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Site Contamination Law and Policy in Europe, North America and Australia – Trends and Challenges

by

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INTRODUCTION

The author has recently undertaken a survey of site contamination laws in Canada, the United States and selected European countries as part of CRC CARE's social, legal, policy and economic research program. This project has been undertaken in conjunction with a parallel survey of site contamination law and policy in all Australian jurisdictions.

The project selected various jurisdictions that have adopted innovative approaches to site contamination law and policy, as follows:

- in the United States, the Federal jurisdiction, California, Massachusetts and New Jersey;
- in Canada, the Federal jurisdiction, Ontario, Alberta and British Columbia; and
- in Europe, the European Union, the United Kingdom, Germany, the Netherlands, Belgium and Switzerland.

In order to produce the surveys of these jurisdictions, it has been necessary to analyze approximately 40,000 pages of legislation, regulations, guidelines, policies and technical bulletins. In addition, over 40 hours of interviews have been conducted by the author with officials in the various jurisdictions surveyed. The intention is to present these surveys in a concise, accessible format on the CRC CARE web-site.

In addition to providing a valuable information source for those interested in site contamination law and policy, these surveys will enable Australian law and policy

to be compared with best practice in other jurisdictions overseas. It is also intended to develop guidelines for site contamination legislation which may be of assistance to countries that have not yet adopted appropriate legal measures to deal with the problem of site contamination.

This paper constitutes the first attempt by the author to analyze the information gathered through these surveys of overseas jurisdictions. It identifies a number of interesting trends that have been observed with respect to site contamination law and policy in the jurisdictions surveyed and explores the implications of these trends for Australian jurisdictions. It should be emphasized that the observations presented in this paper are preliminary in nature, given that the process of completing the surveys has not yet been completed. To a large extent, the observations presented in this paper are based on information gathered by the author in interviews with government officials rather than through a more detailed exploration of the voluminous material that is being summarized in the surveys. This latter exercise is proposed to be undertaken through a new project for CRC CARE over the next 12-18 months in conjunction with the development of a draft model law.

THE DEVELOPMENT OF SITE CONTAMINATION LAW AND POLICY

The risks posed by historic contamination of soils and groundwater were not recognized until some time after the wave of concern about deteriorating air and water quality had prompted the development of new environmental legislation in the early 1970s. The first specific site contamination legislation was the US Superfund law (CERCLA) adopted in 1980. It was largely inspired by the well-known Love Canal site and addresses 'historic' sites that are not subject to any current use. Contamination on sites that are subject to ongoing Federal licensing is dealt with separately under another Federal Act (RCRA). These Federal laws have been complemented subsequently by State-based site contamination laws in most States.

In Western Europe, the first site contamination legislation was introduced in the 1980s (for example, Denmark and the Netherlands in 1983; Switzerland in 1987: and Austria in 1989). However, most countries have only enacted legislation since the 1990s (for example, the United Kingdom in 1995 and Germany in 1999).

Canada and Australia share the common position of having Federal constitutional systems in which most of the Provinces and States respectively have adopted specific site contamination legislation over the past 15 years, whilst their respective Federal governments have failed to do so (unlike their Federal counterparts in the USA and Germany). In both Canada and Australia, national guidelines have been developed to bring a level of consistency in approach across the jurisdictions to matters such as the principles of liability and scientific/technical aspects.

For the rest of the world, the contaminated sites issue is still emerging as a concern. In Asia, several jurisdictions have adopted specific legislation (Japan, South Korea, Taiwan, Singapore and the special region of Hong Kong), while some others are considering the development of such legislation (for example, China and Malaysia). It can be expected that the need to develop specific site contamination law and policy will be recognized in many developing countries during the next decade.

Finally, it should be noted that there has been no effort yet to develop any measures at the international level specifically with respect to site contamination. This is despite calls through the IUCN for an international treaty on the protection and sustainable use of soils and the development of specific international agreements in relation to chemicals and wastes. The one exception is the recent European Union Draft Framework Directive for Soil Protection, which proposes measures with respect to both soil management and site contamination within the one instrument.

THE NEED FOR SPECIFIC SITE CONTAMINATION LEGISLATION

Countries, and regions within some countries, have adopted site contamination legislation either in response to a particularly significant occurrence such as Love Canal in the USA, Lekkerkerk in the Netherlands or the Fischer site in Austria or, alternatively, in response to a gradual, growing awareness of the extent of the problem within their jurisdiction. In the latter regard, the evidence continues to accumulate in many parts of the Western world concerning the magnitude of the historic legacy that has been left by industrial and commercial activities.

In Europe, the European Environment Agency reported in August 2007 that soil contamination requiring cleanup is present at approximately 250,000 sites and predicts that this number will increase by 50% by 2025. In Canada, a report on March 2005 by Industry Canada indicated that there are more than 30,000 sites in that country. The US Government Accountability Office believes there are some 425,000 “brownfields” sites (defined as sites where redevelopment may be complicated by the presence or potential presence of contamination). A now dated assessment in Australia in 1997 suggested there were approximately 80,000 potentially contaminated sites in that country at that time.

It might be thought that the magnitude of the site contamination problem would have prompted very widespread adoption of specific legislation in countries with a relatively long history of industrialization, but this has not been the case in practice. There are still numerous jurisdictions that continue to rely on their powers to regulate polluting activities under their general environmental protection legislation, believing these to be sufficient to enable them to address the problem of site contamination. At present, this attitude is also almost universally adopted in developing countries, where the nature and extent of site contamination problems is only poorly understood.

There are several reasons why such an assumption is likely to prove false in practice. First, in order to address 'historic' site contamination, there is a need to be able to impose liability on responsible parties retrospectively, including where those parties did not act contrary to any law in place at the time of committing the acts or omissions that have resulted in site contamination. General environmental protection legislation does not normally provide for such retrospectivity and this must therefore be provided for in specific provisions addressed to the problem of historic site contamination.

A second reason for specific legislation is to provide for the relevant scientific or technical framework that is now widely applied in relation to the identification, assessment and remediation of contaminated sites. For example, most of the systems that were developed in the 1980's provided for cleanup for "multifunctional use", which in practice has meant pursuing almost complete elimination of contaminants from affected sites. However, this has proved both costly and time-consuming in practice and there have been amendments to legislation since the mid-1990's (for example, in the Netherlands) to emphasize a new standard of "fitness for a specific purpose". The development of this specialized technical framework for dealing with contaminated sites requires more specific provisions than will be found in most general environmental protection laws.

Third, there is an emerging trend of encouraging so-called "brownfield redevelopment" (this is discussed further below), including by offering relief from future liability to those who undertake voluntary remediation of sites as part of development project. The amendments to CERCLA through the *Brownfields Revitalization Act 2002* are a good example of how specific legislation is evolving so as to foster more cleanup activity. Similar legislation has also been passed, or is proposed, in several Canadian Provinces.

Thus, the case for the adoption of specific legislation to address site contamination issues is overwhelming – either by way of a stand-alone Act such as CERCLA or through the insertion of new measures in an existing environmental protection law (as in the case of the UK *Environmental Protection Act 1990,* which was amended in 1995 to inset Part 2A.

GENERAL CHARACTERISITICS OF SITE CONTAMINATION LEGISLATION

It was noted in the preceding section that site contamination legislation is undergoing a process of evolution in many countries. In this regard, it is possible to distinguish between the first and second "generations" of site contamination laws. The "first generation" laws commonly shared several characteristics. First, they provided detailed definitions of "potentially responsible parties", who might include not only the original polluters but also current owners and occupiers of contaminated sites and transporters of contaminants. Second, they provided for a specific liability regime that operated retrospectively in order to address historic

pollution, impose strict liability rather than liability based on fault, and had the capacity to impose both joint and several liability on responsible parties. Third, they provided a specific mechanism for the imposition of liability on responsible parties, usually in the form of an administrative order that could be issued by an environmental authority. Finally, in some instances such as the US Superfund law, site contamination legislation provided for the creation of a public fund to cover the cost of cleanup of contaminated sites where potentially responsible parties were unable or unwilling to do so.

In the following sections of this paper, it will be suggested that this “first generation” legislation has proved inadequate to address the magnitude of the site contamination problem in most Western countries and that it has been necessary to adopt additional measures, particularly for the purpose of promoting voluntary, market-driven approaches to the cleanup of contaminated sites. These are what have been referred to above as “second generation” site contamination laws. The nature and effect of these laws will be discussed more fully below.

Before doing so, however, it is necessary to outline in the next section the general approach that has been widely adopted with respect to the cleanup of contaminated sites – in particular, to demonstrate that there are multiple avenues through which cleanup activity is undertaken rather than one single approach.. Having explained this rather poorly described reality, the rest of this paper is then devoted to a discussion in more detail of specific trends and challenges with respect ot site contamination law and policy.

THE GENERAL APPROACH TO CLEANUP: REGULATION v VOLUNTARY, MARKET-BASED METHODS

As noted above, the typical approach under first generation site contamination legislation has been to provide the power to a relevant environmental authority to order potentially responsible parties to take action with respect to the assessment and remediation of sites suspected of being contaminated. This is a classic "command and control” approach that has been employed in other contexts, for example, to require action in response to pollution spills that have caused or threaten environmental harm. However, in practice, it has been far more difficult to employ this approach with respect to historic contamination, particularly as the technical challenges in relation to achieving cleanup have proven to be far more complex.

In the United States, Canada and Australia, assessment and remediation orders have only been used with respect to the largest, high-risk sites, such as those identified on the National Priority List under the Superfund law. The more common approach has been to use the threat of imposed liability via orders in order to achieve a negotiated arrangement with responsible parties concerning the assessment and remediation of contaminated sites. This negotiated approach has been preferred by regulators because it avoids the possibility of

appeals or other forms of litigation by potentially responsible parties. Even in Europe, where there appears to be greater reliance still placed on formal regulation via orders, the practice of negotiating outcomes appears to be widespread.

The most significant trend to emerge with respect to site contamination law and policy has been the development of measures to promote voluntary remediation, under the banner of "brownfields redevelopment". This approach has been particularly widespread in the United States since the mid-1990's and, more recently, has also been vigorously pursued in Canada and the United Kingdom. It will be described in more detail in the next section of this paper.

But in fact, multiple and overlapping pathways to remediation have emerged in most jurisdictions alongside the formal, "command and control" approach. For example, it is common to use "development" activity in the form of a change of use of land or building construction as a trigger for requiring an initial investigation of sites with a history of land use that may have resulted in contamination. This approach may lead to the reporting of site contamination to environmental authorities and the imposition of consequential obligations with respect to cleanup, or it may involve the relevant planning authorities in the oversight of cleanup prior to the grant of approval for such development activity. The latter approach has been adopted, for example, in the United Kingdom. It may be possible that planning authorities in Australia (who are primarily local governments) are also engaged in a similar role. Further research on the role of planning authorities in the assessment and remediation of contaminated sites in Australia is needed to clarify the extent of their involvement in such activity.

Another avenue to remediation has been the use of specific funds established by site contamination legislation to address "orphan sites" where responsible parties are unable or unwilling to assume responsibility for assessment and remediation. The Federal Superfund scheme has been the outstanding example of this approach, but it has not been complemented by additional schemes in more than a few of the American States. Neither Canadian nor Australian jurisdictions have chosen to establish specific funds for cleanup purposes or to otherwise commit public funds to cleanups. However, in Europe, there appears a greater willingness to apply public funds to site cleanup than is evident in North America or Australia. The 2007 EEA report states that "approximately 35% of total expenditure in the (16) surveyed countries derives from public budgets". Thus, there seems to be some variation in practice in this regard. It is hardly surprising that many governments have been cautious about applying public funds to secure cleanups and have preferred instead to explore ways of stimulating private, market-driven remediation activity.

Finally, it appears that cleanup is undertaken in some jurisdictions on a completely voluntary and unreported basis without any formal supervision by government. This approach has been driven by "due diligence" auditing arising

from the obligations imposed on corporations to report environmental liabilities, and also by requirements imposed by lenders in connection with the proposed sale and transfer of businesses or properties. For example, in Ontario, almost 90% of remediation activity is undertaken in this way.

The extent to which this type of voluntary remediation activity can be undertaken without any formal supervision depends largely on the nature and effect of "notification" requirements where sites are identified as potentially contaminated. Many jurisdictions now have provisions in their site contamination legislation that require notification by either owners or consultants to the relevant environmental authority of suspected contamination, but there are some notable exceptions to this proposition – for example, in Ontario and also the United Kingdom. It is also possible that consumer protection legislation may require disclosure of known contamination by vendors where sale and purchase transactions are involved. To the extent that these provisions are found in relevant legislation, it is less likely that remediation activity will be undertaken without any form of supervision by or on behalf of governments.

It is clear from our surveys that formal regulation of contaminated sites via a “command and control” system of administrative orders accounts for only a small proportion of cleanup activity in most jurisdictions, including in Australia. Instead, either negotiated approaches to cleanup or voluntary, supervised cleanup projects are far more the norm. These may be complemented by government-sponsored cleanups and, in some jurisdictions, by a range of “due diligence” inspired activity that is not subject to any formal supervision by governments. In the next section, the emergence of brownfields measures, particularly in North America, that have encouraged voluntary cleanup activity is discussed.

BROWNFIELDS MEASURES

The concept of “brownfields redevelopment” emerged in the United States in the mid-1990’s and has been rapidly embraced elsewhere, for example in Canada and the United Kingdom. “Brownfields” sites have two basic characteristics:

- first, they generally constitute areas of unused land that contribute to "urban blight”, for example, vacated textile or steel mills in the USA or former gasworks and collieries in the United Kingdom; and
- second, they are most likely to be contaminated by prior use, though not necessarily to the extent that would warrant regulatory intervention due to the presence of a significant risk to human health or ecosystems.

By the early 1990s, it was evident in North America that the first generation of site contamination laws were failing to address these types of sites. Lists of potentially contaminated sites were becoming longer by the year, government “Superfunds” to assist in remediation of sites were proving insufficient to handle the task, and the "market” in the form of land developers was showing no interest

in developing these sites because of the high cost of remediation. At the same time, urban planners in the United States were promoting the "smart growth" movement in an attempt to generate economic and social revitalization of blighted inner city areas, but were finding that many sites potentially suitable for redevelopment were essentially frozen due to the suspected presence of contaminants.

In 1994, the US EPA decided to embark on a new strategy to address the problems with contaminated sites, thereby ultimately giving rise to the second generation of site contamination laws. The strategy adopted by the US EPA has two essential features:

- first, substantial funds have been allocated by the EPA, in the form of both grants and loans, to projects to redevelop brownfields sites; and
- second, where brownfields redevelopment projects are being undertaken voluntarily, the developers have been granted a degree of immunity from future liability under site contamination legislation.

The combined effect of these measures has been to create a substantial "brownfields industry" in the United States comprising property owners, developers, lenders, insurers and government agencies at the national, state and local levels. Brownfields projects are commonly treated as land development schemes in which cleanups are simply one component of a much wider process, rather than the principal goal.

In Canada, brownfields measures have focused almost entirely on the second aspect, namely the provision of immunity from future liability for those who parties who undertake the cleanup of sites voluntarily. There has been less willingness to date to provide financial incentives and assistance with respect to brownfields projects.

The concept of brownfields redevelopment has also been widely embraced in the United Kingdom, particularly through the government-sponsored Closer Partnership initiative. However, it appears to be less well accepted presently in the rest of Europe. In its recent survey, the EEA noted that “there are still insufficient national programmes for promoting rehabilitation of brownfields sites across Europe”

The concept of brownfields redevelopment has also failed to become part of the lexicon of site contamination in Australia, where the term is rarely used. Current site contamination laws in Australia do not provide for immunity from future liability for those undertaking remediation on a voluntary basis. Furthermore, there is little evidence of direct financial support being provided by State governments in Australia to those wishing to undertake redevelopment of contaminated sites on a voluntary basis. One possible explanation for the lack of brownfields measures in Australia may be the absence of large-scale urban

blight of the magnitude that has afflicted many cities in the USA and the United Kingdom.

Whilst there is considerable evidence to indicate that the promotion of brownfields redevelopment in the United States has been successful in reducing the number of sites awaiting remediation, and has also contributed to the revitalization of many inner-city areas, there is also reason for caution in judging the overall effectiveness of the strategies that have been pursued. There are examples of poorly designed brownfields projects that have exacerbated rather than reduced social isolation within communities in the United States. There has also been some criticism that an undesirable lowering of cleanup standards has occurred in practice in order to facilitate brownfields projects. The subject of technical standards and approaches to site remediation is discussed further in the next section of this paper.

There is also some debate in the United States concerning the effectiveness of the provisions granting immunity from liability. Whilst property developers appear to have been willing to rely on the immunity provided, it was suggested to the author that larger corporations are continuing to "mothball" contaminated sites under their control out of a concern that the level of immunity provided from future liability is inadequate. It is clear that the immunity provided in relation to voluntary, brownfields projects is not absolute and that it may be possible for a cleanup to be reopened if fresh evidence of health or ecological risks emerges some time after the completion of a cleanup. The US Federal EPA claims that it is most unlikely to reopen a cleanup that has been undertaken voluntarily to agreed standards, but this reassurance does not appear to have mollified the concerns of some larger corporations and their legal advisers.

It should be noted that the question of the “finality” that attaches to an approved remediation is relevant not only with respect to brownfields projects but also to any cleanup that has been supervised by a government authority. If the authority decides to reopen a cleanup at a later date, there is a significant issue as to whether responsibility should remain with the various responsible parties or should be assumed by government.

TECHNICAL APPROACH TO ASSESSMENT AND REMEDIATION

The technical or scientific approach to assessment and remediation of contaminated sites has undergone an evolution in parallel with that which has occurred in relation to law and policy. The initial reliance on generic, technical standards to determine when sites are contaminated (often referred to as “screening” or “investigation” values) has been complemented by the emergence of a site-based, risk assessment process to deal with sites that present large and complex contamination problems.

Many jurisdictions describe their technical approach in terms of Phase One and Phase Two investigations that are often sufficient to address the needs of particular sites, but which may be followed up with a detailed, site-based risk assessment in the more complex cases. The description of this staged approach to investigation and assessment of sites and the prescription of generic standards are usually undertaken through policy or guidelines documents that have no legal status – many of them being quite lengthy and complex. There is also a lack of consistency across jurisdictions in the terminology used to address these matters.

The 'Void' Between Science and Law re Site Contamination

One of the most significant observations to emerge from our surveys is that there is virtually no linkage or connection between the scientific and technical approaches to assessment and remediation that are now widely employed in many jurisdictions and the relevant site contamination legislation in those jurisdictions. As has been noted above, the relevant generic standards and the procedural requirements with respect to investigation and assessment of contaminated sites invariably are prescribed in informal guideline documents.

Whilst there may be a strong argument in favor of flexibility with respect to such technical matters, this approach gives rise to questions of accountability on the part of those involved in the administration of site contamination legislation. In the absence of legally prescribed procedures and standards, implementation is essentially at the discretion of the relevant administrators. This problem may be exacerbated where governments have chosen to delegate to private professionals a considerable amount of the responsibility for such administration (this subject is discussed further below).

There appears to be a strong case for much closer communication to be developed between scientists and policy-makers in order to overcome the significant void that exists presently between site contamination law and the technical approaches that are being employed in practice with respect to risk assessment. The aim of this communication should be to achieve a greater degree of recognition of the underlying scientific methodologies and standards concerning risk assessment within the relevant legal framework.

The same point can be made with respect to remediation standards. Site contamination legislation has generally provided minimal guidance with respect to the types of remediation strategies that can be employed, preferring to simply prescribe a broad objective such as the elimination of risk to human health or any affected ecosystems. As new scientific approaches to remediation emerge, it is critical that the relevant legislation and accompanying policies are amended to accommodate these developments. The current legislative framework in most jurisdictions appears to be poorly-equipped to do so.

The Need for Clearer Remediation Criteria in Site Contamination Legislation

The lack of detailed, legally-based criteria with respect to remediation raises some practical issues that warrant further comment.

First, there is a very widespread practice of invoking screening or investigation levels as a cleanup standard, contrary to the purpose for which these levels have been designated. This practice has been identified in the course of a recent review of site assessment requirements in Australia, but is also widely reported overseas. It has led in most jurisdictions to widespread reliance upon the "dig and dump' strategy (or, in other words, the removal of contaminated soils to a landfill sites) as the most common remediation method. In Australia, this practice has been reinforced by the transfer of responsibility by environmental authorities in a number of jurisdictions to environmental auditors to determine remediation approaches. Auditors have tended to act cautiously by recommending removal to landfill in most cases rather than exploring alternative approaches, largely out of a concern to avoid any possible future liability.

Second, as the pressure to reduce the flow of wastes to landfills has increased in recent years, together with the cost of using this remediation strategy, land developers and auditors have been forced to reconsider the “dig and dump” strategy. In particular, where site-based risk assessment has been undertaken, the option of in situ retention of contaminants has been canvassed. This may involve removal of particular "hot spots” and some treatment of the contaminants that remain in situ. Also, physical containment of the residual contaminants left in situ is now a very common remediation strategy.

In most instances, retention of contaminants on-site will be likely to involve obligations with respect to the ongoing management of the site following the completion of remediation and possible restrictions on the future land-uses permitted at that site.

Our survey of overseas jurisdictions has found a relatively high level of acceptance on the part of regulators of the option of in situ retention of contaminants. It appears that this strategy has been pursued as an alternative to the “dig and dump” option for the past 15 years, although the latter option has still enjoyed significant support as well. It was suggested in interviews with officials that the availability of the in situ retention option has been a significant catalyst in relation to voluntary cleanup action, alongside the brownfields measures discussed previously.

By contrast, it appears that environmental authorities in Australia have been less willing to explicitly endorse this remediation strategy and that it has therefore been less widely adopted in this country. There is a lack of regulatory or policy guidance in relation to the circumstances in which in situ retention of

contaminants may be considered an acceptable remediation strategy and possibly some resistance to its adoption on the part of environmental authorities, due principally to fears of community opposition.

Some Further Issues Relating to In Situ Retention of Contaminants

There are three other issues that appear to require attention if in situ retention is to be more widely adopted as a remediation strategy – both in Australia and overseas. The first involves the question of public acceptance of this approach. There may be community distrust of this strategy, particularly when it is promoted by auditors who are perceived to be acting for the relevant site owner. Assuming the science utilized in a site-based risk assessment is sound, then there is a significant need for better risk communication strategies that can allay public concerns with respect to this particular remediation strategy. A proposal is currently under consideration within CRC CARE to engage in a project to develop a more effective risk communication strategy that could be employed by Australian environmental authorities and auditors, particularly in conjunction with the strategy of in situ retention of contaminants.

The second problem relates to the interface between site contamination legislation and waste management laws where in situ retention of contaminants is proposed. In Europe, particularly as a result of the decision of the European Court in the *Van der Walle* case in 2004, in which it was held that the EU Waste Directive applied to soil contamination, considerable difficulties have arisen where it is proposed to retain contaminants in situ. The decision has had the practical effect of applying landfill requirements with respect to such containment and it would appear that the problem can only be dealt with in the longer term through an amendment to the Waste Directive to exclude site contamination. Interestingly, there is no evidence that this issue has presented itself in any the jurisdictions surveyed in North America.

The third problem may be seen as more philosophical in nature by site contamination practitioners, but is central to the acceptability of the strategy of in situ retention. The issue is whether the practice of in situ retention can be considered to be compatible with the principles of sustainable development, in particular the principles of precaution and inter-generational equity. In Australia, most environmental legislation, including that related to site contamination, adopts the objective of “ecologically sustainable development”, and often extends this concept by specifically endorsing the precautionary principle and the principle of inter-generational equity. It may be arguable that the approach of retaining contaminants in situ could be contrary to both of these underlying principles of sustainability and therefore in breach of the objects of the relevant legislation.

This issue does not appear to have been raised yet in Australia or elsewhere, but it could become significant should problems emerge in the future with respect to

sites that have been made subject to this remediation strategy. To a large extent, this will depend upon the long-term adequacy of the engineering and institutional controls applied to such sites. The question of institutional controls is emerging as a significant challenge for the proponents of in situ retention, particularly at the moment in the United States.

INSTITUTIONAL CONTROLS AND THE CHALLENGE OF "LONG-TERM STEWARDSHIP"

During interviews with officials in the United States, it was suggested to the author that the issue of long-term stewardship of sites on which contaminants have been retained in situ constituted the "hottest issue" in relation to site contamination law and policy in that country. Many of the sites that have been redeveloped under brownfields schemes require ongoing monitoring and reporting and also may have restrictions imposed on them in relation to the way in which they may be used in the future. The challenge is to ensure that the relevant legal obligations (usually referred to as "institutional controls") are incorporated within a legal framework that will, first, be evident to future owners and occupiers of the relevant site and, second, be capable of enforcement in the event of non-compliance.

Traditional legal mechanisms under private property law (such as easements, restrictive covenants and statutory liens) are affected by numerous technical requirements that limit significantly their capacity to provide the necessary legal framework. In response to these difficulties, a draft model law known as the *Uniform Environmental Covenants Act* has been developed recently in the United States. The Act provides a specific form of instrument (the "environmental covenant") that can be used to detail the necessary institutional controls over remediated sites and which can be recorded on the relevant land title.

This model law was developed in consultation with representatives of land developers, lenders, insurers, property owners and the legal profession and therefore enjoys wide support within the "brownfields industry". By mid-2007, it was expected to have been enacted into law in over half of the American States. Its rapid uptake reflects the level of importance attached in the United States to the development of an appropriate mechanism to ensure that remediated sites will be effectively managed in the long term.

The subject of long-term stewardship has barely rated a mention outside the United States. As in situ retention of contaminants becomes a more common remediation strategy in many countries, it will be necessary to address the same issues that have presented themselves in the United States.

THE EMERGENCE OF "PRIVATIZED" SUPERVISION OF SITE CONTAMINATION LEGISLATION

One area in which Australia appears to have been distinctive in its approach to site contamination issues is in the development of its system of environmental auditors. A number of the jurisdictions surveyed, particularly in Canada, have also moved recently towards a system of privatized supervision of assessment and remediation along similar lines to that developed in Australia in the early 1990s, by the Victorian EPA. In particular, the provinces of Ontario and British Columbia have provided for the use of "qualified professionals" and Alberta is about to do the same.

The rationale for pursuing this approach in the Canadian Provinces has been very much an economic one, in that the relevant Provincial governments have taken the view that it is unnecessary to duplicate expertise within government that exists already in the private sector. In the United States, Massachusetts also has made use of licensed site professionals since the mid-1990s, but is one of only three States to do so in that country.

The other States in the USA maintain branches within their environmental agencies that are responsible for the implementation of State site contamination law and policy. In the case of New Jersey, the relevant section has over 700 staff! Similarly, the use of private qualified professionals in place of government agencies to supervise the implementation of site contamination legislation has not attracted much interest in Europe, although it would appear that environmental authorities place a high level of reliance in practice upon the reports and recommendations provided by private consultants.

The Canadian and Massachusetts experience provides an interesting comparison with the approach that has been adopted in Australia with respect to environmental auditors. The requirement imposed in Australia to pass an examination as a pre-requisite to becoming a licensed qualified professional has not been widely supported in Canada, due to opposition from the relevant professional organizations from which these professionals are appointed. Instead, individuals are deemed to be qualified by virtue of their membership of these professional associations.

On the other hand, there has been a greater concern for oversight of the performance of qualified professionals than in Australia. The relevant environmental authorities generally undertake only an administrative review of reports and recommendations submitted by qualified professionals, rather than a substantive review of the adequacy of these documents. The trade-off for this approach has been a system of "auditing the auditors" in most jurisdictions on an ad hoc basis. Government officials will perform random audits of the documentation prepared by qualified professionals, usually aiming to cover about 20% of such documents. One consequence of this oversight function is that it is

possible for disciplinary action to be taken, usually through the relevant professional associations, where qualified professionals have been found to have acted inappropriately or incompetently. Some jurisdictions are considering the need for an independent body to perform this function.

LIABILITY RULES

Whilst most jurisdictions surveyed by the author have adopted a similar approach to the definition of potentially responsible parties in their site contamination legislation (focusing principally on current owners and occupiers and past polluters), and also to limiting liability to the cost of cleanup so as to leave other types of claim (for example, for personal injury, economic loss or damage to private property) to the general law of torts, some interesting innovations have been observed in several jurisdictions.

In the United States, particularly under the Superfund legislation, there is the possibility that responsible parties may be liable not only for cleanup costs but also for natural resources damages (for example, the cost to a community of being unable to access a contaminated groundwater resource for drinking water purposes). To date, this concept has not been embraced in site contamination legislation in jurisdictions other than the United States, but it may prove of interest in the future, particularly as drinking water supplies become scarcer due to global warming and excessive demand.

In relation to liability rules, two recent innovations are of interest. First, the Alberta site contamination legislation provides that a person who proposes a change of use of land is responsible for its remediation, to the exclusion of all other parties. Second, the national guidelines on liability adopted by the Canadian Council of Ministers for the Environment (CCME) some years ago were amended in 2006 to allow for liability to be transferred between parties provided that an adequate form of financial assurance is put in place. The South Australian site contamination legislation which is presently before the State Parliament seeks to address both of the above matters, but other State legislation in Australia generally does not do so. How this issue is handled in other jurisdictions is being explored as part of the CRC CARE law and policy surveys

There has also been a distinct trend, particularly in Canada, of providing exemptions for certain parties from liability. Exemptions have been afforded by amendments to the original legislation in recent years for local government authorities when acquiring properties for non-payment of rates and taxes; for lenders who foreclose on a property: and for down-gradient property-owners affected by the migration of contaminated groundwater. It is also commonplace for most legislation to provide an exemption for "innocent purchasers". In the United States a new rule was adopted in 2006 under the Superfund legislation

with respect to “due diligence” requirements in order to define more clearly when parties may qualify for this exemption.

An interesting issue which has attracted little discussion relates to the possibility that contaminated property may be subject to the process of escheat to the Crown, which thereby acquires the responsibility for its cleanup. This problem has arisen in Ontario and may also arise in Australia under the Commonwealth Corporations Law, section 568, pursuant to which liquidators can divest themselves of corporate assets that constitute a “burden” in the course of handling a corporate insolvency. In such circumstances, the Crown in right of the relevant State would find itself having title to the site and therefore be faced with the responsibility for its cleanup if it presents a significant risk to health or an ecosystem.

Finally, it has been interesting to note the availability of special forms of insurance to provide cover against contaminated site liability in North America, particularly where developers have engaged in brownfields projects. While such insurance generally is limited to a term of 10 years, it has nevertheless provided an additional stimulus to the undertaking of brownfields projects.

CLEANUP OF “FEDERAL” SITES

It was noted earlier that Canada and Australia share the common position of lacking any Federal legislation that deals specifically with the problem of site contamination. In both jurisdictions, it is the responsibility of the relevant Federal agencies under whose jurisdiction contaminated sites fall to undertake the necessary assessment and remediation of those sites.

However, in Canada, as a result of initiatives driven by the Treasury Secretariat of Canada, the sum of $3.5 billion has been allocated by the Federal government over a 10 year period to achieve the cleanup of Federal contaminated sites. This initiative was prompted by a concern within the Treasury Secretariat that the value of Federal assets could be seriously affected by the presence of site contamination. This approach stands in stark contrast to the attitude of the Federal government in Australia, which has left its agencies and instrumentalities to deal with contaminated sites under their jurisdiction within their own budgets and shown no interest in the development of an overall strategy for the remediation of Federal contaminated sites.

CONCLUSIONS

The surveys undertaken of site contamination law and policy in various jurisdictions within Europe, North America and Australia through CRC CARE have revealed a number of significant trends with respect to the general approach taken to the assessment and remediation of contaminated sites. It is clear that negotiation rather than regulation has been the more common

approach to the implementation of site contamination legislation in most jurisdictions. Perhaps the most significant trend in recent years has been the development of brownfields measures, particularly in North America and the United Kingdom, that reflect a shift from a negotiated, regulatory approach to a market-driven one that utilizes incentives, both of an economic and a legal nature, to encourage voluntary cleanup of contaminated sites. This has resulted in significant increases in the relevant jurisdictions in the numbers of cleanups being achieved and has also helped to address problems with respect to inner-city urban blight.

Alongside these shifts in regulatory approach, there has been a parallel shift in terms of the technical or scientific approach to cleanup. There is a clear trend towards the acceptance of remediation strategies that have the goal of cleanup to achieve fitness of a site for a particular purpose rather than for multifunctional purposes. This is being achieved through the use of a site-based risk assessment methodology that allows the retention of contaminants in situ above background levels. However, it is suggested that this evolution in the science of cleanup has not always been clearly reflected in the relevant legislation, but rather has been achieved often through informal technical guidelines.

Finally, in Australia and Canada, there has been an interesting general shift towards “privatized” supervision of site cleanup involving the use of qualified professionals who perform key functions on behalf of the relevant environmental agencies. This approach has been driven by a desire on the part of some governments to reduce the cost of administration of site contamination legislation and, possibly, to avoid the risk of future responsibility for inappropriate “sign-off” on cleanups.

The challenges in terms of law and policy with respect to site contamination are twofold. First, there is a need to ensure that specific legislation is adopted in the many jurisdictions, particularly in the developing world, where the problem of site contamination is almost certainly emerging but has not yet been appreciated. The development of inventories of contaminated sites in such countries is a crucial first step towards achieving effective legal and policy measures.

The second challenges is to ensure that the trends referred to above deliver sound, long-term outcomes, consistent with the fundamental goal of promoting the principles of sustainable development In this regard, several specific challenges need to be met:

- to provide effective institutional controls that will ensure the effective long-term management (“stewardship”) of sites where contaminants have been retained in situ;
- to ensure there is effective accountability in relation to the operation of “privatized” schemes for the implementation of site contamination law and policy where such schemes have been introduced; and

- to develop closer linkages between the science of site cleanup and the relevant legislation, particularly with respect to the prescription of cleanup criteria.

With respect to the last point, it should be noted that almost all of the jurisdictions surveyed shared in common the relatively complete separation of scientific and technical matters from the relevant legal framework for assessment and remediation. The lack of a stronger linkage in this regard is a significant issue and indicates a more general need for closer dialogue between scientists and policy-makers concerning site contamination issues.

Finally, there may also be a significant role being performed in some jurisdictions by land-use planning authorities, particularly at the local government level, in relation to the assessment and possibly even the remediation of contaminated sites. The nature and extent of this role warrants further investigation in order to ensure that cleanups are being supervised effectively in such circumstances.

After almost thirty years, there has been a substantial evolution in site contamination law and the underlying scientific or technical approach to cleanup. Perhaps the most significant question for the future is whether this evolution will prove in retrospect to have been a short-term expediency rather than a long-term solution.