

***Addressing Barriers to Brownfield Redevelopment:  
An Analysis of CERCLA and the Voluntary Cleanup Programs of  
Ohio, Pennsylvania and Michigan***

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Major Paper submitted to the Faculty of the  
Virginia Polytechnic Institute and State University  
in partial fulfillment of the requirements for the degree of

Master of Urban and Regional Planning

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April 19, 2002  
Blacksburg, Virginia

Keywords: brownfield, state voluntary cleanup program, CERCLA,  
redevelopment, environmental laws

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**Abstract**

Across America, thousands of old industrial or commercial facilities lay abandoned, idle or under-utilized due to real or perceived environmental contamination. These sites, called brownfields, present an opportunity to repair environmental damage and encourage economic development. In 1980, Congress passed the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) to address contaminated sites. This law enables the Environmental Protection Agency (EPA) to force the cleanup of contaminated sites by using the ‘polluter pays’ principle. In some cases, CERCLA’s liability scheme, strict cleanup standards and the law’s tendency to produce long and expensive cleanups, discourage brownfield reuse.

In an effort to remedy the negative consequences of CERCLA, 47 states have enacted Voluntary Cleanup Programs (VCPs). A VCP generically denotes a form of legislation enacted by a state to encourage the cleanup and redevelopment of brownfields under the guidance of an authorized state agency. State VCPs utilize liability protection, streamlined cleanup procedures, and financial support to promote brownfield reuse. This paper examines the VCPs of Ohio, Pennsylvania and Michigan to explore how these states address CERCLA’s barriers to brownfield redevelopment. In addition, this paper offers recommendations for the development and improvement of VCPs in the future.

## Acknowledgements

I would like to thank my committee for their suggestions and guidance throughout this process. In particular, I want to thank Jesse Richardson, my Committee Chair, for his insight and encouragement.

I want to thank my family for the support they have provided time and time again and for listening to me when I needed it most.

I am also grateful to the students in the UAP Department for their friendship and humor. Special thanks go to Ryan (Coach) Devlin for reminding me to take things one step at a time, keeping me sane, and motivating me in the ‘fourth quarter.’

Finally, thanks to the employees at the Ohio EPA, Pennsylvania DEP and Michigan DEQ for their time and assistance.

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## Chapter 1: Introduction

The U.S. Environmental Protection Agency (EPA) defines brownfields as “abandoned, idled, or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination” (EPA, 2002a). These properties present problems in municipalities across the United States, threatening human health and environmental quality. Brownfields also contribute to blight, a weak urban tax base and social concerns.

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), passed by Congress in 1980, sought to give the federal government a means to handle the cleanup of contaminated sites. CERCLA adopted a broad interpretation of the ‘polluter pays’ principle and forces a wide array of parties to pay for the cleanup required at some brownfields. EPA’s enforcement of CERCLA includes (1) a strict liability scheme, (2) stringent cleanup standards and (3) lengthy and expensive cleanups. These three factors serve as significant barriers to the redevelopment of brownfields.

This paper first discusses the brownfields problem as it exists in the United States today, along with potential benefits and barriers of brownfield redevelopment. It will then examine the enactment and administration of CERCLA, focusing on how this federal law affects brownfield redevelopment efforts. This chapter also discusses changes made by EPA in response to criticisms regarding CERCLA.

The paper next describes the development of state voluntary cleanup programs as a way to manage the liability, strict cleanup standards and costs imposed by CERCLA. This chapter describes the basic components of voluntary cleanup programs and their potential benefits. This paper then explores, in some detail, the voluntary cleanups programs of Ohio, Pennsylvania and Michigan and the ways in which these programs seek to remedy CERCLA’s barriers to

brownfield reuse. Finally, this paper concludes with insights and recommendations regarding the ways state voluntary cleanup programs can improve in order to encourage brownfield redevelopment.

## **Chapter 2: Brownfields and Brownfield Redevelopment**

### ***2.1 Introduction***

This chapter defines brownfields and describes the difficulty in accurately determining the number of brownfields in the United States. It also reviews the major environmental, social and economic benefits that can result from brownfield redevelopment. This chapter includes a broad discussion of the factors that act as barriers in the brownfield redevelopment process, including both site characteristics and the unexpected effects of environmental laws.

### ***2.2 What is a Brownfield?***

Brownfields are a concern for government, business and environmental interests. Despite widespread use of the term, brownfield, no commonly held definition exists (Andrew, 1996). Some definitions limit the term to include only industrial properties, only properties with known contamination or only properties with a known market demand. A few definitions include vacant residential lots, though most do not (Bartsch, Anderson and Dorfman, 1999; Simons, 1998). Many groups use the Environmental Protection Agency's (EPA) definition as the default (Bartsch et al., 1999). The EPA defines brownfields as "Abandoned, idled, or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination" (EPA, 2002a).

Because of the variety of definitions currently in use, determination of the precise number of existing brownfields proves difficult. Landowners and municipalities hesitate to characterize property as a brownfield because of the stigma attached to contaminated land. Landowners fear a reduction in value or an enforcement action by the government. Municipalities worry that publicizing a count of their brownfields places them at a disadvantage relative to cities that withhold this information (Simons, 1998).

The Office of Technology Assessment (1995) estimates that the number of brownfields in the United States ranges from 130,000 to 450,000. The majority of sites probably contain only limited contamination, if any. However, some sites still await evaluation or discovery, making it difficult to define the extent of the problem (General Accounting Office [GAO], 1997b). Geographically, the Midwest and Northeast have the greatest concentration of brownfields, due to their industrial heritage. However, because brownfields can include abandoned or idle warehouses, industrial sites, gas stations and dry cleaning businesses, brownfields pose a problem across the United States (Eisen, 1996).

### ***2.3 Brownfield Redevelopment Benefits***

The remediation and reuse of brownfields can yield substantial environmental, social and economic benefits (Andrew, 1996). Recycling brownfields can increase environmental quality, revitalize neighborhoods, and financially benefit both the public and private sector. Brownfield reuse also represents an opportunity to solve multiple problems through a single activity (Strother, 2000).

Brownfield cleanup and reuse offers the obvious benefit of improving environmental quality and removing or reducing the threat to public health (Anderson, 1996; Strother, 2000). Also, by redeveloping disturbed land, brownfield reuse helps to slow the consumption of undeveloped lands called greenfields (Andrew, 1996; Eisen, 1996; Strother, 2000). Greenfield development results in the loss of farmland and open space, worsens existing traffic problems and may lead to more water and air pollution (Eisen, 1996; Hise and Nelson, 1999). Reusing brownfields makes it possible for a developer to utilize existing infrastructure and facilities, and can improve opportunities for the use of mass transit (Hise and Nelson, 1999).

Redeveloping neglected or underused properties can encourage economic recovery (Strother, 2000). Brownfield reuse may also create new employment opportunities, halt neighborhood deterioration, lower area crime rates, and reduce local health problems (Anderson, 1996; Eisen, 1996; Hise and Nelson, 1999). In addition, because a disproportionately high number of brownfields exist in low-income, often minority, neighborhoods, brownfield redevelopment includes an environmental justice component as well (Smary and DeWitt, 1998).

Brownfield reuse can benefit both government and private interests. Governments benefit since redevelopment places property back on the tax rolls. Increased property, sales and income tax revenue allows the provision of improved services and amenities (Hise and Nelson, 1999; Smary and DeWitt, 1998; Strother, 2000; Simons, 1998). Government representatives can also gain politically if credited with redevelopment activities (Simons, 1998).

An old real estate saying suggests three things that make a property marketable: location, location and location (Ensign, 1998). Developers often see brownfields as prime properties for this reason. Brownfield sites usually benefit from existing highway access and other urban infrastructure, unlike some greenfield properties (Eisen, 1996; Simons, 1998). Also, sellers often offer brownfields for a reduced price, providing an opportunity for a risk-taking developer (Smary and DeWitt, 1998). Generally, the willingness of a developer to get involved with a brownfield site depends on what they perceive as the potential economic benefit (Hula, 2000).

## ***2.4 Brownfield Development Barriers***

Despite brownfields' potential for improving the environment, quality of life and the economy, a number of factors constrain their reuse. Concern regarding contamination clearly deters some potential purchasers. However, other non-environmental issues, including site

selection factors and the unintended consequences of environmental laws, also contribute to the problem.

Factors inhibiting brownfield redevelopment include their location, amenities and characteristics. For example, the small size of a brownfield or its distance from a highway may damage a project's financial solvency and reduce the project's competitiveness in the market (Robertson, 2001; Simons, 1998). Other barriers include aging urban infrastructure, a perception of high crime, the need for a skilled and highly educated workforce, and an uncertain demand for brownfields (Eisen, 1996; Gitlen, 1995; Gwyn, 1996; Robertson, 2001; Simons, 1998). Partly because many of these location characteristics do not afflict untouched property, brownfields regularly lose new development to greenfields (Kessler, 1997; Simons, 1998).

Federal and state environmental laws applying to brownfields, passed to protect human health and remediate polluted land, often produce unexpected consequences. Stringent liability, strict cleanup standards and the high costs of cleaning tainted property prevent brownfield remediation in some situations (Davis, 2002; Eisen, 1996; OTA, 1995; Simons, 1998; Strother, 2000).

Participants in brownfield redevelopment efforts often see the threat of liability as a major deterrent in the reuse of brownfields (Eisen, 1996; Geltman, 2000; Strother, 2000; Hise and Nelson, 1999). Under federal statutes and some state laws, any party associated with contaminated property can be held liable for cleanup, regardless of whether they contributed to the contamination. This wide net of liability induces parties to abandon brownfields rather than evaluate the site or reveal its contamination (GAO, 1997b; Simons, 1998). Banks reject financing requests because environmental laws may hold them liable for cleanup if they foreclose on a

contaminated site (GAO, 1997b; Schnapf, 1998; Smary and Dewitt, 1998). Also, the overlapping jurisdiction of state and federal laws creates uncertainty regarding regulation (Eisen, 1996).

Although not all brownfields are contaminated, the mere assumption that the site may contain contamination discourages redevelopment. For contaminated sites, cleanup can take a substantial amount of time and money. Federal and some state laws adopted cleanup criteria aimed at restoring all contaminated sites to a condition suitable for residential use. This standard, often referred to as the 'edible dirt' standard, virtually allows kids to safely eat on-site soil after cleanup. In addition, the policies of EPA and some states require a site-by-site evaluation of each contaminated site, forcing parties to begin a cleanup without a clear idea of the monetary cost or time required. Uncertainty, resulting from the evaluation process, makes finding financing difficult for any cleanup conducted under these environmental laws (Eisen, 1996; Gwyn, 1996; Smary and DeWitt, 1998).

Brownfield redevelopment requires a substantial investment in time and money. Cleanup itself can be extremely expensive due to the cost of cleaning properties to a residential standard. Also, long cleanup and site preparation times add to the development costs of a brownfield (Gitlen, 1995). These expenses typically do not exist when developing uncontaminated greenfield properties (Kessler, 1997; Simons, 1998). Legal costs associated with enforcement actions by environmental agencies also consume time and money (Davis, 2002).

## **2.5 Chapter Summary**

A large number of brownfields exist in the United States, posing potential environmental and health problems. The redevelopment of these brownfields may result in environmental, social and economic benefits. However, several factors hinder brownfield redevelopment. Beyond site selection factors, administration of environmental laws, such as CERCLA, impede

brownfield reuse through stringent liability, strict cleanup standards and the high costs of cleanup.

## **Chapter 3: Comprehensive Environmental Response, Compensation and Liability Act**

### ***3.1 Introduction***

Although more than twenty federal laws regulate hazardous substances, three laws exert the most influence. These are the Toxic Substance Control Act (TSCA), the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Each law affects a different phase in the life of a chemical contaminant. TSCA controls the review of new chemicals while RCRA directs current chemical waste disposal. CERCLA directs the cleanup of existing contamination (Hula, 2000).

This chapter describes CERCLA as the major environmental law at the federal level affecting brownfield redevelopment. Three major barriers to brownfield redevelopment result from CERCLA itself or the Environmental Protection Agency's administration of CERCLA: (1) liability, (2) cleanup standards and (3) costs related to both time and capital. This chapter discusses how these three barriers negatively affect the feasibility of brownfield reuse and how EPA has attempted to modify its policies to correct some of these negative consequences. This chapter concludes by noting the realization by state governments that the viability of brownfield reuse depended on finding a solution to the barriers imposed by CERCLA.

### ***3.2 CERCLA's Intent and History***

On December 11, 1980, the United States Congress passed the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). CERCLA intends to advance two basic purposes: (1) to give the federal government a way to respond to future emergencies involving hazardous substances, and (2) to make responsible parties answerable for

the costs of carrying out cleanup at hazardous waste sites (Geltman 2000; Hise and Nelson, 1999; Kessler, 1997).

CERCLA provides for the establishment of a National Priorities List (NPL) to catalog the most contaminated sites, establishes a liability scheme to recover costs and compel parties to conduct cleanup activities, and creates the Superfund to finance cleanup at sites where EPA cannot find a responsible party (CERCLA, 1980). CERCLA, commonly called Superfund, gives EPA jurisdiction over all contaminated sites in the country. However, EPA will likely never address most of these sites (Simons, 1998). The agency prioritizes the sites by placing the most contaminated sites on the NPL, which had 1,222 sites as of February 26, 2002 (EPA, 2002e).

The discovery of seeping hazardous waste in Love Canal, New York in 1978 had a major impact on the character of CERCLA's provisions. Congress hurriedly passed CERCLA, motivated by the public outcry over sites like Love Canal and the worry that numerous other 'time bombs' existed in communities across the country. Congress was already considering legislation regarding a federal hazardous waste cleanup program, but the public's demand for government action prompted the law's fast move through Congress. The threat of an incoming conservative president also helped to spur a Democratic congress and president into action (Cullingworth, 1997; Hird, 1994).

Notable among CERCLA's provisions are its severe doctrine of liability and its stringent requirements for cleanup [discussed below]. Responding to the public's sense of fear, outrage and distrust regarding hazardous waste disposal and its potential future harm, Congress disregarded liability based on negligence and failed to consider acceptable cleanup standards. CERCLA has been surrounded by controversy since its passage, receiving a great deal of

criticism for its provisions, which were developed in an attempt to make a public stand against chemical hazards (Cullingworth, 1997).

### **3.3 CERCLA's Barriers to Brownfield Redevelopment**

Although CERCLA sought to compel remediation of polluted property, in some situations, it encourages the abandonment of such properties (Strother, 2000). Concern over CERCLA's influence on brownfield redevelopment revolves around issues of liability, cleanup standards and costs.

CERCLA creates an elaborate net of liability designed to make those who benefited from polluting bear the burden of cleanup (Goode, 1996). To establish liability, CERCLA designates certain potentially responsible parties (PRPs). PRPs include current owners or operators, past owners and operators at the time of disposal, generators, and transporters of hazardous waste selecting the disposal site. EPA may also hold lenders who foreclose on a defaulted loan and take possession of a property liable for cleanup (CERCLA, 1980; Geltman, 2000; Simons, 1998; Wagner, 1999).

Liability under CERCLA is retroactive, strict, joint and several (Eisen, 1996; Geltman, 2000). Retroactive liability means that EPA may hold parties responsible for cleanup even if they obeyed existing regulations at the time of the contamination. Strict liability means that liability attaches without fault (Eisen, 1996; Simons, 1998; Wagner, 1999).

Joint and several liability denotes shared and individual liability among PRPs. EPA can hold every PRP responsible for the full cost of cleanup, or EPA can hold one PRP responsible for the entire amount. This allows the government to recover expenses from the most financially solvent parties, the one with the 'deepest pockets.' Any PRP who pays cleanup costs may attempt to recover all or a portion of their costs from other PRPs (Wagner, 1999). CERCLA

contains several liability defenses, but these defenses are narrowly interpreted and difficult to assert successfully (CERCLA, 1980; Eisen, 1996; GAO, 1998; Kessler, 1997).

Under CERCLA, PRPs find it difficult to determine the amount of cleanup that will be required by EPA, and nearly impossible to estimate cleanup costs (Eisen, 1996; Simon, 1998). Under CERCLA enforcement, cleanup plans develop during an in-depth process in which EPA analyzes each site individually (Eisen, 1996; Goode, 1996). EPA also requires that PRPs use costly permanent remedies to the maximum practicable extent (GAO, 1997b; 1998). In addition, critics disapprove of EPA's requirement that CERCLA cleanups be conducted to residential levels, claiming that the requirement overestimates the actual risks posed by contamination (Eisen, 1996; Wagner, 2002). These commentators argue that a cleanup to this standard proves impractical if one considers the future use of the property (Smay and DeWitt, 1998).

Time and financial costs result directly from both liability and cleanup standards. However, for buyers, lenders and developers, costs form a substantial concern in their own right. Monetary costs include present expenses related to cleanup, legal fees and the costs of possible future liability. Lenders also express concern that discovery of contamination on a site will reduce the property's market value or force borrowers to spend such a large amount on cleanup that they default on their loans (Eisen, 1996). For some projects, the cost of cleanup threatens to exceed the value of the property (Anderson, 1996; Eisen, 1996). The period of time required to meet stringent cleanup standards and prepare the site for development adds additional time and monetary costs to the cleanup process (Eisen, 1996; GAO, 1997b).

### ***3.4 Problems Encountered in Practice***

CERCLA's liability scheme gives EPA authority to compel cleanups and recover costs at America's most hazardous sites (Eisen, 1996; GAO, 1997b). However, the strict liability scheme

also taints thousands of other properties with only mild contamination where EPA will likely never take action (GAO, 2000; Goode, 1995). Investors distrust brownfield redevelopment projects because EPA can enforce CERCLA liability at sites with even small amounts of ‘hazardous substances’ (GAO, 1997a; 2000; Simons, 1998). CERCLA also lacks an element of finality, and the resulting uncertainty acts as a major barrier to site cleanups (Anderson, 1996; Eisen, 1996).

Due to potential liability upon foreclosure, banks hesitate to finance development on brownfields (Eisen, 1996; GAO, 1997b; Gitlen, 1995). Financial institutions, because of their extensive assets, serve as prime targets in suits seeking to recover costs or compel cleanups (Strother, 2000). As a result, lenders often practice ‘greenlining,’ systematically denying financing for brownfield redevelopment (Eisen, 1996; Gitlen, 1995; Simons, 1998).

The costs of remediation pushed developers to change the decisions they made regarding land use. Developers choose greenfields over brownfields, encouraging new businesses to locate on previously undisturbed land (Hise and Nelson, 1999). Under CERCLA and similar state laws, developers and municipalities see the costs of redeveloping brownfields as outweighing the benefits (Eisen, 1996).

Some allege that CERCLA has “turned a modest public health problem into an economic crisis for many localities” (Anderson, 1996, pg. 22). Potential participants in the redevelopment process avoid brownfields rather than face the consequences of liability, strict cleanup standards and excessive costs and delays. In some cases, CERCLA’s marriage of strict liability and stringent cleanup standards cause the abandonment of many sites with low to moderate contamination (Smay and Dewitt, 1998).

### **3.5 Attempts at Change**

EPA instituted a number of administrative reforms to respond to public criticism regarding the consequences of CERCLA, and to facilitate new and faster cleanups. These changes include the clarification of lender liability under CERCLA, the delisting of a large number of sites from EPA's database, and the funding of small demonstration projects (Eisen, 1996; GAO, 1997b; GAO, 2000; Simons, 1998; Strother, 2000). Most recently, President Bush signed a bill into law that exempts generators and transporters from cleanup liability if they contributed only a small amount of contamination (EPA, 2002c). Despite EPA's changes, parties still fear potential enforcement actions arising from CERCLA (Eisen, 914).

### **3.6 The Need for a Solution**

Clearly, many barriers to brownfield redevelopment derive from sources other than the enforcement of CERCLA. Homeowners and businesses chose greenfields long before Congress enacted CERCLA. In fact, even with incentives, it may prove difficult to find property owners or developers willing to remediate and reuse some brownfield sites (Eisen, 1996). However, landowners undoubtedly withhold numerous sites from development because of the unintended effects of environmental laws, particularly CERCLA and similar state laws (Andrew, 1996; GAO, 2000; Smary and DeWitt, 1998). EPA continues to alter its policies to clean up contaminated sites, but many more thousands of sites exist than EPA has the time or money to address. These mild or moderately contaminated sites remain idle or vacant, left without action from EPA and without developers willing to brave the risks of CERCLA. In response, states developed into one of the biggest influences in brownfield redevelopment (Goode, 1996).

### **3.7 Chapter Summary**

In some circumstances, CERCLA's implementation blocks brownfield redevelopment through strict liability, rigid cleanup standards and high costs. Despite efforts to remedy these

barriers at the federal level, brownfields remain a problem throughout the U.S. Owners, developers and lenders continue to be cautious about undertaking any brownfield redevelopment project or sale. State governments, acknowledging the need for a new approach to encourage brownfield reuse, developed their own response to brownfields.

## **Chapter 4: The Development of State Voluntary Cleanup Programs**

### ***4.1 Introduction***

This chapter discusses the creation of voluntary cleanup programs as the states' response to the barriers imposed on brownfield redevelopment by CERCLA. It reviews the benefits that states seek to provide through voluntary cleanup programs and identifies the elements that are common to most voluntary cleanup programs. This chapter concludes with a summary of the results produced through the programs.

### ***4.2 Why VCPs were Developed***

State voluntary cleanup programs (VCPs) attempt to remove many of the barriers that block brownfield redevelopment under CERCLA and similar laws. The term VCP generically denotes a law, or sets of laws, passed by states that allow a state agency to provide oversight and administrative sign-off for parties volunteering to clean up contaminated sites (Anderson, 1996). States design VCPs to encourage cleanup by private parties while providing some assurance that acceptable cleanup goals are met (Cavanaugh, 1995; GAO, 1997b). State VCPs differ from CERCLA by relying on incentives rather than enforcement (Cavanaugh, 1995; GAO, 1997a). In other words, VCPs hold out 'carrots,' while CERCLA relies on the 'stick.'

Minnesota established the first VCP with their Voluntary Investigation and Cleanup program, passed into law in 1988 (Anderson, 1996). Currently, 47 States have VCPs (EPA, 2001). Only Washington DC, North Dakota, South Dakota, and Kentucky lack formal programs although Kentucky operates an informal program (Bartsch et al, 2001; Davis, 2002). States create their VCPs in a variety of ways. In some states, the VCP forms a component of the state's hazardous waste program. In other states, the VCP exists as a stand-alone statute (Eisen, 1996; EPA, 2000; Geltman, 2000).

VCPs focus on brownfields with mild to slightly severe contamination that have potential for development. These sites typically do not attract the attention of state or federal environmental enforcement activities (GAO, 1997b). The most developed VCPs are those in the Northeastern and Midwestern states, where a greater concentration of brownfields exist (Eisen, 1996).

### **4.3 Evolution of VCPs**

VCPs often arise from or incorporate existing state policies and environmental laws that deal with contaminated property (Eisen, 1996). These policies and laws include state Superfund programs, environmental lien laws, and property transfer statutes. Many of these programs now coexist with VCPs, and add an extra level of regulation to brownfield properties (Eisen, 1996, GAO, 1997b; Geltman, 2000).

State Superfund laws seek to address the fact that more sites exist with serious contamination than EPA can address (Anderson, 1996; GAO, 1997b). These laws function as mini-CERCLAs, carrying the same type of authority and provisions as the federal law (Anderson, 1996; Goode, 1996; Simons, 1998). Some state Superfund laws contain even more aggressive provisions than CERCLA. Forty-nine states employ some type of state Superfund program to handle releases of hazardous materials and the cleanup of severely contaminated local sites (Davis, 2002). Modeled after CERCLA, these enforcement-based programs generally result in the same effect as the federal law, discouraging the reuse of brownfields (Anderson, 1996; Geltman, 2000). These statutes usually function as the primary way to clean up contaminated property in states lacking a VCP (Simons, 1998).

A lien on property is a right given to creditors to force the sale of the property in order to obtain payment for a debt (Gaddy and Hart, 2000). Twenty-one states permit environmental liens

(Geltman, 2000). These laws allow the government to recover cleanup costs by attaching a lien on any property of an individual who owns contaminated property subject to a cleanup (Eisen, 1996; Geltman, 2000).

Property transfer laws condition the transfer of real property on the investigation, disclosure or cleanup of contamination at a site (Eisen, 1996; GAO, 1997b; Goode, 1996; OTA, 1995). These laws force parties to deal with risks before a transaction, rather than introducing litigation later under state or federal Superfund laws. At present, approximately 24 states employ some form of property transfer requirements (Geltman, 2000). In some cases, rigid property transfer laws hinder cleanup in the same way as CERCLA does (GAO, 1997b; Goode, 1996).

#### ***4.4 Benefits of VCPs***

State VCPs provide numerous benefits for “volunteers.” This paper uses the term volunteer, interchangeably with “participant” to refer to those parties who willingly enter into the VCP process to clean or reuse a contaminated piece of property. Generally, VCPs provide incentives in the form of liability assurances, defined cleanup standards, and avoidance of excessive costs and delays. VCPs also provide an alternative to enforcement-driven government actions in an attempt to encourage the redevelopment of a significant number of brownfields.

State VCPs introduce some finality to the cleanup process through a state sign-off and release from future liability (Anderson, 1996). This release from liability varies in strength between and within programs. Eligibility for liability protection may also vary depending on the parties’ role in the contamination. Finally, some states reserve the right to reassert liability under certain circumstances (Simons, 1998).

State voluntary cleanup programs use clear, defined standards of remediation (Eisen, 1996). State VCPs often base cleanup standards on the proposed or anticipated land use for the

property. Accordingly, less stringent cleanup requirements apply, for example, to sites planned for industrial land uses than to sites planned for residential land use (Robertson, 2001). The use of defined standards provides a clear end to the cleanup process (EPA, 2000). In addition, state VCPs may allow participants to choose from a variety of cleanup options and to use nonpermanent remedies to contain contaminants and attain cleanup standards. A choice of cleanup standards means that participants can choose standards that suit the intended use of the property and their budget (GAO, 1997b; 1998).

Many state voluntary cleanup programs try to streamline the process of brownfield redevelopment. Both states and brownfield developers generally see VCPs as faster and less costly than federal or state enforcement programs (GAO, 1997a; 1997b). States gain by limiting the amount of oversight and enforcement required, freeing their resources for other activities. Volunteers avoid the costs and delays of enforcement actions and can conduct cleanups with a degree of predictability (GAO, 1997b).

Time and monetary savings derive from the use of relaxed cleanup standards, the increased availability of financing upon the provision of liability protection, and a reduction in legal disputes over liability. In addition, states may place deadlines on the review of VCP documents by agency staff in order to move the process along more quickly (Eisen, 1996).

Voluntary cleanup programs are, by their very nature, voluntary. Therefore, the environmental agency overseeing program cleanups acts collaboratively with potential property owners and cleanup participants, rather than acting as an enforcement agency. By working jointly, volunteers can avoid the costs and delays that commonly occur in enforcement driven programs (Cavanaugh, 1995; Simons, 1998).

State VCPs encourage the remediation of numerous brownfields by providing incentives and an alternative to enforcement-driven cleanup. Typically, the number of sites cleaned through a state's VCP exceeds the number of sites cleaned under CERCLA or state-led enforcement programs in that same state (Davis, 2002; GAO, 1997b).

#### **4.5 Elements of VCPs**

VCPs usually incorporate incentives for liability, cleanup, and/or funding, but they use different types of incentives (Anderson, 1996; Bartsch et al., 2001; Davis, 2002). Generally, VCPs contain a common core of elements. These elements include eligibility restrictions, liability protection and closure, choice of cleanup standards, time and cost saving measures, and oversight. In addition, some states require public participation in their programs (Andrew, 1996; Gwyn, 1996; Eisen, 1996; Schnapf, 1998; Simons, 1998; Smary and DeWitt, 1998).

##### **4.5.1 Eligibility Restrictions**

Most states limit participation in their VCPs by site characteristics, type of volunteer, or both. Usually, states exclude sites on EPA's National Priorities List or sites under enforcement or regulatory action for cleanup through state or federal programs (Bartsch et al., 2001; EPA, 2000). Some VCPs only allow prospective buyers to take part in a voluntary cleanup, or prevent parties responsible for contamination from enrolling in the VCP. Often, state agencies disqualify categories of parties that serve as potential targets for the state's regulatory program (Simons, 1998).

##### **4.5.2 Liability Protection and Closure**

Most VCPs issue some type of protection from further liability upon the completion of a satisfactory cleanup. Liability protection gives the volunteer some assurance that their cleanup was satisfactory and releases the volunteer from future liability at the site (Eisen, 1996). The strength of these assurances varies considerably (GAO, 1997b). Although the use of the terms

can differ, a No Further Action (NFA) letter usually asserts that the state agency is unlikely to require further action. In contrast, a Covenant Not to Sue (CNTS) typically serves as an agreement that the state will not take action against the participant for further cleanup of identified contaminants. A CNTS provides more assurances to developers and lenders than a NFA letter (EPA, 2000). States typically retain some ability to revoke liability protection and require further cleanup under certain circumstances (Simons, 1998). VCPs may also provide liability assurances for lenders (Eisen, 1996; Simons, 1998).

States also commonly provide different levels of liability release or finality based on the different roles that the participating party might play, such as whether they are a prospective purchaser or a party responsible for the contamination (Bartsch et al., 2001; Simons, 1998). The liability release provisions of some VCPs protect the volunteer from third party lawsuits (Eisen, 1996; Simons, 1998).

Because of the overlapping jurisdiction of environmental laws regarding hazardous waste, release from state liability does not release participants in a VCP from federal liability. Since some participants or lenders might view this as a deterrent to redevelopment, some states developed memoranda of agreement with EPA as a way to offer more liability protection to program participants (Eisen, 1996; GAO, 1997a; Simons, 1998). Currently, EPA holds memoranda of agreement with 18 states for their VCPs (EPA, 2002b).

Each of EPA's ten regional offices makes its own arrangements with state VCP officers (Simons, 1998). Participants in VCPs for which there is a memorandum of agreement, receive the benefit of an assurance from EPA stating that the cleanup meets their standards. Just as with state releases from liability, EPA retains the right to re-enter a case under certain conditions (EPA, 2002b).

### **4.5.3 Choice of Cleanup Standards**

Voluntary cleanup programs utilize a different scheme of cleanup standards than CERCLA does, although some state Superfund laws have altered their cleanup standards to be more flexible (EPA, 2000). Rather than requiring cleanup to residential levels, VCPs usually provide more flexibility and allow participants more choices, including relaxed standards and nonpermanent remedies (GAO, 1997b; OTA, 1995; Robertson, 2001). Increasingly, agencies develop standards that consider the property's future or intended land use, providing cleanup standards commensurate with the risk of exposure at the site for that particular use. This system of standards is often called a risk-based, flexible, variable or tiered system (Robertson, 2001).

Basing cleanup on future land use usually requires that volunteers restrict their property by engineering or institutional controls. Engineering controls involve elements intended to place distance or physical separation between contaminants and people or the environment, including warning signs, pavement or caps. Institutional controls regulate the property's use through limits such as restrictive covenants, notices in the deed, or zoning ordinances (Eisen, 1996; Robertson, 2001).

Reduced standards make the cleanup process faster and less costly, which enables these programs to move brownfields into productive use more quickly (GAO, 1998). By defining the choice of standards, VCPs provide developers with a clear idea of the level of cleanup required for contaminated property (Robertson, 2001; Simons, 1998). Some parties, including policymakers and environmental officials, raise concerns about the long-term viability of these cleanup standards (Cavanaugh, 1995; GAO, 1998; Robertson, 2001). However, states maintain that all allowable standards protect human health and the environment (Robertson, 2001).

#### **4.5.4 Time and Cost Saving Measures**

Liability protection and relaxed cleanup standards lead to faster and less costly cleanups under state VCPs (Davis, 2002; GAO, 1997b). In addition, since development costs are a barrier to brownfield redevelopment, some states provide funding to encourage cleanups (Eisen, 1996; Gwyn, 1996). States direct financial incentives to assessment and remediation activities, or to the encouragement of job creation (Bartsch et al., 2001). Incentives may include grants, low interest loans, tax abatements, and tax credits (Bartsch et al. 1999, 2001; Davis, 2002; Eisen, 1996).

#### **4.5.5 Oversight**

State VCPs utilize some level of oversight to handle submission of forms, to award funding, to document the attainment of cleanup standards and to issue liability releases (Bartsch et al. 2001). Oversight is necessary to ensure that participants conduct cleanups in accordance with VCP guidelines (Anderson, 1996). Most states conduct oversight through their state environmental agency and charge oversight fees (Anderson, 1996; Eisen, 1996). However, some states have taken an innovative approach by utilizing private professionals to certify the completion of a cleanup. Transferring government functions to the private sector raises some questions about the quality of cleanups being conducted (Robertson, 2001).

#### **4.5.6 Public Participation**

A number of states fail to include public participation requirements in their VCPs (Bartsch et al., 2001). The states avoid public involvement because many developers and program officers see it as a deterrent and find that it delays the cleanup process (Eisen, 1996; GAO, 1997b). Other states see public participation as a necessary element to address public concerns regarding brownfield redevelopment (GAO, 1997b; Gwyn, 1996). As the use of risk-based standards increases, public participation may come to play a larger role in VCPs (Robertson, 2001).

#### **4.6 VCP Results**

Voluntary cleanup programs may represent the best opportunity for the redevelopment of thousands of contaminated sites not slated for federal or state action under enforcement-based programs. VCPs accomplish the identification, evaluation and cleanup of many contaminated sites that would not receive attention under other federal or state cleanup programs for some time, if at all (OTA, 1995; GAO, 2000). VCPs achieve this by allowing participants to come forward on their own rather than relying on enforcement actions (GAO, 1997b).

The cost of continuing state oversight may serve as a potential deterrent for some developers. Still, state VCPs generally receive praise for removing many of the barriers to brownfield redevelopment that exist under the CERCLA system (Davis, 2002; Eisen, 1996; GAO, 1997b).

#### **4.7 Chapter Summary**

States developed VCPs in response to the widespread reluctance of the private and public sector to address brownfield remediation and reuse. VCPs provide a streamlined process for brownfield remediation that offers flexibility, certainty and predictability. Although states construct the specific provisions of their voluntary cleanup programs differently, many basic elements are common in programs across the country. The potential benefits of state VCPs highlight the importance of investigating state voluntary cleanup programs and their particular methods for accomplishing brownfield redevelopment.

## **Chapter 5: Case Studies: State Voluntary Cleanup Programs**

### **5.1 Introduction**

This chapter provides details on the voluntary cleanup programs of Ohio, Pennsylvania and Michigan. The voluntary cleanup programs (VCPs) of these three states are relatively recent. However, the programs were chosen as case studies because the states' VCPs have been recognized as operating innovative and effective programs, employing practices different from those of EPA (Davis, 2002; GAO, 1998; 2000; Hula, 2000).

Since the first VCP in 1988, state VCPs have evolved and modified their components. Generally, the literature indicates a trend toward widening liability protection to include lenders and toward instituting risk-based cleanup standards (Davis, 2002; GAO, 2000; Robertson, 2001). This chapter focuses on the different approaches taken by Ohio, Pennsylvania and Michigan in their attempt to overcome the barriers to redevelopment that exist under CERCLA.

### **5.2 Ohio's Voluntary Action Program**

Ohio created its Voluntary Action Program (VAP) in September 1994 to remove the barriers that stalled the redevelopment of contaminated property (Ohio EPA, 1998b). The Ohio Environmental Protection Agency (Ohio EPA) adopted final administrative rules in late 1996, and fully implemented the program by early 1997. The program offers a way for interested parties to voluntarily undertake a cleanup without direct oversight from the Ohio EPA and still receive assurance that the cleanup meets the state's environmental standards (Ohio EPA, 2001).

Through the VAP, Ohio privatized its brownfield remediation program. The VAP provides a streamlined process, concrete cleanup standards, liability protection in the form of a covenant not to sue, financial incentives and penalties for system abuse. The VAP's use of private, certified professionals and laboratories to provide much of the program oversight makes

the VAP relatively unique among state VCPs. The Ohio EPA administers most features of the VAP. However, a number of different agencies and departments outside of the Ohio EPA control the program's financial incentives (Ohio EPA, 2001).

### **5.2.1 Eligibility and Requirements**

Ineligible properties under Ohio's VAP include sites where federal laws prohibit the VAP, properties subject to Ohio's underground storage tank, oil or gas laws, and properties that involve the closure of a hazardous or solid waste facility. Also, if the Ohio EPA has begun enforcement action on a site and the owner fails to give satisfactory proof of entering the VAP, the site will be ineligible (Davis and Kwasniewski, 2002; Geltman, 2000; Ohio EPA, 1996).

Under the VAP, any individual, business or government entity that wishes to clean up a contaminated property, or investigate a property with suspected contamination, can voluntarily begin activities at any time. The Ohio EPA requires no notification. Participants begin by conducting a "voluntary action" (Davis and Kwasniewski, 2002; Ohio EPA, 1996; VAP, 1994).

As defined by statute, these voluntary actions may include Phase I and II property assessments, a sampling plan, a remediation plan, and remediation activities (VAP, 1994). A Phase I assessment entails investigating the historical and current uses of the property. If there is reason to suspect a release of contaminants, a Phase II assessment is conducted, which involves collecting soil, groundwater and surface water samples. Remediation must address contamination that falls outside of established standards [discussed below] (Ohio EPA, 2001; Geltman, 2000).

### **5.2.2 Liability Protection**

The VAP requirements stipulate that volunteers must engage the services of state-certified professionals and laboratories to qualify for liability protection. Certified laboratories analyze any collected samples. Certified professionals evaluate the Phase I and II assessments and cleanup activities performed at a brownfield. If the site assessments show no contamination,

or show that contamination is within standards, the certified professional employed for the site issues a No Further Action (NFA) letter. The NFA letter contains detailed information about the site characteristics and any remediation activities (Ohio EPA, 2001; VAP, 1994). A NFA letter serves as official documentation that the site meets the appropriate standards, but does not provide any release from liability (Davis and Kwasniewski, 2002).

The certified professional will also issue an NFA letter once cleanup reports indicate that remediation activities brought contamination within applicable standards. Certified professionals have no duty to report sites that do not meet cleanup standards, unless there is an immediate threat to human health or the environment (Ohio EPA, 2001; VAP, 1994).

Some volunteers choose to stop at this point and not pursue liability protection from the Ohio EPA. However, those who wish to receive the legal release can ask the certified professional to submit the NFA letter to the Ohio EPA for review. If VAP staff determine that the site meets the cleanup requirements, the director of the Ohio EPA will issue a Covenant Not to Sue (CNTS). The CNTS protects program participants from liability related to further investigation and cleanup at the site. However, The CNTS does not protect parties from federal action or from third-party lawsuits (Davis and Kwasniewski, 2002; Ohio EPA, 2001).

The program participant must record the CNTS in the office of the county recorder of the appropriate county (VAP, 1994). Recording the CNTS makes it applicable to the current owner and all future owners of the property. When the Ohio EPA issues or denies a CNTS, the agency must publish notice in a local paper. Issuances and denials may be appealed to an Appeals Commission (Ohio EPA, 2001).

The Ohio EPA retains the right to revoke the CNTS if the land use upon which the cleanup standards were based changes, or if the Ohio EPA finds that the cleanup remedy does

not function properly. The Ohio EPA bases their decision to withdraw a CNTS on the standards in place at the time the agency issued the covenant (Davis and Kwasniewski, 2002; VAP, 1994).

The Ohio EPA entered into a Memorandum of Agreement (MOA) with EPA Region V in July of 2001 (EPA, 2002). To satisfy the requirements of the U.S. EPA, the Ohio EPA developed a ‘MOA track’ as an alternative to its ‘classic VAP track’ that leads to a Covenant not To Sue. The MOA track has additional notice and documentation requirements, entails direct agency involvement and oversight, and adds more opportunities for public participation. EPA also requires that the Ohio EPA report certain information to EPA Region V (EPA, 2002b).

Sites completing the requirements of the MOA track benefit from the added liability protection of an assurance from EPA in addition to the CNTS with the Ohio EPA. This assurance states that EPA Region V does not anticipate taking removal or remediation action under CERCLA unless the site poses an imminent threat to human health and the environment, or the Ohio EPA revokes the participant’s CNTS (EPA, 2002b).

The VAP also extends civil liability protection to lenders, trustees and fiduciaries<sup>1</sup>. Civil liability protection means that entities cannot be held responsible for payment of damages or cleanup costs through a lawsuit (Hill and Hill, 2002). The VAP covers any entity who obtained control of contaminated property in order to collect a debt. The law holds that lenders, trustees and fiduciaries acting in this way will not be held accountable for assessment or cleanup activities as long as they did not participate in the management of that property (Davis and Kwasniewski, 2002; VAP, 1994).

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<sup>1</sup> A person or business who has the power or obligation to act for another. For example, a trustee of a trust or an executor of a will would be a fiduciary (Hill and Hill, 2002).

### **5.2.3 Cleanup Standards**

In passing the VAP, the Ohio legislature required the creation of a series of “generic numerical clean-up standards” for soil, sediment and groundwater, and a risk-assessment procedure for a property-specific standard (VAP, 1994, §3746.04). The generic cleanup standards relate to the intended use of the property: industrial, commercial or residential. The industrial standards are the most relaxed and the residential standards are the most stringent of the three. Also, the Ohio EPA ties groundwater standards to the use of the groundwater. For example, those sites in areas served by a public water supply may conduct a lower level of cleanup (Bartsch et al., 2001; Davis and Kwasniewski, 2002; Ohio EPA, 1996).

The property-specific standard must be used if no generic cleanup standard exists for a particular contaminant. Participants must also employ the property-specific standard if the certified professional determines that substances are leaching or will leach into groundwater, requiring control under groundwater standards. Participants must use a property-specific risk assessment when using engineering or institutional controls in addition to the land use restrictions required for the generic standards (Davis and Kwasniewski, 2002; Ohio EPA, 1996).

If a cleanup relies on land use restrictions to meet applicable standards, participants must record the use restrictions in the county recorder’s office (VAP, 1994). Placing the document in the public record ensures that the restriction is perpetual. Recordation also provides a way to inform subsequent purchasers of the restrictions on the property (Gaddy and Hart, 2000). If a cleanup relies on engineering or institutional controls to meet cleanup standards, participants must develop an operation and maintenance plan in order to obtain a NFA letter (VAP, 1994).

### **5.2.4 Cost Savings and Financial Incentives**

The Ohio legislature designed the VAP’s privatization of cleanup oversight to save participants and the Ohio EPA both time and money. The agency expected to benefit by

spending less time reviewing reports. However, the Ohio EPA found it necessary to offer technical assistance prior to the submission of NFA letters because poor quality reports caused program staff to miss review deadlines (Ohio EPA, 1998b). NFA letters submitted for a CNTS require payment of a fee to offset the cost of that service. Participants or certified professionals seeking technical assistance from Ohio EPA staff must also pay an hourly fee (Ohio EPA, 1996).

Developers and lenders may benefit from the privatization by conducting cleanups on a time schedule that meets their needs (Ohio EPA, 1998b). Also, the statute requires Ohio EPA to issue or deny a CNTS within 90 days of receiving a NFA letter for a complex site and within 30 days for a site with less complex circumstances. Although these time limits may allow volunteers to better plan their development activities and limit their costs, there is no penalty if staff do not complete reviews on time (Davis and Kwasniewski, 2002; Ohio EPA, 2001).

The VAP offers another way for participants to limit their expenses. The program provides explicitly for the recovery of the costs incurred by conducting a voluntary action, including any attorney's fees. Both innocent and liable parties may recover costs from responsible parties. Participants must initiate any private cost-recovery action within three years from the date they submitted the NFA letter to the Ohio EPA. The share of each liable party's cleanup costs derives from their respective degree of responsibility. The court may base their determination of liability on four factors outlined in the VAP statute: (1) the nature and amount of hazardous substances contributed, (2) the length of time each person owned or operated the property, (3) each party's history of compliance with environmental laws in the use of the property, and (4) any other factors that the court considers appropriate (VAP, 1994).

In an effort to limit the time and expense of applying for multiple permits, Ohio allows participants in the VAP to apply for a consolidated permit when multiple environmental permits

are required to conduct a cleanup. The single consolidated permit covers activities under the federal Water Pollution Control Act, Resource Conservation and Recovery Act, and the Clean Air Act. The Ohio EPA conducts a public meeting before deciding whether to approve or deny an application for a consolidated permit (Davis and Kwasniewski, 2002; VAP, 1994).

In addition to time and money saved from the program's privatized nature, there are a number of direct financial incentives available to developers, municipalities and economic development agencies. The Department of Taxation offers an automatic tax incentive through the Voluntary Action Program Tax Abatement program. After the Ohio EPA issues a CNTS, the Department of Taxation exempts the increase in value of the land and facilities that results from cleanup for a period of ten years. This real estate tax abatement continues for the full time period even if the property owner changes. If the Ohio EPA revokes the CNTS while the tax abatement is in effect, the Department of Taxation will withdraw the tax abatement and the property owner must repay all taxes that would have been due (Davis and Kwasniewski, 2002; Ohio EPA, 2001).

Ohio also provides low interest loans through The Water Pollution Control Loan Fund (WPLCF), the Ohio Water Development Authority Loan Program (OWDA) and the Urban Redevelopment Loan Program. Only remediation projects that result in water quality benefits can receive WPLCF monies. The OWDA program offers market rate loans for the remediation of publicly or privately owned property. Finally, the Urban Redevelopment Program provides loans to non-profit economic development groups or municipalities for work in designated distressed urban areas (Bartsch, et al. 2001; Ohio EPA, 2001; Ohio EPA, 1998a).

### **5.2.5 Other Program Features**

Ohio's VAP protects participants by asserting that participation in the program does not constitute admission of criminal liability or environmental danger. Any information, documents or data produced through the Voluntary Action Program are not admissible or discoverable in a

civil or administrative legal proceeding against a program participant. However, the public may request information pertaining to a party's NFA at any time (Davis and Kwasniewski, 2002; Geltman, 2000; Ohio EPA, 2001).

The VAP requires that the Director of the Ohio EPA perform random audits on 25% of the properties that utilize the program each year, including those in the MOA track. Volunteers who fail the audit can lose their CNTS. The agency also audits certified professionals and laboratories. The agency can prosecute criminally or civilly any certified professional or lab that violates agreements or falsifies information (Ohio EPA, 1996; Ohio EPA, 2001; VAP, 1994).

Program participants may apply for a variance from applicable cleanup standards. The Ohio EPA charges an application fee of \$18,500 for each variance request. To receive a variance, the applicant must show that attaining the relevant standards is technically infeasible or cost-prohibitive. In addition, the application must also demonstrate that the proposed standards will protect human health, improve environmental conditions on the site, and are necessary to promote, protect or enhance employment opportunities or reuse of the site. The Ohio EPA conducts a public meeting whenever a volunteer applies for a variance (Davis and Kwasniewski, 2002; Ohio EPA, 1996; VAP, 1994).

### **5.2.6 Program Benefits**

Because parties need not notify Ohio EPA to begin an assessment or cleanup under the VAP, the Ohio EPA finds it difficult to track the number of sites in the program at any given time. However, as of 1999, 85 sites had passed through the program, totaling 1,420 acres. Ohio EPA staff estimated that redevelopment efforts at these sites created about 7,100 jobs (Bartsch et al., 2001). In contrast, EPA completed 25 Superfund sites in Ohio by early 2002 (EPA, 2002d).

### **5.2.7 Ohio's Voluntary Action Program in Action: Focus on Liability Protection**

The Strongsville Airpark in Strongsville, OH originally used foundry sands for a runway construction project and utilized underground storage tanks for petroleum storage. The airport closed in the late 1980s, leaving contamination on the site. Fairview Fuel Corporation took over the property after the airport's closure. Fairview Fuel removed the underground storage tanks and surrounding soils and conducted groundwater and soil sampling as part of their voluntary action for Ohio's VAP (Ohio EPA, 1998b).

Following the remediation, the site's certified professional determined that no significant environmental problems remained. This led to the issuance of a No Further Action letter and subsequently, to a Covenant Not to Sue (CNTS) from the Ohio EPA in 1996. The CNTS made it possible to continue the construction of residential housing at the site. Although one phase of housing construction was completed without the CNTS, fears regarding liability hindered future development. The Covenant Not to Sue gave developers and financial entities the comfort they needed to continue with the project. The site will ultimately accommodate 240 homes. By using the VAP to eliminate liability, developers were able to reuse a site that had already been disturbed. This was an important feature to local planners and open-space advocates interested in limiting sprawl in Strongsville, a fast-growing Cleveland suburb (Ohio EPA, 1998b).

### **5.3 Pennsylvania's Land Recycling Program**

Pennsylvania established its voluntary cleanup program, the Land Recycling Program (LRP), with the passage of a three-bill package on May 19, 1995 (DEP, 1995). Act 2, the Land Recycling and Environmental Remediation Standards Act, forms the backbone of the LRP. This Act provides for the creation of risk-based cleanup standards, lays out the requirements for

release from liability and makes funding available for municipalities and private entities to assess or cleanup brownfields (Act 2, 1995; Kessler, 1997; Terai and McAndrews, 1997).

Act 3, the Economic Development Agency, Fiduciary and Lender Environmental Liability Protection Act, provides various financial entities with protection from liability if the financial entities did not directly cause site contamination (Act 3, 1995). Act 4, the Industrial Sites Environmental Assessment Act, authorizes annual funding for abandoned industrial sites in certain distressed communities. The Pennsylvania legislature passed Act 6 in 2001, amending portions of Act 4 (Act 4, 1995; 2001).

Each act supplies some of the policies and regulations used to achieve the LRP's three goals: (1) to make contaminated sites safe, (2) to return contaminated sites to productive use, and (3) to preserve farmland and green space (DEP, 1995). To accomplish these goals, the LRP provides liability relief, uniform and flexible cleanup standards, timely and standardized review and financial assistance (DEP 2000a; Geltman, 2000). The Pennsylvania Department of Environmental Protection (DEP) administers the bulk of the VCP, but the Department of Community and Economic Development (DCED) handles financial support for program participants (PA DCED, 2000; Geltman, 2000).

### **5.3.1 Eligibility and Requirements**

Acts 2, 3, 4 and 6 do not restrict eligibility based on site characteristics, although the VCP focuses on sites that are not under enforcement by CERCLA, or Pennsylvania's CERCLA equivalent. However, all contaminated sites undergoing remediation in Pennsylvania abide by the cleanup standards in Act 2. All parties who voluntarily initiate cleanup through the LRP qualify for a release from liability, even parties responsible for contamination. However, responsible parties remain ineligible for funding (DEP, 1995).

### **5.3.2 Liability Protection**

Pennsylvania provides a release from liability for all parties who voluntarily participate in site cleanup. This liability release applies to current and future owners of the property, participants in the cleanup, developers, occupants, successors or assigns as well as public utilities performing work on the site (Act 2, 1995; Collings and Quimby, 2002). However, the LRP ties this release from liability to one point in time. The liability release does not cover parties who discharge contaminants on the site in the future (Kessler, 1997; Terai and McAndrews, 1997).

The LRP provides liability protection for other parties as well. Act 2 protects parties who conduct environmental assessments on-site, as long as the site conditions are not caused by their action and they perform with “professional care” (Act 2, 1995; Terai and McAndrews, 1997). Act 3 provides liability protection to economic development agencies, fiduciaries and lenders. This protection covers liability for cleanup and any claims relating to environmental conditions at the property. If the entity participates in, or controls, activities that worsen a contamination problem, the release from liability will not apply (Act 3, 1995). The LRP also bars those who purposely violate an environmental law of the state from the liability release (Act 2, 1995).

Upon the completion of cleanup, LRP participants must submit a final report to DEP for a release from liability. Once DEP approves the final report, LRP participants receive relief from further liability for the remediation of any contaminants identified in the final report. Liability protection also shields participants from citizen suits and contribution actions by responsible parties. For remediation of Special Industrial Sites, the participants and DEP create an agreement prior to the completion of cleanup. This agreement outlines the reach of liability protection afforded to participants (Act 2, 1995; Collings and Quimby, 2002; Geltman, 2000).

Pennsylvania has not negotiated a MOA with EPA. Therefore, liability relief through the LRP does not protect participants from the possibility that EPA may take federal action at a site.

In addition, participants receive no protection from liability for remediation under common law (Terai and McAndrews, 1997). Thus far, no EPA action has been taken at any site that completed the Land Recycling Program (DEP, 2000). Act 2 also carries “reopeners,” or circumstances under which DEP can renew a case and require further remedial action (Act 2, 1995). The DEP can compel a participant to perform further cleanup if the department finds:

- That the participant committed fraud in attaining one of the cleanup standards at a site
- That previously unknown contamination exceeds applicable standards
- That the remedy implemented by the participant fails to meet one or a combination of the three cleanup standards [discussed below],
- That land use changes, or a revision in substance exposure risks, requires further cleanup to bring risks in line with acceptable standards
- That further treatment or removal becomes feasible at a site where a release occurred after the effective date of the act and the remedy relied partly on institutional or engineering controls (Act 2, 1995, Collings and Quimby, 2002).

### **5.3.3 Cleanup Standards**

To reduce uncertainty regarding the level of cleanup required, Act 2 sets forth three classes of cleanup standards: the background standard, the statewide health standard, and the site-specific standard. Following a site assessment, program volunteers are free to select any standard they wish. The LRP offers an additional cleanup option, the special industrial sites standard, to innocent purchasers who remediate sites posing an imminent threat that are either abandoned or in an enterprise zone (Act 2, 1995; Collings and Quimby, 2002). To receive the liability release offered by the LRP, participants must attain compliance with one or more of the designated cleanup standards (Geltman, 2000; Terai and McAndrews, 1997). Participants may select the most lenient standard for each contaminant at the site (Act 2, 1995).

Persons selecting the background standard must conduct cleanup that reduces on-site contaminants to background levels. Act 2 (1995) defines “background” as the concentration of a regulated substance that is unrelated to releases at the site. In areas of widespread industrial activity, this standard may not be the most stringent (Collings and Quimby, 2002). Participants

who select the background standard may not use external controls, such as fencing or land use restrictions, to attain the background standard. However, participants may use these types of controls to maintain the standard (Act 2, 1995).

Persons selecting the statewide health standard must abide by published media-specific numerical limits for contaminants. The state developed separate residential and nonresidential standards based on different exposure factors. The restrictions on the use of external controls for the statewide health standard are the same as for the background standard (Act 2, 1995).

The site-specific standard involves using a risk-assessment procedure to determine suitable soil and groundwater cleanup standards. The procedure takes into account future land use and the potential for human exposure. A participant may achieve this standard through treatment and removal, use of institutional or engineering controls, or other innovative methods. However, DEP will reject any cleanup that consists solely of external controls (Act 2, 1995).

Participants selecting the background or statewide health standards need only to file a final report with DEP, documenting attainment of the selected standard. LRP participants selecting the site-specific standard may need to file additional reports with DEP, including an investigation report, a risk assessment, a cleanup plan and a final report (DEP, 1995).

Participants may use the special industrial sites procedure only at sites with no financially sound responsible party or at sites in enterprise zones, a special state-designation for economically distressed areas. Persons using this standard must be innocent of any on-site contamination, but Act 2 only requires that they clean up “immediate, direct or imminent threats to public health or the environment” (§502, 1995). Parties wishing to use this procedure must conduct a baseline environmental investigation and submit a report to DEP. Based on the

remediation proposed in the report, DEP and the participant will enter into an agreement outlining cleanup liability.

Act 2 specifies notice requirements for each standard. Each of the four standards requires that participants submit a Notice of Intent to Remediate (NIR) to DEP before beginning a cleanup, send a copy to the municipality where the site is located, and publish a summary of the NIR in a local paper. DEP must publish acknowledgement of receiving the NIR in the Pennsylvania Bulletin. When cleanup is complete under any of the standards, participants must submit a final report to DEP, and notice of that submission must follow the same guidelines as for the NIR. The same notice requirements apply to each of the required reports for a site-specific cleanup (Act 2, 1995).

Cleanups conducted under the background or statewide standard may avoid notice requirements if volunteers complete the cleanup within 90 days of a release of contaminants. A cleanup conducted under the site-specific or special industrial standard involves additional notice requirements. For these two standards, notice must include a 30-day comment period. During this time, the municipality can request involvement in the remediation plans for the site. The participant must also implement a public involvement program if the municipality requests one. The deed for any site cleaned to a standard other than the background or residential statewide standard must contain a description of the hazardous substances on-site (Act 2, 1995).

Seventy-seven percent of the more than 1000 sites that had passed through the LRP as of 2001 used the statewide health standard. About 14% used the site-specific standard, 6% used the background standard and 3% used the special industrial area standard (DEP, 2000). The background and statewide health standards do not require participants to submit or seek approval of investigation reports or remediation plans before cleanup begins. However, DEP encourages

participants to get pre-approval of work plans. Participants demonstrate the attainment of all standards through self-reporting and self-documentation (Terai and McAndrews, 1997).

Act 2's cleanup standards apply to all sites in the voluntary program and to any cleanups ordered by the government under six Pennsylvania laws, including the Hazardous Site Cleanup Act, Pennsylvania's CERCLA equivalent. This policy creates uniformity for all cleanups supervised by DEP throughout the state (DEP, 1995; Terai and McAndrews, 1997).

### **5.3.4 Cost Savings and Financial Incentives**

The Land Recycling Program contains deadlines for review and approval of cleanup reports. DEP must review reports for sites using the background or statewide health standard within 60 days, and within 90 days for the two remaining standards. If the state fails to approve or identify flaws in the reports before the deadline, reports receive automatic approval. Timely comment and approval gives parties the opportunity to better plan the development process. Another way that the LRP attempts to save time and money is through permit waivers. The LRP allows state and local agencies to waive permits if volunteers conduct cleanup pursuant to Act 2's standards (Act 2, 1995; Collings and Quimby, 2002).

The Land Recycling Program also contains several funding mechanisms. The Industrial Sites Cleanup Fund (ISCF) makes grants and loans available for the voluntary remediation of sites used for industrial activity before July 18, 1996. A program participant may use these funds for up to 75% of their costs for environmental studies and cleanup activities. The DCED only releases these funds to parties who are not responsible for site contamination. Only political subdivisions and economic development agencies may receive grant funds. The DCED may distribute up to 20% of the ISCF total of \$15 million as grants (Act 2, 1995; Terai and McAndrews, 1997).

Political subdivisions, economic development agencies and all other parties are eligible for low interest loans through the ISCF. Act 6 alters these loans by making them performance-based. Directed at brownfields, DCED may now forgive these loans upon the performance of certain measures laid out in an agreement negotiated before cleanup. These measures are based on the timeliness of the cleanup, a certain method of disposal, job creation or economic benefit to a community (Act 6, 2001).

In addition, Act 4 established The Industrial Sites Environmental Assessment Fund, an annual \$2 million fund that the DCED administers for use in distressed communities. The DCED distributes these funds as grants to municipalities, local authorities or nonprofit economic development agencies. These funds require a 25% match from the recipient (Act 4, 1995; Collings and Quimby, 2002). DCED distributes funds based on established criteria, although no guidelines explain the relative importance of the criteria (Act 4, 1995; Geltman, 2000).

Pennsylvania also grants up to \$50,000 to cities and development authorities that carry out brownfields inventories and list these properties in the state's PaSiteFinder, a web-based brownfield inventory system. Localities and development authorities receive a \$1,000 credit for each site listed (Bartsch et al., 2001; DEP, 2000). A Job Creation Tax Credit Program offers a tax credit of \$1,000 per new job for firms who increased employment by 25 jobs or 20% within three years of their enrollment in the VCP (Bartsch et al., 2001).

The state offers other incentives to attract private investment to brownfields including the creation of Keystone Opportunity Zones, in which all taxes may be forgiven for up to 12 years for brownfield redevelopment projects. In addition, the Key Sites Initiative uses state-funded contractors to conduct site assessments, prepare cost estimates and develop cleanup plans for

municipalities and economic development agencies. This activity aims to promote the reuse of abandoned industrial properties (Bartsch et al., 2001; DEP, 2000).

### **5.3.5 Program Benefits**

As of November 2001, the Pennsylvania Land Recycling Program approved cleanup at 1,000 sites and estimated having an additional 200 sites in the program (DEP, 2001). In contrast, by early 2002, EPA completed only 69 Superfund cleanups in the state (EPA, 2002d). In addition, DEP officials estimate that brownfield reuse created 25,000 jobs (Bartsch, et al., 2001). The DCED distributed almost \$45 million in grants and loans for environmental assessments and remediation of contaminated property since the program's inception (DEP, 2001).

### **5.3.6 Pennsylvania's Land Recycling Program in Action: Focus on Cleanup Standards**

In Shippensburg, PA, a brownfield was remediated and redeveloped as the home of several baseball fields. Once occupied by a manufacturing gas plant and a railroad yard, the Shippensburg Little League now uses the baseball fields for their games, with the help of Act 2's cleanup standards (DEP, 2001).

In the late 1990s, PPL Gas Utilities found that contamination from its property had spread to adjacent property owned by the Borough of Shippensburg. When the Borough expressed interest in constructing baseball fields on their property, PPL sped up its remediation schedule to conduct a cleanup under Act 2. PPL paid for and directed the cleanup on both its property and the borough's property. For its part, the Borough passed an ordinance restricting the use of groundwater at the site (DEP, 2001).

Because the Shippensburg Little League was losing their current field, remediation needed to occur quickly while still ensuring that the site was safe for children. PPL conducted the cleanup with three different uses in mind. PPL and the Borough designated one portion of the

site for baseball fields. PPL cleaned a second area, intended for use as a parking area, to the site-specific standard with a restriction on future groundwater use. In a third area, owned by the Borough, PPL excavated a tar storage site and met the statewide health standard. A wetland and the outfields of the baseball fields will be placed in this location. By conducting a cleanup specifically for predetermined end uses, PPL completed the cleanup more quickly and inexpensively than if one standard applied to the entire site. A senior professional for PPL noted, “[t]he strength of the Land Recycling Program lies in its focus on end use. DEP asks the question: What are you going to do with the property? And then it allows you to do the cleanup specifically for the predetermined end uses” (DEP, 2001, Southcentral Showcase).

#### **5.4 Michigan’s Part 201**

In 1995, the Michigan legislature amended Michigan’s CERCLA equivalent, the Michigan Environmental Response Act (MERA). The amendments were codified in Part 201 of the Natural Resources and Environmental Protection Act. Part 201 overhauled MERA and now serves as the Voluntary cleanup program for Michigan. Part 201 radically changed the assignment of liability, the structure of cleanup standards, and the availability of financial incentives for brownfield redevelopment. The Michigan Department of Environmental Quality (DEQ) administers all program components, including financial incentives (DEQ, 1998; Trigger, 2002). Part 201 aims to encourage brownfield reuse (Geltman, 2000). The legislature designed the program to provide for response activities at contaminated sites to eliminate unacceptable risks to the public health, safety and welfare, or to the environment (Part 201, 1995).

##### **5.4.1 Eligibility and Requirements**

Property is eligible for inclusion in the program if regarded as a “facility.” Part 201 defines a “facility” as a property where contamination exceeds the residential cleanup criteria

[discussed below] (Part 201, 1995). All parties who own, operate or purchase a facility fall under the provisions of Part 201 (Part 201, 1995; Trigger, 2002).

#### **5.4.2 Liability Protection**

Prior to the passage of the amendments, MERA functioned on essentially the same liability scheme as CERCLA. The 1995 amendments eliminated liability for innocent owners and operators of contaminated property who obtained the property before June 5, 1995. Now, the state considers only those parties responsible for contamination at a facility to be liable (DEQ, 1998; Geltman, 2000, Trigger, 2002).

Part 201 provides a process whereby owners and operators of contaminated property, who obtain the property after June 5, 1995, can receive exemption from liability if they perform certain duties. These owners and operators must be innocent of contamination. The required duties include conducting a baseline environmental assessment (BEA) within 45 days of purchase, occupancy or foreclosure (whichever is first) and exercising “Due Care” regarding any contamination that exists on the property. If the owner/operator fails to perform these duties, they are liable for the contamination under traditional status liability (Part 201, 1995; Trigger, 2002).

The BEA provides information on the site’s history and an assessment of the extent and types of contamination present. This allows DEQ to distinguish future contamination from existing contamination. Developing a BEA makes it easier to determine the liability of future parties who add further contaminants to the site. The extent and detail required in the BEA depends on the use of the property by the filing party (DEQ, 1998; Hula, 2000).

If the BEA shows that the property qualifies as a facility, the owner/operator must submit the BEA to DEQ (Part 201, 1995; Trigger, 2002). Owner/operators of facilities can petition DEQ for a written determination that they qualify for the law’s liability protection for a fee of \$750. Participants may also request that DEQ determine whether the owner’s use of the property abides

by the terms of the due care obligations. DEQ must approve or deny the request within 15 days. Any denial must explain the reason for rejection (Geltman, 2000; Hula, 2000; Trigger, 2002).

“Due Care” obligations involve preventing the exacerbation of existing contamination, taking response activities to mitigate unacceptable exposures and taking precautions against reasonably foreseeable acts or omissions of third parties (Part 201, 1995; Trigger, 2002). The statutory definition of “Response activities” includes cleanup, removal or treatment of hazardous substances necessary to prevent injury to the public or the environment. Due care obligations apply to any owner or operator who is aware that their property qualifies as a facility, whether or not they are responsible for the contamination (Part 201, 1995).

The owner/operator of a property that is contaminated due to migration of pollutants from other properties receives an exemption from liability and due care requirements. However, the party must be innocent of any activity causing the contamination. Part 201 also provides liability protection to all lenders and fiduciaries involved with contaminated property, unless the financial entities participated in the management of the facility. In addition, Part 201 releases state and local units of governments from liability for property they acquired involuntarily, such as through condemnation or tax reversion (Part 201, 1995; Trigger, 2002).

Parties that own or operate contaminated property and are responsible for on-site contamination must pursue response activities including investigation and cleanup. DEQ can fine or penalize parties who do not engage in such activities (Part 201, 1995; Trigger, 2002).

The reformed liability provisions mean that a buyer can purchase contaminated property without fearing liability for its contamination. However, the liability exemption only applies to current contamination and not to future releases caused by the owner/operator (Trigger, 2002).

In addition to the liability protections provided in Part 201, DEQ and EPA Region V negotiated a MOA. Signed in July 1996, the MOA states that EPA does not “plan or anticipate” any federal action against a covered party under Superfund” (EPA, 2002b, pg. 1). However, EPA may pursue federal action if site conditions pose an imminent threat to public health or if the party fails to meet the provisions of the Part 201 cleanup program (EPA 2002b; Trigger, 2002).

### **5.4.3 Cleanup Standards**

The 1995 amendments instituted cleanup categories based on the expected future land use of the property. From least to most demanding, these are industrial, recreational, commercial and residential. Each designated land use has a limited and unlimited category (e.g. both a limited and unlimited residential category). Limited categories use less strict criteria than do the unlimited land use categories. A limited site may require exposure barriers, such as a parking lot, or institutional controls, such as a deed restriction, to control exposure to contaminants (DEQ 1998; Trigger, 2002). Sites cleaned using unlimited categories do not require the use of exposure barriers to prevent contact because cleanup criteria are more stringent (DEQ, 1998). Cleanup of any contaminated property must conform to one these categories, but parties may use cleanup criteria from more than one category at a given facility (Part 201, 1995).

If a participant wants DEQ to approve a remedial action plan using any cleanup criteria other than the unlimited residential, the party must provide certain documentation. Participants must show that either the current zoning of the property coincides with the proposed criteria, the zoning authority plans to change the zoning so that it coincides, or the property use is a legal nonconforming use<sup>2</sup> (Part 201, 1995).

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<sup>2</sup> Nonconforming use means the use of a piece of property that is zoned for a more limited use. The use is usually permitted because the use existed before the adoption of the zoning ordinance that it violates. (Hill and Hill, 2002)

For cleanup based on any of the unlimited categories, participants must record a Notice of Approved Environmental Remediation with the register of deeds within 21 days after DEQ approves the remedial action. Approval of the remedial action plan depends on the creation of a legally enforceable agreement with DEQ outlining use restrictions, monitoring, maintenance, permanent site markers, and financial assurance for these elements (Trigger, 2002).

To gain approval of a remedial action plan using any of the limited criteria, the owner must file a restrictive covenant with the register of deeds within 21 days and notify DEQ 14 days before the property is transferred (Part 201, 1995). A restrictive covenant is a perpetual requirement included in a deed for real estate that the owner or buyer will limit their future use of the property in some manner (Hill and Hill, 2002). As an alternative to a restrictive covenant, the owner may seek to establish use restrictions through a local ordinance. The seller must disclose all restrictions on land use to a potential purchaser before the seller may convey their interest in the property. In addition, any person who knows they own contaminated property must disclose this information to a potential buyer (Part 201, 1995; Trigger, 2002).

For remedial actions that involve state funds or for which significant public interest exists, DEQ must give notice to the county and local government within 30 days of a remedial investigation. This notice must provide the opportunity for local government members to meet with the Department of Environmental Quality. In addition, the locality, or a group of 25 citizens, may request that DEQ hold a public meeting. DEQ must provide public notice, an opportunity for public comment, and a public meeting before approving a remedial action plan, if the cleanup uses state funds, limited land use categories, institutional controls, or is of significant public interest (Part 201, 1995; Trigger, 2002).

#### **5.4.4 Cost Savings and Financial Incentives**

Michigan's VCP also contains several financial incentives to encourage brownfield remediation and redevelopment. The Clean Michigan Initiative is a \$675 million bond issue approved by voters in 1998. This initiative includes \$255 million for brownfield redevelopment, \$60 million for sites with serious hazards, \$20 million for grants to local governments and redevelopment authorities for sites with 'redevelopment potential' and \$50 million in grants for brownfields in waterfront areas (Bartsch et al., 2001; DEQ, 2002).

The Revitalization Revolving Loan Fund (RRLF) provides loans to municipalities and brownfield redevelopment authorities for assessment and demolition. The loans carry an interest rate of 2.25%, repayable over 15 years. The RRLF offers deferred interest for the first five years of the loan (Bartsch et al., 2001; DEQ, 2002). A new credit enacted in 2000 allows for the relief of up to 100% of taxes on real property for up to 12 years when an urban community forms an Obsolete Property Rehabilitation District (OPRD) (Bartsch et al., 2001). A local government may form an OPRD consisting of any number of obsolete properties within the jurisdiction, by a resolution. The definition of obsolete property includes commercial or commercial housing property that constitutes a 'facility' (OPRA, 2000).

Michigan also allows some governmental units to utilize tax increment financing to capture new property tax revenues resulting from the redevelopment of a facility. The localities may use the captured funds to reimburse parties for redevelopment activities including BEAs, due care, infrastructure improvements and site preparation. In addition, the Single Tax Business Credit allows owners and lessees of businesses to apply for a credit against the state business tax. This program allows the applicant to claim a credit for demolition, building construction and site or building improvements at a contaminated or obsolete site (Trigger, 2002).

### **5.4.5 Program Benefits**

As of 2001, DEQ received 4,952 Baseline Environmental Assessments (Bartsch et al, 2001). This figure represents the number of property transfers involving contaminated property that occurred in the state of Michigan since the amendments to MERA in 1995. In the four years prior to the amendments, parties conducted only 39 such transfers in Michigan that included equivalent liability protections (Hula, 2000). In addition, DEQ awarded 214 brownfield grants and loans since 1992, totaling \$97.7 million. Michigan estimates that their VCP has generated 13,000 jobs and \$2.3 billion in private investment. DEQ also estimates the construction of 15,000 housing units on 12 separate sites (Bartsch et al., 2001). EPA has accomplished only 63 site cleanups in Michigan since Superfund cleanups began in 1981 (EPA, 2002d).

### **5.4.6 Michigan's Part 201 in Action: Focus on Financial Incentives**

In Traverse City, Michigan, the county and developers converted a contaminated piece of riverfront property into a mixed-use urban infill project. After the closing of a 100-year old foundry, the property remained vacant for more than 20 years. Attempts at encouraging redevelopment were unsuccessful due to the risk, uncertainty and cost involved. In response, the county conducted environmental and market assessments on the site. When Michigan's Part 201 was passed in 1995, it encouraged private developers to investigate and purchase the property. 'Due Care' requirements were met primarily by capping the site and constructing a piling wall along the riverbank (ROBIN, 1999).

A \$1.6 million grant from the Michigan DEQ covered the remediation activities. Further incentives for development came from a tax increment financing plan to fund public facilities related to the project, including a roadwork, streetscapes and demolition. The project also benefited from the development's eligibility for the Michigan Single Business Tax Credit, enabling the developer to claim a credit for building construction at the site. Construction began

in October of 1997, when a timeline was established for coordinating development with public services. The availability of financial incentives was crucial to the redevelopment of this site. Here, they took the form of direct and indirect financing as well as tax credits (ROBIN, 1999).

### **5.5 Chapter Summary**

This chapter detailed the voluntary cleanup programs of Ohio, Pennsylvania and Michigan. These three states attempt to overcome barriers to brownfield redevelopment under CERCLA by utilizing liability protection, a choice of cleanup standards and time and money saving measures. Despite varying approaches to overcoming CERCLA's barriers, each of the three states accomplished a number of cleanups under their VCPs, while EPA's completed cleanups in those states remained limited. It is clear that voluntary cleanup programs have had a substantial effect on brownfield redevelopment. The effectiveness of these state VCPs prompts the need for further investigation and comparison.

## **Chapter 6: Conclusions and Recommendations**

### **6.1 Introduction**

This chapter compares each of CERCLA's three main barriers with each state's response in an attempt to draw conclusions about what lessons can be learned. This chapter closes with administrative and policy recommendations for the improvement of state voluntary cleanup programs in the future.

### **6.2 Summary**

Brownfield redevelopment holds the potential to benefit the environment, economy and society. However, a variety of factors keep brownfield redevelopment from achieving its full potential, including the unintended consequences of environmental laws. Although many laws regulate hazardous substances, CERCLA is the primary federal law influencing the redevelopment of brownfields. A party conducting cleanup under CERCLA may experience unyielding liability, uncertain cleanup standards and high costs. These three elements serve as CERCLA's main barriers to brownfield redevelopment. Despite EPA's attempts to remedy these barriers and the unlikelihood that the agency will take action at low or moderately contaminated sites, parties involved remain intimidated by the possibility of EPA enforcement.

State voluntary cleanup programs developed largely to respond to CERCLA's barriers to brownfield redevelopment. Ohio, Pennsylvania and Michigan use their voluntary cleanup programs to redress CERCLA's barriers in different ways, but all three succeed in redeveloping a great deal more properties than the Superfund program. Although implemented differently, the VCPs analyzed here all reduce liability risk, increase flexibility and offer financial assistance.

### **6.3 Case Study Conclusions**

Ohio, Pennsylvania and Michigan created aggressive voluntary cleanup programs to confront the challenges of strict liability, stringent cleanup standards and high costs presented by CERCLA. Data on site cleanups suggests that these VCPs are achieving their goal of returning brownfields to productive use. Because of this fact, these state VCPs serve as model for experimenting with ways to improve environmental policy regarding brownfields. Analyzing the programs offers an opportunity to examine how states compare in their efforts to remedy CERCLA's obstacles. Table 6.1 compares each of CERCLA's barriers to brownfield redevelopment with the response of Ohio, Pennsylvania and Michigan through their VCPs. Each of these elements is discussed below in detail.

#### **6.3.1 Liability**

CERCLA's standard for liability is retroactive, strict, joint and several. The federal law essentially bases liability on status as an owner or operator of contaminated property, rather than on fault. CERCLA taints many older commercial and industrial properties, even those without contamination, because owners and developers fear an enforcement action based on the law's liability scheme. In addition, although CERCLA exempts secured creditors from liability, the courts still regard trusts and lenders who foreclose on a piece of property as potentially responsible parties.

In contrast, the VCPs of Ohio, Pennsylvania and Michigan offer releases from liability for the performance of certain actions. All three states offer statutory releases from liability or administrative releases through documents issued by the VCP's guiding agency. In addition, all three states offer automatic liability protection to lenders, fiduciaries and trustees. Pennsylvania's LRP also includes economic development agencies in their lender protection provisions (Table 6.1).

Participants in Ohio's VAP receive some degree of assurance through a No Further Action letter. Participants may achieve liability protection by receiving a Covenant Not to Sue. Pennsylvania's LRP volunteers receive an automatic release from liability when they complete a cleanup in accordance with applicable cleanup standards. Another valuable feature of Pennsylvania's VCP is the statutory protection it provides against third party suits, which includes suits from neighboring landowners. Michigan's VCP replaces strict liability with liability based on responsibility for contamination. Innocent parties receive liability protection as long as they submit a BEA and abide by due care obligations. Parties at fault for contamination have an obligation to conduct cleanup activities.

Ohio and Michigan offer an added level of liability protection through their memoranda of agreement with EPA Region V. Each state's MOA protects program participants from federal enforcement actions under CERCLA as long as they comply with the provisions set forth in the state's VCP. The overlapping nature of state and federal laws regarding contaminated property makes the MOA valuable to program participants because it provides liability protection on two levels.

All three states can withdraw their liability protection if program participants do not conform to the requirements of the VCP. The details of each state's reopener provisions help to determine the value of the liability release that each state provides. Withdrawal of state liability protection also revokes any applicable MOA with EPA.

### **6.3.2 Cleanup Standards**

Cleanups conducted under CERCLA are a cumbersome, uncertain and expensive process. The law's preference for permanent remedies and the use of an 'edible dirt' standard lengthens the cleanup process and raises costs beyond what is economically feasible for most parties.

Because of CERCLA's discretionary process for determining appropriate site remedies, the costs and length of a cleanup at a given site often vary substantially from a similar site (Table 6.1).

State VCPs offer an alternative to the stringent and uncertain cleanups required under CERCLA. Ohio, Pennsylvania and Michigan each offer a choice of standards, rather than mandating a universal standard. By offering participants a variety of clearly defined standards, the state VCPs provide a means for property owners, prospective purchasers and developers to anticipate the degree of the cleanup required. Ohio and Michigan closely tie each of their standards to future land use. Pennsylvania uses future land use as a factor, but only in some of its standards. Also, the use of alternative cleanup strategies, notably the use of engineering and institutional controls, varies among the three states (Table 6.1).

Ohio allows VAP participants to employ use restrictions on a property to achieve a standard, but requires that participants develop an operation and maintenance plan. With Pennsylvania's LRP, both the background and statewide standards permit institutional controls to maintain the standard, but not to achieve it. The site-specific and special industrial site standards expressly permit the use of engineering and institutional controls. However, no cleanup may be composed solely of external controls. Michigan requires the use of engineering or institutional controls if participants wish to use any of its cleanup categories besides the unlimited residential category. Michigan's VCP balances less demanding cleanup criteria with more demanding requirements regarding external controls.

Despite the states' authorization of engineering and institutional controls, none of the three states explicitly provide for extended state-led monitoring of any plans relating to external controls. Rather, the states rely mainly on the stipulation in their VCPs that the agency would

revoke liability protection or cleanup certification if the property's land use changed or if the cleanup method was found to be inadequate.

### **6.3.3 Costs**

Parties conducting remediation activities under CERCLA face substantial costs. Cleanups under CERCLA are lengthy and expensive, due to the discretionary cleanup process and the strict standard of cleanup required. Because cleanup costs are high, parties forced to pay for a cleanup often sue other PRPs for reimbursement of their expenses, resulting in high legal costs.

One must also consider the potential for future costs. CERCLA does not relieve PRPs from responsibility when they complete a cleanup or reimburse EPA for a cleanup that the agency conducted. Therefore, it is possible that EPA will hold the same PRP liable for future contamination. Finally, many lenders refuse to extend credit to parties interested in redeveloping brownfields because lenders fear they will become responsible for cleanup upon foreclosure of the property. This inability to obtain financing is another cost imposed by CERCLA on brownfield reuse.

Because cleanup standards under VCPs are more flexible and relaxed than cleanup standards under CERCLA, state VCPs generally enable faster and less expensive cleanups. This chapter already discussed the cleanup standards of Ohio, Pennsylvania and Michigan. In a further effort to offset the costs associated with brownfield redevelopment, states offer direct financial incentives in the form of grants, loans, tax credits or tax abatement (Table 6.1). Ohio, Pennsylvania and Michigan each provide funding to both private and public entities. However, Michigan directs the majority of its funds to local government units, rather than private entities.

Ohio, Pennsylvania and Michigan each use report review deadlines to speed up the review process and limit delays for developers, who rely on tight schedules to produce profits.

However, of the three programs studied, only Pennsylvania's VCP provides for the automatic approval of reports agency staff hold beyond the review deadline. Although Ohio and Michigan both employ statutory review deadlines to some extent, neither agency is tightly held to those deadlines. In fact, Ohio's staff has encountered problems with limited personnel and incomplete reports, slowing the review process considerably.

By privatizing its system, Ohio may save both the state and participants time and money by limiting state oversight and allowing volunteers to begin remediation activities without notifying the Ohio EPA. In addition, Ohio specifically allows for private cost-recovery actions in its VCP. However, since cleanups under VCPs typically cost much less than cleanups under CERCLA, it is unclear whether bringing such actions is cost-effective for participants.

#### **6.4 Recommendations**

Brownfields existed long before the enactment of CERCLA and its state equivalents. CERCLA did not cause brownfields, but the law raises barriers to brownfield redevelopment. Still, CERCLA holds an important place in federal regulatory policy. For severely contaminated sites, finding a willing developer amenable to taking on the high costs of cleanup (using any standard) would be virtually impossible. Yet, sites with serious contamination pose the greatest threat to public health and the environment. For those sites, CERCLA's provisions seem rational. However, CERCLA is not appropriate for sites that are not severely contaminated.

States developed VCPs as a direct response to the barriers posed by CERCLA to brownfield redevelopment. These programs, which have spread throughout the U.S., present an alternative to enforcement-driven environmental laws. What follows are recommendations regarding ways to improve the administration and policies related to state voluntary cleanup programs to better promote the redevelopment of brownfields. These recommendations include

reforming CERCLA, clarifying government roles, tailoring VCPs to local needs, monitoring environmental safety and targeting brownfield redevelopment.

#### **6.4.1 Reformation of CERCLA**

The most fundamental way to increase brownfield redevelopment blocked by CERCLA is to alter CERCLA's provisions, particularly those involving liability and cleanup standards. EPA has modified the administration of CERCLA, but administrative acts cannot change the law's basic provisions. Exchanging strict, joint and several liability for a liability standard based on fault or negligence would likely greatly reduce the number of sites that could be cleaned up under CERCLA without a significant input of public money. This reduction in site cleanups would occur because many sites lack financially solvent responsible parties and a liability standard based on fault or negligence would require that EPA show that parties contributed contamination or acted negligently. This standard proves much harder to establish than prior site ownership.

CERCLA's cleanup standards could be modified to incorporate future land use at the site, allowing for a less stringent cleanup process. However, severely contaminated sites may have remediation as their primary goal and not economic redevelopment. Therefore, the future use of the site may not be known at the start of a cleanup. In those cases, cleanup would likely occur according to the residential standard by default. This would nullify the effect of basing cleanup on future land use.

Finally, although CERCLA is mired in controversy, Congress does not appear to be moving toward abolishment or alteration of the law. Due to the unlikelihood of altering CERCLA itself, improvement of VCPs holds more promise. Voluntary cleanup programs, although relatively new, have a respectable record of completing brownfield cleanup and reuse

projects. A number of approaches hold potential for improving the function of state VCPs and the feasibility of brownfield redevelopment.

#### **6.4.2 Clarification of government roles**

Brownfield redevelopment suffers from uncertainty regarding authority over the control of liability and cleanups. Both EPA and state agencies have jurisdiction over the cleanup of a contaminated site in a given state. A need exists to resolve overlaps in administrative jurisdictions and oversight. Levels of government should clarify their roles concerning brownfield cleanup and reuse. Coordinating and clarifying regulatory roles leads to increased certainty regarding cleanups and may increase interest in redevelopment. The memoranda of agreement that Ohio and Michigan have with EPA move closer toward this goal. The MOA acts as a liability assurance for VCP participants and prospective purchasers. As a further step, EPA could defer to state or local control whenever possible. EPA could accomplish this through a total release of site jurisdiction to states certified by EPA to conduct cleanups.

In addition to clearly establishing separate roles regarding liability and cleanup standards, federal, state and local government could each play a different part in encouraging brownfield redevelopment. A suggested role for the federal government is to provide funding and technical assistance to state agencies overseeing VCPs, allowing the devolution of environmental policy to the state or local level.

In turn, states could work to increase the technical capabilities of officials in their environmental agencies to better prepare them to administer federal brownfields programs. States would continue to provide liability protection and defined cleanup standards through their VCPs. However, states could direct funding and technical assistance to lower governmental levels that wish to develop local, county or regional brownfield redevelopment programs (Table 6.2).

Efforts similar to this take place in Michigan, where some local governments develop a brownfield plan and become eligible to initiate tax increment financing.

Decentralizing brownfield redevelopment control is supported by the idea that local officials are in the best position to identify contaminated sites and know which sites could be profitably redeveloped. Putting funding in the hands of local officials would allow local government to apply their expertise regarding area interests, market trends and potential for redevelopment.

### **6.4.3 Tailored VCPs**

The variety seen in state voluntary cleanup programs supports the notion that there are many methods to achieve the same goal. Although some VCPs may serve as examples for other states seeking to develop or reform their own VCPs, states should borrow program aspects with caution. The best programs keep in mind the characteristics and preferences of each region. States that remain most in touch with the people and companies who play a part in brownfield redevelopment will likely have the most effective programs.

In addition, brownfields may be widespread, but they are not identical. Brownfields vary by project type, type of developer, level of contamination, and the developer's financial position and expected return on investment. VCPs that offer choices among cleanup standards and a variety of financial incentives offer the best chance for a prospective purchaser or developer to find an arrangement that fits their needs. Accommodating these integral parties increases the possibility that state VCPs will promote brownfield reuse. The VCPs of Ohio, Pennsylvania and Michigan each do this by offering an array of standards and a variety of funding opportunities. In addition to direct state funding, states may wish to consider supplying funds to local governments, allowing local officials to determine which incentives could best expand their

redevelopment efforts. Finally, states should remain flexible enough to encourage experimentation, originality and responsibility at the local level.

At the local level, sites with excellent development potential that are hindered by environmental contamination and liability risk will likely be well served by the state's basic VCP provisions. However, some sites will require public investment due to more severe contamination or other factors inhibiting development. Financial incentives can take various forms. However, direct input, such as grants or loans, are likely to work best with projects where developers need public money to supplement costs of assessment, remediation or construction. Tax abatement and tax credits are more useful when it is desirable to increase the cash flow of a potential business once the site is redeveloped (Table 6.2).

#### **6.4.4 Environmental Safety**

Generally, state VCPs offer relaxed standards, often relying on engineering or institutional controls to reduce human and environmental exposure to contaminants. Engineering and institutional controls help developers to achieve their goal of minimizing costs and maximizing profits since they are typically less expensive than a remediation using permanent cleanup methods. Therefore, it seems logical for states, trying to achieve greater levels of brownfield redevelopment, to permit external controls despite a potential for long-term social and environmental costs. These long-term costs may include costs to neighboring property owners of migrating contamination and the costs of decreased environmental quality when compared to full remediation.

Relaxed standards and external controls form part of a larger debate regarding whether brownfield redevelopment should focus on public health and the environment, as CERCLA seems to, or on economic development. In an effort to encourage an increasing number of

cleanups, states may find themselves in a race to the bottom in terms of the leniency of their standards. This raises the question of whether VCPs adequately protect human health and the environment. In an effort to encourage the redevelopment of brownfields, Ohio, Pennsylvania and Michigan each reformed their previous cleanup standards to enable risk-based cleanups and cleanups relying on external controls. However, the states fail to provide long-term state-led monitoring of these controls. Local governments do provide some check on external controls by enforcing zoning. However, state VCPs provide for no explicit communication between state agencies and local government regarding the permanency of zoning classifications.

State agencies should examine their VCPs, keeping in mind the fact that relaxed cleanup standards result in tradeoffs with respect to other policy goals. For example, a reduction in standards usually produces increased reuse activity, promoting local economic development. However, the relaxed standards also translate into decreased environmental quality, often another policy goal of brownfield programs. In addition, restrictions on future land use at the site usually accompany reduced cleanup standards. Local government must realize and acknowledge that these restrictions could inhibit future desired growth by locking the parcel into a particular land use unless further cleanup is completed.

States need to maintain an appropriate balance between encouraging development and protecting health and environmental quality. Otherwise, a focus on short-term remedies could lead to higher costs in the future. These costs may ultimately fall on municipalities, depending on the liability protection the VCP provides to program participants. Although developers and program officers often see public participation as a deterrent to brownfield redevelopment, some level of public input may help to counterbalance a push for economic redevelopment. States should also regularly review cleanup standards to keep pace with changing views of toxicity in

the scientific community. State statutes should schedule and mandate these reviews to ensure that agencies complete the evaluations.

#### **6.4.5 Targeted Brownfield Redevelopment**

Through their VCPs, states influence the extent of brownfield redevelopment that occurs within their borders. However, states hold limited control over which particular brownfields undergo development. One way states attempt to influence the location of brownfield reuse efforts is to target their financial incentives to particular areas. Ohio, Pennsylvania and Michigan influence redevelopment locations by offering extra tax incentives for brownfield reuse in economically distressed areas to attract private investment and other economic activity.

However, even in states that identify certain desired locations, brownfield development takes place mainly on a piece-by-piece basis over a relatively large geographic area, leaving states and local governments with little control. Several methods allow a state to alter this outcome through modifications of their VCP or applicable policies. In these proposed modifications, local governments play a key role in attaining targeted brownfield redevelopment. These efforts require a strong local government if they are to be implemented on a local level. Sound leadership proves crucial to the success of a brownfield reuse project. When a municipality lacks leadership, a partnership with the county or state level government may serve area interests regarding brownfield redevelopment.

States contribute further to brownfield redevelopment by establishing a clear goal for their VCP and being certain that the program's provisions reflect, not contradict that goal. For example, a program may aim to encourage brownfield redevelopment in urban areas and reduce sprawl. However, if the state's VCP contains provisions that permit funding to be directed to greenfield areas, the goal of encouraging redevelopment in urban areas is weakened.

Brownfields are fundamentally a local problem, requiring local solutions to achieve targeted brownfield redevelopment. To help localities direct brownfield reuse, federal and state governments could offer funding and technical assistance to enable localities to conduct a systematic inventory of their brownfield properties (Table 6.2). These inventories could catalog the sites, identifying previous owners, type of contamination, environmental and health risks, estimated cleanup costs, and potential benefits from remediation including job creation and tax revenue. Brownfield inventories are an important step in local brownfield reuse planning efforts.

Local governments should also consider incorporating their brownfield plans into the future land use plans for the community (Table 6.2). This means that localities should be certain that any brownfield redevelopment plan coincides with the community's vision for growth. For example, where a brownfield redevelopment project links to a downtown redevelopment plan or waterfront revitalization plan, the brownfield project stands a better chance of receiving private investment dollars and gaining political and community support. Essentially, governments cannot address brownfield sites in an isolated manner and simply assume that the project will be a success.

The case studies of Ohio, Pennsylvania and Michigan indicate that VCPs accomplish a number of cleanups. In fact, private investment in brownfield reuse would not proceed in many cases without clarification of liability and defined cleanup standards. However, voluntary cleanup programs and local brownfield efforts may be more effective by addressing barriers to brownfield redevelopment that are unrelated to CERCLA. Development decisions are complicated and involve more concerns than simply liability risk and cleanup standards, although these present substantial problems. A more comprehensive method including local government involvement could bolster state efforts that focus primarily on liability, cleanup

standards and costs. State and local governments also need to educate citizens and developers in order to build support for projects and spur local interest in brownfield redevelopment.

State legislatures should consider allocating state brownfield funding to local governments to develop targeted incentives once sites are identified and characterized at the local level (Table 6.2). Some form of public investment may be needed to stimulate a brownfield project and fill gaps that private funds do not address. States could provide this seed money out of existing state brownfield funds, possibly requiring matching funds from local governments. This seed money could provide a way for local governments to address site-specific needs in an effort to lure further private investment for redevelopment and the construction of new facilities. These needs may include assessment, remediation, demolition and infrastructure improvements. For smaller sites, local governments could also coordinate land assembly activities to create the space needed for redevelopment projects.

By laying the groundwork for site redevelopment, localities may enhance the attractiveness and marketability of particular sites and help to distinguish between real and perceived contamination. These activities also help to level the playing field with greenfields by placing sites in a position where they are ready for development. Potential investors may be reluctant to invest funds in environmental investigation without an assurance on the expected return of the project. By preparing the site for development, localities can give developers a more solid idea of what further actions will be needed and reduce up-front costs.

Local governments could utilize a variety of funding mechanisms (Table 6.2). Direct sources of public funding such as grants and low-interest loans provide up-front funding for project start-up or construction. Revolving loans funds are popular with local and state governments, because they create a perpetual supply of funds for projects over time through loan

payback. However, loan funds are only viable for projects with an expected future cash flow. Grants would be necessary for projects where cleanup costs would exceed future economic value of the site. Indirect forms of financial incentives, such as tax abatement and tax credits are better utilized where up-front costs are not a concern, but where cash flow is important for a business once it is in place. However, if businesses do not expect to have considerable taxable income, tax credits may not be an attractive incentive. Because tax increment financing relies on future value to finance redevelopment activities in the present, municipalities may wish to use this technique for distressed areas, where benefits are expected in the future, but capital may not be currently available.

Identifying the needs of a site and working to market that particular site could enable local governments to direct brownfield redevelopment incentives to particular locations. Conducting these activities within a larger plan also increases the likelihood of remediation and reuse where the community desires such redevelopment.

## **6.4 Conclusion**

Brownfields present a pressing problem in many localities across the United States. This paper shows that although state VCPs do not address all of the problems blocking brownfield redevelopment, VCPs do provide an alternative to the stringent liability, strict cleanup standards and high costs of cleanup under CERCLA. Rather than stall brownfield redevelopment, state VCPs accomplish what EPA and CERCLA have proven unable to do: encourage brownfield remediation and reuse. As states responded to CERCLA with the creation of VCPs, brownfield redevelopment became a viable option. States now oversee many of the brownfield remediation projects in progress across the country. The development and improvement of state VCPs,

including an increased role for local government, is likely to generate further interest in brownfield reuse.

Table 6.1 Comparison of CERCLA Provisions and the Provisions of the Voluntary Cleanup Programs of Ohio, Pennsylvania and Michigan.

Comprehensive Environmental Response, Compensation and Liability Act	Ohio's Voluntary Action Program	Pennsylvania's Land Recycling Program	Michigan's Part 201
<p>Liability</p> <ul style="list-style-type: none"> <li>▪ Retroactive, Strict, Joint and Several</li> <li>▪ Potential liability for lenders</li> <li>▪ No end to liability</li> </ul>	<ul style="list-style-type: none"> <li>□ Offers a No Further Action Letter</li> <li>□ Potential for a Covenant Not To Sue</li> <li>□ Memorandum of Agreement with EPA</li> <li>□ Liability protection for lenders and fiduciaries</li> </ul>	<ul style="list-style-type: none"> <li>□ Statutory release from liability</li> <li>□ Liability protection for economic development agencies, lenders and fiduciaries</li> <li>□ Release from third party suits</li> </ul>	<ul style="list-style-type: none"> <li>□ Liability protection for innocent parties who conduct a Baseline Environmental Assessment and exercise 'Due Care'</li> <li>□ Memorandum of Agreement with EPA</li> <li>□ Liability protection for lenders and fiduciaries</li> </ul>
<p>Cleanup Standards</p> <ul style="list-style-type: none"> <li>▪ Stringent</li> <li>▪ Discretionary</li> <li>▪ Permanent remedies preferred</li> </ul>	<ul style="list-style-type: none"> <li>□ Three standards tied to future land use</li> <li>□ Option for site-specific standard based on risk</li> <li>□ Engineering and Institutional controls permitted</li> </ul>	<ul style="list-style-type: none"> <li>□ Choice of three standards, based somewhat on future land use</li> <li>□ Special standard for innocent purchasers of orphan brownfields</li> <li>□ Engineering and Institutional controls permitted under some conditions</li> </ul>	<ul style="list-style-type: none"> <li>□ Standards tied to future land use, and the use of external controls</li> <li>□ Engineering and Institutional controls required for some standards</li> </ul>
<p>Costs</p> <ul style="list-style-type: none"> <li>▪ Lengthy cleanup</li> <li>▪ Expensive cleanup</li> <li>▪ Legal costs</li> <li>▪ Potential future costs</li> <li>▪ Difficulty obtaining financing</li> </ul>	<ul style="list-style-type: none"> <li>□ Privatization of cleanup oversight</li> <li>□ Report review deadlines</li> <li>□ Private cost-recovery actions</li> <li>□ Loans, grants and tax abatements</li> </ul>	<ul style="list-style-type: none"> <li>□ Report review deadlines with automatic approval</li> <li>□ Grants, loans, tax credit and tax abatement for innocent parties</li> </ul>	<ul style="list-style-type: none"> <li>□ Review deadlines for determination of compliance</li> <li>□ Grants, loans, and tax abatement</li> </ul>

Table 6.2 Brownfield redevelopment tools that can be utilized at the local government level to accomplish brownfield redevelopment goals

Tool	Case Study Observations	Application in Local Planning
Brownfield Inventory	Pennsylvania offers tax credits for sites listed with the state's brownfield inventory program	Useful for municipalities to identify the characteristics of local brownfields and adjust incentives accordingly
Brownfield Development Plan	Michigan offers extra incentives to localities who develop brownfield reuse plans	Useful for localities to blend brownfield plans and the community vision to ensure constructive brownfield reuse
Funding for Site Preparation	Used by Pennsylvania to assess brownfields and develop cleanup plans for municipalities and economic development agencies	Useful to decrease developer's up-front costs and increase a site's attractiveness for development
Grants and Low Interest Loans	Used in Ohio, Pennsylvania and Michigan to encourage brownfield redevelopment	Useful for local governments seeking to assist developers with initial costs of development
Tax Credits and Tax Abatement	Each state offers tax abatement. Pennsylvania offers tax credits for job creation and cataloging brownfield sites	Useful for local governments who wish to enable businesses to maintain their cash flow once redevelopment is complete
Tax Increment Financing (TIF)	Michigan permits some local governments to use TIF to capture property tax revenue to reimburse parties who remediate sites	Useful in distressed areas where increased value is expected from brownfield reuse efforts

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## Appendix A

### *Acronyms*

#### **Legislation and Policies**

BEA	Baseline Environmental Assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CNTS	Covenant Not to Sue
LRP	Land Recycling Program
MERA	Michigan Environmental Response Act
MOA	Memorandum of Agreement
NFA	No Further Action Letter
NPL	National Priorities List
PRP	Potentially Responsible Party
VAP	Voluntary Action Program
VCP	Voluntary Cleanup Program

#### **Organizations**

DCED	Pennsylvania Department of Community and Economic Development
DEP	Pennsylvania Department of Environmental Protection
DEQ	Michigan Department of Environmental Quality
EPA	United States Environmental Protection Agency
Ohio EPA	Ohio Environmental Protection Agency