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Key Issues in and Policy Options for the Remediation of Contaminated Sites in Canada and the Prevention of Future Problems

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Key Issues in and Policy Options for the Remediation of Contaminated Sites in Canada and the Prevention of Future Problems

I. INTRODUCTION

This paper has been prepared in the context of a series of workshops hosted by the Financial Services Task Force of the National Round Table on the Environment and the Economy in late 1996 and early 1997 on policy issues related to the remediation of contaminated sites in Canada. The paper provides an overview of the perspectives of the Canadian Environmental Law Association (CELA) and the Canadian Institute for Environmental Law and Policy (CIELAP) on the key issues and policy questions related to contaminated site remediation and the prevention of site contamination in the future. Both organizations felt the need to provide a commentary of this nature as, to date, the perspectives of non-governmental organizations have not been strongly reflected in the work of the Task Force.

Both CIELAP and CELA have participated in consultations with the Canadian Council of Ministers of the Environment (CCME), and the government of Ontario on issues related to contaminated site remediation over the past five years. This has included the work of the Environmental Liability Task Force of the CCME,[1] and the consultations on new contaminated site remediation guidelines by the Ontario Advisory Committee on Environmental Standards (ACES).[2] In addition, two of the authors of this paper co-authored a paper published in the journal Alternatives outlining the key policy issues in the remediation of contaminated sites.[3] A copy of that paper is attached to this submission.

The paper focuses on the key issues identified by slmcleod consulting in its September 1996 final report on Contaminated Sites Issues in Canada and August the 1996 paper prepared for the Canada Mortgage and Housing Corporation entitled Removing Barriers to the Redevelopment of Contaminated Sites for Housing. This includes a discussions of the question of who should pay for the clean-up of contaminated sites, how clean-up standards should be established, and how current policies can be structured to avoid the creation of more site contamination problems in the future.

These issues cannot be dealt with in isolation. The questions of the allocation of liability, the establishment of clean-up standards, and the avoidance of future problems are closely linked, and should be addressed through a comprehensive policy framework, rather than in a piecemeal fashion.

II. WHO SHOULD PAY FOR SITE REMEDIATION?

i) Introduction

This section deals with the following issues and policy options related to the allocation of liability for remediation of contaminated sites: the socialization of remediation costs versus their internalization in a manner consistent with the polluter pays principle; the allocation of remediation costs where more than one responsible party is involved; the situation of particular sectors, such as financial institutions in the allocation of remediation costs; the issue of financing of the remediation of "orphan" sites; and exemption of owners, occupiers, or developers of contaminated sites from future liability once a clean-up has been completed.

ii) Polluter Pays Principle and Cost Internalization versus Societal Benefits and Socialization of Costs

Introduction

The central issue underlying the debate over the allocation of liability for the remediation of contaminated sites is the question of who pays for clean-up. Site contamination is often the result of past economic activities which were legal and, in some cases, explicitly authorized by governments at the time. This has led to debates over whether the costs of contaminated site remediation should be socialized, and paid for by governments out of general tax revenues, or whether the principle of polluter pays should be applied such that, wherever possible the costs of remediation would be allocated to those responsible for the contamination, or who benefitted directly from the economic activities associated with the contamination.

Socialization of costs

This view, often advanced by industry, is that the cost of historical contamination is a social cost that society as a whole must bear. The arguments used to support socialization of environmental costs are that society benefitted from the polluting activities and that it should take responsibility for the laws passed by democratically-elected governments. In addition, taxpayers are better able to pay than former polluters and therefore should accept the financial burden of past laws now found to be inadequate.[4]

Polluter Pays Principle

On the other hand, many argue that most, if not all, of past polluters derived some benefit (financial or otherwise) from their polluting activities, or from the

inexpensive disposal of wastes, i.e., by externalizing their environmental costs. In fact, one could argue that industry and corporate shareholders were the primary beneficiaries of these activities and that taxpayers are essentially victims. And the costs of cleaning up past pollution, prohibitive even by conservative estimates, cannot realistically be paid for by governments saddled with current deficits.

Over the past decade, increasing public concern in Canada about environmental issues has provided support for stricter environmental laws. These laws, enacted by the federal and provincial governments, generally impose liability for environmental degradation on those parties responsible for causing or creating it. In particular, parties held responsible usually are required to pay for the costs of cleaning up, in order that taxpayers do not bear the financial burden of the consequences of their activities. The liability generally creates a financial incentive for potential polluters to adopt preventive measures (although arguably no such incentive exists where the liability is imposed on those who were responsible for contamination in the past). This method of imposing liability has been called the "polluter pays principle." The polluter pays principle essentially requires that polluters bear the costs of pollution prevention and remediation measures established by public authorities. The application of this principle leads to the conclusion that those who benefitted in the past by externalizing the environmental costs of their activities should now be required to pay for site remediation.

Other Jurisdictions

In the United States, the *Comprehensive Environmental Response, Compensation and Liability Act*[5] (CERCLA or the "Superfund" law) imposes liability where past actions contributed to present damage and danger because such liability is civil, rather than criminal, and is reasonable under the circumstances. In the words of one U.S. court:

> "Cleaning up inactive and abandoned hazardous waste disposal sites is a legitimate legislative purpose and Congress acted in a rational manner in imposing liability for the costs of cleaning up such sites upon those parties who created and profited from the sites and upon the chemical industry as a whole."[6]

And of another:

> "While the generator defendants profited from inexpensive waste disposal methods that may have been technically "legal" prior to CERCLA's enactment, it was certainly foreseeable at the time that improper disposal could cause enormous damage to the environment. CERCLA operates remedially to spread the costs of responding to improper waste disposal among all parties that played a role in creating

> the hazardous conditions ... CERCLA does not exact punishment. Rather it creates a reimbursement obligation on any person judicially determined to be responsible for the costs of remedying hazardous conditions at a waste disposal facility. The restitution of clean up costs was not intended to act, nor does it operate in fact, as a criminal penalty or as a punitive deterrent."[7]

Legislation imposing liability on past polluters for remediation of contaminated sites exists in a number of European countries, including Denmark and the Netherlands.

Conclusion

On balance, adhering to the polluter pays principle in imposing liability for cleaning up past contamination is justifiable in most instances for the following reasons: (1) it is necessary to protect the public from paying for clean up of contaminated land because much contamination predates pollution laws; (2) past polluters are morally if not legally responsible for contamination (in fact, past polluters may have been in breach of common law responsibilities in some instances); and (3) relative to the taxpayer, the polluter likely derived or intended to derive a greater benefit from the polluting activities.

iii) Developing a Comprehensive Policy Approach to Liability versus *ad hoc* exemptions from Liability

Introduction

In recent years a trend has developed of granting specific sectors or classes of potentially responsible parties exemptions from liability for the clean-up of contaminated sites. The government of Ontario, for example, has provided exemptions from liability for prospectors working on unremediated abandoned mine sites,[8] and a partial exemption for financial institutions.[9] Similarly, the recently proposed amendments to the federal *Bankruptcy Act* contain an exemption from environmental liability for trustees and receivers.[10]

This approach is problematic for a number of reasons. In particular, the practice of granting specific sectors exemptions from liability in the absence of a comprehensive policy framework leads to the possibility that, in many cases liability will be impossible to assign to any party. this may result in situations where sites will either be left unremediated, or will have to be remediated using public funds. A preferable approach would be to establish a comprehensive structure for the assignment of liability based on clearly articulated principles, goals and objectives.

Identifying polluters

The concept of polluter pays is a simple one, but its application to practice is more complex, particularly when the related issues of types, limits and allocation of liability are considered. The initial and perhaps most difficult aspect of implementing the polluter pays principle is the appropriate determination of who is a polluter. Many hard policy issues, in terms of equitably imposing liabilities, are dealt with at this level, including the creation of defences and limitations. Ultimately, failure to define polluters appropriately (i.e., without sufficient certainty and predictability) may result in inefficient regulation at one extreme and in non-compliance and the legislation being brought into disrepute at the other.

Defining liability broadly will ensure that, ultimately, environmental degradation will be remedied and the taxpayer will only be called upon as a last resort. The broad approach is also simpler to apply, but it fails to recognize different degrees of responsibility, ranging for example from parties who directly contributed to the contamination, to those in control who failed to prevent the contamination, to those whose contribution to the contamination was indirect. It can be justified to some extent on the basis that the public purse is protected at the expense of a party which profited in some measure or received a benefit from its involvement with the degradation either financially or otherwise, or who will profit from any remediation funded by the taxpayer (see iii above). This approach also will lead to more responsible environmental behaviour. In addition, in many instances parties have the opportunity to allocate risk among themselves and/or obtain insurance.

The problem of defining responsible persons or polluters is complicated by the complex nature of environmental degradation. Contamination often occurs as a result of many pollutants released by the activities of numerous actors over a number of years or even decades. As noted above, these actors likely will have contributed to the contamination in varying degrees and therefore, resolving issues of liability in a completely equitable manner is difficult and at times impossible (see iv below for a discussion of liability allocation).

Goals and objectives

A principled approach to liability must be developed in order to use private and public resources most effectively. Principles of liability must be consistent with the goals and objectives to be achieved. In developing principles for assigning liability, the goals and objectives of environmental protection first need to be identified. These include:

* the protection of public health and welfare and the environment;

* the orderly, efficient and effective remediation of environmental degradation;

* the prevention and deterrence of future contamination;

* the promotion of compliance and self-regulation;

* provision of incentives for environmental protection;

* requirement that polluters pay in order to protect the public purse;

* the equitable imposition and allocation of liabilities;

* the avoidance of unjust enrichment or deprivation;

* clarity and precision in defining responsibilities; and

* sufficient flexibility and discretion to allow regulators to address a wide range of situations.[11]

The government cannot achieve all these objectives in every situation and therefore must endeavour to strike a reasonable balance among them, while recognizing that in some instances, certain goals will take priority over others. For example, in an emergency, the precise allocation of liabilities among polluters may be less important than clean up, with the result that equitable notions of fairness will be subordinated to the protection of the public and the environment. The approach also needs to be pragmatic and consensual -- the objectives may be compromised if liability is imposed in an arbitrary or unreasonable manner. In this regard, the best approach is one in which the parties are able to work together to a common solution. Situations that should be avoided are those in which a secured creditor abandons its security rather than risking exposure to liability as a result of taking steps to protect the property or assist in ensuring continued operations. In such cases, property and other assets may depreciate and there may be a risk of ongoing damage or threat to public health and safety and the environment.

Principles of liability

Imposition of liability irrespective of causation, fault or negligence would sometimes produce unreasonable results (for example, when a past owner who did not contribute to contamination is held responsible). Legal responsibility should be imposed on the basis of some causal connection to the contamination, although negligence or other fault should not be necessary. This approach recognizes both the primary objective of imposing liability, which is to achieve prompt clean up and restoration of the environment, as well as the secondary goal of requiring the polluter to internalize the risk and costs of environmental degradation. The polluter then may pass these costs along to consumers in the price of goods and services or engage in some other form of risk allocation.

Liability should be imposed on polluters based on the following principles: (1) the extent of a polluter's ability to exercise **influence** and **control** over pollutants, polluting activities or contaminated property; and (2) the extent to which a polluter derived a **benefit**, financial or otherwise, from the pollutants, polluting activities, property or from compliance with an order to clean up.

This extended notion of a polluter recognizes that the costs of compliance may be great and that, in order to ensure compliance, liability should be spread as widely as possible. The wide definition also increases the possibility that parties associated with the pollution will pay for it. Furthermore, it recognizes that giving those with influence and/or control a financial stake in the avoidance and remediation of contamination is an effective way to deter it. The linkage of responsibility with influence and/or control and/or benefit is consistent with equitable notions of fairness and accepted legal principles. Furthermore, knowledge or intention of a party may not be necessary and the assessment of benefit to a party is relative, that is, the position of the potentially responsible party must be compared to that of the taxpayer and other affected by the pollution.

In 1993, the CCME recommended thirteen principles that establish a framework to assist governments in developing legislation imposing liability for cleaning up contaminated sites.[12] The five underlying principles were: the primacy of polluter pays principle, fairness, openness, accessibility and participation, beneficiary pays and the avoidance of unjust enrichment, and sustainable development integrating environment, human health and economic concerns. In terms of adopting the polluter pays principle as the basis of liability policy, the CCME recommended that a "broad net be cast for the determination of potentially responsible persons," but that lenders and receivers be "conditionally" exempt in certain circumstances. Some provinces, such as British Columbia and Alberta, similarly take a broad approach. BC legislation also provides liability exemptions and defences for parties such as secured creditors and owners and operators meeting certain criteria, and Alberta's law sets out circumstances to be considered by regulators in imposing liability.

Conclusion

In developing a principled approach to liability, the absence of a Superfund or superfund-type scheme in Canada, such as that established in the United States under CERCLA in 1980, must be taken into consideration. This type of fund is designed to ensure that the resources for site remediation are available from an industry-generated and/or public fund where responsible parties cannot be identified or made to pay (see v) below). Without this mechanism, a broad approach must be taken to the imposition of liabilities (and to cost recovery mechanisms) in order to protect the public purse. As a result, in some instances recovery should be sought from parties such as secured creditors who have benefitted from polluting activities, even where the benefits do not match compliance costs precisely.[13]

Provision should be made in certain instances to narrow the range of persons responsible for clean up by clearly defined-defenses and limitations. This reflects the reality that not all parties should be held equally responsible for contamination and would allow governments to address the complexities of pollution control. In order to develop a cohesive, consistent and comprehensive liability framework, however, the liability of one or more particular groups *as a group*, e.g., lenders and secured creditors, should **not** be considered in isolation from the liability of other potentially responsible parties. Furthermore, any type of limitation considered should be in the form of a **defence** (e.g., for due diligence) rather than an **exemption.** In other words, the approach to be taken should be that of providing lenders or other parties with a "due diligence" defence to limit their liability, provided they are able to demonstrate that they have met the prescribed criteria.

iv) The Allocation of Liability: Joint and Several Liability versus Allocation of Liability

Introduction

One of the key site remediation issues to be resolved is that of the assignment of liability. In other words, who pays what for clean up that resulted from past activities? Closely related to this is the notion of government accountability -- can and/or should society as a whole be responsible for the errors of former governments? The goal is essentially that of achieving substantive justice in the distribution of liabilities, bearing in mind that there are often other, competing objectives for government, such as those of achieving pollution prevention through environmental regulation and stimulating economic activity.

Joint and several liability

There are two basic models for assigning liability to parties responsible for environmental contamination. In a joint and several liability approach, one party may be responsible for all of the remediation costs, regardless of the party's contribution to the damage. Where this is the case, legislation usually makes provision for the parties held joint and severally liable to seek recovery of the costs from other parties who had a role in the contaminating activities. It also may provide for allocation or apportionment of liability. This type of liability exists in other areas of the law, including the law of negligence.

Liability apportionment

In the several liability approach, liability is assigned to individual parties on the basis of their degree of responsibility and the parties may only be held liable for their

portion. While a several liability approach may have the potential to be fairer to responsible parties, in practice, it can be extremely difficult to allocate responsibility precisely among a group of actors. As a result, public authorities favour the joint and several model. Joint and several liability is employed in the U.S. Superfund legislation.[14] However, opponents of the approach argue that the joint and several liability regime has been partially responsible for the high level of litigation associated with clean ups under the Superfund legislation.

The CCME principles referred to above endorse a four-step process for allocating liability among responsible parties. This process involves allocating liability through voluntary, mediated or directed means, failing which joint and several liability should be imposed as a last resort. Governments also would be empowered to reject a particular allocation of liability or to apply joint and several liability to parties who avoid their obligations. The BC government is attempting to implement this approach in its environmental legislation, by permitting and facilitating efforts by responsible parties to negotiate allocation of liability among themselves. However, the possibility of the imposition of joint and several liability by the government is essential in order to provide an incentive to responsible parties to reach a "voluntary" resolution.

Conclusion

Joint and several liability is necessary as a "backdrop" to any allocation scheme, negotiated or otherwise, not only to assist in bringing all the parties to the table, but also to provide these parties with incentive to reach agreement on their respective shares of responsibility for clean up. Without such a backdrop, responsibility for clean up may fall unfairly on the taxpayer.

v) Funding Orphan Shares and Orphan Sites - the Establishment of Remediation Funds versus the Use of General Revenues

Orphan Sites

Regardless of the liability regime adopted, undoubtedly contaminated sites will exist for which cleanup liability cannot be established and which the public must fund. Many contaminated sites are "orphans," i.e., polluters cannot be located, identified or made to pay for their clean up. In other cases, cleanup liabilities exceed the value of the land and/or the economic worth of the responsible party or parties. In such situations, it may be necessary for funds to be available from another source, such as a cleanup fund.[15]

Government financing options

The issue of funding orphan site remediation has become particularly urgent

following the end of the National Contaminated Sites Remediation Program (NCSRP) in March 1996. This program relied upon general revenues to finance remediation of orphan sites. Governments now have two broad financing options: (1) continue to finance orphan site remediation out of existing general revenues, or (2) find new sources of revenues. The first option, which socializes rather than internalizing environmental costs (see further in iii) above), would require either increased debt levels or reductions of government spending in other areas (both unattractive options in the current fiscal climate), and would set an undesirable precedent for socializing environmental liabilities in the future.

In terms of the second option, there are a numerous possibilities, from broad-based taxes on businesses and consumers (which socialize the cost of clean up), to taxes on the use or discharge of substances historically associated with site contamination, or taxes on products such as batteries and solvents. These alternative instruments for financing orphan site remediation avoid the need to increase public fiscal debt or reduce public services, and are more consistent with the polluter pays principle. They also may provide financial incentives to alter behaviour relating to the use of potentially contaminating substances in the future.

Conclusion

In light of the outcome of the CCME multi-stakeholder workshop on the financing of orphan site remediation in January 1994, in which opposing positions were taken to proposed financing options, the most realistic outcome in this regard may be a formula for sharing the costs of establishing and maintaining remediation funds between government, industry and the consumer, such that funds would come from some agreed-upon mix of general revenues, taxes on the use or discharge of certain substances by industry, and charges imposed on consumers at the point of sale for the purchase of certain products. Another possibility is that industries might contribute directly to a cleanup fund, similar to the manner in which payments are made to the Workers' Compensation Fund. Contributions could be linked to the anticipated cleanup cost for each targeted sector and recovered by these industries through increased product prices.

vi) Limiting Future Liability for Developers of Contaminated Sites

Introduction

Developers, like all other potentially responsible parties, wish to limit their liability for redeveloping brownfields. They argue that otherwise the risks would be too high due to the unpredictable costs associated with redeveloping brownfields. In fact, in some instances the clean-up costs can exceed the cost of the land. Developers are also concerned that if they clean up property to a certain standard (e.g industrial)

they may be held liable for additional cleanup costs in the future, if there is a subsequent change in the use of the property (e.g residential). Accordingly, developers frequently point out that unless there is a provision of "exit ticket" which exempts them from future environmental liability, they will have no incentive to redevelop contaminated sites.

Consequently, the provision of "exit tickets" for potentially responsible parties raises the difficult issue of who should bear the cost for environmental contamination, the degree of the standard of care that potentially responsible parties will exercise as well as the most effective means of ensuring clean-up of brownfields.

"Exit Tickets"

The Ontario government has provided "exit tickets" for mining companies through amendments to the *Mining Act*. As a result of the amendments companies which surrender their mining lands to the crown have been exempted from any future liability under the *Environmental Protection Act,* provided rehabilitation has been done to the satisfaction of the Minister. The "exit ticket" would apply even if future adverse environmental impacts arises from a company's previous acts or omissions.

The provision of "exit tickets" is extremely troubling because it ignores the need for long term monitoring and maintenance of abandoned mine sites. The largest tailings spill in Ontario, for example, occurred thirty six years after the site was closed.[16] Furthermore, contaminants from mining activity such as acid mine drainage is virtually impossible to reverse with existing technology and can continue for centuries. In Great Britain, for example, Roman mine sites continue to generate acid mine drainage 2,000 years after mining operations ceased.[17]

The exemption from future environmental liability will significantly reduce the incentive for these companies to exercise due diligence over their operations. Moreover, it shifts the costs of monitoring and clean-up from those responsible for the contamination onto the taxpayers.

Providing developers with "exit tickets" raises similar concerns such as who should bear the cost of future clean-up if required and the negative impacts "exit tickets" will have on the exercise of due diligence by developers during clean-up of contaminated sites.

Inadequacy of Risk Assessments

The level of clean-up required for contaminated sites is frequently determined by applying risk assessment. A key criticism of the "science" risk assessment is that it involves a complicated series of steps requiring numerous subjective judgements in determining the level of cleanup.[18] For instance, risk assessment procedures involves

many important scientific limitation such as:

- Vast areas of uncertainty, variability and error in areas such as emission estimates, modelling, limited or inappropriate toxicological data, misuse of epidemiological data, problems associated with exposure estimates, health effects or risk estimates, etc. all of which can cause errors in the input data and methods of calculation.

- Uncertainties and/or errors that can result from the extrapolation of high concentration of chemical exposure in small populations as a means of predicting health effects in large populations exposed to lower concentrations of the same chemical.

- Uncertainties and/or errors that can result from the extrapolation of health effects derived from animal studies (both high dose, and short term exposure and low dose, long term exposure) to human health effects.

- A tendency to disregard or be unaware of background sources of exposure to chemicals or be unaware of background sources of exposure to chemicals affecting people or ecosystems resulting in exposures above the threshold values established through risk assessment.

- The ongoing debate within the " science" of risk assessment over which is the most appropriate model to estimate dose-relationships of low level chemical exposures (and the fact that different models yield different results).[19]

The provision of "exit tickets" to developers does not make not make for sound policy given the many unknowns and subjective judgements that arise throughout the application of risk assessment. If the application of the risk assessment criteria proves to be inadequate, developers who saved costs by conducting an inadequate clean-up will not have to bear the cost for any additional remediation. Such an result would not be consistent with the principles of fairness and equity as enunciated in the CCME Recommended Principles. An additional reason for not providing "exit tickets" is that the threat of future liability can be the most effective tool to ensure thorough site remediation by developers.

CCME Recommended Principles

The CCME Recommended Principles on the allocation of liability do not specifically address the issue of developer's future liability for remediated contaminated sites. However, according to the CCME Recommended Principles, developers could be potentially responsible persons as "owners" or "previous owners"[20] From a public interest standpoint, there is no valid policy rationale for

government to limit developers' liability beyond the CCME Recommended Principles.

Common Law

No specific law , statutory or otherwise directed to the issue of liability for the development of contaminated sites. A developer's liability would depend on whether s/he "inherited" an already contaminated site, whether the construction itself causes the pollution or whether the construction aggravates pre-existing problems. In all these cases, the developer's liability will almost always be tortious and subject to established common law principles.[21]

For developers who sell property to purchasers, the general rule of *caveat emptor* applies, subject to certain exceptions. The threat of potential liability for environmental contamination, however, can be a powerful incentive for developers to provide full disclosure to prospective purchasers about the extent and nature of contamination. Accordingly, any statutory or policy limitation on developers' liability for environmental contamination will fundamentally undermine the current common law disclosure requirements.

Property Transfer Law

Developers' disclosure obligations could be strengthened by property transfer laws, similar to those adopted by a number of states in the U.S. The provisions in these laws make the transfer of property contingent upon the discovery, investigation, cleanup and disclosure of the existence of contamination. In fact, a number of states require complete or near complete cleanup before a transfer can occur. The experience in the U.S with property transfer laws is that they have been an effective tool in identifying and initiating voluntary cleanup activities.[22]

Due Diligence

Developers, in contrast to prospective homeowners, are in a better position to access information about and perform site-specific investigations in potentially contaminated sites. Consequently, developers can engage in a cost benefit analysis and make an informed judgement about the merits of proceeding with redevelopment at an early stage of the planning process. If their liability is limited, however, they will have little incentive to be duly diligent in assessing the nature and extent of contamination prior to development. Furthermore, they won't have any incentive to conduct the necessary cleanup.

Moreover, developers often purchase brownfields at significant discounts as a result of the existence of environmental contamination. These developers should not

be allowed to profit unfairly by developing sites and selling them at a premium, unless they have contributed to the costs of remediation. An important motivating factor for developers to conduct site remediation is the potential for future environmental liability. Consequently, limiting liability simply weakens the impetus for developers to exercise due diligence in site remediation.

Finally, the need for limiting liability is questionable since even without such limitations, developers are developing brownfields where they deem it to be a financially profitable venture.

Conclusion

Developers should not be provided "exit tickets" from potential environmental liability in the future, except possibly where clean-up to background levels is completed. Exemption from liability under other circumstances would likely reduce the degree of due diligence exercised during the clean-up of contaminated sites. In addition,"exit tickets" also exempt developers from clean-up costs, if further remediation is required. Providing a blanket exemption to a potentially responsible person would be at odds with the CCME Recommended Principles approach to allocating liability for clean-up of contaminated sites. It is also recommended that consideration be given to developing property transfer laws requiring developers to identify the nature and extent of contamination of brownfields.

III. ESTABLISHING STANDARDS FOR SITE REMEDIATION

i) Site Specific Risk Assessment versus Generic Clean-up Standards

The paper prepared for the Canada Mortgage and Housing Corporation on removing barriers to the redevelopment of contaminated sites for housing, strongly favours a site specific risk assessment/risk management approach to site clean-up, as opposed to standards requiring clean-up to background levels or some other generic standard.[23] Specifically, the report argues that generic remediation criteria are based on sensitive and conservative assumptions with respect to migration pathways and receptors, resulting in over spending on site remediation in terms of achieving and acceptable level of protection for human and ecological health.[24]

Some of the major weaknesses of the site specific risk assessment approach are recognized in the Contaminated Sites Issues in Canada paper prepared by Simcleod consulting. These include:

* the possibility of the emergence of new scientific data indicating that clean-up levels established through a site specific risk assessment process are inadequate to protect human health and the environment, necessitating costly additional remediation work;

* the likelihood that, in general, the site specific approach will result in lower standards of clean-up than the generic standards approach;

* the consideration that public acceptance of determinations of what constitutes "acceptable risk" though risk assessment processes is low; and

* the incomplete clean-up of contaminants from a site resulting in requirements for perpetual containment and management, which may prove costly and difficult to meet over the long term.

A number of other major critiques exist with respect to the use of site specific risk assessment approaches. Risk assessment models used in the development of some generic clean-up standards have themselves been the subject of extensive criticism for being insensitive to the non-carcinogenic and cumulative effects of contaminants, and for failing to consider the situation of particularly sensitive populations, such as pregnant women, and children.[25]

In addition to the resistance of communities and individuals exposed involuntarily to occupational, environmental and health risks to the determinations of the acceptability of risk by scientific and regulatory experts, strong opposition to traditional risk assessment models has emerged from academics and others in the social scientific and humanist disciplines over the past few years. This critique argues

that the structure of conventional risk assessment and management models, such as those proposed in the CMHC, paper mobilize value assumptions in favour of the acceptability of potential risks from technological activities to society.[26]

The use of the site specific approach to standard setting is particularly inappropriate for contaminated site remediation for housing purposes. As noted earlier, the site specific approach tends to result in lower standards of clean-up than a genetic approach. Indeed, the primary rationale for the use of the site specific model is economic, not the protection of human health or the environment. It is use primarily as a tool to rationalize clean-up measures which are less costly and less thorough than might otherwise be employed to achieve appropriate levels of protection for the environment and human health.

The problems associated with the involuntary nature of the acceptability of risks resulting from a site-specific risk assessment approach can only be partially solved by such measures as the establishment of a registry of contaminated sites, and the registration of site contamination and clean-up measures on the title of a property. Such market approaches assume that prospective buyers are in a position to make choices about the acceptability of the risks associated with a particular property.

In reality, many of the contaminated sites being considered for remediation for housing purposes, are intended for social housing purposes. Low income individuals and families are unlikely to be in a position to exercise choices in the marketplace about the location of their housing or the acceptability of the risks associated with a housing site which has been cleaned-up on a site specific risk assessment basis. This clearly raises major issues of social justice, and implies the need for a generic clean-up standard for sites to be used for housing.

The use of a site-specific standard approach clean-up would also be inconsistent with the approaches taken in the United States, and within the European Union.[27]

Conclusion

Consistent with the approach of other OECD jurisdictions, generic site clean-up standards should be established, based on the principle of returning sites to their natural background level of contamination. The need for stringent standards is particularly important in the context of the redevelopment of lands for housing purposes. The processes for developing remediation policy and for setting remediation standards for clean ups also should ensure meaningful public participation throughout the process.

ii) The Need for a Registry of Contaminated Sites

Introduction

The lack of information about the number and nature of the contaminated sites in Canada has been a significant factor hindering the redevelopment of brownfields.[28] Furthermore, the information which currently exists is not stored systematically at a central location. The various data bases that do exist do not relate to one another.[29] Consequently, obtaining information from various government agencies is often a cumbersome and complicated process.

Common Law

There is no statutory or common law obligation for a vendor to disclose to a purchaser any environmental problems relating to a site.[30] The common law rule of *caveat emptor*, or buyer beware, governs real estate transactions. Although there are important exceptions to the *caveat emptor* rule, the general basis of real estate transactions is that a purchaser must be wary of buying property which could be contaminated.[31]

A prudent developer therefore should take steps to protect him or herself from incurring further environmental cleanup costs by including in the contract of purchase and sale express warranties about the condition of the property. For instance, a developer who wishes to investigate the possibility of toxic contamination of a property should include this condition in the contract of purchase and sale. In other cases where the risks are not known, however, it is not always feasible for a developer to undertake a full site investigation prior to entering into a contract. Unfortunately, the result is often that developers buying brownfields have to bear the risk of any environmental hazards on the property.

Rationale for a Contaminated Sites Registry

The Task Force of the Financial Services Program of the National Round Table on the Environment and the Economy (NRTEE) has identified site-specific information as a management tool that would not only help identify past contamination, but would also prevent further contamination.[32] It is beyond the scope of this paper to identify the type of information which should be stored in a contaminated sites registry. However, a comprehensive data system would require, at a minimum, the inclusions of relevant and regularly updated information about the environmental conditions of a site from the federal, provincial and municipal governments. In fact, several industrialized countries have already compiled inventories of potentially contaminated sites.[33]

Some of the compelling policy rationales for establishing a registry include:

- ensuring the public's right to know. If corporations cause pollution, the public has a right to know what kind, where and how much.[34] Contaminated sites pose health and safety risks for persons working on or living near them from direct contact with contaminates or the consumption of contaminated garden produce.[35]

- providing for a systematic approach to the planning process at an early stage,[36] thereby allowing developers to better assess cleanup costs. Site-specific data allows developers and prospective purchasers to make informed decisions about a site. Potential developers would have the necessary information to determine the appropriate use for the land. In addition, prospective purchasers would have better access to information, which would assist in making purchasing decisions and reduce the cost of performing site assessments.

- improving site-specific data about environmental conditions, thereby enabling lending institutions to assess the credit risk of a borrower and develop their environmental risk management strategies; and

- assisting regulators in fulfilling their statutory duties to locate sources of pollution and ensure environmental protection.

Conclusion

A contaminated sites registry accessible to the general public should be established. The database should include comprehensive data about the environmental quality of sites identified as contaminated by the federal government, and provincial, territorial, aboriginal and municipal agencies. In addition, a record of any remediation work conducted on a site should be registered on the title to the land in question. More generally, provisions need to be made for public participation and public accountability in decision-making the remediation of contaminated sites.

IV. AVOIDING FUTURE PROBLEMS

i) Promoting Pollution Prevention

Introduction

The paper prepared by slmcleod appropriately focuses on the importance of the prevention of future contamination. However, the paper argues that pollution prevention can be promoted by reducing reliance on "command and control" regulatory requirements. Rather, governments should rely more heavily on "market-based" instruments which provide incentives for more innovative approaches. This apparently would include both voluntary programs and the use of economic policy instruments. The paper argues that "command and control" regulations often result in government being prescriptive or restrictive in a way that inhibits individual and innovative solutions.[37]

These conclusions are based on a number of false premises with respect to the relationship between regulation and innovation, and current regulatory program design in Canada, and fail to recognize the structural differences between voluntary programs on the one hand, and the use of economic instruments on the other.

Regulation, Innovation and Pollution Prevention.

The presumption that regulatory instruments are necessarily barriers to innovation, particularly in the field of pollution prevention, contradicts the growing body of literature which argues that well-designed public welfare regulations can enhance the competitive position of the affected firms by triggering innovation and upgrading.[38] Domestic standards that anticipate international trends are considered to be particularly beneficial, as they can assist in giving domestic firms a lead in developing products which will be valued in other markets.[39] Conversely, it has also been noted that jurisdictions that lag behind competing jurisdictions in their requirements often lose their domestic markets for the affected products to foreign suppliers.[40]

Furthermore, Canadian governments have not relied on prescriptive design as opposed to performance-based regulations, particularly over the last decade. In Canada, most recent Ontario and federal environmental regulations, such as the provincial MISA and Countdown Acid Rain program regulations, and the federal Pulp and Paper Chlorinated Effluent[41] and Ozone Depleting Substances Regulations[42] made under CEPA, have been drafted as performance rather than design standards. Furthermore, in some cases the use of design standards may be required to ensure the protection of safety, health or the environment.

In addition, some of the most environmentally and economically successful

pollution prevention programs in the United States, such as those implemented in Minnesota, Massachusetts and New Jersey, have been implemented through requirements established by regulation.

Voluntarism

The evidence regarding the effectiveness of voluntary environmental initiatives in Canada to date is extremely limited. However, in a 1996 survey by KPMG Management Consultants, only twenty-five per cent of respondents indicated that voluntary programs had been a factor in the establishment of environmental management systems within their organizations. In contrast, more than ninety per cent cited regulatory requirements as a motivating factor.[43] These results were consistent with the outcomes of KPMG's 1994 survey.[44] In addition, more formal evaluations of major voluntary initiatives, such as the Voluntary Challenge and Registry Program, which is the centrepiece of Canada's carbon dioxide emissions control strategy, and the National Packaging Protocol, which is intended to reduce packaging waste by fifty per cent by the end of the century, have revealed disappointing results.[45]

Furthermore, the Canadian federal government's use of voluntary agreements is inconsistent with the approach taken by other Organization for Economic Cooperation and Development (OECD) jurisdictions. In the case of the United States, for example, voluntary pollution prevention programs are employed as a supplement to a comprehensive environmental regulatory framework. The U.S. Environmental Protection Agency's 33/50 industrial toxics substances release reduction program is based on statutory reporting requirements related to the Toxics Release Inventory and does not involve formal industry-government agreements.[46] In the Netherlands, individual firms' "voluntary" commitments are written into their formal environmental approvals.[47]

ISO 14000

The Simcleod paper also stresses the significance of environmental management standards in the prevention of future pollution. However, the impact of the ISO 14000 process on pollution prevention is likely to be limited. The ISO 14001 definition of pollution prevention is inconsistent with that adopted by the government of Canada[48] and the Canadian Council of Ministers of the Environment,[49] in that it includes reference to end-of-process pollution control in the definition of pollution prevention. In addition, the ISO standards only require the existence of environmental management systems. They do not require any specific levels of environmental performance, and certification under the standards does not guarantee that firms have actually complied with environmental laws.[50] Concerns have also been expressed about the openness and accessibility of the ISO standards development process, and the ISO program's potential implications for environmental standards under international trade law.[51]

Economic Instruments

The slmcleod paper notes that environmental organizations have been skeptical about the rationale for the use of "market based" environmental policy instruments. In fact, environmental organizations in Canada have strongly supported the use of certain types of economic instruments, such as deposit-refund systems and the application of environmental charges and fees, as supplements to regulatory requirements. Environmental organizations have also strongly supported the removal of subsidies for environmentally unsustainable and environmentally damaging activities, such as mining and fossil fuel extraction and utilization.

However, environmental organizations, and others have been more skeptical regarding market creation economic instruments, such as emission trading schemes. Trading systems require extensive and complex administrative, monitoring and enforcement structures, and their potential environmental and economic effectiveness, even when such mechanisms are in place, is the subject of continuing debate.[52] Furthermore, experience with emission trading systems is extremely limited, making it difficult to assess their likely effectiveness.

In addition, serious concerns have been identified regarding the problem of "local loading" with emission trading schemes. These considerations render trading systems an inappropriate instrument for the management of substances known to have direct environmental or human health effects.[53] For similar reasons, it has been argued that emission trading schemes should only be considered for emissions for which there is near perfect mixing, such as carbon dioxide.[54]

Economic instruments have already been employed by a number of OECD jurisdictions in relation to contaminated site remediation and have been proposed for this purpose in Canada.[55] The most commonly employed instrument is the imposition of fees on the use or manufacturing of hazardous chemicals. The resulting revenues are dedicated to a cleanup fund for orphan sites. This mechanism also provides incentive for pollution prevention by encouraging reduction in toxic chemical manufacturing and use. A structure of this nature has provided a significant portion of the funds for the U.S. federal Superfund program, as well as many state "superfund" programs.[56] It was also recommended by the Ontario Fair Tax Commission.[57]

ii) The Role of Financial Institutions in Avoiding Future Problems

The concept of sustainable development requires that the true costs of business activities, including the costs of environmental compliance, should affect the ability of businesses to raise capital and conduct operations. Responsible business practices

in lending and investing must be encouraged, for these can be extremely efficient and effective private sector means of enforcing environmental obligations and policing environmental compliance. Furthermore, the concerns of financial institutions about environmental liability provide great incentive to this industry sector to make institutional changes that direct investment away from environmentally-harmful activities in order to achieve sustainable development.

In fact, one could argue that, as a direct result of concerns over "lender liability" Canada's banks have developed and routinely engage in a number of environmentally responsible investment and lending practices, including the following:

* using environmental risk assessment questionnaires to evaluate the credit worthiness of potential borrowers;

* requiring Phase 1 site assessments and various types of environmental audits as part of their due diligence; and

* imposing ongoing requirements on borrowers such as environmental compliance and monitoring programs in order to protect the value of their security.

Other practices, such as requiring borrowers to have in place adequate environmental insurance, also have the potential to both safeguard lending institutions and enhance environmental protection.

Without the threat of environmental liability, it is unlikely that banks would have adopted these kinds of practices. In fact, banks have developed techniques for assessing the environmental risk of potential borrowers, much as they do for evaluating financial credit worthiness. In addition, they have also been effective in promoting environmental compliance, monitoring and pollution prevention among borrowers. Indeed, the amendments made in September 1996 to the U.S. *Comprehensive Environmental Response, Liability and Compensation Act* to provide exemptions from environmental liability for lenders have been strongly criticized for removing incentives to financial institutions to promote environmentally responsible activities among those to whom they make loans and provide investments.[58]

V. CONCLUSIONS

The question of the remediation of contaminated sites raises a range of complex public policy issues, including the allocation of the costs of externalities associated with past economic activities, the establishment of appropriate standards for site remediation, and the prevention of future contamination. These questions should be dealt with through a comprehensive policy framework, rather than in isolation.

The need for a comprehensive framework is particularly important in the context allocating responsibility for the costs of remediation. In recent years governments have been tending towards granting particular sectors exemptions for liability. In the absence of a more comprehensive policy structure, this approach leads to the possibility that, in many cases, it will be impossible to assign liability to any party, resulting in situations where sites will either remain unremediated, or will have to be remediated using public funds.

Whenever possible, governments should seek to impose liability for the costs of site remediation on those responsible for the contamination, or on those who have benefitted directly from it. The socialization of the costs of site remediation should be avoided to the greatest extent possible, although the definition of polluter may be narrowed in certain instances to reflect the fact that not all parties should be held equally responsible in every situation.

The liability of one or more particular groups *as a group*, e.g., lenders and secured creditors, should not be considered in isolation from the liability of other potentially responsible parties. Furthermore, any type of limitation considered should be in the form of a defence (e.g., for due diligence) rather than an exemption. In other words, the approach should be to provide lenders or other parties with a "due diligence" defence to limit their liability, provided they are able to demonstrate that they have met the prescribed criteria.

Joint and several liability should remain as a "backdrop" to any allocation scheme, negotiated or otherwise, not only to assist in bringing all the parties to the table, but also to provide these parties with an incentive to reach agreement on their respective shares of responsibility for clean up. Without such a backdrop, responsibility for clean up may fall unfairly on the taxpayer. Consideration should also be given to the establishment of a remediation fund for "orphan" sites, funded at least partially through taxes and charges on activities such as the generation and use of toxic substances historically associated with site contamination.

Governments should avoid granting permanent exemptions from future liability for site remediation, except possibly where sites have been fully remediated to background levels of contamination. The granting of such exemptions is particularly

inappropriate for sites which have been remediated on the basis of site specific risk assessment. Such sites are likely to remain contaminated to some degree, raising the possibility of the need for future remediation work or some form of perpetual care. Similarly, exemptions for future liability should not be provided in cases of sites are known to require perpetual care. These would include abandoned mine sites subject to acid mine drainage, or abandoned aggregate extraction sites where the site extends below the water table.

The proposed use of site specific risk assessment in the establishment of standards for site remediation is problematic for a number of reasons, particularly in the context of the future use of land for residential purposes. The site specific approach tends to result in lower standards of clean-up than a genetic standards model. Indeed, the primary rationale for the use of the site specific model is economic, not the protection of human health or the environment. It is a tool to rationalize the use of clean-up measure which are less costly, and less thorough than might otherwise be employed to achieve appropriate level of protection for the environment and human health.

The use of a site specific approach to clean up land for social housing also raises a number of serious social justice issues, as the occupiers of such housing are likely to be unable to make choices regarding the acceptability of the risks associated with a formerly contaminated site in the marketplace. In a manner consistent with the approach of other OECD jurisdictions, sites intended for residential use should be remediated to a generic standard, preferably based on restoration to background or natural levels of contamination.

More broadly, provision must be made for public participation in the standard setting and decision-making regarding contaminated sites. A contaminated sites registry accessible to the general public should be established to improve accountability and public access to information in decision-making. The registry should include comprehensive data about the environmental quality of sites, and any remediation measures taken in relation to a given site.

The prevention of future problems should be a central consideration in the development of site remediation policy. The end result should encourage voluntary cooperation between responsible parties and government, environmentally-responsible business activities and the most efficient use of private and public sector resources. The reduction of the use of practices and substances associated with site contamination should be a central goal. This an be achieved through the establishment of pollution prevention measures promoted through regulatory requirements, the use of economic instruments, such as the imposition of taxes and charges on the generation of hazardous wastes or the use of toxic substances, the establishment of public reporting structures such as the National Pollutant Release Inventory, and measures undertaken by industry on its own initiative.

Finally, the development of environmental liability policies that provide incentives to financial institutions to direct investment away from environmentally unsustainable activities will also be central to the prevention of future incidents of site contamination. In this context, the amendments made in September 1996 to the U.S. *Comprehensive Environmental Response, Liability and Compensation Act* to provide exemptions from environmental liability for lenders have been strongly criticized for removing incentives to financial institutions to promote environmentally responsible activities among those to whom they make loans and provide investments.

APPENDIX 1

Comments on workshop background paper: *Contaminated Sites Issues in Canada*

The following is a point form summary commentary on: Contaminated Sites Issues in Canada.

Overall, general comments on paper

- lacks historical context
- degree of certainty proposed is impossible (also admits uncertainties, yet argues for greater certainty and less flexibility for governments throughout the paper, both in terms of the legal regime and in terms of the use of risk assessment in site remediation)
- oversimplifies legal issues and role of regulators, no discussion of civil liabilities
- voluntarism section is problematic - absolutely need a regulatory backdrop
- why is "essential" section (public participation) at the end?
- needs updating in some areas
- does not adequately address the interplay between and integration of environmental and land use planning issues
- does not discuss government roles (particularly of municipalities) and use of resources, or address issue of need for comprehensive policy development package
- doesn't adequately explore private sector response to issues - e.g., new and effective ways of managing risks and insurance products (threat of liability is great impetus in this regard)

Executive summary, Societal costs
p. iii: disagree with statement that a few short years ago there was broad acceptance that social costs should be borne by governments; discussion of no-fault shares destroys notion of orphan sites

3.0 The allocation of liability

p. 9: reference to jurisdictions that may go after deepest pockets - what evidence is there?
p. 10: odd characterization of judicial system (i.e., that requires parties to give up control over decision making) - what about legal principles and certainty? See also bottom of page 11 with respect to statement that voluntary and mediated approaches enhance fairness.
p. 11: what makes good scientific sense is not always in line with public

perceptions and political decisions are often responsive to public perceptions is inaccurate; the phrase "sharing the unfairness" is misleading
p. 12: true re: dispute about definition of polluter between ENGOs and industry?
p. 13: disagree that lenders may justly argue that they have had no direct influence on operating decisions - must be decided on a case-by-case basis
p. 14: approach to lenders should be applied to all PRPs, e.g., liability for exercise of ownership, control or contribution to contamination; disagree with second bullet of Issue summary re: joint and several liability reducing voluntary participation, earlier said brings parties to table and that small businesses prefer it as a levelling factor.
p. 15: where is deep pockets used (see also above)?; last bullet problematic about the legal system - oversimplified and potentially misleading characterization

Section 4.0 How clean is clean?

p. 16: derogatory statement that the public is not always predictable in behaviours or desires (the whole paragraph is problematic) - acknowledges that issues are complex, but wants certainty!
p. 17: why is public perception contrasted to reality?
p. 18: first paragraph - does not discuss long-term effects of contamination; says consensus on best practices emerging and that public is left behind, but then contradicts with statement that risk assessment is art not science!

5.0 Funding orphan site clean up

p. 21: totals spent were far below totals allocated to NCSRP
p. 22: true that government was prepared to pay all at the outset?; orphan share description is inconsistent with joint and several liability
p. 24: dismissal of Superfund oversimplified and inaccurate

6.0 Properties and operations in bankruptcy

pp. 26-27: true re: acceptance of amendments? Some amendments are very problematic as well - e.g., lenders do not support recovery of public funds provisions!

7.0 Brownfield sites

p. 31: no analysis/critique of issues, e.g., lender liability agreements

8.0 Societal costs

p. 32: does not discuss the issue of relative benefit, i.e., who benefitted most; disagree that five years ago "there was a fairly broad acceptance that government

should step in and pay for the clean up of orphan sites..."
p. 33: true that environment is a lower priority - what source and how much lower?; again, the mention of public willingness to pay for clean up is open to question; increased business profits not logical basis for imposing liability
pp. 33-34: re: no fault shares - who decides how many get, is the process voluntary?
p. 34: questions the beneficiary pays principle endorsed by CCME

9.0 The role of insurance

p. 36: insurers as deep pockets - on what basis if they are found to be polluters - again, question the characterization and use of the deep pockets approach?
p. 37: terminology should be *certification* of environmental auditors, not *accreditation*; ASAC is AESAC (E = Environmental)
p. 38: no discussion of costs of insurance; second bullet under Summary of issues is simplistic about inconsistent enforcement across the country; unclear re: relation between site assessors and auditors - this area is not well-researched.

10.0 The prevention of future contamination

p. 39: pollution prevention also requires up-front cost; does not define full-cost pricing (lose use of terminology)
p. 40: completely omits the problems relating to voluntarism! ISO 14000 is not performance based; confuses full cost and internal pricing
p. 41: unclear re: what is meant by need to define future regulatory regime soon

12.0 Public participation
p. 45: although says public participation is "essential" in introduction, places it last!; characterizes public as cautious in a negative way, which contradicts idea in first paragraph about scientific uncertainties
p. 46: risk assessment is presented as a *fait accompli*, but elsewhere acknowledges the "art" of it and the uncertainties
p. 47: re: public can overcome its skepticism - negative connotation that this is without basis!

ENDNOTES

1.See, for example, coorespondence to S.McLead, Director, Strategic Projects, CCME, from M. Winfield, Director of Research, CIELAP, Re: Funding of the Remediation of Orphan Contaminated Sites, April 28, 1994.

2.See letter to Advisory Committee on Environmental Standards (Ontario) from K.Cooper, P.Muldoon, and M.Winfield, Re: Consultation on Site Assessment and Clean-Up, October, 13, 1994.

3.See G.Ford, D.Macdonald, and M.Winfield, "Who Pays for Past Sins? Policy Issues in Contaminated Site Remediation in Canada," Alternatives, September/October 1994.

4.Industry generally argues for forward-looking liability and endorses the polluter pays principle in this regard with a tax on waste. For example,

> *"without a thoughtful approach to dealing with abandoned sites, the costs to industry will become substantial, relative to the benefits to society. In the United States, for instance, companies spent $12 billion in 1990 to comply with hazardous-waste regulation, the equivalent of over 6% of investment in the manufacturing industry. One of the hardest aspects of environmental policy is to persuade the public that the costs of eliminating risks rise sharply as the risks diminish. Yet for the money Americans will spend on cleaning up old sites, more lethal and irreversible environmental problems could be tackled. Revenge is rarely a sound basis for policy."* ("Cleaning up old pollution", *The Economist*, February 29th 1992, p. 18)

5.42 U.S.C. 9601-9675

6.*U.S. v. Northeastern Pharmaceutical and Chemical Company Inc.*, 810 F.2d 726 (8th Cir. 1986)

7.*U.S. v. Monsanto Company*, 28 E.R.C. 1177 at 1188

8.Ontario Regulation 504/95.

9.Ministry of Environment and Energy, Press Release December 18, 1995.

10.Bill C-109, November 24, 1995.

11.Dianne Saxe, Contaminated Land, a draft working paper in the Protection of Life series released by the Law Reform Commission of Canada, March 1990.

12.Task Group on Contaminated Site Liability, Report to CCME Ministers on Contaminated Site Liability (Winnipeg, CCME Secretariat, March 1993).

13.The polluter pays principle requires that polluters bear the costs of pollution prevention and control measures (both preventative and restorative) established by public authorities to ensure that the environment is in an acceptable state (synopsis of the *OECD Recommendation on the Implementation of the Polluter-Pays Principle*, November 14, 1974).

14.The *Comprehensive Environmental Response, Compensation and Liability Act* (CERCLA).

15.For example, the U.S Superfund and, to a much lesser extent, the National Contaminated Sites Remediation Program. A number of problems have been identified with Superfund; one of the most common criticisms of the American experience is that the costs of protracted litigation to resolve liability issues are excessive.

16.*R v. Matachewan Consolidated Mines Ltd.* 9 C.E.L.R (N.S) (July 14, 1992) 26 (Ont. Prov. Div.)
unreported.

17.Fact Sheet# 1, B.C Mining Watch, *Acid Mine Drainage: The Perpetual Pollution Machine*

18.See letter to Advisory Committee on Environmental Standards (Ontario) from K.Cooper, P.Muldoon, and M.Winfield, Re: Consultation on Site Assessment and Clean-Up, October, 13, 1994.

19.Ibid., pp. 2-3.

20.Core Group on Contaminated Site Liability, Contaminated Site Liability Report - Recommended principles for a Consistent Approach Across Canada (Winnipeg, CCME Secretariat 1993).

21.S. Bright, "Developing Contaminated Land; The Environmental and Legal Challenges," (1991)
The Conveyances and Property Lawyer, Volume 1991 July/ August at pp. 265.

22.E.G. Geltman, "Recycling Land: Encouraging the Redevelopment of Contaminated Property," Natural Resource and the Environment (Spring, 1996).

23.Delcan in association with Golder Associates and McCarthy Tétrault, Removing Barriers to the Redevelopment of Contaminated Sites for Housing (Ottawa: Canada Mortgage and Housing Corporation, August 1996), pg. 38.

24.Ibid., pg.30.

25.See letter to Advisory Committee on Environmental Standards (Ontario) from K.Cooper, P.Muldoon, and M.Winfield, Re: Consultation on Site Assessment and

Clean-Up, October, 13, 1994.

26.See, for example, C.Brunk, L.Haworth, and B.Lee, Value Assumptions in Risk Assessment: A Case Study of the Alachlor Controversy (Waterloo: Wilfred Laurier University Press, 1991). See also M.Winfield, "The Use of Risk Assessment in Environmental Policy Decision-Making," in M.D. Mehta, ed., Regulatory Efficiency and the Role of Risk Assessment, (Kingston: School of Policy Studies, February 1996).

27.See Delcan et. al., Removing Barriers to the Redevelopment of Contaminated Sites for Housing, pp.26-27.

28.W. Braul, J. Russel and W.J Andrews, Toxic Real Estate in British Columbia: Identification of Issues (Vancouver, West Coast Environmental Law Research Foundation 1989).

29.Improving Site-Specific Data on the Environmental Condition of Land, NRTEE, September 9, 1996 at p.1. See also D. Saxe, A Buyer's Guide to Contaminated Land, (Toronto, Emond Montgomery Publications Limited, 1994 at p.95).

30.In contrast, many states in the U.S. have some form of state property transfer legislation. The extent of disclosure required varies across the states. Some states simply require disclosure of the environmental condition of a site, while others require more extensive site investigation. The development of business transfer laws was initiated by the enactment of the New Jersey *Environmental Cleanup Responsibility Act.*

31.W. Braul, Toxic Real Estate in British Columbia: Liability (Vancouver: West Coast Environmental Law Research Foundation, 1989) at p.11.

32.Improving Site-specific Data on the Environmental Condition of Land at p.1.

33.A. Watson, "Britain's Toxic Legacy: The Silence over Contaminated Land," (1993), The Ecologist, Vol 23, No. 5 September\October at pp. 174.

34.N. Zimmermann, M. M'Gonigle and A. Day "Community Right to Know: Improving Public Information about Toxic Chemicals" (1995) Journal of Environmental Law and Policy, at pp.134-135.

35.A. Watson, "Britain's Toxic Legacy: The Silence over Contaminated Lands," p.175.

36.Ibid., at p.174.

37.slmcleod consulting, Contaminated Sites Issues in Canada, pp.39-40.

38.See, for example, M.Porter, The Competitive Advantage of Nations (New York: The Free Press, 1991), pp.647-649.

39.M.Porter and the Monitor Co., Canada at the Crossroads (Ottawa: Business Council on National Issues and Minister of Supply and Services, 1991), p.244.

40.Ibid.

41.*Pulp and Paper Mill Defoamer and Wood Chip Regulations*; SOR/92-268 (Gaz. 20/5/92, p. 1955) and *Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations*; SOR/92-267 (Gaz. 20/5/92, p. 1940).

42.*Ozone-depleting Substances Regulations No.1,2,3 and 4.*
No. 1; SOR/89-351 (Gaz. 19/7/89, p. 3425).
No. 2; SOR/90-583 (Gaz. 12/9/90, p. 3735).
No. 3; SOR/90-584 (Gaz. 12/9/90, p. 3720).
No. 4; SOR/93-214 (Gaz. 19/5/93, p. 2243).

43.KPMG 1996 Canadian Environmental Management Survey (Toronto: KPMG Management Consultants, 1996).

44.KMPG 1994 Canadian Environmental Management Survey (Toronto: KPMG Management Consultants, 1994)

45.On the Climate Change Voluntary Registry Program see Canada's Voluntary Challenge and Registry Program: An Independent Review (Drayton Valley: Pembina Institute for Appropriate Development, November 1995). On the National Packaging Protocol see D.Israelson, "We're all boxed in," The Toronto Star, April 22, 1996, citing S.Labatt, Corporate Response Toward Environmental Issues: A Case Study of Packaging (Toronto: Ph.D. Thesis, Department of Geography, University of Toronto, 1995).

46.See K.L. Clark, The Use of Voluntary Pollution Prevention Agreements in Canada: An Analysis and Commentary (Toronto: Canadian Institute for Environmental Law and Policy, 1995), pp.21-26.

47."Declaration of Intent on the Implementation of Environmental Policy for the Chemical Industry," (The Hague, Government of the Netherlands, April 1993), s.9(c). For a commentary on the Netherlands covenants program, see "The Little Country That Could," Terrascope, Winter, 1995-96.

48.See, Pollution Prevention Strategic Framework (Ottawa: Environment Canada, July 1995).

49.A Strategy to Fulfil the CCME Commitment to Pollution Prevention (Winnipeg: Canadian Council of Ministers of the Environment, May 1996).

50.Ibid., p.16.

51.For a detailed critique of the ISO Environmental Management Standards process see Benchmark Environmental Consulting, ISO 14000: An Uncommon Perspective - Five Questions for Proponents of the ISO 14000 Series (Brussels: The European Environmental Bureau, October 1995).

52.On problems with emission trading schemes see, M.Winfield and B.Heidenreich, "Sustainable Development, the Law and Public Policy," in J.Swaigen and D.Estrin, eds., Environment on Trial: A Guide to Ontario Environmental Law and Policy (Toronto: Emond-Montgomery Publishers and the Canadian Institute for Environmental Law and Policy, 1993); L.Nowland and C.Rolfe, Economic Instruments and Environmental Protection: Selected Legal Issues (Vancouver: West Coast Environmental Law Research Foundation, 1993); and M.Winfield and B.Rutherford, "CEPA and Economic Instruments," in M. Winfield ed., Reforming the Canadian Environmental Protection Act: A Submission to the House of Commons Standing Committee on Environment and Sustainable Development (Toronto: Canadian Institute for Environmental Law and Policy, 1994).

53.Mark A. Bernstein, Alexander E. Farrell, James W. Winebrake, The Clean Air Act's SO2 Emissions Market: An Estimate of Regulator Restrictions and Market Uncertainty (Energy Management and Policy Program, University of Pennsylvania, February 16, 1993).

54.See Winfield and Rutherford, "CEPA and Economic Instruments."

55.For a more detailed discussion on this point, see Ford, Macdonald, and Winfield, "Who Pays for Past Sins?."

56.W.Braul, "Review of Financing Options in the United States," presentation to CCME Core Group on Environmental Liability, June 21, 1993.

57.Fair Tax Commission, Fair Taxation in a Changing World (Toronto: University of Toronto Press, 1993), pg. 559.

58.See, for example, William S. Buzbee, "CERCLA's New Safe Harbour for Banks, Lenders and Fiduciaries," ELR News & Analysis 12-92, pp.10656-10663 (attached).