

Brownfield Remediation as a Policy Tool in Urban Redevelopment

EC465
November 22, 2005

I have neither given nor received any unauthorized aid on this project.

Derek B. Singer

“EPA is charged with protecting human health and the environment. That does not mean we need to be the spoiler of the redevelopment of abandoned industrial property. After all, land redevelopment is one of the most important forms of recycling around. Brownfield redevelopment should not only lead to cleaned up inner city properties and preservation of our remaining green spaces, but should also stimulate local economic growth and thereby help reverse the cycle of decay that endangers our urban cores.”¹

Timothy Fields Jr.
Deputy Assistant Administrator, U.S. Environmental Protection Agency.

During the mid-1990s, the country witnessed a shift in the manner in which urban land use practices were viewed, particularly those of brownfields. For the first time, brownfield redevelopment was treated expressly in federal legislation as both a means for economic growth and environmental stabilization. Still, it was not until 2002 that the Environmental Protection Agency’s formal brownfield program was established. Looking at the history of brownfields in the United States, this paper examines the use of various incentives intended to promote remediation and reuse of urban brownfield

¹ Testimony given before the U.S. House of Representatives, Committee on Commerce, Subcommittee on Commerce, Trade, and Hazardous Material, June 15, 1995.

properties, specifically focusing on the chronic underdevelopment that plagues many ‘third-tier’ cities of the industrial Midwest and Northeast. Looking at the role of brownfields both as a cause and a result of economic decline, this paper will answer three questions. First, how does existing legislation create or exacerbate the brownfields problem? Second, how can current or proposed market-based incentives and legislative changes promote the remediation and redevelopment of urban brownfields? Third, what, ultimately, should be done to alleviate the burden imposed by brownfields on already beleaguered urban centers?

To begin, this paper examines background information regarding the development of brownfields, the role that they currently play in third-tier cities, and the economic, social, and political incentives for their redevelopment. Examining empirical and theoretical studies, this paper will offer a thorough examination of the problems inherent with liability contained in brownfield legislation. Additionally, by looking at existing federal and state legislation, I will address current and potential market-incentives, legislative avenues for change, and information dissemination as a means for promoting the remediation and redevelopment of unused or underused urban properties. Finally, I will offer policy recommendations regarding potential changes to be made to current legislation as well as opportunities to take real and effective action now under current policy regimes. It is my conclusion that effectively designed and administered alternatives to existing legislation can be of dramatic consequence in the overall redevelopment and growth in urban centers by providing options for incentive-based regulation deemed more palatable by both developers and government institutions.

Section I: What is a Brownfield?

The Love Canal, CERCLA, and the Development of Brownfields

Prior to 1978, little concern was paid to the growing body of industrial and chemical pollution collecting throughout the country. However, in the wake of the federal emergency declared at the Love Canal neighborhood in Niagara Falls, New York, where hazardous chemicals began to seep into houses and yards of a residential development and school built on top of a former chemical waste dump, national public attention focused on the accumulation and disposal of hazardous waste for the first time. Public outrage and intense media scrutiny following the exposure of other toxic waste sites across the country pushed Congress in 1980 to pass the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, in an effort to hold polluters responsible for their actions.

Before this time, property owners typically bought and sold land with little thought for the disclosure of pollutants or contaminants on site; with the passage of CERCLA, changes in the law gave the government new leverage in the prosecution of responsible parties who placed hazardous substances on property. CERCLA targets any potentially responsible party (PRP), making them liable for costs of cleanup and damages to publicly owned natural resources. Liability standards are considered *retroactive*, meaning that even those companies obeying contemporary regulations prior to the passage of CERCLA may be held liable; *strict*, meaning that even those firms diligent in avoiding damages may be liable; *joint and several*, meaning that any firm associated with a site, even those not directly responsible for contamination, may ultimately bear the

burden of cleanup and related costs. Under CERCLA, there need be no demonstration of criminal negligence, and the burden of proof rests on the defendants in most court cases.²

CERCLA was designed to address those locations comprising the National Priority List—the roughly 1500 sites where levels of contamination are so severe as to pose a grave and immediate threat to human and environmental health and safety. However, since this legislation has served as the principle federal program for remediation of contaminated sites, even those locations with minor pollution are regulated. As such, the thousands of sites nationally where there exists the potential for minor contamination are held to the same standards of liability as those sites placed on the NPL. The redevelopment of these properties is then complicated and they are often left unused or only partially utilized. These properties are traditionally known as brownfields.³

Brownfields Today

The Environmental Protection Agency defines a brownfield as “any real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.”⁴ Typically, brownfields are located in urban areas, and have been abandoned or significantly underused because of owner or operator fears of contamination that could be prohibitively time consuming or expensive to alleviate. This definition is complicated, as

² Geltman, Elizabeth Glass. *Recycling Land: Understanding the Legal Landscape of Brownfield Development*. Ann Arbor: The University of Michigan Press, 2003. Page 3.

³ Bartsch, Charles, Elizabeth Collaton, and Edith Pepper. *Coming Clean for Economic Development*. Northeast-Midwest Institute: Washington, D.C. 1996. Chapter 1, Page 6.

⁴ This is the definition as recorded in Public Law 107-118 (H.R. 2869), otherwise known as the “Small Business Liability Relief and Brownfields Revitalization Act,” which was signed into law by President George W. Bush on January 11, 2002. <<http://www.epa.gov/brownfields/glossary.htm>>

there is no body of quantitative data available to assess both the number of brownfields in existence or contamination present on a given site. Additionally, not all brownfields are seriously contaminated, if at all, and would in reality be rather inexpensively remedied. However, the mere potential for pollution is enough for many owners, buyers and lenders to shy away from an assessment and clean-up that could exceed market value. In 1995, the U.S. General Accounting Office reported between 130,000 and 450,000 potential brownfield sites, and recent EPA estimates have expanded the range to include from 500,000 to one million sites nationwide.⁵ These estimates include all ranges of pollution, and include former industrial or manufacturing enterprises, gas stations, dry cleaners, residential sites, and even methamphetamine labs.

Geltman describes four stages of brownfield evolution. In the first, those properties in desirable locations or otherwise strong real-estate markets are generally sold with little delay and the cost of clean-up funded by the private sector. Many of these properties are bought, sold and cleaned without government knowledge or intervention and are often cleaned to a standard that far exceeds government standards. The second stage includes what the author refers to as “brownfield traps” or “brownfield paralysis.” These properties generally consist of working businesses in which it is likely that there is some level of contamination. Owners of these properties are reluctant to enter into the real estate market, or otherwise expand, refinance or sell their property as doing so may trigger an inquiry that will uncover existing contamination. In the third stage, owners “mothball” properties, determining that it is cheaper and less risky to let property sit idle and unproductive rather than sell it. These owners are usually large, wealthy corporations

⁵ “President Signs Brownfields Bill.” White House Press Release.
<<http://www.whitehouse.gov/news/releases/2002/01/20020111-3.html>> (November 12, 2005).

who will continue to pay taxes, but are unwilling to open property up to future litigation. The fourth and final stage of brownfields is abandonment; owners either cease to pay taxes or are forced into bankruptcy, and in this case the property is tied up as brownfield while the government either searches for a potentially responsible party, or determines what they will do with it after assuming control.⁶

Symptoms Compounded: Third-Tier Cities

While brownfield sites may exist anywhere and with varying degrees of environmental contamination, the focus of this paper will be on specifically those sites located within so-called “third-tier” cities: urban centers concentrated primarily in the industrial Northeast and Midwest that have experienced years of sustained negative growth characterized by fleeing industrial and manufacturing firms, slow or negative population growth, crumbling infrastructure, and high poverty rates.⁷ Typically, these cities were incorporated prior to 1950, experienced steady industrial and residential growth during mid-century, and then experienced marked decline during the economic reshuffling of the 1970s and 1980s. As such, they find themselves ill-equipped to deal with the development of new high-tech industries and have struggled over the past few decades. Many of these urban centers experienced significant disinvestment in older industrial-warehouse areas, coupled with losses in employment, tax base and related industrial activity; in Northeastern and Midwestern cities, 15 to 20 percent of industrial

⁶ Geltman 5-7.

⁷ Siegel, Beth and Andy Waxman. “Third-Tier Cities: Adjusting to the New Economy.” *Reviews of Economic Development Literature and Practice*, Number 6 (June 2001). Published by U.S. Economic Development Administration. Page 14.

sites were inactive by the mid-1990s.⁸ Brownfields are often located in areas that suffer generally from the decline of physical investments in infrastructure, concentrations of low-income populations and high crime levels. In these cities in particular, brownfield properties are of significance in that they contribute to overall decreases in property values and often occupy what would otherwise be prime real estate available for urban redevelopment initiatives.

Economic, Social, and Political Incentive for Redevelopment

The economic incentive that cities have in promoting the redevelopment of underutilized land is unquestionable. The often close proximity to transportation and necessary infrastructure is one of the most attractive elements of brownfield redevelopment; since many industrial sites are located in close proximity to transportation facilities—water, rail, or highway—as well as markets for labor and materials, the reuse of existing land can reduce capital investments for both municipalities and developers. A central location diminishes the demands imposed by sprawl, which eases traffic congestion, reduces pollution, negates the need for new suburban infrastructure and services, conserves green space, and preserves or improves environmental stability. Cleanup and redevelopment also offers opportunities for cities to create waterfront recreation and scenic byways along river corridors, as well as offering general aesthetic improvement. Brownfield redevelopment can drive downtown revitalization through the creation of new businesses, restaurants, stores, and housing, and represents an opportunity for cities to create jobs and broaden the tax base.

⁸ Black, J. Thomas. “Model Solutions to Revitalize Urban Industrial Areas.” *Land Lines*, Volume 9, Number 5 (Sept. 1997). Lincoln Institute of Land Policy. Page 1.

Socially, brownfields are often located in poor neighborhoods, and redevelopment can result in a reduction of urban blight and in job development and training for the urban disenfranchised. There is also an element of environmental justice in that low-income populations are freed from the burden created by environmental degradation and the associated health and economic consequences.

Politically, brownfield redevelopment is appealing as a relatively inexpensive means for achieving real and lasting revitalization. By adhering to the polluter-pays principle, the economic burden is shifted away from the tax payer, and rewards can be large in the amount of jobs and revenue created. By promoting urban redevelopment, politicians endear themselves to low-income and minority constituents, preserve funding for other programs, and can actively promote the decline of poverty and crime associated with blight.

Section II: Remediation and Redevelopment

*Federal and State Statutes Encouraging Redevelopment*⁹

There have been a number of federal initiatives designed to promote the redevelopment and reuse of brownfields, specifically in urban settings, beginning in 1995 with the EPA Brownfields Economic Redevelopment Project. This program awarded cooperative pilots through which more than 75 cities worked to establish redevelopment models for the clean-up and return of contaminated land to productive use. Additionally, reflecting a growing concern about the body of urban contamination plaguing our cities,

⁹ Discussion in this section does not include all federal initiatives regarding brownfields, but rather focuses in on a few major concepts. The overall scope of federal programs and amendments is prohibitively vast and often focuses on minor details dealing with specific appropriations. Additionally, the interaction and overlap between agencies creates a complicated apparatus for dealing with such problems of local environmental contamination and would likely make for an interesting paper in its own right.

from 2002 to 2003, while total budget requests for the Superfund program remained stagnant, the President's budget for the federal brownfields program more than doubled, increasing from \$98 million to \$200 million.¹⁰ Over the past few years specifically, there has been a great deal of legislative energy expended to streamline regulation governing the cleanup and reuse of brownfields. Much of this discussion has focused on limiting the liability of financial institutions, small businesses and landowners, and providing incentive to encourage the remediation of brownfields.

The Community Reinvestment Act, as amended in 1995, links redevelopment and job creation to environmental improvement and responsible stewardship. Under this program, the EPA was designated an advisor in the administration of resources to federally designated Empowerment Zones overseen by HUD and Department of Agriculture. In this role, environmental considerations were inextricably linked to economic revitalization of urban areas. Subsequently, the Taxpayer Relief Act of 1997 made environmental cleanup costs for properties in targeted areas fully deductible in the year in which they are incurred. At the time, the incentive was expected to create \$6 billion in private investment while returning an estimated 14,000 brownfields to productive use.¹¹

Perhaps most notable was the passage and signing of the Small Business Liability Relief and Brownfields Revitalization Act (H.R. 2869) on January 11, 2002. This piece of legislation formally established EPA's brownfields program and provided some relief from liability under CERCLA for small businesses. This act contains provisions creating a "De Micromis Exemption" and a "Municipal Solid Waste Exemption," which exempts

¹⁰ Reisch, Mark. "Superfund and Brownfields in the 107th Congress." Congressional Research Service, The Library of Congress. January 16, 2003. Page 6.

¹¹ *Ibid.*

from Superfund small businesses disposing of minimal amounts of waste and municipal recycling and disposal centers, respectively. This act also created a \$200 million per year federal brownfield cleanup program and attempted to provide some protection for potential buyers and innocent landowners of brownfield property. The Act authorizes grants of up to \$200,000 per site to inventory, characterize, assess and conduct planning, as well as authorizing grants of up to \$200,000 per site to eligible entities for the cleanup of brownfields. However, while these provisions are a step in the right direction, they contain exceptions and language that creates ambiguity and difficulty in application. Indeed, courts have been reluctant to find this type of defense applicable when brought under suit, and the vague language and need for overwhelming evidence in support has served to make this type of defense posture rare.¹² Additionally, grants awarded typically require that those seeking to undertake remediation projects both match at least a percentage of the initial grant, and follow government regulations with respect to hiring and on-site practices. Again, while this is of some help in providing motivation for the redevelopment of brownfields, many sites require extensive work that may end up being far more expensive than grants allow. However, the proposals in this Act are a step in the right direction.

Nearly all states have enacted a voluntary cleanup law designed to encourage the reuse and redevelopment of contaminated property. These state statutes are particularly popular in that they allow private parties to initiate cleanups and avoid some of the cost and delays associated with brownfield redevelopment under Superfund. These laws are aimed at protecting potential purchasers of contaminated property and often allow for

¹² Geltman 65.

either variable cleanup standards or minimal environmental oversight.¹³ These voluntary cleanup programs generally offer provisions limiting the liability of non-responsible owners for the voluntary cleanup of hazardous substances, protecting buyers, developers and financial institutions. Many states provide liability assurances in the form of covenants not to sue—letters from state environmental regulatory agencies promising no further legal action upon completion of agreed upon cleanup. These agreements serve to insulate to some extent those firms who chose to voluntarily clean contaminated properties. However, agreements between the states and individual firms may not protect against federal suits or those initiated by third parties in either state or federal court. Additionally, many of these contracts only apply to third parties or those not responsible for original contamination, barring those responsible from participation. Some states also offer economic incentives through voluntary cleanup funds designed to aid those who wish to redevelop their own land but cannot afford to do so. For example, the state of Illinois provides volunteers with a 25 percent tax credit for the costs of remediation, and in the state of Ohio, volunteers receive 10 percent tax abatement for the increase in land values.¹⁴ These funds, however, are only applicable under the terms of the voluntary cleanup programs.

Barriers Created by Liability

Empirical evidence suggests that markets have adjusted land prices downward for actual and suspected brownfield sites. Looking at the redevelopment of industrial land in Chicago, McGrath determined that land likely to be contaminated was discounted at the

¹³ Bartsch, Charles, Christine Anderson, and Bridget Dorfman. “Brownfield Voluntary Cleanup Program Impacts: Reuse Benefits, State by State.” Washington DC: Northeast-Midwest Institute. Page 2.

¹⁴ Geltman 85.

rate of about \$1 million per acre.¹⁵ A related study found that under regimes of joint and several liability, property prices for potential brownfields were 30% lower¹⁶ -- both suggesting internalization of expected private cleanup costs. Interestingly, despite the decrease in property cost, there is a nearly 75% reduction in development rates in city centers under joint and several liability as compared to other regulatory regimes.

Additionally, there is a significant negative effect on development rates correlated with the number of known contaminated sites within a metropolitan area.¹⁷ Thus, while land prices are declining to compensate for increased costs associated with brownfield liability, development rates are exhibiting a negative effect as well. Why is it then, that the attempts of the market at self-correction are insufficient to promote development?

Often times, perception drives reality; developers and local officials perceive brownfield contamination as a rigid barrier to redevelopment and treat it as such. In a 2003 survey conducted by the U.S. Conference of Mayors, city leaders indicated that the most common impediments to brownfield redevelopment were a lack of cleanup funds and municipal and developer concerns over liability.¹⁸ In another 2003 survey, researchers interviewing land developers found that contamination deters investment and decreases the probability of a project being selected for development.¹⁹ Additionally, developers reported that they would be willing to sacrifice up to 37% of total revenue

¹⁵ McGrath, Daniel T. "Urban Industrial Land Redevelopment and Contamination Risk." *Journal of Urban Economics*. Vol. 47 (2002), 414-42.

¹⁶ Sigman, Hilary. "Environmental Liability and Redevelopment of Old Industrial Sites." Department of Economics, Rutgers University. April 2005. Page 16.

¹⁷ *Ibid*, 20.

¹⁸ The United States Conference of Mayors. *Recycling America's Land: A National Report on Brownfields Redevelopment, Volume IV*. 2003. Page 14.

¹⁹ Alberini, Anna, et al. "The Role of Liability, Regulation and Economic Incentives in Brownfield Remediation and Redevelopment: Evidence from Surveys of Developers." Department of Agriculture and Resource Economics at the University of Maryland, College Park (November 2002). Page 25.

from a given project to work with a pristine site over a brownfield.²⁰ A joint HUD/EPA study conducted in 1998 surveyed land developers and other associated actors in an effort to determine the relative importance of concerns affecting their projects. This study determined that environmental interests, when coupled with other key factors including weak demand and poor infrastructure, served to exacerbate actors' concerns associated with land redevelopment.²¹ Finally, the stigma associated with both the ownership and redevelopment of brownfield properties serves as a powerful motivator for investors and communities in bringing development out of city centers.

Theoretical evidence has shown that there is a disincentive created by the transfer of liability and an increase in the number of players that serves to discourage efficient transactions. While the market is able to adjust partially to offset these concerns, it often is unable to fully internalize these effects, resulting in fewer transactions than would otherwise be efficient. The first issue that arises has been referred to as the “judgment proof” problem. Strictly speaking, a firm or individual is judgment proof if they are unable to pay the full amount for which they are legally liable. This raises two concerns with respect to liability for brownfield contamination. First, owners and/or operators may engage in activities that are exceedingly hazardous in that they have little incentive to reduce risk taken given their ability to cover costs associated with liability. This effect is compounded under regimes of strict liability; taking all due care under negligence rules increases the probability that polluters will escape responsibility in its entirety, whereas it

²⁰ *Ibid*, 33

²¹ HUD/EPA. 1998. “The Effects of Environmental Hazards and Regulation on Urban Redevelopment.” Report. HUD Accession Number 8614. Washington, D.C.

only lowers the likelihood of being held liable under strict liability regimes.²² Secondly, if a potential buyer and seller are unlikely to be equally judgment proof (i.e. one party is better able to cover total liability costs than the other), then a transfer of property imposes added costs upon the party less likely to be judgment proof: "...if the prospective buyer is less likely to be judgment-proof than the current owner, then the proposed sale would impose a greater expected liability cost on the buyer than the reduction in the expected liability cost for the seller, and no price reduction could compensate the buyer without imposing a net cost on the seller of the transaction. This net cost could discourage efficient transactions and redevelopment of contaminated property."²³ This creates added uncertainty and inefficiency in the market and results in fewer transactions due to purchaser fears of assuming undue liability.

Secondly, information asymmetry creates an adverse selection problem that has the tendency to drive high-quality land from the market, potentially closing the market altogether. As described famously by Akerlof, this problem manifests itself as a "market for lemons." Consider two grades of property, contaminated and clean. Presumably, the seller is conscious of the grade of his own property, yet the potential purchaser is likely unaware due to information barriers. To insulate oneself against adverse decision-making, the purchaser is forced to assume that the land for sale is contaminated and will only be willing to pay a price based on this assumption. Thus, lands of higher quality will be removed from the market as sellers are unable to find buyers willing to pay fair market

²² Shavell, S. "The Judgment Proof Problem." *International Review of Law and Economics*. Vol. 6 (1986), 45-58. Page 45. For the sake of simplicity, we can assume that negligence rules require only that a potential polluter take all due precaution in preventing contamination. As long as they are not considered negligent in their actions, they will not be held liable for pollution. Under rules of strict liability, a polluter is liable for damages regardless of past diligence in adhering to the letter of the law.

²³ Chang, Howard F. and Hilary Sigman. "The Effect of Joint and Several Liability Under Superfund on Brownfields." *National Bureau of Economic Research Working Paper Series*. Working Paper 11667. <<http://www.nber.org/papers/w11667>> (November 12, 2004). Pages 5-6.

price. If this process continues, “it is quite possible to have the bad driving out the not-so-bad driving out the medium driving out the not so good driving out the good in such a sequence of events that no market exists at all.”²⁴ There is also the possibility that asymmetrical information exists between land-owner and government, given regulators’ imperfect ability to detect pollution on certain properties. If a transaction will likely increase the potential for detection, then the added burden of new liability must be reflected in the purchase price, further discouraging sale of potentially contaminated property.²⁵

Third, game theory suggests that if a sale increases the total number of potentially responsible parties (PRPs), then this sale would also increase the total amount that the government could expect to extract from the defendants in a settlement. In this scenario, if the government were to offer all PRPs a settlement, then those parties not judgment proof have a distinct advantage in avoiding costly litigation. Those who chose to litigate and avert settlement likely face both an increased probability of being found liable and of additional costs imposed through legal action (assuming that the government will aggressively litigate against all non-settling defendants). As a result, firms are left with a “prisoners’ dilemma,” in that they are forced to take into account the actions of other PRPs in an attempt to minimize their own liability. As illustrated in Table 1, assuming well-informed and rational actors, this scenario will result in the non-Pareto optimal conclusion of settlement among all firms.²⁶

²⁴ Akerlof, George A. “The Market for ‘Lemons’: Quality Uncertainty and the Market Mechanism.” *The Quarterly Journal of Economics*, Vol. 84, No. 3 (August 1970), 488-500. Page 490.

²⁵ Chang and Sigman 6.

²⁶ In this situation, I am assuming, based on past experience under CERCLA and other literature, that the government is expecting to cover a certain cost, c , for total expenses, and that each firm expects to pay an amount c/n , where n is the total number of firms. If a firm chooses to settle, then the government will extract from them less than they would have had they undergone litigation ($c/n - x$). If many firms accept

Table 1: The Prisoners Dilemma with Multiple Players²⁷

	Fewer than n others choose to litigate	n others choose to litigate	More than n others choose to litigate
Litigate	Cost	(Benefit) – (Cost)	(Benefit) – (Cost)
Settle	0	0	Benefit

Assuming $B > (B-C) > 0 > C$, then the strictly dominant decision is settlement. If a firm chooses to settle, and most other firms litigate, then they will benefit from a lesser judgment. If they and all others settle, than all firms enjoy the negotiated settlement price with no added benefit or cost. The Nash Equilibrium is for all firms to settle, resulting in increased gain for the government. Thus, with each additional firm, the governments' expected gains from settlement increases, and the overall burden placed on the liable firms will increase, providing a further disincentive to property transfer. The increased gain that the government anticipates will function as a sales tax on potentially contaminated property and tends to discourage the redevelopment of brownfield sites.²⁸

Market-Based Incentives and the Dissemination of Information

There is the potential to assuage investor and developer fears regarding the potential for assuming economic burden when attempting to remediate and redevelop brownfield property. And, since cities and states share the economic, social, and political

settlement and a small number do not, then those found liable in court are forced to pay a greater percentage of the total c than they would have otherwise to offset government losses through settlement.

²⁷ This table is an adaptation of information provided by: Kuhn, Steven. "Prisoner's Dilemma." *The Stanford Encyclopedia of Philosophy (Fall 2003 Edition)*. Edward N Zalta (ed.) <<http://plato.stanford.edu/archives/fall2003/entries/prisoner-dilemma/>> (November 19, 2005).

²⁸ Chang and Sigman 16.

incentives that many developers find so attractive, there is a great deal of shared wealth to be obtained in facilitating redevelopment. This can be achieved through the dissemination of information and the increase in market-based incentives designed and administered with the intention of at least partially offsetting developer liability.

It is important to note that the existing language in CERCLA legislation provides an effective means for ensuring that the polluter-pays principle is upheld and that the federal government is not forced to take on undue costs for the remediation of public and private land. For example, one idea considered by Congress for amending Superfund law was the repeal of some aspects of retroactive liability. The Congressional Budget Office estimated that in cutting off liability prior to 1987 the nation would save as much as \$1.1 billion annually in transactions costs, mainly from the private sector. The federal government would have an estimated net increase in cleanup costs of \$1.6 billion annually, plus additional costs of up to \$13.5 billion to reimburse PRPs.²⁹ The concern here then, is to reform existing legislation without shifting the burden of cleanup onto the public by repudiating the polluter pays principle.

One manner in which the government could promote efficient cleanup of brownfield properties is through the reduction in regulatory burden imposed upon those who seek to redevelop. This group includes innocent purchasers, those who had land contaminated by third parties, investors and insurance companies. Doing so would potentially involve taking two actions: changing existing law to clarify language and provide courts with a clear mandate, and/or altering or eliminating the concept of joint and several liability. First, brownfield law ought to be delineated from that regulation

²⁹ Jan Paul Acton, Assistant Director, Natural Resources and Commerce Division, Congressional Budget Office. June 22, 1995. Testimony before the Subcommittee on Water Resources and Environment, Committee on Transportation and Infrastructure. Pages 474-475.

governing NPL sites under Superfund. CERCLA was enacted to cleanup those properties where contamination was so severe as to merit immediate action, and liability defined in Superfund was designed to provide the government with an effective means for taking care of the most problematic sites. Brownfields contain significantly less contamination—often none—and need to be treated accordingly with legislation that promotes their redevelopment. Providing relief from liability for future cleanups serves to reduce the burden imposed upon developers and investors; policies can mitigate the negative effects that liability tends to have on incentives to remediate and redevelop contaminated property. Studies have shown that developers find reductions in regulatory burden an immense incentive to undertake redevelopment projects. In one example, liability relief increased the probability that a developer would choose a brownfield over a pristine site by 34%.³⁰

Another means through which local and state governments can create significant investment is through tax breaks or subsidies. Doing so can result in economic gain for cities through rising property value, increased tax revenues in the long-term, as well as immeasurable gain through increased economic activity as a byproduct of new development, more jobs, and residential growth. As an example, one can turn to the City of Pittsburgh. Left with thousands of acres of vacant, often contaminated urban properties following the departure of industry and manufacturing firms, Pittsburgh turned to private investors, local foundations, and state government for help. The first project undertaken was on a 42-acre island in the Allegheny River which had been used for over 100 years as a rail stop and meatpacking center. Cleanup of persistent hazardous waste and contaminated groundwater was undertaken over the course of a few years at a total cost

³⁰ Sigman 5.

to the city of \$2.5 million in subsidies to contractors and developers. Today, the island functions as a center for commerce, manufacturing, recreation and upscale housing. With the initial public cost of \$2.5 million, total private investment in development since 1990 has exceeded \$70 million, created 2,100 jobs and generates more than \$1 million in revenues annually.³¹ Many similar examples are available for cities across the country that have pursued public funding through subsidies and tax relief.

The government can also take steps toward facilitating brownfield redevelopment by disseminating data, information and accumulated knowledge to developers, investors, conservationists, and local interest groups. By sharing new techniques and technology for locating and evaluating contamination, cleanup costs can be decreased with greater accuracy in assessing and treating contamination. As noted by Alberini, developers experienced in working with brownfields were significantly more likely to undertake similar projects, and were more sensitive to the size of financial incentives offered by the government than were inexperienced developers.³² This suggests a learning curve which the government may be able to influence by providing technological information and facilitating discussion of past successes and failures among developers.

Section IV: Conclusions and Policy Recommendations

Market-based and liability incentives can be highly effective in promoting both environmental remediation and urban redevelopment. The most important aspect, it

³¹ Dettore, Jerome N. "Brownfield Development in Pittsburgh." *Pittsburgh Green Story*. <<http://www.pittsburghgreenstory.org/html/brownfields.html>> (November 20, 2005). The author is the Acting Executive Director of the Urban Redevelopment Authority of Pittsburgh.

³² Alberini et al, 31.

seems, is the effect these incentives have in assuaging developer fears by either offsetting costs or providing more accurate information with which to gauge projects.

First, government policy and administration are moving in the right direction. CERCLA, while effective in its original intent, has been inefficient with respect to brownfields. Recent efforts at reform have created a good starting block for future legislation, but the time has come for federal regulation dealing specifically with those sites plagued by minor contamination. There need to be strong protections in brownfields law for third-party owners and innocent purchasers and financiers. On the federal level, it is time to separate the issues governing brownfield cleanup from those governing the cleanup of federally designated Superfund sites.

Secondly, information needs to be more extensively disseminated regarding tools available to aid developers. Limited experience has been proven to be a major problem, and sharing of technology and knowledge can be essential in both assuaging fears about potential contamination and limiting developer costs when projects are undertaken. If developers have a clearer idea about present actual contamination, then they may be more likely to pursue projects in the future.

Third, tax breaks and subsidies have been highly effective tools in many areas in both cutting costs for developers and in encouraging new inner city development. Cities and States need to take the initiative to make relatively small investments which can result in vast long term benefits.

Fourth, the government can go a long way toward clearing up misunderstandings and eliminating frivolous lawsuits by clearly delineating between local, state, and federal control. Local regulation, particularly voluntary cleanup programs, has been well

received, and there needs to be some assurance that there will be no overlap in regulatory action. For example, if a firm signs a covenant not to sue with a state agency, there needs to be some protection from third-person lawsuits as well as federal government interference.

In conclusion, I propose four policy options along these guidelines for facilitating the redevelopment of urban brownfields:

- Delegating more, if not total control, to state and local agencies and allowing them to pursue flexible cleanup standards. Flexibility has proven to be a strong motivator in brownfield redevelopment, and local and state agencies are more often than not better equipped to handle local problems. Covenants-not-to-sue have also proven to be of help in freeing developers from undue liability, and these types of negotiations ought to proceed without federal interference.
- Creating a database of information gleaned from past cleanup projects by requesting or requiring of developers data from all remediation sites; this includes providing information about environmental insurance and assistance available so that those with less experience may not be deterred from undertaking projects.
- Allowing the grouping of properties together to create neighborhood or city-wide brownfield plots, allowing for easier access to insurance, financing, and accommodation of larger, more expansive redevelopment plans. This concept addresses many of the issues with liability and funding mentioned previously. This system proves attractive for cities in that it promotes the economic revitalization of entire neighborhoods and serves to justify expenses of public subsidies by creating increased public benefits; has the potential to take advantage

of economies of scale in remediation and redevelopment and presents risk-sharing opportunities across multiple sites; may make environmental insurance more cost-effective by bundling together multiple sites; and allows for integrated and comprehensive planning of urban revitalization by taking advantage of opportunities offered across a broad range of sites.³³

- Increased use of tax deductions or cleanup subsidies, allowing that these incentives can be traded or sold to cover cleanup expenses. This will help to facilitate the cleanup of properties that may not be used for redevelopment, or may not otherwise generate sufficient tax revenue to make the subsidy worthwhile. For example, if a private party wishes to cleanup a property to create urban greenspace, there likely will be little, if any tax revenue generated, and future tax-breaks will be of little incentive in the initial project.

³³ Wernstedt, Kris. "A Broader View of Brownfield Revitalization." *New Approaches on Energy and the Environment: Policy Advice for the President*. Ed. Richard D. Morgenstern and Paul R. Portney. Resources for the Future: Washington DC, 2004. Pages 82-86.

Section V: Bibliography

- Acton, Jan Paul. Testimony before the Subcommittee on Water Resources and Environment, Committee on Transportation and Infrastructure. June 22, 1995. Pages 474-475. <http://commdocs.house.gov/committees/Trans/hpw104-22.000/hpw104-22_3.HTM#474> (November 19, 2005).
- Akerlof, George A. "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism." *The Quarterly Journal of Economics*, Vol. 84, No. 3 (August 1970), 488-500.
- Alberini, Anna, et al. "The Role of Liability, Regulation and Economic Incentives in Brownfield Remediation and Redevelopment: Evidence from Surveys of Developers." Department of Agriculture and Resource Economics at the University of Maryland, College Park (November 2002).
- Bartsch, Charles, Elizabeth Collaton, and Edith Pepper. *Coming Clean for Economic Development: A Resource Book on Environmental Cleanup and Economic Development Opportunities*. The Northeast-Midwest Institute: Washington, D.C. 1996.
- Black, Thomas J. "Model Solutions to Revitalize Urban Industrial Areas." *Land Lines*. The Lincoln Institute of Land Policy. September 1997, Volume 9, Number 5. <<http://www.lincolninst.edu/pubs/pub-detail.asp?id=457>> (October 31, 2005).
- Borick, Christopher P. "Stopping Sprawl: An Examination of State Growth Management Initiatives." *Midwest Political Science Association*, paper presented at annual meeting, April 19-22, 2001.
- Chang, Howard F. and Hilary Sigman. "The Effect of Joint and Several Liability Under Superfund on Brownfields." *National Bureau of Economic Research Working Paper Series*. Working Paper 11667. <<http://www.nber.org/papers/w11667>> (November 12, 2005).
- Dettore, Jerome N. "Brownfield Development in Pittsburgh." *Pittsburgh Green Story*. <<http://www.pittsburghgreenstory.org/html/brownfields.html>> (November 20, 2005).
- Geltman, Elizabeth Glass. *Recycling Land: Understanding the Legal Landscape of Brownfield Development*. The University of Michigan Press: Ann Arbor. 2003.
- Gordon, Larry J. "Environmental Health Administration Basics."
- HUD/EPA. 1998. "The Effects of Environmental Hazards and Regulation on Urban Redevelopment." Report. HUD Accession Number 8614. Washington D.C.

- Khanna, Madhu and Wilma Rose Q. Anton. "Corporate Environmental Management: Regulatory and Market-based Incentives."
- Kuhn, Steven. "Prisoner's Dilemma." *The Stanford Encyclopedia of Philosophy (Fall 2003 Edition)*. Edward N Zalta (ed.)
<<http://plato.stanford.edu/archives/fall2003/entries/prisoner-dilemma/>>
(November 19, 2005).
- Meyer, Peter B, Kristen R. Yount, and Kris Wernstedt. "Brownfield Redevelopers' Perceptions of Environmental Insurance: An Appraisal and Review of Public Policy Options." Lincoln Institute of Land Policy, Working Paper. 2002.
- Reisch, Mark. "Superfund and Brownfields in the 107th Congress." Washington DC: Congressional Research Service, the Library of Congress. January 16, 2003.
- Shavell, S. "The Judgment Proof Problem." *International Review of Law and Economics*. Vol. 6 (1986), 45-58.
- Shoenbaum, Miriam. "Environmental Contamination, Brownfields Policy, and Economic Redevelopment in an Industrial Area of Baltimore, Maryland." *Land Economics*, Vol. 78, No. 1 (February 2002), 60-71.
- Siegel, Beth and Andy Waxman. "Third-Tier Cities: Adjusting to the New Economy." *Reviews of Economic Development Literature and Practice*, Number 6 (June 2001). Published by U.S. Economic Development Administration.
- Sigman, Hilary. "Environmental Liability and Redevelopment of Old Industrial Sites." Department of Economics, Rutgers University. April 2005.
- United States Conference of Mayors. *Recycling America's Land: A National Report on Brownfields Redevelopment, Volume IV*. 2003.
- Walker, Kristi. "Locating Opportunities for Brownfield Redevelopment in St. Louis." University of Missouri – St. Louis, Public Policy Administration, Master's Program. July 2004.
- Wernstedt, Kris. "A Broader View of Brownfield Revitalization." *New Approaches on Energy and the Environment: Policy Advice for the President*. Ed. Richard D. Morgenstern and Paul R. Portney. Resources for the Future: Washington DC. 2004.
- Wernstedt, Kris, et. al. "The Brownfields Phenomenon: Much Ado about Something or the Timing of the Shrewd?" Resources for the Future, Discussion Paper 04-46. November 2004.

White House Press Release. "President Signs Brownfields Bill."
<<http://www.whitehouse.gov/news/releases/2002/01/20020111-3.html>>
(November 12, 2005).