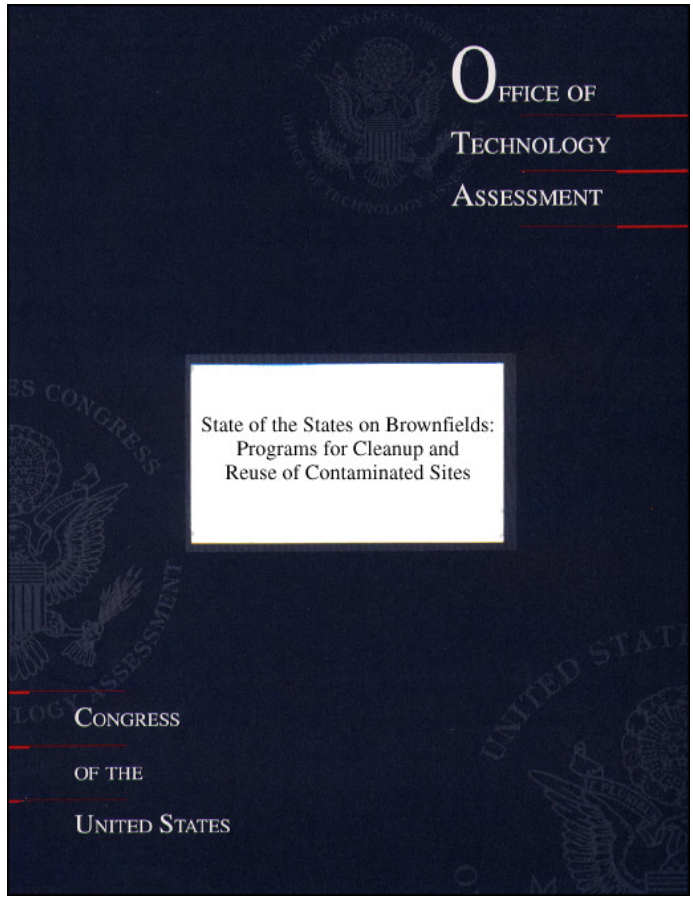
State of the States on Brownfields: Programs for Cleanup and Reuse of Contaminated Sites

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State of the States on Brownfields: Programs for Cleanup and Reuse of Contaminated Sites

Brownfields consist of land and/or buildings that are abandoned or underutilized where expansion or redevelopment is complicated, in part, because of the threat of known or potential contamination. Federal and state laws governing the treatment of these sites may require remediation (cleanup) of property before redevelopment and can contribute to uncertain liability for property owners or users. As a result of these and other factors, redevelopment and reuse of these sites can be hindered.[1] Redevelopment of brownfield sites is a particular problem in many central cities and inner suburbs of U.S. metropolitan areas that need to create jobs and attract commercial and industrial development. Because of this, a number of states and cities have developed programs to facilitate assessment, cleanup, and redevelopment of brownfields.

Congress, in considering the reauthorization of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA),[2] commonly known as Superfund, is interested in the issue of brownfields and in their potential return to productive use. As a result, the House Subcommittee on Commerce, Trade and Hazardous Materials of the Committee on Commerce requested the Office of Technology Assessment (OTA) to prepare a background paper On issues surrounding cleanup and redevelopment of brownfields.

Cleanup of hazardous waste sites in the United States is often associated with the federal Superfund law. The law established a federal program to identify and clean up the nation's worst known sites that are assessed and placed on the Environmental Protection Agency's (EPA) National Priorities List (NPL).[3] While some hazardous waste sites require federal attention and funds

[1] Brownfields may also have redevelopment problems due to, for instance, poor location, old and obsolete infrastructure, and other less tangible factors often associated with neighborhood decline.

[2] 42 U.S.C. SecS. 9601-9675.

[3] The list of hazardous waste sites in the United States that have been evaluated by EPA and de serious threat to human health and the environment.

through the Superfund, many additional sites across the country that do not meet the criteria for placement on the NPL or federal criteria for emergency removal of contamination, come under state control. For this reason, legislation and hazardous waste cleanup programs have evolved at the state level to address the identification and cleanup of known or potentially contamimted (non-NPL) sites.

State approaches to brownfields reuse differ significantly, with some states having well-developed programs and others having none. Because of these differences, the Subcommittee asked that this OTA background paper focus on the state role in brownfields. A more comprehensive background paper on brownfields, scheduled for release in fall 1995, will address a wider range of issues.[4]

This paper first presents an overview of the nature and extent of the brownfields problem and discusses several key issues relating to their cleanup and redevelopment. Next, it examines three primary state approaches for addressing brownfields, with a particular focus on state voluntary cleanup programs. It then presents more detailed information on the voluntary programs in Minnesota, California, and Ohio. This is followed by brief summaries of the most recent activity in state legislatures on brownfields and recent EPA brownfield initiatives. Finally, it outlines a number of unresolved issues and preliminary conclusions regarding the state role in addressing brownfields.

SUMMARY

The existence of potentially contaminated and abandoned property is not a new problem in many metropolitan areas, especially older, central cities and suburbs. Where industry has closed or moved, land and buildings are left behind, idled, or underutilized, jobs are lost, and local tax revenues reduced. Recently, significant attention has focused on these sites, referred to as "brownfields," and the problems associated with their cleanup and reuse. Difficulties associated with cleanup present a barrier to productive reuse of these sites and associated job creation.

The exact number and environmental condition of brownfields in the country is unknown. Estimates range from tens of thousands to 450,000 sites. In addition, information on the level of contamination of brownfields is limited, though sites are known to have anywhere from zero, low, or moderate contamination to extremely hazardous conditions, while many sites have not been evaluated.

Although the exact nature and extent of the problem is difficult to assess, most sites considered brownfields are not associated with extreme levels of contamination and will never be considered for addition to the National Priority List or similar state priority lists. Since these sites do not pose a serious threat or warrant immediate federal attention, they become the responsibility of the states or municipalities where they are located. For this reason, states have taken an active role in identifying and confronting the barriers to promoting brownfield cleanup and redevelopment.

Because brownfields are known or potential hazardous waste sites, there are a number of challenges to cleanup and reuse. Uncertain liability associated with federal and state environmental laws is perhaps the most critical. The complicated and often overlapping nature of

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4 This paper will focus on brownfield cleanup and reuse. Broader issues concerning urban economic development will be addressed in the OTA assessment on the *Technological Reshaping of Metropolitan America,* expected to be available in fall 1995.

these laws creates an unclear picture of the real risk of liability, which serves as a disincentive for involvement at a site. In addition, financial constraints at brownfields act as another deterrent to activity, since assessment and cleanup costs can be high and financing is often unavailable. Uncertainties involving more technical issues of site assessment and cleanup levels also frustrate action on brownfields. This becomes a particular problem when cleanup requirements are unclear and a process for remediation has not been defined. Because public opposition can hinder brownfield redevelopment, defining an appropriate role for public involvement at some brownfield sites, especially larger sites, can be important. Finally, demand for these sites will vary depending on the location, with some sites having limited redevelopment potential even after cleanup.

States have developed a number of approaches to resolve some of the reuse problems of hazardous waste sites in general, and, in some cases, brownfields in particular. While state policies vary considerably, the three most common approaches are state superfund programs, property transfer laws, and voluntary cleanup programs. Each includes a process for site assessment and remediation, with state superfunds and property transfer laws operating on an enforcement-driven basis.

Voluntary cleanup programs for brownfields are currently receiving the most attention and interest in the states. They are being developed at a rapid pace with 17 of the 21 existing programs in the country having been adopted since 1991. In many states, voluntary programs are targeted specifically to overcome the barriers associated with brownfields activity and to better integrate both cleanup and redevelopment of a site. Many offer technical assistance, liability assurances, and financial incentives for participation that are not available through other cleanup programs in the state. Voluntary programs are particularly popular because they allow private parties to initiate cleanups and work cooperatively with state agencies to avoid some of the costs and delays that would likely occur if the sites were subject to state superfund or other enforcement-driven programs. Since many voluntary programs are new, there has been no formal evaluation of their merits or problems. However, a number of states have completed cleanups in this way.

Many state legislatures are rethinking their policies toward hazardous waste sites to facilitate brownfields activity. Such activity is also bolstered by action at the federal level. Environmental Protection Agency initiatives include brownfields pilot projects and development of liability guidance, and congressional activity involves Superfund reauthorization and lender liability legislation. As changes occur and programs continue to evolve, more information should become available on promising approaches and still unresolved issues.

THE NATURE AND EXTENT OF THE BROWNFIELDS PROBLEM

Brownfields have nearly as many definitions as there are interested parties. EPA has adopted one which seems to embody many features of definitions promoted by others.

> Brownfields are abandoned, idled or underused industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination.[5]

[5]Timothy Fields, Jr., Deputy Assistant Administrator, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, "Federal Agency Brownfields Initiatives, " presented at the Environmental Law Institute's Redeveloping Brownfields Workshop, Washington, DC, Mar. 28, 1995.

Many brownfield sites were, or may still be to a lesser extent, used for industrial or commercial activities where hazardous substances were handled, manufactured, or stored. The extent of contamination at brownfield sites exists in a range from low or moderate to extremely hazardous. Even abandoned properties with no contamination can suffer from the stigma of brownfields until a site assessment determines that it is clean. Even then, properties with poor development potential may remain underutilized.

While a small percentage of brownfield sites may have high levels of contamination and be candidates for addition to the NPL or similar state priority lists, a large number of contaminated sites will likely never be put on these lists because they have much lower contamination levels or because the condition of the site has not been evaluated. Information about many sites is currently unavailable. Threat to public health from brownfields contamination varies widely (and is unknown in some cases), depending on the nature and extent of contamination, the exposure patterns, and the use of the site and surrounding area.

The range of estimates of brownfield sites in the U.S. varies from tens of thousands to nearly 450,000 sites, and the associated number of acres involved is equally uncertain. These sites vary in size from less than one acre to hundreds of acres in some instances. Many sites are concentrated in the Northeast and Midwest where much of the economy was historically based on heavy industrial activity. However, they are also common in the South and West and represent a wide variety of past industrial and commercial uses. Brownfields are frequently identified with distressed urban areas, particularly central cities and inner suburbs that have had a longer legacy of industrial production. Many of these areas have undergone deindustrialization, often leaving abandoned and contaminated lands and buildings, making redevelopment more difficult. In all cases, as a known or potentially contaminated site, brownfield property is valued at a reduced amount compared with the estimated value if the property were known to be clean.

Some metropolitan regions have recently initiated brownfield inventories to try to assess the scope of the problem within their own borders. Chicago, for example, has identified over 2,000 brownfield sites in its metropolitan region. Cuyahoga County, which includes the city of Cleveland, estimates that 167 sites would qualify as brownfields,[6] while on the west coast, Portland has identified approximately 40 sites involving nearly 400 acres of underutilized land.[7]

While the estimates remain far from exact, the existence of brownfields frustrates economic development activities in many communities. In large part, this is because brownfields are often associated with some level of uncertainty relating to their treatment in the law and are often disregarded for potential development due to serious concerns involving possible environmental contamination, including difficult and costly cleanup requirements, uncertain cleanup standards, liability, and unavailable financing. The presence of brownfields contributes, in part, to reduced economic development and job creation in urban areas, particularly in central cities and older suburbs. Brownfields may also contribute to develop-

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[6] Cuyahoga County Planning Commission, "Brownfields Reuse Strategies Working Group Report," July 13, 1993, p. 69.

[7] Institute for Responsible Management, Inc., "State Brownfields Policy and Practice," Conference Proceedings, Boston, MA, January 1995, p. 57.

ment of previously unused land on the urban fringe, leading to urban sprawl and its associated problems, including increased traffic congestion and loss of open space.[8]

Some might wonder why brownfields are suddenly demanding so much attention when their existence has certainly been a part of the urban landscape for decades. Old, abandoned infrastructure, such as factories, mill sites, and warehouses that have been "mothballed" due to obsolescence for a number of reasons, were not considered a threat to either human health or the environment until the mid-1970s when concern for contamination became more apparent.[9] Over time, and with the creation of the Superfund law in 1980, in the wake of Love Canal, people slowly began to understand some of the complicated environmental and liability issues at stake for many of these properties. Throughout the 15 years of CERCLA's existence, some issues involving hazardous waste sites have been clarified while others are still unresolved.

Addressing the problem of brownfields is a complex task due partly to the many stakeholders who have a significant interest in decisions that will have some impact on these sites. Brownfield discussions necessarily involve a variety of parties including: property owners, developers, bankers, environmental consultants, insurance providers, environmental and community development organizations, and regulators from all levels of government. Each stakeholder group brings to the table interests and concerns that must be considered in the context of the alternative perspectives represented by other parties. Based on a review of the brownfields literature and reports from the major brownfields forums recently under way (in Chicago and Cuyahoga County), there appears to be some agreement on the primary issues related to brownfield activities and possible avenues for improvement.

MAJOR ISSUES

The brownfields debate centers around a core group of issues that represent the primary barriers and concerns related to brownfield cleanup and redevelopment. Stakeholders have identified technical issues related to remediation, liability concerns associated with contamination, financial barriers to cleanup and reuse, community concerns, and prospects for redevelopment as issues that require some attention and resolution in order to promote greater interest by developers and business in brownfield sites.

Technical Issues

The technical issues surrounding brownfields involve accurately assessing the type and extent of contamination present, and deciding on cleanup standards and procedures that must be followed. When the level of cleanup required and the process for remediation is unclear, uncertainties about the time and money needed at brownfield sites become a disincentive for action. In addition, the difficulty in ensuring that site contamination is fully and accurately assessed contributes to uncertainty regarding liability, since future owners may be responsible for cleanup of prior contamination.

In order to address remediation at brownfield sites, regulators must determine what level of initial site investigation is necessary to identify the type and extent (or absence) of contamination at a site. Identification generally be-

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[8]Larry S. Bourne, "Reurbanization and Urban Land Development: U.S. Cities in a Comparative Context," contractor report prepared for the Office of Technology Assessment, May 1995. Many of the broader issues concerning urban sprawl and analysis of brownfields vs. greenfields development will be addressed in the assessment report on the *Technological Reshaping of Metropolitan America,* expected to be released in fall 1995.

[9]In1 976, the Resource Conservation and Recovery Act was reacted by Congress, and New Jersey adopte Jersey Spill Compensation and Control Act, a state "superfund" law.

gins with a Phase I Site Assessment, during which environmental consultants are often engaged to provide analysis of government and other historical records, perform some site reconnaissance, and interview owners, occupants, and others associated with the site. If a Phase I assessment reveals evidence of contamination, a Phase II level assessment may be conducted, including actual sampling of soil and groundwater. Although this part of the process is common to most remediation activities at hazardous waste sites, it can be particularly troublesome due to the fact that, until a final analysis of contamination at a site is complete, all parties involved do not know the exact level of the hazard posed by the site. This leaves much uncertainty regarding the potential for enforcement action under strict federal or state Superfund laws, as well as the implications for remediation costs.

Determination of the appropriate and feasible level of cleanup based on a whole host of criteria, including toxicity, exposure pathways, associated risk, future land use, and economic considerations, is central to all brownfield cleanup activities. These must be evaluated on a site-by-site basis. While this is a key element in all cleanup processes, state programs differ significantly in how they establish cleanup goals and remedy selection due, in part, to differences in state policies and the procedures that have been developed for decisionmaking purposes. For simplicity and safety, many states have adopted federal guidelines and standards for remediation. Other states have developed their own standards based on identifiable background levels, groundwater, or soil-based contaminant levels. In addition, some states, whether they adopt -federal standards or their own, apply some variation utilizing a range of criteria by applying site-specific risk assessment, economic analysis, and/or future land use in order to develop a feasible cleanup plan.[10]

The uncertainties related to environmental remediation are especially acute for stakeholders interested in the redevelopment of a site that depends on the maintenance of a budget and particular work schedule in order to make a project profitable. Uncertainty about both the exact nature of a site's contamination and the process through which it will be addressed is associated with unknown and potentially high costs for remediation, creating a disincentive for developers and other interested parties to becoming involved at a site. The willingness of a private party to become associated with a brownfield site also depends on the relationship of that party to the site and the contamination found there. For instance, a site owner responsible for contamination on the property will have a different motivation for cleanup than a prospective purchaser. Again, depending on a state's procedures for managing hazardous waste cleanup and the particular characteristics of a given site, the technical process of identifying and cleaning up contamination will range from fairly straightforward to cumbersome and time-consuming.

Legal Liability

Legal liability at brownfield sites is another major issue that acts in some cases as a barrier to cleanup and redevelopment.[11] The potential for liability associated with hazardous waste sites, in general, is especially complicated by complex and often overlapping laws designed to address them at the federal and state level.

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[10] U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, *An Analysis of State Superfund Programs,* EPA540/R-94/008 (Washington, DC: December 1993), p. 24.

[11] OTA was also asked by the Subcommittee to prepare a paper on legal liability related to brownfields. The paper is expected to be available in July 1995.

Depending on the type and extent of contamination, as well as the current capacity (active or inactive) of a brownfield site, enforcement action may be warranted under the federal Superfund program, state superfunds, the Resource Conservation and Recovery Act (RCRA),[12] and other federal and state environmental laws.[13]

The law most often associated with liability at brownfield sites is CERCLA, later amended in 1986 with the Superfund Amendment and Reauthorization Act (SARA). [14] The statute was passed in order to identify and cleanup chemical spills and abandoned hazardous waste sites that pose a threat to human health and the environment. CERCLA is particularly significant due to its far-reaching enforcement capability. It applies strict, joint and several, and retroactive liability to the environmental cleanup of hazardous substances.[15] The law identifies a number of parties that may be held responsible for a site cleanup including:

- current owners or operators of contaminated property,
- owners or operators of property at the time it became contaminated,
- persons who arrange for treatment or disposal of hazardous substances, and
- transporters of hazardous substances.

The extensive reach of CERCLA liability along with other federal and state environmental laws and common law has resulted in significant uncertainty and, therefore, fear of becoming associated with known or potentially contaminated property. Few exemptions exist within CERCLA's liability scheme and court interpretation and decisions in some cases have exacerbated concerns of liability risk for certain parties. [16] To a lesser extent, other federal environmental laws add to the uncertainty about liability, along with state superfund and other property cleanup and transfer laws.

Within this legal framework, any association with a hazardous waste site implies some level of uncertain liability. This real or perceived threat of liability often deters interested parties (especially lenders and developers) from undertaking any transaction necessary to clean up and redevelop a brownfield site. There are few assurances available at the federal or state level to protect a private party from the potential for

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[12] 42 U.S.C. Secs. 6901-6992.

[13] For example, sites involving contamination with petroleum-based chemicals are typically treated under state laws created to address this problem specifically.

[14] **Public Law99-499, 100 Stat. 1613 (1986).**

[15] All liability require proof of a causal link-between a party and the harm. ***Strict liability*** me have to be found negligent in order to be found liable. *Joint and several liability means* that any single responsible party can be required to pay for all the cleanup costs at a hazardous waste site, even if other parties contributed to the contamination. *Retroactive liability* means that parties can be held liable for contamination that occurred before the law was passed.

[16] One case that is often cited is U.S. v. Fleet Factors Corp. (901 F2d 1550, 1 11th Cir 1990), in which the court found that a lender could be held liable for cleanup if the lender participated "in the financial management of a facility to a degree indicating a capacity to influence the corporation's treatment of hazardous wastes. "

enforcement action at a hazardous waste site, though some EPA initiatives and state voluntary cleanup programs have begun to address this issue.

Financial Issues

Even if the uncertainties regarding technical issues and legal liabilities were to be solved, assessing and cleaning up contaminated brownfield sites can be expensive and can limit redevelopment of these sites. Brownfield sites are often categorized in three ways:

- those that remain economically viable, recognizing the need for remediation, where market demands w-ill promote cleanup and redevelopment;
- sites that have some development potential if some incentive or financial assistance is offered for assessment and cleanup; and
- sites that have extremely limited market potential, even if cleaned up.[17]

Financial issues are particularly complicated at brownfield sites due to uncertainties related to the ultimate costs of assessment and remediation, potential risk of liability involving remediation costs, and limited public and private resources.

Cleanup costs associated with hazardous waste contamination are often uncertain and can be quite high. Though data are limited on actual cleanup costs at brownfield sites, reports range from tens of thousands of dollars into the millions of dollars for particularly hazardous sites. Arriving at the real cost of remediation and development can require an initial investment in site assessments that may be too prohibitive for some parties, particularly as they relate to smaller, less valuable sites.[18] The problem is further complicated by the fact that even the most thorough site investigations are not totally certain. Some stakeholders report circumstances involving the discovery of additional contamination during the remediation process that adds to the overall project cost.

Another financial barrier to brownfield cleanup is the uncertainty associated with the real and perceived risk of liability for cleanup costs. Since many stakeholders are unsure of liability that may result from involvement at brownfield sites, they cannot accurately assess the risks in terms of costs and are often reluctant to become involved at all. This seems especially true for lenders (private and public) who are hesitant to make loans on properties where hazardous materials were once handled or will be in the future,[19] and developers who fear they may be held liable for cleanup costs. The prospects of working with contaminated prop-

[17] Chicago Brownfields Forum participants also recognized an additional type: "currently operating sites that are in danger of becoming brownfields because historical contamination discourages new investment and lending. " This is discussed in Brownfields Forum, "Initial Report of Workgroups Review Draft, " Mar. 31, 1995.

[18] Phase I Site Assessments may cost $1,000 to $5,000, while Phase II Assessment can average $50,000 to $70,000.

[19] Survey results of the Independent Bankers Association of America showed that one out of five of its members reported a mortgage loss or default on commercial property as a result of contamination on the site. In addition, seven out of 10 banks reported that they will not offer certain classes of loans due to environmental liability concerns. James Boyd and Molly K. Macauley, "The Impact of Environmental Liability on Industrial Real Estate Development," Resources, No. 114, winter 1994.

erty as collateral in cases of foreclosure or bankruptcy dampen interest in brownfield activity .20

Finally, there is an apparent lack of public and private resources available to promote brownfield cleanup and redevelopment. While some states provide financing mechanisms, such as public grants, low-interest loans, and tax incentives, these remain limited as brownfield sites continue to be identified and left unaddressed.

Community Concerns

Another issue that figures into the brownfields problem involves the fact that these sites do not exist in isolation. Though not always the case, brownfield property is often located in distressed communities and can be in close proximity to other businesses, retail districts, or residential areas. A brownfield site may attract illegal dumping activities and, if left unsecured and open to the public, often turns into a makeshift playground for neighborhood children or temporary shelter for the homeless. If contamination exists on the property, brownfields can pose a threat to human health and the environment where it is located. The absence of contamination, however, may not be sufficient to remove the stigma associated with an abandoned or underutilized site if it is unattractive or derelict. Brownfields may also result in increased insurance rates for neighboring properties and can lower property values in the area.[21]

While community groups are usually interested in promoting the cleanup and redevelopment of brownfields in their neighborhoods, they expect some assurance that remediation will adequately protect their health and the environment. The public's concern includes protection during the cleanup, as well as at the final remediated site. When considering the prospects for site redevelopment, community members may feel they have a stake in the type of activity that is planned for the property. In a few recent cases, concern about the potential for new jobs and economic development of a neighborhood brought forward numerous groups interested not only in being informed about the plans, but also in being included in the decisionmaking process.[22] Due to the high level of interest in brownfield cleanup and reuse in a community, and depending on the size and scope of a project, some form of communication between the responsible parties and community members about the risks involved at a site and plans for redevelopment may prove essential to its completion.

Redevelopment Prospects

The last issue that pervades the entire brownfields problem is an unresolved question about the overall prospects for redevelopment at many of these sites. The question is whether there will be demand for much of this property if the problem of contamination is removed, along with the potential for liability. Many brownfield stakeholders are quick to point out that concern about environmental contamination is only part of the problem. These sites, especially those located in distressed communities, pose other problems for redevelopment, as well. In some cases, the infrastructure is old and obsolete, and access to the property may be

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[20]However, new Community Reinvestment Act (CRA) regulations (60 FR 22156, 22160) recognize loans for financing the cleanup or redevelopment of industrial sites in low- or moderate-income communities as credit toward meeting the act's requirements. This could help expand lender involvement at brownfield sites.

[21]A. Siewers, "The Building Blocks of Ruin," *Chicago Sun Times*, Mar. 14, 1993, p. 20.

[22]Cara Jepsen, "Retooling South Works," *The Neighborhood Works*, March 1995, p. 19.

limited. In addition, other factors such as crime, high taxes, congestion, low-quality amenities, and racial tensions ultimately prevent redevelopment of brownfield sites.[23]

Because of difficulties associated with brownfield cleanup and redevelopment, development of previously untouched land on the urban fringe becomes more attractive. This development pattern (abandonment in older urban areas and suburban/exurban sprawl) is also facilitated by subsidies and tax incentives offered by outlying municipal, county, and state governments interested in promoting growth in their region. The connection between brownfield redevelopment prospects and greenfield development activities is a complex economic problem that will be addressed in the OTA assessment, *Technological Reshaping of Metropolitan America.*

OVERVIEW OF STATE PROGRAMS

Because there are many more non-NPL sites than there are NPL sites, much of the involvement in brownfields has been at the state level. For example, the Michigan Department of Natural Resources has been involved with cleanups at approximately 738 non-NPL sites over the past year, compared with 74 sites in the state that are being addressed through the federal Superfund program.[24] As a result, most issues that are identified as brownfield concerns are, in many ways, state issues.

States address non-NPL sites in their jurisdiction through a variety of methods. The three most common approaches are state superfund programs, property transfer laws, and voluntary programs. Brownfield remediation may be addressed by any number or combination of these programs. For example, California currently addresses most low-priority brownfield sites through the state's Voluntary Cleanup Program, while Kentucky primarily manages brownfields through the state superfund program.

State Superfund Programs

Some states address brownfield sites through state superfund programs, which operate through enforcement-driven activities. These programs were developed across the country soon after the passage of the federal Superfund program.[25] In many instances, state superfund programs were created to address sites not considered hazardous enough to be placed on the NPL, but that a state believes may warrant serious attention for remediation. Approximately 45 states operate their own superfund programs in the United States. Many of them include authorities and capabilities similar to the federal superfund program. While there is some variation among the programs, state superfund or cleanup programs are generally characterized by the following features:[26]

- procedures for emergency response actions and permanent remediation of environmental and human health risk,
- provisions for a cleanup fund or other financing mechanisms to support program activities,
- enforcement authority to identify and compel responsible parties to pay for site assessment and cleanup,
- authorized state agency with staff charged with responsibility for oversight of remediation activities, and

[23] See Boyd and Macauley, footnote 18, p. 19.
[24] Jim Linton, Department of Natural Resources, Environmental Response Division, Site Reclamation program, personal communication, May 25, 1995.
[25] Though New Jersey's superfund program established in 1976 preceded the federal program.
[26] See U.S. Environmental Protection Agency, footnote 10, p. 7.

- provisions for public participation in the remediation process.

The cleanup of brownfield sites through a state superfund program relies on an established process developed by the individual state. While there is some consistency across programs (as indicated in the above list of typical characteristics), few generalizations can be made about state superfund procedures as a whole. Many operate much like the federal Superfund program, with enforcement-led identification of responsible parties driving the remediation process, including emergency removal actions, determination of cleanup standards, remedy selection, and cleanup. However, for a number of reasons, including the extent of the hazardous waste site problem in the state and the level of experience in dealing with them, the process for cleanup will vary from state to state with differing levels of efficiency and effectiveness.

Most states use a variety of criteria for setting cleanup standards. As of 1993, 34 states reported the use of EPA guidelines for cleanup standard decisions. Forty states apply background levels as the goal for remediation, and 42 states employ risk assessment techniques (many relying on EPA risk assessment guidance for direction) to set standards and determine goals. Finally, 19 states have promulgated their own cleanup standards based on a wide range of criteria and selected standards for chemical residuals in soil, water, and/or air, and other standards drawn from federal environmental law.[27]

Another technical aspect of state supefund programs for non-NPL sites involves hazardous waste site identification. As sites continue to be identified and concern for risks to human health and the environment persist, some states have become more proactive in their attempt to account for and prioritize sites that pose some level of concern. In 1993, 26 states were charged by state law to develop and maintain site inventories or similar priority lists. In addition, 10 other states reported having some recorded number of sites available.[28]

A defining element related to liability in state superfund programs involves the state's authority to bring enforcement actions against responsible parties associated with hazardous waste sites. In most instances, the money raised through enforcement actions goes toward cleanup of the site and supplements other funds that are used to operate the program. In 1993, 45 states drew enforcement authority for hazardous waste cleanups directly from state cleanup statutes. At that time, only seven others (including the District of Columbia and Puerto Rico) relied on authorization through other state statutes, including general environmental protection laws.[29] In addition, many states depend on a combination of enforcement activities under state superfund laws and property transfer laws (discussed in the next section) to ensure site cleanup.

State ability to bring enforcement action against responsible parties is based on the type of liability designated by the program. Most states consider a wide range of stakeholders as responsible parties at non-NPL sites, much like those held liable under the federal Superfund program. Parties are considered liable based on their association with the site. Like the federal Superfund program, determinations are made on evidence that includes whether the party was responsible for the hazardous waste release or was the owner at the time that the contamina-

[27]Ibid., p. 25.
[28]Ibid., p. 9.
[29]Ibid., p. 8.

tion was discovered. Another key element in determining liability involves determination of how it will be applied or apportioned at a site with more than one responsible party. In 1993, 32 states applied strict, and joint and several liability to responsible parties. In the remaining states, four allowed proportional liability and 14 had no established standards for determining liability .30 In most hazardous waste site cleanups, liability may ultimately be determined in the courts through interpretation of individual state or federal statutes.

Funding is another key issue for state superfund programs and especially relevant to the state's ability to address brownfield sites. In general, states rely on some level of financial support through one or more of the following: funds designated by law in support of cleanup activities, state general funds, and federal grants. In addition, money raised through enforcement actions against responsible parties is also applied toward site remediation and program operating needs. The state's ability to identify and carry out non-NPL site reclamation is highly dependent on the number of sites demanding attention and the level of available funds. States are concerned with decreasing funds and view their ability to continue cleanups (especially those at abandoned sites) as directly tied to funding levels and the careful allocation of limited resources.

Finally, about half the state superfund programs have provisions that require some level of public participation in the process. Normally, this entails public meetings and opportunity for review and comment on remediation proposals.

Property Transfer Laws

Property transfer laws are the second major approach states use to facilitate remediation of brownfield sites. They are, by definition, an indirect method for identifying and initiating cleanup activities. Property transfer provisions exist in the states as laws, regulations, or policies that make the transfer of real property, or ownership or control of such property, contingent on the discovery, identification, investigation, cleanup, or disclosure of the existence of hazardous waste contamination. These provisions vary across the states with some simply requiring full disclosure of the environmental condition of a site, others requiring a more advanced level of site investigation, and a few states requiring complete cleanup before a transfer can occur. In 1994, 18 states had some form of property transfer requirements .31

New Jersey established the first property transfer law in the country in 1983 with its Environmental Cleanup Responsibility Act (ECRA). Though subsequently revised, ECRA is probably still the most well-known law of its kind. ECRA required that certain industries intending to close, sell, or transfer operations must investigate and clean up hazardous waste contamination before a transaction could occur. The basic approach followed by ECRA was retained in the amendments and subsequent law passed by the state in 1993, called the Industrial Site Recovery Act (ISRA). ISRA was intended to streamline the transfer process, in part, by allowing more flexibility in achieving cleanup agreements between parties, including tying cleanup standards to future use of the property. The new law exempts from the requirement of complete cleanup before transfer, sites that have been assessed, those where the industrial activity remains unchanged, or those for which the ability to finance a cleanup is

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[30]Ibid., p. 31.

[31]Elizabeth Geltman, *Environmental Issues in Business Transactions* (Charlottesville, VA: Michie Co., 1994), p. 340.

demonstrated. [32] Other states with comprehensive property transfer laws include Connecticut and Illinois.

Voluntary Cleanup Programs

The programs receiving the most attention currently in the brownfields debate are the state voluntary cleanup programs. Voluntary programs differ from other programs in that owners or developers of a site approach the state voluntarily to cooperatively work out a process by which the site can be readied for development.

Voluntary cleanup programs are particularly popular because they allow private parties to initiate cleanups and avoid some of the cost and delays associated with state superfund or other enforcement driven programs. Thus, it is the potential threat of enforcement under state or federal superfund laws that is largely responsible for encouraging private sector participation in these programs. Because voluntary programs involve a cooperative effort with regulators, in contrast to enforcement-driven cleanup programs, remediation and certification can take less time, which can be critical in many development projects. In addition, because some voluntary programs may be more likely to consider future use in deciding on remediation plans, cleanup costs could be lower. Also, many state-run voluntary programs offer additional benefits to private parties such as technical assistance, financial support, and importantly, liability assurances. Finally, there is some evidence that financial institutions maybe more favorably inclined to lend on properties that have gone through voluntary programs when they are available in a state, rather than sites cleaned up independently.

In many cases, states are also interested in promoting voluntary cleanups because they typically require fewer government resources and, with funds for enforcement-led programs decreasing in recent years, it assures that cleanups can continue with some level of official oversight. Because state voluntary programs are often operated on a fee-for-service basis, states can address more sites than they would in the absence of such programs. In addition, this helps get underutilized land back into productive use, generating jobs and tax revenues.

A recent count indicates that 21 states have established voluntary programs for the cleanup of hazardous waste sites.[33] Sites that typically enter a voluntary program have no or low to medium contamination problems and are not currently listed or being considered for the federal NPL or similar state superfund lists, although some states will address more difficult sites in their programs. Brownfield sites often have an interested private party present that is responsible for approaching the state about a voluntary cleanup and will ensure payment for oversight and cleanup costs. Abandoned or orphan sites, on the other hand, typically become the responsibility of a state or local government for cleanup. Many of these sites continue to remain unaddressed.

State voluntary programs vary widely and there has been no analysis to uncover the reasons behind the high level of diversity. In some cases, program development was motivated in order to improve the potential for low-priority

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[32] Environmental Law Institute, "New State and Local Approaches to Environmental protection, " contractor report prepared for the Office of Technology Assessment, August 1993, p. 91.

[33] The states are California, Colorado, Connecticut, Delaware, Illinois, Indiana, Maine, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Jersey, North Carolina, Ohio, Oregon, Pennsylvania, Tennessee, Virginia, Washington, Wisconsin.

cleanups in a state, as well as streamline the remediation process. Voluntary programs are viewed as an alternative to enforcement-driven programs, which are often characterized as confrontational and demanding of time and resources. Primarily, voluntary programs, which may be either statutorily or administratively operated, work to overcome many of the barriers to cleanup and redevelopment that were identified earlier.

The following section examines state voluntary programs more closely to identify some important features that account for their current popularity and innovative approach. In particular, information is presented on how voluntary programs address the technical, liability, and financial concerns associated with brownfield cleanup and redevelopment. Voluntary programs in three states are also presented in more detail.

ASPECTS OF STATE VOLUNTARY CLEANUP PROGRAMS

Technical Guidance

Brownfield cleanups involve numerous technical issues that are addressed by state voluntary programs in a variety of ways. States first approach voluntary remediation by establishing a certain level of oversight or involvement of the authorized government agency within the program. Voluntary programs can be roughly divided into three categories regarding the relationship of the government agency to the private party and the cleanup of a brownfield site. These are:

- The state is involved with a private party to provide technical guidance and oversight for any stage of the cleanup process from site investigation through remediation that results in certification of completed work.
- The state certifies or acknowledges environmental professionals who provide oversight and expertise throughout the remediation process and present evidence of the completed work to the state agency, which may or may not review a site and provide certification of completion.
- The state is involved only in the final review of a site to verify completed work and the environmental condition of the property.

Many voluntary programs operate on a fee-for-service basis and the voluntary party is typically responsible for all costs associated with the cleanup. In some cases, programs require a substantial lump-sum payment from a volunteer upon entering the program, which signifies that all parties are committed to the project.

One of the first technical steps in the remediation process is the initial site investigation that must be completed before any cleanup can occur. In some metropolitan areas, little is known about the type and extent of possible contamination that may exist at many brownfield sites. Since contamination problems exist on a continuum from no or low risk to extremely hazardous, it is essential that a thorough investigation take place initially to identify possible threats and help determine cleanup standards and remediation plans. In addition, the information gathered during site investigations can add to the state's overall understanding of the condition of many sites and enable the building of a database of experience that could aid in future site determinations.

In order to assure proper site investigation, states require a variety of assessment methods and often tailor them to address their own specific technical concerns. Typically, voluntary programs call for a Phase I investigation at a brownfield site, which often includes:

- a review of government records and standard historical sources,
- site reconnaissance,
- interviews with owners, occupants, local governmental officials, and
- evaluation and report preparation.

This process has been promoted by the American Society for Testing and Materials (ASTM) for transactions involving commercial and industrial properties and usually employs the services of an environmental professional .34 If the results of a Phase I assessment indicate a possibility of contamination, additional investigation is required and the process calls for a Phase II site assessment. Some states are primarily interested in Phase 11 investigations, which are designed to identify and locate contamination if it is present on a site. Phase II assessments are generally conducted by an environmental consultant based on preliminary investigations and include soil and groundwater sampling with laboratory analysis.

Perhaps the most significant feature in many voluntary programs is the means for determining cleanup standards. This is a controversial issue and the cause of much confusion among interested parties because of the complicated science involved and variety of methods applied to determine toxicity and exposure to contaminants. Many voluntary programs apply the same cleanup standards to voluntary sites that are used under their state superfund program. Others have developed their own standards specifically for voluntary cleanups based on a variety of criteria. Overall, most cleanup standards developed for a wide range of contaminants found at any brownfield site are developed using one or more of the following:[35]

- EPA guidelines for toxic chemicals,
- maximum contaminant level (MCL) or maximum contaminant level goal (MCLG),
- water quality criteria,
- site specific risk assessment,
- background levels for contaminants, and
- state promulgated cleanup standards.

Currently, most voluntary programs require the use of EPA standards for toxic chemicals that set risk at 1 in 1 million (10^{-6}) for cancer risks and a "no adverse effects" level (Hazard Index less than or equal to one) for noncancer risks for site remediation. However, some states have deviated from these guidelines and apply any one or a combination of the criteria listed above to determine cleanup standards.[36] Agreement across the states about the accuracy and validity of applying EPA or other standards is unlikely.

The next step in the cleanup process is combining the findings about toxicity and exposures with cleanup standards in order to select a remedial plan. As with all other features of voluntary programs, states also differ in what is acceptable at this stage. The menu of options that is of interest in remedy selection is extensive. Voluntary programs may employ exposure assumptions and cleanup standards based on pre-determined levels, future use-based levels (for example, industrial, commercial, or

[34]Jenner & Block, "The Evolution of Standards for Environmental Site Assessments: The ASTM (sidelines, " *Jenner & Block L.A. W. News*, fall 1993.

[35]See Environmental Protection Agency, footnote 25, p. 25.

[36]For example, Massachusetts allows a composite risk from al1 contaminants at a site to be set at 1 in 100,000 (10^{-5}) for cancer. Sarah Weinstein, Division of Policy Program Development, Massachusetts Department of Environmental Protection, personal communication, June 1, 1995.

residential), and/or site-specific evaluations. This variation will result in the application of presumptive (for example, standardized) remedies favored by some states, approved or certified remedies, or tailored remedies based exclusively on an individual site. Each of these approaches requires some tradeoff of cost and time commitment. Theoretically, in cases where generic standards and presumptive remedies are applied, there tends to be more immediate agreement and certainty, which can lead to less time involved in the cleanup process. On the other hand, generic approaches may cost more than if a remedy is tailored to specific site conditions and future use, since it may result in greater levels of cleanup. As states gain more experience in remedy selection and cleanup, more alternatives may become "standard," which should serve to lower resource costs and time commitments.

Finally, some states incorporate land-use controls as part of the brownfield cleanup and redevelopment process. In some cleanups, management or engineering controls (for example, placement of a parking lot over contaminated soil) are established to contain pollutants at a site, thereby lowering or eliminating risks to human health and the environment as long as the use is not changed and the controls disrupted. The decision to rely on engineering controls requires some mechanism for recording and transferring this information to future users of a site. There is some experience in state institutions with this role and current control methods include zoning restrictions and recording deeds to prevent land-use changes and transfer information. Evaluation of the effectiveness of these approaches and controls in other contexts (for example, utility rights-of-way) could provide important information to decisionmakers as future land-use-based cleanups are employed more widely.

Liability Assurance

Although many brownfield sites do not rank high among government concerns in terms of risk due to environmental exposure, there is still significant concern among stakeholders that they could be held liable for cleanup through any number of unpredictable means. Those interested in protection from liability are the most significant stakeholders; these include responsible parties (current or past owners who may have contributed to the contamination), prospective purchasers, lenders, and municipalities. In an effort to overcome the concern for liability and promote attention to brownfield sites for cleanup and reuse, some state voluntary cleanup programs offer a variety of assurances that limit some liability potential.

Liability assurances are wide ranging and differ by the party that is granted protection and the type of protection that is made available. A voluntary program can only offer liability protection as it is specifically defined by the individual state law and only applies to activities recognized by that state. In other words, assurances at the state level do not shield stakeholders from liability under federal law or third party lawsuits.[37] As a result, even though in many cases the likelihood of federal or state enforcement under superfund provisions is low for these sites, there is still some question about whether these assurances can provide the needed security to increase the level of brownfield cleanup and redevelopment. While there is currently significant interest in removing or limiting liability for many stakeholders at the

[37] EPA is currently developing a number of new guidances for cleanup liability for certain parties including prospective purchasers, municipalities, and lenders. Also, the use of Superfund Memorandum of Agreements between EPA Regional Offices and states (such as EPA Region V with Illinois and Minnesota) could help ease some liability concerns.

federal and state level, there is still only minimal experience with this practice as applied to brownfields cleanup .[38]

Voluntary programs reduce some level of uncertainty related to liability by specifying parties who would not beheld liable at a site, or by defining government interest in the condition of a site. In the first category, some voluntary programs offer identification of particular parties who under certain conditions would not be found liable for contamination or the impacts of contamination at a site. The types of liability protection offered by some states include:

- letters of "no association" to the contamination either as innocent or involuntary owner, as prospective purchaser, or as neighbor to the site;
- absorption of private liability by the state or a municipality; and
- liability exemption for some public entities, such as city or county governments, and port authorities.

The second category of assurances involves government interest in the condition of the site and includes recognition of the following:

- covenants not to sue for any actions related to the site;
- "certificate of completion" (or partial completion) for a cleanup; and
- a letter of "no further action" or interest in the site.

In most of these cases, there is no actual release from liability granted, but these assurances try to reduce the likelihood that any enforcement action would be pursued.

Of the 21 voluntary state programs that currently exist, only seven offer a covenant not to sue, or other immunity from liability, which protects the recipient from state enforcement action, subject in some cases to reexamination if new information about contamination is found.[39] In each of these programs, the protection is only granted on a site-by-site basis and may be limited only to parties who were not responsible for the contamination. All other letters of assurance vary in terms of their value to responsible parties, and do not offer release from liability. Some lenders have voiced approval of certificates of completion and no further action letters as easing concerns involving loan decisions.

The liability concerns of brownfield cleanup activities are extremely complex due to the overlapping interests of federal, state, and third-party enforcement actions. While some state voluntary programs are experimenting with different levels of liability assurance, few have been offered for a long enough period to

[38]Insurance policies may provide some protection from excessive cost due to remediation or lawsuits involvin cleanup of contaminated properties. OTA did not investigate this issue in detail and plans to include this analysis in the brownfields report planned for release in fall 1995.

[39]The seven states are Minnesota, Oregon, Massachusetts (pilot program), Indiana, Ohio, California, and Virginia. Stateside Associates, personal communication, May 1995.

evaluate. Over time, more experience should be gained in these matters, and as programs continue to evolve, there should be some resolution of the validity and usefulness of such protection.

Funding Support

Due to uncertainties involving the cleanup process and associated costs, interested stakeholders often avoid brownfield sites for financial reasons. While many state voluntary programs are operated on a fee-for-service basis and often include a one-time initial payment for consideration by the program, some voluntary programs do offer financial incentives for participation. Funding assistance for initial site assessment, cleanup, or redevelopment typically comes in the form of public grants, loans or loan guarantees, and tax incentives.

One of the most popular approaches offered by a few programs is the availability of public grants for initial site investigations. With Phase I site assessments averaging $1,000 to $5,000, and Phase II investigations costing on the order of $50,000 to $70,000, initial costs to some volunteers can be prohibitive from the start. Government grants, which are still fairly modest, can motivate some parties, including municipalities, to begin assessment and cleanup efforts. In addition, some states offer grants or loans for initial site investigations to neighbors or prospective purchasers of brownfield sites .[40] Michigan is one state that offers public grants to cities for initial site assessment and also reclamation. The state also offers financial assistance for areawide site investigation.[41]

Some voluntary cleanup programs, such as those of New Jersey and Ohio, offer low-interest loans to help finance site cleanup costs. These loans are often available only to private parties with a demonstrated inability to obtain financing through other means. Typically, these borrowers are refused by banks due to the fear of lending on contaminated property. It is common to offer public financial assistance to brownfield cleanup activities based on fairly stringent criteria including demonstrated need, the relationship of the volunteer to the contamination at the site (some states will not assist responsible parties), and demonstrated potential of the site for economic development.

EXAMPLES OF STATE VOLUNTARY CLEANUP PROGRAMS

While a number of methods are employed in the states for cleaning up and redeveloping brownfields, voluntary programs are growing fastest. Seventeen of the 21 state voluntary cleanup programs have only been in existence since 1991, and nine of these were established in the past year. Though it is too early to evaluate the merits and problems of many of these programs, it is useful to take a more detailed look at a few programs to better understand their mission and variety. The following three examples include a range of programs representing variations, in time in existence, geographic location, technical features involved in the cleanup process, liability assurances, and financial support. Characteristics that mark the program as particularly innovative are also highlighted.

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[40] See Institute for Responsible Management, Inc., footnote 7, p. 106.
[41] See Linton, footnote 23.

Minnesota

Minnesota established the first voluntary cleanup program in the country in 1988. It is formally known as the Voluntary Investigation and Cleanup (VIC) Program and is administered by the Minnesota Pollution Control Agency (MPCA). Operating on a fee-for-service basis, the broad mission of the program is to facilitate voluntary investigation and cleanup of contaminated property and to encourage productive economic reuse of the property .42 The program will not accept sites listed on the National Priority List[43] or that fall under the enforcement authority of other federal or state environmental laws. In a recent development, MPCA and EPA Region V have entered into an amended Superfund Memorandum of Agreement (SMOA) in which "the MPCA is the designated lead agency for remedial activities at . . . voluntary investigation and cleanup sites in the State of Minnesota. " Through this agreement, EPA Region V will not plan or anticipate any federal action under Superfund law at sites that have received a no action determination or a certificate of completion from MPCA, unless, in unusual cases, the site poses an imminent threat or emergency situation.[44] As of May 1995, over 100 sites had been cleaned up through the VIC program and over 300 sites have obtained closure by receiving one of the six written assurances described below.[45]

Program features

Minnesota's VIC program offers a high level of technical assistance and oversight to the entire cleanup process. Most significantly, MPCA staff are involved in the approval of cleanup plans and at the final stage of remediation to certify completion of the work. Cleanup standards are the same as those required by federal and state superfund cleanups, and are based on EPA guidelines to obtain 1 in 1 million cancer risk (10^{-6}) and a "no adverse effects" level (Hazard Index less than or equal to one) for noncancer risks. Cleanup plans may, however, reflect future planned use for a site and the program allows land-use restrictions on property.

Minnesota's program is noteworthy due to the variety of written assurances it offers to participants in the program. Through VIC, six types of assurances are available with some differentiation based on whether the volunteer is responsible for the contamination on the site. These include:

1. Technical assistance approval letters: Offered when MPCA is consulted to establish the adequacy of an investigation or cleanup plan.
2. *No* action letters or agreements: These agreements signify that MPCA will not

[42]Minnesota Pollution Control Agency, "Recycling Contaminated Land in Minnesota, " 1995, p. 8.

[43]The VIC program does, however, accept cleanup on parcels of property at NPL sites, and volunteers cooperating with responsible parties at NPL sites can qualify for liability assurances through the program.

[44]Valdas v. Adamkus, U.S. Environmental Protection Agency, Region V, letter to Charles W. Williams, Commissioner, Minnesota Pollution Control Agency, on the Superfund Memorandum of Agreement, May 3, 1995.

[45]Joe Zachmann, Project Manager, Minnesota Voluntary Investigation and Cleanup Program, personal communication, May 18, 1995.

pursue enforcement against the volunteer under the state superfund law and are offered in two cases; when contamination is detected, but at levels too low for concern, or when contamination is discovered and a cleanup plan is approved by the agency.

3. Limited no action letters: These letters are provided to sites when only a portion of the property is under consideration for cleanup. MPCA retains the ability to pursue future action if new information becomes available about the property or the conlamination.

4. Land Recycling Act Certificates of Completion: This assurance provides full protection from enforcement action through the state superfund law when MPCA certified cleanup plans have been completed. They are offered to parties who are not legally responsible for the contamination at the site. This assurance is the only one offered by MPCA that does not include a "reopener" if new contamination is found or the cleanup proves to be insufficient in the future.

5. Off Site Source Determination Letters and Agreements: This type of assurance protects a private party from enforcement actions that would require the cleanup of a site and is available to an owner of a site that is contaminated due to a source on a neighboring property.

6. No Association Determinations: This assurance protects voluntary parties from state superfund liability for contamination that they did not cause, while enabling them to pursue cleanup or occupation and use of a site.

Minnesota offers this variety of assurances as a means of bringing some level of certainty to the potential for liability involved in site remediation and redevelopment. It should be noted that none of the assurances provide complete liability release from federal laws (though the SMOA could ease some concerns) and private party lawsuits. Only the state's certificate of completion (essentially a "covenant not to sue") offers protection from state enforcement action without consideration of new information (a "reopener") regarding the contamination at a site. Minnesota reports that no VIC assurance has been reopened for any reason in the state. [46]

The Minnesota voluntary program offers some financial assistance for brownfield cleanup and redevelopment. Contamination Cleanup Grants are available through the state for cities, housing and redevelopment authorities, economic development authorities, and port authorities to clean up contaminated land. In addition, voluntary parties with an MPCA-approved site assessment or cleanup plan are eligible for a reduction in property taxes based on lower assessed property values due to the presence of contamination on a site.[47]

California

The California Voluntary Cleanup Program was established by law in 1994 to promote the cleanup of low-priority hazardous waste sites in the state. The program is operated by the Cali-

[46] Joe Zachmann, Project Manager, Minnesota Voluntary Investigation and Cleanup Program, information presented at the Environmental Law Institute's Brownfields Workshop, Washington, DC, Mar. 28, 1995.

[47] See Minnesota Pollution Control Agency, footnote 42, p. 18.

An Example of a Voluntary Cleanup in California: Culver City Kite Site

The Culver City Kite Site* is a 4.5-acre property located in Culver City, California. Former operations at the site included a wood products manufacturing facility, a concrete block facility, die casting machine shops, auto body and painting shops, and plastics manufacturing. Environmental concerns at the site included soil and groundwater contamination involving solvents, petroleum hydrocarbons, and heavy metals. Under the California Voluntary Cleanup Program, the Department of Toxic Substances Control (DTSC) provided oversight of the Preliminary Endangerment Assessment and subsequent health risk assessment process. Remediation for the site was completed and in April 1994 cleanup of the property had achieved standards protective of public health and the environment for industrial and commercial uses. DTSC granted a certificate of completion at the site and a deed restriction for the land-use designation was established. The property is currently being developed as an industrial park, including some retail sales outlets for electronic, home building, and automobile equipment. The property is expected to provide approximately 100 new jobs.

***California Environmental Protection Agency, Department of Toxic Substances Control, "The Voluntary Cleanup Program, " program information sheet, May 1995, p. 6; and Javier Hinojosa, Site Mitigation Branch, Department of Toxic Substances, California Environmental Protection Agency, personal communication, June 1, 1995.**

fornia Environmental Protection Agency's Department of Toxic Substances Control (DTSC). It is designed to offer a more streamlined process for ensuring cleanups that protect human health and the environment in order to put property back into productive use.[48] California's program operates on a fee-for-service basis and excludes sites that are listed on the federal or state superfund lists or that fall under the oversight provisions of other federal and state environmental laws. In March 1995, 100 voluntary projects were under way in the state.

Program features

Participation in the California voluntary program includes an initial agreement between the state and the private parties regarding the extent of the cleanup activity planned for the site. Based on the initial agreement, DTSC staff

California Environmental Protection Agency, Department of Toxic Substances Control, "The Voluntary Cleanup Program, " fact sheet, March 1995, p. 1.

may provide technical assistance in any stage of the process from initial site investigation to oversight and certification of a fill site cleanup. The voluntary program allows the use of site-specific risk assessment to determine cleanup standards and remediation goals that can be tied to future use of the site if the property owner or participant agrees to deed restrictions.[49]

On completion of a cleanup action, DTSC will issue a site "certification of completion" if the implemented remedy meets DTSC standards. A "no further action" (NFA) letter is generally issued on completion of DTSC's initial site assessment, referred to as the Preliminary Endangerment Assessment (PEA). If the PEA shows that a property does not pose significant risk or hazard to human health or the environment and remediation is not necessary, an NFA letter will be granted. Both the NFA and the certificate of completion limit further liability for responsible and nonresponsible parties in the state.[50]

Ohio

The Ohio voluntary cleanup program is one of the newest in the country. The state passed the Real Estate Reuse and Cleanup Law in June 1994, which established the voluntary program. It is currently in interim status (and subject to change) as implementing regulations are being written and expected to be fully operational by October 1995. The Ohio program will be administered by the Ohio EPA, though much of the cleanup process will be privatized. Sites registered on the federal NPL or those regulated under other federal and state environmental laws are not eligible for the program. One cleanup has been conducted through the program at this time.

Program features

The Ohio voluntary program joins a small number of other states by operating a certification program for environmental consultants qualified to review and conduct the site investigation, develop cleanup plans, remediate the site, and certify completion of the work. Laboratories are also certified by the state to perform analyses for a range of contaminants and media. The state will develop numerical cleanup standards for soil, surface water, and groundwater, and will also allow the application of site-specific risk assessment to develop standards based on state-approved procedures. Cleanup goals consider the intended future use of the site and the state has designated at least three categories for this purpose including industrial, commercial, and residential uses. Sites that are cleaned up for a specific future use will be subject to deed restrictions. The state law requires the Ohio EPA to audit a minimum of 25 percent of the NFA letters submitted by the certified environmental professionals each year, as well as conduct audits to verify the qualifications of the certified environmental professionals and laboratories.

The Ohio EPA may offer a covenant not to sue under state law to a remediated site that receives a certification of completed work (an NFA letter) from a certified professional. At the request of the volunteer, the agency will review information about the environmental condition at the site provided in the NFA letter, along with supporting documentation, to determine whether the cleanup adequately meets the

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[49]Barbma Coler, "California Voluntary Cleanup Programs," information presented at the Environmental Law Institute's Brownfields Workshop, Washington, DC, Mar. 28, 1995.

[50]Barbara Coler, Division Chief, Statewide Cleanup Operations, Department of Toxic Substances Control, California Environmental Protection Agency, personal communication, May 26, 1995.

program's requirements and is eligible for a covenant not to sue from the state. The release from liability is available to any volunteer who complies with the applicable standards outlined by the program. The liability release runs with the property and may be transferred to future parties involved with the site. The program also provides lender and fiduciary liability protection, as well as some liability protection for cleanup contractors and local governments .51

The Ohio voluntary program offers financial assistance to participants in the program. The state makes low-interest loans available for site cleanup and redevelopment activities. Tax incentives are also included, allowing volunteers to forego paying taxes for 10 years on the increase in property value resulting from remediation. In addition, participants may also request an additional tax abatement for 10 years on real and personal property taxes from their local government. [52]

RECENT STATE ACTIVITY

State brownfield activity is growing and evolving rapidly. State authorities and organized stakeholder groups are promoting changes in the way that many of these properties are handled through statutory and administrative means. Since 1994, nine states have passed legislation creating voluntary cleanup programs .53 While many of these changes are directed toward improving the prospects for brownfield cleanup and redevelopment, some expand the scope beyond brownfields to all hazardous waste sites including those cleanups pursued through enforcement driven programs, such as state superfunds and property transfer laws. Legislation designed to change state policy on such factors as cleanup standards and liability at a site, will impact the nature of all hazardous waste cleanups in a state.

As states rethink their policies toward hazardous waste site cleanups, many are taking a more comprehensive approach in the law designed to ease some of the constraints considered barriers to brownfields activity. As discussed earlier, states are making an effort to clarify cleanup standards and processes, provide more certainty for liability involving brownfields sites, include some level of government oversight without slowing the process unnecessarily, and offer financial incentives to promote cleanups. However, even among some of the newer programs and recent changes, considerable variation is evident in some important elements.

The most recent legislative activity in Michigan, Pennsylvania, and Illinois characterizes many of the issues at the heart of the debate on brownfields. Michigan recently passed legislation amending the state's Natural Resources and Environmental Protection Act, effectively changing the way hazardous waste cleanups will be handled. It is expected to be signed into law during the first week of June, at which time it will require: proof of cause for contamination in order to find parties liable at a site, thereby eliminating strict, or status based, liability for cleanups; establishment of land-use-based standards for cleanup in eight categories, including residential, commercial, industrial and recreational; and a change in the level of acceptable risk for carcinogens from 1 in 1 million (10^{-6}) to 1 in 100,000 (10^{-5}).[54]

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[51] Ohio Environmental Protection Agency, "Real Estate Clean-up and Re-use Program, " fact sheet, June 1994, p. 2.

[52] Ibid.

[53] These states are California, Colorado, Connecticut, Nebraska, North Carolina, Ohio, Tennessee, Virginia, Wisconsin. Stateside Associates, personal communication, May 1995.

[54] State of Michigan, House Bill No. 4596, 88th Legislature, regular session, 1995-

Proof of a party having taken an action to cause a release will be necessary to hold parties liable for a cleanup. It is possible that this new standard will make it more difficult to bring cases against potentially responsible parties and may increase the number of hazardous waste site orphan shares, putting further pressure on public funding at these and other abandoned properties in the state. Over time, it may be worth evaluating the impact this has on the level of voluntary cleanups in the state.

Pennsylvania also passed legislation that expands the state's comprehensive approach to brownfields and modifies some key elements of the current law. The Land Recycling and Environmental Remediation Standards Act establishes a process for cleanup and redevelopment of industrial and commercial properties in the state, including designated environmental remediation standards (Background Standard, Statewide Health Standard, and Site-Specific Standard), in some cases allowing for engineering or institutional controls to attain them. The legislation also limits the potential for future cleanup liability for parties who meet the environmental remediation standards in the provisions of the act, and the protection is also extended to future parties involved with the site. Parties are protected from enforcement actions by the state, third-party contribution actions, and citizen suits. The legislation also establishes two funds, the Industrial Land Recycling Fund and the Voluntary Cleanup Loan Fund. The first appropriates money to be used by the state's Department of Commerce to help clean up contamination on properties formerly used for industrial activities. The Voluntary Cleanup Loan Fund provides low-interest loans to local economic development agencies and other applicants to help cover the costs of site assessment and remediation.[55]

The Illinois state legislature is currently debating brownfields legislation that will alter the approach applied in the state since 1989. There was early discussion about privatizing the cleanup process, and only involving the Illinois Environmental Protection Agency (IEPA) on completion of remediation to enable closure at a site with an NFA letter by the state. However, this proposal did not receive favorable review from either IEPA or the U.S. EPA, and it appears the state will retain much of the current process. The legislature also addressed the issue of liability for hazardous waste cleanups with some parties promoting replacement of joint and several liability with "proportionate" share liability. On this issue, IEPA officials have expressed concern with the lack of available public funds for use at sites with orphan shares. The legislation, including a provision for proportionate share liability, has passed both the House and Senate, yet there is some uncertainty about whether the bill will become law as it currently stands.

RECENT FEDERAL ACTIVITY

In addition to significant brownfield activity at the state level, EPA and Congress are increasing efforts to address the problem at the federal level. EPA's Brownfields Action Agenda works to remove identified barriers to cleanup and redevelopment. Congress is currently addressing brownfield issues in legislation involving reauthorization of Superfund and separate bills on lender and fiduciary liability for cleanups. While this paper is meant to focus on state-level activity on brownfields, efforts at the federal level will have significant impact on the states and, therefore, this section is included as a brief overview to federal activity.

EPA's Brownfields Action Agenda includes a variety of administrative approaches to pro-

[55]Commonwealth of Pennsylvania, Senate Environmental Resources and Energy Committee, "Analysis of Senate Bill l," final version, 1995.

mote cleanup and redevelopment of brownfields. The Agency's effort stresses the importance of both aspects of brownfields, focusing on the problems associated with environmental contamination, as well as economic development. The primary functions of the agency's Agenda include:[56]

1. Removal of approximately 25,000 potential hazardous waste sites currently included among 38,000 such sites on the Superfund Tracking System list (CERCLIS). The sites were deleted from the active investigations category by EPA and granted a designation of "No Further Remedial Action Planned. "
2. Plans to fund 50 Brownfields Economic Redevelopment Pilot projects across the country over the next two years to promote learning and sharing of methods and information for promoting cleanup and redevelopment.
3. Development of new guidance on liability anticipated for completion in 1995, including prospective purchaser agreements, municipal acquisition liability, and lender liability under Superfund and Underground Storage Tank provisions.

Other ongoing agency activities include: intergovernmental personnel assignments, through which EPA staff are assigned to local-level activities on brownfields; job training and development focused on programs for hazardous materials education; presumptive remedy guidance for cleaning up certain types of hazardous waste sites; and partnerships with other federal agencies such as the Economic Development Administration and the U.S. Department of Housing and Urban Development, to promote a coordinated effort to address brownfields in the country.

Congress is also considering various means to promote brownfield cleanup and redevelopment. The current focus is primarily on Superfund reauthorization; changes are planned that will have an impact on brownfields. Last year's Superfund bill (H.R. 228) has been reintroduced, and includes a provision "to establish an EPA program to provide technical, financial, and other assistance, including grants, to states to establish and expand voluntary response programs. " Chairs of subcommittees with primary jurisdiction for Superfund are expected to introduce legislation in June 1995. Hearings are currently being held to better understand the Superfund program and attention has focused on the state role in hazardous waste cleanup and possible changes to liability applied by the law. In addition, individual bills focusing on specific aspects of Superfund have been introduced, including one that provides lender liability limits for cleanups (H.R. 200).

UNRESOLVED ISSUES

As states debate important issues on brownfields, a number of unresolved challenges emerge. First, in an attempt to clarify liability for cleanups to promote brownfields redevelopment, there is growing interest in altering the most common approach of strict, and joint and several liability. Replacement of either strict or joint and several liability with other standards

[56]U.S. Environmental Protection Agency, "The Brownfields Action Agenda, " Jan. 25, 1995.

(such as proof of cause for contamination, or proportionate share liability based on contribution) has resulted in concern about increasing the number of sites where all or some parties will not be held liable for contributing to cleanup costs (referred to as orphan shares). States' ability to pursue cleanups at sites with orphan shares or that have no identifiable responsible parties may be limited without additional finding sources.

Another issue related to uncertain liability at brownfields is the effort to provide enforcement immunity to particular parties through voluntary cleanup programs. Even as a key feature in many of the programs, liability assurances are limited and extend protection only from state enforcement actions, leaving liability under federal law or third-party actions in place. As a result, state assurances may not go far enough for some stakeholders to promote further brownfield cleanups and redevelopment.

A third issue addresses the fact that although some state agencies have successfully developed programs that clean up brownfield sites, the overall level of experience is still limited. States interested in establishing new approaches for addressing any number of barriers have few models to evaluate and choose among. While many states share similarities in the types of problems associated with brownfields, their treatment is currently very place-specific. The increasing number of brownfields conferences and discussion forums at the local and regional level should help spread awareness of the problems and possible solutions. However, with limited staff and financial resources in many state environment agencies, information about new program developments and effective approaches may not be transferred widely and quickly enough. For this reason, there may be a role for the federal government in providing funds for promoting the development and capacity of state voluntary cleanup programs. In addition, there may be a role for EPA in providing technical assistance and other information on methods and procedures to facilitate additional cleanup and redevelopment.

Another issue that requires attention is the nature of the relationship between the federal government and the states with respect to brownfields cleanup. As states continue to develop and improve voluntary programs they exercise their own discretionary authority for such matters as the adequacy of cleanup standards, expectations for future use of a site, and liability protection for particular parties. These programs would likely gain more credibility with the private sector if they received some form of agreement or approval from the U.S. EPA. This could come in the form of a Superfund Memorandum of Agreement, such as those held between Region V EPA and the states of Illinois and Minnesota, or through a certification process as outlined by legislation introduced in the 103rd Congress. Considerable variation among state voluntary cleanup programs could make development of SMOA'S or certification difficult. More thought is needed on how EPA will recognize the authority of state voluntary programs and develop criteria for agreements that would be flexible enough to meet individual state needs, yet rigorous enough to ensure adequate cleanups.

Finally, as state programs attempt to balance human health and environmental risks with the costs and requirements for cleanup and redevelopment, questions about standard setting and reliance on future land use as guidance for determining cleanup levels will persist. In some instances, interest in adjusting standards to more closely match expected use of a particular site could raise 'concern about the adequacy of protection for human health and the environment. In addition, as more cleanup levels are tied to the future use of a site, reliable mechanisms will be needed to record and transfer information about their environmental condition.

Appendix A:
Acronyms

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act

DTSC = Department of Toxic Substances Control

ECRA = Environmental Cleanup Responsibility Act
EPA = U.S. Environmental Protection Agency

IEPA = Illinois Environmental Protection Agency
ISRA = Industrial Site Recovery Act

MPCA = Minnesota Pollution Control Agency

NFA = no further action
NPL = National Priority List

PEA = Preliminary Endangerment Assessment

RCRA = Resource Conservation and Recovery Act

SARA = Superfund Amendment and Reauthorization Act
SMOA = Superfund Memorandum of Agreement

VIC= Voluntary Investigation and Cleanup Program