



NATIONAL ROUND TABLE ON THE ENVIRONMENT AND THE ECONOMY
TABLE RONDE NATIONALE SUR L'ENVIRONNEMENT ET L'ÉCONOMIE

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Backgrounder



Contaminated Site Issues in Canada

National Round Table
on the Environment
and the Economy



Table ronde nationale
sur l'environnement
et l'économie

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Backgrounder



Contaminated Site Issues in Canada

Prepared by smcleod consulting under the direction of the NRTEE's Financial Services Task Force.

The views expressed herein are those of the authors and editors, and do not necessarily represent those of the National Round Table or its members.

Mandate

The National Round Table on the Environment and the Economy (NRTEE) was created to “play the role of catalyst in identifying, explaining and promoting, in all sectors of Canadian society and in all regions of Canada, principles and practices of sustainable development.” Specifically, the agency identifies issues that have both environmental and economic implications, explores these implications, and attempts to identify actions that will balance economic prosperity with environmental preservation.

At the heart of the NRTEE’s work is a commitment to improve the quality of economic and environmental policy development by providing decision makers with the information they need to make reasoned choices on a sustainable future for Canada. The agency seeks to carry out its mandate by:

- advising decision makers and opinion leaders on the best way to integrate environmental and economic considerations into decision making;
- actively seeking input from stakeholders with a vested interest in any particular issue and providing a neutral meeting ground where they can work to resolve issues and overcome barriers to sustainable development;
- analyzing environmental and economic facts to identify changes that will enhance sustainability in Canada; and
- using the products of research, analysis and national consultation to come to a conclusion on the state of the debate on the environment and the economy.

The NRTEE’s state of the debate reports synthesize the results of stakeholder consultations on potential opportunities for sustainable development. They summarize the extent of consensus and reasons for disagreement, review the consequences of action or inaction, and recommend steps specific stakeholders can take to promote sustainability.

Members of the National Round Table on the Environment and the Economy

The NRTEE is composed of a Chair and up to 24 distinguished Canadians. These individuals are appointed by the Prime Minister as opinion leaders representing a variety of regions and sectors of Canadian society including business, labour, academia, environmental organizations, and First Nations. Members of the NRTEE meet as a round table four times a year to review and discuss the ongoing work of the agency, set priorities, and initiate new activities.

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Preface

Sites that have been contaminated from petroleum products, manufacturing wastes, land-fill operations and radioactive material pose a significant threat to human health and the natural environment, and jeopardize future opportunities for economic development of those sites.

Despite the dangers of contamination, little is known about the full nature and size of the problem in Canada, complicating planning and budgeting for the clean-up and management of these sites. In addition, inconsistency in regulations set by the provinces and territories on how liability for contaminated sites is allocated has led to uncertainty for developers, lenders, the public and governments. Inconsistencies in criteria for site clean-up, the lack of appropriate mechanisms for ensuring clean-up of “orphan” sites, and confusion about the role of insurance in environmental protection have also impeded redevelopment. Work is required on initiatives that will support pollution prevention, promote communication and understanding among the many interested parties, and bridge the information gap between technical experts and members of the public.

Recognizing the need for research and discussion on this issue, The National Round Table on the Environment and the Economy (NRTEE) has undertaken a Financial Services Program. The purpose of the Program is to consolidate information on brownfield redevelopment and other contaminated sites, and to improve data on site-specific information about the environmental condition of land.

This backgrounder analyzes broad areas of concern relating to contaminated sites and sets the stage for more detailed work. As a complement to this study, the Financial Services Program has produced three additional backgrounder reports: *The Financial Services Sector and Brownfield Redevelopment*, *Removing Barriers: Redeveloping Contaminated Sites for Housing* and *Improving Site-Specific Data on the Environmental Condition of Land*. All are designed to stimulate thought and discussion among Canadian stakeholders during the subsequent phases of the NRTEE Program on Financial Services — including workshops and production of a state of the debate report on the issue.

The report was prepared by *slmcleod consulting*, under the direction of the NRTEE Task Force for the Financial Services Program. While it is the result of substantial research and consultation, the authors accept full responsibility for their interpretation of the issues. The content of the report does not necessarily represent the position of the NRTEE or the organizations interviewed.

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Executive Summary

There are thousands of contaminated sites in Canada. The contamination has arisen from private sector industrial activities or public sector public works or defence activities. Petroleum, petrochemicals, heavy metals, wood preservatives, farm or forestry chemicals and radioactive materials are common contaminating materials. Soils and ground water bear the brunt of the immediate effects, but there are often significant related threats to human health and to the natural environment. This, plus the hindrance to future development opportunities caused by uncertainties in the present regulatory regimes, provides adequate reason for a focused effort to resolve the wide range of issues related to contaminated sites.

The Financial Services Task Force of the National Round Table on the Environment and the Economy has assumed the task of investigating the broad issues related to contaminated sites and of generating ideas for the resolution of two of the more critical ones. The availability of site-specific information on contaminated sites and an investigation into the barriers to the redevelopment of brownfield sites and how those barriers could be overcome are the subjects of other papers commissioned by this Task Force. This paper reviews the broad issues and the context for the detailed work being undertaken on site-specific information and brownfields.

Information Needs — The nature and size of Canada's problems related to contaminated sites are not well known. This complicates planning and budgeting for their clean-up or management, particularly in these times of tight financial resources. There is no agreement on the environmental or health significance of small, residential contaminated sites. Consequently, little or no information is being collected on these properties. Existing information on contaminated lands is not cross-referenced to land registry systems, nor are databases presently in use in Canada compatible or easily accessible to allow the sharing of information among regulators, developers or members of the public. Finally, current budgets demand that clean-up and management priorities be set carefully so that the best effect can be obtained from the limited money available. Available site characterization data are insufficient to support this.

The Allocation of Liability — Regulatory inconsistency among the provinces and territories in the way liability is allocated emerges as a significant concern. Different approaches, or in some cases a lack of a clear approach, to the use of the "fairness" and "polluter pays" principles, the application or non-application of a "deep pockets" approach, the use of joint and several liability, the application of prospective and retroactive liability, and the use of an initial broad or narrow net of liability have led to uncertainty for developers, lenders, the public and governments. Specific guidance is required respecting whether and how lenders or directors and officers should be included in liability allocation processes.



Much work has been done on developing and exploring the various available approaches. The most important needs are for more uniformity among the various jurisdictions in the determination of liability and a greater overall commitment to reduce the need for litigation.

How Clean is Clean? Resolution of this question is important for the initial designation of a site, for setting priorities for clean-up among several sites and for determining what constitutes a "clean" site. There is debate on whether clean-up standards should be common across the country or should be responsive to local conditions, needs and priorities. This debate will need to be resolved, and all major interests should be involved in that resolution. Risk assessment is emerging rapidly as a technically acceptable approach; however, the public lacks comfort with it at this time. As management and containment options for site remediation gain in acceptance, special efforts will be required to ensure that unreasonable obligations are not placed on future generations. Finally, whether certificates of compliance should be issued for properly completed remediation remains an issue lacking a uniform response across the country.

Funding Orphan Site Clean-up — Canada has a number of orphan contaminated sites, sites for which no viable responsible parties can be found. These sites need clean-up or management to varying degrees, but since the expiry of the National Contaminated Sites Remediation Program there has been no dependable mechanism in most of the country to ensure that such clean-up occurs. If a mechanism is not developed, orphan sites may remain in their present state with a possible consequent threat to the environment or human health. A complication in the debate is the existence of orphan shares of sites, or elements of contamination for which a responsible party cannot be found. An appropriate funding mechanism may involve multiple parties. The management structure for any fund should reflect the sources of that fund.

Properties and Operations in Bankruptcy — A number of amendments to the *Bankruptcy and Insolvency Act* have been considered by the House of Commons. These changes relate to the personal liability of receivers, responses that a receiver can make to a post-appointment clean-up order, and how public funds expended on clean-up may be recovered from bankrupt properties.

While there is fairly broad support for the type of changes proposed, not all stakeholders or governments are in accord. Unrelated amendments were proposed and passed by the House of Commons and also by the Senate. *Bill C-5* was given Royal Assent during April 1997. The environmental provisions are likely to take effect in the early autumn of 1997.

Brownfield Sites — Many cities in Canada have abandoned or idle commercial or industrial lands that are contaminated, making them more difficult to redevelop. There are many reasons for returning this land to productive use, including the fact that most brownfields are already close to services and are, therefore, easier to develop than new sites, that inner cities benefit from such rejuvenation, and that tax revenues can be restored and urban sprawl can be avoided. Settling issues of liability allocation, what constitutes “clean” is clean and information availability will go a long way toward making the redevelopment of brownfields easier. While first steps have been taken, there may be initiatives that could be pursued by the financial services sector that could contribute to the overall solution.

Societal Costs — The question of societal costs arises in all discussions about who should pay for the clean-up of orphan sites or orphan shares of sites. A few years ago, there was relatively broad acceptance that societal costs should be borne by governments. Several circumstances have led some interests to advocate a broader sharing of responsibility for societal costs. One possible mechanism for that is the purchase of “no-fault shares” by a range of parties to create any necessary fund. The consequence of not resolving the issue of who pays societal costs may be unremediated sites that remain or become a threat to the environment and to human health.

The Role of Insurance — The future role of insurance in contaminated sites should probably be to cover sudden or fortuitous occurrences resulting in the release of contaminating materials into soils and ground or surface waters. A number of conditions seem to be essential for insurance to assume its full role in environmental protection. These include consistent national environmental standards, strong and consistent enforcement, and a commitment to pollution prevention. National certification processes for environmental auditors and site assessors are now largely in place and will aid insurers and others in assessing environmental risks. These professionals, as well as insurers, are well placed to play a role in improving enforcement.

The Prevention of Future Contamination — Pollution prevention is gaining momentum in Canada, but there are pockets of inertia both in business and in governments. Both the public and private sectors have embarked on initiatives supportive of this goal. However, there is much work to be done in developing a new regulatory regime that accommodates both an appropriate mix of voluntary and traditional command and control elements and the use of financial assurances, and fits within a full-cost pricing economic system.

Miscellaneous Issues — A number of technical issues need to be solved to aid in assessing and cleaning up contaminated sites. In this time of declining environmental protection budgets, a system for setting priorities is important to ensure that the most critical technical questions are addressed.

Municipalities have often been too distant from deliberations on policies related to contaminated sites. They should work with provincial governments in developing and implementing such policies. Political will is sometimes lacking in the prevention and limiting of contamination.

Communication and understanding among the myriad interested parties should be a consideration when technical experts develop and use terminology to describe their activities.

Public Involvement — The public is relatively poorly informed about contaminated sites. Information systems should be supportive of openness and easy access for the public. A gap has developed and appears to be deepening between technical experts and the public. Bridging this gap will take considerable effort, but will pay dividends in shared ownership of problems and solutions regarding contaminated sites. A technique that may help in the bridging process is a two-way education approach in which all parties share their information and perspectives and are prepared to learn from each other. If this gap is not bridged, difficulties in implementing solutions for specific contaminated sites can be expected.

Acronyms

AECL	Atomic Energy of Canada Limited
AESAC	Association of Environmental Site Assessors of Canada
BIA	<i>Bankruptcy and Insolvency Act</i>
CCME	Canadian Council of Ministers of the Environment
CEAA	Canadian Environmental Auditing Association
CERCLA	<i>Comprehensive Environmental Response, Compensation and Liability Act</i> (United States)
CMHC	Canada Mortgage and Housing Corporation
EMAS	Eco-Management and Audit Scheme
ENGO	environmental non-governmental organization
ISO	International Organization for Standardization (also from <i>isos</i> , meaning equal)
NCSRP	National Contaminated Sites Remediation Program
NRTEE	National Round Table on the Environment and the Economy
PRP	potentially responsible party

Introduction

Contaminated sites have been with us for longer than we can remember. We created them, often unknowingly. We lived in ignorance of them in the same way that we have lived in significant ignorance of the sensitivities of our land and water resources. We and the environment around us experienced subtle or not so subtle effects. As the effects grew beyond the subtle, we became conscious of contamination, slowly learning cause and effect. We are still learning and need to learn much more.

There are thousands, maybe even tens of thousands, of contaminated sites in Canada. We do not know. The sites we know about are of various complexity and seriousness. It is probably fair to say that every site requires some management. Most will probably require clean-up to some degree. Some of the required clean-up is expensive. Some of the management requirements are extensive and long-lasting, while others are simpler and cheaper. Still, it is fair to say that for all sites, both known and as yet unknown, prevention would have been the cheapest option. But this has always been an elusive lesson and will not be righted overnight. It will only be corrected by persistent efforts that yield incremental but significant improvements.

Soil and ground water contamination have many sources. The primary source of contamination is probably leaked petroleum products. Such leaks have occurred from petroleum refineries and other facilities owned and operated by the petroleum companies themselves, and from the storage of such products at mine sites, manufacturing facilities, service stations, farms and residences.

There are other sources, however. There are raw materials and by-products from manufacturing, such as heavy metals, and there are wastes and by-products from wood-treating facilities, mining and milling operations, farm or forestry chemical formulation and application, and land-filling operations that have been inadequately managed and contain all manner of contaminants. These last can be veritable chemical cocktails yielding undetermined and unpredictable synergistic effects. A source often left out of discussions on contaminated sites is radioactive material from Canada's experimental programs under Atomic Energy of Canada Limited, nuclear thermal power generation by various utilities in New Brunswick, Quebec and Ontario, and uranium mining activities in Saskatchewan and Ontario.

The National Round Table on the Environment and the Economy (NRTEE) has had some history of involvement in issues related to contaminated sites. In 1992, a working paper was commissioned to deal with lender and investor issues arising from contaminated sites.

Current NRTEE member Angus Ross was recently asked to lead a financial services program to examine some specific issues that hinder the integration of the environment and economy. A scoping exercise, which involved identifying key issues, was undertaken and issues related to contaminated land rose to the top of the list.

Realizing that there is a labyrinth of issues related to contaminated sites and in view of its very tight budget, the Financial Services Task Force, with NRTEE agreement, decided to focus on two issues in which the financial services sector has considerable interest: 1) improving site-specific data on the environmental condition of land and the accessibility of those data, and 2) the redevelopment of brownfield sites. Papers have been commissioned on each of these issues. In addition, the Task Force commissioned this paper to identify and describe the evolution of the main national issues related to contaminated sites and to help set the context for the work on site-specific data and brownfields.

All three papers were background to discussions at five multistakeholder meetings held in the last quarter of 1996 and the first quarter of 1997. The emphasis at these meetings was on solutions to which the financial services industry and other stakeholders could contribute, not on solutions to serve only the financial services industry.

What follows in this paper is a broad exploration of the significant contaminated site issues facing Canadians. They are grouped under the following headings:

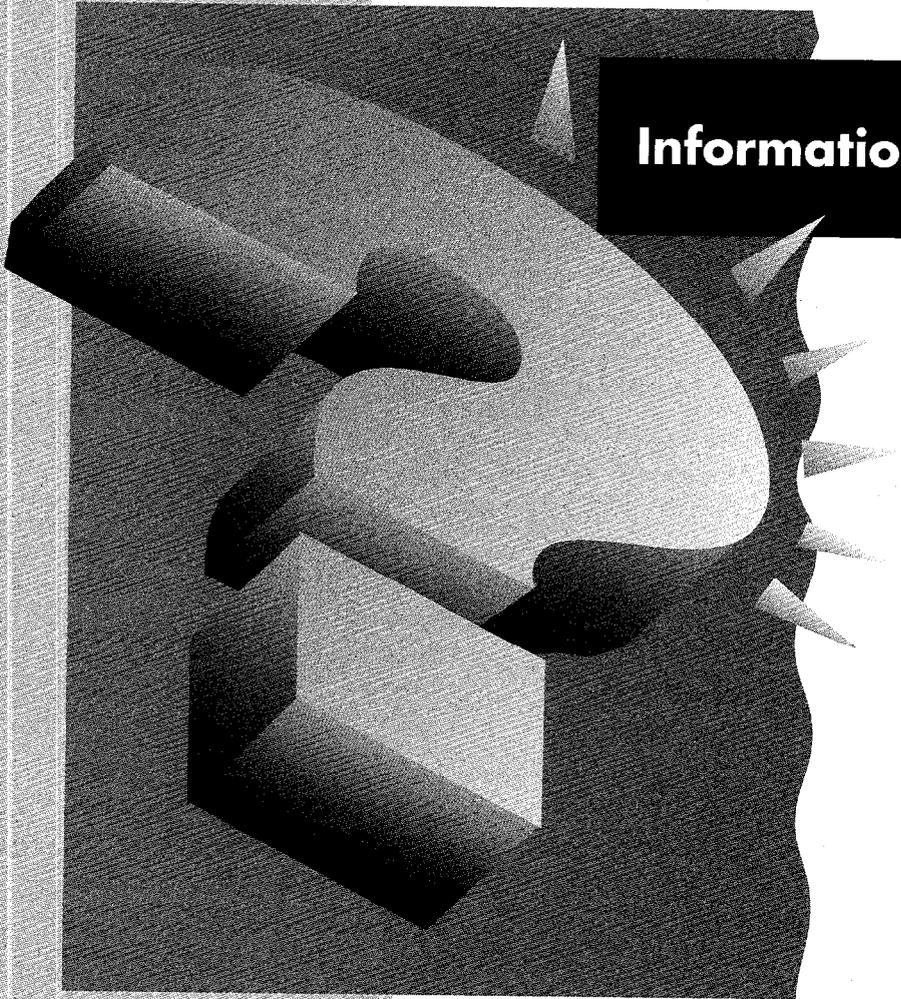
- Information needs
- The allocation of liability
- How clean is clean?
- Funding of orphan site clean-up
- Properties and operations in bankruptcy
- Brownfield sites
- Societal costs
- The role of insurance
- The prevention of future contamination
- Miscellaneous issues
- Public involvement

The order of their presentation is not an indication of their relative importance, with one exception. Public involvement is essential to addressing any of the other issues, and thus it should be the concluding issue. In each section, the issues are discussed and then summarized. An Executive Summary attempts to highlight the major questions facing Canadians with regard to contaminated sites.

The list of issues before Canadians may seem daunting. However, like any other complex problem, this one can be solved by taking logical and incremental steps. A comprehensive process is required that involves all the interested parties. Those parties should bring the correct attitudes to the table, examine the issues, put them in order of priority and begin to work on them one or two at a time. The situation is not hopeless, but it is serious, and only our best cooperative efforts will resolve the problems. The NRTEE is, first and foremost, a cooperative body and is extremely well-positioned to moderate a consensus among interested parties on the need for next steps and on how and by whom those next steps should be taken.

1

Information Needs



The need for information on contaminated sites in Canada is very great. The needs range from basic, such as how many contaminated sites there are, to detailed, such as how mobile the contaminants are in a particular soil, or what impact will be felt in an aspen parkland, for example, from spilled farm chemicals.

Most sectors of society require, at one time or another, information on contaminated sites — the public, regulators, industry, insurers, non-profit organizations. Such information is needed to purchase property, protect property values, protect health, make investments, assess risks, put possible expenditures in order of priority and assess liabilities. Some of this information is collected, but much less of it is readily available as it is dispersed in dozens of databases across the country, many of which do not relate to one another.

Proper resolution of the other issues in this paper almost inevitably requires more information than is currently available or accessible. In some cases, the lack of information has meant no decision has been made. In others, choices have been made that, in some instances, have had to be revised as new information, understandings and interpretations emerge. At the same time, it must be acknowledged that information that is complete and perfect in every way is not possible and would, in any event, not ensure that the perfect decision would follow.

Discussion of Issues

The need for information on contaminated sites arises in a number of ways and for a number of reasons. First, it arises simply because we do not always know of the existence of a site. Subsequently, it may arise because we need to know whether there is any imminent threat posed to human health. Or we need to know whether the contamination on a site can migrate and cause a problem for adjacent properties. These information needs can be triggered by previously unexplained health problems, municipal land use planning exercises, proposed rezoning of previously used lands, proposals for redevelopment or re-occupation of abandoned land, or by changes in government regulatory requirements or industry codes of practice.

A first level of information relates to determining the scope and nature of the problem. How many contaminated sites are there? What kind and degree of contamination is there? These answers are not known. Voluntary reporting of contaminated sites has been encouraged by many governments across the country for some time. However, mandatory reporting requirements are only now emerging. Although some urban municipalities have embarked on full inventories of potentially contaminated sites, the federal, provincial and territorial governments do not have equivalent information within their respective political boundaries. These data deficiencies make it very difficult to develop a rational strategy for progressive clean-up of major sites. In the absence of this basic information, it is impossible to determine, for example, the size of fund required for the clean-up of orphan sites. Moreover, it will be

difficult to determine that a property being considered for purchase, loan or insurance is clean or is not adjacent to or threatened by a dirty site unless a full site assessment is undertaken.

In the case of orphan sites, it is possible that regulators know about more sites than they publicize. It may be that when money is not available for clean-up, there is a reluctance to talk widely about sites that may require remediation. Certainly, the public response to knowledge of “new” sites is predictable, especially from those whose land values may be affected or whose health may be impaired.

There are other complications in determining the nature of the problem. Take, for example, the case of small residential fuel storage tanks. These may be either buried or above ground. They are not registered. Yet some U.S. experience suggests that the likelihood of leaks is greater in small tanks than in large. They are made of thinner materials, perhaps less care is taken in their installation, or they are not well monitored. Knowledge of this aspect of the problem could greatly affect realty prices, and insurance and lending risks.

Another consideration that affects the nature of the problem includes the definition of what constitutes contamination: Any contaminant levels above natural background? Contaminant levels above generic criteria? Levels only above those criteria that leave us with a problem we can afford to clean up. Different criteria will be used in different circumstances, and the stated number of known sites may change accordingly.

Inconsistency among governments is also problematic — inconsistency in the types of data sought and the way in which they are recorded, and the incompatibility of the various databases used throughout the country. What constitutes a site or a problem in one province may not in another.

As noted, many jurisdictions are moving toward required reporting of contaminated sites, and this will greatly improve the information we have to work with. However, provinces are not including small (under 500 gallons) storage tanks in this requirement and are not convinced that this is a serious enough problem to warrant such attention.

Many interests would seek to have information on contaminated sites cross-referenced to the land registry/land titles systems. This would enable property purchasers, realtors, lenders and insurers to know immediately if land is or has been contaminated and, in the case of the latter, to know the details of the remediation and its effectiveness and limitations. This would be a step forward in openness.

The second level of information is required for site characterization. What are the contaminants of most concern? Where do they exist and in what concentrations? What types of soils are on the site? How mobile are the contaminants in these soils? What are the surface and ground water regimes for the site and adjacent or downstream areas?

Have contaminants reached the water systems? This information is costly to obtain and is typically sought in stages through graduated levels of site assessment. The important point for this discussion is that even for the sites identified as contaminated, some data that would aid in characterizing the site are usually lacking. Yet regulators and assessors can draw no conclusions about relative clean-up priorities without that characterization.

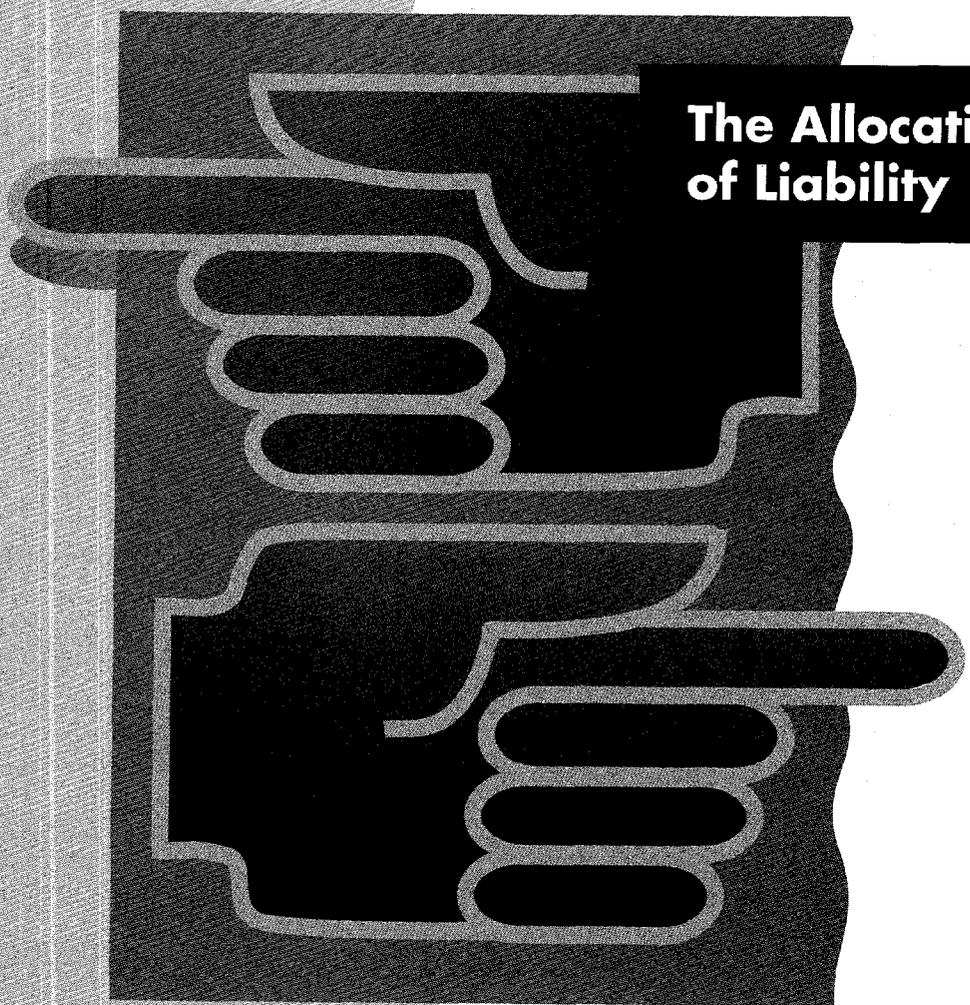
The last level of information is dependent on the remediation policy employed. If the regulator requires clean-up to background levels, then background levels must be defined. If the regulator accepts site-specific objectives or a risk assessment approach, then there must be additional understanding of the local biophysical environment and the uses made of the subject property or adjacent properties by the local population. What are the exposure pathways for human health and the ecosystem? Are there children or animals close by that might ingest contaminated soils? Are the contaminants volatile, such that they can be inhaled? Will the contaminants be taken up by plants and then eaten by increasingly higher order organisms? Again, this is another level of information, but for risk assessment approaches this is the information that must be available to set priorities among sites.

One problem is that governments currently do not have the money for the research required to answer fully the question: what is the size and nature of the problem? It is also true that those who maintain databases, while perhaps seeing the benefits of harmonizing their databases with others across the country, will have difficulty obtaining the resources to do so. Therefore, choices will continue to be made with less information than desirable.

Summary of Issues

- ▶ There is insufficient information to determine the scope and nature of the problem in Canada — the number of contaminated sites and the degree and types of contamination.
- ▶ Smaller sites are rarely included in contaminated site listings, and there is no effort planned to accumulate that information in the near future or to determine whether small sites constitute a significant problem.
- ▶ There is no formal cross-referencing of information on contaminated sites to land registry systems.
- ▶ Money is not available for comprehensive inventory work.
- ▶ Generally speaking, site characterization information is insufficient to allow the setting of priorities for remediation.

2002



**The Allocation
of Liability**

One of the most contentious aspects of contaminated sites in Canada is how liability for individual sites is allocated. A variety of approaches have been employed in various provinces and territories. Until recently, these approaches have had too little in common.

The main consequence of this patchwork of approaches is uncertainty for businesses, communities, environmental organizations, and individual citizens and ratepayers. These uncertainties include whether anyone will take responsibility for the site; whether human health or the environment are at risk; if and how a site will be remediated; how much remediation will cost; and whether the property will be useable or marketable in the near future and for what use and price.

While eliminating uncertainty is impossible, it can be reduced to reasonable levels by working through the various allocation issues one by one and resolving them reasonably and nationally.

Discussion of Issues

Joint and several liability probably stands out as the most controversial element of the allocation debate. At the extreme, the use of joint and several liability means that any party can be held responsible for the whole cost of the clean-up required. In turn, that responsible party may recover some portion of the costs incurred through court action against the remaining responsible parties.

The difficulties with this approach are that it is unfair, or at least delays the achievement of fairness, and it is inefficient. The benefit of the approach is that it is easy for the regulator and apparently easy on the public purse.

The unfairness element is that one party must pay all of the costs for a problem to which they were but one of many contributors. That same party must bear the bulk of the uncertainty throughout the clean-up and cost-recovery phases. One jurisdiction, New Brunswick, selects the most responsible party, against which it applies joint and several liability. In some cases this will be a somewhat less unfair way to proceed. In other cases, it is possible that the regulator may simply go after the easiest responsible party to find or the one most able to pay.

The inefficiency aspect bears on the question of whether the court system is the right place to solve this type of problem. Please note the further comments below.

Is the use of joint and several liability easy on the public purse? In the narrow sense of who pays for the clean-up, yes, it is. But there are broader questions to consider. Does a joint and several approach create a climate that some businesses will shun if they have a choice? Are there costs from the use of the court system that extend beyond the simple recovery of court costs? One such cost might be the delay of cases for which court is the only possible solution. Another cost is the time spent on such cases by justice ministry officials, which might have been spent more productively on other tasks.

These last two points require that we answer a question before we hasten down the joint and several track. Is the court system the best place for society to resolve such issues? A characteristic of the court system is that the interested parties give up most of their control over decision making. A judge renders the decision. The interested parties can only influence the judgment through argument. While much of the argument bears on the substance of the case, far too often the focus is on legal technicalities. This latter tendency is not in the public interest insofar as resolving contaminated site issues is concerned. The public wants a site cleaned up and it would like to see the appropriate responsible parties pay. If a legal loophole lets a particular party off, it only serves to anger the public and engender cynicism in our system of governance. The court system is clearly the right place to go when interested parties have no recourse but to give up control — when they have ceased to communicate one with the other and have no desire to improve that communication. Before disputes reach that stage, there are many other processes that are much more effective and much more economical.

The alternative to the use of joint and several liability is a form of allocation process that avoids the use of the courts as anything other than a last resort. The Canadian Council of Ministers of the Environment (CCME) *Recommended Principles* document¹ suggests a four-step process to resolve the issues of responsibility and the allocation of clean-up costs:

- ▶ **a voluntary allocation** in which the responsible parties are given a period of time to reach their own agreement on cost allocation. Should that fail, the second step is
- ▶ **a mediated allocation** in which the responsible parties are assisted in their efforts to reach agreement among themselves with the use of a disinterested third party who is there solely to manage the process. Should that also fail, the third step is
- ▶ **an arbitration** in which a third party hears the arguments of the responsible parties and directs a solution to the dispute. Should the first three steps fail, then there is
- ▶ **a default to a court-based joint and several process.** This is a use of joint and several that even most of its opponents can find acceptable.

Effectively, the process gives every opportunity for the responsible parties to find their own way to share the inevitable unfairness of a complicated contaminated site situation. Joint and several liability is invoked as a last resort. Being in the background, it is an incentive for all parties to come to the table in the first instance and allows action to be taken against those who will not take their responsibility seriously. It is interesting that small business sees the use of joint and several liability, in a backdrop application, as having a levelling effect at the negotiating table. It forces the bigger actors to look seriously for a solution — the only circumstance in which small businesses feel that they can play and not come out losers.

At present, the provinces and territories are approximately evenly split on the use of joint and several liability versus apportioned liability. British Columbia, New Brunswick, the Northwest Territories and Ontario are among the jurisdictions still adhering to a largely joint and several regime. Among those that use an apportionment approach, joint and several is retained as a backdrop.

Fairness is a principle to which most would subscribe. The trick in the allocation of liability and clean-up costs is to find a way to do it that minimizes unfairness. Some party will see as unfair that:

- a polluter goes bankrupt or leaves the country and leaves other potentially responsible parties to face the consequences;
- what once seemed a reasonable practice is revealed by the evolution of science to be inadequate and is corrected by retroactive application of a new regulation;
- what makes apparent scientific and economic sense is not always in line with public perceptions and that political decisions will often be responsive to these public perceptions;
- certain companies are held fully responsible, seemingly only because they have the money to effect the remediation;
- the public purse of today should have to be accessed to clean up a mess created in the past;
- government makes the rules but its own Crown corporations or departments do not play by the rules and, further, may not be held to full account for their behaviour.

These are a few of the types of situations that various participants find unfair. Unfairness is frequently impossible to escape in contaminated site situations. Therefore, the goal of allocation processes must be to minimize the unfairness. This most often means sharing the unfairness as much as possible among those responsible. Some responsible parties are more willing than others to approach discussions in such a vein. It is for the reluctant others that joint and several liability may need to be retained because it effectively requires them to be at the table. They may realize that non-cooperation may result in them having to take an even greater responsibility. Voluntary and mediated approaches enhance fairness because in both cases control of the outcome remains with the responsible parties collectively.

The “polluter pays” principle is widely supported by government, the public and industry alike. There have been some disputes about the definition of “polluter.” Some representatives of environmental non-governmental organizations (ENGO) have made the point that a polluter may be an industry sector, while industry organizations maintain that the term should be interpreted on a facility-specific or company-specific basis. A “deep pockets” approach to the allocation of clean-up costs can sometimes offend the polluter pays principle. The responsible party most able to pay may not be the one that bears the greatest responsibility for the contamination.

The application of the deep pockets approach in which the responsible party most able to pay is expected to pay is controversial and costly in both a financial and a time sense. For the most part, regulators and stakeholders accept that a deep pockets approach offends the obligation to be fair in any cost allocation process. The CCME *Recommended Principles*,² which all environment ministers supported in 1993, recommends that a deep pockets approach be rejected. Nonetheless, there remains a concern that it may be used from time to time in various Canadian jurisdictions.

Should liability be “absolute” or “strict”? The former means that if there is damage on your property or from your operation you are liable for it. On the other hand, strict liability allows potentially responsible parties to use a due diligence defence, to demonstrate that they are not at fault and so to avoid liability. The benefit of an absolute liability approach is that it ensures that somebody other than the public purse will pay remediation costs on a privately owned site. The disadvantage is that it may offend the principle of fairness. Conversely, strict liability may leave the public purse having to pay for contamination that the public had no hand in creating. This issue has diminished of late as most courts will consider favourably arguments of due diligence or reasonable care. An example of this occurs in Nova Scotia where recent legislation is written so as to allow the application of absolute liability, but, in practice, the government has put restrictions on itself to ensure that only responsible parties are pursued.

Should liability be prospective? If a responsible party has correctly completed a clean-up of a site and additional pollution is discovered after the clean-up, should that party retain a responsibility for further remediation or should the additional cost be societal? With only one or two exceptions, liability is applied prospectively in Canadian jurisdictions in these types of situations.

Should liability be retroactive? As legislation is revamped and in many cases toughened, should it have effect on historical contamination and polluters when they had been in compliance with the laws of the day? Should earlier owners or operators, for example, bear the costs associated with such clean-up or should the costs be seen as societal? Virtually all provinces and territories have applied liability retroactively in one situation or another. That is not to say that it is done in all cases.

It is interesting to note that how these questions of prospective and retroactive liability are resolved depends on how regulations are perceived by all parties. For example, if legislated criteria are seen as being of utmost importance, then the responsibility of the operator to practice good environmental behaviour is superseded by the responsibility of the regulator to select the right numbers. If the legislated or practised criteria are seen only as guidance with no intention of removing long-term responsibility from the operator, then placing the onus on the operator for both future and past practice is more appropriate. This does not receive open discussion.

Property values can be expected to decrease markedly when the contamination of a property becomes known. Conversely, property values should increase when contaminated lands are cleaned up. An issue with those that pay clean-up bills is who should benefit from the increase in the land value? The resolution of this issue would seem to be rooted in the principle of fairness. It makes good sense that benefits resulting from the clean-up of a property should be shared in similar proportions to the contributions made to the clean-up.

Determining who the responsible parties are for any liability allocation process can be very difficult. The list of potentially responsible parties (PRPs) can include:

- present and previous owners;
- the operator, if different from the owner;
- tenants;
- manufacturers of the contaminant;
- distributors and transporters of the contaminant;
- lenders;
- directors and officers of any organization which contributes to pollution; and
- regulators.

Should the net cast in identifying PRPs be broad in the first instance (allowing for subsequent exemptions), or should it be narrow? Those arguing in favour of casting a broad net would like to be sure that certain PRPs are exempted only consciously. This is best done by catching them in the net in the first place and then deciding that because they meet certain criteria, they can be exempted in a particular instance. Those arguing against casting a broad net fear that some PRPs will be kept in the net solely because they have money, not because they are at fault. The broad net with case-by-case exemptions reduces predictability and requires that PRPs have significant faith in the system.

Lenders, like all other PRPs, wish to limit their liability for contaminated sites. It is argued that capital must be available for economic development and prosperity, and that its availability will be limited if the risks are too high because of unpredictable liabilities. Lenders may often be able to argue that they have had no direct influence on operating decisions that have caused contamination. On the other hand, lenders are seen as having the financial resources required for remediation.

The CCME *Recommended Principles*³ dealt with this issue by noting that lenders should be granted a pre-foreclosure exemption from personal liability beyond the value of the outstanding debt unless they had actual involvement in control or management of the business of the borrower. Lenders see this as good, but they seek broader exemptions or at least some predictable rules covering post-foreclosure situations as well. Virtually all provinces and territories target lenders only when they have assumed ownership or have exercised control or contributed to contamination. In many cases, legislation enables lenders to be identified as responsible parties but practice permits exemptions to be made.

The other category of PRP that engenders some controversy is directors and officers. While companies would like to protect these people from liability in the creation of contaminated sites, the fact that on occasion directors and officers have been held liable has increased vigilance and efforts directed at the prevention of such pollution in the first place. Some have been heard to say that the only reason they are watching environmental performance is to make sure they stay out of jail. This would seem to be an argument for putting directors and officers on the list of PRPs. However, this must be weighed against the consequent increased difficulty of attracting good people to directorships. Only one or two jurisdictions (the Yukon is an example) take the position that directors and officers cannot be held responsible. However, most require that the directors and officers must have exercised control or failed to halt a contaminating activity before they will be considered as responsible parties.

Summary of Issues

- There is a lack of consistency and predictability in the way in which issues of liability allocation are handled across the country.
- The role of joint and several liability is a source of great uncertainty to all PRPs. The unpredictability of its use reduces trust in the system, and fear of its overuse can lessen the probability of voluntary participation in allocation processes.
- Fairness is an important principle that is applied inconsistently across the country in spite of stated adherence to it.
- Polluter pays is a widely accepted principle, but it requires more thoughtful application, particularly as it relates to a deep pockets approach.

- Fear of the use of a deep pockets approach still exists in some parts of the country in spite of its tendency to offend the fairness and polluter pays principles.
- Issues of prospective and retroactive liability continue to yield uncertainty.
- Improving the level of certainty in the allocation of liability will require that a common choice be made across the country on the initial use of either a broad or a narrow net.
- Lenders are left in uncertainty, not knowing whether they are in the net in the first instance, under what conditions they could be exempted, and under what conditions they could be brought into it.
- There will be uncertainty about responsibilities in board rooms until there is more clarity on whether or not directors and officers of responsible parties are included in the net.
- Expectations of the regulatory system are not uniform, and the time may be ripe for reconsideration of how standards are perceived and what they mean to future and ongoing responsibility.

3

**How Clean
is Clean?**



This question refers to the assessment of first, whether a site is contaminated, second, whether it needs to be cleaned up or managed in a different manner, and third, if it is to be cleaned up, to what level it must be cleaned up. These are significant questions because of the stigma attached to a site being declared contaminated, because of the unpredictability of the costs associated with any clean-up activity, and because of the difficulty of assessing risk when one cannot easily define “clean.”

There is an increasing gap between those who use or advocate the use of emerging technologies and the general public. This is a gap that will only be bridged with trust and understanding on all sides.

Discussion of Issues

Designating the Site

There has always been tension between the idea that there should be national standards for defining the cleanliness of a site and the belief that this is a highly local issue that must be solved using local criteria. Businesses seek some predictability in what kind of contamination is going to result in a designation, because such a designation is going to affect property values immediately and negatively and liabilities may be incurred. The regulator that holds to the view that designation will be determined on the basis of considerations at a particular time and place, and thus be subject to the unpredictability of public opinion, creates discomfort for businesses and plays havoc with their planning processes. On the other hand, it is appropriate that the regulator (who, frankly, has little choice) be responsive to the public's relationship to the government. The public will not always be predictable in its behaviours or desires, but this does not decrease the legitimacy of its views.

Canada is diverse in its land forms, in its soil characteristics and in its surrounding environments and settlements and their sensitivities. There is justification for a location-specific approach, but it is also reasonable to be able to expect that the basis for decisions on designation would be predictable and broadly defensible. The location-specific approach is justified on the basis that background levels of contaminating substances vary widely depending on the geological history of the area. Also, because soil and ground water characteristics are sufficiently variable, contaminant mobility, which is largely dependent on these two factors, varies widely from site to site. Finally, surrounding environments and land uses are diverse and can result in significantly different exposure pathways and receptors. This in turn affects whether or not a site might receive designation as being contaminated.

Setting Priorities

At present, there are more contaminated sites requiring clean-up than there are available resources to complete the work. This means that priority setting is critical. Otherwise Canadians may spend scarce resources without addressing the sites that present the greatest long-term problems. Good work will have been done, but with a less-than-optimum effect. There is a need, therefore, for a system that aids in the determination of priorities among contaminated sites. On a technical level, this could be *The National Classification System for Contaminated Sites*, published by the CCME in 1992.⁴ All jurisdictions across the country are familiar with this tool and most have found it helpful.

The other part of the puzzle is not technical. It deals with the public and political will and thus often hinges on public perceptions. Public perceptions may be seen as distinct from reality which often results in their being too quickly dismissed. Public perceptions should be explored through communication and mutual learning, although it may often be difficult to create the atmosphere within which mutual learning can occur. Public perceptions should neither be ignored nor totally dominate decision making. The public needs to be part of the discussion and the solution.

Rendering a Site Clean

Many aspects of a site and its condition can affect the extent to which contamination on that site is deemed to be a problem. These factors include:

- natural background levels of the contaminant in the soils or the ground water;
- the nature of the soils and the contaminants;
- the extent to which the contaminants are mobile;
- threats to human health and the environment, given the ecological characteristics of the surrounding landforms and the type of the human activity that either does or may in future take place in the area; and
- the pathways available for the contaminant to find its way to sensitive human or natural receptors.

Attempts have been made to develop clean-up criteria that have widespread application. In practice, that application is difficult because site-specific circumstances intervene. Therefore, various protocols have been developed that allow a regulator to take into account site characteristics, the nature of the contaminants, human activity in the surroundings and the sensitivity of the receptors in the area. Recent (March 1996) publications of the National Contaminated Sites Remediation Program (NCSRP) and CCME⁵ provide guidance for the regulator or developer to develop site-specific clean-up criteria. Ontario has also released its guidance document (July 1996, with editorial

revisions in late 1996 and early 1997).⁶ This material consists of guidance for sampling, numerical limits for 135 chemicals and the rationale for those numbers as well as guidance for site-specific risk assessment.

In the past, some jurisdictions have sought clean-up to natural background levels. They know that this is the safest solution, because at background levels no incremental impacts will be noted. This approach has been criticized by industry and others, who have noted that levels significantly in excess of background can often be tolerated by humans and the local ecosystem without measurable effects, due to the lack of sensitive receptors or an absence of critical pathways. This criticism has its roots also in the fact that the costs of such clean-up are often very high, with the bulk of those costs being incurred in completing the last 10 percent or 20 percent of the clean-up. To repeat an adage: you can have 80 percent of the effect with 20 percent of the effort but you will spend the last 80 percent just trying to get at the remaining 20 percent of the problem.

The question that arises is: is it better to clean up five sites to 80 percent of their original condition, or clean up one site to its natural condition? While logic suggests that we would be better off to address five sites, the answer may not always be as simple as that. Our scientific understanding of contaminants, receptors and their interactions is incomplete. If the 80 percent solution is selected, there may be a tendency to believe that those five sites are now addressed and can be forgotten. However, we may discover at some later date that the environment or human health is more sensitive, or a contaminant more potent, than previously thought. To reopen a site and undertake further work on it will be more difficult to initiate and will likely cost more than doing it all in the first instance. Even this statement does not take into account costs associated with the impacts experienced in the interim.

One of the proposed solutions to the question of how clean a site should be when remediated is to do exposure pathway analysis and risk assessment, followed by remediation to the level at which risks are "acceptable." The normal expectation is that clean-up criteria developed through risk assessment will be less stringent than generic criteria, since there is usually a built-in conservatism in generic criteria. The less stringent outcome is common but not universal, for there have been instances in which the criteria have become tighter as a result of risk assessment.

Risk assessment practice is evolving quickly, and techniques are becoming better and better. It is understood well enough now by the scientific, engineering and regulatory community that some consensus on best practices is emerging. Its drawbacks seem to be that there is still a large amount of judgment required on the part of the individual practitioners, and that the public has been left out of the debate. Elements of the public are inclined to wonder how any additional risk could be "acceptable" when it is not a risk of their choosing. This concern is most likely to arise in circumstances in which there has been no engagement of the local public during the risk assessment process.

There is sufficient judgment involved in a risk assessment process that perhaps it should be seen as an art, not as a science. Then the numbers that emerge from the process would not be seen as an unassailable basis for a “logical” decision, but as input to be considered seriously in a public process. The public has come to distrust large numbers (e.g., the number of jobs that will be created from a new development) and extremely small ones (your risk of getting cancer from this contaminant is only 1.0×10^{-6}). The challenge here is to put the risk assessment process into a perspective that works for the practitioners of risk assessment, the decision makers and the public together.

A risk assessment approach, and other approaches for that matter, can result in clean-up proposals that will include transport of contaminants off-site for storage or treatment, treatment on-site, or containment and management on-site. It is not uncommon for at least a part of the contamination to be left on the site and to require an ongoing commitment to monitoring, maintenance and perhaps management. Containment and management on-site may save money today but also may create obligations for the future. More and more sites could require monitoring and maintenance, sometimes for indefinite periods (depending largely upon the life of the contaminant). While the containment/management option may be the right solution in individual cases (e.g., when contaminant transport cannot be recommended or treatment options are not available), considered collectively it may leave a legacy for future generations that obliges them to be much better at meeting their commitments than history suggests is likely. Of course, this also needs to be weighed against the possibility of no clean-up at all.

Regulators are adapting to the emergence of risk assessment, as they would to any emerging technology, with a response that fits the time and place. Although tools have been prepared that aid this response, they are adopted non-uniformly. This does not improve the consistency among Canadian regulatory regimes.

The final issue is certification of site cleanliness. Those who invest in cleaning up a site, and have done so according to an approved plan, wish to avoid future liability for the site. This would require that regulators issue some type of certificate of cleanliness. The consequence of not certifying cleanliness may be hesitation on the part of some developers to invest voluntarily in site clean-up. However, the public purse may be more highly protected (if development is not impeded), especially in the absence of a broad-based clean-up fund. This is yet another example of an issue of confidence and trust in motives and system performance.

Most jurisdictions in Canada are prepared to issue a letter confirming that directions were followed in cleaning up a site. A few of those will then issue a certificate of compliance. However, with only one known exception (the Yukon), responsible parties would retain responsibility for the site under these certificates, should conditions or standards change in future.

Summary of Issues

- The tension between predictable national standards and individual, local assessment in the designation of sites needs to be resolved.
- A common approach that will lend itself to achieving broad support on clean-up priorities is required.
- The lack of a broad consensus on an approach to determining clean-up standards is hindering remedial actions.
- The long-term management obligation that may arise from frequent use of containment and management options should be assessed in the context of the ability of future generations to assume such obligations.
- As technologies advance, regulatory systems respond. Those responses are uneven across the country, and this increases or at least perpetuates the patchwork of requirements found among the provinces.
- The question of whether or not certificates of cleanliness should be issued needs to be settled uniformly across the country. How can this best be accomplished?

4

Funding Orphan Site Clean-Up



An orphan contaminated site is one for which viable responsible parties cannot be found. The responsible parties may have gone bankrupt, left the country, or simply be unwilling or unable to accept responsibility, but the bottom line is that they are not available to clean up a site at a particular point in time. This does not lessen the need to clean up the site, but it certainly reduces the resources that can be brought to bear on the task. How is the clean-up to be accomplished?

Orphan sites are a major problem in Canada. There is no reliable estimate of the number of such sites, nor of the likely costs of their remediation.

In 1989, the CCME agreed on a 50/50 cost-shared federal-provincial program called the National Contaminated Sites Remediation Program (NCSRP). This program was to make available approximately \$200 million for the actual clean-up of priority sites and \$50 million for the development of new technologies. In addition, there was a further \$25 million set aside by Environment Canada to assist other federal agencies in conducting site inventories and assessments. The program would run for five years, from April 1990 until March 1995.

The program was successful in many ways, fully or partially remediating 45 sites across the country. Some provinces, specifically Manitoba and Saskatchewan, were late joining the program, so some projects were not started until the last full year of the program. Consequently, some expenditures were continued until the end of March 1996 on projects approved before September 1994. In the end, over \$85 million was spent on site remediation and about \$40 million was spent on technology development. As noted earlier, this money was obtained equally from the federal and provincial/territorial governments. One of the program's greatest legacies, however, is the tools that were developed:

- *National Classification System for Contaminated Sites*⁷
- *Interim Canadian Environmental Quality Criteria for Contaminated Sites*⁸
- *Guidance Manual for Developing Site-specific Soil Quality Remediation Objectives for Contaminated Sites in Canada*⁹
- *Guidance on Human Health and Ecological Risk Assessment*¹⁰
- *A Review of Whole Organism Bioassays for Assessing the Quality of Soil, Freshwater Sediment and Freshwater in Canada*¹¹
- *Evaluation and Distribution of Master Variables Affecting Solubility of Contaminants in Canadian Soils*¹²
- *Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites*¹³
- *Subsurface Assessment Handbook for Contaminated Sites*¹⁴

- *A Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines*¹⁵

Discussion of Issues

At the time that the NCSRP was initiated, governments were prepared to undertake the full cost of such clean-up work. The public was supportive of such expenditures: such work was seen as a societal cost, and government was seen as responsible for societal costs.

As the NCSRP mandate drew to a close, a multistakeholder group began work under the auspices of the CCME on the creation of a new funding mechanism for the remaining orphan sites. The CCME Core Group worked diligently on this issue, holding a national workshop in January 1994 to develop serious proposals to deal with the funding problem. In the end, the Group could not reach consensus on the solution, two ministers of the environment disputed the existence of orphan sites and discussions were halted. What was on the table at the time was a fund that would be fractionally supported by business and largely supported by federal and provincial governments through general revenues and dedicated taxation. The fund would be managed by a multistakeholder group. This group would include a voice for each contributor. The CCME Core Group was unable to agree on relative proportions of the cost that would be borne by the various participants.

The lack of consensus reflected a changing climate for government/public participation in rectifying problems largely caused by ignorance, mismanagement or poor regulation of private sector facilities. Recognition that government budgets were being reduced and that environment departments would experience these reductions caused some interest groups and some government representatives to take a harder line on the issue of public funds for such clean-ups. As the NRTEE put it, in its Working Paper *Lender Liability for Contaminated Sites: Issues for Lenders and Investors*,¹⁶ the “public is more likely to support the privatization of site remediation costs than higher taxes/reductions in services in order to publicly fund clean-up.”

Another point of contention for the participants in this funding discussion was the question of orphan shares of sites. The concept of an orphan share of a site is best understood by way of an oversimplified example. A contaminated site may have contamination arising equally from five different owner/operators. Four of those responsible parties may still be solvent and prepared to assume their share of the responsibility. The fifth is bankrupt. Who should pay that fifth portion of the costs of the clean-up? It may not be fair to ask one or all of the four still present to pay the extra. It may not be fair to ask the public purse to assume this cost. It is also not useful, or maybe even possible, to leave 20 percent in its contaminated state.

It was the view of some of the governments and businesses that the existence of an orphan share would be a circumstance calling for the application of the clean-up fund, in other words, a situation calling for sharing the unfairness. Other governments and ENGOs did not share that view. They were concerned that the orphan share would show a tendency to grow during the voluntary negotiation process, diverting responsibility, in the example above, from the four responsible parties to the fifth which could not be at the table. This would result in a proportional increase in the public funds required to support the clean-up fund and could consequently make the clean-up fund a costlier and longer-lived process than necessary.

At present, these issues remain unresolved. There is no fund for the clean-up of orphan contaminated sites, no replacement for the NCSRP and no consensus on how to handle orphan shares of sites. Some jurisdictions continue to avail themselves of joint and several liability in the absence of any consensus.

A number of options for an orphan site fund are available:

- **Industry sector fund** — could be administered either by industry or government and would be funded by a levy on a particular product or from donations by all sector members; funds would be used to clean up sites created by the activities of that sector. A variation of this option is a single fund covering all sectors with prorated contributions tied to the frequency of creation of contaminated sites from each sector.
- **Corporate environmental tax** — would provide a predictable and consistent level of funding but is not directly related to environmental performance.
- **Fees/taxes on contaminating activities** — could be levied on the generation, transportation, use, treatment or disposal of hazardous substances.
- **Penalties and fines** — revenues from prosecutions would be diverted to orphan site clean-up. There is a strong connection with polluting activities and performance, but the revenue amounts are unpredictable.
- **General government revenue** — a regular allocation approved through standard legislative/parliamentary budget processes.
- **Broad-based consumer tax** — revenue from the tax would be earmarked, something government finance departments do not support.
- **Site remediation bonds** — governments would probably have to subsidize rates of return on such bonds. Indeed, this may just be a delayed general revenue option.
- **Voluntary funds** — would require a high level of cooperation among businesses and governments and a basic agreement that they all want to solve the problem.
- **Mixed funds** — various combinations of the above options.

A useful observation to make at this point is that the costs of clean-up are passed down the line. Depending on the option chosen, the costs are passed on to taxpayers, property ratepayers or consumers. There is no big brother or sister who can pay. It must be individuals who pay in one or more of the above guises. This is disappointing news to those who hope for a simple redistribution of wealth to solve this funding problem. What this really means is that the arguments over who, nominally, pays to clean up orphan sites is really an argument over who should deliver the bad news to the taxpayer (government) or ratepayer (government) or the consumer (business or government).

An interesting option is being developed among Alberta Labour, Alberta Environmental Protection and the Canadian Petroleum Products Institute. That proposal would see a special levy placed on wholesale gasoline sales that would be dedicated to the clean-up of orphan underground gasoline storage sites. Other jurisdictions, such as Ontario, are watching this approach with interest in the hope that something similar may have application in their province or territory — perhaps with the same sector or perhaps with another. There is already a history of its use in the United States.

Two provinces, Alberta and New Brunswick, have funds that can be used for environmental protection or enhancement. New Brunswick used the Environmental Trust Fund to fund orphan site clean-up under the NCSRP and continues to do so now that the NCSRP has been terminated. In 1996-97, New Brunswick continued orphan site clean-up to the tune of about \$600,000. Alberta could access its Environmental Protection and Enhancement Fund for the same purposes, although there is no indication this would be done on any regular basis. Other provinces and the federal government would have to obtain separate appropriations for remediation on a case-by-case basis. The probability that more than the worst sites will be addressed is low in the present economic climate.

No discussion of orphan site funds seems complete without reference to the U.S. Superfund. However, virtually no one in Canada advances it as a model that should be followed here. This paper does not attempt a full analysis of Superfund, but the most frequent criticisms include that too little of the money “goes into the ground” and too much goes into litigation costs; the funding mechanism is unfair; and moving through the process has been extremely slow.

Some other U.S. information may be instructive. Almost all the states have their own separate “superfunds,” at least in part because working through or with the federal Superfund has been difficult, and quicker response is sometimes required. Most of the state funds appear to be limited in total size, with some ceasing their fund generating when a certain maximum is reached and resuming it again when the value falls to a stipulated minimum. Some funds are as large as \$50 million, while others are not allowed to exceed \$200,000 or \$500,000. Consequently, some funds are comprehensive in the types of activities they attempt to address, including remedial actions, The U.S. *Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)* matches projects, emergency response, site investigations, studies, design, grants to municipalities and even victim compensation. Other funds are extremely limited and may be used only for emergency response. The sources for these funds range from cost recovery, through legislative appropriations, state bonds, fees attached to hazardous waste handling and special taxes, to penalties and fines.

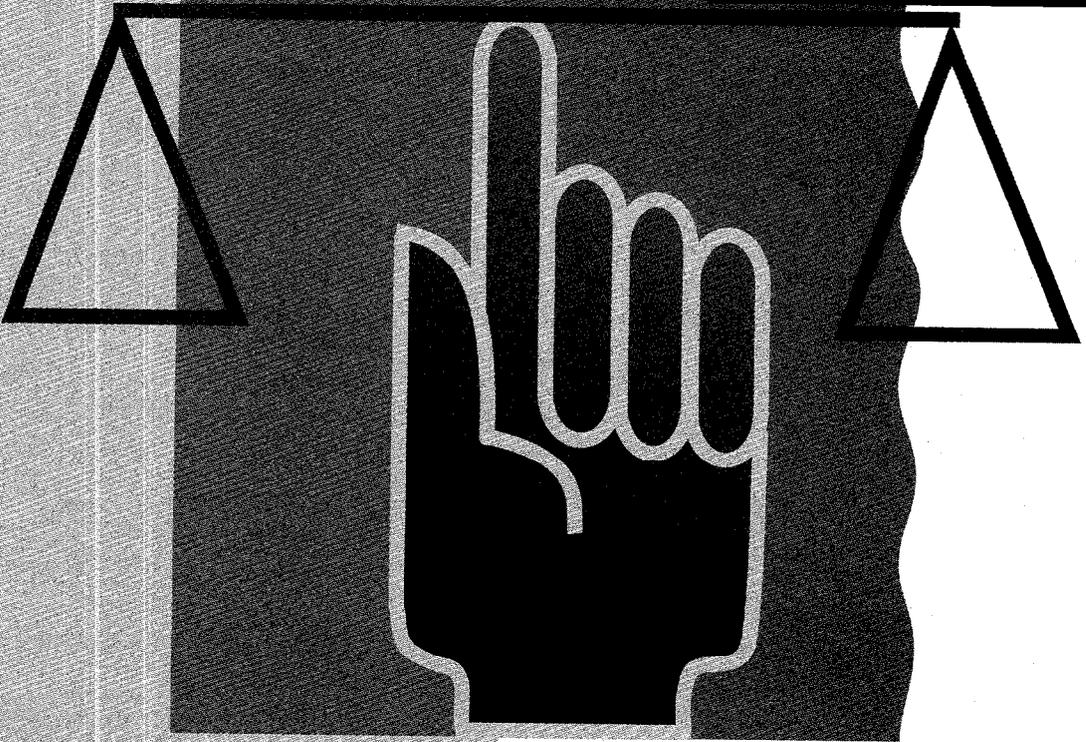
The final issue is how a fund should be managed. If the private sector contributes directly, it will wish to have a say in the management of the fund. If even part of the fund is drawn from a special tax, all stakeholders and most citizens will likely wish to see that fund dedicated exclusively to orphan site clean-up. There are many issues here that require focused effort to resolve. They vary with the funding option selected.

Summary of Issues

- Orphan sites may simply go unattended if a solution to funding their clean-up is not found.
- The issue of whether to include orphan shares within a fund is controversial and requires resolution.
- The fund management structure should be appropriate to the type of fund.

5

**Properties and
Operations in
Bankruptcy**



An operation that becomes insolvent can present special challenges in the management of contaminated sites. First, some contaminated sites have been left orphaned when a receiver has refused an assignment because of fear of personal liability exposure. Second, a similar outcome has also been produced when receivers served with a clean-up order by the regulator choose to contest the order rather than comply. They are choosing to spend the scarce funds of the bankrupt fighting the order instead of cleaning up the site. Third, in instances in which government has had to go onto a bankrupt site and clean up a health- or environment-threatening problem, there have been difficulties in recouping the expenditures from the assets of the operation. This is not surprising when, by definition, the liabilities exceed the assets in these cases. These are unsatisfactory outcomes from an economic as well as an environmental perspective.

The statute that governs the activity of receivers is the federal *Bankruptcy and Insolvency Act (BIA)*. It is currently going through a major reworking but was amended as recently as 1992.

Discussion of Issues

The present amendments of the *BIA* are broad but, for this discussion, can be focused in three areas:

- ▶ changes regarding the personal liability of receivers;
- ▶ possible responses to a post-appointment clean-up order; and
- ▶ recovery of public funds spent on clean-up of a bankrupt's property.

Personal Liability of Receivers

The 1992 amendments to the *BIA* eliminated personal liability for receivers and trustees for any contamination that occurred pre-appointment. The amendments also allowed for a due diligence defence for receivers' personal liability post-appointment. This very quickly proved problematic. The lack of a clear understanding of what constituted due diligence left too great a risk of personal exposure for the receivers. They were understandably reluctant to take on such assignments. This had the effect of leaving the operation or site without an administrator and sometimes left a contaminated site orphaned.

Amendments introduced in the past session of Parliament (in November 1995 and then reintroduced in March 1996 as *Bill C-5*) alter the troubling clauses by eliminating all possibility of personal liability for receivers, either pre-appointment or post-appointment, unless the receiver is guilty of gross negligence or willful misconduct. Insolvency practitioners are much happier with this, and pre-amendment consultations indicate that some other interests are supportive of the change also. There are mixed feelings among provincial governments.

Responses to a Post-appointment Clean-up Order

The present *BIA* allows receivers two possible responses should they, as administrators of a bankrupt operation, be served by the regulator with an order to remediate the property. Those two possible responses are to comply with the remediation order or contest it in the appropriate court. Insolvency practitioners found this to be too inflexible. It required a decision on their part, too often in the absence of critical information.

Under the new proposed amendments, the receiver may seek time from the court to assess the economic viability of the required clean-up. If such a request were made by the receiver, the regulator could then argue for immediate clean-up (e.g., if public health was greatly threatened), or could agree to an appropriate time for analysis. The final option permitted under the proposed amendments would allow the receiver to abandon the assets related to the clean-up order. This last option would effectively orphan the site.

Recovery of Public Funds

In the past, the priority given to the recovery of clean-up costs in dispersing the assets of a company has been relatively low. In these situations, where liabilities exceed assets, little public money has been recovered when the government has had to step in to remediate a contaminated site that is posing an immediate threat to the environment or to human health.

The proposed amendments to the *BIA* give environmental clean-up costs a first-ranking priority lien over certain assets of the operation, even ahead of secured creditors. This applies not only to the primary property, but also to adjacent or contiguous properties if implicated. Further, if the cost of site remediation exceeds the total value of the assets affected by the lien, the residual clean-up costs will be recognized as an unsecured claim against other assets of the developer.

These potential changes represent a significant step forward for environmental priority and will probably encourage governments to take clean-up action when conditions demand it. Lenders have given grudging support to changes that include reducing the likelihood that lenders can recover a significant portion of their investment in the operation. Another possible implication of the change is that lending institutions may become more reluctant to invest in small, independent businesses. Small businesses do not believe they enjoy a favoured status with the major banks in the country, and they have a genuine concern that this amendment will provide the banks with yet another excuse not to lend to them.

Bill C-5 received Royal Assent during April 1997 after a number of amendments, which did not affect the environmental provisions, were proposed and passed by both the House of Commons and the Senate. It is expected that the environmental provisions of the *Bill* will come into effect in the early autumn of 1997, followed by the other elements of the *Bill* in the spring of 1998.

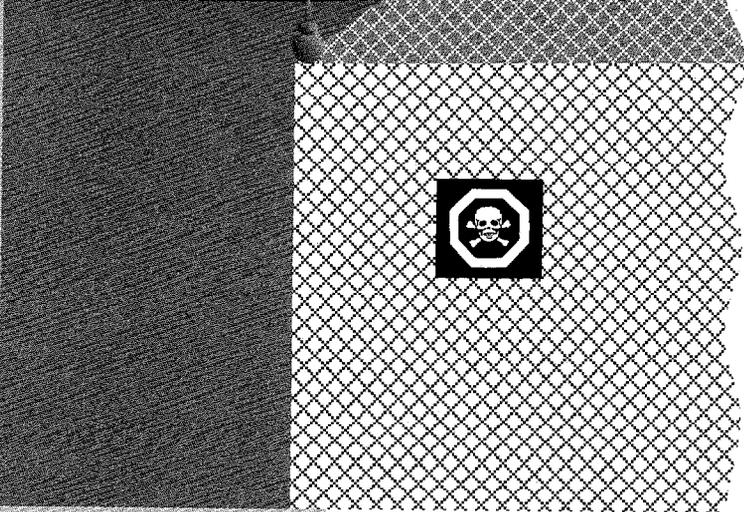
Summary of Issues

- Will the new environmental procedures in *Bill C-5* perform as expected or will problems arise, such as those of concern to small businesses, that may necessitate further changes and uncertainties in the not too distant future?

6



Brownfield Sites



“Brownfields” are abandoned or idle industrial or commercial land where reuse, expansion or redevelopment of the land is complicated by environmental contamination. Brownfields are often centrally located and thus surrounded by urban development. They usually have servicing infrastructure in place and tend to be close to major transportation facilities or routes. These lands have obvious economic potential, which will vary with current markets and the degree of contamination.

Brownfield sites have been contaminated by the raw materials, products or by-products of former industrial or commercial operations. For various reasons, including the departure of responsible parties, lack of funds for clean-up, lack of agreement on what constitutes clean-up, or lack of investment due to fear of liability, remediation has not proceeded. The contamination prevents immediate use of the land and often affects or threatens adjacent land. Municipalities are affected as property tax payments are reduced or eliminated.

The redevelopment of brownfield sites is an issue in a number of Canadian urban centres, most prominently in Montreal and Toronto but also in other centres such as Calgary, Edmonton, Winnipeg and Halifax. It is estimated that there are over 2,900 brownfield sites in Canada, including many in rural areas.

There are many reasons why brownfields should be redeveloped and why they should be seen as opportunities rather than as problems:

- brownfields, either urban or rural, should not be left as a source of contamination;
- the existence of municipal services such as transportation, sewer, water and utilities makes it generally more cost effective to develop a brownfield site compared to a new suburban site;
- a redevelopment will contribute to a rejuvenation of an inner city and can stimulate other supporting initiatives;
- a potential orphaning of a site is averted;
- property tax revenues can be restored to the benefit of the municipality and its ratepayers;
- the need to expand urban boundaries is reduced;
- the need for energy-intensive transportation is reduced;
- the Canada Mortgage and Housing Corporation (CMHC) has noted that central locations are preferred for social housing; and
- more dense utilization of city property, if done in an environmentally sound manner, is a measurable step toward sustainability.

Discussion of Issues

The issues that are inhibiting the redevelopment of brownfield sites are the same as those that affect other contaminated sites. Uncertainty in the allocation of liability is a major concern. As in other cases, predictability is probably more important than the preference of one particular approach over another.

The subject of clean-up standards is critical. Clean-up costs disproportionately increase as clean-up standards become more stringent. Generic criteria or background levels have often been applied as clean-up objectives for brownfield sites. Developers have argued strongly that this often results in unnecessary expense and that clean-up criteria should be variable, depending on future land use and on a risk assessment analysis. In other words, clean-up standards could be less stringent if the land was returned to commercial or industrial uses than if it was going to a residential use. Standards could also be lowered if risk assessment demonstrated a low exposure of humans and the environment to the contamination.

Issues of prospective liability also apply. Will a responsible party (or even a new owner who is otherwise not responsible for the pollution) who remediates a site according to an approved plan still bear responsibility for further clean-up should standards change or other contamination be discovered? Will an insurer that insured a previous activity at the site suddenly find itself liable for some of the environmental consequences of that activity?

Financial institutions want to see these questions resolved to create as certain an environment as possible for investment. Absence of such certainty means developers will have difficulty obtaining financing for the rehabilitation and redevelopment of brownfields. Some regulators argue that the expectations of financial institutions are too high and that governments will always have to retain flexibility to respond to emerging concerns and evolving understanding about human or environmental health. Can these two perspectives be reconciled?

Municipal governments are also anxious to see the issues of brownfields resolved. Tax payments to municipal governments are often reduced or eliminated, and assessments and taxes on adjacent lands may likewise be decreased. New industrial activities will tend to locate on new, clean land. This land is often on the outskirts of the city in question. Such development, therefore, contributes to urban sprawl, the depopulation of city cores and attendant social issues.

Few parties with an interest in brownfield sites do not want to see them redeveloped. The challenge is to find the common ground among the interests so that it can happen. It is important to get sites clean enough to allay the concerns of senior and local governments and of local residents. A sufficiently predictable regime is needed so that developers will consider acquiring these properties, lenders will be prepared to invest in redevelopments and insurers will be prepared to insure them. A sufficiently flexible regime should be created such that governments are able to respond if a significant threat to human or environmental health arises.

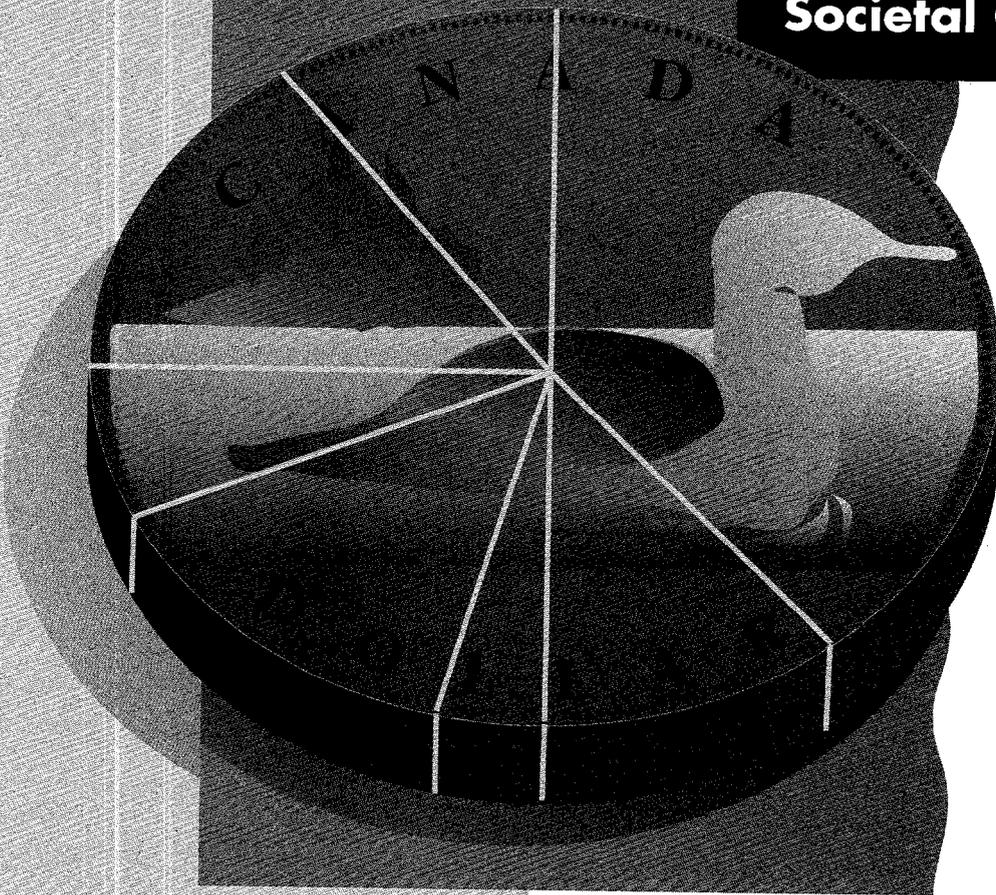
Efforts are being made by a few of the interested parties to address these issues. The Insurance Bureau of Canada has recommended the application of limits to first- and third-party liabilities for environmental impacts. At least three insurance companies have responded with a range of products to address these needs. This puts a limit on the uncertainty faced by insurers and makes it easier for companies to offer appropriate coverage. But, will it be the coverage that developers need? Legislation respecting the allocation of liability is evolving quickly in many provinces. This usually has the effect of reducing the uncertainty faced by developers. The legislation of a few provinces allows for agreements to be reached between lenders and regulators on the limitations to liability assumed by the lender. This reduces the uncertainty for lenders and should improve the climate for investment in brownfield redevelopments. Nevertheless, the questions remain: Are these responses sufficient? What else is required?

Summary of Issues

- The uncertainty in liability allocation regimes is detrimental to the investment climate.
- The issue of clean-up standards, both generic and site-specific, needs to be resolved to reduce the uncertainty for investors. Many interests have valuable input to offer toward this resolution.
- Sufficient predictability in the regulatory regime is required without tying the hands of government in such a way as to prevent it from acting in the public interest.
- Are present initiatives to address these problems sufficient, or is more effort required?
- If more effort is required, what initiatives could the financial services sector take that would help overcome inertia in the redevelopment of brownfields?



Societal Costs



Part of the ongoing discussion among stakeholders when they attempt to resolve who pays for the clean-up of a contaminated site centres on the question: what is a societal cost? The idea is that there are certain costs that broadly accrue to society because society has benefited equally broadly from the activity that caused these costs.

For instance, the property upon which an abandoned manufacturing facility was located has been left in a contaminated state. The owners and operators cannot be found, and the site is deemed to be orphaned. A group of concerned stakeholders discusses its clean-up, and some note that the cost of clean-up is a societal cost and, therefore, society should pay to clean it up. What is meant, usually, is that governments should pay.

The thinking behind this is that a lot of people, either individually or collectively, benefited from the building and operation of the facility. Construction workers received wages and benefits while building the plant, the local government received money for building permits, the employees of the operation received wages and benefits during either the life of the facility or for the duration of their employment, local governments received property taxes from the operators, and provincial and federal governments received income taxes from employees and owners and corporate taxes from the operation itself. The economic impacts were even wider, with those supplying the operation with its raw materials or services benefiting also. The important point to this argument is that the benefits of the operation were felt widely and, therefore, the costs should be borne equally widely. This is one aspect of the “beneficiary pays” principle. Of course, the counterpoint to this is that some benefited more than others.

Discussion of Issues

There is no real dispute that society at large benefits from individual economic activities. However, some take the view that the economic benefits are experienced disproportionately by the owners and shareholders of the operation; that perhaps society, through its government, made many concessions in the first place to get the facility into that neighbourhood and that a major part of the societal cost has been paid during the start-up and active life of the facility. On the other side of the ledger, some would argue that the contamination occurred in spite of following the instructions of the regulator precisely. In other words, “we did what society asked us to do.”

As recently as five years ago, there was fairly broad acceptance that government should step in and pay for the clean-up of orphan sites and thereby absorb the societal cost. This is now less true, and several reasons are emerging for this shift.

First, the financial situation within governments at all levels has deteriorated, and priorities have changed. Public officials, both elected and appointed, have a vastly different view of how public money should be spent than was the case a few years ago. There is much less public money available as government budgets generally, and environment budgets specifically, have been significantly reduced. Polls have suggested to politicians that the environment is a lower priority issue with the Canadian public. Consequently, governments are less apt to approve expenditures for environmental purposes when there is a consequent direct loss of spending power in some other demanding area.

Second, attitudes are changing both within government and among the public. Whereas a few years ago (e.g., in 1989 and 1990 as the NCSRP was getting under way), governments and the public were more willing and able to provide funding for the clean-up of orphan sites; today, an increasingly predominant view is that the public purse should not have to pay for what might be the mistakes of industry.

Third, some businesses are enjoying significantly increased profits. Some members of the public believe that with these profits may go some responsibility for societal costs.

These emerging views are only that. They are not conclusions but, rather, are the present lay of the land. They do not represent a resolution of concerns about who, exactly, benefits or is hurt by a particular taxation and spending regime in government. Nor do they apportion responsibilities for poor environmental performance.

The background and the present views lead to much the same question that arises in the section on funding the clean-up of orphan sites. Who should fund such clean-up and in what proportions? An idea has emerged in a recent consultative exercise in Saskatchewan that might be helpful. The concept is one of a fund created by beneficiaries who contribute through "no-fault shares." For example, the federal and provincial governments benefited from taxing the incomes of employees and the firm itself; local governments benefited from the collection of property taxes; banks benefited from interest charges on the operation's debt and from handling charges on their banking; suppliers benefited as the operation was an important market for them, etc. Each of these beneficiaries would purchase a certain number of no-fault shares in the clean-up fund. This idea is only at the conceptual stage, but certain conditions for this to work would likely include:

- knowing the size of the problem so that the total contribution (through purchase) to the fund by each party is known or, alternatively, funding on a case-by-case basis;
- a clear acknowledgment that the purchase of these no-fault shares is based on having benefited from the activities encompassed by the fund, not from having contributed in any direct way to the contamination problem;

- an understanding that the purchase of these shares may, in part, be because the purchaser occupies a role in the cradle-to-grave management of the contaminating substance; and
- arranging for participation in the management of the fund in proportion to the shares purchased.

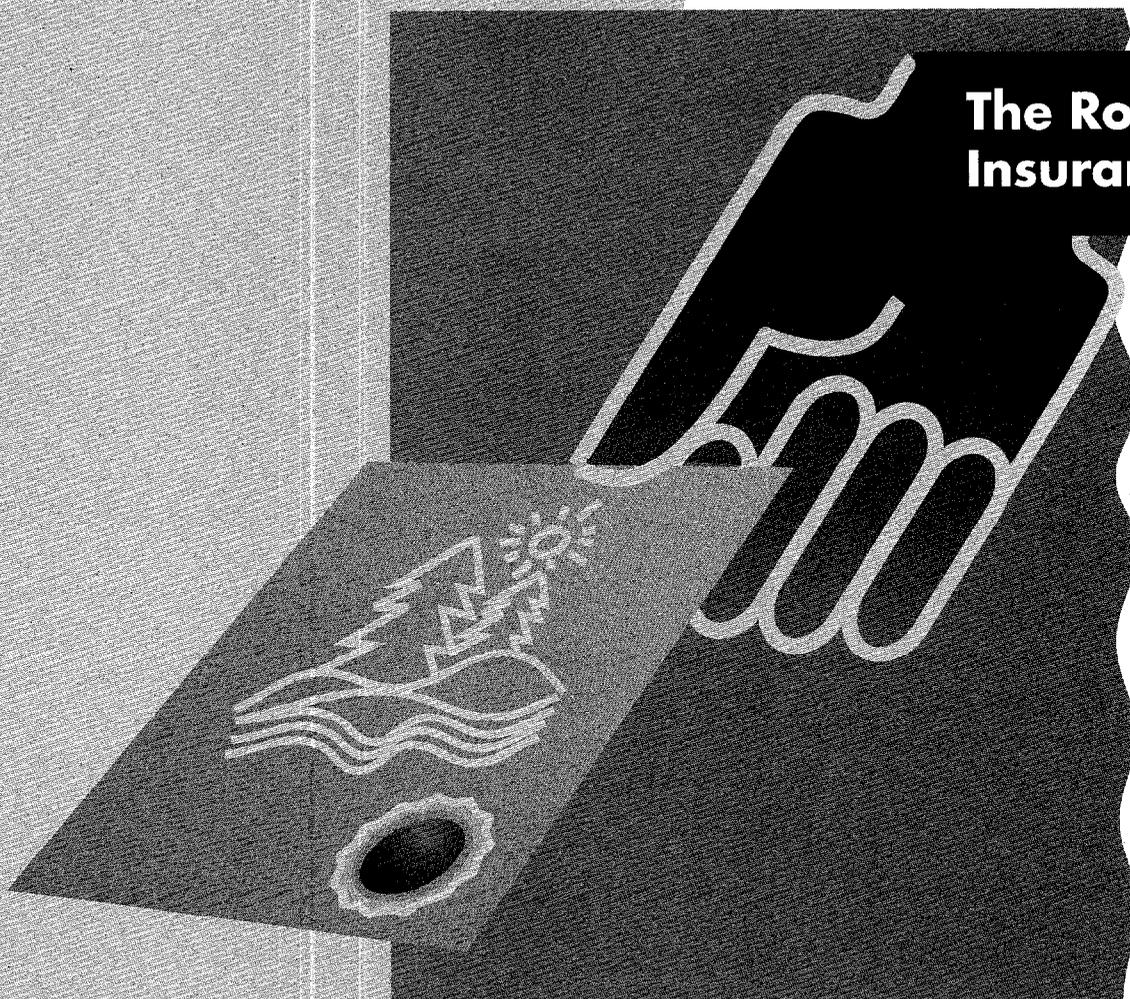
At the time of writing, the Saskatchewan Advisory Committee was about to present this concept formally to the Saskatchewan Minister of Environment and Resource Management. However, there remain some unknowns: would the public be represented by their governments, or would citizen representatives have an opportunity to participate in the fund management? Will all beneficiaries see this positively as a way to share the unfairness without assuming any fault? Can the fund be established in such a way that legal advisors are satisfied that contributions do not attract liability to their clients?

Summary of Issues

- The issue of who pays societal costs should be resolved soon so that other related issues can be addressed. The consequence of not resolving this issue may be unremediated sites that remain a threat to the environment and human health.
- Preliminary to resolving the societal costs issue, it should be determined whether “the beneficiary pays” is a valid principle and, if so, how it should be applied.
- Does the notion of no-fault shares offer some hope as a way to clean up orphan sites or orphan shares of sites?

8

The Role of Insurance



Insurance has always been intended to cover accidents or occurrences with adjectives such as “sudden” or “abrupt” having application to the policies. In the past, this has meant that property and auto insurance, for example, while not explicitly intended as environmental insurance, has covered environmental incidents such as spills of contaminants. Some interpretations in the courts resulted in ongoing polluting activities being seen as accidental. This led insurers to begin the use of exclusion clauses, which were aimed at making explicit the intent to cover sudden occurrences and not to cover ongoing polluting activities.

Insurance should not be seen as a way in which to cover the liability of contaminated sites where the contamination is caused by ongoing pollutant release. The responsibility for that type of contaminated site should rest with the polluter and, indirectly, the regulator if there has been improper advice, direction or enforcement. What environmental insurance can be expected to cover are the sudden or fortuitous occurrences that result in contamination of soil, ground or surface waters and, although not the subject of this paper, air.

Discussion of Issues

Environmental insurance is not fully a fact of life in Canada, and a number of preconditions seem to be necessary before it will be widely offered:

- **The existence of national environmental standards.** The details of this term have not been resolved, but the insurance industry believes that they must address pollutant release standards as well as clean-up standards and the perennial question of “how clean is clean?” National performance standards, in the sense of numerical standards, are unlikely to be implemented any time soon in Canada. Judging by the progress or lack of progress on the harmonization of environmental regulation in Canada, the most that can be hoped for in the next several years would be agreement among Canada’s environment ministers on a common level of environmental protection. This would be preferable to the present situation, but will not give industry certainty about exact concentrations that would be considered contaminating. These would still be highly sensitive to regional considerations and would have to be flexible to respond to new information about contaminants or the environment, local political will, and so on.
- **Consistent enforcement.** The insurance industry believes that national standards are important, but that without consistent enforcement across the country, such standards are of limited or even negative value. Delivery of consistent enforcement on the part of Canada’s 13 environment departments can be expected to be very difficult and some time in the offing. The strong need for regional expression among Canada’s governments is manifested in local decisions such as the level of enforcement provided for environmental regulations. The concept of sustainable development offered many the hope that environment and the economy need not

always be in conflict, that there could be win-win solutions, that good environmental performance could lead to good economic performance and a high level of competitiveness. A few developers and other stakeholders have become believers, but many have not, and protection of the environment is still often seen in opposition to the economy. This affects the way companies behave and the way governments are pressured to enforce.

It may be incorrect to think of government as the enforcers in the coming years. Certainly, strong arguments can be made for governments' continued involvement in enforcement. This will be essential. However, it is interesting to contemplate the role of the private sector in the future enforcement regime. Take, for example, the ISO 14001 environmental management system standards. Both internal and external auditors will play a significant role in identifying regulatory non-compliance (even though the standard itself does not require regulatory compliance). If the North American implementation of ISO 14001 evolves toward the European Eco-Management and Audit Scheme (EMAS) or the British BS 7750 standards, which do require regulatory compliance, then private sector involvement in enforcement will be a reality.

Not only environmental auditors may be drawn into this role. Insurers themselves may also have a part to play. Certainly, as potential insurers of a particular operation, they would have a very strong interest in the regulatory compliance and best practices compliance of that operation. Insurers would be likely to reinforce pollution prevention as well.

- ▶ **A consistent approach to the allocation of liability for the clean-up of a contaminated site.** All industries seek predictability in as many aspects of their business as possible. This may be particularly true of the insurance industry, which often must compensate a party for unpredictable damages. In many circumstances, the insurer of a company that has created a contaminated site becomes a potentially responsible party for the costs of clean-up. If the company is not in good financial condition, it may be that the regulator or the courts will look to the insurer to bear most of the clean-up costs, since the insurer has deep pockets or is, at least, available. Insurers have attempted to address this through their use of exclusion clauses, but this will not totally eliminate the possibility of being caught up in such situations. Lack of predictability in the allocation of liability may result in fewer companies being insured for accidental and sudden releases where insurance would be an appropriate way to cover the costs of clean-up.
- ▶ **An improvement in insurers' knowledge of the environmental area.** Underwriters do not always have sufficient experience to assess environmental risks with confidence.

- **Certification processes for environmental professionals.** The competence of many practitioners, particularly environmental auditors and environmental site assessors, has been unknown to clients and could only be discovered through experience. That experience has occasionally been costly and painful. Help is on the way on the audit side, as the Canadian Environmental Auditing Association (CEAA) has developed a system of certification for environmental auditors in Canada. Final determinations on who was “grandfathered” under the system were made in the fall of 1996, and approximately 60 applicants received certification. At the time of writing (April 1997), final considerations respecting the first group of new applicants were under way, and additional certifications should be announced shortly. The system will likely be presented to the Standards Council of Canada, and, if it is approved, there will be an opportunity for parity with auditor certification systems in other countries where ISO 14000 series standards are being adopted.

On the site assessment side, the Association of Environmental Site Assessors of Canada (AESAC) has also embarked on a certification program development process. AESAC will accredit site assessors for site screening and Phase I and Phase II assessments. Phase III (remediation activities) will have to await a broader certification effort, given the multiple disciplines involved in good remediation work. The AESAC initiative arose in 1992, at least in part because site assessment costs were being driven downward by some high-volume users, thus lowering the quality of many Phase I site assessments.

There is another side to this question. In our increasingly litigious society, it will be important for environmental auditors and site assessors to be able to obtain liability insurance. This will be facilitated by credible certification processes for them. Site assessors seem to have this issue in hand. It may yet remain an issue for environmental auditors.

- **A stronger commitment to pollution prevention.** A paper done for the Insurance Bureau of Canada in 1994¹⁷ notes that pollution prevention, meaning the substitution of non-hazardous materials for hazardous materials in manufacturing processes, is the best way to reduce the future creation of contaminated sites. The adoption of such practices by individual businesses yields an activity that is much easier and cheaper to insure. The encouragement of pollution prevention by governments will improve consistency and predictability as well as performance. Insurance premium reductions for certain measures could also be helpful in encouraging pollution prevention.

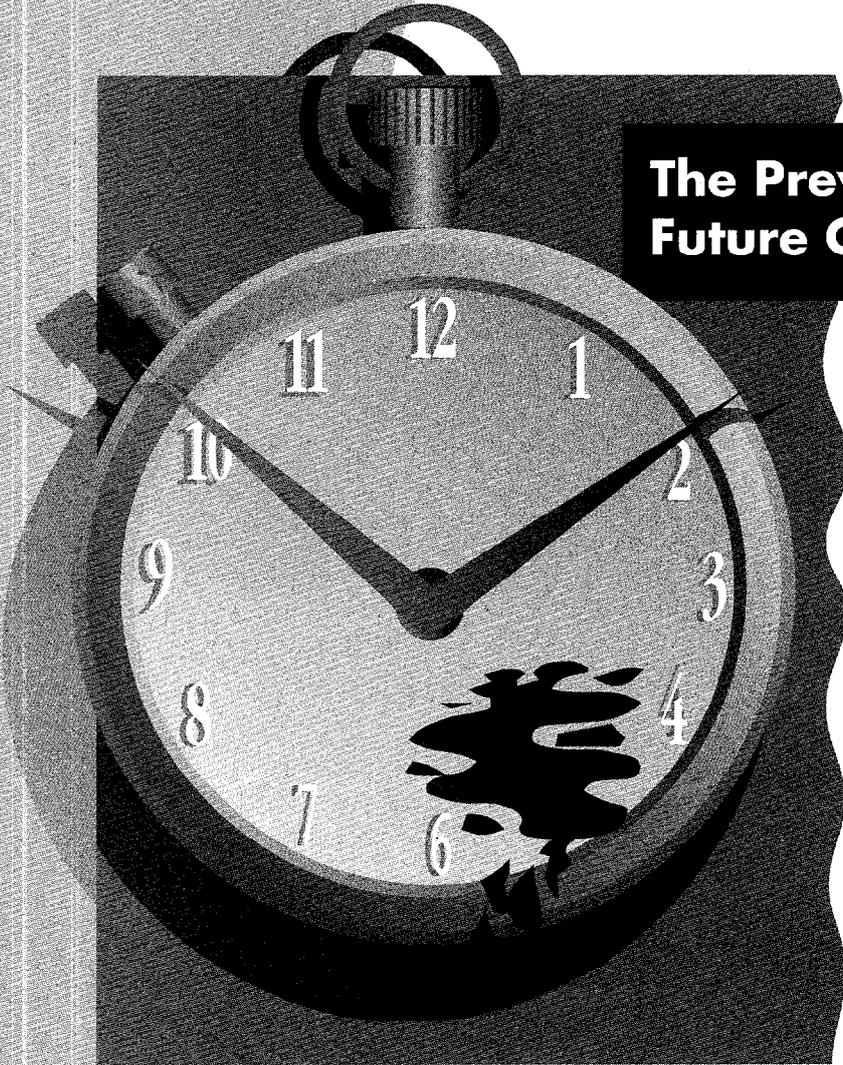
A further question arises regarding the extent of possible application of environmental insurance. Who will be the purchasers? Will it be only those who operate high-risk businesses? Will it be primarily those who have had contaminated site problems in the past and cannot afford to have them again in the future? Or should there be classes of activities for which government requires that environmental insurance be purchased to ensure that a particular type of contaminated site never becomes orphaned?

Environmental insurance would appear to be an essential piece of the puzzle in reducing or cleaning up future contamination and preventing the orphaning of some sites. Regulators will have to work with the insurance industry and potential future purchasers of such products to provide the right regulatory climate so that insurance can fulfill its role in this domain.

Summary of Issues

- Inconsistency of environmental standards across Canada needs to be addressed if the role of environmental insurance is to be fulfilled.
- Enforcement of environmental standards is inconsistent across the country, and the relative roles of government and the private sector are undetermined.
- There is a need for insurance underwriters to have a better knowledge of the interaction between various wealth-generating activities and the natural environment.
- Certification processes for environmental professionals are essential to ensure better environmental work, consistent returns for good environmental work and insurable professionals. How will processes for auditors and site assessors relate to each other?
- Should environmental insurance be mandatory for certain activities? The role of insurance in Canadian regulatory systems should be resolved.

9



**The Prevention of
Future Contamination**

The difficulties noted in all the earlier sections of this report are testimony to the need to avoid contaminated sites in the first place. They are a clear manifestation of the old saw that an ounce of prevention is worth a pound of cure, or the more recent oil filter advertisement that notes, "you can pay me now, or you can pay me later." Later is always more expensive and, very often, those left to pay are not those who created the problem in the first instance. It may be the second or the third purchaser of the car. For contaminated sites, it may be future generations.

Discussion of Issues

Pollution prevention initiatives are gaining momentum across the country, led by a couple of specific programs. In 1993, the CCME published *A National Commitment to Pollution Prevention*.¹⁸ This document made clear the CCME members' belief that it is much better to anticipate and prevent pollution than to clean it up after it has occurred. The CCME defined pollution prevention as "the use of processes, practices, materials and energy that avoid or minimize the creation of pollutants and wastes."¹⁹ This definition is consistent with avoiding the creation of contaminated sites. However, as with other commitments made at the CCME table, each government is free to use elements of this commitment or not. Consequently, implementation of pollution prevention by environment departments has ranged from rationalizations of "we're already doing it" to developing a significant new focus in programming such as in British Columbia.

The typical approach to environmental regulation in the past has been to limit, collect or treat pollution after it has been produced by various industrial processes. The thrust intended under a pollution prevention regime is to substitute less hazardous raw materials, change industrial processes, and capture and reuse other wastes in closed-loop systems, etc. This requires initiative and a willingness to invest on the part of businesses, supportive policies and practices on the part of regulators and the general support of a full-cost pricing regime.

Even without the support that full-cost pricing would bring to a pollution prevention approach, some companies have turned pollution prevention into a money saver, if not a money maker. The 3M Company and The Body Shop are cases in point, but there are other, smaller businesses that have made a success of pollution prevention as well, among them dry cleaners and photographic film processors.

Government departments can support a preventive approach to pollution through the use of market-based instruments that provide incentives for more innovative approaches and by reducing, but not eliminating, reliance on a command and control style of regulation. Command and control often results in government being prescriptive or restrictive in a way that inhibits individual and innovative solutions. Yet its strength is its ability (admittedly, not always exercised) to take the bad actors to task — something business, the public and government all wish to see.

Pollution prevention is gaining momentum. Evidence of this in business circles is the Responsible Care program of the Canadian Chemical Producers' Association, which was developed in Canada but has been adopted internationally. In 1993, the Ontario Ministry of Environment and Energy published *Pollution Prevention Planning, Guidance Document and Workbook* to provide an introduction to the concepts and principles of pollution prevention and its planning and implementation.²⁰ Later that year, the CCME produced *A National Commitment to Pollution Prevention*.²¹ Then, in 1995, the House of Commons Standing Committee on Environment and Sustainable Development published its report on the future of the *Canadian Environmental Protection Act* and gave the report a clear pollution prevention focus, entitling it *It's About Our Health! Towards Pollution Prevention*.²² In May 1996, the CCME Ministers approved a strategy for encouraging and implementing pollution prevention. In approving this strategy, the Ministers emphasized that pollution prevention was at the top of the hierarchy of environmental protection activities. In June 1996, British Columbia's Ministry of Environment Lands and Parks published *An Introduction to Pollution Prevention Planning for Major Industrial Operations in British Columbia*.²³ A number of pollution prevention pilot projects are under way in British Columbia.

The International Organization for Standardization (ISO) has developed a standard for environmental management systems. This standard, known as the ISO 14000 series, is voluntary and was published in October 1996. It calls for each registrant to have an environmental policy. Pollution prevention must be stressed, and registrants are required to commit to continual improvement. The adoption of an environmental management system does not guarantee better environmental performance. However, it supports and makes more probable such an outcome, and thus can be expected to contribute to the prevention of future contamination.

Most regulators are not unhappy with their rate of progress toward a strong pollution prevention regime. However, many acknowledge that there is a long way to go in:

- designing the future regulatory regime and determining the respective roles of command and control and voluntary approaches;
- developing and implementing appropriate market-based incentives;
- making appropriate use of financial assurances and insurance; and
- developing and implementing full-cost or internalized pricing.

Another apparent need is an early warning and reaction system for contamination when it does occur. Better enforcement of potentially contaminating activities, early detection of leaks or improper treatment and immediate corrective actions are all important in reducing future contamination of lands and water resources.

Stakeholders, as much as regulators, believe that there is much left to do. Canada has only scratched the surface of market-based instruments. Businesses want the flexibility in response that such instruments allow. They want more opportunity for voluntary approaches. Environmental non-governmental organizations are skeptical of the reasons why market-based and voluntary approaches are being pursued and are worried about loss of public control. However, they too are supportive of the broad goals of pollution prevention.

It is urgent that the future regulatory regime be defined soon. How should the various components interact to produce a system? Who will be accountable for which elements? Until this is resolved, skeptics will remain skeptics, and understandably so. This is a priority for Canadians — to give all the interests the comfort they need and to reassure them that the regulatory regime will be open to the public, effective in protecting the environment, predictable and flexible in embracing innovative approaches, and that it will identify and punish those whose environmental performance is poor.

Summary of Issues

- ▶ How can better enforcement, improved early detection of contaminant releases and appropriate and timely corrective actions when releases have been discovered be attained?
- ▶ In order to set the stage fully for pollution prevention, there is a need to develop and implement appropriate market-based instruments, voluntary approaches, financial assurances and full-cost pricing.
- ▶ It would be difficult to develop and implement a successful new regulatory regime in the absence of a broad national consensus.

10

**Miscellaneous
Issues**

**MODELING
TECHNICAL
IMPACT
CONTAMINANTS**

A number of issues do not fit well or exclusively within the previous headings. These issues include specific technical challenges, the need for more involvement of municipalities in planning broader and site-specific regulatory approaches, the need for follow-up on what is already known and the difficulties caused by technical jargon.

Discussion of Issues

Knowledge about specific contaminants, their mobility and associated health and environmental impacts continues to grow. The demand for this information, however, seems to outstrip the rate of such growth. There is much to learn about the behaviour and toxicity of specific contaminants. For example, how might guidelines be set for total petroleum hydrocarbons when the constituents change from case to case? How does one assess the ecological effects of volatile compounds that do not stay in the soil long enough for existing tests to measure their impact? What kinds of management solutions can meet environment and health protection needs and still be sensitive to economic requirements?

There are challenges in restoring certain soils, particularly fine-grained clays. As an example, while thermal phase separation has proved very effective in treating certain soil contaminant combinations, it failed in recent tests on wood-treating chemicals in clay soils. Bioremediation has held great promise for both in situ and ex situ treatment of certain contaminants. However, its limitations are still being revealed. On occasion, sites will need to be cleaned up to background or near-background levels. For some contaminants, this is not possible, due to a lack of the appropriate technology. In short, there are many technical challenges that ought to be addressed on a priority basis.

Municipalities have often been too distant from policy-level discussions on contaminated sites. However, that order of government will be increasingly implicated in environmental protection, as the impact of federal budget reductions is pushed to lower orders of government. In most cases, municipal government is the final stop, and implementation can end up being its responsibility.

Better communication among orders of governments, especially between provincial and municipal governments, would be helpful. Municipal governments are implicated and have a right to a voice in such issues as liability allocation, bankruptcy and insolvency legislation and practice, brownfields redevelopment and the resolution of the "how clean is clean" debate. Integration of provincial and municipal actions on contaminated sites is critical in setting clean-up criteria for land being returned to particular uses. Remediation consistent with industrial or commercial land uses cannot safely support residential uses or zoning. Provincial governments direct remediation while municipal governments do zoning. It is important that these actions be mutually supportive.

Some ongoing contaminated site problems result, not from a lack of knowledge of the problem or how to correct or avoid it, but from a lack of political will to require corrective action. The example that most easily springs to mind is that of underground storage tanks of service stations in the Prairie provinces. Many service stations in small communities are family-owned. A government order to replace their underground storage tanks with new double-walled tanks with leak detection capability could stretch owners' financing abilities to the breaking point. In turn, the loss of a service station in a hamlet in decline could hasten that decline and thus carries a high political price. The "solution" has often been to "grandfather" the small operators, giving them an additional 10 or 15 years to comply. Thus, contaminants are allowed to begin or continue to leak. What are the future costs of this sanctioned inaction? Sites more difficult and expensive to clean up? Another generation of orphan sites? Perhaps it is another example of "You can pay me now, or you can pay me later."

Finally, the creation and use of awkward, ambiguous or even misleading terms is harmful to communication and understanding. This is illustrated by three examples. A word used throughout this report is "remediation." It is possible that many readers will think of remediation as a synonym for restoration or rehabilitation. However, remediation has come to include containment and management of contaminants. This can be confusing and frustrating and can lead to more cynicism on the part of the public.

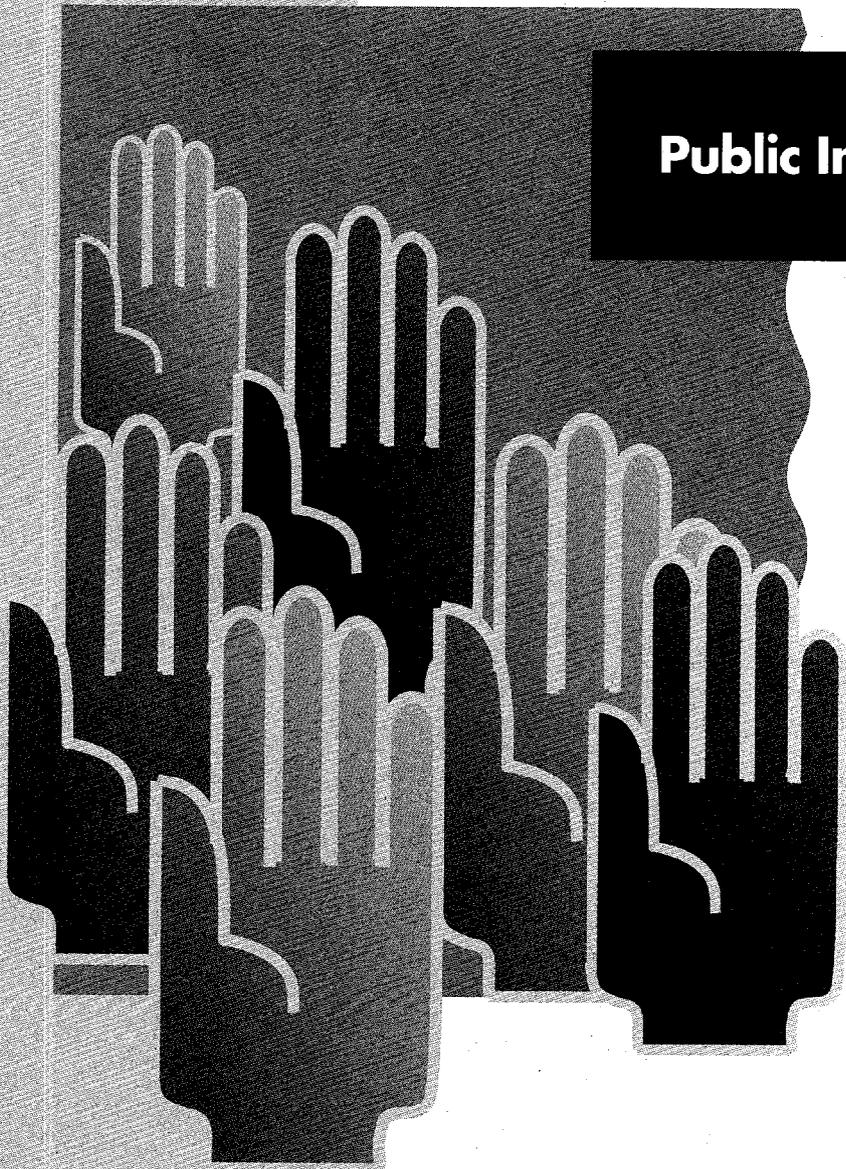
Another example of a term that can cause discomfort is the use of "halo," not to denote something related to spiritual purity or life after death, but to mean an area of contaminant concentrations in excess of background. This is a term with positive connotations used to describe something negative.

Of course, "sustainable development" seems destined to be one of the most inconsistently used terms in history. Not because anyone attempts to be misleading, but because the term has a number of meanings that are accepted by various communities of interest. Thus, the term is used to justify environmental initiatives one minute, economic initiatives the next and social policies the minute after that.

Summary of Issues

- There is a need to address technical challenges even during this time of cutbacks. Setting priorities among those challenges will be critical.
- The lack of municipal involvement in developing policy and practice in regard to contaminated sites is problematic and should be rectified.
- Political will is sometimes lacking in the prevention or limiting of site contamination.
- Communication and understanding have rarely been an objective in the development and use of terminology.

Public Involvement



Public understanding of contaminated sites is often relatively poor. This is not the fault of the public, but simply reflects the fact that information on the existence of sites is incomplete; that site characterization is often only partially complete; that we are still learning about contaminants, the receiving environment, human health and the interactions among them; and that the technologies of analysis and remediation are advancing and distancing themselves from the public.

The consequence of this is that public input to contaminated site discussions may be fearful, imperfectly informed and very cautious and self-serving. This wrongly leads developers and governments to be hesitant to involve citizens fully. Instead, interest groups speak “for the public,” though this may be entirely unsanctioned.

Discussion of Issues

When the quality of citizens’ input to contaminated site discussions is poor, there are at least four possible causes:

- First, information on contaminated sites is not widely available. Public registries are only now being established in a few jurisdictions in Canada. This makes it extremely difficult for members of the public to inform themselves. If people do not know that the site exists, they cannot ask intelligent questions about it. They cannot seek involvement in its remediation or management.
- Second, the public is becoming skeptical of experts and their assurances of “no measurable effect,” “the contamination is virtually immobile” or “the risk is at acceptable levels.” The public has correctly discerned that expert opinions represent best judgment, which means that different experts will give different answers of approximately equal credibility. This means that valid information on a site is sometimes assumed to be biased and is accordingly discounted by the public.
- Third, our knowledge of the impacts of various pollutants is always evolving; it is not absolute or complete. What is considered insignificant today can become significant tomorrow or vice versa.
- Fourth, the gap between the knowledge levels of scientists, regulators and developers on the one hand and the general public on the other will be translated into a difference in the ability of individuals to participate in decision making. Thus, those in the know may be heard to say, “yes, but the public won’t understand,” or “this is too technical; it’ll be misunderstood,” etc. This tendency is exacerbated by the fact that technological development is proceeding quickly and new techniques are being introduced and, seemingly, validated scientifically before they have any credibility with the public (e.g., risk assessment).

Why might the public want to get involved in discussions related to contaminated sites? There are elements of the public that are motivated to do the right thing for the broader environment. However, the prime motivation for the public seems to be public health — its own health, the health of its children or of future generations. A secondary motivation, but nonetheless a very important one, is the effect of contamination on the property values. This aspect can bring a community together in opposition to or acceptance of a particular clean-up or management plan.

There is a broader underlying reason why the public may want to be involved, and that is that it wishes to be master of its own destiny, or at least to have some measure of control over what happens to it. At one time, the public was content to have government speak for it, but that trust has diminished. This could be due to governments' increasing tendency to listen to interest groups as representatives of the public instead of involving the broader public, or it may stem from a recognition of governments' reduced capacity to make a difference.

The desire for involvement on the part of the public runs up against the following views held variously by responsible parties, developers and regulators:

- we should talk to the public about this but they will not understand;
- the public will perceive problems where none exist;
- the media will blow those problems out of all proportion;
- the public is too emotional;
- it will take too much time;
- they will never be happy;
- it will cost too much;
- local politicians will use the opportunity for grandstanding; and
- it is too difficult to identify the legitimate representatives to whom we should talk.

Of course, not everyone holds these views: there are people in every organization who want to see proper, effective participation.

Experience has shown time and again that involvement should be early and substantive to be meaningful. Too often, good plans have been derailed because people who had the ability to derail a solution were not engaged in the development of that solution. A good solution for a contaminated site is one that achieves broad community ownership. This is not accomplished by holding one meeting at the end of a technical process.

Some will argue that involvement is a public relations job. Or the phrase “the public must be educated” is heard. Indeed, there is a place for education. But it is important to remember that education is a two-way process. Good educators learn as much as they teach. There is no one party in possession of the whole truth. If one party believes it is, the process of imparting that information ceases to be education and instead becomes indoctrination. The information thus imparted ceases to be knowledge and becomes propaganda. Propaganda has a lesser and even negative value. A dialogue between technical experts and the public would have significant value.

Recent experience in Alberta may be instructive. Alberta Environmental Protection has found that the public is more accepting of specific applications of techniques such as risk assessment as long as it is involved from the beginning. On a specific remediation project, this means involving the public before the choice is made to use a risk assessment approach. There are other models for combined public and stakeholder involvement that may have some application to issues of contaminated sites. The National Building Code approach may warrant attention.

It is noteworthy that it is not only responsible parties, developers and regulators who are, from time to time, guilty of discounting the value of public involvement. Many “public” interest groups do this also, excusing it because they do not have the resources to “fight cleanly,” or “the developers hold all the cards,” or “the regulators are in the pockets of the proponents,” and so on.

A final issue is that many interested parties are cynical about the value of involvement because they believe the government listens too much to the other interested parties. This is probably untrue in general, but has some truth in individual cases. More importantly though, the attitude reflects the reality that processes could be more open so that interactions are visible and shared as much as possible.

If there are a few principles at the root of public involvement in resolving issues related to contaminated sites, they might be that:

- There should be mutual respect for all interested parties involved in decision making where the results may affect them.
- There should be an assumption that people come to the table with good and serious intent in any shared decision-making process.
- There should be a belief that the public cannot only learn from involvement but can also teach.
- Involvement opportunities should be shared among all interested parties to be most positive and useful.
- Some groundwork is required to aid in the establishment of mutual respect and trust. It does not just happen.

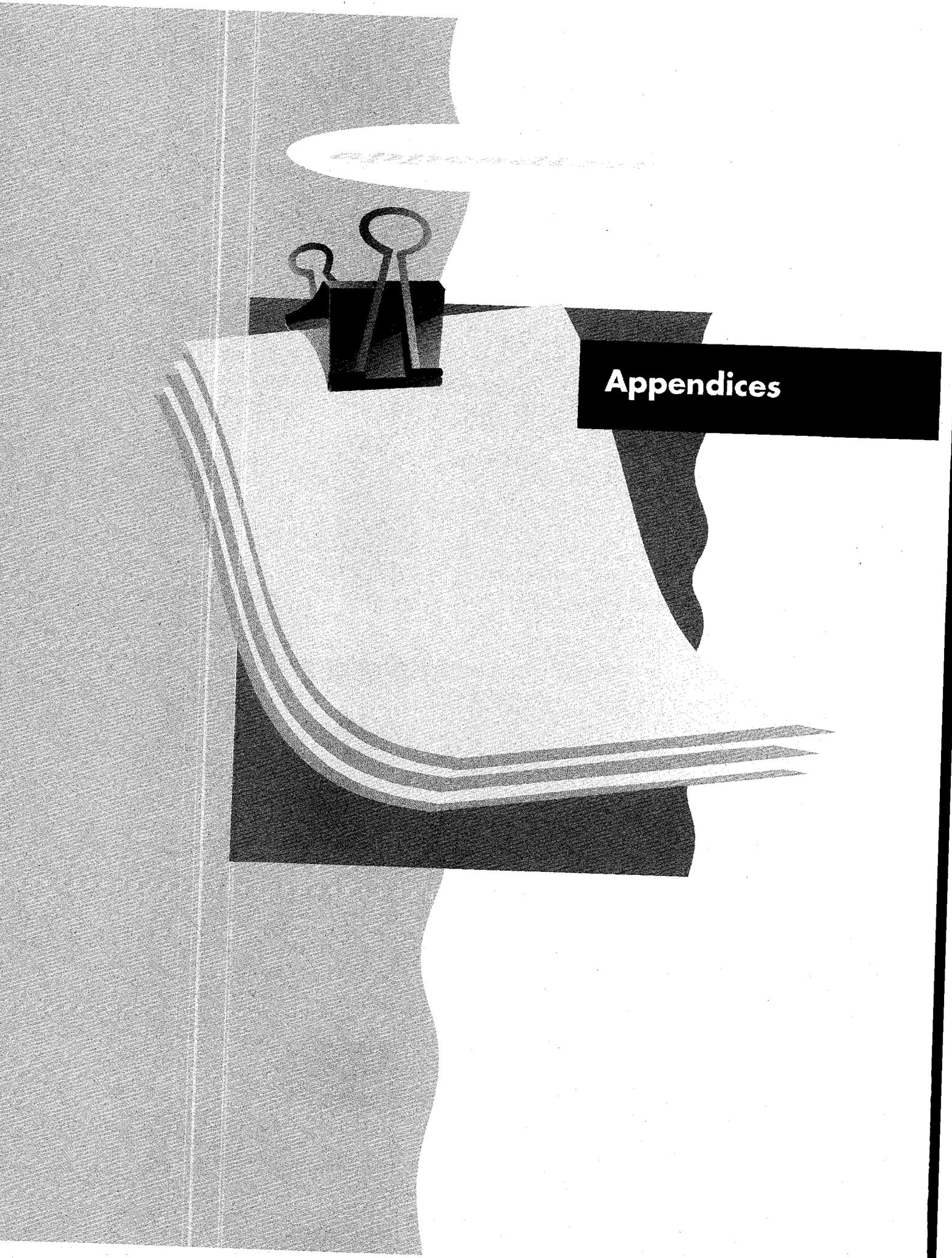
Summary of Issues

- How can the public be better informed about contaminated sites — their existence, the nature of contaminants, the ways in which contaminants move and the effects or lack of effects of particular contaminants on the environment and human health?
- Information systems to support easier public involvement either do not yet exist or are only in the early stages of development.
- General information about the existence of contaminated sites has not been readily available.
- How can the growing gap between the public and technical experts be bridged? New technologies are being validated scientifically but not publicly.
- Public involvement and the value the public brings to deliberations on problems and solutions seems to be unrecognized by many decision makers.
- Education is a two-way process, but is too often thought to be one way.
- What efforts can be made to begin building trust among all interested parties?

Endnotes

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- 22** House of Commons Standing Committee on Environment and Sustainable Development, *It's About Our Health! Towards Pollution Prevention* (Ottawa, 1995).
- 23** British Columbia Ministry of Environment, Lands and Parks, *An Introduction to Pollution Prevention Planning for Major Industrial Operations in British Columbia* (Victoria, 1996).
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Appendix A

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Appendix B

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- McKernan, John — Dale Intermediaries

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Mitchell, Anne — Canadian Institute for Environmental Law and Policy
Mundy, Dean — New Brunswick Environment
Power, Rob — Association of Site Assessors of Canada
Richards, Ken — Ontario Ministry of Environment and Energy
Schikaze, Kim — Canadian Environmental Auditing Association
Smith, Bruce — Saskatchewan Environment and Resource Management
Stephens, R.A. (Dick) — Manitoba Environment
Steward, Louise — New Brunswick Environment
Therrien, Robert — Environment Canada
Wilson, Don — Standards Council of Canada



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