HAZARDOUS WASTE MANAGEMENT
IN CANADA:
THE LEGAL AND REGULATORY RESPONSE*

by

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quantities of such wastes requiring treatment and disposal; and foster greater accountability in, and public support for, governmental decision-making activity in this area. Constitutional implications of these proposals are briefly surveyed. The paper concludes with a brief final assessment of the existing and prospective situation in Canada.

Because of the relatively recent attention that has been paid by governments to hazardous wastes disposal law, this paper will not review legislation addressing such matters as food additives, pesticides, radioactive substances, occupational health or consumer product safety though substances regulated under these laws can become hazardous wastes if they are disposed of improperly. These areas have generally evolved a separate body of law and policy beyond the scope of this paper.[6] Control of toxic chemicals, which is, in part, the front end of the hazardous waste problem, has been examined elsewhere and will not therefore generally be reviewed here.[7]

II. THE DIMENSIONS OF THE HAZARDOUS WASTE PROBLEM IN CANADA

The rapid growth of the chemical industry since the end of World War II, both world-wide,[8] and in Canada,[9] has spurred the development of problems in disposing of wastes with toxic properties.[10] Recent federal estimates of the magnitude of the hazardous waste problem in Canada conclude that of the approximately one million tonnes generated nationally every year,[11] about eighty-five per cent are improperly dealt with.[12] Early federal evaluations of the causes of the dilemma focussed on the lack of awareness by the public, industry and the regulatory agencies of the nature and extent of the problem, lack of agency resources and policies to address the issue and economic factors.[13] Given the increasing hazardous waste quantities being generated,[14] the problem has manifested itself, according to the Economic Council of Canada, in dubious and illegal dumping practices because of a lack of adequate treatment and disposal facilities.[15] Regardless of region, the Maritimes,[16] the West[17] and central Canada[18] are all experiencing difficulties in the proper management of such wastes. National estimates of the total number of old or abandoned dump sites which may have potential for toxic chemical waste problems are incomplete. By mid-1981, apart from Ontario, which had undertaken its own studies, most of the provinces, in conjunction with Environment Canada, were just initiating the appropriate first-phase identification of such sites.[19] As of mid-1982 several provinces, arguably as a matter of policy, still had not commenced such first-phase investigations.[19a]

The diversity of materials that constitute hazardous wastes include: industry process wastes or by-products (e.g. cyanides); distressed products which become wastes because of federal government regulatory restrictions (e.g. DDT, PCBs); sludges arising from air emission or water effluent controls; and wastes from governmental or institutional activities.[20] The pathways or sources of possible contamination suggest the insidious and largely hidden threats that mismanagement of such wastes presents to health and the environment. Deposition of hazardous wastes on land or to other media may damage drinking water supplies by polluting ground water and surface water; pose public health risks such as cancer and mutations through direct physical contact with, or accumulation in, the body or food chain; interfere with wildlife reproduction; and cause damage through air or odour pollution, fire and explosions.[21]

Recent incidents across Canada illustrate the results of the mismanagement of hazardous wastes. In 1973, eighty 45-gallon drums of waste liquid PCBs were buried at a municipal dump site in Amherst, Nova Scotia. In 1978, the drums were removed when monitoring wells on the site indicated an increase in PCB levels in groundwater. In addition to the drums of liquid, several thousand electrical capacitors containing PCBs were also buried at the site. The capacitors have not been removed. An Environment Canada study has shown the presence of PCBs in the sediment of the stream which leads from the dump to the Nappan River.[22] PCBs have been linked to cancer, chloracne, still-births and deformities in infants.[23]

Spills and leakages of PCBs have occurred at the Federal Pioneer Ltd. industrial site in Regina, Saskatchewan. Seriously contaminated soil, arising from a 1976 spill, now threatens the city of Regina's water supply. The National Research Council has recommended that up to 20,000 cubic metres of the soil be immediately excavated. At least a $1 million clean-up cost is estimated.[24]

A 1979 clean-up program conducted in southern Alberta by the Pesticide Chemicals Branch, Alberta Environment Department, recovered nearly one thousand pesticide containers from eighteen landfills or dumps south of Lethbridge, Alberta. Six of the sites were classified as "having a high risk of pesticide residue getting into a water body or system," and an additional four sites were classified as being "environmental hazards." Treated seed grain was also observed, uncovered, at several of the sites and was believed to have been coated with hexachlorobenzene (HCB); a chemical which is poisonous if ingested.[25]

In 1977, the Ontario Ministry of the Environment initiated efforts to issue a control order against the present owners of a shut down mining and smelting site near Belleville, Ontario after it was discovered that leachate containing arsenic from the site was draining into the nearby Moira River system in steadily increasing quantities.[26] In 1979, substantial arsenic contamination of the river system was still feared.[27]

Tri-Chem Refineries Ltd. of Delta, British Columbia closed its facility in 1978 and declared bankruptcy after the local municipality obtained an injunction preventing the company from continuing its operations. Between 100,000 to 150,000 gallons of solvents and chemicals were left on the site for more than a year before government agencies were able to arrange for proper disposal of the materials at public expense.[28]

In 1982, ground water beneath several square miles of Quebec farmland is contaminated and several thousand domestic water wells are closed because of toxic chemicals, oils, grease and phenols leaking from a local waste disposal lagoon southwest of Montreal. Millions of dollars could be necessary to clean up the water table in the area. In the interim, the Quebec Environment Department has had to build a pipeline to supply area residents with drinking water. Between 1968 and 1972, at least ten million gallons of liquid organic wastes were dumped at the site.[29]

The low cost of improper disposal has been its principal attraction.[30] Environmentally safe disposal is considerably more expensive.[31] Predictions for future clean-up costs in Canada if preventive action is not taken immediately[32] suggest the need for government controls that will eliminate the incentives to environmentally unsound management of hazardous wastes. The governmental response to date is evaluated below in light of this objective. A brief examination of the common law and early legislative activity is first undertaken.

III. INADEQUACIES OF THE COMMON LAW AND EARLY LEGISLATIVE ACTIVITY

Before legislatures began to address even the early manifestations of environmental pollution in the late 19th and early 20th centuries, common law remedies existed[33] which can today have application to the problems posed by hazardous wastes. However, for reasons summarized below, traditional tort law presents serious limitations to public and individual claims for recovery from hazardous waste related damage. Similarly, early legislative approaches to the problem of pollution centred on public health safety from untreated sewage and control of nuisances associated with garbage disposal.[34] Given the dramatically different situation arising from the post-World War II rise of the chemical industry and its resulting wastes, the focus of these early legislative initiatives proved inadequate to the task.

A. Tort Law Limitations

Several tort law remedies are theoretically available for damage to health and property caused by hazardous wastes. These include nuisance (both public and private), negligence, trespass, riparian rights and strict liability. While either damages or an injunction may be obtained, a combination of factors may restrict the availability of these remedies. These obstacles include procedural barriers as to who may sue for certain damage; problems in establishing cause and effect; defences to liability; and prohibitive expense.

Public nuisance is an interference with the right, convenience or welfare of the community at large.[35] Because the effects of a public nuisance may be felt over a widespread area, the theory has obvious attractiveness for remedying problems such as surface and groundwater contamination from hazardous wastes. However, public nuisance does not aid individuals who do not have proprietary interests in the land or area affected.[36] Moreover, because such damage is by definition capable of adversely affecting many people, the common law precludes any person from suing in public nuisance unless the injury or damage he has suffered is greater in degree than and different in kind from that of any other member of the public. Unless an individual can prove that he has been specially damaged, only the provincial Attorney-General may commence an action for public nuisance, or authorize a relator to do so.[37]

Private nuisance is the unreasonable interference with the owner or occupier's use or enjoyment of property.[38] In determining whether a nuisance of this type exists, one must not only ask whether the occupier has made a reasonable use of his own property but whether his conduct is reasonable in light of the fact he has a neighbour. The taking of all reasonable care is not a defence to an action for nuisance.[39] If an activity creates a nuisance, then even if it is done with reasonable care and skill, "it cannot lawfully be undertaken."[40] Thus, illegal dumping of hazardous wastes would appear to be amenable to a private nuisance action because of the low social value of such a practice. However, if there is statutory authorization for the activity then a defendant may be able to escape liability[41] if he is operating according to the terms of his approval.

Moreover, because of short limitations periods and difficulties in identifying or collecting from the person responsible for the damage, a private nuisance action may be moot if the dump site has long been inactive or abandoned and the owner unknown. Another potential defence to a private nuisance action is prescription (acquisition of a right to pollute because defendant has openly caused the nuisance to his neighbour's lands without cessation for at least twenty years).[42]

Negligence is conduct which falls below the standard accepted in the community,[43] and may also be applicable to those who engage in activities involving, for example, disposal of hazardous wastes. To succeed in an action for negligence requires proof by the plaintiff that the defendant owed him a duty of care in the circumstances, that the defendant's conduct falls below the standard required of a reasonable person engaged in the particular activity and that damage resulted. To be liable in negligence the defendant must also be able to foresee that harm may result from the activity.[44] Where an activity is unusually dangerous, a greater degree of care, commensurate with the greater risk, may be necessary to avoid liabiility in negligence.[45] Given the nature of hazardous wastes and their potential for causing harm, persons engaging in their handling would appear to be required to adhere to a higher standard of care.

However, despite the stringent standard persons engaged in hazardous waste activities could be required to meet, there are important obstacles to the use of negligence theory as a basis for recovery in this area. Key plaintiff burdens of proof include identifying the responsible party, proving causation and establishing foreseeability of the type of damage sustained.[46] These requirements may prove particularly difficult to meet with respect to abandoned hazardous waste sites, for example, because there may be long latency periods from the time of deposit of the wastes, exposure to an individual and emergence of damage. Over time exposures to more than one chemical waste from more than one generating source and pathway may occur, compounding the difficulty in determining who and what caused the problem. Moreover, lack of scientific knowledge linking cause and effect of environmental health damage from hazardous wastes may further weaken a plaintiff's chances of success.[47] Short statute of limitation periods for negligence actions as well as for other tort actions provide a further obstacle to be overcome.[48]

Trespass theory protects rights of property by providing for relief from intentional and direct interferences or invasions of land.[49] Under this theory, liability may result regardless of fault,[50] or damage.[51] Despite this theory's narrow application, it is arguable, for example, that a landowner whose groundwater had been rendered unfit for his use by subsurface migration of hazardous wastes, could sue in trespass, unless the courts characterized such invasion as indirect only.

Pollution of water from hazardous waste dumping may also be attacked under riparian rights theory. This refers to the rights to the use and enjoyment of water arising from possession of land bordering the water.[52] Both damages or an injunction may be available. Factual damage to the riparian's interest does not need to be shown; just a deterioration in the quality of water flowing past his land.[53] Problems of proving defendant identity, causation and the defence of statutory authority also arise in the riparian context.

Strict liability may also be applicable to hazardous waste disposal activities. This theory of liability arises from the act of a person bringing onto his land something which is not naturally there (typically, though not necessarily, something inherently dangerous) which is likely to cause harm if it escapes. If it does escape, the person may be required to compensate another for injury or damages even though the loss was neither intentionally nor negligently inflicted.[54] Thus, strict liability has been said to help achieve market deterrence by forcing "enterprisers" of "abnormally hazardous activities . . . to pay all the costs of the accidents generated by their activities,"[55] rather than inflicting such costs on the rest of society. However, strict liability only has a curative impact on those with sufficient assets to meet liability awards (e.g. major generators) but little or no impact on those who would otherwise be unable to meet such claims or who may have already gone out of business (e.g. transporters and disposers). In heavy industrial areas, moreover, it is possible that a hazardous waste activity would not be considered a non-natural or special, exceptional or unusual use of land.[56] The result could be no victim compensation for injury under this theory in such areas. Acts of God, deliberate acts of third persons and statutory authority are among the defences also available to defeat a strict liability claim.[57]

Overall, while tort theories of recovery have potential application to the modern problems posed by hazardous wastes there are substantial barriers extant to their systematic use in this area. It is not surprising that statutory schemes began to emerge to address early manifestations of the problem and continue to evolve as the complexity of the issue unfolds. However, because such regulatory schemes frequently do not provide remedies for third party damage, reform of tort law to meet such gaps appears necessary. Possible reforms are briefly surveyed below.[58]

B. Focus of Early Legislative Efforts

The problems posed by hazardous wastes are largely post-World War II phenomena. Early turn of the century statutory initiatives were therefore directed to nascent, more limited, areas of environmental concern. At the federal level, protection of fish was a principal area of interest;[59] at the provincial and local levels adequate sewage treatment, sanitation and nuisance control were predominant concerns which manifested themselves in early legislative responses.[60]

Indeed, despite the rise in the 1950s of more sophisticated administrative arrangements for water pollution control in some provinces,[61] the area of waste disposal remained one that was largely influenced by the early, turn of the century approaches. As late as 1980 in Alberta, for example, sanitary landfills, usually the final repository for hazardous wastes, were still being regulated under provincial public health legislation. Not surprisingly, a provincial body investigating hazardous waste management in Alberta concluded that administration of the Act "does not adequately control hazardous waste deposition in landfills."[62] Problems of enforcement manifested themselves in the Edmonton area, for example, where toxic wastes were going to landfills not permitted to accept them.[63] Even where statutes developed in the 1960s and early 1970s were meant, as in Ontario, to systematically address waste disposal problems, they were frequently silent on hazardous wastes.[64]

Because of these limitations, federal and provincial initiatives and now being undertaken, the adequacy of which is evaluated below.

IV. EXISTING REGULATORY INSTRUMENTS TO ADDRESS THE PROBLEM

Existing laws, policies and programs at all levels of government offer a patchwork of approaches to the difficult issues presented by hazardous wastes. While progress has been made in improving the governmental ability to define and respond to the magnitude of the problem, serious gaps remain both in legislative and policy development. Senior governments and industry have blamed the public, and sometimes local governments, for opposing the establishment of new hazardous waste facilities. In turn, the public has voiced concerns about the past disposal practices of industry, the adequacy of new technical proposals and the effectiveness of existing and prospective law to protect health and the environment. The overall picture that emerges is one of a major national problem for which the regulatory and legal system is still evolving its response.

A. The Federal Government Role

1. Overview

Federal environmental legislation enacted or amended in the early 1970's was primarily directed to controlling air and water pollution. The emphasis was on limiting the emission or discharge of certain industrial contaminants.[65] However, this legislation did not require the testing of new or existing chemicals to determine their effects on environment or human health; foster re-use, recovery or reduction of industrial or hazardous wastes; or seek solutions to problems posed by the disposal on land of such wastes. Moreover, the methods of treatment for control of air and water pollution from such contaminants, could result in the creation of more such wastes requiring disposal on land.[66]

Parliament did not deal with the issue of industrial toxic chemicals until the mid-1970's when it passed the Environmental Contaminants Act.[67] The Act authorizes the Ministers of Environment and National Health and Welfare to publish notices in order to gather information about certain chemicals from industry;[68] to require testing;[69] and requires the mandatory reporting to government by any person within three months of the first time manufacture or import of a chemical compound in excess of 500 kilograms.[70] Although the Environmental Contaminants Act mainly addresses the import, manufacture and use of toxic chemicals, no federal law addresses the disposal or management of toxic or hazardous wastes.[71] This is the case notwithstanding that the federal government regards toxic and hazardous wastes as ranking as one of the "highest priority environmental concerns in all regions of the country."[72]

The role Environment Canada, the nation's federal environmental agency, has carved out for itself in the hazardous wastes area, is principally an advisory, not a regulatory one.[73] This is due in part to perceived or actual constitutional constraints discussed below. However, because departmental activities are not mandatory, international agencies have suggested that these initiatives are vulnerable to changing priorities and funding availability.[74] Given the important emphasis by the federal government on this type of approach, review of federal efforts with respect to regulating hazardous wastes will fall, therefore, into two main categories: non-regulatory programs; and the regulatory program evolving under the Transportation of Dangerous Goods Act.

2. Non-Regulatory Programs

a. Hazardous Waste Definition

An early focus of federal efforts was to define hazardous wastes, long considered a primary difficulty requiring resolution.[75] The concerns in the late 1970's of the Canadian Council of Resource and Environment Ministers on the emerging hazardous waste problem in Canada resulted in Environment Canada's coordinating the establishment of a Task Force on Hazardous Waste Definition with federal, provincial and industrial representation to accomplish this end.[76] The purpose of the Task Force was "to recommend a definition of hazardous waste that would assist in the identification and regulation of such wastes."[77]

Reporting in 1980, the Task Force, and the federal government generally, defined "hazardous wastes" as those discarded materials or substances in solid, semi-solid, liquid or gaseous form which, due to their nature and quantity, require specialized waste management techniques for handling, transport, storage, treatment and disposal because they may cause or contribute to adverse, acute or chronic effects on human health or the environment when not properly controlled. Such wastes may contain toxic chemicals, pesticides, acids, caustics, solvents, infectious, radioactive, ignitable or explosive substances or other materials in sufficient amount to cause death, cancer, birth defects, mutations, disease or infertility upon exposure.[78]

The federal government has stressed the importance of a uniform definition of "hazardous wastes." For example, in 1981, Environment Canada stated its reasons for supporting a uniform definition of such wastes:

> "This is a definition that can stand up in a court of law so that legislation and regulations governing transboundary shipments of waste can be based on it. It will have to be acceptable to all provinces, otherwise uniform national standards for transboundary movement cannot be established and applied."[79]

While a definition of hazardous waste was proposed by Environment Canada for incorporation into Transportation of Dangerous Goods Act regulations,[80] neither the Act[81] nor recently published draft regulations,[82] contain such a definition. It is difficult to see how Environment Canada's stated purposes for developing a uniform definition of hazardous wastes for transboundary shipment control can be achieved, unless this omission is rectified. Commentators generally have characterized the importance of definitions as helping to define the jurisdictional scope within which a regulator's actions are authorized by law.[83] In interpreting the Act or regulations, it is arguable that the courts will not take cognizance of a definition that is outside the statute. Whether this could generally undermine the Act's application or effectiveness with respect to hazardous wastes, remains to be seen.

If the federal intention in developing a definition was to ensure that all the provinces would develop their own uniform definitions, this has not occurred to date, judging from a review of existing or prospective provincial legislation and regulations.[84] Moreover, if a key concern is with transboundary shipments, then it is preferable to include the definition of hazardous wastes in the federal statute where control of such transboundary matters can be authorized.

Certainly, it is true that the statutory and regulatory efforts in the U.S. and the U.K. to define hazardous wastes have not been without their problems.[106, 107] Nonetheless, it is clear that such a process is a key component of any hazardous waste management scheme, since whether a waste is deemed "hazardous" will determine whether a particular jurisdiction's full regulatory apparatus should be applied.[108]

In Canada, discrepancies in the way agencies at the federal and provincial levels are characterizing such wastes are already arising.[109] Incorporation of a definition of hazardous wastes into federal law would therefore appear to be of key importance to the achievement of consistent management of such wastes, protection of the public and the strengthening of the regulators' jurisdiction to act.

b. National Inventory of Hazardous Waste Quantities

The federal government has undertaken several inventories of the quantities of hazardous wastes being generated nationally.[110] The work done on waste definition is closely linked to the waste quantities initiatives. Federal officials note that the early inventories depended upon various individuals' opinions as to what should be defined as a hazardous waste.[111] As a result there are inconsistencies in the earlier findings when compared with more recent efforts.[112]

The latest inventory has recently been completed and identifies the major industrial generators of hazardous wastes together with types and volumes of wastes produced on a geographical basis across the country.[113] This type of information is necessary to help estimate the national and regional demand for various treatment, storage and disposal facilities.[114]

c. Abandoned Sites Inventory

According to Environment Canada officials, the federal hazardous waste program is aimed at preventing the occurrence in Canada of "Love Canal" type incidents which are the result of inadequate or improper treatment and disposal of hazardous wastes.[115] As part of this program, Environment Canada has initiated, in collaboration with a number of provinces, a joint national survey of abandoned sites with potential for toxic chemical problems.[116] There are three phases to the investigations: (1) identification and verification of site location together with information on the nature and quantity of wastes deposited; (2) preliminary assessment of high priority sites; and (3) detailed assessments of high priority sites and identification of remedial action where necessary.[117]

The joint first phase study on the situation in New Brunswick constitutes an example of a report completed under this program to date.[118] Ontario completed the equivalent of phase one on its own,[119] while Quebec has carried out investigations on a limited number of sites.[120] Joint studies with other provinces are completed or underway, except in British Columbia, Nova Scotia and Newfoundland.[121] These latter provinces have not wished to participate in the study to date.[122] Some members of Parliament and provincial legislatures have raised concerns about the delay in start-up of the federal-provincial search for old dump sites and the failure of some provinces to participate in the program.[123]

d. <u>New Facility Establishment</u>

Currently, adequate hazardous waste disposal facilities in Canada are very limited in number and capability. Because of this, most of these wastes are either stored, co-disposed with municipal wastes in landfills, shipped to the U.S. for disposal, or disposed of in an environmentally unsound manner.[124] As noted above, information being developed regarding the types and quantities of hazardous wastes produced geographically across the country is necessary in order to determine where new treatment, storage and disposal facilities should be located.

The federal government has been promoting the concept of a regional network of such facilities. It argues that economies of scale can be achieved, regional needs can better be met and such large facilities can be safer, more efficient and more secure than many smaller facilities scattered across the country.[125] As an example of this approach, a recent federally sponsored feasibility study for northern and western Canada recommended establishment of a single regional incineration plant in Alberta combined with physical-chemical treatment plants in all western provinces and a network of collection stations across the region. Although the report did not identify specific sites for any of the treatment plants, it listed candidate areas that it believed suitable on environmental, social and geological grounds. The incineration plant would destroy organic wastes such as PCBs and oily sludges, and the physical-chemical treatment plants would handle inorganic wastes such as plating solutions containing heavy metals. The capital and annual operating costs for the system are estimated to be approximately $71 million and $22 million respectively. The average unit treatment cost is estimated at $120 per tonne.[126]

In conjunction with these studies Environment Canada is developing guidelines and codes of good practice for treatment, storage and disposal facilities.[127] These are meant to encourage provincial agencies to adopt uniform standards.[128] Indeed, uniform standards in this area are seen by the federal government as desirable[129] and of help in reassuring sceptical local communities about the acceptability of a hazardous waste facility.[130]

However, treatment, storage and disposal guidelines and codes of practice for hazardous wastes will not be enacted as regulations under federal statute law. Waste management is seen as solely within provincial jurisdiction. Environment Canada policy is that:

> ". . . the management of wastes within the provinces remains within provincial jurisdiction. The provinces are responsible for the siting, design, approval, licensing, monitoring and surveillance of hazardous waste facilities and their operations. . . ."[131]

Whether federal guidelines will in fact be adopted under provincial regulations and provide a basic level of hazardous waste management anywhere in the country, remains to be seen. This advisory approach is potentially one of the key limitations in the federal effort in this area.

Environment Canada argues that the technology for developing the hazardous waste facilities it believes are necessary is in fact proven and has been used in Europe and elsewhere.[132] It cites public opposition as the main stumbling block to establishment of such facilities at any particular location. The Department argues that greater public education on the acceptability of sites is needed.[133] This has also been industry's viewpoint at the national level.[134] Environmental groups have disputed this government-industry assessment of the situation. They suggest that the establishment of such large regional treatment-disposal facilities, while important, will in the absence of a vigorous policy initiative on waste reduction and recovery, fuel the increasing production of hazardous wastes because the incentives to reduce such waste generation will be removed. Moreover, they argue that government and industry have a legacy of public mistrust to overcome because of their past performance and practices.[135] To a much greater extent this debate has gone on at the provincial level and is, therefore, taken up below.

e. Control of Hazardous Wastes at Federal Facilities

There are three components to the federal effort of control hazardous wastes arising from federal activities. First, there is the environmental assessment and review process (EARP) for establishment of new federal project facilities. Second, there is the development of guidelines and codes of good practice for use at new or existing federal facilities. Third, there is the investigation of closed or abandoned federal sites that may contain hazardous wastes. These are, of course, all non-regulatory programs.

Generally, it is Environment Canada policy to promote and coordinate the development and implementation of environmentally sound prevention and control programs for the management of wastes generated by federal activities including guidance in the preparation of environmental evaluations and assessments as required by EARP.[136] The EARP developed out of a 1972 federal cabinet directive to control pollution from existing federal facilities and to prevent pollution from proposed federal works.[137] It is intended to apply to projects that are initiated by federal departments; for which federal funds are to be made available; and where federal property or Crown lands will be used. Federal proprietary Crown corporations (i.e. those in competition with private enterprise) and regulatory agencies (e.g. National Energy Board) are invited, though not required, to participate. Under the process, the proponent department undertakes an initial environmental evaluation of the project and then determines if a full environmental assessment document and public hearing will be necessary.[138] No public hearings under EARP have been held for establishment of federal facilities such as waste disposal sites since the program's inception in 1974.[139]

Pursuant to the 1972 federal cabinet directive, Environment Canada also developed guidelines to assist federal departments and agencies in evolving waste management programs, plans and specifications for the construction and operation of federal facilities.[140] The guidelines state that the objectives of hazardous and toxic waste management systems are: the reduction of detrimental ecological effects due to the disposal of hazardous and toxic wastes generated within federal facilities; the reduction of waste generation within federal facilities; the attainment of maximum safety, efficienty and economy in the handling and disposal of wastes within federal facilities; the recovery of reusable materials from wastes generated within federal facilities; and the establishment and maintenance of a working relationship between each federal facility and a public or private waste disposal agency.[141] The guidelines also state that: "All hazardous and toxic wastes generated at federal facilities should be handled in compliance with this code and with applicable municipal, provincial and federal regulations or requirements."[142] Apart from prospective federal transportation regulations under the TDGA, however, there are no federal regulations that apply to toxic or hazardous wastes. The guidelines further address such matters as waste classification, handling, storage, transportation, disposal, design, location and construction of waste facilities.[143]

The third component of the federal effort to ensure that federal activities do not cause hazardous waste problems is the survey of abandoned federal sites.[144] The federal government estimates that there are at least 170 abandoned federal waste disposal sites in Ontario.[145] A study has commenced in Ontario which has similar objectives and phases to the joint abandoned sites inventory discussed above.[146] The study is particularly looking at "all significant disposal sites" created by eight federal agencies over the "last 40 years,"[147] and is to determine if there is an existing or imminent hazard to either public health or to the environment emanating from them.[148] Some members of Parliament have raised concerns about the whereabouts of these sites and what they might contain,[149] and have urged the federal government to take immediate steps to clean the sites up.[150]

f. Recycling of Hazardous Wastes

The federal government has long advocated that waste reduction and recovery should be an integral component of hazardous waste management in Canada.[151] Current Environment Canada policy is that re-use and recycling of waste materials should be encouraged as one of the desirable elements of a comprehensive approach to the problem.[152] This general view is supported by international organizations including the IJC,[153] the European Community,[154] WHO-UNEP[155] and NATO.[156] Governmental agencies in the U.S.[157] and Parliamentary committees in the U.K.[158] have also shared this perception as a basis for reducing the quantities of such wastes requiring treatment and disposal.

The non-regulatory programs that the federal government has either sponsored or administered as economic incentives to reduction, recovery and re-use of toxic and hazardous wastes include the Canadian Waste Materials Exchange; the Development and Demonstration of Resource and Energy Conservation Technology Program (DRECT); and the Industry Energy Research and Development Program (IERD).[159]

The latter two programs have been directed primarily toward encouraging development of energy conservation technology.[160] More recently, actions have been initiated to advertise the applicability of the programs to hazardous waste as well.[161] Efforts in this regard are in their early stages.

The Canadian Waste Materials Exchange, operated for Environment Canada by the Ontario Research Foundation, attempts to find new uses for industrial waste materials based on the concept that "one man's garbage is another man's gold." The Exchange acts as a clearinghouse of information that brings together waste owners and prospective buyers or users of such by-products.[162] In its four years of operation to June 1982 the Exchange recorded 241 successful waste transfers, totalling 190,000 tons of waste, whose replacement value was estimated at $5.3 million.[163] However, the program is seen by its operators as only a modest contributor to alleviating the need for waste disposal.[164] Indeed, it was estimated that only 0.2 per cent of the liquid industrial wastes generated in Ontario between 1979 and 1980 were recycled through use of the Exchange program.[165] Environmental groups argue that from the standpoint of the total quantity of wastes exchanged, the program's performance is "disappointing."[166] They note that only twelve per cent of businesses contacted joined the Exchange, and they contend that industry should be required by statute to become members as a condition precedent to establishing or continuing to operate in Canada.[167] This approach has been used in Germany.[168]

While arguing that safe disposal is of critical importance, the chemical industry suggests that "much industrial waste is economically recycled."[169] It seems clear, however, that disposal is the predominant method used today for dealing with such materials in Canada.[170] Generally, it would appear, therefore, that waste reduction and recovery activities have had a marginal impact on alleviating the hazardous waste problem to date. Environmental groups suggest that the reasons for this include: the lack of nation-wide disposal regulations; the cheaper cost of disposal than recovery; inadequate economic incentives from government; business concerns about capital cost outlays; business unfamiliarity with resource recovery or skepticism about using "leading edge technology"; and business unfamiliarity with the wastes it produces through failure to employ a materials balance for measuring inputs, product and waste outputs.[171] Similarly in the U.S., state and industry officials note that waste reduction, separation and recovery techniques have not gained general acceptance or wide use because they are more expensive than land disposal.[172]

The failure of recycling techniques to become more widespread in use is of particular concern because even with improvements in land disposal technologies, serious problems may remain regarding the long-term environmental safety of modern landfill facilities.[173]

Various regulatory strategies for increasing the use of reduction, recovery and recycling options have been proposed in order to reduce the quantity of wastes being generated that require disposal. First, nationwide waste disposal regulations under federal law have been supported by environmental groups. They argue that in the absence of minimum standards for upgrading disposal, it will remain inexpensive and therefore more attractive than recycling techniques as well as pose potential hazards.[174] Second, statutorily mandated waste reduction or recycling has been recommended by international agencies,[175] government consultants,[176] and environmental groups.[177]

Environmental groups in Canada point to the state of California as an example of a jurisdiction which has taken statutory initiatives with respect to hazardous waste recycling.[178] State law requires the listing of hazardous wastes that the government has found are economically and technologically feasible to recycle. Whenever any waste on the list is disposed of by any person, there is an onus placed on the producer or disposer of the waste to justify in writing why the waste was not recycled.[179] California now plans to establish higher landfill fees for highly toxic, persistent or mobile wastes and for wastes that can be recycled.[180] Elements of this program should be considered at the national level in Canada. The manifest system being developed under the TDGA could, for example, be designed to track and identify recyclable waste streams.[181]

g. Public Consultation and Socio-Economic Impact Analysis Programs for New Regulations

Two inter-related federal programs, which may have application to the hazardous waste problem, deserve brief mention. Both programs relate to the regulation-making process, though they are not themselves specifically mandated by statute.

The first initiative is the Environment Canada public consultation program.[182] This policy effort is, in part, designed to allow public comment on significant new regulations proposed by the department "at all stages of their development."[183] Traditionally, the regulation-development process under statutes administered by Environment Canada has facilitated industry, but not general public, consultation.[184] This has been the case at the federal level, generally.[185] The purpose of the new policy is to open Environment Canada's regulation-making process to public scrutiny; provide the public with an early opportunity to contribute to the department's regulation-making according to an explicit procedure; provide a fair opportunity for all public views to be presented; and be compatible with the Socio-Economic Impact Analysis program discussed below.[186] Under the public consultation program, Environment Canada must state reasons why a regulation is being considered; the alternative regulatory options; and the rationale for the selection of a particular option.[187]

This recent policy effort, while of value, is deficient in several key respects. In the hazardous waste area, Environment Canada's role is largely advisory, not regulatory. Thus, to the extent that hazardous waste regulation-making is being undertaken at the federal level, it is being done under legislation administered by other federal departments. The policy, however, does not apply to the regulation-making activity of other federal departments and agencies. Regulations proposed by Transport Canada under the Transportation of Dangerous Goods Act, which are meant to establish a national hazardous waste manifest system, have not gone through the process of public scrutiny at all stages of their development, contemplated by the Environment Canada public consultation policy.

The proposed TDGA regulations, as a result of statutory requirements, have been officially published in draft form for comment.[188] But a comment period for such extensive regulations[189] may not be an adequate substitute for prior consultation. Industry itself has frequently complained about limited comment periods being no substitute for earlier consultation.[190] Arguably, since other government departments, such as Transport Canada, administer statutes that will contain regulations that address important environmental concerns like hazardous wastes, inconsistent or conflicting treatment of how the public may become involved in the regulation-making process can only lead to confusion and misunderstanding regarding the federal role in this area.

The second initiative of interest is the Socio-Economic Impact Analysis (SEIA) directive, which came into effect in 1978. The purposes of the SEIA program include: promoting a more thorough and systematic analysis of the socio-economic impact of major proposed federal regulations in the areas of health, safety and fairness; removing economic barriers or inflexibilities which may have been unnecessarily adding to costs; reducing undesirable economic side effects of regulation; and providing an opportunity for increased public participation in the regulation-making process.[191] Summaries of SEIA analyses are published in the Canada Gazette, along with draft regulations for public comment, at least sixty days before the rules are promulgated.[192] In emergencies, regulations on health and safety may be published without a SEIA document, though they must be assessed if they are to remain in force for more than two years.[193]

Socio-economic analyses may employ the use of several alternative methodologies including cost-benefit, cost-effectiveness or risk-benefit analysis.[194] Treasury Board prefers cost-benefit analysis, which identifies all benefits and costs arising from a regulation and measures them in monetary terms. Where it is not possible to measure the benefits of a proposed government action in monetary terms, cost-effectiveness analysis may be used. This approach compares, in monetary terms, the costs of achieving certain benefits from alternative regulatory actions, while describing the benefits themselves in physical, not monetary, terms. Risk-benefit analysis compares the risks of loss of life or limb of an activity considered for regulation and balances them against the activity's general economic benefit.[195]

Industry has argued that the SEIA program requires the use of the cost-benefit approach and that under this program all new regulations must have a net benefit to society.[196] However, a Parliamentary Committee studying regulatory reform concluded that: "A greater appreciation of the use of cost-effectiveness analysis in situations in which a benefit cannot be assessed in dollar terms needs to be developed."[197] Generally, it would appear that cost-benefit analysis and related concepts are limited, if not crude, instruments upon which to place decisive regulatory reliance, especially in the face of statutory mandates to protect health and safety.[198]

Indeed, this is exemplified in the recent SEIA performed on the TDGA regulations relating to dangerous wastes transport.[199] Background documents to the SEIA indicate that none of the methodologies described above was considered appropriate for the analysis on control of these materials.[200]

The SEIA document states, in monetary terms, the expected social costs to provincial governments for processing hazardous waste manifests caused solely by the TDGA regulations,[201] and the projected costs to shippers and carriers of meeting new manifest, labelling and packaging requirements.[202] The SEIA also estimates the costs of proper treatment and disposal at environmentally safe facilities for wastes transported across international or interprovincial boundaries.[203] The report observes, however, that these costs are not caused by the TDGA regulations but could result from additional controls on treatment and disposal implemented at the provincial level.[204]

In discussing expected social benefits of the TDGA regulations as they relate to dangerous wastes transport, the SEIA document employs primarily a qualitative assessment of anticipated improvements. It notes that:

> "The benefits to Canadians of the proposed use of manifests depends almost entirely upon what actions provinces take when they implement their own plans. The SEIA assumes that provincial governments take actions which prevent hazardous wastes from being dumped in an uncontrolled manner to avoid subsequent governmental action to restore the damaged environment, especially land, so that it could be used productively for the benefit of Canadian society."[205]

The document estimates that based on U.S. experience and the size of Canada's chemical industry and population, "a future expenditure of between [$500 million and $1 billion] might be required in Canada if preventive action is not taken immediately."[206] According to the SEIA, anticipated long-term benefits from primarily provincial preventive actions would include: a lessening of health expenditures for Canadians who might otherwise be exposed to hazardous wastes, sometimes unknowingly; a reduction in numbers of fish, birds, plants and animals killed because toxic chemicals would not seep into streams, groundwater, marshes and other wildlife habitats; a retention of some land for normal commercial, residential and agricultural purposes rather than its restriction to less economic uses because of contamination from dangerous wastes; and continued availability of rivers and adjacent banks for recreation rather than being contaminated.[207]

The principal short-term environmental benefit anticipated from the TDGA regulations with respect to dangerous wastes transport was the reduction of fish kills in three streams and associated savings from three less spills and reduced clean-up and property damage costs.[208] However these quantifiable cost reduction benefits would be exceeded by the short-term cost of implementing the regulations.[209] Thus, only by looking at the broader picture of potential for long-term damage from general hazardous waste mismanagement and the partial response to it that the TDGA regulations may provide, is the SEIA able to conclude that the proposed regulatory action would contribute to an overall qualitative benefit to the Canadian public.[210] Were a rigid cost-benefit regimen in place, that is, one which mandated that regulations must result in a net quantifiable benefit to society, the SEIA document's conclusions might not be possible.

As noted above, the purposes of the SEIA program include opening the regulation-making process to public comment on draft regulations. This is an encouraging development at the federal level. However, failure to enshrine such public involvement in law can leave the process open to potential abuse. For example, despite the SEIA requirement of prior publication of draft regulations in the Canada Gazette for public comment, at least one major regulation under the Fisheries Act inexplicably escaped the process. In April 1979, a regulation was promulgated allowing a major mining and milling project in British Columbia to dump twelve thousand tonnes of toxic waste per day for the next twenty-six years into Alice Arm inlet.[211] The dumping would exceed existing federal regulations by eight thousand times.[212] Given the purposes and scope of the SEIA program, this type of regulation would appear to fall within the program's ambit. It has been argued that the mining project may have potentially damaging effects on marine life, the principal food source for the local Nishga Indians, from release of heavy metals in the mine tailings.[213] A joint House of Commons - Senate committee subsequently voted that authorizing the regulation was "an unusual and unexpected use" of ministerial powers.[214] Adherence to the SEIA procedures for public scrutiny might have avoided these problems.

3. Regulatory Programs

a. The Transportation of Dangerous Goods Act: A National Manifest System for Hazardous Waste Tracking and Control?

A key component in a hazardous waste management program is control of the transport of such wastes.[215] Across Canada, inadequate tracking of the movement of these waste materials has caused numerous problems in ensuring their proper disposal.[216] As a result, the development of a manifest system to track hazardous wastes from generator to ultimate disposal[217] is regarded as a high priority by Canada,[218] as well as by other countries[219] and by international bodies.[220] Because of the frequent transboundary movement of these wastes, the federal government has acknowledged that it has jurisdiction to enact legislation controlling transport.[221]

The principal Parliamentary response to the problem has evolved out of a long-standing concern for public safety in the movement of dangerous products. The 1979 evacuation of 250,000 people from Mississauga, Ontario following a train derailment, explosion and fire involving tank cars filled with propane, chlorine and other chemicals, spurred the re-introduction of legislation in Parliament to control dangerous goods during transport.[222] The legislation, the Transportation of Dangerous Goods Act, administered by Transport Canada, was eventually passed in mid-1980.[223]

The preamble to the Act states that the Act's purpose is to "promote public safety in the transportation of dangerous goods."[224] The Act and proposed regulations establish a system of compliance with safety standards, marks and requirements applicable to dangerous goods. The Act makes it an offence to handle, offer for transport or transport any dangerous goods unless the applicable safety requirements and markings are complied with.[225] The Minister of Transport is authorized to designate inspectors,[226] and the Act establishes their powers of inspection,[227] including authority to seize and remove dangerous goods where they consider it necessary to "reduce any serious and imminent danger to life, health, property or the environment."[228]

Accidents resulting in the discharge, emission or escape of dangerous goods are required to be reported immediately to the appropriate authorities by the persons having management or control of the goods.[229] The owner of the dangerous goods and anyone in control of them at the time of the accident are required to take all reasonable measures to repair or remedy any dangerous condition or reduce or mitigate any danger to life, health, property or the environment resulting from the occurrence.[230] An inspector may take similar emergency measures where necessary.[231] The federal government can recover general as well as emergency clean-up costs from the owner or persons who jointly or severally, through fault or negligence, caused or contributed to the accident.[232] The Act also authorizes the Transport Minister to require persons involved in dangerous goods transport to provide evidence of financial responsibility by way of insurance or indemnity bond.[233]

The Act includes provision for federal-provincial agreements for implementing and enforcing the law's provisions within a province.[234] Where such agreements have not been entered into despite reasonable negotiation efforts over a twelve-month period, the federal government may proclaim that the Act applies within a province as if an appropriate agreement had been entered into.[235]

The federal cabinet is authorized to make regulations identifying,[236] categorizing,[237] and exempting[238] such goods. Provisions prescribing handling,[239] safety marks, requirements, standards,[240] shipping documents,[241] and the qualifications and training of inspectors[242] are also authorized. A schedule to the Act establishes nine classes of dangerous goods.[243]

The first unit of the proposed regulations provides for additional interpretation of terms, goods classification, documentation, safety markings and exemptions from the Act and regulations.[244]

Neither "waste" nor "dangerous waste" are defined in the Act or regulations though ninety-seven waste types are listed in a schedule to the regulations.[245] The regulations require that a consignor of goods that are wastes must, before the goods are transported, complete a declaration containing information describing each of the dangerous goods[246] and related matters.[247] If the good is a "waste" that word must appear on the declaration, unless it is already expressly or impliedly there, whether or not the material is to be transported to a place where it is to be "recycled, discarded as waste or temporarily stored" before being so dealt with.[248] Additional requirements are placed on the consignor, carrier and consignee of wastes, including marking the declaration with the dates of delivery[249] and receipt[250] respectively; retaining copies of declarations;[251] and sending copies of the declaration to the provincial environment minister of the province where the wastes are destined.[252]

In conjunction with development of the TDGA regulations, a federal-provincial-industry committee working group, coordinated by Environment Canada, has been designing a compatible format for federal and provincial hazardous waste manifest or declaration forms for transboundary waste shipments. The group has also worked on obtaining agreement between federal, provincial and state agencies on both sides of the Canada-U.S. border on the exhcnage of manifest information.[252a]

Despite the lack of reference to hazardous or dangerous wastes in the Act, Transport Canada officials testified during House Standing Committee hearings on the Bill, that due to requests from federal and provincial environment agencies, the Bill's safety program on dangerous goods would be designed to be capable of controlling hazardous waste movement as well.[253] Transport Canada officials also testified that environment agencies agreed that "hazardous waste materials may generally be considered a special case of dangerous goods" and that steps would be taken in the regulations to adequately cover hazardous wastes.[254]

Indeed, at the time of the Act's passage, John Roberts, federal Minister of the Environment, welcomed its enactment. He stated that the Act would make it possible to control the international and interprovincial shipment of hazardous wastes "from cradle to grave," through development of a nation-wide manifest system to assist federal and provincial governments in the overall management of hazardous wastes.[255] "We can now put a system in place," stated the Minister, "that forces those who generate waste to identify it, to comply with safety and labelling requirements of the transportation system, and ensure that the intended disposal facility for these wastes is acceptable."[256]

However, it is not likely that the Act was meant to change the perceived division of responsibilities in the waste management area. The Minister himself emphasized that: "It is a matter of great concern to the provinces, which have management responsibility for hazardous waste disposal, that there be . . . effective control over waste transportation . . ."[257]

Nonetheless, some ambiguity arises from a reading of the TDGA[258] as well as from Environment Canada statements on the Act's scope with respect to disposal.[259] The impression left is that a "cradle to grave" system that could include "control" of disposal is to be created under federal law. This is what RCRA authorizes in the U.S. In fact, the system in the TDGA may be more accurately characterized as one that mainly requires "notice" of disposal at facilities that are otherwise under provincial jurisdictional control. This seems the case given the federal reluctance to regulate hazardous waste disposal and Environment Canada's lack of statutory authority under the Act.[260] It is unlikely that Transport Canada has entered the disposal field through a transportation statute, particularly where no definitions of "environment," "waste," "hazardous waste" or "hazardous waste manifest" appear in the Act or draft regulations.

Attempts during Standing Committee hearings to make the Bill more explicitly applicable to hazardous wastes[261] and environmental protection[262] were unsuccessful. However, international bodies have subsequently raised concerns about the adequacy of the Act on precisely these grounds. A committee reporting to the IJC in late 1981 concluded in part that:

> "Potential shortcomings in the Act center on safety, which is not always synonymous with environmental protection, and on 'dangerous goods,' which are not necessarily the same as 'hazardous wastes.' These shortfalls could create gaps in regulatory coverage."[263]

Concerns have also been raised about whether the Act will be applicable to all hazardous wastes within a province. In this regard, commentators have noted three unresolved matters:

> "[The TDGA]. . .may not automatically apply to all hazardous waste within the province. First, there must be agreement from the province to extend the legislation to govern waste transportation within the province. Second, the definition of dangerous goods must be broad enough to include hazardous waste. There are discretionary exemption powers in s. 3(3) however, which could be used to exclude hazardous waste or certain hazardous waste from regulation. Third, there must be clear regulatory power to control waste movement systems (s. 21(1)). At the urging of the Minister of the Environment, the Bill was amended following second reading to clearly include authority for establishment of hazardous waste manifest systems. However, these powers are enabling only, and implementation of actual legal requirements for hazardous waste handling depends on the discretionary powers of the Federal Minister of Transport. If provinces are to ensure that these powers are appropriately exercised they must negotiate and enter into agreements with the federal government."[264]

There is also the key unresolved issue of the adequacy of criteria under the Act for determining if a waste is dangerous. A recent report for Environment Canada which evaluated an earlier version of the proposed TDGA regulation, concluded that while the draft rule addresses a number of physical-chemical and exclusion criteria, it does not incorporate ecological criteria.[265]

The report found that the health criteria used in the proposed regulation include acute oral, dermal and inhalation toxicities and a qualitative criterion for dealing with infectious substances. However, no health criteria are included for carcinogenicity, mutagenicity and teratogenicity.[266] The report also found that none of the ecological criteria commonly used in other comprehensive criteria systems are covered in the proposed regulation. Thus, criteria were absent for determining acute aquatic and phyto-toxicities,[267] bioaccumulation potential, persistence in the environment[268] and chronic exposures relating to survival, growth and reproduction.[269] The report concluded that:

> "The purpose of the proposed regulation with regard to Class 9, Division 9.3 - Dangerous Wastes, is to regulate those substances that are not covered by Classes 1 to 8 inclusive, but nevertheless would be of concern if released in an uncontrollable manner into the environment. Given this requirement, then at least some of the criteria which currently are not incorporated in the proposed regulation should be included."[270]

Due to the deficiencies found in the proposed regulation, the report recommended improvements to methods of regulation-development,[271] implementation,[272] and criteria expansion.[273] Many of the concerns raised in the report about inadequate criteria in proposed TDGA regulations had previously been voiced within the federal government itself.[274]

The deficiencies in the TDGA regulations thus present serious problems regardless of whether the provinces create their own waste tracking rules. On the one hand, some provinces could agree to allow the TDGA regulations to be used for tracking intra-provincial waste movements as a substitute for establishing a provincial system.[275] If this occurs then possibly too few waste types generated within the province might be covered because of the inadequate criteria established under the TDGA scheme. On the other hand, if future provincial waybill or waste tracking regulations are established, problems could arise in the relationship between the TDGA system and the various provincial systems. If the TDGA regulations contain inadequate criteria and prospectively up to ten provincial waybills were to create different requirements, depending on how hazardous wastes are defined within each province, then the resulting situation could prove very unsatisfactory. Uncoordinated and varying provincial waybills, in conjunction with narrow criteria in the TDGA system, could result in lost or mishandled waste shipments, confusion for industry and a lessening in the likelihood of compliance.[276] While compatibility of manifests has been sought in Canada[276a] and is seen to be an important international goal in the Great Lakes Basin,[277] it is unclear whether compatibility will result in comprehensive waste tracking or simply the lowest common denominator of wastes tracked.

The passage of the TDGA has resulted in greater progress toward developing a system of waste tracking. However, it is suggested that a failure to substantially revise the system to meet the concerns noted above will result in the TDGA proving inadequate to the task of dealing with the full dimensions of the hazardous waste transport problem.

b. The Applicability of Other Federal Laws to the Hazardous Waste Problem

Other federal legislation may have a more limited application to the hazardous waste problem. Both regulatory and fiscal law may influence management of such wastes.

Certain uses of regulatory law have in fact contributed to a waste disposal problem on land. For example, development of contaminant specific regulations under air and water pollution control legislation can have the effect of increasing sludges requiring disposal on land.[278] Many of these semi-solid wastes would arguably be hazardous because they would contain toxic chemicals that would otherwise have been directly discharged into air or water. Similarly, federal legislation, such as the Environmental Contaminants Act, is recognized as contributing to a waste management problem because of the toxic substances it has banned or restricted the use of in recent years.[279] The Ocean Dumping Control Act[280] is another federal law whose regulatory requirements may influence land disposal of hazardous wastes. The Act requires that no ocean dumping of wastes takes place except in accordance with the terms and conditions of a permit issued by Environment Canada.[281] The effect of this Act can be to place some pressure on industrial waste disposal facilities on land, as controls on ocean dumping become more restrictive.[282]

Other federal regulations may also have some limited impact on waste disposal practices such as use of PCB contaminated waste oil for road dust suppression. Proposed Environmental Contaminants Act regulations will make it an offence to willfully release PCBs in a quantity greater than 5 parts per million from such activity.[283] Environment Canada argues that this practice is one means by which the environment is made particularly prone to PCB contamination thus necessitating reduction of the hazard as much as possible. The Department also argues that the restriction will also stimulate recycling of such waste oils.[284] However, because the regulation is generally restricted to wilful releases of PCBs from commercial, manufacturing or processing activity it would be difficult to successfully argue that it would have application to leakage of PCBs from disposal sites. If the regulation could be said to have such application it could potentially serve as a spur to improvement of disposal practices, at least for selected substances.

Spills of certain substances could create a hazardous waste problem which would also be subject to the Fisheries Act. Owners and carriers of substances that might be deleterious to fish must notify Environment Canada of a spill of such materials, where required by regulations. Clean-up orders must be complied with.[285] The Act also makes the owner of a deleterious substance, any person in charge of it, and anyone who caused or contributed to its deposit in fish frequented waters, jointly and severally liable without proof of fault or negligence, to the federal and provincial governments for reasonable costs and expenses taken to prevent or mitigate such damage. Such persons are also liable to licensed commercial fishermen for any loss of income caused by such deposits or by government fishing prohibitions arising from the pollution.[286] The Act also enables the Minister to require plans and specifications for existing and proposed expansions of operations and to reject a proposal or order that it be modified with the approval of Cabinet where he believes it will result in alteration, disruption, destruction or contamination of fish or fish habitat.[287] Because all of these provisions were only brought in as amendments to the Act in 1977, there has been little experience with their potential application to hazardous waste situations to date.

Various provisions of the Criminal Code[288] including common nuisance,[289] mischief,[290] and criminal negligence[291] may also have applicability to the special threats posed by hazardous wastes to health and the environment. However, these provisions have not generally been used in an environmental context. This may be the case because of the added difficulty of proving a mental element for such offences. In contrast, most federal (or provincial) regulatory or public welfare offences are ones of strict liability necessitating only the proof of the actus reus and then the onus shifts to the defendant to prove on a balance of probabilities that he was not negligent or that he has a defence of due diligence or reasonable care.[292] This lessened burden on the Crown in strict liability offences would normally result in the Criminal Code being the instrument of last choice for environmental health matters.

An example of fiscal law that may influence private sector hazardous waste management decisions to a limited extent is the Accelerated Capital Cost Allowance Program (ACCA). Regulations under the Income Tax Act[293] allow a business established before 1971 to deduct from its income taxes over a two-year period, the total cost of equipment or processes installed for the prime purpose of controlling air[294] or water[295] pollution. Though there is no explicit provision covering pollution of land from solid or hazardous wastes, in many instances, accumulation of such wastes will result in either air or water pollution. Thus, elimination of such wastes can be classified as preventing air or water pollution.[296] However, in practice, because the program is not applicable to new businesses established since 1971, it is of limited practical benefit to most commercial and manufacturing operations. Currently, ACCA is applicable to primarily the lumbering, mining and agricultural sectors of the economy.

B. The Provincial Government Role

1. Overview

Provincial governments have substantial constitutional authority to deal with hazardous wastes disposal and related matters.[297] However, with some exceptions, provincial legislation like federal law, has focused on control of general air and water pollution discharges.[298] The inadequacy of this approach to the problems of land disposal of hazardous wastes, as well as limitations of early provincial legislative schemes directed to traditional waste disposal,[299] have prompted more recent provincial initiatives addressing various facets of the hazardous waste problem. Among the areas of provincial concern have included defining hazardous wastes; the siting of new facilities; control of existing and abandoned sites; spills and compensation; hazardous waste transportation; reduction, recovery and re-use of hazardous wastes; improved enforcement; and the role of the public. A review of provincial initiatives and their adequacy is undertaken below.

2. Hazardous Waste Definition, Identification and Classification

In determining the parameters of the regulatory response to the hazardous waste problem, several provinces are in the process of defining for the first time, or up-grading their existing definitions of, such wastes. A number of provinces have been influenced in their thinking by the work done earlier by the Federal-Provincial Task Force on Hazardous Waste Definition.[300] However, to date there is little indication that uniformity of hazardous waste definition is developing in provincial statutes or regulations across the country. As discussed above, this can have important consequences for the quantities of wastes needing special controls, consistent management of such wastes and protection of the public.[301] Moreover, while some provinces are in the process of classifying hazardous wastes by regulation, it is unclear whether all provinces will adopt this approach. Some may opt for placing such wastes in guidelines only. In addition, the criteria, if any, for how wastes will qualify for designation as hazardous, appear to be in their early development in most provinces. These factors can all have serious implications for the effectiveness of various provincial control efforts.

To the extent that some provinces have been influenced by the work of the Task Force in developing statutory definitions of hazardous wastes, there has also been a recognition of the need to develop a regulatory definition, listing or classifying such wastes, as well.[302] In Alberta and British Columbia, for example, recent legislative proposals were preceded by investigations by special governmental panels or committees that substantially endorsed the Task Force definition as a basis for developing a statutory definition as well as hazardous waste lists and/or criteria at the provincial level.[303] Proposed amendments to existing Alberta legislation provide a limited statutory definition of "hazardous waste"[304] and authorize establishment of a schedule by regulation for classifying and exempting hazardous chemical wastes.[305] British Columbia legislative proposals define "special waste" only by reference to what the provincial cabinet may prescribe in regulations.[306] There is also authority to exempt wastes by regulations from the Act's requirements for special wastes.[307] Emphasis in both provinces to date appears to be on the list approach to definition,[308] not the quantitative criteria approach.[309]

In provinces such as Quebec and Ontario where legislative or regulatory amendments are still evolving it is less clear the extent to which the Task Force's work will ultimately influence the final content of provincial legislation or regulations. Current Quebec statute law[310] and regulations[311] do not specifically define hazardous wastes despite a number of references in both statutes and regulations to wastes qualified as being "toxic", "hazardous" or "chemical".[311a] Nor do quantitative or qualitative criteria exist under Quebec law for designating such wastes.[312] While apparently legislation will not be amended, draft regulations still under preparation will include a hazardous waste definition.[313] There will also be referral to a list of categories of wastes considered to be hazardous.[314] Whether quantitative or qualitative criteria will be included for designating hazardous wastes under the new regulations is unclear.

While Ontario law has long defined both "hauled liquid industrial waste"[315] and "hazardous waste,"[316] the province early recognized the inadequacies of its respective definitions of these materials. As a result, it supported the Task Force effort to develop a hazardous waste definition. However, more recentlyprovincial officials, while expressing dissatisfaction with the lack of criteria in, and comprehensiveness of, Ontario regulations note that it is unlikely the province will rely on the Task Force definition in future amendments to the Act or regulations.[318] While the province has been internally developing interim definitions of hazardous wastes,[319] its existing regulatory definitions have been criticized by industry experts during public hearings on waste disposal facility siting[320] as well as by citizens and environmental groups.[321] Indeed, the Ontario Waste Management Corporation (OWMC), a body established by legislation in 1981 to develop a province-wide system for management of the province's liquid industrial wastes and hazardous wastes,[322] has recently adopted the term "special waste" to deal with the problem on an interim basis.[323] The OWMC evolved the term because:

> ". . . of a lack of uniformity in Ontario over what constitutes liquid industrial waste and hazardous waste. The Ministry of the Environment has specific regulations--currently under review--for the transportation and disposal of certain types of liquid industrial wastes--both hazardous and non-hazardous. On the other hand, there are various kinds of hazardous wastes existing in a range from liquid to solid which are not governed by law due to their physical nature and manner of disposal.
>
> OWMC has therefore had to undertake its own classification and quantification of Ontario's special wastes to determine and estimate those for which its facilities must be developed."[324]

The OWMC's efforts at definition and resulting quantification of such wastes have also culminated in recent findings that Ontario industry produces six times more hazardous wastes than previously calculated.[325]

In light of the dilemma in which these recent developments have placed the province's regulatory program, it is unclear when a revised waste classification system will be put into place. Currently, the province uses a guideline for classifying hauled liquid industrial wastes.[326] As early as June 1979 the province promised to implement a waste classification system by regulation.[327] The failure to do so by August 1982, a 38-month delay, resulted in further public criticism of the Ministry of the Environment.[328] At this point, provincial officials indicate that a decision has not been made whether a hazardous waste classification or listing system will be promulgated as a regulation or remain a guideline.[329] Differences between the legal effect of regulations and guidelines have been noted above.[330]

In the remaining provinces, upgrading of statutory or regulatory definitions of hazardous wastes is at a very early stage or does not appear to be occurring. Manitoba defines "hazardous materials" by statute[331] and lists them by regulation.[332] The remaining provinces, apart from, for example, defining "wastes" per se,[333] do not define toxic or hazardous wastes by statute or regulation.[334] Nor do specific criteria appear to have been developed for characterizing or designating hazardous wastes in these provinces.[335]

Generally, it would appear that there is uneven movement toward improving hazardous waste definition in various provincial laws. Arguably, the most comprehensive efforts are underway in the provinces with the largest quantities of hazardous waste requiring treatment and disposal. However, even where substantial initiatives are occurring there seems to be a reluctance to commence with a statutory definition demarcating the application of the regulatory program to the hazardous wastes problem. Where initiatives are developing the preferred approach appears to be designation in regulations or guidelines which classify or list the wastes deemed to be hazardous. The existence or development of specific criteria in law for how a waste has been determined to be hazardous, appears to be the exception rather than the rule in most provinces. This especially seems to be the case for development of quantitative criteria. Whether problems in the effectiveness of provincial schemes will arise in practice in light of these concerns remains to be seen.

3. New Facility Siting

The inadequacy of existing landfill sites to contain increasing quantities of hazardous wastes they were never designed to handle, has been noted above.[336] As a result, the siting of new centralized facilities has come to be regarded by most provincial governments as a linchpin of proper management of such wastes. While this view has not been shared by all provinces,[337] and some members of the public,[338] the need for new facilities has been supported in most government studies, investigations and statements,[339] legislative inquiries,[340] and international reviews[341] of the problem. Efforts to establish new sites under existing provincial law are considered here together with new legislative approaches. The roles and views of the public and industry in the siting question are also examined.

Efforts to establish toxic waste facilities under general environmental protection legislation have frequently proved unsuccessful for a variety of reasons. Under Ontario law, for example, a public hearing is required before a decision may be made as to whether a certificate of approval should be issued for a waste disposal site for hauled liquid industrial or hazardous wastes.[342] Both government[343] and industry[344] argue that local public opposition has usually been successful in blocking the establishment of such sites either at the hearing or pre-hearing stages by emotional campaigns against the particular project. Recent Ontario Ministers of the Environment have labelled the problem the "not-in-my-backyard syndrome."[345] However, a review of some of the major industrial and governmental hazardous waste siting proposals under this type of legislative scheme suggests that they have often been rejected on technical, not emotional, grounds. Public intervenors, despite the lack of adequate funding, have frequently shown that industry or government have not done their technical homework by the time of provincially required public hearings.[346] Ironically, recent industry comments can be taken to question the need to show technical adequacy of proposals at hearings.[347]

Arguably, the lack of technical adequacy in such proposals is in part a function of the limited requirements for environmental investigation of proposals under general environmental protection legislation.[348] In contrast, the use of more comprehensive environmental assessment legislation could fill this void.[349] However, Ontario has not employed its environmental assessment law to the siting of hazardous waste facilities.[350] This contrasts with the situation in Quebec where environmental assessment law requirements do apply to toxic waste facilities[351] and under which some facilities have recently been approved.[352]

Indeed, the continued inability to establish toxic and hazardous waste sites under existing laws has caused some provinces to seek different legislative solutions. In 1980, Ontario established a crown corporation, the Ontario Waste Management Corporation (OWMC), to undertake such activities on Crown land.[353] At the same time that

Ontario announced this approach it also named a site already on Crown land that the OWMC would be responsible for investigating and establishing a facility upon.[354] The province also exempted the OWMC's activities from any of the public hearing requirements of Ontario's environmental laws, despite public protests.[355] The Minister of the Environment indicated that the choice of site had been sufficiently investigated from a technical standpoint and was found to meet "most, if not all, of the criteria established by [government] consultants" though further geotechnical tests and ad hoc hearings would be necessary.[356] Ironically, the OWMC announced one year later that it was abandoning this site because of its technical inadequacy.[357] Many of the grounds for rejection noted by the OWMC had been raised by the public at the time of the Minister's decision.[358] The OWMC is now undertaking new site investigations around the province, though any future hearings it will hold will still be exempt from the province's environmental laws.[359]

The provinces of British Columbia[360] and Alberta[361] have also proposed legislative schemes which could include the creation of a Crown corporation to establish toxic waste facilities. However, Alberta citizen groups have raised concerns over the potential dumping of hazardous wastes in Alberta from other provinces because of possible provincial lowering of standards in order to be able to establish such a facility.[362]

While provincial governments continue to support public participation in their processes leading to establishment of such facilities,[363] no provincial government has enacted or amended its legislation to provide citizens with funding in order for them to be properly prepared for tribunal proceedings.[364] The OWMC policy is that funding of intervenors will be provided at future hearings it may hold on toxic waste siting.[365] Existing and prospective provincial legislative schemes have also not sought to provide technical-financial support or compensation to municipal governments faced with proposals for new toxic waste facilities.[366]

The prospects appear to be that provincial governments will continue to seek establishment of centralized waste facilities, possibly with direct provincial involvement in their ownership and/or operation through Crown corporations. At the same time public involvement may be more tightly circumscribed as governments attempt to either re-write the role of the public in provincial legislation or by-pass hearings under environmental laws entirely.

4. Control of Existing and Abandoned Sites

In addition to finding suitable sites for new facilities, provincial government agencies must also control the use of existing and inactive sites containing hazardous wastes.

Mechanisms for controlling toxic and hazardous wastes in existing landfill sites vary considerably under provincial laws. Some provinces such as Saskatchewan[367] and, until recently, Alberta[368] have attempted to control the deposition of toxic wastes in existing municipal landfills through provincial public health legislation. This has not normally proved a successful approach.[369] Other provinces such as British Columbia[370] and

Quebec[371] attempt, with mixed success,[372] to prohibit toxic waste deposition in existing municipal landfills under general environmental protection legislation. Ontario[373] and Nova Scotia[374] use permits and approvals to determine on a case-by-case basis under their environmental statutes whether toxic wastes should be deposited in particular municipal or private sector landfills. However, Ontario, for example, has had problems with unauthorized sites receiving chemical wastes,[375] while Manitoba[376] has no statutory control requirements at all in this regard. Use of injunctive relief by provincial authorities to close down landfill sites receiving toxic wastes in violation of permit provisions, regulations or control orders has been the exception rather than the rule.[376a]

In part, the problem of inadequate control of hazardous wastes in existing sites has been a function of a number of factors including: legal uncertainty as to whom the wastes belong once they're deposited; poor or non-existent record-keeping by operators of waste disposal sites; general lack of provincial government knowledge as to what wastes are buried where; and inadequate penalties and enforcement.

Where provincial laws have, more recently, addressed the issue of ownership of wastes, the tendency has been to place responsibility on the owner of disposal facilities, rather than on the generator of wastes. For example, recent amendments to Ontario's Environmental Protection Act place responsibility for waste ownership on the disposal site operator who has a valid certificate of approval for the site and the site landowner (if not the same person) once the operator accepts transfer of the wastes.[377] Where the wastes have been dumped in the certified disposal operator's site without his knowledge, the ownership of the wastes is still transferred to the site operator, but would not remove the legal liability of the person who hauled the waste to the site.[378] The stated purpose of these amendments is to force all parties to maintain a strict level of security at a disposal site to prevent unauthorized dumping.[379] Yet apart from being required to permit no one but a certified hauler to transfer wastes from his plant,[380] and to accurately fill in waybills and send them to MOE, a waste generator appears to be absolved from further responsibility for the wastes.[381] British Columbia[382] and Alberta[383] proposed legislative schemes require the generator to at least be responsible in first instance for where the wastes are ultimately to be consigned, though once they have been accepted at a site, these wastes become the responsibility of the receiving facility operator.[384] Generally, provincial legislation has not sought to extend liability to the generator of hazardous wastes who does not otherwise participate in their disposal. It could be argued that provincial legislative schemes in fact create financial incentives for generators to avoid assuming responsibility for disposal of wastes they benefit from producing.[385]

Record-keeping requirements for toxic wastes buried at landfills are rare under provincial law. Quebec requires record-keeping by all liquid industrial waste disposal facilities and by sanitary landfill sites although the latter are not authorized to accept toxic wastes.[386] Two provinces, British Columbia[387] and Alberta[388] will require such record-keeping under their proposed legislative schemes. The provinces of Manitoba,[389] Ontario[390] and Nova Scotia[391] have not established such requirements under their respective laws. Few provincial laws require that landfill records on toxic wastes deposited at a site be transferred to the province when the landfill closes.[392] However, such requirements would appear to be necessary in each province in order to allow proper monitoring and prompt remedial action should problems later develop at a site.

A major problem under provincial legislation has been controlling existing sites from receiving liquid industrial wastes where no prior hearings were held, no initial application to accept such wastes was made, and the initial approvals were silent on the authority to accept such wastes. Recent Ontario case law[393] indicates that where an approval is silent as to what wastes may be disposed, the application and its supporting information are determinative of what can be disposed of at a site. An approval does not include authorization to dispose of wastes which were not sought in the application unless the approval makes that fact specifically clear at the time of its issuance. The approval does not give the site operator the permission to do whatever it and government officials later decide it can do on an ad hoc basis. Moreover, where approvals are changed to allow deposit of liquid industrial wastes, a public hearing must first be held, because the scope of an approval cannot be broadened in this manner, in the absence of the statutory hearing requirement.

The effect of the decision was to bar liquid industrial waste dumping at the particular site.[394] However, all the other sites in Ontario accepting liquid industrial wastes could also have been subject to this ruling if their approvals were challenged.[395] As a result, the Ministry of the Environment promulgated a special regulation exempting these other sites from needing future certificates of approval which could have retroactively required a public hearing in each case.[396] Additional operating conditions such as record-keeping, reporting and waste tonnage limits were also imposed on these sites by the regulation.[397] Opposition critics have characterized the regulation as a circumvention of statutory public hearing requirements.[398]

Most provincial law, regulation or permitting practice does not require or systematically impose bonding or clean-up fund requirements on operators of sites receiving toxic wastes to ensure proper closure and de-commissioning of such sites.[399] Where it has been employed, it has mostly been done on a case-by-case basis.[400] Indeed, once a site closes it may be difficult to take remedial enforcement action to clean up the site, even if an owner can be found.[401]

The more usual situation is the long abandoned site containing toxic or hazardous wastes. Few provinces are aware of the number of sites this may involve. As a result, most,[402] but not all provinces[403] have commenced inventories, usually with federal involvement, on the number of inactive or abandoned sites in their province. Some provinces have completed the first stages of such inventories on their own,[404] or with federal assistance.[405] Clean-up of such sites presents enormous technical, legal and economic difficulties. For example, the present owner of land on which an inactive site is located might have no connection, other than current ownership of the land, with the prior disposal activities.[406]

In the absence of a clean-up fund for abandoned sites containing hazardous wastes, therefore, remedial measures would be difficult or impossible to undertake. However, no provincial law requires financial contribution by the chemical or related industries to establish and maintain a clean-up fund for such sites.[407] Ontario has investigated legislative establishment of a perpetual care fund for clean-up of existing and abandoned sites, including those containing liquid industrial and hazardous wastes.[408] The fund could be financed through an industry surcharge based on type, toxicity, weight or volume of waste disposed.[409] Ontario officials argue that contributions should be made by operators of sites rather than generators of wastes because:

> ". . . the operator is expected to charge the generator a sufficiently large fee to defray his contribution. . . . [T]his [is] a practical method because it puts a more direct onus on the site operator who has the principal duty to take care of and manage the wastes at the site in a satisfactory manner."[410]

However, since the Ontario government's 1979 release of its interim report on a perpetual care fund, no final report has been issued or any proposed legislation on the subject introduced. Citizen groups have criticized this 36-month delay in light of the need to clean up inactive sites.[411] Members of the provincial legislature have also called for establishment of a "superfund" to be established and financed by industry and government at rates that would ensure that industry would operate "in a non-polluting fashion" and that abandoned dumps would be properly controlled.[412] "Superfund" legislation has recently been enacted in the U.S.[413]

Generally, provinces will likely continue to monitor existing sites to determine the magnitude of the clean-up costs the public and private sector might be required to bear. Stringent control or shut-down of existing sites seems unlikely in the short and medium term while the search for new sites continues and dangerous wastes have few other environmentally suitable places to go. Legislative proposals to deal with funds for inactive or abandoned site inventories are completed in the next few months and years and remedial needs are assessed. At that point, provincial governments will have to tackle the thorny questions of how the fund will be structured, which segments of industry must contribute to it, if any, and what level of government financial contributions to the scheme will be necessary. With some exceptions, few provincial governments have begun to systematically ask these questions, let alone craft policy or legislative solutions to them.

5. Transportation of Hazardous Wastes: Waybills and Manifests

As noted above,[414] controlling the movement of hazardous wastes is integral to their proper management. In Ontario, where a waybill system has been in place for several years, the purpose of the control scheme is to require the generators and licensed transporters of liquid industrial wastes as well as the operators of certified disposal facilities, to provide information to the provincial government respecting the nature and quantity of wastes that are being handled and moved from point of generation to that of ultimate disposal.[415] Recent legislative proposals in British Columbia[416] and Alberta,[417] creating manifest requirements, have similar objectives. However, apart from these provinces, and to a lesser extent Quebec,[418] no other provinces have enacted legislation on this matter.[419] Whether the recently enacted federal Transportation of Dangerous Goods Act will provide an adequate complement to existing provincial controls, or substitute in those provinces without waybill or manifest requirements, remains to be seen.[420]

Since the Ontario waybill regulation's inception, it has generated much useful data on volumes of liquid industrial wastes, their sources and destinations.[421] It has also allowed the province to commence tackling the problem of clandestine or illegal dumping of industrial wastes. However, there are still major deficiencies in the waybill scheme. The regulation would not appear to apply to industrial or hazardous wastes that are stored[422] or disposed of on the generator's premises,[423] that are solids[424] or that are recycled.[425] The net effect of these regulatory gaps is that the waybill has only been recording a fraction of the province's industrial and hazardous wastes.[426] Moreover, the waybill fails to place the onus on the waste generator to designate the site to receive the wastes, leaving this responsibility to the waste transporter.[427] Industry spokesmen have termed this a "fundamental flaw" in the waybill system.[428]

The British Columbia[429] and Alberta[430] legislative proposals appear to have avoided this problem by making the generator and transporter jointly responsible for designating sites for the reception of wastes. However, it's unclear whether these recent western proposals will be able to avoid some of the other deficiencies in Ontario's law.[431]

Indeed, despite Ontario Government efforts, the problem of illegal dumping has continued to plague the waybill system,[432] having been acknowledged by the waste hauling industry itself.[433] Its recent confirmation in an OWMC study[434] underscores continued weaknesses of the regulation. Recent statutory amendments in Ontario have increased requirements on haulers.[435] Prospective government statutory or regulatory improvements may include bringing solids within the ambit of the waybill,[436] and establishing a registration system for wastes that remain on a generator's premises.[437] However, citizens' groups have argued the need for most of these legislative reforms has been known since 1978. They argue that little has been gained by four years of delay in introducing amendments[438] and that there should be public input into regulation-making, since these instruments are frequently the teeth of environmental laws.[439]

Provincial statutory authority over hazardous wastes transport has increased with the recent legislative proposals in British Columbia and Alberta, though it is too early to tell how these mechanisms will work in practice. Experience with the Ontario waybill regulation has revealed major flaws in it that are long overdue for reform and may suggest future problems with the western laws. Perhaps the key unknown in this area is the prospective impact of the federal Transportation of Dangerous Goods Act both on those provinces with waste transport laws and those that have yet to enter this regulatory area.

6. Spills and Compensation

Procedures to respond to hazardous waste spills as well as compensate victims from resulting damage are also necessary components in a comprehensive provincial control strategy on hazardous wastes. Most provincial laws, however, have emphasized requirements for reporting,[440] emergency response,[441] clean-up of spills,[442] and recovery of clean-up costs,[443] but not victim compensation.[444] Generally, provincial officials note that such compensation would have to be sought through common law remedies.[445]

With some exceptions,[446] provincial laws do not directly state that they're applicable to spills of hazardous wastes. Generally, hazardous waste spills are covered by the same provisions that apply to spills of other environmental contaminants.[447] Moreover, the definition of "spill" in many provincial laws is usually broad enough to cover "leakage" of materials as might arise from abandoned hazardous waste dumps.[448]

Legislation in Ontario and Saskatchewan illustrates the range of law reforms that provinces have recently sought to achieve in this area. Under Part IX of Ontario's Environmental Protection Act, the owners and handlers of pollutants are responsible for reporting,[449] and cleaning up spills, restoring the environment to its previous condition[450] and reimbursing the victims of spills for property or health damage and financial losses.[451] The Act also authorizes the establishment of an environmental compensation corporation to provide victims with funds under certain conditions.[452] While enacted in 1979, Part IX had not been proclaimed by May 1983, though draft regulations have been prepared respecting conditions for payments by the compensation corporation,[453] classification and exemption of spills,[454] and insurers.[455] The three-year delay in proclaiming Part IX and releasing draft regulations for comment has been criticized by citizen and environmental groups.[456] At the same time, industry has argued that legislation of this type is "intrinsically unfair" because it establishes "liability without fault,"[457] and ignores the possibility that environmental impairment insurance will not be available at reasonable cost.[458]

Recent legislation in Saskatchewan grants powers to the province similar to Ontario's Part IX, though the Saskatchewan law does not establish a compensation fund corporation.[459] Regulations under the Saskatchewan Act make mandatory the reporting of any accidental or deliberate discharge of certain pollutants to the environment,[460] and set out reportable limits for particular hazardous waste spills. The minimum quantity reportable is dependent on whether the spill occurs on-site or off-site.[461] The regulations also require the owner of the pollutant and the person having control of the pollutant to take all reasonable action to prevent further discharge of the pollutant, contain the spill, minimize the effect of the spill and restore the area affected and the environment as nearly as possible to its condition immediately prior to the spill.[462]

Where provincial legislation has addressed the need to compensate victims, provincial governments have nonetheless failed to come to grips with the concept of industry contribution to a general compensation fund or scheme.[463] While industry supports the establishment of a chemical pollution victims' fund from general revenues, it also argues that social programs may have already created too great a burden on government revenues.[464] Moreover, as far as industry contribution to such a scheme is concerned, industrial spokesmen argue that "liability and any other requirement for companies to provide compensation should be based on fault."[465]

However, recent proposals in Canada for establishment of a pollution victim's compensation fund would impose a basic pollution levy on all industries, with high environmental-risk industries paying a higher levy and the worst polluters paying a surcharge. Government contributions would also be made to the scheme.[466] The rationale for this approach include buttressing existing government controls, internalizing the costs of damage to those activities that risk such damage and compensating innocent victims. Proponents of this scheme have argued that:

> ". . . achieving . . . clean-up, restoration or replacement of contaminated environments is not the end of a pollution incident. . . . [T]he person who has suffered a substantial loss that he was not in a position to prevent or avoid, through no fault of his own, and as a result of the actions of some third party, should not have to undertake expensive legal proceedings or incur great delay to obtain compensation."[467]

The imposition of collective liability on a group of firms whose products or substances tend to cause a given type of harm has also been proposed in other jurisdictions.[468] U.S. "Superfund" legislation justifies its system of levies on this basis,[469] though the law cannot be used to compensate victims.[470]

Establishment of emergency response and clean-up measures for spills of contaminants has been the principal focus of provincial laws. Where provinces have addressed the issue of the need to compensate victims from spill damage, emphasis has been on recovery from the particular operator who caused the damage. Provincial law has yet to address the issue of whether particular industries, producing high-environmental risk products or substances, should pay into a scheme or fund to enable compensation of victims where the source of "spill" damage (e.g. an abandoned hazardous waste dump) has no owner or operator to which liability may otherwise be assigned.

7. Reduction, Recovery and Re-Use of Hazardous Wastes

Development of comprehensive provincial hazardous waste management strategies must also include reduction, recovery and re-use of such wastes. Studies and policies in many provinces including British Columbia,[471] Alberta,[472] Ontario,[473] and Quebec[474] recognize the importance of such options in minimizing the quantities of hazardous wastes requiring treatment and disposal.

However, despite repeated provincial support and encouragement for the priority of such approaches, industry commitment to recovery and related techniques appears marginal at best, judging from recent studies conducted in some provinces.[475] In light of this situation some government sponsored studies have gone so far as to suggest that legislation is necessary to mandate recycling of some hazardous wastes,[476] though recent provincial legislation has not in fact broached this issue.[477]

While industry appears to view the economics as continuing to favour disposal over recovery options,[478] environmental groups have pressed for mandatory recovery legislation.[479] Moreover, they have argued that industry could afford to massively slash production of such wastes and remain profitable at the same time.[480]

Like the situation at the federal level,[481] provinces have not intervened legislatively in the private sector to require hazardous waste recovery or related techniques. The provincial preference has appeared to be one of hoping that future increases in disposal costs will result in industry voluntarily turning to non-disposal options in its own economic self-interest. Arguably, the success of this provincial approach has not been demonstrated thus far.

8. Improved Penalties and Enforcement

Inadequate enforcement of hazardous waste controls can be especially serious given the dangers posed by such wastes to human health and the environment. Past provincial enforcement efforts have often faced great practical difficulties,[482] or have been based on systematic policies of seeking voluntary compliance before prosecution or other remedial action is undertaken.[483]

The perceived need for greater enforcement action in this area has been reflected in numerous recent policy reviews commissioned by provincial governments,[484] or undertaken by provincial legislatures.[485] As a result, stiffer penalties have been included in recent legislative proposals,[486] and more frequent enforcement action undertaken.[487] Indeed, Quebec has extended its 2-year statute of limitations for prosecutions so as to allow this 2-year period to be calculated from the time provincial officials are informed of a violation involving toxic or hazardous wastes rather than from the moment the violation actually occurred.[487a]

Notwithstanding these recent initiatives, the public has continued to retain doubts that government policy has shifted away from a widely perceived, if not discredited, position of prolonged efforts at voluntary compliance.[488] Major new legislation has not necessarily improved enforcement efforts in other jurisdictions, such as the United States,[489] or the United Kingdom.[490] In Canada, members of the public have sought to enforce legislation through private prosecutions where, for whatever reasons, governments have not acted.[491]

Prospectively, greater penalties and enforcement powers can be expected in provincial legislation though, where such instruments are not used, private enforcement efforts may be expected to be undertaken.

C. The Municipal Government Role

Because of their nearness to particular hazardous waste problems, municipalities are frequently the most immediately affected level of government in attempting to address the issues posed by such wastes. While municipalities are creatures of provincial legislatures,[492] the evolution of local powers has not always resulted in compatible actions by the two levels of government with respect to hazardous waste control. Indeed, municipal actions can also strongly influence federal policy in this area.

Municipal authority to address problems posed by hazardous wastes is derived from three traditional types of provincial enabling legislation. First, local governments can enact by-laws controlling nuisances, waste disposal, industrial use of sewers and related matters under general legislation establishing municipal institutions in the province.[493] Provincial governments have frequently provided models for by-law development in some of these areas.[494] Second, protection of public health and abatement of nuisances has traditionally been delegated to local boards of health under provincial law.[495] Such boards have often been drawn into hazardous waste matters because of their broad investigatory powers and authority to address local health issues.[496] Third, municipalities through provincial planning law, are responsible for developing the official plan and zoning by-laws for a local area.[497] Such powers can frequently be instrumental in determining where or whether hazardous waste facilities will be established in the planning area.

Because of inadequacies in past provincial regulatory law and current concern about the effectiveness of senior government controls, some municipal governments have sought improvements in their own regulatory instruments. Three types of mechanisms are of particular interest: (1) improved municipal by-laws controlling hazardous waste transport, packaging and disposal within urban boundaries; (2) authority to require disclosure of information respecting types and quantities of chemicals and wastes manufactured, used or stored in the municipality; and (3) by-laws restricting or prohibiting establishment of facilities or activities deemed harmful to the local population.

The first type of mechanism is illustrated by a City of Calgary by-law.[498] Under this instrument, before a permit may be issued to dispose of hazardous wastes at the city landfill, a report must be prepared by the proponent indicating the type, volume and weight of the wastes; trade name and chemical components of the waste; special disposal precautions necessary; hazard ratings or other waste characteristics that might cause problems during handling and disposal; and type of packaging during transport to the site.[499] The report must also state whether the nazardous wastes are health hazards; flammable, chemically or organically active or explosive; or potentially damaging to the environment.[500] If the City issues a permit, notice must be given to the City before each proposed disposal of hazardous wastes according to the permit's conditions.[501] While one of the few by-laws in the country that essentially create an urban manifest system for hazardous wastes, the by-law is not without its problems. These include lack of hauler licensing with the result that some private haulers disguise or mix hazardous wastes to look like municipal wastes and dump them at the Calgary site or elsewhere in order to avoid more stringent disposal costs.[502]

The second type of instrument sought by some municipalities is "right to know" legislation. This interest has arisen in part because of the "widespread production, use and disposal of chemicals" about which information, respecting their whereabouts, health and environmental effects is often lacking.[503] The City of Philadelphia was the first municipality in North America to enact ordinances (by-laws) requiring companies to report to city agencies any toxic substances they use, manufacture, store,[504] or emit into the air.[505] This information is required to be on file with the City and is available to the public.[506] Several municipalities in Canada have been interested in obtaining similar authority over chemicals and waste products within their borders.[507]

Perhaps the most controversial municipal initiatives have been their attempts, through their by-law making power to prevent or restrict industrial disposal[508] or burning of chemical wastes within their borders.[509] The impetus for these by-laws has been a combination of concern over nuisances and adverse health effects arising from these wastes,[510] as well as mistrust of industry-government control records.[511] Provincial[512] and industrial[513] officials have characterized these by-laws as obstructing legitimate efforts to properly manage these wastes. Indeed, the possibility has been raised that such municipal actions, though understandable, could frustrate national policy on elimination of selected chemicals, such as PCBs and related wastes.[514] The Ontario courts have recently overturned two by-laws that placed restrictions on provincial government initiatives.[515] However, the issues generally seem likely to persist for the foreseeable future.

It would appear that municipalities will continue to seek greater legislative authority to require information about chemical waste products within their boundaries and protect their citizens from nuisances and potential health hazards. Municipal confidence in senior government-industry proposals appears essential if inter-governmental conflicts regarding hazardous waste storage and disposal are to be resolved.[516]

V. INTERNATIONAL APPROACHES AND PERSPECTIVES

International initiatives on hazardous waste control can influence what national governments may do on this issue. Indeed, Canada has been active in various international bodies that have sought answers to these problems. International initiatives reviewed here are of two types. First, bilateral efforts to protect the Great Lakes, a major natural resource between Canada and the United States, are investigated. Second, multilateral efforts to develop standardized protocols and policies relating to hazardous waste controls are examined.

A. Bilateral Efforts to Protect Major Natural Resources from Hazardous Waste Pollution

1. Canada-United States Great Lakes Water Quality Agreement

The Great Lakes, with approximately one-fifth of the world's total supply of fresh surface water,[517] has been of concern to both Canada and the United States since the inception of the Boundary Waters Treaty of 1909.[518] The culmination of a six-year pollution study in 1970[519] eventually resulted in a 1972 Great Lakes Water Quality Agreement,[520] whose objects were re-affirmed in a 1978 agreement.[521] The purpose of the current agreement is to "restore and maintain the chemical, physical and biological integrity of the Great Lakes Basin Ecosystem."[522] To achieve this end, both governments agreed to "make maximum effort to develop programs, practices and technology necessary for a better understanding of the Great Lakes Basin Ecosystem and to eliminate or reduce to the maximum extent practicable the discharge of pollutants into the Great Lakes System."[523] The International

Joint Commission (IJC), a bilateral body created originally under the 1909 Treaty, is given advisory and oversight responsibility under the Great Lakes Agreement.[524]

The agreement, while not primarily focused on hazardous wastes per se, does in fact emphasize stringent control of toxic substances from whatever their source.[525] Indeed, it is doubtful that the purposes of the agreement can be achieved without national, state and provincial programs that adequately address hazardous waste control. The agreement does contemplate the adoption of measures by governments that would govern the "hauling and disposal of liquid and solid wastes, including encouragement to appropriate regulatory agencies to ensure proper location, design and regulation governing land disposal."[526] The agreement also calls for the adoption of "measures for the control of inputs of persistent toxic substances including control programs for their production, use, distribution and disposal" in accordance with an annex to the agreement.[527]

Recent IJC reports to the two governments on the progress being made in meeting the agreement's objectives have emphasized the need for a comprehensive attack on the hazardous waste problem. A major 1980 report recommended that:

> "Governments conduct a complete inventory of waste disposal sites in the basin, a determination of their capabilities for handling such wastes, and the adequacy of their regulation; that every effort be made to reduce the generation of such wastes, to identify and secure abandoned sites and to establish safe disposal sites that can be acceptable to the public; and that governments establish a compatible manifest system among all jurisdictions within and beyond the Great Lakes Basin."[528]

Subsequent IJC reports have also suggested the need for compensation to residents and communities where future hazardous waste facilities might be established.

The IJC has, however, raised doubts about the time it is taking the governments to meet key agreement objectives. For example, a 1982 report noted that despite the committment by the parties to develop and adopt by 1980 joint programs for matters including the proper transport and disposal of industrial wastes, "there has been no substantial progress apparent to the Commission."[530] The IJC's concern is especially acute because of the approximately 400 chemicals already identified in the Great Lakes System.[531]

Specific areas within the Great Lakes System have also been the subject of special IJC reports where agreement objectives have been consistently violated for long periods of time. The Niagara River and its effects on Lake Ontario have come under scrutiny because of its heavy contamination by toxic chemicals. The IJC notes that: "This concern increases with the growing realization of the presence and effects of both the many abandoned or improperly operating hazardous waste disposal sites (some of which have been found to be leaching pollutants to the Niagara), and new or newly-found substances in the ecosystem at concentrations that may be problematic."[532]

Because of the heavily contaminated nature of the Niagara River, both governments[533] and citizen groups[534] on both sides of the border have also conducted studies in the area. Canadian citizen groups have also been active in intervening in major U.S. litigation involving chemical dump site contamination of the River.[535] These interventions in the U.S. courts have raised major legal[536] and international environmental policy issues[537] regarding transboundary hazardous waste impacts which are bound to recur in future.[538]

Generally, the agreement has proved a major vehicle for both heightening public awareness of the problems facing the Great Lakes and focusing government attention on actions to be taken. However, delays in the implementation of control programs necessary to meet agreement objectives as well as delays in initiating other programs to meet IJC recommendations, have underscored weaknesses in government efforts and the advisory structure of the agreement itself. Concern with the inter-boundary impacts to the Great Lakes from old chemical dump sites may continue to draw citizen groups to the courts, at least in the U.S.

B. Multilateral Efforts to Establish Standardized Procedures

Hazardous wastes can have numerous transboundary impacts ranging from transport of such wastes from one country to another, to migration of chemical wastes across borders in surface and groundwater, arising from leaking landfill sites. As a result, many international bodies have argued that a "clear need exists for international guidelines on the management of hazardous waste."[539]

Several international organizations have attempted to respond to such problems including the World Health Organization (WHO), the United Nations of remedial actions to neutralize, contain or remove the hazards.[546]

Many international organizations regard establishment of new hazardous waste facilities with better technology, siting and operating practices as a "central task" and one of the only ways to solve existing disposal problems.[547] One element of this task would appear to be licensing all such facilities, a requirement outlined by an EEC directive on toxic and dangerous wastes.[548] Conceivably, licensing can help reach another goal international organizations regard as important; the achievement of harmony in national disposal standards amongst member countries. Indeed, according to NATO, this is a "priority task" because "harmonization is not only desirable for environmental reasons but also in order to create a fair and common reference basis for economic competition for the waste generating industries in different countries."[549] Development of international policy guidelines on these and related matters is at an early stage.[550]

The tracking of hazardous wastes movement to ultimate disposal locations both within a country and across boundaries has been another key international concern. The EEC directive requires member countries to develop "tripticket" or manifest systems for such off-site transport of wastes following their generation.[551] However, few of the systems in place are adequately enforced, according to NATO, due to insufficient staff and related problems.[552] Moreover, there are ethical matters to consider when disposal is transboundary. The export of wastes by a generator from a country with stringent controls to one with less sophisticated mechanisms, in order to avoid greater disposal costs, has provoked international

Environment Program (UNEP), the North Atlantic Treaty Organization (NATO), the European Economic Community (EEC), and the Organization for Economic Cooperation and Development (OECD). Areas these groups have investigated include: definition and classification of hazardous wastes; control of existing and abandoned sites; achievement of harmony among national laws with respect to siting, treatment, storage and disposal standards; tracking the intra-country and transfrontier movement of hazardous wastes; the role of recycling and resource recovery; financial responsibility and liability; and reciprocal rights of action for transboundary hazardous waste damage. A number of these matters are briefly reviewed below.[540]

Recognizing that the operation of existing landfills that continue to receive hazardous waste is often unsatisfactory,[541] some international bodies such as the EEC have recommended that member countries under their national laws require operators to keep records in perpetuity regarding waste types and quantities deposited at such sites.[542] Because nearly all industrialized countries face the serious and growing problem of having to deal with closed or abandoned sites where hazardous wastes have been mismanaged in the past, NATO[543] and OECD[544] have urged the establishment of cooperative efforts to identify and solve the dilemma. According to NATO, governments "cannot afford to delay investigation of uncontrolled sites until after damage to the environment or public health accidents have occurred."[545] In this regard, both NATO and OECD recommend to their member countries detailed efforts to attack the problem centred around: location and characterization of unsafe sites; environmental and health impact assessment of hazards connected to such sites; and development and application concern over such "dumping" practices.[553] International policies to address both intra-country[554] and transfrontier[555] disposal are under development.

Development of principles respecting financial responsibility and liability arising from hazardous waste damage has also been considered at the international level, though no consensus on approaches has been reached. The EEC directive states that in accordance with the "polluter pays" principle, the cost of disposing of toxic and dangerous wastes should be borne by those who have waste handled at a treatment, storage or disposal facility or by the producer of the product from which the waste came.[556] NATO recommends that sufficient funding for proper closure and post-closure care should be raised through trust funds or like mechanisms. The result would be that fees charged users of hazardous waste facilities are "truly reflective of the long-term costs" of proper management and consistent with the "polluter pays" principle.[557] WHO-UNEP argue that "regardless of who provides the waste disposal services, the legal responsibility for the proper disposal of waste should remain with the waste generator."[558]

While in many countries liability is still determined on the basis of negligence principles, some international organizations argue that a regime of strict liability should be considered.[559] However, it has been argued that this and related developments make obtaining adequate private insurance difficult for coverage of both sudden and non-sudden damage occurrences.[560] Thus, according to WHO-UNEP, the monies for such emergency clean-ups may only be obtainable through establishment of a national fund into which generators and/or waste disposal enterprises are obliged to subscribe; in effect, taxation of waste disposal.[561] Lack of experience with any of the models under consideration, has kept international recommendations in this area relatively tentative to date.

A final international initiative relates to reciprocal rights of action for individuals damaged by transboundary environmental pollution generally, but has obvious application to the special problems posed by hazardous wastes. The progenitor of this notion was the OECD, though more recently the national bar associations of Canada and the United States have explored the concept. The OECD recommendations would ensure that any person in a neighbouring country who may be harmed by transfrontier pollution has equal access to the courts of the country where the pollution originates as that country's own citizens would have for redress from pollution within their own nation.[562] The emphasis of a 1979 Canadian Bar Association-American Bar Association draft treaty draws heavily from the earlier OECD recommendations. The draft treaty recognizes that it should not matter on which side of the border the polluter is located, where the person affected lives, or in which jurisdiction the judicial or administrative protection is available. The main operative provision of the draft treaty would ensure that the actual or potential victim of transfrontier pollution would have a remedy in the courts of the country where the pollution originated, if a victim residing in the country of pollution origin would have had a remedy in the case of domestic pollution.[563] The same principle would apply to access to administrative proceedings pertaining to approval of permits and related matters.[564]

However, the regime proposed by the ABA-CBA draft is strictly procedural, it would not alter substantive rights, obligations or remedies on either side of the border.[565] It would merely grant equal access to whatever procedures and remedies now exist--or could exist in future--in either country. In this sense, the draft treaty is very much status quo in nature. Given the current inadequate state of the common law of public nuisance in Canada, any American who sought redress in Canadian courts would be confronted with the same legal and financial barriers that Canadians face including lack of standing to sue, broad agency discretion under statute and prohibitive costs. Because Canadians have little access to their own courts in public nuisance environmental matters, the draft treaty would put Americans in no better position. Canadians, on the other hand, have generally been able to appear in U.S. courts to seek redress from pollution originating in the U.S. because of liberalized standing rules.[566] The draft treaty does not further improve that situation.

While the OECD recommendations and the ABA-CBA draft treaty are a step forward in recognizing the need to deal with transfrontier pollution damage to the individual, it is clear that they will only be as effective as the domestic law of a signatory country allows.

Canada is a member of, and has been active in, all of these international bodies, apart from the EEC, and has acted upon some of the above multilateral proposals. However, federal-provincial action seems less systematic, if not haphazard, on other key international objectives including investigation and control of abandoned sites;[567] achievement of harmony in disposal standards across the country; recycling and resource recovery efforts; establishment of industry contribution to clean-up funds; and improvements in citizen access to the courts. The absence of comprehensive federal-provincial action in these areas of international concern, suggests where reform efforts in Canada should be directed.

VI. NEW APPROACHES FOR HAZARDOUS WASTE LEGAL AND REGULATORY CONTROL EFFORTS IN CANADA

The governmental ability to define and respond to the hazardous waste problem has clearly improved in recent years. However, it is equally clear from the above review that major gaps and inconsistencies remain in legislative and policy development in Canada notwithstanding international, federal, provincial and municipal attention to the problem. Reforms are needed, moreover, not just to improve governmental authority to act, but also to provide the individual with the ability, as a matter of law, to protect his or her health and environment when, for whatever reasons, governments do not act. The recommendations that follow are proposed with those twin objectives in mind.

First, national standards for treatment, storage and disposal facilities for hazardous wastes should be established under federal law. These should not preclude establishment of more stringent provincial standards where necessary. However, a bottom-line level of protection anywhere in the country appears integral to the success of a hazardous waste management program. It may provide several benefits including reassuring skeptical local communities about the acceptability of a facility;[568] preventing the creation of "hazardous waste havens" in those parts of the country where provincial or local law may, for whatever reasons, be inadequate or less stringent than other parts of the country;[569] and, by providing national minimum standards for upgrading disposal, make recycling techniques more attractive to industry by making dumping more expensive.[570] Non-enforceable guidelines are unlikely to have comparable effects.[571]

Second, trust funds for clean-up, environmental restoration and victim compensation should be established under federal or provincial law for damage arising from existing and abandoned hazardous waste sites or other sources. Such funds could be of two types. One scheme could cover the liability of an existing or future owner or operator of a hazardous waste site that has been operated or closed in accordance with appropriate legislative approvals. The fund could be financed primarily through an industry tax or fee based on the type, toxicity, weight or volume of waste disposed, with the tax or fee collected from disposal site operators.[572] However, because it is possible that such a scheme could not alone properly care for the many improperly managed or past abandoned sites that may cause problems in future, a second type of trust fund appears appropriate. This second type of fund would also be primarily financed by industry through a series of taxes or fees levied against products whose manufacture generates hazardous wastes. This tax or fee would be determined by reference to such factors as risk levels, quantities and opportunities for exposure of particular substances. Thus, this fund would be built up by those industries and consumers who profit from products or activities associated with toxic or hazardous materials.[573] Notwithstanding industry concerns about being compelled to pay for the sins of their predecessors, a fund for hazardous waste site clean-up has legislative precedent in analogous areas such as industry-financed rehabilitation funds for lands abandoned or left derelict by mining activities.[574] Both types of funds should also be available to compensate innocent victims for health and property damage, thereby internalizing the full social costs with those who produce wastes that risk such harm.[575]

Third, mandatory recycling of selected hazardous wastes should be required under federal or provincial law. Legislation could also require the establishment of a registry or listing of hazardous wastes that government has found are economically and technologically feasible to recycle. Whenever any waste on the list is disposed of by any person, there would be an onus on the producer or disposer to justify in writing why the waste was not recycled. Higher landfill taxes or fees could be required for hazardous waste that could otherwise be recycled. A combination of the federal Transportation of Dangerous Goods Act and the provincial manifest systems could be used to track and identify such recyclable waste streams.[576] Initiatives such as these would appear necessary both to help reduce the quantities of such wastes requiring treatment and disposal and to minimize reliance on landfill sites whose long-term environmental safety remains in doubt.[577]

Fourth, environmental rights legislation should be enacted under provincial law.[578] Under such legislation any person should have standing to sue without having to first demonstrate that he or she has a proprietary interest in the matter or has suffered special or particularly direct damage over and above that incurred by the public at large.[579] This cause of action for damages or injunction should be authorized to protect human health and the environment from hazardous waste damage or for non-compliance with government environmental approvals. Where it can be demonstrated that, notwithstanding the existence of government approvals, the data relied upon by an agency in issuing an approval can be shown to be inaccurate, an action for a prospective nuisance should be allowed, if there is a dangerous probability that a threatened or potential injury will occur.[580] Once the plaintiff has proved that a defendant was generating, hauling or disposing of particular hazardous wastes and has shown that human health or the environment has been damaged in a manner consistent with the presence of such wastes, or that statutory requirements have been violated, the burden of proof should shift to the defendant to show that the harm did not result from his activities.[581] Such legislation has been seen as consistent with, and complementary to, victim compensation fund provisions.[582] Other components of environmental rights legislation should include limiting security for costs or damages;[583] permitting any person to participate in, or initiate, regulation-making activity;[584] and providing funding of those individuals or groups otherwise unable to participate in administrative tribunal hearings on the establishment of hazardous waste facilities.[585]

Finally, a number of additional law reforms appear warranted arising from the above review. These include:

- establishment of a hazardous waste definition in the Transportation of Dangerous Goods Act, including incorporation of qualitative and quantitative criteria for how wastes are determined to be hazardous and harmonization with provincial manifest systems;[586]
- improvements in provincial manifests to include tracking of solid hazardous wastes as well as development of a program parallel to the manifest system for registration and accounting of hazardous wastes stored or disposed of on a generator's premises;[587]
- greater legal responsibility on generators under provincial law for how hazardous wastes are ultimately disposed;[588]
- mandatory record-keeping requirements under provincial law for all existing landfills continuing to receive hazardous wastes;[589]
- provincial legislation requiring "host community" compensation where hazardous waste facilities are sited near a community;[590] and
- provincial enabling legislation authorizing municipal right-to-know by-laws.[591]

In light of the nature of several of the law reforms proposed here, a brief examination is undertaken respecting constitutional aspects of the hazardous waste problem.

VII. CONSTITUTIONAL ASPECTS OF HAZARDOUS WASTE MANAGEMENT

The Constitution[592] reflected the concerns of the 19th century when it was enacted. It does not explicitly allocate legislative authority to either the federal or provincial governments respecting problems of the modern era such as management of the environment generally, or hazardous wastes, in particular. As a result, environmental affairs may frequently be characterized as being subject to overlapping jurisdiction, because of the generality of federal and provincial powers as defined in the Constitution.[593] Among the key powers assigned to Parliament that may have application to environmental management, including hazardous waste concerns, are the criminal law power,[594] the power "to make laws for the peace, order and good government of Canada,"[595] the power to regulate trade and commerce[596] and the taxation power.[597] Other federal heads of power provide a more limited basis for federal law on hazardous wastes because of their greater specificity with respect to particular concerns.[598]

Provincial jurisdiction that may have broad application to hazardous wastes management is derived from the authority to legislate with respect to municipal institutions in the province,[599] property and civil rights in the province,[600] local works and undertakings other than those placed under federal control,[601] generally, all matters of a merely local or private nature in the province,[602] lands and other natural resources owned by the province[603] and direct taxation within the province to raise revenue for provincial purposes.[604]

The stages through which a toxic chemical or hazardous substance may go before it becomes a toxic or hazardous waste can include import, export, manufacture, processing, use, storage, handling, transportation, disposal and re-use.[605] However, the constitutional authority for one government level to legislate for control and management of toxic or hazardous substances from "cradle to grave" has been treated within governments as a gray area.[606] Federal-provincial cooperation has been argued to be capable of overcoming any constitutional limitations which either government level might suffer.[607] Where cooperation is not possible, for whatever reasons, it has been suggested that either government level can act alone, though federal constitutional jurisdiction is perceived as being more limited.[608]

One of the above proposals has argued for the need for national law on waste disposal standards. However, limitations on federal constitutional authority have been perceived as being particularly acute in the area of waste disposal,[609] which has usually been regarded as a provincial and local concern, at least in the context of traditional garbage disposal.[610] While provincial constitutional authority is much broader, three key limitations on such authority centre on provincial inability: to legislate with respect to federal enterprises and activities that come within exclusive federal jurisdiction; to legislate where the result would have extraprovincial effects; and to legislate where the result would be inconsistent with valid federal legislation.[611]

Generally where the federal government has entered the toxics field, such as with the Environmental Contaminants Act[612] and the Transportation of Dangerous Goods Act,[613] a combination of the criminal law power and the general power may be said to justify, constitutionally, such federal enactments.[614] The criminal law power has been held to encompass the preservation of "public peace, order, security, health and morality."[615] Arguably, whether the issue is toxic chemicals, dangerous goods movement or hazardous wastes, a serious threat to public health is involved which could justify invocation of the criminal law power, even with intraprovincial effects.[616]

The principal difficulty in federal legislation authorized solely pursuant to the criminal law power, is that sanctions available are limited to a prohibition-punishment type approach,[617] rather than a management type scheme. Indeed, while the Environmental Contaminants Act is arguably justified under the general power as well as the criminal law power, it has been characterized as being drafted as if only the latter head of power authorized it.[618] Parliament's power "to make laws for the peace, order and good government of Canada" is also an important constitutional basis for broader federal action.[619] The judiciary has held this general power capable of supporting federal legislation where the subject matter has attained "national dimensions"[620] or become a matter of "national concern."[621] The mismanagement of hazardous wastes and the implications for health and environment are a grave national concern, judging from the available literature, and go beyond "local or provincial concerns or interest."[622]

Against this line of reasoning, it could be argued, as was done in the Margarine Reference, that "a matter might be of local concern in many provinces, but the aggregation does not make it a matter of national concern."[623] This could be said to characterize the situation with respect to disposal, even of hazardous wastes. However, it could be argued that:

> ". . . the most important element of national dimension or national concern is a need for one national law which cannot realistically be satisfied by cooperative provincial action because the failure of one province to cooperate would carry with it grave consequences for the residents of other provinces. A subject-matter of legislation which has this characteristic has the necessary national dimension of concern to justify invocation of the p.o.g.g. power."[624]

Moreover, some commentators have noted this concern in the environmental area generally:

> ". . . the possibility (indeed likelihood) that some provinces would fail to co-operate constitutes a problem that cannot be dealt with at the provincial level and falls therefore within the residual powers of the federal government. It is possible that a general federal pollution control program designed to deal uniformly with even purely intra-provincial pollution so as to prevent provincial authorities reducing their standards to attract industry, could be enacted under the 'peace, order and good government' power, since this would provide an approach to pollution control that provincial legislation could not guarantee. . . ."[625]

The possibility of "hazardous waste havens" presents just such a spectre; one that may only be capable of being dealth with through national disposal standards legislation. The subject matter meets both the tests of novelty and discreteness usually required to justify legislation on a national dimensions basis. The provinces cannot act adequately given the scope of the problem nationally, and the proposed legislative intervention by the federal government would not be intrusive or pervasive of provincial powers.

Moreover, the potential environmental health damage and public costs such wastes could pose if disposed of improperly could be considerable. Indeed, this concern, in a slightly different context, was expressed by the Environmental Contaminants Board of Review with respect to the Environmental Contaminants Act's failure to address storage and disposal of scheduled substances under the Act (e.g. PCBs). The Board attributed the omissions to "political realities" and "accepted constitutional notions however debatable" of the division of federal and provincial powers under the constitution.[626] Hearings before the Board of Review in 1979 revealed the problems and uncertainties associated with the division of scheduled substance control between federal manufacturing control under the Environmental Contaminants Act and general provincial disposal control responsibilities.[627] 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."[628]

Because of these concerns, and despite the existence of federal waste guidelines,[629] the Board recommended replacing such guidelines, where possible, with federal regulations agreed to with the provinces, using the Fisheries Act[630] as a model. "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 disposal of PCB wastes."[631]

More recently, the chairman of the Board of Review has observed that:

> ". . . I am not persuaded that any classical view of Canadian federalism . . . is a barrier to a national policy on something as important as toxics. Ground waters go from one province to another . . . we are dealing with something that is very mobile."[632]

The initial reaction at the provincial level to the Board's recommendations has been to reject them as exceeding federal constitutional authority.[633] Arguably, the provincial response would be the same on the issue of hazardous waste disposal generally, though it is submitted that the above review demonstrates that the general power can in fact support the establishment of national hazardous waste disposal standards.

Trade and commerce is another head of federal power that may be applicable to support national disposal standards in this area. The movement of hazardous wastes in commerce constitutes an economic activity that invites potential federal legislative involvement, particularly where there is inter-provincial movement of such waste commodities. Moreover, commentators have noted, though in another context, that "while purely intra-provincial transactions may not be regulated per se, federal legislation is not invalid simply because it has some incidental impact on such transactions."[634] At the same time, some provincial regulatory schemes have been declared invalid for infringing the trade and commerce power even though they dealt substantially with only intra-provincial regulation.[635]

One potential limitation on the trade and commerce power, however, relates to whether it may be used as a basis for enacting legislation protecting health and the environment apart from economic activity.[636]

Despite the limitations raised above, there appear to be compelling arguments for federal authority to legislate national hazardous waste disposal standards using a combination of the criminal law and general powers, though more problematically the trade and commerce power.

A second proposal made above calls for the establishment of clean-up and victim compensation trust funds financed by a tax on industry at either the product generation or waste disposal stage. It seems clear that the provinces could, under their authority for "property and civil rights within the province," enact legislation establishing a compensation fund for intra-provincial pollution-related damage.[637] The fund could be financed by special contributions from industries within their boundaries, as has been done in the workmen's compensation area.[638] As a provincial taxing scheme it would have to be a direct tax.[639]

The more interesting question is whether the federal government has the authority to establish a fund covering the chemical and related industries engaged in interprovincial trade and commerce. It has been suggested that it is unlikely that Parliament could do so[640] based on the Unemployment Insurance Reference.[641] However, the practical consequences of denying federal authority in this area can be quite significant. As one commentator has recently noted:

> "The answer to the question of constitutional jurisdiction has important practical effects. On the one hand, the federal government has traditionally been reluctant to deal with the matter of compensation in cases where jurisdiction is unclear, and therefore has not provided for compensation in proposed recent legislation such as the Transportation of Dangerous Goods Act. On the other hand, provincial

> legislation will require uniformity and reciprocity to avoid the creation of "pollution havens," which can only be achieved by inter-provincial agreements. Otherwise, a province that licences a business involved in the discharge of pollutants will have little incentive to pass legislation for the benefit of the population of a neighbouring province. This will be especially true if the polluting industry is of great economic importance to the home province and the requirement to pay compensation might cause it to curtail its activities."[642]

Moreover, doubt has been cast on the correctness of certain aspects of the Unemployment Insurance Reference.[643] Whether the provinces will enact such industry-financed funds and whether constitutional limitations in the types of funds they may establish will arise, remains to be seen.

A third proposal made above relates to mandatory recycling of selected hazardous wastes. Provincial authority to assess higher levies or taxes on hazardous wastes disposed of, that could otherwise be recycled, appears supportable on the same basis as the analysis made with respect to industry contribution to trust funds. To the extent that Parliament has broad authority to prohibit conduct under the criminal law power,[644] disposal of otherwise recyclable hazardous wastes could be made a federal offence. However, the more managerial the scheme were to become, the less likely the courts would be to uphold it on the criminal law power alone, because of a concern for encroachment on areas traditionally reserved to the provinces.[645]

Generally, while there appear to be constitutional limitations or uncertainties with respect to certain types of approaches that federal and provincial governments can take in the hazardous wastes area, ample authority appears to exist for most of the major initiatives proposed here.

VIII. CONCLUSIONS

The control of hazardous wastes has become a focus of major public concern in Canada in recent years. Evidence is clearly available of past, if not present, mismanagement of such wastes as well as the potential for considerable environmental and human health damage. The enormous public expenditures that would be necessary to rectify such problems in future, if preventive action is not taken now, suggests the need for major law reform initiatives.

Tort law remedies, while applicable to the problem, have serious limitations to their systematic use for public and individual claims for recovery from hazardous waste related injury. Without legislative reform, archaic procedural barriers as to who may sue for certain damage, problems in establishing causation, related liability defences and prohibitive expense will continue to make the tort law system applicable to the hazardous waste problem more in theory, than in practice.

In responding to rising public concern, federal, provincial and municipal governments have begun to fashion legislative and administrative responses. Most government efforts have centred on improved definition and quantification of such wastes; siting new treatment and disposal facilities; control of existing and inventory of abandoned sites; tracking of waste movement; emergency response and clean-up; and increased penalties. Not surprisingly some of these governmental efforts have worked at cross-purposes, particularly where local governments and populations have resisted senior government and industry proposals for establishment of new facilities within their borders. New government legislative and policy initiatives have also been hampered by narrow readings of constitutional authority, particularly at the federal level, inadequate or conflicting scientific criteria for regulation development, competing socio-economic concerns and a legacy of public mistrust. International efforts have influenced national and provincial activity in this area both with respect to protecting major natural resources, such as the Great Lakes, but also in relation to establishing more compatible control regimes with other countries such as in the area of waste tracking. Other international proposals, such as establishment of industry-financed clean-up funds, have not been reflected in federal or provincial law or policy to date.

Industry itself has been concerned, if not ambivalent, about the potential burdens on it from new and prospective regulatory initiatives in the hazardous waste area. The chemical industry has supported a uniform hazardous waste definition based on sound scientific criteria, while the general manufacturing industry has doubted the need to develop a nation-wide definition at all. The disposal industry has claimed that most of its proposals have been technically sound and should not be subjected to detailed public hearings on such technical matters, while other industry sectors have admitted that some siting proposals that have failed were environmentally unsound to begin with. The waste hauling industry has admitted that the practice of illegal hazardous waste dumping is taking place, while waste generators have resisted proposals for general industry contributions to clean-up and victim compensation funds.

Environmentalists in turn have pointed out key gaps in governmental legislative and policy development. These have ranged from lack of national disposal standards, recycling requirements and industry clean-up and victim compensation funds to needed reforms in the common law and administrative procedures to allow greater citizen access to the courts and administrative decision-making.

The picture that emerges is one of a major national problem for which the regulatory and legal system is still evolving its response. Considering the potential damage to human health and the environment from continued mismanagement of hazardous wastes, it is clear that legislative improvements to both the governmental authority to act and the role of the public in the process are past due.

IX. NOTES

1. "Hazardous wastes" have been defined as wastes that have physical, chemical or biological characteristics which require special handling and disposal procedures to avoid risk to health or the environment. Such wastes present either (a) short-term acute hazards, such as acute toxicity by ingestion, inhalation or skin absorption, corrosivity or other skin or eye contact hazards or the risk of fire or explosion; or (b) long-term environmental hazards, including chronic toxicity upon repeated exposure, carcinogenicity (which may in some cases result from acute exposure but with a long latent period), resistance to detoxicification processes such as biodegradation, the potential to pollute underground or surface waters, or aesthetically objectionable properties such as offensive odours. See World Health Organization and United Nations Environment Programme. Hazardous Waste Management: Policy Guidelines and Code of Practice Including the Report on a Working Group. Interim Document No. 7. (Copenhagen and Nairobi: WHO/UNEP, 1982) at 10.

   However, efforts to comprehensively define hazardous wastes have met with difficulty. WHO and UNEP note that "international agreement on both a universally acceptable and comprehensive definition and classification of hazardous waste has not been reached because suitable parameters are difficult to identify. Waste is frequently a complex mixture that makes the collection of data on waste composition difficult - and often very costly - to obtain. Even given adequate analytical data, the significance of the concentration of a particular waste component is seldom clear." Id. at v. Other international agencies argue that: "During the past ten years, the political and regulatory discussion has, to a large extent focussed on the question of what constitutes a hazardous waste. This discussion has not been completely fruitful, to the extent that an international consensus has not been achieved on this issue. The question has often been posed without indicating clearly the legal requirements which the definition and classification were required to satisfy. A frequent oversight is that the definition of hazardous wastes has to meet quite different criteria when one looks to the various elements of the overall disposal system....As international discussion on this topic has not been sufficiently clear, it is not surprising that no common international definition or classification of hazardous waste exists and that each of the NATO countries has its own approach in that area. Future discussions, therefore, should concentrate more on the question of the purposes for which some sort of classification is needed before continuing the dialogue about how a hazardous waste should be identified." North Atlantic Treaty Organization. Committee on the Challenges of Modern Society. Disposal of Hazardous Wastes. Final Report (Phases I and II) No. 122. (Brussels: NATO, April 1981) at 43-44.

   The problem of hazardous waste definition is discussed further below. See IV. A.2.a and IV.B.2.

2. WHO and UNEP note that improper hazardous waste disposal methods can lead to human death, injury or serious impairment of health such as took place from mercury pollution in Minimata Bay, Japan. Every year,

approximately 30 million to 50 million tonnes of hazardous wastes are disposed of in the European Economic Community alone. Id. WHO/UNEP at 2-3.

3. Hazardous waste pollution in the Great Lakes System, which contains 20% of the world's fresh surface water supply, has prompted the International Joint Commission (IJC) to conclude that: "The disposal of hazardous or toxic liquid and solid wastes, generated by the intense industrial activity in the Great Lakes Basin, is a matter of urgent and immediate concern. With the recent appreciation of the magnitude of the environmental and health problems associated with the disposal of these waters, it is being realized that adequate treatment and disposal regulations and facilities do not exist, and that insufficient concern has been directed at methods to reduce the generation of pollutants and to dispose of such wastes. The Commission is also aware that many inactive but potentially dangerous waste disposal sites exist throughout the basin. The problem of hazardous waste management requires immediate attention." International Joint Commission. Pollution in the Great Lakes Basin From Land Use Activities. (Ottawa and Washington, D.C.: IJC, March 1980) at xi-xii. More recently, the IJC has argued that: "A multitude of industrial chemical wastes continue to be generated and disposed of in large quantities by uncontrolled and unsafe methods. There is at present no effective Basin-wide operating plan to cope with the generation, transportation, and disposal of hazardous wastes in the Great Lakes Basin. The Commission concurs with its [Water Quality] Board's conclusion that the existence of uncontrolled accumulations of hazardous wastes, whether they exist in improperly-constructed sites or inadequate temporary storage facilities, is an extremely serious environmental and health risk in the Basin." International Joint Commission. Seventh Annual Report on Great Lakes Water Quality. (Ottawa and Washington, D.C.: IJC, October 1980) at 43.

In one case, covering a period of approximately two decades, ending in 1975, Hooker Chemicals and Plastics Corporation disposed of an estimated 80,000 tons of chemical wastes, including dioxin [TCDD], at the Hyde Park landfill, a 15-acre site located in the Town of Niagara, New York. The site is approximately 3500 feet from the Niagara River which drains into Lake Ontario. Migration of chemicals from the site has taken place, though a settlement agreement to commence remedial measures has recently been approved by the U.S. courts. TCDD, one of the most potent toxins known to humans, has been linked to the production of cancer, mutations and birth defects. See United States of America v. Hooker Chemicals and Plastics Corporation (1982), 11 CELR 59. [United States District Court (Western District of New York)]. The settlement agreement has been criticized as being inadequate to prevent chemical migration from the site to the Niagara River. See Toby Vigod, "Hyde Park Landfill Settlement Ratified: Future of the Niagara River in Doubt", (1982), 7 CELA Newsletter 49.

4. The federal government has acknowledged that: "At present, the management of hazardous or toxic wastes on a national basis throughout Canada is not acceptable. In all geographic regions in Canada, some more so than others, hazardous wastes are being handled and disposed

of in a manner that endangers public health and/or the environment." Statement of E. Carey, Chief, Hazardous Waste Management Division, Environment Canada to the Second Meeting of public interest groups and the Canadian Environmental Advisory Council, November 21-22, 1977, Ottawa. See Canadian Environmental Advisory Council. Reports of the First and Second Meetings of Public Interest Groups with the Canadian Environmental Advisory Council. Report No. 7. (Ottawa: CEAC, May 1978) at 71.

5. In the late 1970's, the Canadian Council of Resource and Environment Ministers increasingly perceived the need for action to deal with the environmental and health problems posed by toxic and hazardous wastes. In October 1978, a federally sponsored seminar resulted in the decision by federal, provincial and industrial representatives to establish a Task Force to begin initially concentrating on the problem of hazardous waste definition in anticipation of subsequent comprehensive management of such wastes at the appropriate government level. Correspondence to the author from R.J. Fry, Chief, Hazardous Waste Management Division, Environment Canada, Ottawa. July 19, 1979.

6. Such other federal laws include: Food and Drugs Act R.S.C. 1970, c.F-27 as amended; Pest Control Products Act R.S.C. 1970, c.P-10; Atomic Energy Control Act R.S.C. 1970, c.A-19 as amended; Canada Labour Code R.S.C. 1970, c.L-1 as amended; and Hazardous Products Act R.S.C. 1970, c.H-3 as amended.

7. The principal federal law is the Environmental Contaminants Act S.C. 1974-75-76, c.72. For a review of Canadian law and policy respecting toxic chemicals, see J.F. Castrilli, "Control of Toxic Chemicals in Canada: An Analysis of Law and Policy," (1982), 20 Osgoode Hall Law Journal 322 . See also Canadian Environmental Law Association and Canadian Environmental Law Research Foundation. Roundtable Discussions on Toxic Chemicals Law and Policy in Canada. Proceedings of a Seminar held on June 15-16, 1981. (Toronto: CELA/CELRF, 1981).

8. Organic chemical production increased 800 per cent in the western world between 1950 and 1970. (7 million tons to 63 million tons). By 1985, production volume is expected to increase approximately 300 per cent more to 250 million tons. See Eckard Rehbinder, "Control of Environmental Chemicals", in Trends in Environmental Policy and Law (Berlin: Eric Schmidt Verlag, 1980) at 199.

9. For example, between 1962 and 1974 use of vinyl chloride monomer (VCM) by manufacturers of plastics and synthetic resins in Canada increased 444%. (14,200 tons to 77,300 tons). See Statistics Canada. Human Activity and the Environment. (Ottawa: Supply and Services Canada, 1978) at 117. VCM is a confirmed carcinogen. 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: Supply and Services Canada, 1977) at 22.

10. Economic Council of Canada. Reforming Regulation. (Ottawa: Supply and Services Canada, 1981) at 91. A recent inventory for the federal government confirms that the chemical industry is the largest generator of hazardous wastes annually in Canada, with forty-seven

per cent of the national total. See Environment Canada. Environmental Protection Service. Canadian National Inventory of Hazardous and Toxic Wastes. Vol. 3. Prepared by Gore and Storrie Limited. (Ottawa: Env. Cda., January 1982) at 6. The metals industries contribute about thirty-eight per cent and eleven other industry groups together contribute fifteen per cent. Id.

11. Carey, supra, note 4. This figure represents three per cent of the at least 32,000,000 tonnes of industrial wastes generated annually in Canada (excluding agricultural, mining and pulp and paper wastes). Id. at 71. Subsequent, more detailed, inventories place quantities of hazardous wastes generated annually at 1.3 million tonnes (dry weight) or 3.3 million tonnes (wet weight). Environment Canada Inventory, id. at 49.

12. Raymond M. Robinson, Assistant Deputy Minister, Environmental Protection Service, Environment Canada, Ottawa. Text of an Address given at the Canadian Environmental Law Research Foundation Regulation Conference. (Toronto: January 22, 1980).

13. According to one federal official, "...the degree of hazardous waste control being exercised by the provinces and territories is variable and nowhere totally satisfactory. The variability is caused, in part or in total, by a lack of appreciation of the dangers of hazardous wastes to human health or the environment, and/or by economics, and other factors such as past experiences, differences in capabilities of the various regulatory agencies and lack of policies covering these matters." Carey, supra, note 4 at 71.

14. Hazardous waste quantities are expected to grow forty-five per cent from their current levels by the end of the century. Id. at 71.

15. The Economic Council states that "....the pressure to get rid of [toxic wastes] has led to illegal or indiscriminate dumping in fields or ditches, or on unlicensed land-fill sites or garbage dumps. The toxic properties of the wastes may or may not have been known at the time of disposal...." Supra, note 10.

16. A 1980 Environment Canada inventory found that approximately one-half of the 138,900 tonnes of hazardous wastes estimated by this report to be generated every year in the Maritimes are being deposited in municipal dumps or landfills, the vast majority of which are not suitable for receiving them. Some of the sites are already leaking such materials as PCB wastes. Environment Canada. Environmental Protection Service. Atlantic Region. Maritimes Hazardous Wastes Inventory Report. (Halifax: Env. Cda, November 1980).

    Federal officials have characterized the hazardous wastes disposal system in the Maritimes as "unsatisfactory, even dangerous". John Roberts, Federal Minister of the Environment. Speech to the Third National Conference on Waste Management. (Toronto: October 14, 1981).

17. A 1980 study done for Environment Canada, the western provinces and the territories, concluded that in the west both the hazardous waste haulage sector of the transportation industry and the waste disposal

sector are inadequate, poorly regulated and not subject to comprehensive monitoring. "Environmentally risky practices" were found to be "routinely" engaged in. The list of "environmentally unacceptable practices" was found to include: the mixing of waste types in transport containers; the concealment of hazardous wastes with municipal refuse; the disposal of such wastes in unsuitable areas; poor equipment maintenance; and lack of training and safety programs. The lack of a waste tracking system from source to disposal was of "special concern." The report noted that: "Generators know the waste type, the transporter's identity, but not the disposal location. The transporter knows the location but not the waste type . . . the disposer is often unaware of the waste type delivered to the site." Reid, Crowther & Partners. Hazardous Wastes in Northern and Western Canada: The Need for a Waste Management Strategy. Vol. 1. Prepared for Environment Canada and the governments of British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, the Yukon and Northwest Territories. (Calgary: Reid, Crowther, 1980) at iii-iv.

18. Every year Quebec and Ontario generate approximately seventy-nine per cent of the nation's hazardous wastes (29% and almost 50%, respectively). Environment Canada Inventory, supra, note 10 at 6. Based on studies conducted by the two provinces, federal Environment Minister John Roberts has characterized the situation in these two provinces as "equally worrisome" to that of the Maritimes and the West. Roberts, supra, note 16. Problems in Ontario have included an inability to establish new facilities; illegal dumping; co-disposal of liquid industrial wastes with domestic wastes in landfills; undue reliance on treatment and disposal of Ontario wastes in the United States despite recent and predicted border closings to selected hazardous waste streams (e.g. PCBs) by U.S. authorities; abandoned sites and related matters. See, e.g. "Waste disposal sites called inadequate," The Globe and Mail, June 2, 1977; "Toxic waste dumped in fields, sewers," The Globe and Mail, June 8, 1977; "Minister agrees that liquid waste being dumped illegally," The Globe and Mail, July 6, 1977; Gwen Smith and Jock Ferguson, "Hazardous chemical waste: where it goes, nobody knows," The Globe and Mail, August 18, 1980; and Gwen Smith, "Ontario's controls on waste called 'a game of sham,'" The Globe and Mail, August 26, 1980. See also Ontario Ministry of the Environment. The Siting of Facilities and the Management of Liquid Industrial and Hazardous Wastes in Ontario. Prepared by Maclaren Engineers, Planners & Scientists. (Toronto: MOE, November 1980).

19. John Roberts, Federal Minister of the Environment. Speech Notes for an address to a Joint Meeting of the American Water Works Association and Federation of Associations on the Canadian Environment. (Moncton, New Brunswick: September 14, 1981). Problems with old or abandoned sites may include contamination of nearby surface and groundwater resources by contaminated leachate (wastes mixed with water) and escape of toxic and explosive gases to surrounding air and buildings. Id. Further discussion on the abandoned site surveys is undertaken below. See

The United States Environmental Protection Agency (US EPA) has recently identified 9,000 to 11,000 inactive sites in the United States. See

The Conservation Foundation. State of the Environment - 1982. (Washington, D.C.: Conservation Foundation, 1982) at 152.

19a. These provinces include British Columbia, Nova Scotia and Newfoundland. Infra notes 121, 122, 123 and 403. As of February 1983 abandoned site studies were still not underway in these provinces. Memorandum from J. Myslicki, Chief, Inventories and Assessment Division, Waste Management Branch, Environment Canada to D.S. Hay, Chief, Control and Implementation Division, Waste Management Branch, Environment Canada (February 9, 1983, Ottawa, Ontario).

20. V. E. Niemela, Director, Waste Management Branch. Environment Canada, Ottawa. "Hazardous Waste Management in Canada - Overview." An Address to the Chemical Institute of Canada. Sixty-Fifth Chemical Conference and Exhibition. (Ottawa: CIC, 1982).

21. See, e.g. Roberts, supra, note 19; Environment Canada. The hazardous waste problem: Let's find some common ground. (Ottawa: Env. Cda., 1981) at 4; Maritimes Inventory, supra, note 16 at 20.

22. Maritimes Inventory, supra, note 16 at 25. See also "East Coast industries dump unsafe wastes," The Globe and Mail, April 28, 1981 at 1.

23. National Research Council of Canada. Associate Committee on Scientific Criteria for Environmental Quality. Polychlorinated Biphenyls. (Ottawa: NRC, 1978). See also Environmental Defense Fund and Robert H. Boyle. Malignant Neglect. (New York: Alfred H. Knopf, 1979) at 55-81.

24. National Research Council of Canada. 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).

25. Reid, Crowther study, supra, note 17 at 151.

26. Environment Canada. Environmental Protection Service. Socio-Economic Impact Analysis for Regulations relating to Divisions 9.2 and 9.3 under the Transportation of Dangerous Goods Act. Appendix. (Ottawa: Env. Cda., January 1982) at 25.

27. S. Oziewicz, "Fencing arsenic-laden site useless, MOH says," The Globe and Mail, November 14, 1979.

28. Reid, Crowther study, supra, note 17 at 125.

29. See, generally, "Ville Mercier: pas de crainte pour maintenant," La Presse, July 11, 1981; "Quebec plans war on waste," The Montreal Gazette, July 28, 1981 at 3; and "Dump pollution study requested," The Montreal Gazette, May 7, 1982.

30. In 1977, federal officials estimated the costs of unsound disposal as ranging from $10 to $40 per tonne. Carey, supra, note 4 at 71.

31. One estimate places the cost of environmentally sound disposal methods at $140 per tonne. Environment Canada, supra, note 26 at 19.

32. Recent projections suggest that a future expenditure of between $500 million and $1 billion might be required in Canada if preventive action is not taken soon. Id. at 18.

33. See generally David Estrin, "Annual Survey of Canadian Law - Part 2: Environmental Law" (1975), 7 Ottawa L. Rev. 397 at 399.

34. Id. at 400.

35. Wright and Linden, Canadian Tort Law (Seventh ed., Toronto: Butterworths, 1980) at 17-1.

36. Id. at 17-1 and 17-2.

37. See, e.g. Hickey v. Electric Reduction Co. of Canada (1972), 21 D.L.R. (3d) 368 (Nfld.S.C.); Fillion v. New Brunswick International Paper Co., [1934] 3 D.L.R. 22 (N.B.C.A.). In both these cases, standing to sue in public nuisance was denied to fishermen whose livelihood was damaged when poisonous wastes from a phosphorous plant and pulp and paper mill respectively, were discharged into bodies of water resulting in water pollution and destruction of fish life.

38. See, e.g. Appleby v. Erie Tobacco Co. (1910), 22 O.L.R. 533 (Ont. Div. Ct.); Hollywood Silver Fox Farm Ltd. v. Emmett [1936] 2 K.B. 468 (K.B.D.); and Pugliese v. National Capital Commission (1977), 17 O.R. (2d) 129, 79 D.L.R. (3d) 592 (Ont. C.A.); affd but answer varied [1979] 2 S.C.R. 104, 97 D.L.R. (3d) 631 (S.C.C.).

39. Russell Transport Ltd. v. Ontario Malleable Iron Co. Ltd. [1952] O.R. 621, [1952] 4 D.L.R. 719 (Ont. H.C.).

40. Pugliese, supra note 38 at

41. Id. at (O.R.), (D.L.R.); see also Managers of the Metropolitan Asylum District v. Hill (1881), 6 App. Cas. 193 (Eng. H.L.).

42. Supra, note 39 at (O.R.), (D.L.R.). For a general discussion of the defence of prescription, as well as that of statutory authority, see John P. S. McLaren, "The Common Law Nuisance Actions and the Environmental Battle--Well-Tempered Swords or Broken Reeds?" (1972), 10 Osgoode Hall Law Journal 505 at 543-547.

43. Wright and Linden, supra, note 35 at 4-1.

44. Id. at 4-2. Messrs. Wright and Linden propose a six-fold test in this regard: (1) the defendant's conduct must be negligent, that is, in breach of the standard of care set by the law; (2) the claimant must suffer some damage; (3) the damage suffered must be caused by the negligent conduct of the defendant; (4) there must be a duty recognized by the law to avoid this damage; (5) the conduct of the defendant must be a proximate cause of the loss, that is, the damage must not be too remote a result of the defendant's conduct; and (6) the conduct of the plaintiff should not be such as to bar his recovery, that is, he must not be guilty of contributory negligence and he must not voluntarily assume the risk. Id.

45. Linden, Canadian Negligence Law (Toronto: Butterworths, 1977) at 86. The balance that must be struck before a court determines that a particular risk is unreasonable requires weighing the danger created by the activity (magnitude of risk and likelihood of injury) with the utility of the activity (its purpose or objective and the cost or burden to the defendant of eliminating the hazard). Id. at 82-91.

46. See, e.g. Estrin, supra, note 33 at 399; and John Swaigen, "Annual Survey of Canadian Law: Environmental Law 1975-1980" (1980), 12 Ottawa L. Rev. 439 at 464-465.

47. Medical doctors testifying at 1979 U.S. Congressional hearings on hazardous waste disposal noted that: "A major problem in determining dose-response in a population exposed to environmental contaminants is that the dose at any given time is usually very low and the response chronic and delayed. Thus, establishing cause and effect becomes extremely complex." See Hazardous and Toxic Waste Disposal Field Hearings: Joint Hearings Before the Subcommittees on Environmental Pollution and Resource Protection of the Senate Committee on Environment and Public Works, 96th Cong., 1st Sess. (San Francisco, Calif., June 29, 1979), testimony of Drs. Robert Cooper and Donald Whorton, Professors of environmental health sciences, School of Public Health, University of California, Berkeley at 212.

The following exchange between U.S. Senator John H. Chafee and Dr. Whorton during these hearings also illustrates the problem:

Senator Chafee: Can you draw a cause and effect relationship between a chemical and an injury or do you work on probabilities that there is *x* percent chance that the injury was caused by the chemical? . . .

Dr. Whorton: . . . It is not everybody [who] becomes sick by [a chemical] agent, unless it is such a high dose everybody dies from it. . . . But, on the other hand, when you are talking about chronic exposure, especially the lower doses, a lot of other things may be happening as well, then you are talking probabilities in most cases.

Id. at 216-217.

48. In Ontario, for example, negligence actions must be commenced within six years after the cause of action arose. See Limitations Act R.S.O. 1980, c.240, s.45(1)(g). The case law indicates that a cause of action in negligence arises from the occurrence of the damage not when the plaintiff realizes he's suffered damage. See, e.g. Cartledge v. E. Jopling & Sons Ltd., [1963] A.C. 758, [1963] 1 All E.R. 341 (Eng. H.L.) ; Archer v. Catton and Co. [1954] 1 All E.R. 896 ; and Robert Simpson Co. Ltd. v. Foundation Co. of Canada Ltd. (1982), 36 O.R. (2d) 97 (Ont. C.A.). Mr. Justice Cory in Simpson stated that: "In the case of a personal injury not arising out of a contractual relationship, the cause of action arises when the injured party

suffers the damage. This is so even though the plaintiff was not and could not reasonably have been expected to be aware that he had suffered such damages. . . . Once again the harshness of the decision has been recognized, but only an amendment to the Limitations Act can ameliorate the situation." Id. at 108. Because of the long latency periods involved for damage from chemical waste exposure to manifest itself, a plaintiff may frequently be unable to pursue a negligence action.

49. Wright and Linden, supra, note 35 at 2-50 to 2-57. See, e.g. Entick v. Carrington (1765), 19 State Trials 1029 (C.P.).

50. Turner v. Thorne (1959), 21 D.L.R. (2d) 29 (Ont.

51. Supra, note 49.

52. McLaren, supra, note 42 at 537-539.

53. Id. at 539.

54. Rylands v. Fletcher (1868), L.R. 3 H.L. 330; 37 L.J. Ex. 161; affg. L.R. 1 Ex. 265 (Eng. H.L.).

55. Linden, "Whatever Happened to Rylands v. Fletcher?" in Studies in Canadian Tort Law, Klar, ed. (Toronto: Butterworths, 1977) at 340.

56. See, e.g. Rickards v. Lothian [1913] A.C. 263; 82 L.J.P.C. 42 (JCPC).

57. Wright and Linden, supra, note 35 at 12-24 to 12-34.

58. See Part VI.

59. See, e.g. An Act further to Amend the Fisheries Act, S.C. 1895, c.27, as found in Estrin, supra, note 33 at 400.

60. See, e.g. The Public Health Act, S.O. 1884, c.38, as found in Estrin, id. See also The Municipal Act R.S.O. 1980, c. 302.

61. See, e.g. The Ontario Water Resources Commission Act S.O. 1956, c.62 as repealed and replaced by The Ontario Water Resources Act R.S.O. 1980, c.361. The 1950s legislation has been said to have arisen from the collision of greater industrialization with private property owners asserting their common law rights to be free from resulting nuisances. See Estrin, supra, note 33 at 402.

62. Environment Council of Alberta. Public Hearings on Hazardous Waste Management in Alberta: Report and Recommendations (Edmonton: ECA, December 1980) at 25.

63. Environment Council of Alberta. The Management and Disposal of Hazardous Waste: The Administration and Regulation of Hazardous Waste. Bulletin No. 2 (Edmonton: ECA, January 1980) at 25.

64. See The Waste Management Act R.S.O. 1970, c. 491; repealed by The Environmental Protection Act S.O. 1971, c. 86, s.104. The EPA did address hazardous wastes. See Part V.

65. See, e.g. Fisheries Act, supra, note 69; and Clean Air Act, .S.C. 1970-71-72, c.47 as amended. Regulations that have been promulgated under the Fisheries Act include SOR/72-92 (chlor-alkali mercury effluent regulations); and SOR/77-178 (metal mining liquid effluent regulations). Regulations that have been promulgated under the Clean Air Act include SOR/76-464 as amended (secondary lead smelter national emission standards regulations); SOR/77-548 (chlor-alkali mercury national emission standards regulations); SOR/77-514 as amended (asbestos mining and milling national emission standards regulations); and SOR/79-299 (vinyl chloride national emission standards regulations).

66. Carey, supra, note 4 at 71.

67. S.C. 1974-75-76, c.72. The Pest Control Products Act, supra, note 6, concerning the registration, labelling, marketing and safety of pesticides, is not as potentially comprehensive a statute.

68. S.3.

69. Ss.4 and 18.

70. S.4(16).

71. A recent Environment Canada policy paper states that: "The jurisdiction for hazardous waste management is primarily a provincial prerogative. Aside from the broad departmental mandate for the protection of the Canadian environment under the Government Organization Acts of 1970 and 1979, Environment Canada does not have comprehensive legislation or regulations specific to the management of hazardous wastes." Environment Canada. Operating Policy on Hazardous Waste Management. (Ottawa: Env. Cda., October 1981) at 1.

72. T. E. Rattray, Director, Waste Management Branch, Environment Canada, Ottawa. "The Federal Approach to Hazardous Waste Management." An Address at the 26th Ontario Industrial Waste Conference. Proceedings. (Toronto: MOE, June 1979) at 203. J. B. Seaborn, Deputy Minister, Environment Canada has recently testified before a Parliamentary committee that: ". . . the question of the use and disposal of toxic waste is one of the highest priorities to which [the Environmental Protection Service, Environment Canada] is addressing its activities right now." See Can. H. of C. Standing Committee on Fisheries and Forestry, Proceedings, No. 16 (November 4, 1980) at 9, testimony of Mr. Seaborn.

73. For example, an Environment Canada official recently described the federal hazardous waste program as containing the following components: definition of a hazardous waste; waste quantity inventories; technology development; guidelines for site selection and facility operation; monitoring and control of transboundary waste movements; expertise and advice. Only control of transboundary movements of such wastes was seen to be an area where the federal government has jurisdiction to

legislate. Moreover, control of hazardous wastes transportation (as with other dangerous goods) was seen to be a statutory responsibility of the federal Department of Transport, not of Environment Canada. See Stu Hay, Acting Director, Waste Management Branch, Environment Canada, Ottawa. "Liquid Industrial Wastes - The Federal Government's Jurisdiction and Programs." An Address at a Seminar on Liquid Industrial Wastes organized by the Pollution Control Association of Ontario and the Ontario Ministry of the Environment. Proceedings. (Toronto: PCAO/MOE, March 5, 1980) at 4-13.

74. See, e.g. Toxic Substances Committee. Toxic Substances Control Programs in the Great Lakes Basin. A Report to the Great Lakes Water Quality Board of the International Joint Commission under the authority of the 1978 Canada-United States Great Lakes Water Quality Agreement. (Windsor: IJC, 1981) at 81.

75. See, e.g. J. R. Monteith, Chief, Hazardous Materials Management Division, Environment Canada, Ottawa. "Relationships Between Industrial Waste Management, the Environmental Contaminants Act, and Hazardous Materials Management." An Address at the 23rd Ontario Industrial Waste Conference. Proceedings. (Toronto: MOE, June 1976) at 481; and Hay, supra, note 73 at 4.

76. Fry, supra, note 5.

77. Federal-Provincial-Industry Task Force on Definition of Hazardous Wastes. Proceedings. (Ottawa: Env. Cda., 1980) at i.

78. Id. at iv, 1-3; Task Force on Hazardous Waste Definition. Minutes of the Second Meeting. (Ottawa: Env. Cda., October 18-19, 1979); Task Force on Hazardous Waste Definition. Report of the Sub-Group on Criteria. Working Paper as adopted by the Task Force. (Ottawa: Env. Cda., January 15, 1980); Carey, supra, note 4 at 71.

79. Environment Canada, supra, note 21 at 18.

80. See, e.g. correspondence from A. D. Pittuck, Contaminants Control Branch, Environment Canada (Co-ordinator for transport regulations) to P. G. Rodgers, Acting Chief, Hazardous Waste Management Division, Environment Canada. (Ottawa: October 16, 1979).

81. S.C. 1980-81, c.36. "Dangerous Goods" are defined, however, in section 2.

82. Canada Gazette. Part I. Appendix. Transportation of Dangerous Goods Regulations. First Unit (Proposed). June 19, 1982.

83. A. R. Lucas. Legal Aspects of Hazardous Waste Management. A Report prepared for the Environment Council of Alberta. (Edmonton: ECA, January 1981) at 2.

84. Discussion of provincial activities in this area is undertaken below. See IV.B.2.

85. Dr. John D. McIrvine, Corporate Coordinator for Environmental Affairs, Canadian Industries Ltd. "Summary of Industry Perspective from Workshop

on Definition of Hazardous Waste," in Proceedings of Hazardous Waste Seminar sponsored by Environment Canada. (Toronto: Env. Cda., October 1978) at 5-2, 5-3.

86. Canadian Manufacturers' Association. Position Statements on Environmental Quality Control. (Toronto: CMA, December 1980) at 10, 11.

87. Canadian Chemical Producers' Association. Policy Paper on Hazardous Waste Handling and Disposal. (Ottawa: CCPA, March 1982) at 4.

88. Id.

89. Id.

90. Id. at 4-5.

91. 42 U.S.C. sections 6901-6987, as amended. U.S. EPA issued its final section 3001 regulations in May 1980. See 45 Federal Register 33084 (1980); 40 CFR Part 261. Hazardous Waste Management System: Identification and Listing of Hazardous Waste.

92. Supra, note 87 at 5.

93. Environment Council of Alberta. Public Hearings on the Management of Hazardous Wastes In Alberta. Transcript Volume XV (Red Deer: June 5, 1980) at 129, comments of Mr. William Ross, hearing panel member, during questioning of Mr. William Neff, Technical Director, Canadian Chemical Producers' Association.

94. It has been suggested that: ". . . an interpreting court will look at the statutory context but not necessarily at codes or guidelines that are outside the statute." Lucas, supra, note 83 at 10.

95. Reid, Crowther & Partners. Review of Existing Environmental Hazard Criteria. A report prepared for Environment Canada. (Ottawa: Env. Cda., March 1982) at i, iii, 3.

96. Task Force, supra, note 77 at 1.

97. Correspondence to the author from V. E. Niemela, Director, Waste Management Branch, Environment Canada, Ottawa. July 30, 1982. See also Federal-Provincial Committee on Hazardous Wastes. Working Group on Waste Lists and Criteria. Interim List of Environmentally Dangerous Wastes of the Transportation of Dangerous Goods Act: Bill C-18. (Ottawa: Env. Cda., 1982).

98. The development of criteria and how they may apply to the TDGA scheme is addressed below. See Part IV.A.3.a.

99. RCRA defines "hazardous waste" as solid waste "which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or (B) post a substantial present or potential

hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed." Supra, note 101, s.1004(5). RCRA also defines "solid waste" as including "any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material . . ." Id., s.1004(27).

An early 1970s US EPA report which outlined the magnitude of the hazardous waste problem in the United States and which also served as a spur to eventual passage of RCRA, defined "hazardous waste" as "any waste or combination or wastes which pose a substantial present or potential hazard to human health or living organisms because such wastes are lethal, nondegradable, persistent in nature, biologically magnified, or otherwise cause or tend to cause detrimental cumulative effects." General categories of such wastes include "toxic chemicals, flammable, radioactive, explosive and biological materials in solid, sludge, liquid or gaseous" forms. See United States Environmental Protection Agency. Report to Congress on Hazardous Waste Disposal. (Washington, D.C.: U.S. Government Printing Office, June 1973), at 4.

100. Supra, note 91, s.3001.

101. According to regulations recently promulgated by US EPA, a hazardous waste exhibits any of the following four characteristics: ignitability; corrosivity; reactivity; and EP (Extraction Procedure) toxicity. Id. 45 Federal Register 33084, 33121, 33122; 40 CFR Part 261, ss.261.20-261.24 (1980).

102. "Special wastes" are those "controlled wastes" which "may be . . . dangerous or difficult to dispose of . . ." See United Kingdom. Control of Pollution Act 1974, c.40, s.17. A "controlled waste" is "household, industrial and commercial waste . . ." Id., s.30.

103. See United Kingdom. Control of Pollution (Special Waste) Regulations 1980. No. 1709, s.2 and Schedule 1. A list of substances is given in the schedule. Pursuant to the regulations, special wastes are any wastes which contain any substances on the list and are either flammable (having a flashpoint of 21°C or less); medicines available only on prescription; substances likely to cause death or serious damage to tissue on ingestion; or substances likely to cause serious damage to human tissue by inhalation, skin or eye contact upon exposure. Government circulars suggest that these four criteria enable the status of all controlled wastes of known composition to be decided by the waste producer. See United Kingdom. Department of the Environment. Joint Circular on the Control of Pollution Act 1974; Special Waste Regulations 1980. Circular 4/81. (London: DOE, February 1981) at 3.

104. For example, a recent report for Environment Canada notes that: "Because definitions for waste materials are often broad statements which leave room for varying interpretations when dealing with specific waste substances, an effective and workable regulatory mechanism for dangerous wastes requires proceeding to either the second (criteria) or third (listing) stages . . ." Reid, Crowther, supra, note 95 at iv.

105. North Atlantic Treaty Organization. Committee on the Challenges of Modern Society. Disposal of Hazardous Wastes: Recommended Procedures for Hazardous Waste Management. No. 62 (Brussels: NATO, June 1977) at 1.

106. U.S. environmental groups criticized proposed US EPA regulations as giving inadequate coverage to potentially hazardous wastes because of insufficient listing, limited identification of characteristics, and inadequate testing procedures. See "The Hazardous Waste Crisis: EPA Struggles to Implement RCRA; Amendments Needed," 9 ELR 10060. April 1979. In promulgating the final regulations US EPA refrained from expanding the criteria for identifying the characteristics of hazardous wastes because it considered the available test protocols for measuring these characteristics to be insufficiently developed, too complex and too highly dependent on the use of skilled personnel and special equipment. Supra, note 101, 45 Federal Register 33084 at 33105. Some commentators have argued that omitting these characteristics including organic toxicity, carcinogenicity, mutagenicity, teratogenicity, bioaccumulation potential and phytotoxicity, could permit many dangerous wastes with such characteristics to fall outside the authority of the regulatory program. US EPA hopes to avoid this problem by covering such wastes in the listing process. Id. at 33106, 33107.

107. In the U.K., despite support from industry for the new special waste regulations, criticisms from other segments of the public have focused on: concern that too few wastes are covered by the regulations; and that inadequate testing protocols are authorized for assessing toxicity. With regard to the former concern a House of Lords investigating committee recently noted that during its hearings, witnesses were of the view that: the definition of special waste covered only danger to human health and ignored environmental matters including water pollution, animal and vegetation impacts, cumulative toxic effects, sub-lethal poisoning and delayed effects such as birth defects. Moreover, the list included some but not other wastes and does not provide for the inclusion of new chemical substances. See United Kingdom. House of Lords. Select Committee on Science and Technology. Hazardous Waste Disposal. Vol. 1 - Report. (July 28, 1981) at 30-32.

With regard to the issue of toxicity testing as defined in the regulations, some witnesses before the committee characterized "the theoretical foundation of the calculations" as "highly unsatisfactory. . . . We can see no reason why a defence lawyer [in a prosecution] would allow any of the numerous assumptions [in DOE explanations] to be taken as read if they were unfavourable to his client." These witnesses maintained that as a result waste disposal authorities [responsible for enforcement] would have the greatest difficulty in proving in court that certain wastes are special. They proposed that the burden of proof in disputed cases should be on the waste producer, to prove that a waste is not special. Producers wrongly defining waste as not special should reimburse the waste disposal authorities the cost of testing. Testimony of A. V. Du Sautoy, Under-Secretary, Association of County Councils before the House of Lords Select

Committee on Science and Technology. Hazardous Waste Disposal. Vol. 2 - Oral Evidence (April 2, 1981) at 290, 297, 304 and 324.

Other witnesses objected to the inclusive list approach, arguing that the government rather than the waste producers are bearing the cost and responsibility of determining which wastes should be on the list, adding that it is the waste producers who are far more likely to have specialist knowledge about their wastes and the damage they might do. Memorandum submitted by the Environmental Safety Group of Harwell Laboratory, U.K. Atomic Energy Authority to the House of Lords Select Committee on Science and Technology. Hazardous Waste Disposal. Vol. 2 - Oral Evidence (March 19, 1981), at 258.

The House of Lords itself concluded that the inclusive list approach was a good one, but that the list should be capable of expansion; that the burden of proof whether a waste is special should be shifted to the waste producer; and that the regulatory definition was generally satisfactory though it did commend the definition of hazardous waste developed by the World Health Organization [reproduced supra, note 1]. H. of L. Report Vol. 1, at 4, 51-52.

108. For example, in Michigan, it has been argued that the lack of a definition of hazardous wastes in a proposed bill has resulted in a Governor's Task Force reporting that there are 4.8 million tons of hazardous wastes requiring disposal per year in the state while the Michigan Department of Natural Resources estimates only 1.3 million tons per year of such wastes. Testimony of J. L. Dauphin, West Michigan Environmental Action Council to the Special House Legislative Committee on Hazardous Waste Legislation. (Lansing, Michigan: March 5, 1979).

Similarly, a recent report to the New York State Governor and Legislature recommended that a "regulatory definition of the term hazardous waste should be promulgated so that an assessment can be made of hazardous waste volumes and specific treatment and transportation needs." See New York State Hazardous Waste Disposal Advisory Committee. A Comprehensive Program for Hazardous Waste Disposal in New York State. (Albany: March 1980) at 4.

As well, during 1979 U.S. Congressional hearings, when regulatory definitions of hazardous waste were still under development for RCRA, the following findings were made by Congressional investigators:

> "Because [US] EPA, in consultation with the States, has not defined what is a hazardous waste under [RCRA], the volume to be controlled is at best a rough estimate. None of the States we visited were fully aware of the volume of hazardous wastes being generated in their States, and none could adequately account for the disposition of these wastes.
>
> For example, [US] EPA estimated the volume of hazardous waste produced in one State at 3.6 million tons annually while the State estimated 8.5 million tons annually. At another State, [US] EPA estimated 3.8 million tons annually while the State estimated 20 million tons annually."

See United States House of Representatives. Hearings before the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce. Hazardous Waste Disposal. Part 2. (June 4, 1979) at 1287, testimony of Henry Eschwege, Director, Community and Economic Development Division, U.S. General Accounting Office.

109. See, e.g. the Reid, Crowther study which determined that the manufacturing sector generated 230,000 tonnes (wet weight) for the area of British Columbia, Alberta, Saskatchewan, Manitoba and Yukon. The Environment Canada National Inventory indicated a hazardous waste quantity of 549,000 tonnes for the same area which is higher than the Reid, Crowther study by a factor of approximately 2.4. Environment Canada Inventory, supra, note 10 at 52.

A New Brunswick study of hazardous waste produced in the province excluded all acid, alkali and petroleum wastes that had been included in a previous federal inventory. This resulted in the province concluding that only one-fifth of the waste material mentioned in the federal report as being generated in the province was in fact hazardous waste. The authors of the New Brunswick report concluded that the basic reason for the difference between the federal and provincial estimates was related to the "difference in philosophy as to which wastes are to be considered hazardous . . . the decision as to which waste materials to include as hazardous was somewhat subjective, the decision made arbitrarily by the authors rather than on the basis of a definition or guidelines." See Melvyn K. Estey and Robert G. Lutes, Environment New Brunswick. Hazardous Waste in New Brunswick. (Fredericton: ENB, March 1982) at 12-21.

110. See, e.g. Environment Canada Inventory, supra, note 10; Maritimes Inventory, supra, note 16; and Reid, Crowther, supra, note 17.

111. Hay, supra, note 73 at 9.

112. See, e.g. supra, note 109.

113. The most recent inventory indicates that 3.3 million tonnes (wet weight) or 1.3 million tonnes (dry weight) of hazardous wastes are produced annually in Canada. Nearly one-half of the total is generated in Ontario and about 29 per cent in Quebec. Of the remaining 22 per cent, 5 per cent comes from the Maritimes and 17 per cent from Western Canada, with British Columbia and Alberta the main contributors. For Canada as a whole, the chemical industry was found to be the largest generator, representing 47 per cent of the total. The metals industry contributes about 38 per cent, while the remaining 15 per cent is produced by eleven different industry sectors. See Environment Canada Inventory, supra, note 10 at 6.

114. Environment Canada, supra, note 21 at 18; and Hay, supra, note 73 at 8.

115. Can. H. of C. Standing Committee on Fisheries and Forestry, Proceedings, No. 3 (June 10, 1980) at A7, notes for use by the Hon. John Roberts, Federal Minister of the Environment on Main Estimates for 1980-1981.

The Love Canal, located on 16 acres of land in Niagara Falls, New York, was first used for chemical waste dumping in the 1920s and eventually acquired by Hooker Chemical Co. for this purpose in 1947. Dumping continued until the early 1950s when the site was sold to the local school board after thousands of tons of chemical wastes had been dumped there. The school board permitted a public school to be built on top of the site and local officials permitted a residential subdivision to be built adjacent to the site. In the mid-1970s a rising water table allowed chemicals and associated vapours to enter basements and backyards of residents' homes next to the site. Over 80 chemical compounds, including at least ten known to be carcinogenic, were found in the area. Since 1978, at least two hundred thirty families have been evacuated from the Love Canal and property values rendered negligible. Health data show elevated miscarriage and birth defect rates; evidence suggests many other health effects, the nature and extent of which are in dispute. Clean-up costs at the Love Canal have already exceeded $27 million and area residents are seeking more than $2 billion in lawsuits for personal injury and property damage. It is estimated that a properly secured disposal site would have cost only $4 million (in 1979 U.S. dollars) in the early 1950s when the site was closed. See United States House of Representatives. Hearings before the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce. Hazardous Waste Disposal. Part 1. (March 21, 1979) at 141-156, testimony of William C. Hennessy, Commissioner, New York State Department of Transportation and Chairman, Governor's Task Force on Love Canal. See also Report of the Subcommittee. (September 1979) at 4-5.

116. Roberts, supra, note 19. Review of the abandoned site program as it applies to federal agencies is discussed below. See Part IV.A.2.c.

117. Niemela, supra, note 97.

118. Id. A total of 190 closed or abandoned land disposal sites were identified within New Brunswick. Nine of these sites were classified as having a high potential for impacting the environment. Major problems encountered at the high priority sites were contact with the water table or a water course, uncovered waste, odours, potential for well contamination, indiscriminate use of closed sites and in one case random disposal of pesticide and herbicide containers. The study also identified the existence of 245 active land disposal sites in the province. Environment Canada and Environment New Brunswick. Identification and Verification of Closed or Abandoned Land Disposal Sites in the Province of New Brunswick. Prepared by W. H. Crandall & Assoc. (Moncton: February 1982) at iii-iv.

119. Niemela, supra, note 97.

120. Roberts, supra, note 19.

121. Niemela, supra, note 97; see also Myslicki; supra, note 19a.

122. Environment Canada. Situation Report on Management of Hazardous Wastes. (Ottawa: Env. Cda., April 1982) at 5. See also Situation Report. (Ottawa: Env. Cda., October 1981).

123. Environment Task Force. Report on Toxic Chemical Pollution. Prepared by six members of Parliament and the Legislative Assembly of Ontario from the New Democratic Party. (Ottawa: NDP, 1982) at 22.

124. Niemela, supra, note 20 at 3.

125. Environment Canada. Hazardous Waste Management: Federal Government Progress Report. A background paper for the 1980 Canadian Council of Resource and Environment Ministers. (Ottawa: Env. Cda., 1980) at 5; and Environment Canada Policy, supra, note 71 at 3. The sale of federal Crown lands for such facilities will also be considered. Id.

126. Reid, Crowther & Partners. Hazardous Wastes in Northern and Western Canada: Development of a Waste Management Plan. Vol. 3. Prepared for Environment Canada and the governments of British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, the Yukon and Northwest Territories. (Calgary: Reid, Crowther, March 1981).

127. Environment Canada, supra, note 125 at 7.

128. Environment Canada, supra, note 21 at 18-19; Niemela, supra, note 97.

129. Environment Canada, id. at 19.

130. Environment Canada, supra, note 125 at 7.

131. Environment Canada, supra, note 71 at 1-2.

132. Environment Canada, supra, note 21 at 7, 11.

133. Id. at 5, 9, 20.

134. See, e.g. John H. Prinsen, Technology Manager, Union Carbide Canada Ltd. "The Canadian Chemical Industry's Perception of the Regulation of Industrial Wastes." An Address at a Seminar on Liquid Industrial Waste organized by the Pollution Control Association of Ontario and the Ontario Ministry of the Environment. Proceedings. (Toronto: PCAO/MOE, March 5, 1980) at 42.

135. Daniel Green, Societe pour Vaincre la Pollution, Montreal. "An Ecological Analysis of the Problem of Hazardous Wastes." An Address at the National Meeting of Environmental Non-Government Organizations. (Calgary: ENGO, June 1982).

136. Environment Canada Policy, supra, note 71 at 3.

137. Government of Canada. Cabinet Directive. "Control and Abatement of Pollution from Federal Activities - Cleanup and Prevention." (Ottawa: June 8, 1972).

138. Federal Environmental Assessment Review Office. Revised Guide to the Federal Environmental Assessment and Review Process. (Ottawa: Supply and Services Canada, 1979) at 1-6.

139. To May 1982 twenty reports on federal projects had been issued by the FEARO office covering such activities as nuclear power stations and refineries, hydro-electric schemes, airport, oil, gas and highway construction, harbour expansions and off-shore drilling. None of the reports dealt with hazardous waste facility establishment. None of eleven additional projects currently under review by FEARO and listed in the report covers hazardous waste facilities; Federal Environmental Assessment Review Office. Federal Environmental Assessment and Review Process: Register of Panel Projects. (Ottawa: FEARO, May 1982) at 3-11, 14; and Federal Environmental Assessment Review Office. Guide for Environmental Screening. (Ottawa: Supply and Services Canada, 1978) at 1-2.

140. Environment Canada. Environmental Protection Service. Code of Good Practice for Management of Hazardous and Toxic Wastes at Federal Establishments. (Ottawa: Env. Cda., January 1977) at 1.

141. Id. at 4.

142. Id. at 1.

143. Id. at 2-3.

144. Environment Canada. Environmental Protection Service. Ontario Region. Terms of Reference for Consultants for the Phase 1 Study of Abandoned Waste Disposal Sites (Land) for Selected Federal Agencies in Ontario. (Toronto: Env. Cda., 1982).

145. Id. at 5.

146. Supra, note 117 and accompanying text.

147. Supra, note 144 at 4-5. The eight federal "agencies" include the Departments of Indian and Northern Affairs, National Defence, Transport, Agriculture, Solicitor General, Parks Canada, Canadian National Railway and Atomic Energy of Canada Ltd. A ninth category is "transferred property" which refers to inactive sites located on property formerly owned by the federal government but now transferred to non-federal control (e.g. closed National Defence bases). Id. at 4.

148. Id. at 3. Three priority classifications of sites are identified in the study terms of reference: Priority I sites are those which could present a high risk potential to health and the environment which should be immediately assessed; Priority II sites are those which could present a medium risk potential which should be assessed at a future date; and Priority III sites are those which should not present a danger to human health or the environment but which may require occasional monitoring in the future. Id.

149. News Release Statement of Jim Fulton, M.P. (Skeena). (Ottawa: NDP, May 31, 1982). The terms of reference of the study indicate that Priority I sites could be located under or near residential buildings, schools, public libraries, shopping malls, playgrounds or within 300 feet of streams, lakes and wells. High concern wastes could include:

wastes on the federal interim list of dangerous wastes; materials regulated under the Environmental Contaminants Act; institutional, pathological and low level radioactive wastes. Supra, note 154.

150. Fulton, id. at 1.

151. In the mid-1970s, federal officials noted that: "Waste reduction and utilization have priority over waste disposal. Disposal should be chosen only if the first two possibilities do not exist or they are unreasonable. This requirement should be taken into consideration in all government measures." Monteith, supra, note 75 at 482.

152. Supra, note 71 at 3.

153. The IJC notes that technical solutions to the hazardous waste problem that are generally available include recovery, reclamation and re-use. International Joint Commission. Great Lakes Water Quality Board. Sixth Annual Report - Appendix F: Report on Hazardous Waste Disposal. (Windsor, Ontario: IJC-GLWQB, July 1978) at 9. The IJC has also noted that: "Reduction and recovery possibilities should be an integral and prominent part of any hazardous waste management program." IJC (March 1980 Report), supra, note 3 at 87.

154. The European Community regards prevention, recycling, recovery, re-use and extraction of raw materials for energy from toxic and dangerous wastes as matters of priority to be encouraged by member states. Council of the European Communities. "Directive on Toxic and Dangerous Wastes of 20 March 1978." Official Journal of the European Communities. No. L84. (Brussels: EEC, March 31, 1978) at 43-44.

155. According to recent reports done for WHO-UNEP: "Environmental and economic considerations dictate both the promotion of increased internal recycling and/or external re-utilization of waste before disposal is considered. Thus, the first priority in hazardous waste management is to reduce waste generation at the source, e.g. by process modification or raw material substitution . . ." Supra, note 1 at 5.

156. The final NATO report on hazardous waste disposal concludes that: "In the overall management context for hazardous wastes, recycling and the application of low waste technologies must gain increasing importance. This is not only due to the contents of valuable raw materials in many wastes making resource recovery more and more economically attractive, but it is also a direct consequence of the pressure coming from more stringent requirements for hazardous waste disposal and the limited availability of high quality disposal facilities to meet these requirements. Therefore, in many situations the prevention of hazardous waste generation, either by recycling or reduction at source, is the only viable way to solve that part of the hazardous waste problem in a satisfactory manner." Supra, note 1 at 54.

157. US EPA has specified desired management options for hazardous waste prior to ultimate disposal in secure landfill sites. These include: reducing the generation of hazardous waste; separating out and concentrating hazardous waste; and utilizing the waste through exchange or recovery. See U.S. General Accounting Office. How to Dispose of Hazardous Waste--A Serious Question That Needs to be Resolved. A Report to the Congress by the Comptroller General of the United States. CED-79-13. (Washington, D.C.: GAO, December 19, 1978) at 17.

158. Although outside their terms of reference, the House of Lords Select Committee investigating hazardous waste disposal in the U.K. touched on waste recycling and re-use "because these are usually preferable to unproductive disposal, and decisions to recycle obviously affect disposal; . . ." House of Lords Report, supra, note 107 at 3.

159. Niemela, supra, note 97.

160. Under the DRECT program the federal government pays up to fifty per cent of the total estimated costs of an approved project; that is one whose primary aim is to reduce waste; recover or recycle wastes; and save energy, particularly from non-renewable resources. Explanatory brochures on the program note that: "Environment Canada in particular, is encouraging new projects which will cut down on pollution and recover energy from municipal and industrial wastes. The main aim of the proposed technology, however, must be energy savings - long or short term." See Environment Canada and Energy, Mines and Resources Canada. DRECT Program: Aiding Resource Conservation Technology. (Ottawa: Env. Cda., 1981).

161. Situation Report, supra, note 122 at 3.

162. R. G. W. Laughlin, Ontario Research Foundation. "Canadian Waste Exchange Program." Presentation to the Second National Conference on Waste Management in Canada. (Winnipeg: October 17, 1980).

163. Canadian Waste Materials Exchange. Bulletin No. 27. (Mississauga, Ontario: ORF, June 1982) at i.

164. Ontario Legislature. Standing Committee on Resources Development. Hearings on the Annual Report of the Minister of the Environment. No. R-34 (October 18, 1978) at 1210-1 and 2, testimony of Dr. R. G. W. Laughlin, Ontario Research Foundation.

165. Ontario Ministry of the Environment. The Siting of Facilities and the Management of Liquid Industrial and Hazardous Wastes in Ontario - Annex One: Need for Waste Management, Facilities and Available Technologies. Prepared by Maclaren, Engineers, Planners & Scientists. (Toronto: MOE, November 1980) at 2-13.

166. Moni Campbell, Pollution Probe. "Making Industrial Waste Reduction and Recycling a Viable Alternative to Land Disposal." A brief submitted to the Toxic Chemicals Management Centre, Environment Canada. (Ottawa: March 1982) at 8.

167. Id.

168. Id.

169. CCPA, supra, note 87 at 12.

170. In the Maritimes, for example, the "overwhelming trend" is toward "land disposal of wastes," according to the 1980 federal inventory of the problem. Maritimes Inventory, supra, note 16 at 19. In the West, hazardous wastes are "routinely disposed of in landfills . . ." Reid, Crowther, supra, note 17 at iv. At least 50 per cent of the liquid industrial wastes generated in Ontario in 1980 were going to landfill sites. MOE, supra, note 165 at 4-3.

171. Campbell, supra, note 166 at 3-4.

172. Supra, note 157 at 18.

173. A recent study completed in California concludes that: "Despite major safeguards added to land disposal practices in the past five to ten years, the long-term security of even the most modern and sophisticated landfill sites is questionable. . . . There remain serious questions about whether land disposal containment systems can be maintained and made to operate effectively and efficiently for long periods of time." State of California. Governor's Office of Appropriate Technology. Alternatives to the Land Disposal of Hazardous Wastes: An Assessment for California. (Sacramento, California: Office of Appropriate Technology, 1981) at 10-11.

174. Campbell, supra, note 166 at 1, 2 and 9. In the U.S., recycling techniques are expected to become more competitive as more stringent controls over disposal and increased enforcement under RCRA cause disposal costs to rise. GAO, supra, note 157 at 18.

175. In 1980 the IJC recommended that: "The reduction of waste generation at the source through the development of conservation technologies should receive a high priority. Mandatory provisions should be made for reclamation, re-use and recovery of hazardous wastes, wherever feasible, or for the complete prohibition of the manufacture, import, transport, sale and use of specific substances . . ." IJC (March 1980 Report), supra, note 3 at 87.

176. A 1981 report on hazardous waste strategies for northern and western recommended as part of a package of high priority legislative actions that mandatory recycling and re-use of specific waste streams be required whenever financially feasible in order to reduce the quantities of hazardous wastes generated. Reid Crowther, supra, note at Table 5-16.

177. Campbell, supra, note 166 at 2.

178. Id. at 6.

179. Cal. Health & Safety Code. Section 25175 (Deering Supp. 1981).

180. State of California. Managing Hazardous Wastes for a Non-Toxic Tomorrow: 1981-82 Implementation Program. (Sacramento, California: Office of the Governor, 1981), at 2-3.

181. Campbell, supra, note 166 at 7.

182. Environment Canada. Policy for Public Consultation and Information Availability. (Ottawa: Env. Cda., 1981).

183. Id. at 1. Other elements of the policy address public consultation generally, information availability and transportation expense contributions.

184. An Environment Canada official 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, and it is out of these task forces that the recommendations come on which we base our regulatory instruments . . ." See Can. H. of C. Special Committee on Regulatory Reform, Proceedings, No. 6 (September 24, 1980) at 6, testimony of Raymond M. Robinson, Assistant Deputy Minister, Environmental Protection Service, Environment Canada.

185. See, e.g. J. F. Castrilli and C. C. Lax, "Environmental Regulation-Making in Canada: Towards a More Open Process," in Environmental Rights in Canada. J. Swaigen, ed. (Toronto: Butterworths, 1981) at 338-345.

186. Supra, note 182 at 5-6.

187. Id.

188. Supra, note 82. Section 22 of the TDGA requires such draft publication.

189. The TDGA regulations are to be published in three separate units over several months. Unit one and the accompanying summary of the socio-economic impact analysis of the regulations is 282 pages in length.

190. See, e.g. William A. Neff, Technical Director, Canadian Chemical Producers' Association. "Early Industrial Input An Essential Element in Rule-Making." An address presented at the 63rd Chemical Conference and Exhibition of the Chemical Institute of Canada. (Ottawa: CIC, June 1980) at

191. Treasury Board and Consumer and Corporate Affairs Canada. News Release. "Regulatory Review System Announced." (Ottawa: December 14, 1977). See also Treasury Board Canada. Socio-Economic Impact Analysis. Administrative Policy Manual. c.490. (Ottawa: Treasury Board, December 1979) at 3.

192. Id. at 5 and 11.

193. Id. at 3.

194. Treasury Board Canada. Evaluation Methodologies. Administrative Policy Manual. c. 490. Appendix E. (Ottawa: Treasury Board, December 1979) at 4, 5-12.

195. Id.

196. See, e.g. Neff, supra, note 190 at ; and Can. H. of C. Special Committee on Regulatory Reform, Proceedings, No. 14 (October 14, 1980) at 7, 15, testimony and brief of J. M. Belanger, President and W. A. Neff, Technical Director, Canadian Chemical Producers' Association.

197. Can. H. of C. Special Committee on Regulatory Reform, Report (December 1980) at 9-10.

198. Castrilli, supra, note 7 at 366-367; see also U.S. House of Representatives Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce. Report on Cost-Benefit Analysis: Wonder Tool or Mirage? (December 1980).

199. Supra, note 82.

200. Supra, note 26 at 1.

201. The SEIA notes that at an estimated cost of $20 per transaction, the additional annual costs to provincial governments for the 60,000 manifest declarations proposed for the future is $1.2 million. However, because only 3,000 of the 60,000 declarations are international or interprovincial, the estimated costs to the provinces for them would only be $60,000. Supra, note 82 at 279.

202. The estimated range of costs to shippers and carriers is $151,400 to $271,000. Supra, note 26 at 11.

203. The SEIA Appendix notes that at an estimated cost of $140 per tonne for authorized, environmentally safe disposal costs to industry would approximate $9,380,000. However, because industry is already incurring costs for current disposal practices the increased cost is estimated to be $5,360,000. Id. at 19.

204. Supra, note 82 at 282.

205. Id. at 280-281.

206. Supra, note 26 at 18.

207. Supra, note 82 at 281.

208. Supra, note 26 at 13 and 23.

209. The total quantifiable cost reduction benefits from reduced clean-up and property damage arising from TDGA controls on dangerous waste transport is projected over eleven years to approximate $110,000. The projected range of costs of implementing these regulations over eleven years is $1.1 million to $1.9 million. Id. at 29.

210. The SEIA, for example, concludes that a projected eleven year total of thirty-three fewer fish kills in streams from implementation of the TDGA regulations, represents a net value to Canadian society. The SEIA assumes that no quantification of this value is possible or necessary. Id.

211. Alice Arm Tailings Deposit Regulations. SOR/79-345. See also Peter Rickwood, "Ottawa to release file on dump permit: Controversy mounting over B.C. mining company's toxic wastes," The Toronto Star, June 21, 1982 at A5.

212. Metal Mining Liquid Effluent Regulations. C.R.C., c.819. See also Rickwood, id.; and Kriss Boggild, "The Amax Controversy," Alternatives Vol. 10, Nos. 2,3 (Fall-Winter 1982) at 40.

213. See, e.g. Christie McLaren, "Mine allowed to dump in Pacific despite reports," The Globe and Mail, March 17, 1981.

214. Can. H. of C. - Senate Standing Joint Committee on Regulations and other Statutory Instruments, Proceedings, No. 66 (June 3, 1982) at 45.

215. Monteith, supra, note 75 at 482.

216. See, e.g. Reid, Crowther, supra, note 17 and accompanying text.

217. The United States under RCRA defines "manifest" as "the form used for identifying the quantity, composition and the origin, routing and destination of hazardous waste during its transportation from the point of generation to the point of disposal, treatment or storage." RCRA, supra, note 91 s.1004(12).

218. Environment Canada, supra, note 125 at 3-4.

219. A U.S. Congressional committee investigating the problem of hazardous waste disposal recently concluded that: "The key to effective regulation lies in broad application of the manifest requirements to generators of hazardous waste. . . . The manifest system is designed to track the movement of wastes and provide State hazardous waste management agencies, [US] EPA, and others with an accurate accounting of the wastes' journey from generation to final disposal or treatment. Because the manifest forces companies to account for the waste, it is hoped that the system will encourage the use of safe disposal. By tracing the disposition of the waste through manifest records it is easier to discover if violations have indeed occurred, and who is responsible for them. Additionally, if it is determined that a certain waste product is of special concern, the manifest may be used to move precisely and . . . quickly to locate the waste." U.S. House of

Representatives. Report of the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce. Hazardous Waste Disposal. (September 1979) at 41.

220. The IJC has recommended that: "A manifest system for hazardous wastes, from the generator to the disposal site operator, should be mandatory in the [Great Lakes] Basin." IJC (March 1980 Report), supra, note 3 at 88.

221. Hay, supra, note 73 at 11. See also Pepin, infra, note

222. Can. H. of C., Debates, (April 21, 1980) at , statement of the Hon. J. L. Pepin upon the introduction of the Transportation of Dangerous Goods Act, Bill C-18 for First Reading. The Bill was given Second Reading on May 2, 1980 and referred to the Standing Committee on Transport. The Bill was reported on July 11, 1980 and received Third Reading on July 16, 1980.

223. S.C. 1980-81, c.36. The Act was assented to July 17, 1980.

224. "Dangerous goods" are defined as "any product, substance or organism included by its nature or by the regulations in any of the classes listed in the schedule" to the Act. Id. s.2.

225. S.4.

226. S.13.

227. S.14.

228. S.15. Inspectors may also destroy or otherwise dispose of abandoned or deteriorated dangerous goods. Id. s.15(2).

229. S.17(1). Reporting requirements are to be stipulated by regulation. Id. s.21(0).

230. S.17(2).

231. S.17(3).

232. S.18(1).

233. S.19(1).

234. S.25.

235. S.32(4).

236. S.21(a).

237. S.21(b)(c)(d).

238. S.21(e)(f).

239. S.21(i).

240. S.21(k).

241. S.21(l).

242. S.21(m).

243. Nine classes of dangerous goods are established by the schedule: (1) explosives; (2) gases; (3) flammable liquids; (4) flammable solids; (5) oxidizing substances; (6) poisonous (toxic) and infectious substances; (7) radioactive materials; (8) corrosives; and (9) miscellaneous products, substances or organisms considered by the federal cabinet to be dangerous to life, health, property or the environment when handled, offered for transport or transported and prescribed to be included in this class.

244. Supra, note 82 at 3. The second unit of the proposed regulations will provide for the prescription of safety standards for the containment of dangerous goods, safety requirements respecting handling and transportation, prohibitions and limitations, training and education, notification and reporting of accidents. The third unit of the proposed regulations will establish some administrative provisions respecting the designation of inspectors, applications for permits and ticketing offences. Id.

245. Id. at 124-129. These waste types, authorized as Class 9 materials under the Act, are derived from a larger list authorized under RCRA. Preparation of the TDGA list was coordinated by Environment Canada. Niemela, supra, note 97. See also Niemela, supra, note 20 at 9.

246. Supra, note 82, ss.56, 57(1)(a)(i).

247. These additional matters include: the name and address of the consignee; the destination of the goods; the name, address and phone number of each carrier; and a statement specifying each mode of transport to be used to transport the goods. Ss.57(1)(i)-(iv).

248. S.57(1)(a)(i).

249. The carrier must ensure that the declaration is marked with the date of delivery to him. S.57(4).

250. The consignee must ensure that the declaration is marked with the date of receipt by him. S.57(4).

251. Consignors, carriers and consignees must retain, in Canada, one copy of the declaration for at least two years after the goods have reached their destination. S.59(4)(a)-(c).

252. Consignors must send a copy of the declaration to the provincial agency in the province where the wastes are destined within two days of their being received by the carrier. S.59(4)(a)(i). Consignees must send a

copy of the declaration to the provincial agency indicating whether or not the information on the declaration accurately reflects the goods in consignment at the time the consignment reached its destination. This must be done within two days of the goods reaching their destination. S59(4)(b)(ii).

252a. Correspondence to the author from D.S. Hay, Chief, Control and Implementation Division, Waste Management Branch, Environmental Protection Service, Environment Canada (March 7, 1983, Ottawa, Ontario).

253. Transport Canada officials noted, for example, that: ". . . the request of the Ministers of Environment for assistance in the control of hazardous waste materials led to the identification by the government of amendments needed to ensure that the safety program respecting dangerous goods meshed with their environmental programs . . ." Can. H. of C. Standing Committee on Transport, Proceedings, No. 10 (July 7, 1980) at 7, testimony of Mr. Robert Backstael, Parliamentary Secretary to the Minister of Transport.

254. Can. H. of C. Standing Committee on Transport, Proceedings, No. 12 (July 10, 1980) at 59, testimony of Mr. Duncan Ellison, Director, Transport of Dangerous Goods, Transport Canada. Mr. Ellison noted that this could be done, for example, "by introducing the word 'waste' before the conventional shipping name. . . . [If] you have something like sulphuric acid, which is in the waste state, that would be shipped as 'waste sulphuric acid,' a Class 8 corrosive material. . . . Where substances do not conform to one of the other danger classes, it is intended to treat them as a Class 9 material. . . ." Id.

255. Environment Canada. News Release. "Dangerous Goods Act Welcomed by Roberts" (Ottawa: July 23, 1980).

Environment Canada has been coordinating the development of a uniform hazardous waste manifest. According to the department: "The generator will issue a manifest or tracking document to accompany shipments of waste material, and send a copy to the appropriate authority. The transporter must produce this manifest when requested by an inspector. The receiving facility will verify receipt of the materials and forward a copy of the manifest to the same authority. It will list the nature of the waste, the producer or generator, the transporter and the method of treatment or disposal." See Environment Canada. Environment Update. "Hazardous Wastes." Vol. 1, No. 1 (Ottawa: Env. Cda., November 1980) at 1.

256. Environment Canada News Release, id.

257. Id.

258. Several amendments were introduced to the Bill by the federal government while it was in Standing Committee. For example, the definition of "handling" was expanded to include various actions at any facility for the purposes of, in the course of, or following transportation. Similarly, the definitions of "safety marks" and "safety standards"

were expanded to include facilities used in the handling, offering for transport or transporting of dangerous goods. S.C. 1980-81, c.36, s.2. The Act authorizes the federal cabinet to make regulations "prescribing safety marks, safety requirements and safety standards of general or particular application." Id. s.21(k).

259. In Environment Canada's main estimates for 1981-82, for example, it is stated that: "The department is assisting in the development of a manifest system that will record the movement of hazardous wastes that cross borders. This manifest will further ensure that storage, treatment and disposal will take place only at approved facilities." Can. H. of C. Standing Committee on Fisheries and Forestry, Proceedings, No. 21 (March 12, 1981) at A7.

In Environment Canada's main estimates for 1980-81 it was stated that: "The transportation of hazardous wastes across provincial or international borders will be subject to the requirements of a federal manifest system now being developed. . . . This system will record the movement of hazardous wastes from generator to disposal facility, and will require that storage, treatment, and disposal of the wastes occur only at provincially-approved facilities." Supra, note 115 at A7.

Also in 1981, a senior Environment Canada lawyer, Mo Prabhu, Director of Legal Services, had the following exchange with Dr. Ilan Vertinsky, Faculty of Commerce and Business Administration, University of British Columbia, during a national roundtable discussion on jurisdictional issues relating to storage and disposal of toxic chemicals:

Mr. Prabhu: . . . with regard to the Transportation of Dangerous Goods Act, we have authority to inspect and approve the site as such unless it is in fact licensed by some body such as the province. The legislation may provide that those facilities cannot receive those hazardous wastes. The Department of Transport is actually working on the safety measures, precautions and the design, construction and so on of the receiving facility.

Dr. Vertinsky: Can you say something is unsafe?

Mr. Prabhu: Unless a facility is approved by the province, we will not allow the waste to be shipped to that facility. There is going to be a licensing system where we work with the provinces.

Dr. Vertinsky: I see that you would have to approve the licensing system of the province.

Mr. Prabhu: Indirectly yes. That will be done in consultation with the province.

CELA/CELRF Roundtable, supra, note 7 at 98.

260. While Environment Canada is not statutorily responsible for administration of the Act, a ministerial agreement or understanding between the department and Transport Canada is being drafted respecting the division of responsibilities for inspection and enforcement under the Act. ~~Niemela, supra, note 97. The agreement is expected to be similar~~ to one in existence between Transport Canada and the Atomic Energy Control Board regarding the division of responsibilities for control

of the transport of radioactive materials. See Transport Canada and Atomic Energy Control Board. Inter-Departmental Memorandum of Agreement on the Transport of Radioactive Materials. (Ottawa: October 1981)

The DOT-AECB agreement refers to the overlapping responsibilities both agencies have under their respective statutes. In contrast, while Environment Canada administers the Environmental Contaminants Act, it does not administer any statute that gives it waste management responsibilities. As a result, one could foresee an agreement between the two departments continuing to leave Environment Canada in substantially an advisory capacity with respect to such matters as definitions; the addition of specific dangerous wastes to the list in the TDGA regulations; whether criteria will be placed in the regulation with respect to dangerous wastes; responsibility for prosecutions and related matters.

261. Mr. Les Benjamin M.P. moved an amendment to the Act's schedule which would have created a class of substances specifically identified as hazardous wastes. The amendment read: "Class 9 - Hazardous wastes, discarded materials or substances in solid, semi-solid, liquid or gaseous forms which, due to their nature and quantity, require specialized waste management techniques." Mr. Benjamin argued that the amendment would include hazardous wastes in the classification of dangerous goods and that this was necessary because certain substances that were wastes would otherwise not be covered by the Act. The amendment was subsequently withdrawn following submissions from Transport Canada officials that amendments they were proposing would adequately cover these concerns. Supra, note 254 at 59.

262. Mr. Benjamin moved an amendment to the Act's preamble respecting environmental protection. The amendment would have made the Act's purpose "to promote public safety and the protection of the environment in the transportation of dangerous goods." This purpose had appeared in earlier versions of the Bill. Id. at 60-61.

Justice Department lawyers noted that reference to the environment had been removed from the Act's preamble because the Bill was viewed as a criminal statute with heavy penalties in relation to public safety. Thus, there was a felt need "to make public safety very, very apparent because of the constitutional jurisdiction in respect of criminal law that relates to matters in the realm of public safety." At the same time it was viewed as important "not to confuse the bill with an environmental measure more appropriately under [Environment's] control." Id. at 60, testimony of Bernie Shaffer, Legislative Counsel, Department of Justice.

263. Toxic Substances Committee, supra, note 74 at 79.

264. Lucas, supra, note 83 at 14.

265. Reid, Crowther, supra, note 95 at 30.

266. Id. The report notes the importance of these omissions and the availability of such criteria in other jurisdictions as follows: "Wastes released in an uncontrolled manner to the environment can, depending upon the specific circumstances, threaten to contaminate surface and sub-surface potable water supplies. If these wastes exhibit carcinogenic [cancer-causing], mutagenic [mutation-causing] and/or teratogenic [birth-defect causing] effects, such an incident could pose a serious threat to human health. Consequently, criteria for carcinogenicity, mutagenicity and teratogenicity should be included in the regulation for dangerous waste. The criteria for such effects can be divided readily into degree of hazard groupings depending upon whether or not the substance is confirmed, potential or suspected of exhibiting these toxic effects. The State of Michigan has well-established criteria in this regard." Id. at 31.

267. Id. at 30. With respect to these matters the report noted: "The uncontrolled release of a waste into the environment can, depending upon its toxicity, cause damage to aquatic flora and fauna as well as terrestrial flora. Standard bioassay procedures to measure the aquatic and phytotoxicities of a substance have been developed for both acute (short term) and chronic (long term) exposure periods. The State of Michigan has well-developed degree of hazard criteria in this regard and these could be adapted to the Transportation of Dangerous Goods Act regulations concerning dangerous wastes." Id. at 31.

268. Id. at 30. The report in regard to bioaccumulation and persistence noted that: "Chronic exposure of aquatic and terrestrial species to low levels of certain contaminants can result in the bioaccumulation of these contaminants in the tissue of the organism thereby leading to contamination of the food chain and possibly causing a toxic response in the organism. Depending on the contaminant and the species affected, trace metal elements and some refractory organic compounds can have bioaccumulative properties. On the other hand, persistence relates to only organic compounds and is an indicator of the natural degradation rate of such compounds in the environment. Bioaccumulation and persistence can be significant indicators of environmental impairment and possible threats to human health if a hazardous waste is released in an uncontrolled fashion to the environment. This is a point in favour of including them in criteria for designating dangerous wastes . . . .the State of Michigan has established a degree of hazard criteria system for designating materials as hazardous due to their bioaccumulation potential and persistence in the environment. The State of Washington current and proposed regulation includes a persistence criterion. In fact, State of Washington officials strongly maintain that persistence in the environment should be a criterion for designating hazardous wastes." Id. at 31-32.

269. Id. at 30.

270. Id.

271. The report recommended developing criteria to update the list of dangerous wastes; basing the criteria on a degree of hazard approach; and increasing public consultation in the regulatory process so that greater public confidence in the regulations would result. Id. at 32-33.

272. The report urged maintenance and expansion of the TDGA list of dangerous wastes and establishment of a monitoring board made up of federal environment and health agencies in addition to transport officials to recommend criteria for, and listings of, dangerous wastes for inclusion in future regulations. Id. at 33.

273. The report supported development of hazard criteria for dangerous wastes (Class 9) addressing such properties and parameters as carcinogenicity, mutagenicity, teratogenicity; aquatic and phyto-toxicities; bioaccumulation; persistence; and minimum quantity and concentration exclusion limits. Id. at 33.

274. In 1979 Environment Canada was of the opinion that the then proposed criteria for hazardous waste (from U.S. EPA) as compared with those for dangerous goods (from Transport Canada) were not compatible, except for reactive, flammable and infectious materials. For the hazards of corrosivity, toxicity, radioactivity, phyto-toxicity, carcinogenicity, teratogenicity, mutagenicity and bioaccumulation the compatibility of U.S. EPA and Transport Canada criteria either varied markedly or was non-existent. Pittuck, supra, note 80.

While U.S. EPA did not include criteria for many of these waste characteristics in final RCRA regulations (supra, note 116), the Reid, Crowther report suggests that in fact criteria development for most of these waste characteristics is both feasible and in force in other jurisdictions. Supra, notes 265-268 and accompanying text.

275. This could occur pursuant to s. 25 of the Act.

276. These have been the findings based on U.S. experience with federal and state manifests. See P.G. Waldrop, Great Lakes Basin Commission, Hazardous Waste Manifests: Toward a Common System (Ann Arbor, Mich.: GLBC, November 1979) at 1.

277. The IJC has urged governments to accelerate efforts "to establish a compatible manifest system between all jurisdictions within and beyond the [Great Lakes] Basin in order to enable ready identification and tracing of hazardous wastes which may be transported across boundaries, including the international boundary." IJC (March 1980 Report), supra, note 3 at 94.

278. Supra, notes 75-76 and accompanying text.

279. Toxic Substances Committee, supra, note 74 at 78. The Committee notes in part that: "The federal government, although it contributes to the waste management problem (banning and restricting certain uses of PCB creates a PCB storage and disposal problem) has no direct mandate to resolve or control the problem. . . . The Environmental Contaminants Act has no power to control waste substances." Id.

Other federal legislation, such as the Pest Control Products Act and the Hazardous Products Act, have been suggested to have a similar effect for other substances. Environment Canada, supra, note 71 at 1.

In the U.S. it is estimated that the volume of waste defined as hazardous under RCRA will increase due to provisions under the Toxic Substances Control Act which have banned the manufacture of PCBs and restricted uses of the chemical. John R. Hall, Great Lakes Basin Commission. Hazardous Waste Management in the Great Lakes Basin: Technical Report V: Effects of Federal Regulatory Policy on Hazardous Waste Generation and Management. (Ann Arbor, Mich.: GLBC, August 1980) at 15.

280. S.C. 1974-75-76, c.55.

281. S.4(1). As part of the Act there are three schedules. Schedule I (prohibited) substances can seriously harm the marine environment and are not rendered harmless in the sea by physical, chemical or biological processes. These include mercury, cadmium (and their compounds) and organohalogenated compounds such as PCBs. These substances are not normally permitted to be dumped in the ocean except under exceptional circumstances. Schedule II (restricted) substances are potentially harmful substances which can only be dumped safely only with extreme care. These substances include arsenic, lead, copper, zinc, beryllium, chromium, nickel, vanadium and their compounds, pesticides and their by-products not listed in Schedule I, cyanides and fluorides. Schedule III substances are all those not listed in Schedule I or II. Schedule III also lists factors which must be considered in granting all ocean dumping permits.

282. Monteith, supra, note 75 at 480.

283. Correspondence to CELA from Raymond M. Robinson, Assistant Deputy Minister, Environmental Protection Service, Environment Canada (October 7, 1981: Ottawa); and correspondence to CELA from R. W. Slater, Assistant Deputy Minister, Environmental Protection Service, Environment Canada (August 16, 1982: Ottawa).

284. Id., Slater.

285. R.S.C. 1970, F-14 (1st Supp.) as amended, s.3(2).

286. S.33(10).

287. Ss.33.1(1)-(2).

288. R.S.C. 1970, c.34 as amended.

289. S.176. The provision includes committing an unlawful act or failing to discharge a legal duty which results in either endangering lives, safety, health, property or comfort of the public; or obstructing the public in the exercise or enjoyment of any right that is common to all the subjects of Her Majesty in Canada.

290. S.387. The section is primarily directed to protection of property. Mischief is defined as the wilful destruction or damage of property; rendering of property dangerous, useless, inoperative or ineffective; obstruction, interruption or interference with the lawful use, enjoyment or operation of property; or obstruction, interruption or interference with any person in the lawful use, enjoyment or operation of property. S.387(1)(a)-(d). The section relates to both public (s.387(3)) and private (s.387(4)) property as well as actual endangerment to life (s.387(2)). The offence may be committee by "doing an act or by omitting to do an act" that is the person's "duty to do, knowing that the act or omission will probably cause the occurrence of the event and being reckless whether the event occurs or not. . . ." (s.386(1)).

291. S.202. Criminal negligence includes the commission or omission of an act that is the person's duty to do, which shows a "wanton or reckless disregard for the lives or safety of other persons." The "duty" incorporated in this section is one that is "imposed by law." (s.202(2))

292. See, e.g. R. v. Corporation of the City of Sault Ste. Marie (1978), 40 C.C.C. (2d) 353 (S.C.C.); R. v. Chapin (1979), 7 C.R. (3d) 225 (S.C.C.).

293. R.S.C. 1970, c.I-5 as amended; S.O.R. 154-682 as amended.

294. S.1100(1)(t) and Schedule B, Class 24 of the Income Tax Regulations.

295. Id. Class 27.

296. Environment Canada. Accelerated Capital Cost Allowance Program. (Ottawa: Env. Cda., undated).

297. See, e.g. s.92(13) property and civil rights in the province and s.92(16) generally all matters of a merely local or private nature in the province. The Constitution Act, 1867 as am. Constitutional aspects of hazardous waste management are reviewed below. See Part VII.

298. See, e.g. Clean Air Act, R.S.A., 1971, c.16 as am. and Clean Water Act, R.S.A. 1971, c.17 as am.

299. See discussion under Part III.B.

300. Supra, notes 76-78 and accompanying text.

301. See Part IV.A.2.a.

302. See, e.g. Environment Council of Alberta (ECA), supra, note 62 at 39-47. See also Lucas, supra note 83 at 8-10.

303. In Alberta, the ECA proposed a substantive definition of hazardous wastes that was substantially similar to the Task Force definition. The purpose of the ECA definition was to govern its findings and recommendations to the Alberta Government and to serve as a basis for later statutory definition. Id. at 39.

In British Columbia, a provincial committee endorsed the Task Force definition as a "sound philosophical basis for the further development of specific lists of hazardous wastes and/or criteria for application in British Columbia." British Columbia Ministry of the Environment. Hazardous Waste Management in British Columbia. Report of the Hazardous Waste Management Advisory Committee. (Victoria: BCMOE, 1981) at 1-1.

304. Under amendments to existing hazardous chemicals legislation, Alberta proposes to define "hazardous waste" as "a hazardous chemical disposed of or to be disposed of as waste." Hazardous Chemicals Amendment Act, 1982 (Bill 16, 19th Leg. Alta., 4th Sess.) s.1(g). Existing Alberta legislation defines "hazardous chemical" as "any substance, class of substance of mixture of substances that is entering or is likely to enter the environment in a quantity or concentration or under conditions that may constitute a danger to the natural environment; plant or animal life; or human health." The Hazardous Chemicals Act S.A. 1978, c.18, s.1(f).

305. Id. ss. 16(1)(f)(i).

306. Waste Management Act (Bill 52, 32nd Leg. B.C., 4th Sess.) ss. 1 and 35(1)(b).

307. Id. s.35(1)(s).

308. See, e.g. correspondence to the author from the Hon. Stephen Rogers, British Columbia Minister of the Environment (May 11, 1982, Victoria,

B.C.). See also Government of British Columbia. Special Waste List. Draft. (Victoria: BCMOE, 1982).

309. Reid, Crowther, supra, note 95 at 128-131.

310. Environment Quality Act R.S.Q. 1977, c.Q-2. Neither the definition for "contaminant" nor for "waste" specifically relate to hazardous wastes. See ss. 1(5) and 1(11) respectively.

311. The only definition that somewhat resembles a definition of hazardous wastes is that for "liquid waste" under the liquid waste management regulation Q.Reg. 75-496 made under the EQA. S.1(b) defines "liquid waste" as "any liquid or semi-liquid waste product at 20°C composed of organic or inorganic matter, even diluted with water, with the exception of agricultural waste, whey, sludge from septic pits or catch basins, residues from the manufacture of pulp and paper processes, residues of starch in water solutions, residues of cellulose and adhesives constituted of animal proteins."

311a Supra note 310, EQA (as am. through 1982) ss. 67, 68, 70(m) and 110.1. See also Regulation respecting solid waste, R.R.Q., 1981, c. Q-2, ss. 1(e)(o), 54, 129.

312. Reid, Crowther, supra, note 95 at 147.

313. Correspondence to the author from Jean Piette, Director of Legal Services, Quebec Ministry of the Environment (July 7, 1982, Quebec City, P.Q.). Quebec policy documents indicate that the province regards two properties as making wastes potentially hazardous: reactivity (when a waste is explosive, combustible, corrosive, bioaccumulative or radioactive) or toxicity (when a waste presents a danger to human health and the environment). Any residue that possesses either of those properties and "which cannot be treated, recycled on-site or directly eliminated without danger to the environment and which, by this very fact, must be transported outside of the industry before it is ultimately disposed of, is considered to be potentially hazardous waste" under Quebec policy. See Quebec Ministry of the Environment. Policy on the Management of Industrial Wastes. (Quebec City: MOE, May 1981) at 5.

314. Piette, id. Annex 1 to the Quebec industrial management policy lists twenty-three classes of wastes that the province regards as potentially hazardous. Id. at 19.

315. "Hauled liquid industrial waste" is defined under Ontario regulations to mean liquid waste, other than hauled sewage, that results from industrial processes or manufacturing or commercial operations and that is transported in a tank or other container for treatment or disposal, and includes sewage residue from sewage works that are subject to the provisions of the Ontario Water Resources Act." R.R.O. 1980, Reg. 309, s.1.12 (Waste Management - General) made under the Environmental Protection Act R.S.O. 1980, c.141, as am. A separate regulation respecting transfers of liquid industrial waste defines

such wastes in a similar manner but excludes from within its ambit septic and holding tank wastes; municipal sanitary sewage work discharges; waste disposed of on-site; and waste that is wholly used or recycled. See R.R.O. 1980, Reg. 313, s.1 (Transfers of Liquid Industrial Waste) made under the EPA.

316. "Hazardous waste" is defined under Ontario regulations to mean "waste that requires special precautions in its storage, collection, transportation, treatment or disposal, to prevent damage to persons or property and includes explosive, flammable, volatile, radioactive, toxic and pathological waste." R.R.O. 1980, Reg. 309, s.1.14 (Waste Management - General) made under the EPA.

317. See, e.g. correspondence of E. W. Turner, Waste Management Branch, Ontario Ministry of the Environment to the Federal-Provincial Task Force on Hazardous Waste Definition, Ottawa (undated 1979, Toronto, Ontario). Mr. Turner notes that the formulation of a definition of hazardous wastes is deemed very critical to the province and its regulatory programs.

318. Interview with Colin MacFarlane, Director, Waste Management Branch, Ontario Ministry of the Environment (July 26, 1982, Toronto, Ontario).

319. Under the MOE interim definition of hazardous wastes, U.S. EPA criteria for characterizing and listing a waste will be employed (i.e. ignitability, corrosivity, reactivity and toxicity) as well as internally generated criteria for radioactivity and pathogencity. Under this scheme guidelines are to be prepared to determine acceptable amounts, concentrations or levels for each of the proposed characteristics of hazardous wastes. See Ontario Ministry of the Environment. Proposed Interim Definition of Hazardous Waste. (Toronto: MOE, April 1981).

320. Frank A. Rovers, an engineer and hydrogeologist appearing for a disposal company during recent hearings testified that in Ontario at present there were not good definitions of hazardous and toxic wastes. See Ontario Environmental Assessment Board. Report on the Application by York Sanitation Company Limited for Approval of an Extension to a Waste Disposal Site in the Town of Whitchurch-Stouffville. (Toronto: O.E.A.B., November 1981) at 48.

321. In August 1982, twelve citizen and environmental groups noted that the definition of hazardous wastes in the EPA had not been improved although the Federal-Provincial Task Force had agreed on a definition of hazardous wastes in January 1980. The groups noted that the reforms were needed to define the limits of regulatory control of hazardous wastes. See "Citizens' groups take Norton to task," The Globe and Mail (Toronto), August 12, 1982, at 4, col. 4.

322. Ontario Waste Management Corporation Act S.O. 1981, c.

323. The OWMC defines "special waste" to be "'liquid industrial waste' and 'hazardous waste' that require special treatment, that is, waste that cannot be treated by sewage treatment plants and/or municipal incinerators and should not be disposed of in municipal landfills." The OWMC Exchange Vol. 1, No. 2, September 1982 at 3.

324. Id.

325. As a result of recent studies conducted for the OWMC it was found that Ontario produces 330 million gallons of industrial waste a year with five per cent (or sixteen million gallons) of it "vanishing in ways not accounted for." Dr. D. A. Chant, Chairman and President, Ontario Waste Management Corporation. Press Conference Remarks on the Phase One Study Results. (Toronto: OWMC, September 9, 1982) at 7-8. See also Ontario Waste Management Corporation. Waste Quantities Study. (Toronto: OWMC, September 1982) at 2. Dr. Chant noted that until the OWMC studies, MOE records based on the waybill system for tracking wastes under the transfers of liquid industrial waste regulation, recorded only about 60 million gallons produced a year. Dr. Chant explained the huge discrepancy between the two figures as follows: "The waybill system is designed to record only certain wastes hauled by licensed carriers to licensed treatment and/or storage facilities. Our estimates cover all wastes - whether they are recycled, stored or treated on site or treated and/or stored off-site, or not treated at all." Id. at 9. See also "Waste problem for worse than believed: Study," The Toronto Star, September 10, 1982 at A3; and Michael Keating, "Waste inventory reveals huge totals: Six times more than [previously] calculated," The Globe and Mail (Toronto), September 10, 1982 at 4, col. 1.

326. Ontario Ministry of the Environment. Guidelines for the Treatment and Disposal of Hauled Liquid Industrial Wastes in Ontario. (Toronto: MOE, December 1978).

327. Leonard F. Pitura, Director, Waste Management Branch, Ontario Ministry of the Environment. "Ontario Industrial Waste Disposal - Guidelines, Regulations and Related Activities." An Address at the 26th Ontario Industrial Waste Conference. (Toronto: MOE, June 1979) at 168.

328. Supra, note 321.

329. MacFarlane, supra, note 318.

330. See, e.g. Lucas, supra, note 94.

331. Clean Environment Act S.M. 1972, c.C-130, s.1(e.2) as am. A "hazardous material" means any substance so designated by the regulations.

332. M. Reg. 15/81. (Designation of Certain Substances as Hazardous Materials). Five substances have been listed to date: ammonium nitrate; hydrochloric acid; nitic acid; polychlorinated biphenyl (PCB) and sulphuric acid.

333. See, e.g. the definition of "waste" under Nova Scotia legislation. "Waste" refers to a substance which, if added to the environment, would pollute or tend to pollute and includes rubbish, slimes, tailings, fumes, smoke of mines, factories or other industrial wastes,

effluent, sewage, garbage, refuse, scrap, litter or other waste products of any kind whatsoever. Environmental Protection Act S.N.S. 1973, c.6 as am., s.2(o).

334. See, e.g. correspondence to the author from E. L. L. Rowe, Office of the Deputy Minister, Nova Scotia Department of the Environment (May 3, 1982, Halifax, N.S.).

335. Reid, Crowther, supra, note 95 at 136 (New Brunswick), 138 (Newfoundland), 140 (Nova Scotia), 145 (P.E.I.), 149 (Saskatchewan).

336. See Part II. Provincial governments have expressed concern at the practice of dumping untreated wastes into landfills. The Hon. H. C. Parrott, Ontario Minister of the Environment raised these concerns during 1981 standing committee hearings: "[the provincial government] was particularly anxious to stop the practice of disposing of untreated liquid wastes in municipal solid waste disposal sites. The practice has become increasingly repugnant to the public . . . because of demonstrable technical shortcomings. . . . Landfilling of untreated industrial waste . . . must stop." Legislature of Ontario Standing Committee on Resources Development, Proceedings, No. R-3 (January 20, 1981) at 33 and 35, testimony of Dr. Parrott.

An Ontario fact sheet notes that: "The unacceptable practice of landfilling untreated liquid industrial wastes will be prohibited as soon as other facilities for handling these wastes can be put into place." Ontario Ministry of the Environment. Industrial Waste Management - A Program for Ontario. (Toronto: MOE, 1981) at 4.

337. The Nova Scotia Department of Environment, for example, concluded from its review of the Maritimes Hazardous Waste Inventory Report (supra, note 16) that: most hazardous wastes in Nova Scotia are treatable on site through either existing company facilities or with alternate waste treatment and disposal practices; four thousand to five thousand tonnes of hazardous waste require specialized treatment preferably at a disposal facility; and that the economic, financial and social feasibility of a central, maritime hazardous waste disposal facility is not demonstrated by the inventory. Nova Scotia Department of Environment. Assessment of Maritime Hazardous Waste Inventory Report as it Applies to Nova Scotia (Halifax: NSDOE, undated).

338. Environmental groups have argued that the establishment of large regional treatment-disposal facilities, while important, will in the absence of a vigourous policy initiative on waste reduction and recovery, fuel the increasing production of hazardous wastes because the incentives to reduce such waste generation will be removed. Green, supra, note 135.

339. Reid, Crowther, supra, note 126; B.C. study, supra, note 303 at xiv; Quebec policy, supra, note 313 at 15. See also Government of Alberta. Position Paper on Industrial and Special Waste Management (Edmonton: Gov't of Alta.; January 1982) at 4. In Ontario, the province's new

crown corporation, OWMC, recently noted that it is now looking at two possible system options: a fully centralized facility or a decentralized system with treatment and/or disposal facilities in different locations. Chant, supra, note 325 at 11.

340. Leg. of Ont. Standing Committee on Resources Development, Interim Report on Liquid Industrial Waste (Toronto: Queen's Printer, December 1978).

341. IJC (March 1980 Report), supra, note 3 at 94.

342. The Environmental Protection Act R.S.O. 1980, c.141 as am. Part V. Waste Management.

Provincial planning legislation also grants municipalities substantial responsibility for official land use planning and zoning by-law development. Normally, undertaking any project, including a waste disposal site, contrary to an official plan or zoning by-law is prohibited. Before any such project can proceed, changes to the official plan or zoning by-law would be necessary and this would be the subject of a hearing before a separate hearing body, the Ontario Municipal Board. See The Planning Act R.S.O. 1980, c. To avoid duplicate hearings under both Acts, the province recently passed The Consolidated Hearings Act S.O. 1981 c. 20 to streamline the process. The municipal government role is discussed further below. See Part IV c.

343. See, e.g. Hon. H. C. Parrott, Ontario Minister of the Environment. "Liquid Industrial Wastes--Beyond the Seven-Point Program." An Address at the 26th Ontario Industrial Waste Conference. Proceedings (Toronto: MOE, June 1979) at 159-162. During 1981 standing committee hearings, Dr. Parrott charged, for example, that public opposition thwarted the establishment of two solidification facilities for liquid industrial wastes (Harwich and Thorold); an interim storage facility for PCB wastes (Middleport); conversion of a treatment plant for industrial wastes (Ajax); and burning of PCB wastes in a cement kiln (Mississauga). Supra, note 336 at 34-35.

A summary of the views of federal, state and provincial Great Lakes Basin agency representatives at a 1978 IJC special meeting on hazardous waste disposal concluded, in part, that: "Local resistance to siting of disposal systems has prevented the location of these sites even on government owned land. . . . Social acceptability of the site in the local area is the key to the problem whether the site is government or privately owned." See International Joint Commission. Great Lakes Water Quality Board. Report on Hazardous Waste Disposal: Sixth Annual Report on Great Lakes Water Quality - Appendix F (Windsor, Ont.: IJC, July 1978) at 13.

344. See, e.g. T. Fowle, President, Simcoe Engineering Ltd. "Industrial Waste Disposal - Myth and Reality." An Address at the 28th Ontario Industrial Waste Conference. Proceedings (Toronto: MOE, June 1981) at 07-209. See also testimony of T. W. Drew, President, D & D Disposal Services Ltd., Legislature of Ontario Standing Committee on Resources Development, Proceedings, No. R-35 (October 18, 1978) at R-1420-2 and R-1425-1.

345. See, e.g. Hon. H. C. Parrott, Ontario Minister of the Environment. Address given at the Canadian Environmental Law Research Foundation Regulation Conference (Toronto: January 22, 1980). See also Parrott, supra, note 336 at 35-36.

This concern has been illustrated in other provinces as well. For example, an Alberta Environment official recently noted that: "Public hysteria fanned by accounts of the Love Canal, Valley of the Drums and Stouffville, Ontario was great enough to invoke the cry of 'not-in-my-backyard' from every corner of Alberta." See K. J. Simpson, Head, Waste Management Branch, Alberta Department of the Environment. "The Alberta Approach to Hazardous Waste Management." An Address at the Corpus Conference on Hazardous Waste Management (Toronto: Corpus, September 1982).

The federal government has also echoed these same sentiments, stating: "The establishment of proper facilities for the treatment, disposal and storage of hazardous wastes in Canada is an issue of national importance. Although appropriate technology is available, and most people agree that proper facilities are needed, public opposition has been a major obstacle to the establishment of specific sites. The phenomenon of strong local opposition to the siting of hazardous waste facilities has become known as the 'not-in-my-backyard' or NIMBY syndrome." Environment Canada. Hazardous Waste - The Nimby Syndrome. A Background Document for a Public Consultation Meeting. (Ottawa: Env. Cda., September 1982) at 1.

Interestingly, not all industry views have coincided with those noted above (supra, note 344) or with government views on the causes or origins of this problem. One industry spokesman recently noted that: "Public acceptance of waste disposal sites has been slow in coming. Much has been made of the 'not-in-my-backyard,' or NIMBY syndrome, which has supposedly crippled efforts to establish waste management facilities. Indeed, a close examination of the facts, on a case by case basis, reveals that political power, presumably generated by some citizens' groups, is sometimes unjustly credited with 'sinking' proposals that were environmentally unsound in the first place." Douglas J. R. Lisle, Canadian Chemical Producers' Association. "An Industrial Overview of Chemical Waste Management." An Address at the Corpus Conference on Hazardous Waste Management (Toronto: Corpus, September 1982).

346. In 1978, both the Environmental Assessment Board and the Director of Environmental Approvals for the Ontario 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 hydro-geological investigations by the company; unsatisfactory provisions for leachate handling; unsatisfactory provisions for monitoring and site management; a finding that the wrong waste 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., April 1978). See also Decision of the Director of Environmental Approvals, Ontario Ministry of the Environment. Re Nanticoke Waste Management Limited (1978) 7 C.E.L.R. 129.

In October 1980, a panel of the O.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 provisions 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 groundwater 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., October 1980). Portions of the draft report were varied by the full O.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 O.E.A.B. by resolution" (November 20, 1980, Toronto).

347. One waste disposal industry official recently suggested that: ". . . the public should have a forum where they can let the world know they do not favour a landfill in their community. . . . There should also be an opportunity for them to challenge expert opinion, if they wish. But only in areas where the technology is unproven. . . . Endless days spent on technical details which can be settled ahead of time merely frustrates the hearing process. In fact no hearing should be convened until the government is satisfied the project is technically sound. At that point the public can debate both the need and any possible social or human disruptions, including the likely impact on health and the environment. . . . [P]ublic hearings on the social impact and public opinion should be separate from any technical hearings on disposal methods, except where a technology may be unproved or questionable for that specific site and poses a

possible health or nuisance hazard." J. G. Temple, District Manager, Waste Management of Canada, Inc. "Does Business Have Any Business in the Waste Business?" An Address at the 29th Ontario Industrial Waste Conference (Toronto: MOE, June 1982).

The problem with the above thesis is that both industry and government have long argued that hazardous waste technology is proven. But as the above hearings suggest (supra, note 346) the public and tribunals have usually found proposals weak because of the failure of the proponent to adequately mesh his technology with his chosen site. Thus, it is hard to imagine a situation where a hearing on technical issues could be dispensed with or limited to "social issues."

348. The EPA only requires that an applicant for a certificate of approval must submit "plans and specifications of the work to be undertaken together with such other information as the Director [of Approvals] may require." R.S.O. 1980, c.141 as am. s.37. Intervenors at the Nanticoke hearing argued that the applicant should have provided information on: watertable definition and fluctuation; groundwater flow in clays and bedrock; gradients; soils and bedrock permeability; water quality and use; leachate and fisheries impacts; contingency plans; velocity and directional flow of groundwater; and alternative sites and technologies. See J. Castrilli, Canadian Environmental Law Association. "Hazardous Waste Siting Requirements: What Role Should Be Assumed by Intervenors." An Address at the Environment Canada Hazardous Waste Management Seminar. Proceedings (Toronto: Env. Cda., October 1978) at 21-4. Many of these technical concerns are reflected in the O.E.A.B.'s findings of inadequacy on the Nanticoke proposal. Supra, note 346.

349. The Environmental Assessment Act R.S.O. 1980, c.140. EAA requirements include: a description and evaluation of the undertaking's purpose; alternatives to, and alternative methods for, carrying out the undertaking; a statement of the environment to be affected; mitigation of the environmental effects of the undertaking and the alternatives; and advantages and disadvantages to the environment of each of the options. S.5(3). See also Ontario Ministry of the Environment. Environmental Approvals Branch. Environmental Assessment Guidelines for the Treatment and Disposal of Hazardous Liquid Industrial Wastes (Toronto: MOE, June 1979).

350. From the coming into force of the EAA in October 1976 to January 1981 when the Ontario Government established a crown corporation to address the hazardous waste problem in the province, no public hearings under the Act were held for such facilities. Thereafter, the activities of the OWMC were not subject to any of the hearing provisions of the EAA. See J. Castrilli, Canadian Environmental Law Association. Submissions to the Legislature of Ontario Standing Committee on Resources Development. The South Cayuga Liquid Industrial Waste Facility: Policy Considerations (Toronto: CELA, January 1981).

351. The establishment and extension of a site for the disposal of toxic waste by treatment, landfilling or other method is subject to environmental impact assessment and review requirements pursuant to Quebec regulations made under the EQA. See O.C. 3734-80 under the Quebec Official Gazette (December 30, 1980) at 5060. A public hearing must be held upon a request by citizens in relation to such a project unless the Minister deems such request to be "frivolous." EQA, s 31.3.

352. The Quebec Environment Ministry granted approval in 1981 to the construction of an $18 million toxic chemical waste treatment and disposal centre in Blainville, P.Q. Hearings were held by the Office of Public Hearings on the Environment pursuant to the Act. The Office had expressed strong reservations about the hydrogeological impact of the proposed site. Conflicting studies as to how long it would take toxic chemical wastes to seep through the groundwater table ranged from 1000 years to 18-25 years. One of the conditions to the approval requires that further hydrogeological work be done on the site's impact. Virginia Adamson, "Stablex-Quebec Government Allows Construction of Toxic Waste Treatment Centre in Blainville." (1981), 6 CELA Newsletter 71.

353. Parrott, supra, note 336 at 37. See also note 322, the Act establishing the OWMC in 1981.

354. Id.

355. See O. Regs. 1120-22/80. South Cayuga Sewage Works (OWRA); Crown Waste Disposal Sites (EPA); South Cayuga Sewage Works and Waste Disposal Sites (EAA). See now the OWMC Act S.O. 1981, c. s.15. See also "Hearings sought on Cayuga waste plant," The Globe and Mail (Toronto: November 27, 1980) at 19.

356. Parrott, supra, note 336 at 36.

357. The OWMC rejected the South Cayuga site because almost half of the area was shallow clay till over bedrock which could allow leachate to quickly reach the groundwater passing through bedrock; approximately a quarter of the site was in part of a potential flood area; and the presence of gas wells in the area posed a danger of hazardous conditions. The OWMC concluded, therefore, that on the basis of its investigations the site was "borderline" or "marginal." Dr. D. A. Chant, Chairman and President, Ontario Waste Management Corporation. Press Conference Remarks Regarding the Proposed South Cayuga Site for a Secure Landfill (Toronto: OWMC, November 18, 1981) at 4-6, 8.

358. An ad hoc citizens' coalition had identified both the flood plain and gas well constraints as potential problems in establishing a hazardous waste facility at South Cayuga as early as 1980. See Press Release. "Citizens' Hazardous Waste Coalition Demands Thorough Environmental Assessment in Place of Government Edict" (December 9, 1980: Toronto).

359. S.15 of the OWMC Act exempts the Corporation from any of the statutory hearing requirements of the EAA, EPA and OWRA for any site it may choose to establish a facility upon.

360. In British Columbia it was recommended that a crown corporation be formed to provide the overall leadership and planning of hazardous waste disposal facilities in the province. The crown corporation would have "suitable capital financing from government" and would "construct, own and manage the necessary centralized treatment and disposal facilities . . ." B.C. Advisory Committee, supra, note 303 at xiv. However, the B.C. Government has not moved to establish such a corporation to date and has instead sought proposals from the private sector for establishment of such facilities. See Brian Kieran, "Government looking for firms to handle hazardous wastes," The Vancouver Sun, August 18, 1981 at A10. See also Province of British Columbia. News Release. "Special Waste Management in British Columbia" (Victoria, B.C.: BCMOE, January 26, 1982) and Province of British Columbia. News Release. "Good Response to call for Proposals" (Victoria, B.C.: BCMOE, March 24, 1982).

361. In Alberta it was recommended that legislation establishing a crown corporation to manage hazardous waste treatment and related facilities be brought forward as soon as possible. ECA, supra, note 62 at 210. The Alberta Government's policy is to give specific responsibility of implementing an overall special waste management system to the crown agency and to give the private sector opportunities to own and operate, for example, treatment facilities within this system. Supra, note 339 at 4. The provincial government recently entered into negotiations with a private company to design, build and operate a special waste treatment facility. Government of Alberta. News Release. "Selection of Proponent - Hazardous Wastes Treatment Facility" (Edmonton: Alta. DOE, July 7, 1982). Legislation forming the crown agency to oversee and coordinate central treatment storage and disposal facilities for hazardous wastes was recently enacted. The Special Waste Management Corporation Act S.A. 1982, c.

362. See, e.g. E. Struzik, "Province rethinking waste plant standards," The Edmonton Journal, February 8, 1982.

The concern over possible lowering of standards has prompted Alberta environmentalists to call for federal legislation to prevent this from occurring. Linda Duncan, an environmental lawyer, recently noted that: "I would support very strongly the federal government moving in to control the disposal of toxic substances . . . we have had hazardous waste hearings in Alberta over the past year and it sounds like there are going to be several major . . . hazardous waste disposal plants set up in the province. . . . [I]t would be a disaster if the rest of the provinces allowed Alberta to go ahead with these disposal plants and didn't take the responsibility to lobby for federal legislation controlling how those substances are handled. . . . [T]here will probably be a good deal of transportation of waste, particularly PCBs, to Alberta for disposal and storage. . . . [I]f

Alberta is encouraged and allowed to take that initiative it is the responsibility of the other provinces to encourage legislation at the federal level so that those wastes are handled in a proper fashion." CELA/CELRF Roundtable, supra, note 7 at 97, comments of Ms. Duncan.

363. See, e.g. Simpson, supra, note 345 at 4, regarding the Alberta position; see also the recommendations of the B.C. Advisory Committee, supra, note 303 at xvi.

364. In Ontario, for example, twelve citizens' groups in August 1982 strongly criticized the Ontario Government for failing to introduce legislation providing for funding of citizens to appear before administrative tribunals on such matters as hazardous waste facility siting. The groups charged that such legislation was necessary to balance the glaring disparity between citizen resources and those of proponents and had been urged on various provincial environment ministers since at least 1971. See Toby Vigod, "Environment Minister Receives Report Card on Hazardous Waste Record: Law Reforms Needed Before Grades Raised," (1982), 7 CELA Newsletter 61 at 63.

365. Dr. Chant, Chairman of the OWMC, testified during 1981 Standing Committee hearings that: ". . . if you are having technical hearings . . . citizen intervenor[s are] at a great disadvantage if . . . the group doesn't have some technical resources of their own. . . . [T]here should be financial resources made available to citizen intervenors . . . to enable them to have technical consultants who can give them advice on the data that will be coming forward from the corporation and will be . . . heard and examined by the hearing tribunal." Legislature of Ontario. Standing Committee on Resources Development, Proceedings, No. R-12 (January 28, 1981) at 24, testimony of Dr. Chant.

More recently, Dr. Chant has noted that the OWMC has taken the policy decision that: the public and special interest groups will be consulted on planning and site selection decisions; proposed sites and technologies will be submitted to an independent hearing panel; and that intervenor funding will be provided for hearing participants approved by the panel. Dr. D. A. Chant, Chairman and President, Ontario Waste Management Corporation. "History and Current Status of the Ontario Waste Management Corporation." An Address at the Ontario Waste Management Corporation Seminar on Waste Management Issues. (Niagara-on-the-Lake, Ont.: OWMC, January 1982) at 4.

366. One jurisdiction that has attempted such a legislative approach is the Commonwealth of Massachusetts. Commentators note five critical elements to the Massachusetts Hazardous Waste Facility Siting Act (Ch. 508, 1980 Mass. Acts 673): "First, the Act gives a developer the right to construct a hazardous waste facility on land zoned for industrial use if the developer obtains the required permits and completes a negotiated or arbitrated siting agreement with the host community. The siting agreement describes the steps which the

the developer will take to mitigate adverse impacts associated with the facility and to compensate the community for remaining impacts. Second, the Act limits the ability of local communities to exclude hazardous waste facilities without first showing that such facilities pose special risks. Third, the state provides potential host communities with technical assistance grants to promote local participation in the siting process and effective negotiation with developers. Fourth, the Act requires that deadlocks between developers and host communities be submitted to an arbitrator. Finally, the Act provides for compensation to abutting communities that are likely to be affected by new hazardous waste facilities in adjacent jurisdictions." Lawrence S. Bacow and James R. Milkey, "Overcoming Local Opposition to Hazardous Waste Facilities: The Massachusetts Approach" (1982), 6 Harv. Envtl. L. Rev. 265, 279-280. See also Commonwealth of Massachusetts. First Interim Report of the Special Commission Relative to the Procedures and Guidelines for Siting Hazardous Wastes Facilities in the Commonwealth. House Rep. No. 6756 (Boston, Mass.: June 1980).

367. See, e.g. Public Health Act S.S. . See also correspondence to the author from H. S. Maliepaard, Acting Deputy Minister, Saskatchewan Environment (July 7, 1982, Regina, Saskatchewan).

368. See, e.g. Public Health Act S.A. . Recent amendments to the Hazardous Chemicals Act give legislative control over the disposal of hazardous wastes to Alberta Environment. Supra, note 304, s.7.4(1).

369. Supra, notes 62-63 and accompanying text with respect to the Alberta situation prior to the recent amendments.

370. Pollution Control Act S.B.C. . The provincial government notes that: "Disposal of special wastes or chemicals in an existing sanitary landfill will not be permitted." Rogers, supra, note 308. A new Waste Management Act has recently been proposed. Supra, note 306.

371. Environment Quality Act R.S.Q. 1977, c.Q-2. Quebec's solid waste regulation promulgated under this Act prohibits the deposit of toxic wastes in a municipal landfill. Q. Reg.

372. In British Columbia, for example, federal fisheries officials raised concerns in 1981 about toxic waste dangerous to fish seeping into a local creek from a North Vancouver landfill. Moira Farrow, "Toxic waste 'dangerous' to Lynn Creek," The Vancouver Sun, November 17, 1981. Federal biologists also warned in 1981 of high levels of PCBs in a canal system near Vancouver arising from a leaking landfill site. "PCBs leaking from dump: Official," The Montreal Gazette, August 13, 1981.

In Quebec, for example, an unlicensed landfill site was reported in 1980 to have received hundreds of barrels of liquid wastes shipped from Toronto. Gwen Smith, "Unlicensed Quebec site used for waste," The Globe and Mail (Toronto), November 7, 1980 at 3. The site was subsequently closed down by a court injunction. See Procureur general de la province de Quebec c. Carriere Landreville Inc. 1981 C.S. 1020.

373. Environmental Protection Act R.S.O. 1980, c.141 as am. Part V - Waste Management. See also Guidelines, supra, note 326.

374. Environmental Protection Act S.N.S. 1973, c.6 as am. Nova Scotia officials note that: "Prior to approval of municipal landfills, documentation presented to the Department is required to provide information for the municipal operator on wastes which are restricted from the landfill and those special wastes which the Department must review before approving deposition in the landfill. . . . Some approved sanitary landfills may receive hazardous or toxic wastes providing the proper pre-treatment methods are followed." Rowe, supra, note 334.

375. In 1979, the Ontario government released a report which indicated that at least seven certified waste disposal sites that were not specifically authorized to receive liquid industrial wastes, were receiving them anyway. Two additional sites, which were not certified at all under Ontario law, were also reported to be accepting such wastes. Ontario Ministry of the Environment. Details on Waste Site Identification Program (Toronto: MOE, June 1979) and Appendix A to this report List of Waste Disposal Sites Accepting Liquid Industrial Wastes (Toronto: MOE, May 1979) at 2. One of the two companies operating the uncertified sites was subsequently convicted under the EPA for illegally operating a waste disposal site (in reality a worked out gravel pit). See R. v. Refluent Investments Ltd. (unreported November 1979 decision of the Provincial Court [Criminal Division] Judicial District of York). This conviction came at a time when the site was the subject of an environmental hearing to determine if approval should be given to allow establishment of one of the largest landfill sites in Canada. The approval sought specifically indicated that the site would not be used for liquid industrial waste disposal. See Application for Certificate of Approval under the Environmental Protection Act for a waste disposal site filed by Crawford Allied Industries. March 30, 1976. Exhibit 3 before the Ontario Environmental Appeal Board. Evidence during the provincial prosecution had indicated that Refluent had buried tankers in the gravel pit and used them to store and treat liquid industrial wastes. The contents of one of the tankers sampled were considered hazardous. Sludges from the bottoms of the trucks delivering wastes had been pumped onto the ground in the pit. See Carol M. Olchowski, Legal Counsel, Ontario Ministry of the Environment. "Hazardous Wastes: The Legal Context - A Review of Ontario Environmental Law and its Practical Application." An Address at the University of Toronto and Oyez Limited Symposium on the Treatment and Disposal of Hazardous Wastes (Toronto: University of Toronto/ Oyez, May 1981) at IIE-5.

In a 1982 report, following a major hearing on a waste disposal site expansion, the Ontario Environmental Assessment Board concluded that: ". . . the areas already used for landfilling have received an unknown quantity of liquid industrial and hazardous waste. . . . [T]he applicant, to date, has made no attempt to characterize the waste or leachate in these areas, has made only a limited attempt to monitor leachate migration, and has not implemented any remedial or environmental protection measures. The Board takes note that the applicant has failed to take any measures to contain the movement of hazardous wastes. It does recognize that the present application provides for certain remedial measures, but the applicant has not implemented any measures to date. This indicates to the Board a degree of irresponsibility on the part of the applicant." Ontario Environmental Assessment Board. Report on the Public Hearing on the Application by the Ridge Landfill Corporation Limited for Approval of an Extension to a Waste Disposal Site - Township of Harwich (Toronto: O.E.A.B., April 1982) at 72. In fact, in the original application and approval for the site in the early 1970s, no mention was ever made that the site would be receiving toxic or liquid industrial wastes. Infra, note 393 and accompanying text. For ten years, the Ministry of the Environment did not advise the township or residents of Harwich that cyanide, PCBs, formaldehyde or other toxic wastes were being dumped in the landfill. 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.

376. Correspondence to the author from the Hon. Jay Cowan, Manitoba Minister of Northern Affairs responsible for Environmental Management (July 9, 1982, Winnipeg, Man). Section 5.2(1) of the Clean Environment Act S.M. 1972, c. C130 as am. could allow the Minister to issue orders respecting the removal, disposal, storage, handling and transportation of hazardous materials. However, only five substances have been designated under the regulations to which such orders could apply. M. Reg. 15/81.

376a. See, for example, Procureur général de la province de Québec c. Les Enfouissements sanitaires de l'Est Inc. reported in Duplessis, Hetu et Piette, La Protection juridique de l'environnement au Quebec (Montreal: Themis Inc. , 1982) at 463-466. See also Procureur général de la province de Québec c. Carrière Landreville Inc., 1981 C.S. 1020.

377. S.40a(1)(3)(6). A contract to the contrary could vary the effect of s.40a(1). See s.40a(4).

378. S.40a(2)(5).

379. The Hon. Keith Norton, Min. of the Env., Ont. Leg. Deb. October 15, 1981 at 2521-22.

380. R.R.O. 1980, Reg. 313, s.4. Regulation respecting Transfers of Liquid Industrial Waste made under the Environmental Protection Act R.S.O. 1980, c.141, as am.

381. MacFarlane, supra, note 318. See also id., Reg. 313.

382. Supra, note 306, s.4(1)(c).

383. *Supra*, note 304, ss. 7.3(1) and 7.4(1).

384. British Columbia officials, for example, state that: "The proposed legislation will make the generator and transporter responsible for ensuring that special wastes are delivered to a permitted storage, treatment or disposal facility. After delivery and acceptance, the waste is the responsibility of the receiving facility operator." Rogers, *supra*, note 308.

385. Commentators discussing U.S. statutes, such as RCRA, suggest that such legislative schemes by separating regulation of waste producers from regulation of disposal practices encourage generators to subcontract transportation and disposal responsibilities thus avoiding more stringent provisions applicable to the transport and disposal activity. A generator meets his RCRA responsibilities as long as he employs a transporter or disposer who has a RCRA permit. They argue for legislation that places some financial responsibility on non-negligent generators for the improper disposal of their hazardous wastes by others. The result would be that waste generators would be forced to take greater oversight of disposal practices and devise better technology to resolve the problem. See Joseph K. Brenner, "Liability for Generators of Hazardous Waste: The Failure of Existing Enforcement Mechanisms," (1981), 69 Georgetown L.J. 1047.

386. *Regulation respecting liquid waste,* R.R.Q., 1981, c. Q-2, r.13; *Regulation respecting solid waste*, R.R.Q., 1981, c. Q-2, r.14, s. 57a as enacted by *Regulation amending the Regulation respecting solid waste management*, décret 195-82, G.O.Q. II February 24, 1982 at 836-844.

387. Rogers, *supra*, note 308. (Proposed for regulations)

388. Correspondence to the author from K.J. Simpson, Head, Waste Management Branch, Alberta Environment (May 11, 1982, Edmonton, Alta.). Mr. Simpson notes that this will be proposed for the regulations.

389. Cowan, *supra*, note 376.

390. MacFarlane, *supra*, note 318. A recent exception to this is O. Reg. 808/81 respecting record-keeping requirements on eight sites known to be receiving hauled liquid industrial wastes. This is discussed further, *infra*, notes 396-97.

391. Rowe, *supra*, note 334. Mr. Rowe notes that landfill operators do not currently maintain lists of toxic and hazardous materials at their sites though this could be required under s.8(d) of the EPA.

392. Only Ontario appears to require transfer of landfill records and this only for the eight landfill sites designated under O. Reg. 808/81, s.5(1).

393. *Harwich Township* v. *Ridge Landfill Corp. Ltd. & the Minister of the Environment* (1981), 10 CELR 148 (Ont. Div. Ct.).

394. See, e.g. Geoffrey York, "Court bars liquid waste from dump in Harwich," The Globe and Mail (Toronto), October 22, 1981; and Bill Eluchok, "Court ruling shuts tap at industrial waste site," The London Free Press, October 22, 1981 at A1.

395. See, e.g. Bill Eluchok, "Corunna, Guelph dumps compared to Ridge situation," The London Free Press, October 28, 1981; and "Landfill ruling ripples spread," The Hamilton Spectator, October 29, 1981.

396. Supra, note 380, s.2. The reasons for exempting the eight sites listed in a schedule to the regulation were noted in the regulation's preamble. These reasons included: clerical oversights in re-issuing approvals had allowed these sites over the years to accept liquid industrial wastes though no public hearings had been held as required by statute; the continuing operation of these sites was needed to service Ontario industry by providing essential disposal facilities for hauled liquid industrial wastes; the Harwich decision might have resulted in these sites not being legally entitled to continue their operations; forcing hearings on these sites for continuation of their present operations would be unreasonable; and the present operation of the sites was environmentally acceptable at least until such time as the OWMC could establish sites that would allow the province to prohibit dumping of untreated wastes in the existing sites.

The Minister of the Environment, in announcing the promulgation of the regulation, justified the action in part as follows: "Losing these facilities could bring much of our industrial community to a virtual halt. The environmental soundness of these eight sites is not at issue. They are closely monitored and supervised by our regional staff to ensure proper operation. Without approved, acceptable disposal sites for liquid wastes, we risk either shutting down industries or facing the prospect of illegal dumping on fields, roads and vacant lots all across the province. Perhaps both. We now have only eight facilities to handle hauled liquid industrial wastes as compared with 23 facilities, which were operating 18 months ago. . . . [T]his action is required to ensure the operation of essential facilities will not be placed in jeopardy, thereby leaving us without adequate waste disposal [facilities] for liquid industrial wastes. . . ." The Hon. Keith Norton, Min. of the Env., Ont. Leg. Deb. Dec. 1, 1981, at 4067-68. See also "Law enacted to forestall dump closings," The Globe and Mail (Toronto), December 3, 1981.

397. Supra, note 380, ss.3-5. Groundwater and surface water quality monitoring was also required as well as related standards for operation and maintenance. S.3.

398. Vince Kerrio, Opposition Environment Critic, Ont. Leg. Standing Comm. on Resources Development, Proceedings, No. R-12 (December 2, 1981) at 333-335.

399. See, e.g. Cowan, supra, note 376 (Manitoba); and Simpson, supra, note 387 (Alberta). In Quebec, while there are no formal statutory requirements in this regard, provincial officials note that the government has negotiated the deposit of a guarantee with those firms which store or eliminate PCBs to pay for damage caused by such materials. Officials note, however, that the guarantee is obtained through a contract and not by virtue of any distinct legal obligation. They note that this deficiency will be remedied in the new draft regulation on hazardous wastes now under preparation. Piette, supra, note 313.

When the Quebec Cabinet authorized the establishment of an inorganic industrial waste treatment plant in Blainville after an environmental assessment of the project and a public hearing (supra, note 352), it imposed as a condition that the proponent post a $1,000,000 bond, indexed to the cost of living, to remain in force for a period of 25 years after closure of the landfill site for the plant's residues. See décret no. 1317-81 (May 13, 1981).

400. See, e.g. Rogers, supra, note 308 (British Columbia); and MacFarlane, supra, note 318 (Ontario). In Ontario, the EPA does require that private landfill operators cannot be issued certificates of approval unless an appropriate sum of money; surety bond; or personal surety has been provided in accordance with the regulations (s.34). However, the regulations do not set down any conditions. Moreover, the provision does not apply to municipalities, arguably on the grounds that municipal continuity is assumed. The Act however, does not require a fund in addition to a bond. A fund could be used to rehabilitate sites; rectify pollution problems and provide compensation to individuals whose health, property or water supplies had been damaged by contamination from a site.

401. See, e.g. The Director, Ministry of the Environment v. Mississauga (1979), 9 CELR 24 (Ont. Cty. Ct.) where it was 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 EPA imposing new obligations on either current or former owners of a site, once the use of the site has ceased.

402. Roberts, supra, note 19. See also Part IV.A.2.c.

403. Supra, note 132 and accompanying text. Nova Scotia officials indicate that: "The Province has not undertaken an inventory of existing or abandoned sites to determine how many contain hazardous wastes." Rowe, supra, note 334.

British Columbia officials indicate that: "No inventory of existing or abandoned landfills has been conducted as the past history of industrialization in this province does not lead us to believe any significant quantities of toxic wastes have been deposited in the past." Rogers, supra, note 308.

404. In Ontario, the province commenced a program in 1979 to locate long abandoned sites in part at least due to frequent pressures for development on or near lands which may have had dumps on them. S.45 of the EPA indicates that land that has been used for a waste disposal site may not be used for twenty-five years after site closure without Ministry of the Environment approval. The survey records a

total of 3475 sites known to the Ministry of which 1525 were open as of June 1979 and 1950 were closed as of that date. Approximately 1200 of the closed sites had never been certified. The survey also identified 177 priority 1 sites; that is, sites where information suggests that material such as chemical waste may have been disposed of at a site that was used predominantly for municipal waste. This survey did not, however, generally investigate industry on-site chemical waste disposal facilities. Ontario Ministry of the Environment. Site Inventory Study (Toronto: MOE, June 1980) at 2-6 and 143-170.

A second Ontario study, investigating just locations used by industry for its own waste, reviewed over fifty such sites for evidence of methane gas, leachate, unstable waste, uncontrolled access to the site and related problems. Ontario Ministry of the Environment. Industrial Waste Site Identification Study: Preliminary Field Investigations (Toronto: MOE, January 1981).

In Quebec, an inventory has also been conducted though not yet released. Certain disposal sites, according to provincial officials, were already known to contain toxic or dangerous wastes and surveys carried out in order to identify with greater precision the nature of the environmental problems likely to be caused and possible remedies. Piette, supra, note 313. In the case of the disposal site for toxic waste that had been developed at Ville Mercier between 1969 and 1972, the province adopted a special regulation to prevent progressive contamination of the groundwater in the region. Q. Reg. 82- . Regulation respecting Protection of groundwater - Ville Mercier Region made under the EQA.

405. Supra, note 118 (New Brunswick).

406. See, e.g. U.S. General Accounting Office. How to Dispose of Hazardous Waste - A Serious Question That Needs to be Resolved. Report to the Congress by the Comptroller General of the United States. CED-79-13 (Washington, D.C.: USGAO, December 19, 1978) at 23. See also U.S. Environmental Protection Agency. Hazardous Waste: Proposed Guidelines and Regulations and Proposal on Identification and Listing. 43 Federal Register 58946 at 58984 (December 18, 1978).

407. See, e.g. Piette, supra, note 313 (Quebec); Cowan, supra, note 376 (Manitoba); Simpson, supra, note 387 (Alberta); and Rogers, supra, note 308 (British Columbia). See also correspondence to the author from C. J. MacFarlane, Director, Waste Management Branch, Ontario Ministry of the Environment (August 25, 1982, Toronto, Ontario).

408. Ontario Ministry of the Environment. Perpetual Care for Waste Management Facilities: Interim Report (Toronto: MOE, August 1979) at 2 and 14.

409. Id. at 15.

410. MacFarlane, supra, note 407. The ECA, however, recommended establishment in Alberta of an environmental trust fund initially government funded but later financed in part through fees and taxes levied against products whose manufacture generates substantial quantities of hazardous wastes. Supra, note 62, at 225.

411. Supra, note 364 at 62.

412. Supra, note 123 at 26.

413. Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. ss. 9601-9657 (1980). The Act creates a hazardous substance response trust fund to pay for the removal, remedy and clean-up of released hazardous substances and hazardous waste sites. The fund of $1.6 billion will be financed from two sources over a five-year period. Most of the total (app. 86%-88%) will be raised by an industry-based tax on manufacturers of petrochemical feedstocks and toxic organic chemicals, and importers of crude oil. The remaining 12%-14% will come from public revenues. Id. s. 9631.

A second fund created by CERCLA is the smaller post-closure liability trust fund. This fund will assume the liability of an owner or operator of a hazardous waste site that has been closed in accordance with applicable federal law. When hazardous wastes are released from a closed site, this fund will pay for clean-up and natural resource restoration. The fund will be financed by a tax on hazardous wastes to be collected from disposal site operators commencing in late 1983. Id. ss. 9641, 9611(j). See generally T. E. Gulick, "Superfund: Conscripting Industry Support for Environmental Cleanup," (1981), 9 Ecology L.Q. 524.

414. See Part IV.A.3a.

415. R.R.O. 1980, Reg. 313. Regulation respecting Transfers of Liquid Industrial Waste made under the Environmental Protection Act R.S.O. 1980, c. 141 as am. Transporters are licensed under Part V of the Act. The waybill system monitors the movements of liquid industrial wastes from source to the point of final disposal using a five copy manifest form on which the waste generator, hauler and treatment or disposal company fill out required information such as waste type and quantity at the appropriate stage. See ss. 4-6 of Reg. 313.

416. Under B.C.'s proposed legislative scheme producers, transporters and disposal operators are prohibited from allowing more than the amount of waste prescribed on the manifest from being moved from point of generation to disposal. Supra, note 306. In addition to completing and filing the manifest, producers are required to ensure that the transporter is licensed, where required, and that the site for disposal or storage has the appropriate permits to receive such materials. S. 5(1). Transporters are required to carry completed manifests.

S. 5(2). Disposal operators may only accept waste with completed manifests; must themselves complete the appropriate part of the manifest; and must have the appropriate permit to store or dispose of such special wastes. S. 5(3). Generally, in a prosecution under this section the burden is on the defendant to prove compliance with the above provisions. S. 5(4). The Act also authorizes the provincial cabinet to make regulations prescribing the form and content of manifests and the procedures for completing and filing them; respecting the licensing of transporters of special wastes and prohibiting the transporting of special wastes without a licence; issuing, suspending, cancelling and amending special waste transport licences. S. 35 (2)(1)(m)(n).

A report which preceded the proposed legislation recommended establishing a manifest system in order to achieve provision for controlling the movement and off-site disposal of hazardous wastes; detailing information on waste volumes necessary for informed decisions on treatment and disposal site options; and detailing handling and emergency response information in the event of an accident. Other benefits of such a scheme were seen to include: removal of unfair cost advantages enjoyed by waste generators who do not provide adequate waste disposal; encouragement to industry to develop economical on-site waste handling, recycling and treatment facilities thus reducing risks involved in transporting hazardous wastes; and reduction of future incidences of sites requiring ameliorative actions due to improper storage or disposal of hazardous wastes. BCMOE, supra, note 303 at 3-2 and 3-7.

417. Under Alberta's law "manifest" is defined to mean "the document designed to identify the quantity, composition, origin and destination of hazardous waste during transportation and the persons consigning, transporting and accepting that waste." Supra, note 304, s. 1(g.1). Generators, transporters and receivers of hazardous wastes must all obtain identification numbers from the province. S. 7.2. Proper manifests must accompany waste shipments and accurately identify the quantity, composition and points of origin and destination of the hazardous wastes as well as contain the proper identification numbers. S. 7.3. Contraventions of this requirement could result in $10,000 fines. S.7.3(2). The Act also authorizes the provincial cabinet to make regulations governing the completion, retention, use, disposition and filing of manifests and related matters. S. 16.

Earlier reports which had recommended a manifest system for Alberta noted four primary objectives for such a scheme: development of data to determine type, quantity and location of wastes generated and disposed within the province; control of unauthorized hazardous waste dumping thus minimizing environmental damage; ensure safe handling and transport; identification of problem areas requiring enforcement. ECA, supra, note 62 at 170-172.

418. Quebec's Liquid Waste Management regulations require the holding of records by the producers, transporters and disposers of liquid wastes. Q. Reg. 75-496, ss. 28-30. However, according to Quebec officials this system has shown itself to be inadequate and a new system of tracking is to be incorporated in a prospective dangerous wastes regulation under the EQA. Piette, supra, note 313.

419. See, e.g. Maliepaard, supra, note 367 (Saskatchewan); Cowan, supra, note 376 (Manitoba); and Rowe, supra, note 334 (Nova Scotia).

420. See Part IV.A.3a.

421. MOE and Maclaren, supra, note 18 at 4-8. See Ontario Ministry of the Environment. Waste Management Branch. Data on Hauled Liquid Industrial Wastes from Ontario's Waybill System Computer - April 1, 1981 to March 31, 1982 (Toronto: MOE, 1982). The waybill for this period recorded approximately fifty-six million gallons of liquid industrial wastes going to such areas as landfills, private landfills and sludge farms, incineration, water pollution control plants, transfer stations, shipped out of province, reclaimed or being spread on roads as a dust suppressant or otherwise going to unclassified receivers.

422. Ontario Ministry of the Environment. Development of Treatment and/or Disposal Sites for Liquid Industrial and Hazardous Wastes. Interim Summary Report prepared by James F. Maclaren Ltd. Consulting Engineers, Planners and Scientists. (Toronto: MOE, August 1979) at 2-3.

423. "Liquid industrial waste" does not include waste disposed of at a waste disposal site as defined in Part V of the EPA, operated by the producer of the waste and located on the site where the waste is produced. R.R.O. 1980, Reg. 313, s. 1(1)(b)(vi).

424. MacFarlane, supra, note 318.

425. "Liquid industrial waste" does not include waste that is wholly used or recycled. R.R.O. 1980, Reg. 313, s. 1(1)(b)(vii). In practice this has meant that waste oils used for rural and road dust control are not covered by the regulation. Approximately 6.5 million gallons of waste oil were reported as being spread on 2000 miles of unpaved Ontario roads in 1978. Hon. G. R. McCague, Min. of the Env. Statement to the Ontario Legislature. Guidelines for Waste Oil Use (Toronto: MOE, April 1978). Despite an Ontario guideline which restricts the use of waste oil with more than 25 parts per million PCB from being spread on rural roads, potential environmental and health problems may occur. A 1980 MOE study indicated that aquatic life could still take up significant concentrations of PCBs despite residue concentrations of PCBs in waste oil considerably below the MOE guideline. Ontario Ministry of the Environment. The Effects of Road Oiling on PCB Accumulation in Aquatic Life. (Toronto: MOE, September 1980) at ii.

Critics have characterized the practice of road oiling as "merely a disposal method for used oils [containing carcinogenic and toxic substances] which could be re-utilized in other [more] environmentally acceptable ways." Mark Rudolph, "Road Oiling: An Example of Environmental Mismanagement," *Alternatives*, Vol. 9, No. 2 (Spring 1980) at 34.

The failure of the MOE to control waste oil use through the waybill or another regulatory mechanism was argued to be a function of administrative manageability and the difficulty MOE has experienced in defining waste for regulatory purposes. E. W. Turner, Waste Management Branch, MOE. Ont. Leg. Standing Committee on Resources Development. *Proceedings*, No. R-34 (October 18, 1978) at R-1130-1, 2, testimony of Mr. Turner.

Another problem with the recycling exemption under the waybill regulation is the use of transfer stations and recycling depots to evade compliance with the law. The Ontario Government acknowledges that: "The prime cause for concern is associated with the reasonable assurance that transfer and recycling operations are not used covertly for the improper blending of wastes whose true characteristics are not reflected in the description given on waybills. Other concerns or potential problems associated with these facilities include illicit disposal on-site, improper blending to produce a "product" still considered a waste and receiving products actually considered to be wastes, thereby by-passing the requirement for the use of a waybill." As a result, the MOE has recently instituted internal administrative reforms to address this problem. Ontario Ministry of the Environment. Waste Management Branch. *Procedures for Monitoring Transfers of Industrial Waste Materials at Transfer Stations and Recycling Depots* (Toronto: MOE, November 1981) at 1.

426. OWMC, *supra*, note 325.

427. R.R.O. 1980, Reg. 313, ss. 4-5.

428. During 1978 standing committee hearings, industry spokesmen noted that: "The waybill system is fundamentally flawed. There must be some mechanism to assure cradle to grave tracking of each and every shipment of chemical waste and this is not the case today. Under the present system the generator has no knowledge of the ultimate disposal site for his waste. Likewise the treatment or disposal site is not advised of the source of its waste. . . . We feel it would be most advantageous to require that the generator actually designate the final site. Because then he will know and he can be held accountable for having assured that it be directed to a permanent facility. . . . At present the transporter makes the determination of where the waste will go. For conventional waste such a system is perfectly adequate but for chemical waste we feel that responsibility should fall to the generator who can better determine

which site is capable of handling the particular types of waste which he generates." R. L. Hanneman, National Solid Waste Management Association. Ont. Leg. Standing Committee on Resources Development. Proceedings, No. R-35 (October 19, 1978) at R-1050-1, testimony of Mr. Hanneman.

During 1981 standing committee hearings, Mr. Hanneman noted that the waybill system was much improved, though flaws still remained respecting transfer station waste tracking and delays in the return of waybill forms to the provincial government. Ont. Leg. Standing Committee on Resources Development. Proceedings, No. R-14 (January 28, 1981) at 20, testimony of Mr. Hanneman. However, ss. 4 and 5 of the waybill regulation have in fact not been amended, so that the onus is still on the transporter not the generator to designate sites.

429. Supra, note 306, s. 5.

430. Supra, note 304, ss. 7.3 and 7.4.

431. In Alberta, for example, it would appear that the proposed manifest system will not apply to hazardous wastes that are stored or disposed of on the waste generator's premises. Simpson, supra, note 387. While use of waste oils for dust suppression is discouraged, Alberta does not apply either the waybill or any other regulation to their control. Id.

432. In R. v. Nacan Products Ltd. (unreported 1981 decision of the Provincial Court [Criminal Division] Judicial District of York) a company was convicted and fined $5000 for illegally transferring its liquid waste and for failing to follow the waybill requirements. Between 700 and 1000 barrels of liquid waste were dumped into a swamp in Quebec. Olchowski, supra, note 375 at IIE-11. See also note 372.

433. The following is an exchange, during 1978 standing committee hearings, between Ian Deans, M.P.P. and Alex Thomas, President of an Ontario waste hauling company:

Mr. Deans: Do you have any direct knowledge personally of illegal dumping? . . .

Mr. Thomas: Yes, I've been told about, and have seen illegal dumping.

Mr. Deans: All right; we hear of people driving along just dumping it in the ditch as they drive. We hear of others who just inadvertently leave the drain cock open so that it dribbles out along the road. We heard yesterday of people taking it in drums and disposing of it in the woods. That wasn't here incidentally that was in the States. We hear of people who just simply own a piece of property and take it out and just dump it on that piece of property.

Mr. Thomas: That's right. It can be mixed with sewage and dumped in an area that is for sewage landfilling, if you will, or on their own property; in gravel pits, it can be put in under the guise of being dust control.

Mr. Deans: And you believe that is happening?

Mr. Thomas: I know it is happening.

Ont. Leg. Standing Committee on Resources Development. Proceedings, No. R-38 (October 20, 1978) at R-1040-1.

More recently the waste haulers association in Ontario has proposed more stringent control over who may enter the waste hauling business and better driver education as a means of combatting illegal dumping. See Ontario Liquid Waste Carriers Association and Ontario Trucking Association. Brief and Model Legislation on Transportation of Liquid Waste (Toronto: OLWCA/OTA, 1982).

434. The OWMC recently indicated that at least 16 million gallons of industrial waste simply vanishes every year in Ontario. Presumably it is dumped secretly. Supra, note 325. See also Ross Howard, "Witch's brew of wastes poisoning Ontario," The Toronto Star, October 25, 1982 at A1 and A4.

435. Under 1981 amendments to the EPA, a police officer or a provincial officer is authorized to seize the permit and vehicle number plates for a vehicle where he is of the opinion upon reasonable and probable grounds that the vehicle was or is being used in the commission of an offence with respect to hauled liquid industrial or hazardous waste and that the continued operation of the vehicle will result or is likely to result in impairment of the environment; damage to property, plant or animal life; adverse health effects to any person or related impacts. At the time of prosecution, the officer could apply for a court order suspending the permit and plates for up to five years upon conviction. For vehicles registered outside Ontario, the court is authorized to order the return of the permits and plates to the authority that issued them. EPA, S.O. 1981, c. 49, ss. 47a-h.

At the time of the introduction of these amendments, the Minister of the Environment noted that the purpose of these new provisions was to "take further steps against the fly-by-night operator who gets in the waste disposal business simply by obtaining a vehicle and dumping waste in a remote area without incurring the cost of treatment and of disposal at an approved site." The Hon. Keith Norton, Min. of the Env., Ont. Leg. Deb. Oct. 15, 1981 at 2522.

436. MacFarlane, supra, note 318.

437. Id. Provincial officials have recently noted that: ". . . we must register the sources and amounts of wastes that are destined for . . . new facilities or for existing commercial facilities with the competence to treat them. This task has already commenced but it will probably culminate in a fairly elaborate bookkeeping exercise which will go hand-in-hand with the waybill system of accounting for the movement and fate of hauled liquid industrial wastes in Ontario. This new registration will embrace not only liquid industrial wastes but also hazardous solids and sludges that require special treatment." C. J. MacFarlane, Director, Waste Management Branch, Ontario Ministry of the Environment. "Hazardous Wastes: Ontario Government Programs." An Address at the University of Toronto and Oyez Limited Symposium on the Treatment and Disposal of Hazardous Wastes (Toronto: University of Toronto/Oyez, May 1981) at IIA-9.

438. Supra, note 364 at 62. At an August 1982 meeting between the Minister of the Environment and twelve citizens' groups, the Minister advised them that amendments to the waybill regulation were at least one year away. Id. at 64.

439. Supra, note 350 at 15. At the August 1982 meeting of citizen groups with the Ontario Minister of the Environment, the Minister noted that there would be a policy announced dealing with public participation in standard-setting. However, the Minister indicated that this policy would not be implemented by legislation. Supra, note 364 at 64.

440. See, e.g. EQA, s. 21 (Quebec); EPA, s. 15 (Ontario); and the Clean Environment Act S.M. 1972, c. C130 as am., s. 5.1 (Manitoba).

441. See, e.g. Environment Management Act S.B.C. 1981, c. 14, s. 5.

442. See, e.g. EQA, s. 114 (Quebec).

443. See, e.g. EQA, s. 115 (Quebec); EMA, s. 6 (British Columbia).

444. Apart from Part IX of the Ontario EPA, provincial laws are silent on compensation of victims. Part IX is discussed infra, notes 449-455.

445. See, e.g. Rowe, supra, note 334 (Nova Scotia); and Rogers, supra, note 308 (British Columbia).

446. See, e.g. supra, note 304, s. 7.1(1) (Alberta).

447. Olchowski, supra, note 375 at IIE-6.

448. Under British Columbia law, for example, an "environmental emergency" includes a "spill or leakage of oil or of a poisonous or dangerous substance." EMA, s. 1(1). The provincial government notes that an environmental emergency can include the "discovery of abandoned hazardous waste dumps. . . ." British Columbia Ministry of the Environment. Synopsis of the Environment Management Act. (Victoria: BCMOE, April 1981) at 5.

449. EPA, Part IX, s. 80.

450. Id. s. 81.

451. S. 87(2). Victim "loss or damage" may include "personal injury, loss of life, loss of use or enjoyment of property and pecuniary loss, including loss of income." S. 87(1). The liability of owners or handlers under this section does not depend upon fault or negligence. S. 87(6).

452. SS. 99-101.

453. Ontario Ministry of the Environment. Draft Regulation Under Part IX of the Environmental Protection Act. (Toronto: MOE, October 1982).

454. Part IV.

455. Part V.

456. Supra, note 364 at 62. In addition, there are concerns that the draft regulations may unduly restrict the scope and application of Part IX from what was originally intended. For example, the draft regulations classify and exempt from Part IX a spill of pollutants from a waste disposal site for which a certificate of approval under Part V of the EPA has been issued and is in force at the time of the spill or that occurs at a location and by a physical method that are in accordance with the certificate. Supra, note 453 at 28-29. This exemption makes it clear that Part IX will not apply to "leachate" and "leaks" from approved landfill sites. However, in many instances landfill sites which initially were not expected or approved to receive hazardous wastes, were subsequently authorized to accept them, even though statutory public hearings were not held. Whether these sites are thus operating in a proper manner notwithstanding their possession of a certificate is an open question. Supra, notes 393-398.

457. The Canadian Manufacturers' Association recently stated that: "Liability without fault is intrinsically unfair and it may not promote a high standard of care. Yet there is a present tendency in environmental legislation to make those who own and control spilled pollutants liable for all clean-up costs and resulting third party damages, irrespective of whether the owner or person in control was at fault or negligent in causing the spill. In some cases, if a

company is liable for the consequences of a spill, even though it has not been negligent, there may be less incentive to take precautionary steps to prevent the spill. Conversely, if liability is based on fault, this may be an incentive to be careful." CMA, supra, note 86 at 3.

However, if the issue is compensation of the innocent victim and making industry responsible for internalizing the costs of the damage its products cause, there is no particular reason to accept the fault model as the paradigm in this area. Certainly, of the common law remedies, only negligence depends upon fault. Trespass, riparian rights, nuisance (public and private) and strict liability do not normally depend upon fault.

458. Lisle, supra, note 345 at 14-15.

459. The Department of the Environment Act, S.S. 1980-81, c. 50.

460. R.R.S. 1981, c. D-14, Reg. 1, s. 4.

461. Id. Appendix to the Regulation; Columns III and IV.

462. Id. s. 8.

463. In Ontario the compensation corporation was to receive funds initially from general government revenues to cover any losses victims could not recover through the courts. Harry Parrott, Ontario Environment Minister, also promised at the time of Part IX's enactment that the government would review and determine what contributions to the fund should come directly from industry rather than the taxpayer. See "Compensation Fund for Victims of Pollution One Year Overdue," (Editorial) CELA Newsletter, No. 6, Feb. 1981 at 1. The draft regulation, however, makes no determination of any general industry contribution to the scheme. Supra, note 453.

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

465. Id.

466. John Z. Swaigen. Compensation of Pollution Victims in Canada. A study prepared for the Economic Council of Canada (Ottawa: Supply and Services Canada, 1981) at 75.

467. Id. at 2, 3, 6.

468. In the U.S. some legislative proposals have been based on the notion that funds could be generated by assessing risk levels, quantities and opportunities for exposure of particular substances and then

levying a corresponding pollution tax. As a result, the fund would be built up by those industries and consumers who profit from products and services that are associated with toxic or hazardous materials. See, e.g. United States House of Representatives. Toxic Substances Control Act Amendments. Hearings before the Subcommittee on Consumer Protection and Finance of the Committee on Interstate and Foreign Commerce, 95 Cong. 2nd Sess. (March 7, April 26 and July 25, 1978). See also The Environmental Emergency Response Act. Hearings on S. 1480 before the Committee on Finance, 96th Cong. 2nd Sess. (September 11 and 12, 1980).

469. Supra, note 413.

470. See, e.g. Robert C. Eckhardt, "The Unfinished Business of Hazardous Waste Control" (1980), 33 Baylor L. Rev. 253.

471. A government advisory committee in British Columbia argued that the desirable hierarchy of actions for dealing with hazardous wastes was: (a) do not generate the wastes (b) recycle or reuse wherever possible (c) treat the wastes on the site of the generator wherever possible (d) treat and dispose of the wastes at a facility designed and operated for hazardous waste disposal. B.C. Advisory Committee, supra, note 303 at vii.

472. The Environment Council of Alberta recommended a hierarchy similar to that of the B.C. Advisory Committee. ECA, supra, note 62 at 94-97 and 217.

473. A 1980 study for the Ontario Ministry of the Environment concluded that: "Recovery and re-use of waste products having marketable value continue to be excellent means of reducing the requirement for ultimate treatment and disposal of some industrial wastes." Maclaren, supra, note 18 at 3-6.

A recent study for the Ontario Waste Management Corporation recommended a hierarchy of approaches to the management of liquid industrial and hazardous wastes similar to the ones recommended in British Columbia and Alberta. The order of desirable actions was: (1) waste abatement, non-waste or zero discharge technology (2) waste reduction or modification (3) waste re-use (4) waste refining for recycle (5) waste treatment and destruction (6) waste disposal. Ontario Waste Management Corporation. Waste Reduction - Background Paper (Toronto: OWMC, July 1982) at 1.

The President and Chairman of the OWMC, Dr. Donald Chant, has also noted the important links between recovery and reduction of hazardous wastes and the ability to site treatment and disposal facilities: ". . . [W]e must develop and implement a province-wide long-term program, aimed at not only treating and storing wastes, but also at reducing and recycling them. We can expect little sympathy and support in locating and building waste treatment facilities if we do not also develop programs for assisting industry in reducing and recycling as much waste as possible." Donald A. Chant. "Liquid Industrial Waste - Toward New Ways of Waste Management." Legacy Vol. 11, No. 1 (1982) at 38.

474. Quebec policy is to stimulate the market for waste recycling. Supra, note 313 at 13 and 17.

475. A recent study for the OWMC reported that less than ten per cent of the 1.5 million tonnes of hazardous wastes generated annually in Ontario is recycled with only about one per cent being exchanged. Supra, note 323 at 5.

476. Reid Crowther, supra, note 176 and accompanying text.

477. Neither recent proposed legislative schemes in British Columbia nor Alberta address these issues. Supra, notes 306 and 304 respectively.

478. Ontario officials testified during 1977 hearings on the establishment of a liquid industrial waste treatment complex at Nanticoke that recovery, reclamation and re-use of materials from liquid industrial wastes is generally uneconomical in Ontario, under the present scheme of things, due either to the need for complex treatment processes or the fact that the wastes are generated randomly or are too small to make treatment investment viable. Therefore, there has been very little effort made by industry to recover materials. 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., April 1978) at 23, summary of the testimony of E. W. Turner, Ontario Ministry of the Environment.

479. Campbell, supra, note 177 and accompanying text. Twelve citizens' groups urged such legislation in Ontario as a means of ensuring the reduction of the volume of waste requiring treatment and disposal. Supra, note 321.

Citizens' groups in Alberta have also pressed for such laws. The following are excerpts from the testimony of one group during recent hazardous waste hearings held by the Environment Council of Alberta: "While the emphasis of these hearings has been on how to dispose of the by-products of industry, some attention should be given to the re-use, recycling and re-processing of these waste by-products. It has been said many times that most of what we term as 'waste' is a resource that can be re-used with the application of technology and some economic incentive. Any legislation dealing with the problem of waste disposal should emphasize and encourage a waste exchange system similar to but more extensive than the one now in place across Canada. Government should take a lead role in developing an effective waste exchange system and instruct government agencies to participate in the system whenever technically feasible. It is important to foster an attitude of reuse rather than one of disposal. The government could act as an intermediary for private industry but in cases of necessity the power should be given to the Minister to make use of the exchange system mandatory. . . ." See Testimony of Dan Rogers, Legal Reform Section of Student Legal Services, University of Alberta. Environment Council of Alberta, Public Hearings on the Management of Hazardous Wastes in Alberta. Vol. 12 (May 27, 1980, Edmonton) at 112-113.

480. See generally Moni Campbell and William Glenn. Profit From Pollution Prevention: A Guide to Industrial Waste Reduction and Recycling (Toronto: Pollution Probe Foundation, 1982).

481. See Part IV.A.2.f.

482. One Ontario official testifying during 1978 standing committee hearings noted that: "Now there are a variety of types of material that are hauled around. Liquid industrial wastes are one type. We have a number of people in the business of hauling septic tank sewage sludge. The comment is frequently made by people in the business . . . that someone can get a certificate of approval to haul septic tank sludge and with that certificate they then go into the business of hauling liquid industrial wastes. My only comment on that is if the ministry finds out about it then we will prosecute, and I believe we have prosecuted for this very thing on a number of occasions. But it's extremely difficult to find out. If somebody has approval to haul septic tank sludge and they have approval to dispose of it on a farm, and that's part of the whole management system, then short of us going there and sampling every batch that's dumped we really have no way of telling whether or not somebody has slipped a batch of liquid industrial wastes in there. It's really down to this fundamental problem of enforcement." Testimony of E. W. Turner, Ontario Ministry of the Environment. Ontario Legislature. Standing Committee on Resources Development. Proceedings. No. R-38 (October 20, 1978) at R-1120-1.

483. A recent British Columbia Environment Ministry internal task force investigation of pollution in the Lower Fraser River made the following findings with respect to enforcement efforts by the province: "Enforcement of permits and orders was lacking on many occasions and this proved to be a serious problem when the Task Force came to investigate [a] company. Although a company would be in violation of a permit for, in some cases, two or three years, no legal action had been taken by Waste Management Branch. This resulted in almost tacit approval by the Branch and caused problems for the Task Force when it came time for the decision to lay charges because of the 'due diligence' rule. Another problem centred around the actual finding of violations of permits by Waste Management Branch staff

and the reporting of same on compliance checks. The [Task Force] teams would constantly encounter major violations which were easily identifiable yet would observe no record of the non-compliances of a permit which caused a deadly toxic substance to enter the Fraser River. Three days after the team visited one site, two Waste Management staff members visited the same site and reported no violations. These violations are still continuing today. The Task Force also observed many instances of lack of enforcement of specific orders issued by Waste Management staff . . . wording on some of these orders proved to be too vague to enforce, thus making them literally useless." The Task Force characterized the situation as a "general attitude of 'non-enforcement' which had been fairly consistent throughout the Province. . . ." Government of British Columbia. Fraser River Task Force - Final Report (Victoria: Gov't of B.C., 1980) at 14-15. The Task Force recommended that: "The Ministry make a major attempt to change the past philosophy of Waste Management Branch from 'non-enforcement' to 'enforcement,'" and that ". . . the practice of amending pollution control permits to justify or legalize discharges in excess of present permits be stopped. This practice has caused considerable public opposition to the Waste Management Branch and has made enforcement of present permits difficult at times." Id. at 26-27.

A further B.C. Government investigation characterized the lower Fraser River as "a filthy mess of illegal dumping and toxic wastes piling up for 25 years." Ralph Surette, "Where can waste go if nobody wants it?" The Globe and Mail (Toronto), July 9, 1981 at 7.

In Ontario, a Royal Commission inquiry into certain waste disposal site approvals and enforcement efforts concluded that "unless a statute provides that no prosecution shall be brought for infraction of its provisions . . . without leave of the Attorney-General, no public official is entitled to decline or delay prosecution as a matter of policy." Royal Commission Inquiry Into Waste Management Inc. Mr. Justice Hughes (Toronto: Queen's Printer, 1978) at 100.

484. A study of western Canada hazardous waste management needs recommended as "high priority legislative actions" that "penalties of sufficient magnitude to discourage improper disposal" be instituted in order to better "direct hazardous wastes to proper disposal sites." Reid, Crowther, supra, note 126 at Table 5-16.

A 1980 report by the Environment Council of Alberta concluded that: "There must be public confidence in the level of protection that Alberta's environment receives. Prompt and appropriate enforcement of regulations is vital to that confidence." As a result, the ECA recommended that the elements of a proper enforcement program should include: creation of a special enforcement staff by legislation, with a clear description of responsibilities; sufficient authority for such a staff to take action; and placement of a special onus on enforcement staff to carry out their duties. ECA, supra, note 62 at 224.

485. A standing committee of the Ontario Legislature reporting on toxic wastes in 1978 recommended that: "Strict enforcement of all control orders, provisional certificates of approval and certificates of approval is . . . essential . . . the Ministry's program of monitoring and enforcement should be stepped up and fines very substantially increased and jail sentences imposed for flagrant violations." Supra, note 340 at 6-7.

486. In Alberta, for example, violation of manifest reporting requirements can result in fines of up to $10,000 upon conviction. Supra, note 304, s.7.3(1)(2). In British Columbia, for example, persons who accept delivery of more than a prescribed amount of special waste without a permit or approval are liable to penalties of up to $50,000 upon conviction. Supra, note 306, s. 34(7).

487. Recently, government prosecutions in Ontario have been increasing following public criticism of Ministry of Environment inaction. Some unreported decisions include: R. v. Refluent Investments Ltd. $6000 fine for burying tankers in a gravel pit near Maple, Ontario. The tankers had been used to store and treat liquid industrial wastes; R. v. Chemical Leaman Tank Lines Inc. $3,200 fine for transportation of liquid industrial waste without MOE approval; R. v. Brown $500 fine for unapproved and improper disposal of liquid industrial waste from a Niagara Falls manufacturer; R. v. Scientific Sanitation Inc. $750 for use of an unapproved truck for hauling liquid industrial waste and for dumping waste in a Windsor area scrapyard; R. v. Western Metals Corp. Ltd. $7000 and clean-up costs assessed against a Thunder Bay scrap metal dealer for draining PCB transformer fluid into a hole on company property. $2500 fine against the company superintendent for falsely informing an MOE officer that the transformers had been cut up and removed; R. v. Interflow Systems Ltd. $3000 for illegal burning of liquid wastes in the Hamilton area; R. v. Tricil $15,000 for improper operation of a waste incinerator contrary to MOE order; R. v. Nacan $5000 for illegally transferring liquid industrial wastes and failing to follow waybill requirements. The waste was dumped in a Quebec landfill site operating illegally which was subsequently closed down by court order. See Olchowski, supra, note 375 at IIE-5-11.

The Ontario Ministry of the Environment has also established a special investigations unit with respect to liquid industrial wastes whose duties include: waybill monitoring; surveillance; complaints and incidents reports; vehicle and transfer station monitoring; spot checking of road oilers; and legislative reform. See correspondence to Phil Weller, Waterloo Public Interest Research Group from Hon. Keith Norton, Minister of the Environment (July 29, 1982, Toronto).

487a. See Environmental Quality Amendment Act S.Q. 1982, c. 25, s. 13 amending s. 110.1.

488. Participants at a recent OWMC seminar on waste management issues had strong concerns regarding the need for major improvements in the monitoring, regulation and enforcement of waste generators, haulers and disposal operators. Much of this concern was based on a "lack of confidence (that has developed over the past few years) in the Ministry of the Environment." Ontario Waste Management Corporation. Seminar on Waste Management Issues: Summary of Proceedings (Niagara-on-the-Lake, Ont.: OWMC, January 1982) at 26.

Witnesses at 1980 hazardous waste management hearings in Alberta argued in part that: "Fines for breaches of disposal regulations must serve a deterrent function and must be hefty enough so that it makes 'good business sense' to dispose of the waste properly. While compromise with industry may be a good policy in certain situations, we believe the attitude of 'after the fact cooperation' must change. . . . [S]trong penalties must be established and used where there is a violation of disposal and handling standards established by government. It is time to consider such violations as not simply 'petty offences' but as in the realm of criminal liability. . . . [S]ome of the discretionary element must be taken out of the regulatory and enforcement process. At the present moment, most of the powers granted to the Minister are discretionary (i.e. 'the Minister may make orders . . .'). To encourage the quick establishment of and enforcement of waste legislation, we believe that the phrase 'the Minister shall . . .' should become the key words in the statute. This would serve the function of opening the door to the legal remedy of mandamus to the public at large and ensure that the enforcement of waste regulations was protected from purely political considerations . . ." Rogers, supra, note 479 at 114-115.

489. A recent U.S. General Accounting Office report found that U.S. EPA's current enforcement philosophy "emphasizes voluntary compliance with environmental statutes and regulations. Legal action against violators is initiated only if voluntary compliance fails." U.S. General Accounting Office. Information on the Environmental Protection Agency's Enforcement Activities. CED-82-62 (Washington, D.C.: USGAO, April 1982) at 1. Between fiscal years 1980 and 1981 civil case referrals from U.S. EPA to the U.S. Department of Justice under RCRA and CERCLA declined from 46 to 8, an 82 percent reduction. In fiscal year 1982, 29 civil cases under these two statutes were referred, though 45 percent of these hazardous waste cases were referred on the last day of the fiscal year. Congressional investigators raised the possibility that these last minute referrals might have been an attempt to simply "bolster enforcement statistics." While EPA justified the agency's reduction in civil case referrals on the grounds that it was pursuing more effective and less expensive enforcement through administrative orders, in 1981-82 only ten administrative orders were issued respecting

abatement of imminent hazards; testing of hazardous waste sites; and imminent hazard orders. Congressional investigators characterized these statistics as "pale in comparison to the number of hazardous waste disposal sites in the United States--approximately 30,000." United States House of Representatives. Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce. Update on Administration Enforcement of Key Environmental Statutes. Memorandum from the Subcommittee Staff to the Hon. John D. Dingell, Subcommittee Chairman (October 8, 1982, Washington, D.C.).

490. Road haulers in the U.K. testified during House of Lords investigations on hazardous waste disposal that: "prosecutions [for fly-tipping (illegal dumping)] . . . are infrequent and the penalties often no greater than the commercial charge for deposit. Consequently, there are considerable hazards to the public. . . ." Submission by the Road Haulage Association Waste Disposal Contractors Functional Group to the House of Lords Select Committee on Science and Technology. Hazardous Waste Disposal. Vol. 3 - Written Evidence (January 1981) at 74.

491. See, e.g. R. v. Fraser River Harbour Commission, Municipality of Richmond, and Richmond Landfill Ltd. A private prosecution for depositing landfill leachate into the Fraser River contrary to s.33 (2) of the Fisheries Act. Trial was scheduled to commence June 1982 in Richmond Provincial Court. See "Case Comment," West Coast Environmental Law Research Foundation Newsletter. Vol. 7, No. 1 (Jan.-Feb. 1982) at 14.

492. Municipal institutions in the province are a provincial responsibility. The Constitution Act, 1867, s.92(8).

493. See, e.g. The Municipal Act, R.S.O. 1980, c. 302.

494. See, e.g. Ontario Ministry of the Environment and the Municipal Engineers' Association. A By-Law to Control Industrial Waste Discharges to Municipal Sewers (Toronto: MOE/MEA, undated).

495. See, e.g. The Public Health Act, R.S.O. 1980, c. 409.

496. One recent local health board noted: "Since our own involvement with possible leakage of toxic wastes from a landfill site into neighbouring wells in May 1981, we have been contacted by seven other health units with similar concerns. Our situation in the Whitchurch-Stouffville area of York Region is a possible 'worst case' scenario for human exposure to toxic chemicals. During the period from 1965 to 1970, hundreds of thousands of gallons of liquid toxic wastes were dumped into ponds on a landfill site directly connecting with a large aquifer in a major ground water recharge area. . . . Subsequently from 1973 to 1975 dry industrial wastes were ~~dumped in the same landfill site. While no records are available~~

of what was dumped, PCBs, pesticides and heavy metals have been detected on the site. At the same time it is frustratingly difficult to adequately assess the risks to humans exposed, in that the most likely insult to human health that may have occurred would be the result of intermittent, relatively low dose exposure to multiple toxic chemicals." Dr. J. R. Hodgkinson, Office of the Medical Officer of Health. Regional Municipality of York. Studies of Human Populations Exposed to Environmental Chemicals (Newmarket, Ont.: York Region, June 1982) at 2.

497. The Planning Act, R.S.O. 1980, c. 379.

498. City of Calgary. Engineering Department By-Law.

499. S.8.2(a)-(e).

500. S.8.2(f)-(i).

501. Ss.8.3 - 8.5.

502. ECA, supra, note 62 at 331; Environment Council of Alberta. The Management and Disposal of Hazardous Waste: Background Information. Bulletin No. 1 (Edmonton: ECA, January 1980) at 11-13; and Alberta Environment. Hazardous Wastes in Alberta: An Inventory and Review of Practices and Technology. Vol. 1 (Edmonton: Alta. Env., March 1980) at 179.

503. City of Toronto. Department of Public Health. Health Advocacy Unit. Our Chemical Society: Chemicals, Environment and Health. Prepared by T. Hancock, D. Saunders and D. Cole (Toronto: City of Tor., October 1981) at 14, 74-77.

504. City of Philadelphia. Fire Code. Ch. 5 as am. (1981). Approximately 450 substances are subject to the fire code reporting requirements. See correspondence from City to Philadelphia area companies attaching Toxic Substance list (August 26, 1981, Phila., Pennsylvania).

505. City of Philadelphia. Air Management Code. Ch. 3 as am. (1981).

506. Supra, note 504, s.5-508.

507. Supra, note 503 at 109-110. See also City of Windsor. Council Resolution. M24-82 (February 1, 1982).

508. See, e.g. Township of Harwich. By-Law 5525. This by-law purported to prohibit the use of any land in the municipality for the disposal of industrial waste.

509. See, e.g. City of Mississauga. By-Laws 731-79 and 944-79 as am. These by-laws purported to prohibit the test burning of fuel containing PCBs within municipal boundaries.

510. The preamble to the Mississauga by-laws noted the possibility that the burning of PCBs within the city might prove to be or cause a public nuisance. Id. The municipal councillor who sponsored the by-law noted that part of the concerns respecting the proposed burns arose from recent studies done for the provincial government which stated that "PCBs should not be stored beside a large body of water, an oil refinery because of the high fire risk hazard, or any food processing plant" and that the cement company where the burns were to take place violated all those conditions." See Margaret Marland, Councillor, City of Mississauga. "The NIMBY Syndrome." An Address at the Second National Conference on Waste Management in Canada (Winnipeg, Man.: Env. Cda., October 1980) at 2.

511. See, e.g. Grace Patterson, Counsel, Canadian Environmental Law Association. "The Municipal Act: An Environmental Protection Device." A paper delivered at the Canadian Bar Association (Ontario Branch) Seminar on Environmental Law for the General Practitioner (Dec. 11, 1980).

512. Parrott, supra, note 343 and accompanying text.

513. Lisle, supra, note 345 at 18.

514. Environmental Contaminants Board of Review. Report on PCBs (Ottawa: Gov't of Cda., March 1980) at 14-15. The Board acknowledged that "public opinion in Canada . . . remains unconvinced 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 a waste disposal unit within its boundaries." Id. at 15.

515. In Re Ridge Landfill Corp. Ltd. and The Corporation of the Township of Harwich (1980), 31 O.R. (2d) 366 the Ontario Divisional Court quashed the Harwich by-law that attempted to restrict the use of land for an existing landfill site on the ground that the by-law was inconsistent with the official plan for the area. The by-law was also held invalid on the ground that it purported to remove the right granted to the operator of the site under Part V of the EPA that authorized the use of the site. Because of the conflict between the EPA and the by-law, the latter was declared invalid.

In A. G. Ontario v. Mississauga (1981), 10 C.E.L.R. 91, the Ontario Court of Appeal declared both Mississauga by-laws inoperative because of their conflict with s.8 of the EPA which authorized approval of the test burning of PCBS.

516. The PCB Board of Review observed that: "The difficulty 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." Supra, note 514 at 14.

517. International Joint Commission. First Biennial Report under the Great Lakes Water Quality Agreement of 1978 (Ottawa and Washington, D.C.: IJC, June 1982) at 1.

518. Treaty Between the United States and Great Britain Relating to Boundary Waters, and Questions Arising Between the United States and Canada (January 11, 1909). See also Boundary Waters Treaty Act R.S.C. 1970, c.

519. International Joint Commission. Report on Pollution of Lake Erie, Lake Ontario and the International Section of the St. Lawrence River (Ottawa and Washington, D.C.: IJC, 1970).

520. Canada and the United States of America. Great Lakes Water Quality Agreement of 1972 (Ottawa and Washington, D.C.: Gov'ts of Cda. and the U.S.A., November 1972).

521. Canada and the United States of America. Great Lakes Water Quality Agreement of 1978 (Ottawa and Washington, D.C.: Gov'ts of Cda. and the U.S.A., November 1978).

522. Id., article II.

523. Id.

524. Id., article VII.

525. For a review of the agreement's provisions respecting toxic substances see Castrilli, supra, note 7 at 385-388.

526. Supra, note 521 at article VI.1(e)(iii).

527. Id., article VI.1(k) and annex 12 respecting persistent toxic substances.

528. IJC (March 1980 Report) supra, note 3 at xv.

529. In 1980 the IJC argued that: ". . . part of the solution to public reluctance to accept new or expanded disposal sites lies in shifting the economic risk involved from the individuals directly affected to society as a whole. It is suggested the Governments explore means to protect the public from potential losses to real estate

values, property or health by providing for compensation to persons residing near proposed disposal sites and transportation routes. Such a procedure may ameliorate the present 'no gain' situation faced by residents located in the vicinity of proposed sites or routes." IJC (October 1980 Report), supra, note 3 at 44.

530. International Joint Commission. Addendum to the First Biennial Report under the Great Lakes Water Quality Agreement of 1978 (Ottawa and Washington, D.C.: IJC, August 1982) at 21.

531. Supra, note 517 at 12.

532. International Joint Commission. Special Report on Pollution in the Niagara River under the Great Lakes Water Quality Agreement of 1978 (Ottawa and Washington, D.C.: IJC, January 1981) at 3-4.

533. See, e.g. Environment Canada and Ontario Ministry of the Environment. Environmental Baseline Report on the Niagara River - Update. A report prepared under the Canada-Ontario Agreement on Great Lakes Water Quality (Toronto: Env. Cda./MOE, November 1981); and United States Environmental Protection Agency. Overview of Environmental Pollution in the Niagara Frontier, New York (Washington, D.C.: U.S. EPA, March 1982).

534. See, e.g. New York Public Interest Research Group. The Ravaged River (Niagara Falls, N.Y.: NYPIRG, 1981).

535. See, e.g. United States of America v. Hooker Chemicals, supra, note 3; and Toby Vigod, Counsel, Canadian Environmental Law Association. The Hyde Park Landfill Case: Canadian Citizen Action in the U.S. Courts. A report to Environment Canada (Toronto: CELA, March 1982).

536. Among the seminal legal precedents set by the intervention of Canadian citizens' groups in the Hooker Chemicals case include: their intervention in the U.S. federal district courts as amicus curiae (friends of the court); their presentation, along with U.S. environmental groups, of a joint challenge to a proposed settlement agreement between U.S. EPA, New York State and Hooker Chemical; the granting of a fact-finding hearing by a U.S. federal district court on the basis of an amicus brief; and the granting of leave by the court for amicus to participate in cross-examination and to call witnesses. Vigod, id., at 62.

537. The proposed settlement agreement was one of the first arising out of hazardous waste litigation in the United States and therefore was expected to be a model for other settlements across the country including three additional ones in the Niagara Falls area: Love Canal; "S" area; and 102nd Street. However, the significance to

Canada was that the Niagara River and Lake Ontario provide the drinking water for approximately four million Canadians whose health could be affected by the chemicals migrating from the Hyde Park site. The contention of CELA, on behalf of Pollution Probe and Operation Clean-Niagara (the Canadian amici), was that the implications of the settlement on the public interest and on international boundary waters under the Great Lakes Water Quality Agreement and the Boundary Waters Treaty, had not been addressed. While the court granted the amicus motion to appear the judge indicated that international matters would best be dealt with "in another forum." Id. at 18-20. Moreover, the amici position in final argument was that the proposed settlement agreement would not provide the requisite remedial technology to ensure that chemicals did not reach the river and Lake Ontario; that the agreement as constituted would provide a complete defense to any future action brought by the governmental parties to properly clean-up the site; and that, therefore, the best approach was to excavate the site. Id., 43, 48-51. However, Hooker Chemical lawyers indicated that they would not remove the contents of the dump just to satisfy "certain parochial Canadian interests." See, e.g. "Won't clean dump just for Canadians, Hooker tells judge," The Globe and Mail (Toronto), October 17, 1981.

Canadian officials have also expressed concerns over the implications of the settlement agreement. See, e.g. "Canadians condemn U.S. chemical deal," The Ottawa Citizen, July 7, 1981 at 45; "Chemical dump plan endangers lake - Ottawa," The Toronto Star, July 6, 1981 at A7; and "U.S. dump cleanup 'threat to Lake Ontario,'" The Montreal Gazette, July 7, 1981 at 10.

538. Most recently concerns have been raised that a possible Ontario Government intervention in and eventual approval of a future settlement involving another of the Hooker Chemical dumps in Niagara Falls, "S" area, could have the effect of damaging future rights of redress the Canadian Government might have if the clean-up proves ineffective. See, e.g. "Ottawa fearful of Ontario role in toxic waste talks," The Toronto Star, October 4, 1982; and "Ontario seeking a say in N.Y. waste disposal," The Toronto Star, September 28, 1982.

In addition, Canadian environmental groups have feared that the technical opinions of Ontario Government experts and Canadian environmental group experts involved in such future negotiations or hearings could be sufficiently divergent that Hooker Chemicals would have a major opportunity to point up contradictions and shed doubt on the validity of the Canadian case. See, e.g. correspondence to the Hon. Keith Norton, Ontario Minister of the Environment, from Toby Vigod, Counsel, Canadian Environmental Law Association (October 12, 1982, Toronto, Ontario).

539. WHO-UNEP, supra, note 1 at vi.

540. Several international efforts have been summarized above and will therefore not be repeated here. See, e.g. hazardous waste definition, supra, notes 1 and 105; and recycling and resource recovery, supra, notes 154-156.

541. NATO, supra, note 1 at 46.

542. EEC, supra, note 154, Article 14(1). For an example of an EEC member state's adoption of this provision, see U.K. special waste regulation, supra, note 103, s.14.

543. NATO, supra, note 1 at 52-53.

544. Organization for Economic Cooperation and Development. Environment Committee - Waste Management Policy Group. Hazardous Waste Problem Sites: Report of an Expert Seminar. ENV/WMP/81.10 (Paris: OECD, November 1981) at 1.

545. NATO, supra, note 1 at 53.

546. Id.; see also OECD, supra, note 544 at 2-8.

547. NATO, supra, note 1 at 47.

548. EEC, supra, note 154, Article 9.

549. NATO, supra, note 1 at 50.

550. WHO-UNEP, supra, note 1 at 40-41, 52, 131-132.

551. EEC, supra, note 154, Article 14(2). See, e.g. U.K. special waste regulation, supra, note 103, Part II: Consignment Notes.

552. NATO, supra, note 1 at 45.

553. WHO-UNEP, supra, note 1 at 128.

554. A WHO-UNEP working group has recommended that transport of hazardous wastes be covered in regulations; producers of hazardous facilities licensed; contractual agreements be negotiated between the waste producer and disposal site operator; manifest or trip-ticket system be used to ensure that waste arrives at its designated destination; and that transporters or haulers be licensed. Id. at 127-128.

555. The WHO-UNEP working group has recommended with respect to transfrontier transport that: contractual agreements between the waste producer and proposed storage, treatment or disposal operator be negotiated; the producer apply for an export licence in his own country and provide certain basic information such as nature and quantity of waste, country of destination and why a particular facility in that country has been chosen; certification of the information in the licence application by the country of origin and the passage of such information to the country of destination; responsibility of receiving state for adequate transport, storage, treatment and disposal according to national standards; issuance of an export licence by originating country only on receipt of an import licence from receiving country; transfrontier manifest form for each such shipment of waste; responsibility of customs authorities for assuring import, export and manifest information is in order. Id. at 128-129.

556. EEC, supra, note 154, Article 11(1).

557. NATO, supra, note 1 at 55.

558. WHO-UNEP, supra, note 1 at 33 and 133.

559. Id. at 42.

560. Id. at 133.

561. Id. at 42-43.

562. Organization for Economic Cooperation and Development. Environment Directorate. Implementation of a Regime of Equal Rights of Access and Non-Discrimination in Relation to Transfrontier Pollution (Paris: OECD, 1977) at

563. American Bar Association and the Canadian Bar Association. Report of the Joint Committee of the American Bar Association and the Canadian Bar Association on the Settlement of International Disputes between Canada and the United States of America (Ottawa: CBA, 1979); Draft Treaty on a Regime of Equal Access and Remedy in Cases of Transfrontier Pollution between Canada and the United States: Article 2. The report suggests that if a North Dakotan, for example, has a right of action for pollution prevention or control in a court somewhere in the United States, so should a Manitoban similarly affected, and vice versa. Id. at xxxv.

564. Id., Article 3.

565. Id., Article 5.

566. See, e.g. Andrew J. Roman, "Locus Standi: A Cure in Search of a Disease?" in Environmental Rights in Canada, supra, note 185 at 30 and 48 where the author discusses the general liberalizing trends in standing cases in both the U.S. federal and state courts.

567. Supra, notes 121, 122 and 403 and accompanying text.

568. Supra, note 129 and accompanying text.

569. Supra, note 362 and accompanying text. The problem of "hazardous waste havens" was graphically illustrated in 1979 U.S. Congressional testimony by Frank J. Polkowski, Supervisory Auditor, U.S. General Accounting Office: "Originally New Jersey was a state that received most of the hazardous waste. As the dumping industry became aware of the fact that controls were going to be more stringent in New Jersey, dumping then proceeded toward Rhode Island. Then when the controls were tightened in Rhode Island, we are informed now that the dumping process is largely centered on Pennsylvania. The weakest state winds up with most of the dumping problem." Supra, note 108 at 1297.

570. Supra, note 174 and accompanying text.

571. The problem with non-enforceable guidelines is that they are frequently too easy to ignore both by industry and government. The following are the conclusions of an Environmental Assessment Board panel regarding the 1980 Ajax industrial waste treatment proposal: "With respect to the role of the Ministry of the Environment in its review of the proposed site, the Board was disturbed to discover, through the cross-examination of the Ministry's regional representative . . . that the Ministry did not evaluate this application against its own guidelines for the siting of such facilities [Guidelines For Environmental Protection Measures At Chemical Storage Facilities (Toronto: MOE, 1978)]. The intent of these guidelines clearly is to assess the need for environmental protection measures at existing or proposed facilities. The Board . . . is of the opinion . . . that the proposal . . . was subject to the provisions of these guidelines and should have been evaluated accordingly. At the very least, the application of these guidelines . . . would have identified some of the serious problems associated with the selected site." Supra, note 346 at 31.

572. Supra, notes 408-413, 561 and accompanying text.

573. Supra, notes 410, 466-469, 561 and accompanying text.

574. See, e.g. The Aggregates Act, 1979 (Bill 127, Leg. Ont., Sess.), Part IV. Abandoned Pits and Quarries. Under this Bill, gravel companies would be required to pay a fee or tax per ton of gravel excavated from their sites. The monies under this fund would be used to rehabilitate past pits and quarries abandoned by the industry as a whole. The Ontario Government supports the approach because of the environmental and social benefits to be gained from rehabilitating thousands of acres of land left derelict by the industry. See, e.g. Ontario Mineral Aggregate Working Party. A Policy for Mineral Aggregate Resource Management in Ontario (Toronto: Gov't of Ont., December 1976) at Ch. 5.

575. Supra, notes 466-467 and accompanying text.

576. Supra, notes 175-181, 471-480 and accompanying text.

577. Supra, notes 151-158, 173 and accompanying text.

578. 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: BCLRC, 1980) at 72.

While the Ontario Law Reform Commission has yet to issue its report on the law of standing, under review since 1976, it recently acknowledged that its law reform proposals in the area of class actions would be largely moot in the area of environmental law in the absence of environmental rights reform: "While the Commission is of the view that class actions could perform a useful role in redressing widespread environmental harm, it would appear that, in the absence of express statutory causes of action authorizing redress for a broad range of environmental law violations, and until reform of the law of nuisance and, in particular, the law relating to standing occurs, the substantive bases for access to the courts by classes of litigants to redress environmental harm will be limited." See Report on Class Actions, Vol. 1 (Toronto: OLRC, 1982) at 276.

Since 1978, five private member's bills and one government bill on this matter have been introduced in Canada.

In Quebec, amendments to the province's principal environmental statute 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 a 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. Environment Quality Act S.Q. 1978, c. 64, ss.19.1-7.

The five private member's bills have come from three different provinces and all three major political parties, though none have been enacted: The Environmental Bill of Rights, 1979 (Bill 22, 19th Leg. Alta., 1st Sess.). Introduced by Mr. Clark, Lib. Leader of the Opposition; The Ontario Environmental Rights Act, 1979 (Bill 185, 31st Leg. Ont., 3rd Sess.). Introduced by Mr. Smith, Lib. Leader of the Opposition; The Environmental Magna Carta Act, 1980 (Bill 91, 31st Leg. Ont., 4th Sess.). Introduced by Ms. Bryden, NDP Environment Critic; The Environmental Magna Carta Act, 1981 (Bill 23, 19th Leg. Sask., 4th Sess.). Introduced by Mrs. Duncan, PC Environment Critic; and Ontario Environmental Rights Act, 1982 (Bill 96, 3rd Leg. Ont., 2nd Sess.). Introduced by Mr. Elston, Lib. Environment Critic.

579. See, e.g. Ontario Environmental Rights Act, 1982, s.4.

580. See, e.g. Village of Wilsonville v. SCA Services, Inc. (1981), 426 N.E. 2d. 824 (S.C. Illinois). The court held that in an action to enjoin operation of a chemical-waste disposal site, the trial court did not err in failing to give weight to permits issued by the state environmental protection agency, as the data relied upon by the agency in deciding to issue the permits were proved at trial to be inaccurate.

581. Supra, note 579, s.6.

582. It has been suggested that "notwithstanding a firm's payments into a [victim compensation] fund, the compensation system could provide for: suits by the fund against individual actors, to recover payments made by the fund; giving the victim the option of suing the polluter directly instead of going to the fund; and/or allowing the individual to sue the polluter directly for any portion of his loss over and above the portion payable by the fund, if the fund pays less than the full amount." Swaigen, supra, note 466 at 75.

583. Supra, note 579, s.5.

584. Id., ss.4(3) and 14.

585. Id., Part VI. Public Interest Funding. See also Raj Anand and Ian G. Scott, Q.C. "Financing Public Participation in Environmental Decision Making," (1982) 60 Can. Bar Rev. 81.

586. Supra, notes 75-108, 245, 261-277, 420 and accompanying text.

587. Supra, notes 422-426, 436, 437 and accompanying text.

588. Supra, notes 377-385, 427-431 and accompanying text.

589. Supra, notes 386-392 and accompanying text.

590. Supra, notes 366, 529 and accompanying text.

591. Supra, notes 503-507 and accompanying text.

592. Constitution Act, 1867.

593. See, e.g. Dale Gibson, "Constitutional Jurisdiction over Environmental Management in Canada," (1973) 23 University of Toronto Law Journal 54; and Dale Gibson, "The Environment and the Constitution: New Wine in Old Bottles," in Protecting the Environment, O. P. Dwivedi, ed. (Toronto: Copp Clark, 1974) at 105-107.

594. Supra, note 592, s.91(27).

595. Preamble to s.91.

596. S.91(2).

597. S.91(3).

598. See, e.g. navigation and shipping (s.91(10)); seacoast and inland fisheries (s.91(12)); Indians and lands reserved for the Indians (s.91(24)); interprovincial works and undertakings (s.92(10)(a)); and works declared by Parliament to be for the general advantage of Canada (s.92(10)(c)).

599. S.92(8).

600. S.92(13).

601. S.92(10).

602. S.92(16).

603. S.109.

604. S.92(2).

605. See, e.g. Dr. Ross H. Hall, Professor of biochemistry and a member of the Canadian Environmental Advisory Council, who suggests that an assumption upon which the federal Environmental Contaminants Act is based is that: "Environmental contamination can be controlled

solely by regulating chemicals at the source, the manufacturing plant or the importer." Dr. Hall argues instead that: "Chemicals wasted during use or when discarded find their way into the environment in some form. As an alternative to outright ban on all chemicals, the regulatory agency should be designing a system that controls chemicals from their manufacture, distribution and use to their ultimate disposal." CELA/CELRF Roundtable, supra, note 7 at Appendix A to Proceedings.

606. Infra, note 627.

607. R. T. Franson and A. R. Lucas. Canadian Law and the Control of Exposure to Hazards. Prepared for the Science Council of Canada. Background Study No. 39. (Ottawa: Supply and Services Canada, 1977) at 11 and 13.

608. Id. at 13.

609. Jean Piette, Director of Legal Services, Quebec Environment Department has argued that: "From a constitutional point of view, the views of the Province of Quebec are that [storage and disposal of toxic wastes] relate essentially to property and civil rights. This is a provincial responsibility. . . ." CELA/CELRF Roundtable, supra, note 7 at 91. John Roberts, Federal Environment Minister, has also stated that "waste disposal is an area of provincial responsibility." See Can. H. of C. Standing Committee on Fisheries and Forestry, Proceedings, No. 21 (March 12, 1981) at A5. The conclusion of a recent research paper prepared by the Library of Parliament was that: "Federal powers to deal with toxic waste management are much more scattered, and because of this, it is hard for the federal government to implement a national policy of toxic waste disposal in Canada unless it is performed or on federally-owned lands such as Indian reserves and national parks or on federal territories such as the Yukon and Northwest Territories." See Claude St. Pierre, Law and Government Division, Research Branch, Library of Parliament. Constitutional Aspects of Toxic Waste Disposal (Ottawa: Library of Parliament, April 1982) at 30.

610. Gibson, supra, note 593 at 117.

611. Id. at 118; and Franson and Lucas, supra, note 607 at 18.

612. S.C. 1974-75-76, c.72.

613. S.C. 1980, c.36.

614. In the area of dangerous goods movement, for example, 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 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 (s.92(10)(a)) 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 Committee on Transport, Proceedings, No. 1 (May 29, 1980) at A3, submission of Mr. Pepin.

615. See Reference Re Validity of Section 5(a) of Dairy Industry Act [1949] S.C.R. 1 at 50.

616. See R. v. Cosman's Furniture (1972) Ltd. (1976), 73 D.L.R. (3d) 312 (Man. C.A.) (Hazardous Products Act regulations respecting infants' cribs and cradles upheld as valid criminal law although it affects civil rights in the province).

617. Gibson, supra, note 593 at 119.

618. The Environmental Contaminants Board of Review, established to hear objections to proposed PCB regulations issued pursuant to the Environmental Contaminants Act in 1978, has observed that the Act "may be regarded as legislation designed essentially to prohibit various forms of individual or corporate behaviour. The language of the Act . . . is very largely prohibitory rather than managerial." See Environmental Contaminants Board of Review. Report on PCBs (Ottawa: Env. Cont. Bd. of Rev., March 1980) at 17.

619. 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 607 at 17 and cases cited therein.

620. Attorney-General of Ontario v. Attorney-General of Canada [1896] A.C. 348.

621. Johannesson v. West St. Paul [1952] 1 S.C.R. 292 (federal power over aviation); Munro v. National Capital Commission [1966] S.C.R. 663 (national capital commission); Reference re Offshore Mineral Rights [1967] S.C.R. 792 (minerals off the shore of British Columbia); and The Queen v. Hauser [1979] 1 S.C.R. 984 (control of narcotics).

622. Attorney-General of Ontario v. Canada Temperance Federation [1946] A.C. 193 at 205.

623. Supra, note 615 at

624. Mr. Justice Estey quoting with approval Professor P. W. Hogg's definition of national concern in Labatt Breweries of Canada v. Attorney-General of Canada [1979] 110 D.L.R. (3d) 594 at 627 (S.C.C.).

625. Gibson, supra, note 593 at 119.

626. Supra, note 618 at 17.

627. For example, the following is an exchange between the Environmental Contaminants Board of Review Chairman, Maxwell Cohen, Q.C. and Raymond M. Robinson, Assistant Deputy Minister, Environmental Protection Service, Environment Canada:

Chairman: But there is no question . . . when it comes to the manufacture of new PCB fluid, that that is clearly a [matter of] 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 produce, you have both provincial [control] plus grey areas?

Mr. Robinson: I think that's a fair comment.

See Environmental Contaminants Board of Review. Hearing Record on PCB Regulations. Transcript Volume 1 (Ottawa: December 10, 1979) at 76-77.

628. Supra, note 618 at 17.

629. Environment Canada. Environmental Protection Service. Guideline for the Management of Waste Materials Containing Polychlorinated Biphenyls (PCBs) (Ottawa: Env. Cda., August 1978); and Environment Canada. Environmental Protection Service. Guideline on Central Collection and Storage Facilities for Waste Materials Containing Polychlorinated Biphenyls (PCBs) (Ottawa: Env. Cda., November 1978).

630. R.S.C. 1970, c.F-14 (1st Supp.) as amended.

631. Supra, note 618 at 17.

632. Maxwell Cohen, Q.C., during CELA/CELRF Roundtable, supra, note 7 at 95.

633. Piette, supra, note 609. Mon. Piette added that cooperation as well as uniformity is possible without the enactment of federal law: ". . . all PCB storage, permits and licences issued by the Government of Quebec incorporate federal guidelines respecting PCBs. So there is uniformity in the standards. . . ." Supra, note 7 at 98. (But cf. Ontario's use of guidelines, supra, note 571.)

634. Franson and Lucas, supra, note 607 at 16. See, e.g. The Queen v. Klassen [1959] 20 D.L.R. (2d) 406 (Man. C.A.) where the Canada Wheat Board Act was upheld as valid federal legislation even though it affected purely local works or business, since the effects were necessarily incidental to the primary purpose of the Act, which was interprovincial trade.

It is unclear how far the "necessarily incidental" doctrine will go in supporting a federal statutory scheme directed at waste disposal, without considering the purpose of such federal legislation. If the problem of "hazardous waste havens" is a primary concern i.e. the need to provide for rational "allocation" or distribution of such wastes nation-wide, arguably it would follow that the location and quality of disposal sites would be integral to such a scheme. It would not be sufficient to merely regulate the quantities of waste distributed interprovincially without reference to the quantities, methods and location disposed of intraprovincially. Otherwise hazardous wastes could become geographic areas out of proportion to the ability of the particular province(s) to properly manage them. See also Caloil Inc. v. Attorney-General of Canada [1971] S.C.R. 543; 20 D.L.R. (3d) 472 (S.C.C.) where the Supreme Court of Canada upheld National Energy Board Act regulations pursuant to the trade and commerce power even though they restricted the import of oil into a specific area for consumption within that area because the purpose of the regulations was to foster the development and utilization of Canadian resources. The Court reasoned that: "The restriction on the distribution of the imported product to a defined area is intended to reserve the market in other areas for the benefit of products from other provinces. Therefore, the true character of the enactment appears to be an incident in the administration of an extraprovincial marketing scheme. . . . Under the circumstances, the interference with local trade, restricted as it is to an imported commodity, is an integral part of the control of imports in the furtherance of an extraprovincial trade policy and cannot be termed 'an unwarranted invasion of provincial jurisdiction.'" Id. at (S.C.R.), (D.L.R.).

635. See, e.g. A.G. Manitoba v. Manitoba Egg and Poultry Association [1971] S.C.R. 689 (S.C.C.); and Burns Foods v. A.G. Manitoba [1975] 1 S.C.R. 494 (S.C.C.) where the Supreme Court of Canada struck down provincial attempts to apply marketing schemes to imported eggs and to hogs purchased out-of-province, respectively. But cf. Carnation

Co. Ltd. v. Quebec Agricultural Marketing Board [1968] S.C.R. 238 (S.C.C.) where the Supreme Court upheld a provincial marketing plan for the sale of raw milk by farmers to Carnation which processed the milk and then sent the bulk of its product out of province. Even though the company had to pay higher prices for its milk, the Court still held that the provincial marketing law was in relation to intraprovincial trade and that it merely affected interprovincial trade.

636. Franson and Lucas, supra, note 607 at 16. The authors note a 1974 case in which the Federal Court upheld Food and Drug Act regulations controlling the use of cyclamates in food on the basis of the criminal law power. The court also noted that "there is much to be said for the argument that s.4 [of the Act] does in reality set "commodity standards" with respect to food that can be sold in Canada and thus might well come within the federal power to regulate trade and commerce." However, the court found it unnecessary to determine the validity of the legislation on the basis of the trade and commerce power because of its finding that the legislation was valid under the criminal law power. See Berryland Canning Co. Ltd. v. The Queen (1974) 44 D.L.R. (3d) 568 at 575 (F.C.T.D.).

637. See, e.g. Interprovincial Co-Operatives Ltd. et al. v. The Queen in Right of Manitoba (1975) 53 D.L.R. (3d) 321 (S.C.C.). Manitoba, which was receiving damage from discharges of contaminants into its waterways from industries in Ontario and Saskatchewan, enacted legislation affecting the right to compensation of its residents from the sources of contamination in the neighbouring provinces. All the members of the Court agreed, with respect to the issue of intraprovincial pollution, that compensation legislation would be within provincial jurisdiction, though this was obiter.

638. See, e.g. Workmen's Compensation Act R.S.O. 1980, c. 321.

639. Constitution Act, 1867. S.92(2). Using the waste disposal stage as an example, the waste disposal site operator could be licensed as the tax collector for the wastes received from, and paid for by, the generator. Like a retail sales tax, the tax could be considered direct, because it has been paid by the ultimate consumer with no question of further resale of the waste or possibility of the tax being passed onto any person by subsequent dealing. See, e.g. Atlantic Smoke Shops Ltd. v. Conlon [1943] A.C. 550 (JCPC); A.G. British Columbia v. Kingcome Navigation Co. Ltd. [1934] A.C. 45 (JCPC); and Cairns Construction v. Government of Saskatchewan [1960] S.C.R. 619 (S.C.C.).

640. Franson and Lucas, supra, note 607 at 22.

641. A.G. Canada v. A.G. Ontario [1937] A.C. 355 (JCPC).

642. Swaigen, _supra_, note 466 at 45.

643. Professor P. W. Hogg has suggested that the case is probably "wrongly decided. . . . One would have thought that unemployment insurance was sufficiently specific to qualify as a new judge-made head of federal power, and that it had the requisite national concern." Peter W. Hogg. _Constitutional Law of Canada_ (Toronto: Carswell, 1977) at 265.

644. See, e.g. _P.A.T.A._ v. _A.G. Canada_ [1931] A.C. 310 (JCPC); _A.G. British Columbia_ v. _A.G. Canada_ [1937] A.C. 368 (JCPC); and _Goodyear Tire and Rubber Co._ v. _The Queen_ [1956] S.C.R. 303 (S.C.C.).

645. Hogg, _supra_, note 643 at 289.