970, c. F-14, s. 33.2(3).

¹⁷³ R.S.C. 1970, c. F-14, s. 33.2(4).

¹⁷⁴ S.C. 1970-71-72, c. 47, s. 3.

¹⁷⁵ S.C. 1970-71-72, c. 47, s. 7(1).

¹⁷⁶ S.C. 1970-71-72, c. 47, s. 7(2).

¹⁷⁷ This description of the process generally follows that found in Robinson, *supra* note 134.

report as a basic source of information. As a result of its deliberations, the task force recommends the appropriate technology for the particular contaminant's control and the emission limits that should be achieved by the use of the particular technology chosen. Since August 1978, this process takes place with the socio-economic impact analysis procedure discussed below.

Recent regulatory initiatives indicate that industry sector regulations or standards under these Acts can result in an improvement in the control of toxic substances, or at least in a reduction of absolute contamination:

- a) Prior to 1978 mercury losses in liquid effluents from chlor-alkali plants were about 67,000 kilograms per year. Regulations first promulgated under the *Fisheries Act* in 1972 and revised in 1977, have contributed to a reduction in these aquatic discharges to under 250 kilograms per year. (Reduction in the number of plants operating in Canada that use the mercury-cell process for chlorine production has also been a key factor.)¹⁷⁸
- b) Based on 1972 Environment Canada emission inventories, emissions of arsenic from gold roasting operations were 1,934 tons per year. Regulations proposed for the *Clean Air Act* are expected to limit these emissions to about 25 tons per year, or 0.3 per cent of the amount of arsenic associated with such operations.¹⁷⁹ Arsenic is a toxic substance and a carcinogen.¹⁸⁰

Unfortunately, few regulations under either Act have been made with respect to toxic chemicals. *Fisheries Act* regulations have been promulgated, for example, on mercury discharges from chlor-alkali plants¹⁸¹ and on various metal discharges from mining operations.¹⁸² *Clean Air Act* regulations have been proposed or promulgated for certain industries emitting lead,¹⁸³ mercury,¹⁸⁴ asbestos,¹⁸⁵ vinyl chloride,¹⁸⁶ and arsenic.¹⁸⁷

The regulation-development process under these Acts, as under the *Environmental Contaminants Act*, is one that has traditionally facilitated in-

¹⁷⁸ Environmental Protection Service, Water Pollution Control Directorate, Env. Cda., *Status Report on Compliance with the Chlor-Alkali Mercury Regulations 1976-77* (Ottawa: Env. Cda., Oct. 1979).

¹⁷⁹ Environment Canada. "Arsenic Emissions Regulations Announced," *News Release* (Ottawa: Env. Cda., Oct. 16, 1979).

¹⁸⁰ *Canada Gazette*, Part I, "Summary of Socio-Economic Impact Analysis for the Gold Roasting Plant Proposed National Arsenic Emission Standard Regulations" (October 13, 1979) at 6443-6444.

¹⁸¹ Chlor-Alkali Mercury Liquid Effluent Regulations. SOR/72-92.

¹⁸² Metal Mining Liquid Effluent Regulations. SOR/77-178.

¹⁸³ See, e.g., Secondary Lead Smelter National Emission Standards Regulations. SOR/76-464 as am.

¹⁸⁴ Chlor-Alkali Mercury National Emission Standards Regulations. SOR/77-548.

¹⁸⁵ Asbestos Mining and Milling National Emission Standards Regulations. SOR/77-514 as am.

¹⁸⁶ Vinyl Chloride National Emission Standards Regulations. SOR/79-299.

¹⁸⁷ Draft Arsenic Gold Roasting Plant National Emission Standard Regulations, *supra* note 180, at 6444-6449.

dustry, but not general public, consultation.¹⁸⁸ Under the *Clean Air Act* process, public comment on draft regulations has occurred,¹⁸⁹ resulting in the federal government dealing more openly with concerns raised,¹⁹⁰ and occasionally revising draft regulations before they become law.¹⁹¹ Even industry argues that a comment period of sixty days after a draft regulation has been published is inadequate if there has been no prior consultation.¹⁹²

The government is trying to open up regulation-development under these Acts to more participants at an earlier stage in the process. But industry concerns for the confidentiality of information may have a substantial effect on the eventual success of these efforts. Federal officials have said that to some extent technical knowledge of industry may be sacrificed for greater openness in consultation.¹⁹³

The federal commitment to opening up the regulation-making process is an encouraging sign for public involvement in toxic substance control. The failure to enshrine minimum procedures in law, however, may leave the process open to charges of potential abuse. An example of the result of not having a minimum procedure is the promulgation of regulations in April 1979 under the *Fisheries Act* for a major mining and milling project in British Columbia without first publishing them in draft form in the *Canada Gazette* for public comment.¹⁹⁴ Subsequent public concerns included the argument that the mining project will have potentially damaging effects on marine life

¹⁸⁸ Raymond M. Robinson, Assistant Deputy Minister, Environmental Protection Service, Env. Cda., recently indicated this to a Parliamentary Committee noting that "...our consultation historically has been with the regulated... We have extremely full consultation with industry both in terms of developing specific regulatory instruments where we set up task forces with industrial personnel, our own personnel and provincial personnel, and it is out of these task forces that the recommendations come on which we base our regulatory instruments..." Can. H. of C. Special Comm. on Regulatory Reform, *Proceedings*, No. 6 (Sept. 24, 1980) at 6.

¹⁸⁹ See, e.g., proposed emission standards regulations published in *Canada Gazette*, Part I, Vol. 109 (May 29, 1976) at 2588 (mercury); and *Canada Gazette*, Part I, Vol. 111 (June 11, 1977) at 3251 (vinyl chloride). Both notices filed with the draft regulations advise of the Department's intention to regulate the particular substance; summarize the known or presumed environmental and health effects; note the availability of control technology to meet the proposed standard; and invite comment within the sixty-day specified period.

¹⁹⁰ See, e.g., departmental reviews of public comments received on proposed emission standards regulations published in *Canada Gazette*, Part I, Vol. 111 (March 19, 1977) at 1350-52 (mercury); and *Canada Gazette*, Part I, Vol. 112 (Aug. 26, 1978) at 5193-98 (vinyl chloride).

¹⁹¹ In the case of mercury air emission standards for chlor-alkali plants, the Department's review indicates that public comments it received persuaded it to specify a total daily maximum emission of 1.68 kg. of mercury regardless of plant capacity in addition to the daily emission rate of 5.3 grams of mercury for each 1000 kg. of chlorine produced. *Id.* at 1351.

¹⁹² Chemical industry representatives note that: "A 60-day period is adequate and sufficient if prior consultation has taken place during the development process. It is mere window dressing if there has been no prior consultation." *Supra* note 139, Neff.

¹⁹³ *Supra* note 188, at 6 and 7.

¹⁹⁴ See SOR/79-345. Alice Arm Tailings Deposit Regulations.

from release of heavy metals in the mine tailings.¹⁹⁵ In this instance, the regulations were promulgated despite the 1978 Treasury Board requirement of prior publication of all major regulations in the areas of health, safety and fairness. A joint Senate-House of Commons Committee recently declared the federal order-in-council authorizing the regulations as an "unusual and unexpected use of power."¹⁹⁶

Increasing recognition by the courts of potential damage to the environment from toxic chemicals appears to be resulting in the gradual imposition of higher fines. A 1977 conviction for depositing mercury into waters in excess of concentrations permitted under the *Fisheries Act* chlor-alkali regulations resulted in a \$64,000 fine, probably the highest pollution fine ever imposed in Canada.¹⁹⁷

In certain jurisdictions, such as Ontario, where the *Fisheries Act* is administered by the province, the provincial government's preference has been to rely on its own laws rather than on the Act. This policy preference has sometimes resulted in *Fisheries Act* enforcement being left to private citizens.¹⁹⁸

4. Non-Statutory Programmes

Programmes without legal effect may, nonetheless, have an important influence on legislated requirements regarding toxic chemicals. Federal programmes respecting socio-economic analysis, development of drinking water and waste management guidelines and accords with the provinces are of particular interest.

a) *The Socio-Economic Impact Analysis Requirements*

In December 1977, the federal government announced that all new federal regulations in the areas of health, safety and fairness that would have a significant effect on the Canadian economy would be subject to socio-economic impact analyses (SEIA) as part of the basis for decision-making. The principal aim of the program is to "reduce undesirable economic side effects" and "economic barriers or inflexibilities which may have been unnecessarily adding to costs and prices."¹⁹⁹ Apart from emergencies, summary analyses are to be published in the *Canada Gazette*, along with draft regulations. The public is given sixty days to comment on these proposed regulations.²⁰⁰

¹⁹⁵ See, e.g., Christie McLaren, "Mine allowed to dump in Pacific despite reports," *The Globe and Mail* (Toronto), March 17, 1981 at 11 col. 1.

¹⁹⁶ Can. Sen. and H. of C. Standing Joint Comm. on Regulations and Other Statutory Instruments, *Proceedings* (June 3, 1982) unreported.

¹⁹⁷ *Regina v. American Can of Canada Ltd.* (Ont. Prov. Ct., April 4, 1977). See also, "Highest Fine Ever Assessed for Environmental Pollution in Canada," C.E.L.A. Newsletter. Vol. 2, No. 4 (1977) at 40.

¹⁹⁸ See *Regina v. Cyanamid Canada Inc.* (1981), 11 C.E.L.R. 31. See also "Chemical producer charged by biologist," *The Globe and Mail* (Toronto) March 3, 1981 at 5, col. 1.

¹⁹⁹ *Supra* note 62.

²⁰⁰ *Supra* note 62 and note 68.

Socio-economic analysis, as contemplated by the federal government, covers the use of several different methods or conceptual frameworks, including cost-benefit, cost-effectiveness and risk-benefit analysis.²⁰¹ Cost-benefit analysis, which is preferred by the Treasury Board,²⁰² compares all benefits and costs arising from a regulation and weighs them in monetary or quantitative terms. Cost-effectiveness analysis compares the costs of achieving certain benefits from alternative regulatory actions in monetary terms, but describes the benefits themselves in physical, not monetary, terms. Risk-benefit analysis compares the risks to life, limb or property of an activity being considered for regulation and balances them against the activity's general economic benefit.²⁰³

Industry has been strongly supportive of the SEIA concept.²⁰⁴ It has argued, however, that the programme's implementation by environmental agencies has revealed "deficiencies" including the "apparent reluctance to assess benefits because of the difficulty in quantifying them."²⁰⁵ The result has been "increased reliance on cost-effectiveness comparisons of the various alternatives rather than the cost-benefit assessment which was intended."²⁰⁶ Cost-effectiveness, according to industry officials, assumes, rather than demonstrates, a net benefit to society from regulation. Thus, the method confines itself to estimates of how much contaminant reduction can be obtained from different technologies and levels of expense. As a result, use of cost-effectiveness is said by industry to run counter to "the stated government policy that all future regulations shall have a net benefit to society. . . ."²⁰⁷ Industry has recommended that some attempt be made to assess benefits, even if only qualitatively. It has further recommended that the SEIA be performed by independent third parties rather than by the agency proposing the regulation.²⁰⁸ Recent testimony by chemical industry officials before a Parliamen-

²⁰¹ Treasury Board Canada, *Administrative Policy Manual* (Ottawa: Treas. Bd. Cda., 1979) ch. 490. See also Treasury Board Canada, *Benefit-Cost Analysis Guide* (Ottawa, 1977).

²⁰² *Id.*

²⁰³ *Id.* For further elaboration on these methods or frameworks see, e.g., testimony of Dr. Lester B. Lave, Senior Fellow, the Brookings Institution and Professor of Economics, Carnegie-Mellon University in United States House of Representatives, *Use of Cost-Benefit Analysis by Regulatory Agencies: Joint Hearings Before the Subcomm. on Oversight and Investigations and the Subcomm. on Consumer Protection and Finance of the Comm. on Interstate and Foreign Commerce*, 96th Cong., 1st Sess. (Wash., D.C., July 30, 1979).

²⁰⁴ *Supra* note 139. See also Canadian Manufacturers' Association. Submissions to the Government of Canada regarding the Socio-Economic Impact Assessment Process (Nov. 1979, Toronto).

²⁰⁵ Neff, *supra* note 139.

²⁰⁶ *Id.*

²⁰⁷ Testimony of W.A. Neff, Assistant Technical Director, Canadian Chemical Producers' Association, Can. H. of C. Special Comm. on Regulatory Reform, *Proceedings*, No. 14 (Oct. 14, 1980) at 18.

²⁰⁸ Neff, *supra* note 139. See also testimony and brief of J.M. Belanger, President and W.A. Neff, Assistant Technical Director, Canadian Chemical Producers' Association, Can. H. of C. Special Comm. on Regulatory Reform, *Proceedings*, No. 14 (Oct. 14, 1980).

tary committee respecting the SEIA performed by Environment Canada on proposed *Clean Air Act* arsenic emission standards illustrates industry concerns:

[Environment Canada] stated very honestly that they could not determine if there were any benefits or not and, therefore, they would simply adopt a cost-effective approach. There probably was some benefit there but they were unable to qualify it; when you are looking at something like arsenic, I do not know. The point that concerned us was that there was a policy requiring a cost-benefit study, and simply to say, we cannot do it so we will adopt this other methodology does not achieve the same end point. You will always be able to remove something if you spend enough money; whether or not there is a benefit is an open question... [W]e would like to think there is a societal benefit, not necessarily a benefit to our company but to society as a whole.²⁰⁹

Industry officials later added that:

You may not be able at this point in time to quantify [benefits], but that would be the ultimate goal... in the meantime let us ensure that at least qualitatively what we see or what we suspect will be the benefits [are] put down, and not simply say, as they did in the case of arsenic, we are unable to determine the benefits, therefore we will ignore them.²¹⁰

SEIA documents prepared by Environment Canada on proposed regulation of chlorofluoromethanes have also been criticized on similar grounds.²¹¹

Federal officials, in describing the dilemma they faced with the development of the SEIA document on arsenic, noted:

In the case of the arsenic problem, we were faced with a conclusion by the Department of National Health and Welfare, a conclusion that is fairly widely supported in world literature on the subject, that arsenic in very small quantities, in so-called trace quantities, is a cancer-causing agent,²¹² and therefore we ought to move to reduce the presence of arsenic in the environment... As is so often the case, in the area of identifying health threats for trace contaminants, there was no threshold value given for the contaminant... a so-called safe level... [NHW] were not able to draw a graph which would say that below this amount of concentration of arsenic in the atmosphere, you were safe, that you would not have any incidence of cancer in the population...²¹³

The arsenic problem had to be resolved other than by quantifying the benefits

²⁰⁹ Testimony of Neff, *supra* note 208 at 7.

²¹⁰ *Id.* at 15.

²¹¹ Robert D. Anderson, "The Federal Regulation-Making Process and Regulatory Reform, 1969-1979," in Stanbury, ed., *Government Regulation: Scope, Growth, Process* (Montreal: The Institute for Research on Public Policy, 1980) at 176-77.

²¹² See, e.g., Robert Hoover, National Cancer Institute, Bethesda, Maryland, *Environmental Cancer* (paper presented before the New York Academy of Sciences Conference on *Public Control of Environmental Health Hazards*, Vol. 329, 1979). Mr. Hoover notes in part that "counties which contain nonferrous metal smelters experience unusually high lung cancer rates for both males and females. These industries are known to involve their work force in an excess risk of lung cancer due to the arsenic exposure, and are also known to dump large amounts of arsenic into the general atmosphere around these plants." See also Blot and Fraumeni, *Arsenical air pollution and lung cancer*, (1975) 2 *Lancet* 142.

²¹³ *Supra* note 188, at 8 and 9, Robinson.

of controls.²¹⁴ Indeed, such inability to quantify benefits appears to be the rule rather than the exception with respect to toxic substances.²¹⁵

The use of the non-statutory SEIA program raises several questions in relation to toxic chemical legislative responsibilities. First, does the program in fact require that regulations have a "net benefit to society"? If so, what exactly does that mean and how is it to be determined? Second, how much reliance can be placed on the cost-benefit analysis, in any of its conceptual forms, for determining, or aiding in the determination of, such matters? Third, what are the implications of such a non-statutory directive on statutory mandates to protect human health and the environment from significant dangers posed by toxic chemicals?

The SEIA policy does not require that regulations be adopted only if their benefits exceed their costs.²¹⁶ Indeed, a recent Parliamentary Committee on regulatory reform, while recommending that all proposed regulations be subjected to an "impact assessment" performed by the "sponsoring department or agency," gave no explicit support to the notion that regulations only be adopted if their benefits exceed their costs. The committee noted that, "[a] greater appreciation of the use of cost-effectiveness analysis rather than cost-benefit analysis in situations in which a benefit cannot be assessed in dollar terms needs to be developed."²¹⁷

Some evidence suggests that cost-benefit analyses and related concepts are limited, if not primitive, instruments for decision-makers to place great, let alone decisive, reliance upon. A recent United States congressional subcommit-

²¹⁴ The end result of this problem was a federal decision to draft a SEIA document which, rather than quantifying benefits of regulation, instead stated a rationale for controlling arsenic (by saying it is a carcinogen at trace levels with no indication of a point below which it ceases to be a threat). [Generally, methods do not now exist for determining a "safe" threshold level of exposure to carcinogens. Thus, it has been argued that prudence requires that no safe threshold levels be assumed to exist. Toxic Chemicals Report, *supra* note 103, at 133. See also Marvin A. Schneiderman, *et al.*, *Thresholds for Environmental Cancer: Biologic and Statistical Considerations*, (paper presented before the New York Academy of Sciences Conference on *Public Control of Environmental Health Hazards*, Vol. 329, 1979)]. The document also reviewed the industry's economic situation, the applicable control technology and alternative control levels and costs. (*Supra* note 188, at 9, Robinson).

²¹⁵ *Id.* The following is an exchange between the Regulatory Reform Parliamentary Committee Chairman, James Peterson and R.M. Robinson, Environment Canada on this point:

Chairman: ... You have indicated to us that there is a ... problem in quantifying certain benefits.

Mr. Robinson: That is right.

Chairman: And that is the main problem under the SEIA. We will probably never be able to find some way to quantify a lot of these benefits in money terms.

Mr. Robinson: Well, in our present knowledge, and given the uncertainties particularly about toxic substances at threshold levels, the answer is basically correct. That is right.

²¹⁶ *Supra* note 211, at 172.

²¹⁷ Can., *Report of the Special Comm. on Regulatory Reform*. 1st Sess., 32nd Parl. (Dec. 1980, Ottawa) at 9-10.

tee report, which followed testimony by key experts on the subject, outlined several problems with institutionalizing reliance on these instruments in government regulation-making.²¹⁸ Even dissenting views on the subcommittee did not support cost-benefit analysis as a tool or test to be used as a decisive determinant when considering whether to promulgate a regulation.²¹⁹ Industry in Canada has also recognized the limitations of the method.²²⁰

In sum, to rely primarily upon cost-benefit or related analyses and prohibit the implementation of regulations whose "benefits do not exceed their costs," would appear neither prudent nor consistent with the mandate in toxic chemicals legislation originally authorized by Parliament. If such methods are to be used, it should be with a recognition of their limitations and only within the context of a full and open regulation-making process.

b) *Drinking Water, Waste Management and Related Guidelines*

The federal government has also developed guidelines for the purpose of advising other government levels, the private sector and the general public regarding appropriate measures and controls to be taken with respect to toxic chemicals. Three types of guidelines in use relate to drinking water parameters,²²¹ management of wastes containing substances scheduled under the

²¹⁸ These problems included:

- i) because it is easier to quantify the costs of regulation than its benefits, there has been a general tendency to overstate costs and understate benefits;
- ii) while it is usually easier to estimate costs than benefits, particularly in dollar terms, there are also many problems associated with cost quantification including: agency dependence on industry data that over-estimates compliance costs; failure to reduce cost estimates that might come from recognition of economies of scale; and failure to reduce cost estimates that come from industry's ability to learn over time to comply more effectively with controls;
- iii) the state of the art in quantifying benefits is primitive, as reflected in difficulties in determining how many lives will be saved; how much pain and suffering averted and risk of environmental harm reduced. There are also difficulties in applying dollar values to items that lack a market value *e.g.* human life) or of adjusting cost-benefit estimates over the time during which they accrue; and
- iv) cost-benefit analysis is incapable of dealing with questions of equity, *i.e.* that costs and benefits are often borne by different groups of people within society.

United States House of Representatives. *Cost-Benefit Analysis: Wonder Tool or Mirage? Report together with Minority Views by the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce, 96th Cong., 2nd Sess. (Dec. 1980)* at 25. Similar difficulties have been raised with risk-benefit analysis. See United States Senate and House of Representatives. *Risk-Benefit Analysis in the Legislative Process. Summary of a Congress-Science Joint Forum prepared by the Congressional Research Service, Library of Congress, 96th Cong., 2nd Sess. (March 1980).*

²¹⁹ *Id.*, at 40, report.

²²⁰ *Supra* note 204, CMA submissions.

²²¹ Health and Welfare Canada, *Guidelines for Canadian Drinking Water Quality* (Ottawa: H & W Cda., 1978). The guidelines note that "the chemical characteristics of drinking water are a matter of growing concern because of the increasing number of organic pollutants, metals and organometallic substances that are being introduced into the environment." Thus, "limits are specified for those organic and inorganic substances that could present a health hazard if present in drinking water at excessive concentrations." Parameters for sixteen inorganic and three organic substances are provided. A further

Environmental Contaminants Act,²²² and effluent controls which should be employed for existing industrial activities not covered by federal regulation.²²³

The guidelines are not legally enforceable unless promulgated as such by the appropriate federal or provincial agency.²²⁴ In the case, for example, of the drinking water guidelines, no provincial or federal agency has adopted them or variants of them as regulations in Canada. The advice provided by the guidelines may prove useful in adopting controls to an activity or project under local circumstances.

Concern and uncertainty about the degree to which actual practices of the private sector and other government levels are meeting the goals of federal PCB waste management guidelines, recently prompted the PCB Board of Review to recommend that, where practicable, the guidelines should be adopted as federal regulations and that they should be administered by the provinces.²²⁵

c) *Accords with the Provinces*

Another mechanism that has evolved without statutory base, or recognition by the courts is the development of accords with seven provinces on general environmental protection matters. The objectives of such accords are to improve co-ordination of federal-provincial environmental control activities and provide a framework for coping with particular problems by specific agreement. The accord with Ontario, for example, addresses such matters as the development of ambient environmental criteria; control requirements and guidelines for industry; consultation mechanisms on environmental effects of projects; pollution control implementation and enforcement; monitoring and surveillance; special agreements for accelerated action; contingency plans; research and technical training and cost sharing.²²⁶

The accords have not been used to develop specific toxic chemicals sub-agreements. Control of PCB wastes through development of sub-agreements, however, was raised by the PCB Board of Review during its hearings as a

background document lists ten additional substances or classes of substances that were reviewed but for which maximum acceptable and objective concentrations were not considered necessary. These include Mirex, PCBs and phthalic acid esters. See Health and Welfare Canada. *Supporting Documentation—Guidelines for Canadian Drinking Water Quality* (Ottawa: H & W Cda., 1978). Surveys are also conducted in conjunction with drinking water guideline development. Toft, *Supra* note 61.

²²² Environmental Protection Service, Env. Cda., *Guideline for the Management of Waste Materials Containing Polychlorinated Biphenyls* (PCBs). (Ottawa: Env. Cda., 1978); and Environmental Protection Service, Env. Cda., *Guideline on Central Collection and Storage Facilities for Waste Materials Containing Polychlorinated Biphenyls* (PCBs) (Ottawa: Env. Cda., Nov. 1978).

²²³ Environmental Protection Service, Env. Cda., *Guidelines for Liquid Effluents from Existing Metal Mines* (Ottawa: Env. Cda., Apr. 1977).

²²⁴ See, e.g., *supra* note 221, at 15, *Guidelines*.

²²⁵ *Supra* note 88, at 16 and 17. See also PCB Board of Review hearings, *supra* note 63 at, e.g., 77 and 78.

²²⁶ Canada-Ontario Accord for the Protection and Enhancement of Environmental Quality (Toronto and Ottawa: Gov't. of Cda., Oct. 1975).

possible mechanism for ensuring better waste management control of scheduled substances where federal jurisdiction is uncertain.²²⁷

The accords indicate that the federal government will undertake enforcement where the provinces cannot or will not do so, with respect to matters of federal jurisdiction administered by the provinces.²²⁸ The tendency in Ontario, with few exceptions, has been for the province not to prosecute alleged violations of federal laws.²²⁹ Instead, Ontario relies on provincial laws to achieve abatement. In some cases, however, provincial control programs may have the effect of prolonging violations of federal law. The result has sometimes been that private citizens are left to enforce federal laws when neither level of government prosecutes.²³⁰

B. *The Role of the Provincial Governments*

Because of the provincial constitutional responsibility for property and civil rights, matters of a local or private nature and other heads of power, the provinces' control of toxic chemicals can be substantial. The next part of the paper presents an overview of both provincial statutory and non-statutory activities in this area.

1. Application of General Pollution Control Programmes to the Problems of Toxic Chemicals

With the exceptions of Alberta,²³¹ and, to a certain extent, Quebec,²³² provincial governments do not have legislation specifically directed to toxic chemicals.²³³ Generally, provincial environmental legislation cannot be used to prohibit the use of any substance, but only to regulate its discharge into

²²⁷ *Supra* note 63, at 60-68.

²²⁸ *Supra* note 226, s. 14(c).

²²⁹ The one exception since 1970 known to the author is the *American Can* prosecution, *supra* note 197.

²³⁰ *Supra* note 198.

²³¹ See *The Hazardous Chemicals Act* S.A. 1980, c. H-3. This Act does not contain a provision for pre-market testing, though approximately 13 substances or classes of substances have been added by Ministerial order to a Schedule under the Act. However, to date no orders have been issued under the Act to require that information from manufacturers of the scheduled chemicals be submitted to the provincial government. Correspondence to author from K.J. Simpson, Head, Waste Management Branch, Alberta Environment (March 23, 1981, Edmonton).

²³² In Quebec, regulations may be promulgated so as to regulate and prohibit the intra-provincial use of any contaminant and the presence of any contaminants in any product so distributed or used in Quebec. See *Environment Quality Act* R.S.Q. 1977, c. Q-2, s. 31.

²³³ See, e.g., correspondence to author from: the Hon. Stephen Rogers, British Columbia Minister of the Environment (March 26, 1981, Victoria, B.C.); H.S. Maliepaard, Director, Policy, Planning and Research Branch, Saskatchewan Environment (March 9, 1981, Regina, Sask.); the Hon. Gary A. Filmon, Manitoba Minister of Consumer and Corporate Affairs and Environment (March 12, 1981, Winnipeg, Man.); Leo B. FitzPatrick, Solicitor, Legal Services Branch, Ontario Environment Ministry (Apr. 9, 1981, Toronto, Ont.); Madeleine C. Robitaille, Quebec Environment Ministry (March 31, 1981, Quebec City, Que.); and the Hon. Eric J. Kipping, New Brunswick Minister of the Environment (March 31, 1981, Fredericton, N.B.).

the ambient environment. Thus, while it is theoretically possible to prescribe zero discharge for certain substances, provincial legislation does not provide for pre-manufacture or pre-market toxicity testing or routine inventory reporting of designated chemicals.²³⁴ The result has been the application of general emission control programmes to the toxic chemicals problem.

a) *Control of Air and Water Discharges of Toxic Chemicals*

The thrust of provincial pollution control legislation for industrial discharges to air and water is to prohibit general contamination of the environment.²³⁵ In practice, provincial laws, through site-specific permits, licences, approvals or administrative orders, allow discharges based on the capacity of local environments to assimilate such discharges. These mechanisms are sometimes used in conjunction with general ambient environmental standards. Normally, under provincial law, a chemical does not have to be declared "hazardous" or a "significant danger" in order to be subject to regulation or other control.²³⁶

Provincial agencies argue that reliance on site-specific approval or related mechanisms can provide the flexibility needed for adaptation to unforeseen problems, such as toxic chemicals. Use of these mechanisms can enable control of releases of more exotic chemicals that might not originally have been regulated by quantity and quality limitations in a permit. This can be important with substances, such as PCBs, that have been found to have multiple pathways of entry into the air and the water.²³⁷ Yet, given the large number of discharge sources of a substance and the potential difficulties and delays in amending each specific permit or order, it is reasonable to argue that the issuance of province-wide or even basin-wide air or water emission standards would be an easier, swifter and more effective approach. The scientific uncertainty about what levels to set, as well as differences in economic and technical feasibility among companies, are possible reasons why the provinces, generally, have not preferred this route for control of substances such as PCBs.²³⁸

²³⁴ See, e.g., Robert Caton, Air Resources Branch, Ontario Environment Ministry, "Hazard Assessment by the Ontario Ministry of the Environment" in *IJC Workshop on Hazard Assessment*, *supra* note 59, at 146.

²³⁵ See, e.g., *The Environmental Protection Act*, R.S.O. 1980, c. 141, s. 14.

²³⁶ *Supra* note 234, at 145.

²³⁷ A 1976 federal task force on PCBs reported that "PCBs are being liberated into water, air and soil from sewage treatment plants, solid waste disposal sites and incinerators." *Supra* note 63 at ix. A 1976 report on PCBs in the Great Lakes concluded that PCBs were detected in the waste waters of all thirty-three municipal sewage treatment plants sampled with an estimated total load to receiving waters from the thirty-three plants of 246 kg/yr. The report also noted high PCB concentrations in sewage sludge. Environment Canada and the Ontario Ministry of the Environment, *Polychlorinated Biphenyls (PCBs) in Municipal Wastewaters*, Research Report No. 49, Research Program for the Abatement of Municipal Pollution under Provisions of the Canada-Ontario Agreement on Great Lakes Water Quality, 1976.

²³⁸ See, e.g., *The Ontario Water Resources Act* R.S.O. 1980, c. 361. This statute does not contain environmental standards for specific substances, though it does contain a general prohibition on impairment or pollution of the aquatic environment. (s. 16)

Even where provincial agencies do promulgate province-wide standards, they may not always be adequate.²³⁹ Nonetheless, a number of provinces, including Ontario, have begun to take more systematic initiatives to deal with toxic chemicals in air and water. Ontario's hazardous contaminants program is concerned primarily with industrial discharges of specific chemical compounds. The program facilitates decisions about which substances to control

To provide guidance to the public and private sector, the province has established water quality guidelines that provide goals, policies and where possible specific objectives as to what the province regards as acceptable water quality. In addition to outlining objectives for a number of toxic substances, the province's policy is to require case-by-case examination of any proposal to release any hazardous substances for which provincial water quality objectives have not been established. See Ontario Ministry of the Environment, *Water Management: Goals, Policies, Objectives and Implementation Procedures* (Toronto: Gov't. of Ont., Nov. 1978). See also Ontario Ministry of the Environment, Hazardous Contaminants Office, *Assessment of Toxic Substances Legislation in the Province of Ontario* (Toronto: Gov't. of Ont., 1980). No water quality standards have been promulgated for specific substances under this Act.

See also the following exchange between R.D. Kennedy, M.P.P. and E.W. Turner, Waste Management Branch, Ontario Ministry of the Environment during 1978 legislative standing committee hearings:

Mr. Kennedy: . . . The Ministry, of course, has standards set as to the emission of various elements as a result of industrial activity and so on. Do you have standards set for emissions of PCBs?

Mr. Turner: The simple answer to that is no, there is not a formal standard as such. The philosophy, of course, is for zero emission wherever possible. I should perhaps just indicate that the Ministry has standards in some areas only covering emissions, primarily in the air emission field. It doesn't cover all materials or wastes by any means. In the liquid field, particularly with respect to liquid industrial wastes, we do not have any standards per se.

Legislative Assembly of Ontario Standing Comm. on Resources Development, *Proceedings*, Vol. R-37 (Oct. 19, 1978) at R-1540-2. Quebec has set limits to the emission of halogenous substances in the atmosphere from liquid waste incinerators. See Q. Reg 75-496. Regulation respecting liquid waste management made under the EQA.

²³⁹ This appears to be the case, for example, with Ontario's air-borne lead criterion regulation, which, since 1973, has been 2.0 micrograms per cubic metre measured by a geometric mean over a thirty day period. This method of measurement is inadequate because the use of a geometric mean as the unit of measurement for the lead standard de-emphasizes high pollution concentrations or readings, whereas an arithmetic mean is more directly related to dosage and biological effects. (In fact, in 1976 the then Ontario Environmental Hearing Board recommended that use of the geometric mean be discontinued in favour of an arithmetic mean for protection of health.)

A further inadequacy is observed when, in 1978, the U.S. ambient air lead standard was set by the U.S. Environmental Protection Agency (EPA) at 1.5 micrograms per cubic metre using a maximum arithmetic mean averaged over a calendar quarter. California has had a similar standard since the early 1970's. By this yardstick Ontario's air-borne lead criterion regulation and guidelines are twice as lenient. (*ie.* Ontario's geometric mean of 2.0 micrograms per cubic centimetre is convertible into an arithmetic mean of 3.0, which is twice as much as the U.S. EPA standard of 1.5). This should be cause for concern because the California regulations indicate that the most relevant health effects associated with air-borne lead levels *above* the 1.5 standard include increased body burden and impairment of blood formation and nerve conduction.

For a fuller description with references regarding this matter see Castrilli and Lax, "Environmental Regulation-Making in Canada: Towards a More Open Process," in Swaigen, *Environmental Rights in Canada* (Toronto: Butterworths, 1981).

and in what manner, through development of a priority chemicals list and industrial source inventory.²⁴⁰ River basin surveys of industrial effluents will also normally identify problems created by certain substances (such as organic chemicals) and involve fish toxicity and related testing in anticipation of implementing abatement measures.²⁴¹

b) *Control of Toxic Chemicals Pollution from Landfill Sites*

Toxic chemicals, such as PCBs, can also enter the environment through improper disposal or management of liquids, solids, garbage, sewage sludge, waste oils, scrap and other waste materials.²⁴² A frequent source of local toxic chemicals contamination is a landfill site that has been poorly located, designed, operated and closed.²⁴³ Without raising the issue of hazardous waste management generally,²⁴⁴ this section of the paper will focus on the toxic chemicals problem in relation to landfills.

Control mechanisms for addressing the problem of toxic chemicals in landfill sites vary under provincial laws. Measures are usually undertaken pursuant to a statute's general pollution control authority as opposed to specific toxic chemical control provisions. In some provinces, administrative guidelines that are specific to toxic chemicals management at landfills have been developed.²⁴⁵ Such guidelines have no legal effect, except to the extent they are incorporated into a specific permit, licence, approval or related statutory mechanism.

Because provincial statutory provisions for disposal control do not distinguish between measures to be taken for toxic chemicals and more conven-

²⁴⁰ See, e.g., Caton, *supra* note 234. See also address by T.W. Cross, Ontario Ministry of the Environment, "Ontario Government's Hazardous Substances Program," given at the 24th Ontario Industrial Waste Conference (June 1977, Toronto) Ont. Min. of the Env., Air Resources Branch, Hazardous Substances Program, *Hazardous Substances List and Handbook* (Toronto: Gov't. of Ont., Dec. 1976); and Ont. Min. of the Env., Air Resources Branch, Hazardous Contaminants Program, *Environmental Aspects of Selected Chlorinated Hydrocarbons in Ontario: A Comprehensive Background Report* (Toronto: Gov't. of Ont., Nov. 1978). Asbestos, PCBs and Vinyl Chloride are three substances that were investigated under the program shortly after its inception.

²⁴¹ Michael Keating, "84 chemicals discovered in St. Clair River near Sarnia," *The Globe and Mail* (Toronto), Apr. 2, 1981 at 4 col. 1.

²⁴² *Supra* note 63, *PCB Task Force*. See also Ont. Min. of the Env., *Pollution Prevention and Waste Management Guidelines for Polychlorinated Biphenyls (PCB)* (Toronto: Gov't. of Ont., Nov. 1978).

²⁴³ A recent federal government report on Maritimes pollution noted that few landfill sites are adequate to contain the substances dumped into them. For example, PCBs from a municipal dump in Amherst, Nova Scotia have been found in a nearby river. See "East Coast Industries dump unsafe wastes," *The Globe and Mail* (Toronto), Apr. 28, 1981, at 1, col. 3.

²⁴⁴ For a review of the hazardous waste problem generally see *supra* note 3.

²⁴⁵ *Supra* note 242. See also Ont. Min. of the Env., *Guidelines for Environmental Protection Measures at Chemical Storage Facilities* (Toronto: Gov't. of Ont., Oct. 1978); and Nova Scotia Department of the Environment, *Guidelines for the Selection of Chemical Waste Landfills* (Draft) (Halifax, Nova Scotia: Gov't. of N.S., 1981).

tional pollutants, special precautions, if any, for toxics would appear in individual landfill permits.²⁴⁶ The imposition and enforcement of such measures for old or existing landfills is uneven across the country. For example, Alberta and Saskatchewan officials note that broad authority exists, usually under provincial public health laws, to control toxic chemicals deposition in existing landfills. This authority, however, is rarely exercised in practice.²⁴⁷ Manitoba has no statutory requirements at all in this regard.²⁴⁸

Ontario requires that a public hearing be held before approval may be given to deposit hazardous wastes at a site.²⁴⁹ The province has had problems, however, with unauthorized sites receiving chemical wastes.²⁵⁰ And Quebec has various sections of its solid wastes regulations which prohibit the dumping of both toxic and non-toxic wastes in landfill sites.²⁵¹

Provincial legislation is not usually specific in relation to the establishment and operation of new landfill sites that are to receive toxic chemicals. Permits, however, can specifically require plans and specifications for containment, pre-treatment, design, operation and de-commissioning as well as place restrictions on the location of such sites. Unfortunately, establishing systematic control without specific legislative or regulatory authority may be an extremely difficult, if not impossible, task in many instances.

Controlling problems from closed sites may be especially difficult without explicit statutory authority.²⁵² Ontario has considered enacting legislation to provide for a perpetual care fund for clean-up of existing and inactive or abandoned sites. According to a 1979 interim report on the subject, a fund of this nature could be financed through an industry surcharge based on type, toxicity or weight volume of waste disposed.²⁵³ No final report, however, has been released nor has any legislation been proposed to date.

Apart from Quebec, almost no provincial legislation or regulations spe-

²⁴⁶ *Supra* note 233, Rogers.

²⁴⁷ *Supra* note 231 and 233, Simpson and Maliepaard.

²⁴⁸ *Supra* note 233, Filmon.

²⁴⁹ *The Environmental Protection Act* R.S.O. 1980, c. 141, Part V.

²⁵⁰ The province recently released a report which indicated that seven certified waste disposal sites were not specifically designated for liquid industrial wastes but were receiving them anyway. Two additional sites, which were not certified at all under Ontario law, were also accepting liquid industrial wastes. See Hon. Harry Parrott, Min. of the Env., *Details on Waste Site Identification Program* (Toronto: Gov't. of Ont., June 1979). See also Appendix "A" to that report: *List of Waste Disposal Sites Accepting Liquid Industrial Wastes* (Toronto: Gov't. of Ont., May 1979).

²⁵¹ See regulation respecting solid waste management made under the EQA. Q. Reg. 78-687, ss. 54, 68, 82, 84, 86 and 99.

²⁵² See, e.g., *The Director, Ministry of the Environment v. Mississauga* (1980) 9 C.E.L.R. 24 (Ont. Ct.). The court held that despite the existence of high levels of methane gas escaping from a closed waste disposal site, the Ontario Ministry of the Environment cannot issue control orders under the *Environmental Protection Act* imposing new obligations on either current or former owners of a site, once the use of the site has ceased.

²⁵³ Ont. Min. of the Env., *Perpetual Care for Waste Management Facilities. Interim Report* (Toronto: Gov't. of Ont., Aug. 1979).

cifically require toxic chemicals proposed for landfilling to be either characterized as to their content or segregated for disposal from non-toxic or hazardous materials.²⁵⁴ Such information is frequently important for prompt remedial action if a problem arises. Ontario's Waybill Regulation²⁵⁵ may be a step toward providing such a system. The purpose of the waybill is to require the generators and haulers of liquid industrial wastes, as well as the operators of disposal facilities, to provide information to the province respecting the nature and quantity of such wastes. While the program has been of value, it has several inadequacies. The waybill appears not to apply to industrial or hazardous wastes that are stored or disposed of on a generator's premises.²⁵⁶ Nor does it appear to apply to solids or to recycled wastes, such as waste oils used for rural road dust control.²⁵⁷ Indeed, a 1980 consultant's study for the Ontario Government reported that even the waste hauling industry, itself, was certain that substantial quantities of liquid industrial wastes were not being reported; that certain types of waste exemptions were likely to encourage unscrupulous operators to mix some industrial wastes with sewage and disguise the entire mixture as sewage; and that there was a general lack of enforcement of the waybill regulations.²⁵⁸

The dumping of toxic chemicals in existing landfills has contributed to public concerns about the adequacy of provincial planning and enforcement.²⁵⁹ It has also increased public and municipal scepticism about the sufficiency of recent provincial proposals to address toxic chemicals of national concern, such as PCBs, through such measures as interim storage²⁶⁰ and

²⁵⁴ *Supra* note 231 and 233. Several provinces note that this could be done by permit system. Correspondence to author from C.D. Carter, office of the deputy minister, Nova Scotia Department of the Environment, Halifax, Nova Scotia (March 26, 1981).

²⁵⁵ See *Transfers of Liquid Industrial Waste*. O. Reg. 926/76. This regulation, promulgated under *The Environmental Protection Act*, 1971, came into force April 1, 1977.

²⁵⁶ O. Reg. 926/76, s. 1(vi). See also James F. MacLaren Ltd. Consulting Engineers, Planners and Scientists. *Development of Treatment and/or Disposal Sites for Liquid Industrial Wastes and Hazardous Wastes. An Interim Summary Report to the Ontario Ministry of the Environment* (Toronto: James P. MacLaren Ltd., Aug. 1979) at 2-3.

²⁵⁷ O. Reg. 926/76, s. 1(vii). "Waste that is wholly used or recycled" is not meant to be included under the waybill's ambit. See also *supra* note 3, at 155-156.

²⁵⁸ See James F. MacLaren Ltd. Consulting Engineers, Planners and Scientists, *Need For Waste Management Facilities And Available Technologies. Annex One. Technical Report to the Ontario Ministry of the Environment on the Siting of Facilities and the Management of Liquid Industrial and Hazardous Wastes in Ontario* (Toronto: James F. MacLaren Ltd., Nov. 1980).

²⁵⁹ In Ontario, for example, for ten years the Ministry of the Environment did not advise either the township or residents of Harwich that cyanide, PCBs, formaldehyde or other toxic substances, were being dumped in the local landfill. See Rudy Platiel, "Township's mistrust is ministry's reward for years of poison," *The Globe and Mail* (Toronto), May 23, 1980 at 4 col. 1.

²⁶⁰ Hon. Harry Parrott, Min. of the Env. A Statement to the Ontario Legislature on Proposed Interim Storage Site for PCB Wastes (Dec. 4, 1979, Toronto). See also Doris Hiltz, "Misled over PCB storage, West Lincoln councillors say," *The Globe and Mail* (Toronto), Oct. 18, 1978, at 8 col. 4.

cement kiln incineration.²⁶¹ Resistance to such proposals has been characterized by provincial officials as exhibiting part of the "not in my backyard syndrome," although such proposals have frequently been rejected on technical—not emotional—grounds.²⁶²

Most provincial programs are still in their infancy in attempting to meet the PCB disposal problem, even as federal controls on manufacture and use increase the stock of PCB wastes requiring disposal. The PCB Board of Review expressed the following concern:

The difficulties that governments and industry are having with the storage and disposal question may be resolved, in the Board's view, only if and when the public can be satisfied that a specific storage and disposal site is selected for its special features, providing minimum risks to nearby populations and maximum protection from transportation, storage or disposal accidents.²⁶³

²⁶¹ Robert Sheppard, "Kiln is seen as answer for PCBs," *The Globe and Mail*, (Toronto), May 26, 1978, at 4 col. 1. See also *Attorney-General of Ontario v. Mississauga* (1980) 9 C.E.L.R. 87 (Ont. D.C.), where municipal by-laws which regulated nuisances and prohibited PCB test burns except under controlled conditions were upheld against provincial challenge that such by-laws were in conflict with provincial law. However, this was reversed on appeal, see *A.G. Ont. v. Mississauga* (1981), 10 C.E.L.R. 91 (Ont. C.A.). See also *Re Canadian Environmental Law Association et al and Pitura* (1980) 9 C.E.L.R. 41 (Ont. D.C.), where an application challenging the legality of a commission established under *The Public Inquiries Act* to investigate the safety of PCB burns in a cement kiln in Mississauga was dismissed in part on grounds that the project was not a Crown undertaking necessitating the use of *The Environmental Assessment Act* for consideration of alternative sites and methods of PCB control. *Aff'd on other grounds*, (1981) 10 C.E.L.R. 80. *Leave to appeal to the S.C.C.* is being sought by the Can. Env. Law Assn.

²⁶² In 1978, both the Environmental Assessment Board and the Director of Environmental Approvals for the Ministry of the Environment rejected primarily on technical grounds, an industry proposal to establish a liquid industrial waste treatment and landfill site complex at Nanticoke. The grounds included: inadequate hydrogeological investigations by the company; unsatisfactory provisions for leachate handling; unsatisfactory provisions for monitoring and site management; a finding that the wrong discharge point was chosen; unsatisfactory provision for contingencies; unacceptable further deterioration of groundwater quality, and; lack of demonstration that effluent quality would be acceptable. See Ontario Environmental Assessment Board, *Report on the Public Hearings on the Nanticoke Waste Management Limited Waste Disposal Site for Liquid Industrial Waste Treatment and Landfill Facilities* (Toronto: O.E.A.B., Apr. 1978). See also Decision of the Director of Environmental Approvals, Ont. Min. of the Env., *Re Nanticoke Waste Management Limited* (1978) 7 C.E.L.R. 129. In October 1980, a panel of the E.A.B. that heard the evidence recommended rejection of a regional government proposal to convert a conventional treatment plant to one for the treatment of liquid industrial wastes in Ajax, Ontario. The grounds for the recommended rejection included: unsatisfactory planning, site selection and design; vulnerability of the site to flooding; unsatisfactory provision for inorganic sludge disposal; possible elimination of future waste reclamation opportunities due to the treatment process proposed, and; the absence of on-site soil and ground-water studies. See Ontario Environmental Assessment Board, *Report on the Public Hearing Concerning an Application By the Regional Municipality of Durham for Approval of a Proposed Liquid Industrial Waste Treatment Facility—Town of Ajax* (Toronto: O.E.A.B., Oct. 1980). Portions of the draft report were varied by the full E.A.B. (*i.e.* including those who did not hear the evidence by resolution. The result was a recommended approval. See T.M. Murphy, Board Secretary, "Certification that portions of the draft report were varied by the full E.A.B. by resolution," (Nov. 20, 1980, Toronto).

²⁶³ *Supra* note 88, at 14.

According to the Board, the inability to devise such a program would inevitably delay further PCB restrictions under federal law.²⁶⁴

c) *Spills and Emergencies: Regulatory Controls and Victim Compensation*

PCB spills in Ontario²⁶⁵ and Saskatchewan²⁶⁶ in recent years have highlighted the need for improved provincial authority to respond to releases of toxic chemicals and to compensate victims. Existing requirements for the reporting and clean-up of spills, while of value, have not addressed the issue of victim compensation. Guidelines²⁶⁷ and plans²⁶⁸ have emphasized the need for the co-ordination of emergency response actions by agencies.

One of the more comprehensive pieces of legislation enacted in this area is Part IX of Ontario's *Environmental Protection Act*.²⁶⁹ The Act makes the owners and handlers of pollutants responsible for cleaning up spills, restoring the environment to its previous condition and reimbursing the victims of spills for property or health damage and financial losses. The Act further authorizes the establishment of an environmental compensation corporation to provide victims with funds not otherwise recoverable through the courts. As of May 1982, this law had not been proclaimed in force nor had regulations creating the corporation been released.²⁷⁰ A new Act in Saskatchewan grants similar powers, although no provision is made for the creation of a compensation corporation.²⁷¹ Numerous toxic substances, including sched-

²⁶⁴ *Id.*

²⁶⁵ A 1973 train-truck collision in the Sudbury area spilled 1500 gallons of battery transformer fluid containing PCBs. The chemical eventually leached into groundwater and threatened the Dowling, Ontario area's well-water supply. A complete clean-up was delayed for years while the Ontario government and the Canadian Pacific Railway negotiated responsibility before the government issued a clean-up order. A 1977 Environmental Appeal Board decision ordered both the government and the railway to share the costs of PCB removal. See *Re Canadian Pacific Ltd. and the Ministry of the Environment* (1977), 6 C.E.L.N. 173 (Ontario Environmental Appeal Board). On appeal, the Sudbury District Court held that the MOE had no jurisdiction to issue a waste clean-up order under the Act because the PCBs were not a waste under s. 42 and had not been deposited by the railway. Nor was there authority under the Act for the Ministry to be directed to share in the clean-up costs. Authority under other sections of the Act could be used to direct the railway to clean-up and repair damage. *Re Canadian Pacific Ltd. and Director of Ministry of the Environment* (1978), 19 O.R. (2d) 498.

²⁶⁶ In Saskatchewan, PCB contaminated soil, arising from a 1976 industrial spill, has threatened the city of Regina's water supply. The National Research Council in 1980 recommended that up to 20,000 cubic metres of the soil be immediately excavated. At least a \$1 million clean-up cost is estimated. See National Research Council, Associate Committee on Scientific Criteria for Environmental Quality, *A Case Study of a Spill of Industrial Chemicals—Polychlorinated Biphenyls and Chlorinated Benzenes* (Ottawa: NRC, 1980).

²⁶⁷ Ont. Min. of the Env., *Guidelines for Response to Environmental and Environmental Health Emergencies* (Toronto: Gov't. of Ont., Nov. 1978).

²⁶⁸ Ontario Contingency Plan for Spills of Oil and Other Hazardous Materials. 1975. Toronto, Ontario.

²⁶⁹ *Environmental Protection Act*, R.S.O. 1980, c. 141. Part IX.

²⁷⁰ "Compensation Fund for Victims of Pollution One Year Overdue," (Editorial) *C.E.L.A. Newsletter*, No. 6, Feb. 1981 at 1.

²⁷¹ *The Department of the Environment Amendment Act*, S.S. 1980-81, c. 50.

uled substances under the *Environmental Contaminants Act*, come within the control ambit of the regulations proposed under this Act.²⁷²

Nova Scotia, Quebec, Manitoba, Alberta and British Columbia also have legislation establishing procedures for emergencies and for the recovery of government incurred clean-up costs. These jurisdictions, however, are silent on the matter of victim compensation.²⁷³

Where provincial legislation addresses the issue of victim compensation, the question of general industry contribution to the scheme has been left unresolved.²⁷⁴ Industry argues that "liability and any other requirement for companies to provide compensation should be based on fault."²⁷⁵ It supports the establishment of a chemical pollution victims fund from general revenues, but at the same time it argues that social programmes may have already created too great a burden on government revenues.²⁷⁶

Compensation funds proposed in other jurisdictions have been said to fulfill two important societal goals in internalizing social costs of pollution and providing assistance to the individual injured by toxic substances.²⁷⁷ The latter function cannot be met by traditional tort law, in many instances, because in order to recover damages, proof of causation must be established. This is frequently an insurmountable obstacle in relation to toxic substances.²⁷⁸ The imposition of collective liability on a group of firms whose products or substances tend to cause a given harm has been proposed as an alternative. Funds could be generated, for example, by assessing risk levels, quantities and opportunities for exposure of particular substances and then levying a corresponding pollution tax.²⁷⁹ Thus, the fund would be built up by those industries and consumers who profit from products and services that are associated with hazardous substances.²⁸⁰ Unfortunately, provincial law, generally, has yet to address this issue.

²⁷² The Environmental Spill Control Regulation (Draft) (Feb. 1981, Regina).

²⁷³ *Supra* notes 231, 233 and 254. In Quebec, for example, see *Environment Quality Act*, R.S.Q. 1977, c. Q-2, ss. 21 (compulsory spill reporting), 114 (power to require a clean-up), and 115 (authority to obtain clean-up costs).

²⁷⁴ In Ontario, for example, the compensation corporation was to receive funds initially from general government revenues to cover any losses victims could not recover through the courts. Environment Minister Harry Parrott also promised at the time of the Spills Bill's passage that he would review and determine what contributions to the fund should come directly from industry rather than the taxpayer. *Supra* note 270.

²⁷⁵ Correspondence to author from Gordon Lloyd, Manager, Technical Department, Canadian Manufacturers' Association (March 2, 1981, Toronto).

²⁷⁶ *Id.*

²⁷⁷ Trauberman, "Compensating Victims of Toxic Substances Pollution: An Analysis of Existing Federal Statutes," (1981), 5 Harv. Env. L. Rev. 1 at 28.

²⁷⁸ Toxic chemicals and various common law restraints are discussed *infra*.

²⁷⁹ See United States House of Representatives. *Toxic Substances Control Act Amendments. Hearings before the Subcomm. on Consumer Protection and Finance of the Comm. on Interstate and Foreign Commerce*, 95 Cong. 2nd Sess. (March 7, Apr. 26 and July 25, 1978).

²⁸⁰ See *The Environmental Emergency Response Act. Hearings on S. 1480 before the Comm. on Finance*, 96th Cong. 2nd Sess. (Sept. 11 and 12, 1980).

d) *Information Access, Regulation-Making and the Role of the Public*

Pollution control legislation is normally silent on information access and public involvement in regulation-making. These matters are governed by discretionary agency procedures which vary from province to province.²⁸¹ The policy employed under Nova Scotia's *Freedom of Information Act*,²⁸² is to treat information from permits regarding toxic chemicals waste discharges as proprietary, and therefore, confidential.²⁸³ Saskatchewan grants no access by statute, but the province argues that only in very special cases does confidentiality prevent the province from releasing chemicals information.²⁸⁴ Alberta has a provision in its *Hazardous Chemicals Act* similar to that in the federal *Environmental Contaminants Act* respecting non-disclosure of confidential information.²⁸⁵ In contrast, the province of Quebec, under its general pollution control law, must provide every person with a copy of any information concerning the quantity, quality or concentration of contaminants emitted, issued, discharged or deposited by a contamination source.²⁸⁶

Quebec law may also be contrasted with that of the other provinces regarding public comment on draft regulations. All draft regulations must be published by the Minister of Environment in the *Quebec Official Gazette* with notice that, at the expiry of sixty days following such publication, they will be presented for adoption by the provincial Cabinet. The Minister is also required to consider every written objection made to him before the expiry of the sixty day period.²⁸⁷ Legislative Committee hearings have also been held on some draft regulations in Quebec before being promulgated. Other provinces such as Saskatchewan, Manitoba and New Brunswick have, as a matter of policy, circulated some draft regulations for public comment. British Columbia, which does not adopt its industry-specific pollution control objectives as province-wide legal standards, has nonetheless frequently held public hearings on them. The adequacy of these varying, if not sporadic, provincial mechanisms for involving the public in this key decision-making activity, has been detailed elsewhere.²⁸⁸

Many of the issues raised during the discussion on federal procedures regarding information access and regulation-making in respect of public involvement are equally applicable at the provincial level.

²⁸¹ For a review of access to information in Canada generally see Rankin, "Information and the Environment: The struggle for Access," in Swaigen, *supra* note 239. For a review of regulation-making procedures in Canada see Castrilli and Lax, *id.*

²⁸² C.S.N.S. 1979, c. F-21.

²⁸³ *Supra* note 254, Carter.

²⁸⁴ *Supra* note 233, Maliepaard.

²⁸⁵ *The Hazardous Chemicals Act*, S.A. 1980, c. H-3, s. 4(5).

²⁸⁶ *Environment Quality Act*, S.Q. 1978, c. 64, s. 118(d), (e). Under the Act's new environmental impact assessment procedures, the Minister may withdraw from a public consultation any information or data concerning industrial processes. See s. 31(h).

²⁸⁷ *Environmental Quality Act*, R.S.Q. 1977, c. Q-2, s. 124.

²⁸⁸ *Supra* note 239.

2. Emerging Initiatives

There are a number of emerging regulatory and policy initiatives at the provincial level respecting toxic chemicals that deserve brief mention.

First, in 1979 the Canadian Council of Resource and Environment Ministers established a federal-provincial task force to review existing toxic substance controls and to advise on any actions needed to fill legislative gaps or to avoid duplicative measures. Areas under review include manufacture, importation, transportation, storage, handling, use, effluents, emissions, waste disposal and secondary effects of toxic substances. The adequacy of emergency response and information or data systems is also to be examined. The task force reported to the Ministers in late 1981.²⁸⁹

Second, initiatives by provincial labour ministries regarding the development of inventories of existing chemicals may influence provincial and federal environment agencies to adopt similar mechanisms. For example, under the *Occupational Health and Safety Act*, the Ontario Ministry of Labour must be notified of any new biological or chemical agents that are to be manufactured, distributed or supplied.²⁹⁰ New chemical agents are those not included in the Chemical Substances Inventory published under the United States, *Toxic Substances Control Act of 1976*.^{290a} The inventory has been adopted as an Ontario regulation.²⁹¹

Under Quebec occupational health law, no one is permitted to manufacture contaminants or hazardous substances, other than those prescribed in a list under development, unless prior notice is given to the Commission on Occupational Safety. Inspectors may also have analyses and tests done, at the expense of the manufacturer, to evaluate the risks posed by any substance.²⁹²

Third, as a means of supplementing federal restrictions on toxic chemicals, several provinces, including Alberta,²⁹³ Manitoba,²⁹⁴ Saskatchewan²⁹⁵

²⁸⁹ Canadian Council of Resources and Environment Ministers. *Report on Toxic Substances* (Toronto: C.C.R.E.M., 1981).

²⁹⁰ R.S.O. 1980, c. 321, s. 21.

²⁹¹ Inventory of Agents or Combinations of Agents for the Purpose of Section 21 of the Act. O. Reg. 693/80.

²⁹² *An Act Respecting Occupational Health and Security*, S.Q. 1979, c. 63, ss. 64, 65 (these two sections were proclaimed in force on Jan. 1, 1981. Que. Gazette Vol. 113, No. 2 at 49).

²⁹³ *The Hazardous Chemicals Act*, S.A. 1980, c. H-3, s. 4. The Schedule under the Act lists approximately thirteen classes of substances including PCBs, chlorofluorocarbons, cadmium, chlorophenols, chlorobenzenes, mercury, phthalic acid esters, lead, arsenic and asbestos.

²⁹⁴ *The Clean Environment Act*, S.M. 1972, c. 130, s. 5 and Man. Reg. 15/81, Respecting the Designation of Certain Substances as Hazardous Materials. The 5 substances listed are ammonium nitrate, hydrochloric acid, nitric acid, PCBs and sulfuric acid.

²⁹⁵ *Supra* note 272. The draft regulations list over 100 substances under nine pollutant categories, including substances scheduled under the *Environmental Contaminants Act*.

and, prospectively, Quebec²⁹⁶ have adopted schedules of certain toxic chemicals for which special controls may be applied. These controls address such matters as storage, handling and transportation. The schedules frequently include restricted substances listed on the federal *Environmental Contaminants Act* schedule.

Fourth, the increasing awareness of the need for more research in toxicology and for the monitoring of toxic chemicals has led Ontario to propose the establishment of an Ontario Centre for Toxicology. The Centre will focus on the potential health hazards from the manufacture, use and disposal of chemical products as well as emphasize training, research and assessment activities.²⁹⁷

Lastly, concern about toxic chemicals has prompted both legislative committees²⁹⁸ and other groups²⁹⁹ to urge that provincial testing be undertaken for new chemicals before their manufacture and use in a province.

C. *The Role of Municipal Governments*

Provincial enabling legislation has historically granted municipalities the capacity to enact by-laws addressing such matters as waste disposal, control of nuisances, industrial use of sewers and other related matters.³⁰⁰ Provincial legislation has also historically delegated responsibility for many public health and nuisance control initiatives to boards of health at the local level.³⁰¹ Provincial planning legislation has similarly granted to municipalities substantial responsibility for official land use planning and zoning by-law development.³⁰² These, and related authorities, can, in varying degrees, have application to the problems posed by toxic chemicals.

Two current areas of activity at the municipal level are of interest. There is increased municipal interest in knowing what substances the urban public and work force are exposed to and in enacting by-laws substantially restricting activities such as PCB burning and related undertakings within their borders.

²⁹⁶ *Supra* note 233, Robitaille. A redrafting of the province's liquid waste regulation is underway which will contain a definition of dangerous wastes including a list of wastes coming from specific and non-specific sources; as well as a list of toxic chemical substances which may become dangerous wastes when discharged into the environment. The new regulation will also require from producers on an annual basis, a list of dangerous wastes that they produce.

²⁹⁷ *Leg. of Ont. Deb.: Speech from the Throne*, Apr. 21, 1981 at 8.

²⁹⁸ A standing committee of the Ontario Legislature recommended in 1978 that: "Pre-testing of all substances before they are introduced into the workplace and into the environment is strongly urged to prevent hazards before they threaten the community." *Leg. of Ont. Interim Report on Liquid Industrial Waste of the Standing Comm. on Resources Development* (Toronto: Queen's Printer, Dec. 1978).

²⁹⁹ See Testimony of Dan Rogers, Legal Reform Section of Student Legal Services, Univ. of Alta. Env. Council of Alta., *Public Hearings on the Management of Hazardous Wastes in Alberta* Vol. 12 (May 27, 1980, Edmtn.).

³⁰⁰ *The Municipal Act*, R.S.O. 1980, c. 302.

³⁰¹ *The Public Health Act*, R.S.O. 1980, c. 409.

³⁰² *The Planning Act*, R.S.O. 1980, c. 379.

Interest in "right to know" legislation by cities, such as Toronto, has been spurred by the "widespread production, use and disposal" particularly of "new synthetic organic chemicals."³⁰³ Information regarding the "presence and health effects" of such substances is frequently lacking.³⁰⁴ In this regard, the City of Philadelphia recently became the first local government in North America to enact ordinances requiring public disclosure by industry of toxic substances emitted into the atmosphere, used, manufactured, or stored.³⁰⁵ Amendments to the city's air management code require companies to report to the city Health Department any toxic substances emitted from their plants.³⁰⁶ Amendments to the city's fire code require companies to identify toxic materials they use or store on their premises.³⁰⁷ This information is retained on file by the city for public scrutiny. Presently, approximately 150 chemical substances are subject to the air management code requirements and 450 substances are subject to the fire code requirements.³⁰⁸ City of Toronto health officials have expressed interest in similar authority as part of their programme.³⁰⁹

Municipal by-laws, restricting industrial chemical disposal or PCB burning within local boundaries, have been enacted because of the potential nuisance or health effects posed by such projects. Distrust of the records of both provincial governments and industry has also been argued to be a reason for these municipal actions.³¹⁰ These by-laws have frequently been viewed by provincial governments as conflicting with their attempts to control safe disposal or destruction of toxic substances and wastes. Moreover, these by-laws have recently been overturned by the courts.³¹¹

In commenting on the influence municipal concerns could have on national policy, such as with respect to PCBs, the PCB Board of Review ob-

³⁰³ The production of chemicals or solids through the polymerization of compounds possessing a carbon chain or ring. Synthetic chemicals pose special problems as environmental contaminants because although they may contain low toxicity levels they may also be persistent and biologically active. Two examples are DDTs and PCBs.

³⁰⁴ City of Toronto, Dept. of Public Health, Health Advocacy Unit. *Brief Concerning Bill C-43: The Proposed Access to Information Act*. Submitted to the House of Commons Standing Committee on Justice and Legal Affairs. April 1981.

³⁰⁵ "Law Regulating Chemicals Wins In Philadelphia: Companies Must Disclose Stored Toxic Substances," *The New York Times*, Jan. 23, 1981, at A14, col. 5.

³⁰⁶ City of Philadelphia. Air Management Code. Ch. 3. Jan. 14, 1981. Bill No. 270.

³⁰⁷ City of Philadelphia. Fire Code. Ch. 5, Jan. 14, 1981. Bill No. 475.

³⁰⁸ City of Philadelphia. Council Resolution Concerning Right-To-Know Legislation. Jan. 22, 1981.

³⁰⁹ "City may screen toxic chemical use," *The Toronto Star*, January 25, 1981, at A18, col. 1.

³¹⁰ Grace Patterson, Counsel, Canadian Environmental Law Association. "The Municipal Act: An Environmental Protection Device." Paper delivered at the Canadian Bar Association (Ontario Branch) seminar on *Environmental Law for the General Practitioner* (Dec. 11, 1980).

³¹¹ See, e.g., *Attorney-General of Ontario v. Mississauga*, *supra* note 261, which upheld the by-laws. However, this was reversed on appeal, see *10 A.G. Ont. v. Mississauga* (1981), 10 C.E.L.R. 91 (Ont. C.A.).

served that "local concern over environmental contamination by PCBs may be having the result of delaying the development of facilities for their disposal and elimination."³¹² It acknowledged, however, that the public has not been convinced that "the combination of transportation hazards, storage risks and disposal uncertainties do not constitute a major environmental threat to any community that is presented with a proposal for a storage facility or waste disposal unit within its boundaries."³¹³ The Board voiced its opinion on the need for sound proposals and viewed public and municipal confidence in the soundness of federal and provincial government proposals as integral to resolving the waste storage and disposal problem.³¹⁴

D. *The Role of the Courts in Control of Toxic Chemicals: Common Law Restraints*

Use of the common law areas of nuisance (private and public), riparian rights, trespass, negligence and strict liability can provide a valuable supplement to government regulatory actions in controlling toxic chemicals contamination. Exercise of these common law rights can result in the court granting relief in the form of damages or an injunction to the injured party. It has been observed that the common law provides one of the principal methods of redress for injury to health or property.³¹⁵ It can also be used to compel firms to internalize costs they currently inflict on the rest of society.³¹⁶

There are serious limitations, however, in the undertaking of common law actions. This is exemplified with respect to public nuisance actions. This area of tort law has been traditionally regarded as the one most capable of responding to interferences with interests or rights common to all.³¹⁷ The courts have usually held that individuals affected by a public nuisance may not sue unless they can show that there has been interference with their private rights, or that a statute has given them a special protection or benefit which has been interfered with, or unless they can show that they have suffered some particularly direct damage over and above that incurred by the public at large.³¹⁸ Thus, normally only the Attorney-General or someone acting in his name or with his consent (a relator) may sue on the basis of public nuisance.³¹⁹ These limitations on who may sue have been severely

³¹² *Supra* note 88, at 15.

³¹³ *Id.*

³¹⁴ *Id.*

³¹⁵ Estrin and Swaigen. *Environment on Trial*, Carswell and Swaigen, eds. (Revised ed. Toronto: Can. Env. Law Research Fdn., 1978) at 400, 412.

³¹⁶ McLaren, *The Common Law Nuisance Actions and the Environmental Battle—Well-Tempered Swords or Broken Reeds* (1972), 10 Osgoode Hall L.J. 505 at 518.

³¹⁷ *Id.* See also Estey, *Public Nuisance and Standing to Sue* (1972), 10 Osgoode Hall L.J. 563 at 564-65.

³¹⁸ See, e.g., *Hickey v. Electric Reduction Co. of Canada* (1972), 21 D.L.R. (3d) 368 (Nfld. S.C.); and *Fillion v. New Brunswick International Paper Co.*, [1934] 3 D.L.R. 22 (N.B.C.A.).

³¹⁹ Roman, "Locus Standi: A Cure in Search of a Disease?" in Swaigen, *supra* note 239. See also notes 316, 317 and cases cited therein.

criticized and reforms have been proposed.³²⁰ In fact, in Quebec, a modified standing requirement has been adopted.³²¹

Even if the average citizen can show personal injury to health or property, trespass to his land, negligence or some other cause of action, thus overcoming the public nuisance bar to his suit,³²² there are still substantial problems posed by traditional tort law in relation to recovery for toxic chemicals-related injury. These include:

- a) Chronic diseases with long-latency periods arising from exposure to toxic chemicals usually make it difficult to obtain proof that the defendant's release of a particular chemical was the proximate cause of subsequent damage;³²³
- b) Compensation may also be difficult to obtain for increased risk of future damage arising from toxic chemicals exposure because the courts may frequently regard this as remote and speculative damage. The problem of compensation for future harm may also be exacerbated by short statute of limitations periods or difficulties in obtaining adequate evidence linking cause and effect;³²⁴
- c) Proof that a specific chemical caused damage, identification of the responsible parties, and establishment of their failure to exercise appropriate care, require prohibitively expensive scientific and technical data that may be difficult or impossible for the average citizen to obtain;³²⁵
- d) Compensation for economic and psychic losses may frequently be difficult to obtain;³²⁶
- e) Potential defences available to a defendant including prescription (long-term development of a right to pollute) and statutory authority (a licence or approval to discharge or emit certain levels of a contaminant)

³²⁰ The Law Reform Commission of British Columbia recently recommended in part that "... any member of the public should have the status to bring proceedings in respect of an actual or apprehended violation of a public right, whether it be an infraction of a statute, a public body exceeding its power or a public nuisance. We do not believe that the right to bring such proceedings should remain within the Attorney General's exclusive jurisdiction." See *Report on Civil Litigation in the Public Interest* (Vancouver: B.C. Law Reform Commn., 1980) at 72.

³²¹ *Environment Quality Act*, S.Q. 1978, c. 64, s. 19a-g. These sections grant every person a right to a healthy environment and to its protection; authorize a Superior Court judge to grant injunctions prohibiting any activity or operations that interfere with such right where filed by any natural person in Quebec living in the immediate vicinity of the operations; limit to \$500, plaintiff security for costs; but permit defendants to continue to raise the defence of statutory authority.

³²² *Supra* note 319, at 14.

³²³ Swaigen, *Environmental Law 1975-1980* (1980), 12 Ottawa L. Rev. 439 at 464-465.

³²⁴ *Id.*

³²⁵ *Id.*

³²⁶ Wright and Linden, *The Law of Torts* (Seventh ed., Toronto: Butterworths, 1980) ch. 10.

may also be impediments to recovery from toxic chemical damage, and;³²⁷

- f) Compensation for massive damage to major natural resources is seldom sought or recovered by individuals, let alone governments.³²⁸

Because of these and related problems involved in using the common law, several reforms have been proposed. It has been suggested that once a plaintiff has proved that a defendant was manufacturing or using a substance or discharging it or emitting it into the air or the water, and once he has shown that someone's health or the environment was damaged, the burden of proof should shift to the defendant to show that the harm did not result from his activities.³²⁹ Reverse onus clauses, relaxation of causation requirements, as well as abolition of standing requirements, certain defences and plaintiff court cost burdens, have been proposed in a number of private members' bills in Alberta³³⁰ and Ontario,³³¹ although none have been enacted to date.³³²

III. INTERNATIONAL PROGRAMS AND CONCERNS

International initiatives respecting control of toxic chemicals are an important supplement to the activities underway at the national, provincial and local levels. Canada is involved in a number of these actions. Two international approaches to the problems posed by toxic chemicals are briefly reviewed below. One involves bilateral cooperation to protect a major natural

³²⁷ *Supra* note 316, at 543-47.

³²⁸ In 1971, for example, the Ontario Government sued Dow Chemical Co. for \$35 million for mercury contamination of Lake St. Clair. (\$10 million to clean up the Lake and \$25 million for damage to fisheries). The suit followed the 1970 banning of commercial fishing in the Lake as a result of the mercury contamination. In 1978 the Ontario Attorney-General settled the case for less than \$500,000 without it ever coming to trial, or the company admitting liability as a precedent for future cases. Among the costs associated with the lake's pollution which were not covered adequately, or at all, by the settlement included: unemployment insurance and welfare payments to the fishermen; costs of clean-up and restoring the lake and riverbeds from mercury pollution; loss of taxes that the commercial fishermen would have paid; loss of tourist revenue from sport fishing; legal costs to the Government and Ontario taxpayers, and; damages to fishermen for loss of income, destruction of their way of life and effects on their community. See "Province ends lawsuit against Dow," *The Globe and Mail* (Toronto), June 9, 1978 at 4 col. 1, and "From writ to wrong," *The Globe and Mail* (Toronto), (Editorial) June 13, 1978 at 6, col. 5.

³²⁹ *Supra* note 315, at 477-479.

³³⁰ *The Environmental Bill of Rights*, Bill 222, 1979 (19th Leg. Alta., 1st Sess.). Introduced by Mr. Clark, Leader of the Opposition. Never received First Reading.

³³¹ *Environmental Rights Act*, Bill 185, (31st Leg. Ont., 3rd Sess.). Introduced by Mr. Smith, Leader of the Opposition. First Reading, November 20, 1979. Died December 13, 1979; and *The Environmental Magna Carta Act*, Bill 91, (31st Leg. Ont., 4th Sess.). Introduced by Ms. Bryden, NDP Environment Critic. First Reading, June 3, 1980. Died October 9, 1980.

³³² *Supra* notes 330 and 331. See also "Broad Public Coalition Supports Citizens Suit Bill, Though Measure is Defeated in Ontario Legislature" 4 *CELA Newsletter* 88 (1979); and "Environmental Rights 'Snowed Again' in Ontario" (1980), 5 *CELA Newsletter* 99.

resource—the Great Lakes. The other involves multilateral attempts to standardize procedures for toxic chemicals control in order to minimize environmental health and economic damage.

A. *Protection of Major Natural Resources from Toxic Chemical Contamination*

1. The Canada-United States Great Lakes Water Quality Agreement

The Canada-United States Great Lakes Water Quality Agreement of 1978,³³³ arising out of the Boundary Waters Treaty of 1909³³⁴ and other agreements and studies,³³⁵ is designed to prevent future, and to abate existing, pollution of the Great Lakes Basin Ecosystem. This objective is to be achieved, in part, through both countries adopting common water quality objectives and developing and implementing joint, and domestically based, control programmes and measures. In this regard, certain overview and advisory functions are also assigned to the International Joint Commission (IJC), a bilateral body originally created under the 1909 Treaty.

The current agreement places particular emphasis on control of toxic³³⁶ and hazardous polluting substances.³³⁷ Both countries have adopted the policy that “the discharge of toxic substances in toxic amounts” is to be prohibited and the “discharge of any or all persistent toxic substances” is to be “virtually eliminated.”³³⁸ The agreement authorizes adoption of broad goals and minimum acceptable water quality levels that relate, in part, to toxic chemicals.³³⁹ It also commits both countries to adopt programmes to abate and prevent industrial pollution by a specified date and to include “requirements for the substantial elimination of discharges into the Great Lakes System of persistent toxic substances.”³⁴⁰ Pre-treatment requirements and programmes for industries discharging wastes to municipal treatment works are also

³³³ Great Lakes Water Quality Agreement, Jan. 11, 1978, Can.-U.S., [30] UST 1383.

³³⁴ Treaty Between the United States and Great Britain Relating to Boundary Waters and Questions Arising Between the United States and Canada, Jan. 11, 1909, U.K.-U.S., 12 Beavans 319, 36 Stat. 244.

³³⁵ See, e.g., Great Lakes Water Quality Agreement, Apr. 15, 1972, Can.-U.S., [23] UST 301; and International Joint Commission, Canada and the United States, Report on Pollution of Lake Erie, Lake Ontario and the International Section of the St. Lawrence River (Ottawa and Washington, D.C.: IJC, 1970).

³³⁶ *Supra* note 333. Article I (v) defines “toxic substance” to mean a substance which can cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological or reproductive malfunctions or physical deformities in any organism or its offspring, or which can become poisonous after concentration in the food chain or in combination with other substances.

³³⁷ *Id.*, Article I (j) defines “hazardous pollution substance” to mean any element or compound identified by Canada and the United States which, if discharged in any quantity into or upon receiving waters or adjoining shorelines, would present an imminent and substantial danger to public health or welfare. “Public health or welfare” is defined to include all factors affecting the health and welfare of humans including but not limited to human health, and the conservation and protection of flora and fauna, public and private property, shorelines and beaches.

³³⁸ *Id.*, Article II (a).

³³⁹ *Id.*, Articles III and IV.

³⁴⁰ *Id.*, Article VI.1 (b) (ii).

authorized.³⁴¹ An inventory of requirements for each municipal and industrial discharger is required,³⁴² as are advisory programmes and measures for abating the impacts of toxic substances from land use or non-point sources.³⁴³ Effective enforcement programmes and programmes for reducing pollution from storm, sanitary and combined sewers³⁴⁴ must also be developed.³⁴⁵ Both governments are further committed to controlling and maintaining a joint contingency plan for the release of hazardous polluting substances from shipping activities.³⁴⁶ Programmes to control pollution from dredging³⁴⁷ and onshore-offshore facilities are expected,³⁴⁸ as well as programmes to identify and to consult about airborne pollutants.³⁴⁹

Annexes to the agreement focus on the programmes are required to be developed.³⁵⁰ In particular, the annex on persistent toxic substances³⁵¹ outlines the principles under which regulatory programmes are to be developed,³⁵² what programmes are to be established,³⁵³ the monitoring requirements,³⁵⁴ the establishment of an early warning system,³⁵⁵ action levels for human health protection³⁵⁶ and research needs.³⁵⁷ The annex on hazardous polluting sub-

³⁴¹ *Id.*, Article VI.1 (a) (iv) and (b) (vi).

³⁴² *Id.*, Article VI.1 (c).

³⁴³ *Id.*, Article VI.1 (e) (vii).

³⁴⁴ *Id.*, Article VI.1 (a) (v).

³⁴⁵ *Id.*, Article VI.1 (a) (vi) and (b) (vii).

³⁴⁶ *Id.*, Article VI.1 (f) and (i).

³⁴⁷ *Id.*, Article VI.1 (g).

³⁴⁸ *Id.*, Article VI.1 (h).

³⁴⁹ *Id.*, Article VI.1 (1).

³⁵⁰ See, e.g., *id.* Annexes 4 (Discharges of Oil and Hazardous Polluting Substances), 7 (Dredging), 8 (Discharges from Onshore and Offshore Facilities) and 9 (Joint Contingency Plan).

³⁵¹ *Id.*, Annex 12.

³⁵² *Id.*, s. 2. The general principles include virtual elimination of the input to the Lakes of persistent toxic substances; adoption of a philosophy of zero discharge; and rehabilitation to the extent reasonable and practical of those portions of the Lakes adversely affected by such substances.

³⁵³ *Id.*, s. 3. Programs include an inventory identifying raw materials, processes, products, by-products, waste sources and emissions and quantitative data on the substances along with handling, use and disposition recommendations; co-ordination and integration of air, water and solid waste programs in order to assess the total input to the Lakes of toxic substances; and joint disposal programs.

³⁵⁴ *Id.*, s. 4.

³⁵⁵ *Id.*, s. 5. Such a system is expected to include development and use of structure-activity correlations to predict environmental characteristics of chemicals; ability to predict trends in the production, import and use of chemicals; review of new chemical environmental testing results; toxicological research on chemicals and foreign research reviews; biological tissue and sediment bank maintenance to permit review of trends over time; monitoring; development of mathematical models to predict different chemical loading rate consequences; and data bank development and information storage respecting known and suspected persistent toxic substances regarding their physical-chemical properties, toxicology, use and quantities in commerce.

³⁵⁶ *Id.*, s. 6.

³⁵⁷ *Id.*, s. 7.

stances lists both actual³⁵⁸ and potential³⁵⁹ substances and outlines the procedures and criteria relating to the listing of these substances.³⁶⁰

IJC rules of procedure authorize public notice, comment and hearings on major reports done by or for it, including reports on proposed water quality objectives.³⁶¹

Both the IJC and groups reporting to it have raised concerns regarding toxic substances pollution in the Lakes, as has been noted above.³⁶² A 1978 report to the IJC recommended the following: toxic substances should be controlled at their source; proper management and disposal should be required; including identification, monitoring and control of toxic substances at existing and closed waste disposal sites; cumulative and synergistic effects of toxic substances on environmental health should be assessed in order to improve water quality objectives; and where necessary and practicable, a zero tolerance load should be designated.³⁶³ The IJC itself reported to the Canadian and U.S. governments in 1980 that approximately 2,800 chemicals, including 2,200 organic compounds, are being produced or used in the Great Lakes Basin. About 400 organic compounds have been identified in the Basin Ecosystem. The IJC recommended that, "[t]he production, sale, transport or use of persistent synthetic organic compounds with known highly toxic effects whose use will result in their entry into the environment be prohibited."³⁶⁴ More recently the IJC reported concerns about atmospheric deposition being a major source of hazardous substances to the Lakes. It further advised of the possible need to immediately regulate up to thirty-three chemicals found in the Lakes previously identified as "being known to cause chronic adverse effects in humans."³⁶⁵

The IJC has also focused on specific areas of the Great Lakes Basin that have been contaminated by toxic substances. Niagara River water quality was recently the subject of a special report because it does not meet or is close to exceeding a number of specific objectives contained in the agreement including that for "unspecified organic compounds."³⁶⁶ In addition, the IJC

³⁵⁸ *Id.*, Annex 10, appendix 1. Approximately 250 substances listed.

³⁵⁹ *Id.*, Appendix 2. Approximately 100 substances listed.

³⁶⁰ *Id.*, Annex 11, ss. 1-4.

³⁶¹ International Joint Commission, *Rules of Procedure* (Wash. D.C. & Ottawa: I.J.C., 1912, as am. 1964). These rules were adopted in accordance with Article XII of the Treaty. See, e.g., Part III of Rules, s. 29.

³⁶² *Supra* note 5.

³⁶³ *Id.*, PLUARG at 5-8.

³⁶⁴ International Joint Commission, *Pollution in the Great Lakes Basin from Land Use Activities: An I.J.C. Report on the governments of the United States and Canada* (Windsor, Ont.: I.J.C., Great Lakes Regional Office, 1980).

³⁶⁵ International Joint Commission, *Interim Report under the Great Lakes Water Quality Agreement* (Wash. D.C. & Ottawa: I.J.C., Jan. 28, 1981) at 7.

³⁶⁶ International Joint Commission, *Special Report on Pollution in the Niagara River* (Wash. D.C. & Ottawa: I.J.C., Jan. 20, 1981).

has raised the issue of the adequacy of federal statutes³⁶⁷ and enforcement programmes.³⁶⁸

Ironically, the mechanisms and objectives authorized under the agreement to control current and future damage from toxic substances may also be inadequate in certain respects. To illustrate, a 1978 reference group report to the IJC raised significant issues in respect of the water quality objectives and trace elements.³⁶⁹ The report noted that the additive, synergistic and antagonistic effects of a mixture of heavy metals, such as might be found near an industrial outfall, had not been considered in formulating the objectives. It was critical, for example, that

... a mixture of all the trace elements listed in the [IJC's] revised Water Quality Objectives proved highly toxic to algae at concentrations given in the objectives, as well as at 50 and at 10 per cent of the proposed objective concentrations.³⁷⁰

The group advised that a better definition of Great Lakes pollution was required, one that recognized that while individual land use or non-point sources of contaminants may not in themselves result in violations of water quality objectives, "pollution" of the Great Lakes does result from these sources in combination with other sources.³⁷¹

Currently, IJC reporting groups are working to meet the requirements of certain aspects of the 1978 agreement such as the identification, description and evaluation of federal, state and provincial toxic substance control programmes.³⁷²

B. *Standardization of Procedures and Protocols*

Regulation of toxic chemicals has been described as a major international challenge.³⁷³ But there are many obstacles to an effective international response. These include the poor quality of existing test data; the lack of internationally accepted testing protocols; differences in national requirements regarding the timing of new chemicals notification to government agencies; industry and some governments' concern about the release of "confidential" information due to fears of competitive market positions being harmed; the lack of public participation requirements in many national chem-

³⁶⁷ *Supra* note 87, and accompanying text.

³⁶⁸ For example, in 1977 the I.J.C. argued that it was "concerned with the growing evidence of the dangers of toxic chemicals in the lakes and with the failure to implement enforcement measures on many industrial and municipal sources of pollution." International Joint Commission, *Fifth Annual Report on Great Lakes Water Quality* (Windsor, Ont.: I.J.C., 1977).

³⁶⁹ *PLUARG*, *Supra* note 5, at 44-46.

³⁷⁰ *Id.* at 46.

³⁷¹ *Id.* at 93-94.

³⁷² See, e.g., International Joint Commission, Great Lakes Water Quality Board, *First Report of the Toxic Substances Committee* (Windsor, Ont.: Nov. 1980).

³⁷³ Philip Alston, *International Regulation of Toxic Chemicals* (1978) 7 Ecology L.Q. 397. John Roberts, federal Environment Minister, has stated that "... the solution to dealing with the problem of chemicals in our society must involve international cooperation on a major scale." *Supra* note 95.

ical control laws; the establishment of unnecessary trade barriers due to differing control requirements in each country; and the export or "dumping" of hazardous chemicals from countries with stringent controls to those with less stringent requirements.³⁷⁴

The responses of several international groups, including the United Nations Environment Programme (UNEP), the Organization for Economic Cooperation and Development (OECD) and the European Economic Community (EEC), to several of these issues are reviewed briefly below.

1. Testing

The OECD's chemical controls programme, established in 1978, is designed to facilitate the acceptability of chemicals testing data among its 24 member countries (including Canada), as well as to coordinate controls at the international level.³⁷⁵ Current emphasis is on developing testing procedures for new—not existing—chemicals.³⁷⁶ In May 1980, OECD members reached agreement on the basis for mutual acceptance of data,³⁷⁷ test guidelines,³⁷⁸ principles of good laboratory practice³⁷⁹ and a minimum pre-market set of data.³⁸⁰ Canada is likely to adopt much of the OECD proposals in its revisions to the *Environmental Contaminants Act*.³⁸¹

National preferences regarding initial testing requirements have been said to depart extensively from one another. One commentator has noted that:

Up to now, U.S. and European concepts concerning the extent of initial testing are quite apart. The Americans prefer extensive (and costly) base testing of all

³⁷⁴ Alston, *supra* note 373. See also comments of Rehbinder, *supra* note 6.

³⁷⁵ *OECD Chemical Controls Coordination 1979*) 5 Environmental Policy and Law 8. The initiative for OECD development of such a program is in part due to the fact that trade in chemicals amongst OECD members accounts for approximately two-thirds of world chemical production and annual sales in the 300 billion dollar (U.S.) range. Thus, the failure to develop coordinated programs was seen as potentially capable of adversely impacting human health and the environment, the chemical industry and unnecessarily disrupting international chemical trade. See "OECD Programme on Chemicals," *UNEP: International Register of Potentially Toxic Chemicals Bulletin*, Vol. 3, No. 2, July 1980.

³⁷⁶ *Supra* note 95, comments of Roberts.

³⁷⁷ *Supra* note 375, *UNEP: IRPTC Bulletin*, OECD members decided that data could be assured as internationally acceptable if specified guidelines for tests and standards for laboratory practice were followed.

³⁷⁸ *Id.* The purpose of the 52 test guidelines is to establish identical testing methods for specific chemical classes in each country. Thus each country could accept the others' test results and avoid the duplicative effort associated with each country conducting its own testing program. *Supra* note 95, comments of Roberts.

³⁷⁹ *Id.*

³⁸⁰ *Id.* The elements of the data package include: chemical identification; production/use and disposal; recommended precautions and emergency measures; analytical methods; physical/chemical properties; acute toxicity; repeated dose toxicity; and mutagenicity, ecotoxicity, degradation and accumulation.

³⁸¹ *Supra* note 93.

new chemicals and envisage only one step of in-depth testing for selected chemicals; the Europeans are considering multi-step sequence testing requirements... where the initial testing obligation could be relatively lenient but the obligations would gradually increase with production volume.³⁸²

OECD industrial advisory groups do not support one method over another.³⁸³ They note that currently there are unresolved questions about the relevance and the ability to reproduce some of the tests as well as gaps in the information about how and when any given test should be applied. They also argue that little or no work has been done on costs, economic impact and the effects on small business.³⁸⁴ They further emphasize that to minimize the economic burden to industry, any testing requirements should be restricted to those tests which are essential to assess the potential effects of a chemical on human health and the environment.³⁸⁵

European environmental groups have argued that toxic substances laws should contain "a general obligation on manufacturers and importers to test new and existing chemical substances" for their effects on humans and the environment and that "an adequate screening programme for existing chemical substances" should be authorized.³⁸⁶

The objectives of UNEP's International Register of Potentially Toxic Chemicals (IRPTC) are: to facilitate access to existing data on the effects of chemicals on humans and the environment; to identify important gaps in existing knowledge and to draw attention to the need for further research; to identify or help to identify potential hazards from chemicals; and provide information on national, regional and global policies, regulatory measures, standards and recommendations for the control of potentially toxic chemicals. IRPTC's strategy for achieving these objectives includes the development of working links with other information systems and the establishment of an information network, the collaboration with institutions carrying out evaluations of health and environmental effects of chemicals, and the dissemination of information.³⁸⁷

³⁸² Reh binder, *U.S.-German Conferences on Toxic Chemicals (1978)*, *Environmental Policy and Law* 166. See also *Dispute with U.S. on Toxic Substances (1979)*, 5 *Environmental Policy and Law* 92; and *Commission of the European Communities: Note Verbale; Comments of the European Community on the proposed rules of TSCA Section 5 (1979)*, 5 *Environmental Policy and Law* 110-112.

³⁸³ OECD, Business and Industry Advisory Committee, *BIAC Chemicals Sub-Group Recommendations to O.E.C.D.'s Step Systems Group* (Paris: OECD, Dec. 1979).

³⁸⁴ OECD, Business and Industry Advisory Committee, *BIAC Comments for High Level Meeting of O.E.C.D. Chemicals Group* (Paris: OECD, Apr. 1980).

³⁸⁵ OECD, Business and Industry Advisory Committee, *Views of the B.I.A.C. Chemicals Sub-Group Regarding Some Principles of Controls Affecting National and International Commerce in Chemicals* (Paris: OECD, Oct. 1979).

³⁸⁶ Henselmans, "Toxic Substances Control in the European Community: Lack of Prevention and Public Participation," *UNEP: Industry and Environment Quarterly Newsletter*. Vol. 2, No. 4 Oct.-Dec. 1979, at 14.

³⁸⁷ Satkunanathan and Huismans, "International Register of Potentially Toxic Chemicals," *id.*, at 18.

2. Information Confidentiality

The OECD has been investigating how member countries can exchange health and safety data on chemicals and, at the same time, protect the commercially sensitive or confidential information of the firms that had the testing done.³⁸⁸

An OECD legal and scientific committee has proposed several principles to govern the exchange of confidential information. The principles being discussed include: the exchange of information between competent authorities (governments) for the sole purpose of assessing the hazard to and the protection required for humans and the environment; a requirement that the requesting country produce evidence of need (for example, that the chemical is on the market or being marketed and is being assessed); an agreement that certain principles be followed to protect confidentiality and that the requesting country ask only for information that it is authorized to collect under its national legislation or during the normal course of its administration.³⁸⁹ The committee has also recommended a "non-confidential package" that could be exchanged between countries. This package would include such information as chemical trade names, general data on usage, safe-handling precautions and emergency measures, disposal and transport methods, physical and chemical data (excluding that information which would reveal chemical identity) and summaries of environmental health and safety studies.³⁹⁰ The EEC has adopted a similar non-confidential list.³⁹¹

The OECD business and industrial advisory committee (BIAC) supports the above principles for protection and use of data, but it does not agree with governments directly sharing confidential data. It also supports the "non-confidential package" concept. The BIAC views industry involvement as necessary in preparing the toxicological and eco-toxicological study summaries. It further argues that governments should recognize two fundamental principles as being important within the chemical industry. First, that information submitted to government is the intellectual property of the industry concerned, if industry resources were used in developing the information. Second, that government is the trustee and not the owner of the confidential information.³⁹²

There are, however, some potentially serious international environmental health implications in the OECD-BIAC position. This is exemplified in

³⁸⁸ *Supra* note 375, UNEP; IRPTC Bulletin.

³⁸⁹ Telephone interview with Ruth Demayo, Hazard Assessment Division, Contaminants Control Branch, Env. Cda. (May 23, 1981).

³⁹⁰ "O.E.C.D. Proposes Exchange on Hazardous Chemicals Data," *Canadian Environmental Control Newsletter*. No. 189. Feb. 3, 1981 at 1603. See also O.E.C.D. Environment Committee, *High Level Meeting of the Chemicals Group: Summary Record*. ENV/CHEM/HLM/80.M/1 (Paris: May 1980).

³⁹¹ "European Economic Community," *UNEP: I.R.P.T.C. Bulletin*. Vol. 3, No. 1. Jan., 1980.

³⁹² OECD, Business and Industry Advisory Committee, *Views of the B.I.A.C. Chemicals Sub-Group Regarding Some Aspects of Confidentiality* (Paris: Oct. 1980).

the proposal to release only health and safety study summaries. In 1969, for example, studies were performed on the pesticide leptophos, by Industrial Bio-Test Laboratories (IBT). The IBT report concluded that an examination of tissue from chickens fed leptophos "did not reveal any evidence of demyelination [nerve damage] in any of the chickens tested." The body of the report, however, included numerous descriptions of such neurotoxic symptoms as "no control of legs," "very unsteady," "cannot remain standing" and "extreme staggering."³⁹³ A 1974 U.S. EPA review of the same tissue slides found them "impossible to evaluate from the time they were prepared."³⁹⁴ In 1975-76, workers at one chemical plant showed neurotoxic and related health problems as a result of exposure to leptophos which was being manufactured and packaged there. While leptophos was used only experimentally in the U.S., and is no longer in production there, it was exported to as many as fifty countries, including Canada, between 1971 and 1976.³⁹⁵

Notwithstanding concurrent international attempts to improve laboratory testing practices, it is difficult to see how potential environmental health damage can be entirely avoided in the future if test summaries are the principal, if not only, type of information permitted to be released to the general public, or to be shared with other governments.

In light of the OECD-BIAC views, and the pressure for internationally similar mechanisms, it is unclear how Canada, a net importer of chemicals, will address the question of confidentiality and health and safety study summaries in any new federal toxic chemicals law. John Roberts, federal Environment Minister, has recently stated that:

... it is vital that we maximize the availability of data in order to ensure the public that there are no cover-ups going on here—nothing being hidden. I recognize that objective has to be balanced against the risk, when data are not fully assessed, of causing uninformed or premature concern. We must also protect legitimate proprietary rights. But my bias is very clear. If we are to err, we should err on the side of making the information available.³⁹⁶

In an area as circumscribed by common law restrictions, if not ambiguities, as this one, this policy statement, while laudable, cannot stand alone. It clearly must have a statutory base for support. The federal government has previously failed to release information about chemicals because of threats

³⁹³ Report—Demyelination Study—Chickens, I.B.T., no. J7162, from Industrial Bio-Test Laboratories, Inc., Northbrook, Illinois, to Velsicol Chemical Corporation (July 29, 1969). Reported in United States Senate, *The Environmental Protection Agency and the Regulation of Pesticides: Staff Report to the Subcomm. on Administrative Practice and Procedure of the Comm. on the Judiciary*. 94th Cong., 2nd Sess. (Dec. 1976). See also *Appendix to the Staff Report*.

³⁹⁴ Memorandum from Howard Richardson (U.S. EPA pathologist) to "The Record." Subject: Phosvel-Demyelination studies (Aug. 27, 1974), *id.*, *Senate Judiciary Staff Report and Appendix*.

³⁹⁵ *Id.*, *Staff Report* at 42.

³⁹⁶ *Supra* note 95.

of lawsuits from U.S. manufacturers claiming confidentiality for health and safety tests.³⁹⁷

3. Timing of Notification, Control Options and Public Participation

Three additional issues at the international level deserve brief mention: the timing of industry notification to government regarding new chemicals; control options, and; the role of the public.

The EEC, in September 1979, adopted what is known as the sixth amendment to a 1967 EEC directive that dealt with standardization of member states' laws regarding classification, packaging and labelling of dangerous substances. The sixth amendment provides for a pre-market notification procedure regarding new chemical substances. The manufacturer or importer of a substance must submit to the relevant government authority in the member state, at least forty-five days prior to marketing, a technical file or package containing information adequate to evaluate foreseeable risks which the substance may present to human health or to the environment.³⁹⁸ Other information, such as that described above, must be included.³⁹⁹ Protection for confidential information is provided for in the amendment,⁴⁰⁰ as well as opportunities for government to require additional studies or tests if certain conditions are met.⁴⁰¹

Critics of the amendment argue that although government authorities may ask for more information, they cannot stop marketing or restrict usage if the notification is in accordance with the directive's requirements. Only when a member state has detailed evidence that a substance constitutes a hazard may it temporarily prohibit or restrict its use. Critics argue that the burden of proof is substantially on the member state. As a result, the sixth amendment has been described as being incapable of providing a preventive control approach to new chemicals;⁴⁰² it is a "pure notification procedure."⁴⁰³

The forty-five day waiting period between notification and marketing has also been described as too short to make a risk assessment, on the basis of which government agencies may consider any regulatory options.⁴⁰⁴ Moreover, the pre-market notice requirement occurs at a much later stage in the corporate decision-making process than the pre-manufacture notice requirement of statutes such as the *Toxic Substances Control Act*.⁴⁰⁵ In the TSCA,

³⁹⁷ Horgan, "Chemicals secret in Canada, not in U.S.," *The Globe and Mail* (Toronto), March 18, 1981 at 5, col. 3.

³⁹⁸ *Supra* note 391.

³⁹⁹ *Supra* note 380.

⁴⁰⁰ *Supra* note 391.

⁴⁰¹ *Id.*

⁴⁰² *Supra* note 386.

⁴⁰³ *Supra* note 382, comments of Reh binder.

⁴⁰⁴ *Supra* note 382. This was also a criticism of the recently enacted German chemicals law; the first European statute to adopt the bulk of the EEC requirements. *Supra* note 81, comments of Jasanoff.

⁴⁰⁵ *Supra* note 382. See also *supra* note 99, comments of Mitchell.

there are also longer waiting periods and greater authority to restrict production for lack of sufficient information on human health and environmental effects.⁴⁰⁶ The EEC amendment is also silent on public participation in regulatory decision-making regarding new chemicals.⁴⁰⁷

Improvements in EEC and related initiatives have been proposed. These would require notification procedures for the manufacture, import or export of new chemical substances; procedures for decision-making, including public participation, prior to manufacture, import or export; and timely application of control options.⁴⁰⁸

IV. PROSPECTIVE GOVERNMENT INITIATIVES IN TOXIC CHEMICAL CONTROL LAW AND POLICY IN CANADA

International programmes and concerns, as well as experience with existing federal, provincial and municipal law, are likely to influence the shape and effectiveness of any new federal toxic chemicals management law in the 1980's. New legislation is, in fact, now under development.⁴⁰⁹ The final framework of such legislation is yet to be settled. It is likely, however, that there will be a consolidation of federal air, water and contaminants programmes so as to address toxics in one law.⁴¹⁰ Some elements of the expected reforms, arising out of international efforts to achieve compatible national programmes, have been discussed above.⁴¹¹ Still others are hinted at in recent

⁴⁰⁶ Under §5, 15 USC §1604 of TSCA, after the 90-day pre-manufacture notification period, the manufacturer may proceed to produce or process the chemicals involved unless the U.S. EPA for "good cause" extends the 90-day review period for another 90 days; or the U.S. EPA issues an order at least 45 days before the review period expires to prohibit or limit the manufacture, processing, commercial distribution, use, or disposal of the chemical pending acquisition of additional data where the U.S. EPA determines that there is inadequate information to evaluate the health and environmental effects of the new chemical.

⁴⁰⁷ *Supra* note 386.

⁴⁰⁸ *Id.*

⁴⁰⁹ Recent comments of federal officials before a Special Parliamentary Committee on Regulatory Reform indicated that "there is underway the development of new environmental legislation. . . . The nature of the legislation—it deals with a number of environmental matters, but the most important, perhaps, is the management of industrial chemicals. . . . A great deal of the thrust of the legislation will be on obtaining information about said chemicals, in the initial phases; and ultimately, as required and where evidence demonstrates it is needed, some kind of government intervention in the marketplace related to said chemicals; some limitation or ban, product substitution, whatever it may be." *Supra* note 188, at 24, comments of Robinson. See also Hon. John Roberts, Minister of the Environment, "Notes for a speech in the House of Commons" (May 12, 1980, Ottawa); "Federal Policies For Toxic Contaminants Control," speech of G.M. Cornwall, Director General, Policy Planning and Assessment Directorate, EPS, Env. Cda. (June 1980, Ottawa). Both statements indicate that Environment Canada is developing a new federal environmental protection policy which will require new federal legislation to protect human health and the environment from toxic chemicals and the hazards they pose.

⁴¹⁰ *Supra* note 6, comments of Gerin.

⁴¹¹ Comments of Roberts regarding international testing guidelines for new chemicals; and note 93 and accompanying text, comments of Bryden regarding pre-market notification of new chemicals and related mechanisms. *Supra* note 95 and accompanying text.

PCB Board of Review recommendations.⁴¹² A number of possible amendments have also been raised by federal officials in earlier reports.⁴¹³

Integral to the development of the legislative proposals has been the federal enunciation of several broad principles. Few are currently enshrined in federal law. Nor is it entirely clear how many will become part of the eventual legislative package. The principles are important, however, to illustrate the direction in which federal thinking is heading. They include:

- a) The placing of responsibility on producers and users of toxic chemicals to ensure that human health and the environment are not damaged by such substances regardless of whether regulations are in place;
- b) The placing of responsibility on producers or importers, through tests performed at their expense, to demonstrate the safety of their product before commercial production;
- c) The establishment, where possible, of a "safe level" for a chemical, and the incorporation of this level in the regulations; where it is not possible, controls will be employed at the level of best practicable control technology, taking into account socio-economic concerns;
- d) The application by the importer or producer of federally approved systematic evaluations to new chemicals or new uses of existing chemicals;
- e) The providing of information on usage, release and effects of existing chemicals by manufacturers and users upon request of the federal government, with duplicative testing to be avoided or minimized;
- f) A reporting requirement to government of information regarding normal discharge or accidental release of toxic chemicals;
- g) The minimization by manufacturers, importers or handlers of products containing toxic chemicals of activities which damage environmental and public health;
- h) The making public of all toxic chemicals information except that which is of a confidential proprietary nature the disclosure of which would prejudice a legitimate commercial interest, though confidential information should be shared between governments where necessary;
- i) The encouraging of industry to seek alternative products and processes to those which result in toxic chemical releases;

⁴¹² The Board recommended, for example, statutory authority to control exports, to require labelling and to require the reporting of scheduled substance releases to the environment. Other recommendations for statutory improvement addressed protection of environmentally sensitive areas from toxic chemicals; control of products containing scheduled substances; control of inventory, ownership transfer and abandonment of equipment containing scheduled substances; mandatory reporting; inspection authority; penalties; and who may file notices of objection to compel hearings on proposed regulations. *Supra* notes 88 and 114.

⁴¹³ The 1976 PCB Task Force noted, for example, that the *Environmental Contaminants Act* did not permit the federal government to require labelling or control of exports. *Supra* note 63.

- j) Because of the nature of the problems posed by toxic chemicals, federal leadership is required in co-operation with the provinces in such areas as environmental measurement, cause-effect research, information exchange, federal and provincial control and regulation, as well as provincial implementation of selected federal controls; and
- k). The requiring of exporters of toxic chemicals to notify the recipient country and the federal government and to provide necessary information.⁴¹⁴

In 1980, Environment Canada established a Toxic Chemicals Management Centre to co-ordinate control programmes and strategies. This is expected to provide particular focus for federal initiatives.⁴¹⁵

The success of the Environment Canada actions is dependent upon the development of common objectives and policies with other key federal departments (for example, National Health and Welfare, Fisheries and Oceans and Agriculture); the encouragement of provincial control initiatives in their respective areas of jurisdiction, including co-operation on monitoring and surveillance activities and delegation of selected federal controls; the promotion of industry and general public involvement in regulation-development and related activities, including socio-economic assessments; and the continuation of international co-operation in such areas as testing protocols for new chemicals.⁴¹⁶

Provincial statutory or administrative practice initiatives will likely continue to address, in varying degrees, such topics as the development of a greater capacity to respond to emergencies, the need for better clean-up requirements and the authorization of victim compensation; the compilation of surveys and inventories of selected chemicals emitted or discharged by industry; the need to upgrade landfill requirements; the compilation of river basin surveys; the need for better storage, handling and transportation of chemicals; the need to give special attention to chemicals of national concern, such as PCBs; the need for greater specificity in permit or administrative orders relating to chemicals; and, with some exceptions, the need for discretionary public involvement in the areas of access to information, regulation-making, permit issuance and administrative hearings.

Some municipalities will seek both better mechanisms for obtaining information on chemicals within their borders, and greater authority to protect their populations from nuisances and potential health hazards.

V. RECOMMENDATIONS FOR ADDITIONAL REFORMS

In addition to the government initiatives underway or contemplated, a number of other actions appear warranted, given the dimensions of the toxic chemicals problem. These can be divided into two general categories: activ-

⁴¹⁴ Gerin, *Supra* notes 4 and 5.

⁴¹⁵ *Id.*

⁴¹⁶ *Id.*

ities that government should have authority to undertake or require, with respect to management or control of toxic chemicals, and; activities that the general public should be able to become involved in or initiate as a matter of law. The following recommendations may also apply to more than one government level.

First, consideration should be given to requiring registration, or at least pre-manufacture notice, before new industrial chemicals are introduced to Canada. In conjunction with this, development of a Canadian inventory of existing chemicals is necessary. There should be a statutory onus on industry to show that any new substance it wishes to introduce into the marketplace will not pose a significant danger to human health or the environment. Registration has long been required, for example, under federal pesticides law.⁴¹⁷ Under federal food and drug law, tolerances must be set and extensive data required before pesticides may be used in Canada that would leave a residue on foods.⁴¹⁸ A registration requirement would not appear onerous in the industrial chemical area because few new chemicals are produced in Canada each year.⁴¹⁹ While much larger numbers are imported for the first time each year, if international testing guidelines are in place, most of the needed data should already be available. If, for whatever reasons, registration is not regarded as an appropriate approach, pre-manufacture, as opposed to pre-market, notification should be required. The reasons for pre-manufacture notice have already been reviewed above.⁴²⁰ Either mechanism could serve to make new toxic chemicals legislation more preventive in nature; to reduce potentially large industry investment costs if a chemical's manufacture is unwise; and to facilitate early public involvement in the process.

Second, consideration should be given to requiring a more systematic programme for testing or screening existing chemicals of concern. The need as

⁴¹⁷ *Pest Control Products Act*, R.S.C. 1970, c. P-10, s. 4.

⁴¹⁸ *Food and Drug Act*, R.S.C. 1970, c. F-27 as am. The health protection branch of Health and Welfare Canada normally requires "extensive data" on at least the following matters before authorizing a pesticide residue limit in food: specifications for the chemical and its physical-chemical properties; evidence that the product is effective and practical; the amount to be applied, frequency and time of application; satisfactory methods of analysis for determining residues in foods; plant and animal metabolism studies; data on the quantities and chemical nature of residues remaining on foods at harvest, slaughter or point of sale, and; toxicity studies designed to evaluate the hazards of residues to experimental animals including acute, subacute and chronic studies as well as various types of special studies on reproduction, birth defects, neurotoxicity and related matters. These requirements are regarded as consistent with the notion that the applicant is responsible for proving the chemical nature, level and safety of any pesticide residues in food. Correspondence to C.E.L.A. from Dr. Ian C. Munro, Director General, Food Directorate, H.P.B., Health and Welfare Canada (Dec. 9, 1980, Ottawa).

⁴¹⁹ *Supra* note 6, comments of Robinson and Brydon. Federal reports have also noted the following: "Within Canada, only a small number of 'new' chemicals is developed each year. Much larger numbers are imported." They also note that "Particular consideration will have to be given to testing new chemicals developed in Canada for specialist use abroad and which, because of the small quantities entailed, might otherwise go untested." *Supra* note 4, at 7.

⁴²⁰ *Supra* notes 99 and 405 and accompanying text.

well as the possible mechanisms for accomplishing this while minimizing costs and duplication have been discussed above.⁴²¹ At the least, those chemicals which were developed and used primarily in Canada and which are of concern, should be addressed first. The development of a Centre of Toxicology (such as in Ontario), may prove helpful as the smaller businesses that have developed specialty chemicals may be able to have evaluations done at the Centre. Payments could then be made through cost-sharing arrangements with all other suppliers or users of the substance. This initial experience could serve as a basis for systematically refining and expanding existing chemical reviews and cost sharing as appropriate. While industry has been concerned about the cost of testing existing chemicals, in the past, particularly in the United States, industry cost projections have been substantially higher than those of government or independent evaluators.⁴²²

Third, consideration should be given to requiring manufacturers, processors and importers of chemicals to notify the government immediately if one of their substances may cause or contribute to a danger to human health

⁴²¹ *Supra* notes 17, 21, 22, 24, 78-83, 386 and accompanying text.

⁴²² During 1975 consideration of proposed toxic substances legislation in the U.S., for example, Dow Chemical Co., the Manufacturing Chemists Association (MCA) and U.S. EPA each conducted cost analyses which attempted to project the costs of screening, testing, delays, bans, restrictions and related actions on the chemical industry arising from such legislation. Dow estimated an overall annual cost to industry of \$2 billion, MCA projected a range from \$358 million—\$1.3 billion depending on the range of testing needed and U.S. EPA projected a range of \$78.5 million—\$141.5 million per year. Because of the discrepancies in these three sets of figures, the U.S. Senate requested the U.S. GAO to review the appraisal variations. The GAO, while indicating that any appraisal would be subject to uncertainty in this area, suggested a cost range of \$100 million—\$200 million per year. The U.S. GAO also noted that none of the studies had considered the health and environmental benefits of the Act. See Testimony and Report of Harry Havens, Director, Office of Program Analysis, U.S. GAO, *Hearings on S. 776 before the Subcommittee on the Environment of the Committee on Commerce*. 94th Cong., 1st Sess. (Oct. 24, 1975).

A subsequent GAO submission to the Senate affirmed GAO's earlier views. It noted that the main problem in estimating costs is to determine the extent of testing required per chemical and the number of chemicals to be tested. (MCA had estimated that thorough toxicity testing could total as much as \$800,000 per chemical while U.S. EPA projected a range of \$200,000-\$400,000.) GAO also substantially rejected the other industry cost estimates such as those regarding economic impact (e.g. prices and gross national product) and "maintenance of innovation" (what the MCA study called the cost required to maintain the same rate of successful product innovation as before the imposition of testing requirements and restrictions on production.) With regard to prices, the GAO concluded that "an accurate estimate of TSCA costs would yield estimates of price increases significantly lower than those of the MCA study." With regard to GNP, the GAO concluded that while TSCA "would have some effect upon GNP," the MCA report "greatly exaggerates that effect." With regard to the "maintenance of innovation" costs, GAO raised three basic objections. First, it concluded that firms would not necessarily behave in such a way as to incur these extra costs. Second, it concluded that even if they do incur these costs they should not be counted as costs of TSCA. Third, it concluded that even if "maintenance of innovation" costs were conceptually valid, the MCA study estimated them inaccurately. See United States General Accounting Office. Reporting Letter to the Hon. John V. Tunney, United States Senate from the Comptroller General of the United States. (Dec. 4, 1975, Washington, D.C.).

or the environment. A provision of this type has been discussed above as one that can contribute to government information-gathering and other regulatory activities.⁴²³ A similar provision has been proposed by the European Economic Community⁴²⁴ and is also contained in United States toxic substances law.⁴²⁵

Fourth, consideration should be given to the establishment of a chemical victims compensation fund to be financed substantially from taxes or fees from industry based on the risk level, quantities and opportunities for exposure associated with chemicals so listed in a government established register.⁴²⁶

Fifth, consideration should be given to requiring the release by government of health and safety studies and any information or tests on emissions or discharges in its possession regarding any chemical, upon request of any member of the public. Cost-sharing arrangements for tests on health and environmental effects should also be considered. Moreover, the chemical structure of all chemicals used in Canada should be public information. Current law is inadequate in these respects.⁴²⁷ The federal Access to Information Bill, as currently drafted, would not improve the situation.⁴²⁸

Sixth, consideration should be given to requiring that procedural mechanisms be set up permitting all interested, knowledgeable or concerned persons an opportunity to participate in government regulation-making activity.

Seventh, consideration should be given to requiring regulation-making and advisory committee activity to be initiated in response to citizen petitions. For example, a petition could seek initiation of regulation-making or advisory committee activity on a substance about which new data has come to light regarding health or environmental effects. In light of concerns that have been noted regarding the relatively few toxic chemicals which have been regulated to date,⁴²⁹ a provision of this type could provide a valuable supple-

⁴²³ *Supra* note 45 and accompanying text.

⁴²⁴ The EEC sixth amendment would require any manufacturer or importer who originally notified a member state of his intention to market a chemical substance, to inform the competent authority of new knowledge of the effects of the substance on humans and/or the environment. *Supra* note 391.

⁴²⁵ TSCA, §8(e), 15 U.S.C. §2607(e).

⁴²⁶ *Supra* notes 277, 279, 280 and accompanying text. A bill recently passed in the U.S. Congress requires chemical firms to finance 87.5 per cent of a "superfund" through a series of taxes on feedstocks, inorganic chemicals and oil. The U.S. government would finance the rest of the fund.

⁴²⁷ *Supra* notes 100-11, 139, 140, 193, 283, 285, 388-97 and accompanying text.

⁴²⁸ See *The Access to Information Act*, Bill C-43, 1980 (32nd Parl., 1st Sess). (First Reading, July 17, 1980), s. 20. This section [s. 20(1)] requires in part that government not disclose third party information (e.g. trade secrets, financial, commercial, scientific or technical information that is confidential and so treated by a third party). Section 20(2) requires in part that only the results of government product or environmental testing cannot be withheld. Section 20(2) (a) would allow such testing to be withheld if it "was done as a service and for a fee." Section 20(2) (b) would allow such testing to be withheld if the government "believes, on reasonable grounds, that the results are misleading."

⁴²⁹ See, for example, *supra* notes 64 and 70 and accompanying text.

ment to control of toxic chemicals. The notion of a citizen petition is not unheard of in Canadian law.⁴³⁰ Under the proposal here, however, there should also be a statutory requirement that the agency undertake the regulation-making or related activity or give reasons why such activity is not warranted, within a reasonable period of time. There should also be an appeal mechanism available to the citizen petitioner.

Eighth, consideration should be given to creating government and citizen causes of action for damages or injunction to protect human health or the environment from damage posed by a chemical or for non-compliance with environmental statutory requirements. Once either the government or a citizen has proved that a defendant was manufacturing or using a substance or discharging or emitting it into the air, water or land, and has shown that human health or the environment has been damaged or statutory requirements violated, the burden of proof should shift to the defendant to show that the harm did not result from his activities. Any citizen should have standing to sue without first having to demonstrate that he or she has a proprietary or pecuniary interest in the matter or has suffered some particularly direct damage over and above that incurred by the public at large.⁴³¹

Ninth, consideration should be given to requiring the funding of those individuals or groups otherwise unable to participate in regulation-making or administrative tribunal activity.

VII. CONCLUSIONS

It is trite to say that chemicals are of value to society. Some of them, however, present a continuing risk of damage to human health and the environment due to their properties and quantities, the nature of their uses, and

⁴³⁰ See, e.g., *Combines Investigation Act*, R.S.C. 1970, c. C-23, as am. Section 7(1) of the Act authorizes any six persons resident in Canada to apply to the Director of Investigation for an inquiry where they are of the opinion that a person has contravened or failed to comply with orders under the Act; grounds exist for the Restrictive Trade Practices Commission to issue an order under the Act; or an offence has been or is about to be committed. Section 7(2) outlines the material the six persons must submit with their application. Section 8(a) requires the Director to cause an inquiry to be made upon the filing of the s. 7(1) application. The Act is silent, however, on any further duties the Director may have pursuant to this application or any appeals available to the six persons if the Director makes an adverse finding, or no finding at all. Nor does the Act require the Director to even prepare a report based on his inquiry or to send a copy of it to the six persons; or to do any of the above in a stipulated period of time.

⁴³¹ The B.C. Law Reform Commission rejected the three principal reasons that have evolved in restricting an individual's standing to sue: the fear of multiple litigation or of opening the floodgates to litigation; the needs of the adversarial system, and; the need to eliminate "busybodies". The Commission characterized the first concern as "exaggerated"; the second as unconvincing; and the third and generally all three as capable of being adequately dealt with by the inherent authority of the courts to control their own process. *Supra* note 320.

Though beyond the general scope of this paper, other reforms should also address such matters as limitation periods, costs, principles of fault, class actions and limited damages (for example, "pure economic loss" not being compensable in negligence).

the levels of exposure to them. Moreover, little is known about either many chemicals already on the market, or new ones introduced each year, because frequently they have not been tested for their human or environmental effects. Recent incidents in Canada have demonstrated the resulting problems.

As a result of increasing public concern, governments at all levels have responded with a variety of legislative and administrative actions, which have proven complementary as well as contradictory in some instances. Governments have sought to improve controls on the importation, manufacture, processing, use, storage, handling, transportation, emission, discharge, and disposal of toxic chemicals through both statutory and non-statutory mechanisms. The effectiveness of controls introduced on particular substances has been influenced by perceived and actual limitations in constitutional authority, the level of scientific and technical knowledge available and competing socio-economic concerns. International attempts to achieve harmony in the requirements of national control law, such as the testing of new chemicals or the protection of major natural resources from toxic chemicals, are also in their early stages.

The focus of much of this attention, the chemical industry, has raised numerous concerns about the prospective impacts on business of this regulatory activity. These include concerns regarding the confidentiality of information; testing; trade barriers resulting from differing government control approaches at the international and domestic levels and related matters. Environmental groups have expressed concerns about inadequate preventive mechanisms (for example, the lack of pre-manufacture notice or control) and enforcement; the lack of access to information and regulation-making involvement; and the absence or only limited availability of victim compensation through statutory provisions or common law remedies.

This review suggests that, given the nature of the dilemma posed by toxic chemicals to the health and environment of the Canadian public, improvements in both the comprehensiveness of government controls and the role of the public are required.

