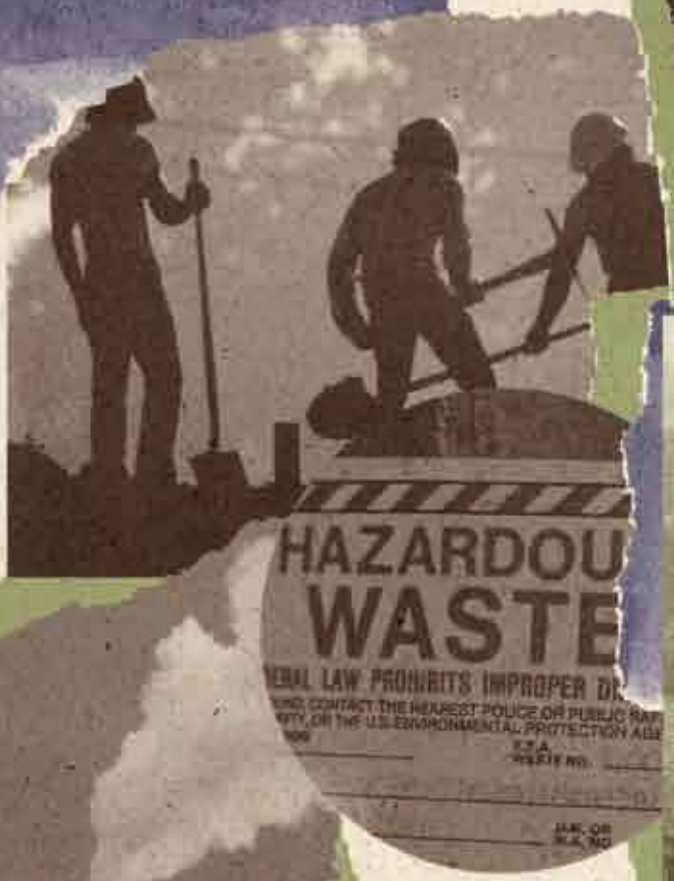


risks and rewards of brownfield redevelopment

james g. wright

risks and rewards of brownfield redevelopment

This report is one in a series of policy focus reports published by the Lincoln Institute of Land Policy to address timely land-related questions of concern to policymakers, scholars and citizens. Each report is based on a workshop or conference designed to bridge the gap between theory and practice. Participants typically represent a range of academic disciplines, professional experience and types of communities.

On March 28 and 29, 1996, the Lincoln Institute assembled in Cleveland a panel of experts on brownfield redevelopment to explore the significance of brownfield reclamation within the context of metropolitan development. What is the relationship between revitalizing brownfields and protecting or developing greenfields on the urban fringe? Some speakers analyzed real estate trends, demographic statistics, tax records and other data useful in formulating more effective development strategies. Others discussed successful brownfield redevelopment efforts that involve creative financing, collaborative approaches, regulatory changes and other policy initiatives at all levels of government and in the private sector.

speakers

VIRGINIA AVENI, Manager, Environmental Programs, Cuyahoga County Planning Commission, Cleveland, Ohio

JONATHAN BARNETT, Director, Graduate Program in Urban Design, City College of New York, New York

THOMAS BIER, Director, Housing Policy Research Program, Maxine Goodman Levin College of Urban Affairs, Cleveland State University, Cleveland, Ohio

J. THOMAS BLACK, Resident Fellow, Urban Land Institute, Washington, DC

CLEMENT DINSMORE, Senior Policy Analyst, Clean Sites, Inc., Alexandria, Virginia

DONNA DUCHARME, Deputy Commissioner, Industrial Services and Development Division, Chicago Department of Planning and Development, Chicago, Illinois

CHARLES FAUSOLD, Fellow, Lincoln Institute of Land Policy, Cambridge, Massachusetts

DONALD IANNONE, Director, Economic Development Program and Great Lakes Environmental Finance Center, Cleveland State University, Cleveland, Ohio

EDWIN MILLS, Professor of Economics, Graduate School of Management, Northwestern University, Evanston, Illinois

HUNTER MORRISON, Director, Cleveland City Planning Commission, Cleveland, Ohio

* with their professional affiliations at the time of the conference

JAMES G. WRIGHT is assistant city editor of the Fort Lauderdale (Florida) Sun-Sentinel. He was previously the business editor of the Gazette Telegraph in Colorado Springs, Colorado, and he participated in the Lincoln Institute's Land Policy Forum for Journalists in 1995.

table of contents

Bill Stover

executive summary

America's failure to recycle old industrial sites has emerged as a major concern in recent years, but the brownfield phenomenon is only now coming to be understood.

Brownfields are abandoned, idled or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination. This definition is broad and can cover an entire industrial zone or a single abandoned building; a massive hazardous waste dump or spillage from a corner dry cleaning shop. By some estimates, there are as many as 450,000 brownfields scattered nationwide—a land mass that, if assembled, would equal the acreage of the city of Los Angeles.

We fear these brownfields, with their specter of cancer-causing toxins or heavy-metal time bombs, and our fears are spelled out in strict environmental regulations designed to force anyone ever associated with the property to pay for the cleanup.

Some sites do present direct public health hazards, but in most cases the more serious threat is to the economic health of the host city due to abandonment of industrial buildings, loss of jobs and expansion of neighborhood blight. Because of the widespread damage they do, brownfields cannot be viewed solely as a problem for the inner cities or older suburbs where they are located.

Bypassing a brownfield as a site for economic development means abandoning extensive urban infrastructure and replicating it at great cost in a less developed suburban or exurban area. This process contributes to increased sprawl as core city areas are left vacant while jobs and people move to more enticing greenfields—never developed land—on the urban fringe.

It is not a simple tradeoff to hope that brownfield redevelopment can stem the tide of greenfield sprawl.

Legitimate fear of brownfield contamination has led to strict control of their cleanup and use, but the severity of the regulations, particularly in assigning financial responsibility, is seen as the major impediment to urban revitalization. Federal, state and local governments have addressed the unintended consequences of regulation, but their efforts have not prompted a renaissance in urban industrialization.

Many policymakers now recognize that environmental problems are often easier to surmount than are complex social problems, local zoning laws, bureaucratic delays, realities of the real estate market and the needs of modern manufacturing. Any efforts to recycle brownfields must take these barriers into account, as well as technical environmental concerns.

Yet there are brownfield success stories. In Chicago, a relatively inexpensive cleanup of an abandoned steel plant restored confidence that the site would not cause blight to spread. An adjoining factory expanded onto the site, creating 100 new jobs in the neighborhood. In Denver, a $20 million cleanup of a brick yard contaminated by radioactive slag and heavy metals failed to clear the way for revitalization until the Environmental Protection Agency promised not to hold a new user liable for past contamination. A major retail store now occupies the site.

Creating more success stories will take time, money and creativity. It is clear that no single solution can overcome all regulatory and economic barriers. Systemic changes, as well as a broad array of tools applied in specific cases, are required. Basic regulatory reform must start at the federal level with congressional action to amend the existing Superfund law and create permanent brownfield redevelopment strategies.

Other initiatives include:

- ***Financing:*** The Superfund trust, which in the past has collected about $4 billion per year through a petroleum products tax, could be tapped to also pay for redevelopment. The Clinton administration has also proposed tax credits for brownfield cleanup, and many state and local governments are considering creative financing that would allow cleanup and redevelopment costs to be recovered through tax increment financing or special improvement districts.
- ***Information:*** Lack of knowledge delays redevelopment, making some projects cost-prohibitive. Simply adding environmental information about properties to geographic information systems or keeping an inventory of known or suspected brownfield sites can speed remediation and reuse.
- ***Regionalization:*** Few cities have the resources to address brownfield revitalization without help from surrounding communities. Various proposals involve shifting the financial burden to suburban areas, with payback in the form of decreased sprawl in urban fringe development.
- ***Prevention:*** Changes in tax laws would allow industrialists to save for future remediation costs, and emerging sustainable development strategies may reduce the amount of contamination produced in manufacturing, thus making brownfields a phenomenon of the past.

Ultimately, the private real estate market will determine how brownfields are reused, but it is necessary for government to act to protect the public interest. Just as government sets cleanup standards and undertakes remediation, so must it help close the gap between the cost of redevelopment and what the market will bear. To do less is to leave the work unfinished and the holes in the urban fabric unmended.

holes in the urban fabric

BROWNFIELDS: Abandoned, idled or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination.[1]

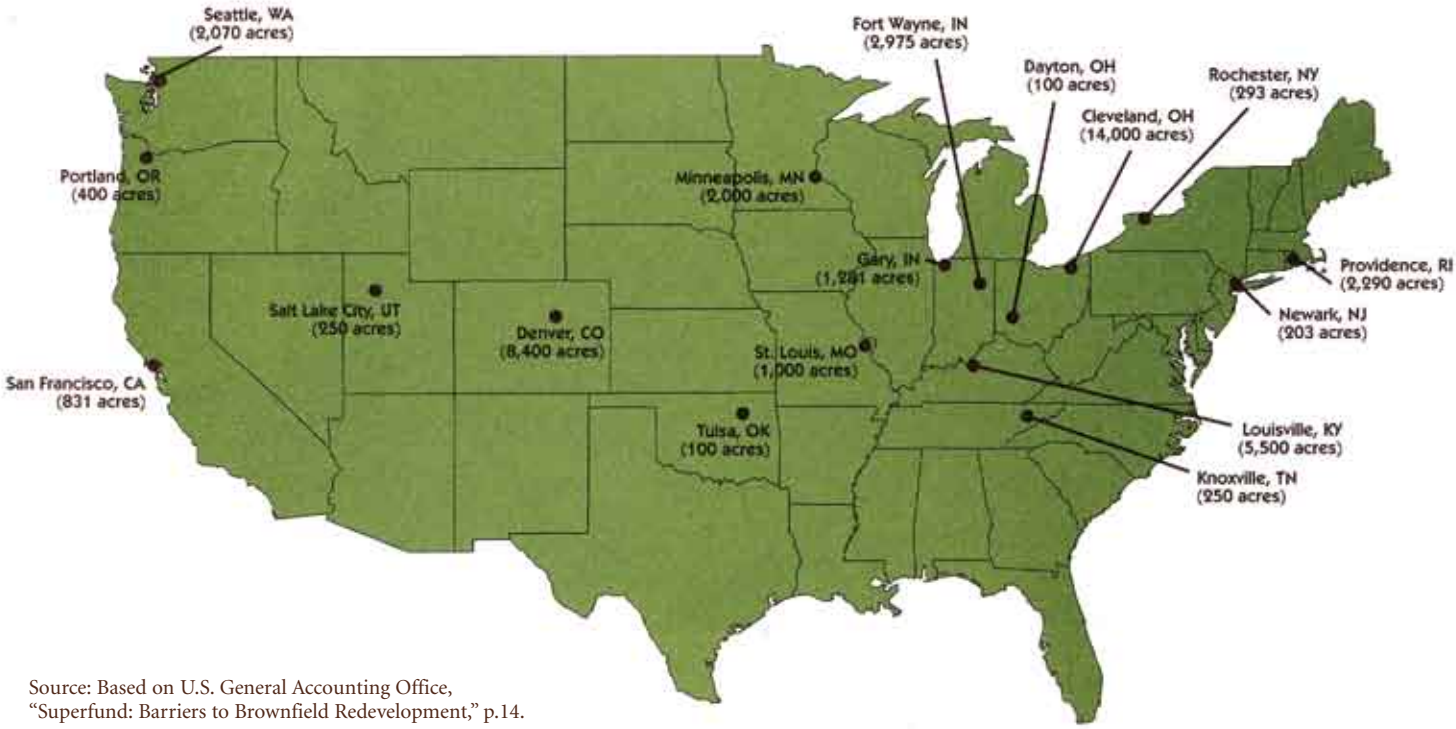
Once they were just old factories, shuttered and waiting for new owners or the wrecking ball. No one worried much about them. But that was before environmental disasters like Love Canal and Times Beach led Congress to create the federal Superfund in 1980, making every former factory or vacant lot a potential hazardous waste site. Now everyone worries about them.

The risk is enormous. Buy an old factory and you may inherit generations of contamination. By law, you, and maybe even your banker, are liable for the entire cost of cleanup, no matter who caused the problem. Many banks refuse to make loans on any property that just might be contaminated, and builders bypass these newly defined "brownfields" to build on "greenfields" outside the urban core, particularly along ring highways where the land is accessible, clean and generally less expensive.

Though most commonly found in rust-belt cities of the Northeast and Upper Midwest, brownfields are a nationwide phenomenon that is still not well understood. They can cover a single property or an entire industrial zone, but most are small—a corner lot where gas station pumps may have leaked into the soil or a few acres where a mom-and-pop factory spilled chemical solvents.

Brownfields polluted by hazardous materials present direct threats to human health, particularly when contaminants migrate through air or water to surrounding properties. Yet even pollution-free brownfields complicate urban revitalization, contribute to visual blight and perpetuate the notion that core cities are unsafe and unhealthy. Brownfields have clearly become a rallying point for a wide range of public and private efforts to focus attention on urban reinvestment and economic development.

U.S. Conference of Mayors' Survey of Brownfields (in acres)



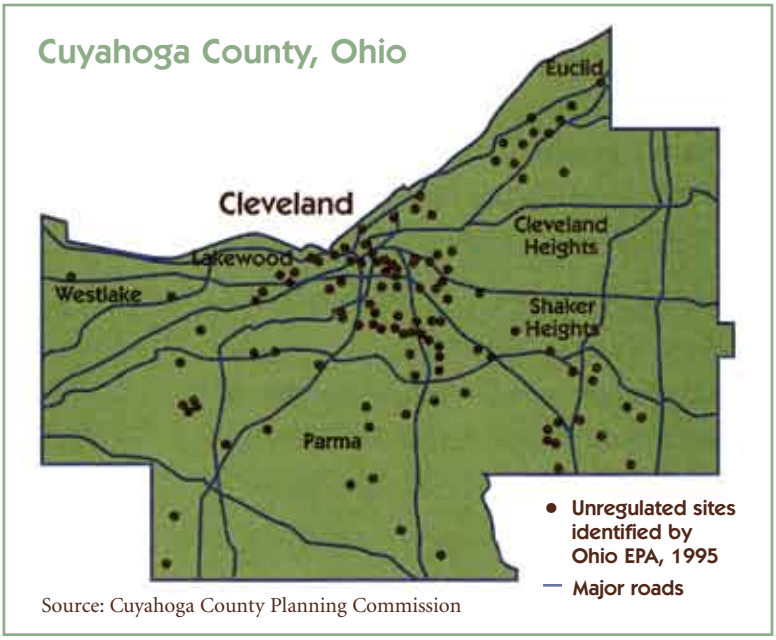
Source: Based on U.S. General Accounting Office, "Superfund: Barriers to Brownfield Redevelopment," p.14.

How Many Brownfields Are There, Anyway?

Estimates on the number of brownfield sites range widely and are based on variable criteria, making identification and evaluation of the sites very difficult. In 1987, the U.S. General Accounting Office estimated that between 130,000 and 425,000 sites nationwide are thought to have some degree of contamination from past industrial use or illegal hazardous waste dumping.[2]

In 1995, the Urban Land Institute developed a widely used estimate of the problem by comparing current land use patterns and inventories from 1970, the peak year of industrialization in American cities. Assuming a 15 to 20 percent vacancy rate, ULI estimates that 132,000 to 176,000 acres—an area about the size of the city of Los Angeles—previously devoted to manufacturing, rail yards or related industry could be classified as brownfield sites.[3]

A few cities have tried to inventory their own brownfield sites. Metropolitan Chicago, an early leader in addressing brownfield redevelopment, has identified more than 2,000 sites, concentrated in the west and southeast sides. Ohio's Cuyahoga County Planning Commission has identified an estimated 14,000 sites, 3,000 of them in the city of Cleveland.[4] A brownfields survey conducted by the U.S. Conference of Mayors in 1996 shows widely disparate estimates of brownfield acreage because the cities used different criteria (see map at left).



Source: Cuyahoga County Planning Commission

Ripple Effects on Metropolitan Regions

Brownfields consume a relatively small portion of any major city, yet the potential for damage extends well beyond the boundaries of a single property. The U.S. Department of Housing and Urban Development has identified brownfields as significant contributors to urban decay, saying "the existence of derelict former industrial areas worsens many of the other problems cities must confront, such as out-migration of the middle class, poverty, crime and deterioration of the education system."[5]

As inner-city industries spiral into decline, so do the blue-collar neighborhoods they had nurtured. Neighbors watch the quality of life worsen because of the eyesores, which provide no jobs but can attract transients, vandals and illegal dumpers. Adjacent areas also suffer as businesses move to avoid decaying brownfields, taking with them scarce jobs and leaving behind more vacant buildings, declining property values and a dwindling tax base.

As urban jobs disappear, the need for social services usually increases. As tax revenues fall, less is spent on basic city services, causing a new round of out-migration by those with the financial means to escape. Eventually, the core city is left only to those who cannot afford to leave it—the poor, the elderly and those with unmarketable skills—and those who can afford to commute from upscale residential areas to work in the less mobile institutions, such as universities and government centers, that remain in their central locations.[6]

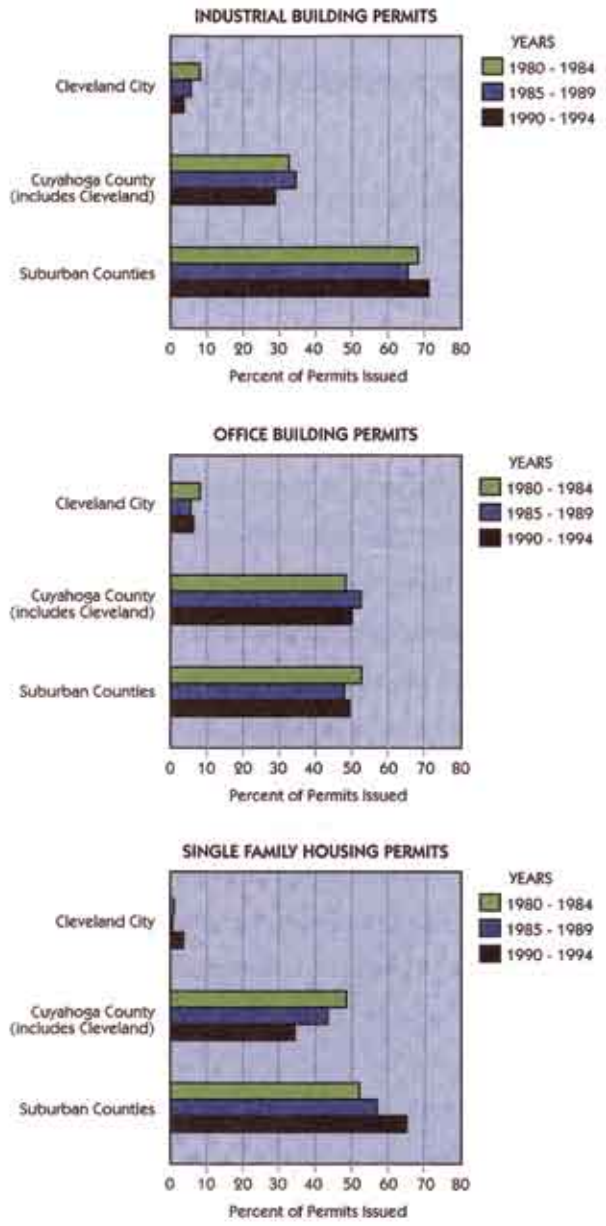
Core cities clearly have an immediate stake in the future of brownfield redevelopment, but the failure to recycle these problem sites will gradually damage the environment and economy of the suburbs and the entire region. Based on his analysis of U.S. Census data and housing surveys in the Cleveland area, Thomas Bier has determined that the wave of decay that has undermined the city's economy now threatens the entire metropolitan region.

Failure to recycle urban brownfields is often cited as a contributor to suburban sprawl, as industrial zones are left vacant while pristine greenfields become new factories, office parks and shopping malls. Reuse of brownfield sites logically would reduce pressure on the urban fringe and provide for more compact and thus cost-effective provision of services. Jonathan Barnett suggests that brownfield redevelopment could directly reduce the cost of government. He estimates that as much as 20 percent of urban infrastructure is under-used because of deindustrialization, even though expensive new roads, sewers and utility lines are being built to replicate those urban services in suburban and exurban areas.

Others argue the amount of brownfield land in most cities is so small that even full redevelopment would do little to stem the rush to the suburbs. They also note that existing infrastructure may be so old it must undergo cost-prohibitive repairs and upgrades to support new industrial use—even if the host city could accommodate additional burdens on its water supply, sewers and streets.

For developers, the added costs of brownfield cleanup, coupled with the risk of expensive time delays, legal headaches and regulatory burdens, often tip the balance against brownfield redevelopment. It is not a simple tradeoff to hope that brownfield redevelopment can stem the tide of greenfield sprawl.

Building Permits in Cleveland PMSA 1980–1994



Source: Thomas Bier, based on Bureau of the Census Construction Division Building Permit Data Files, 1980-94.

Bailey Smelter, Denver

The long process of making 17 acres of Denver a hazardous waste nightmare began with construction of the Bailey Smelter in 1886. Strategically located just off the Santa Fe Trail, the smelter site would see many uses over a century—gold and silver smelting by cyanide leaching, zinc milling, manufacturing and servicing storage batteries, treating and sacking metallic ore insulation, and oil reclamation.

Through a succession of owners, the site was sometimes under-used and occasionally abandoned, but it always was returned to service without much concern about its past. In 1940, the site became the home of Robinson Brick. Well served by a rail spur, the area around the brickyard became increasingly industrial, and later the Santa Fe Trail became a major arterial. In the 1960s, Interstate 25 angled just south of the property. Conditions were ripe for redevelopment after the planned closure of the brickyard in the early 1980s.

However, in 1979, an Environmental Protection Agency researcher discovered a vague reference in some old paperwork to the long-forgotten National Radium Institute located in Denver between 1914 and 1917. Concerned investigators flew over the city with instruments that pinpointed radioactive hotspots, including the Robinson Brickyard, where the U.S. Bureau of Mines had processed radium. The resulting public outcry helped push Superfund, a strict new environmental cleanup bill, through Congress, and the old smelter site was added to the EPA's National Priorities List for cleanup in 1983.

Five years later, EPA workers were digging away the radium-contaminated soil for shipment to a disposal site when a hard rain exposed another long-buried secret: heavy metals. Several more years passed before the cleanup was completed—radium-tainted soil was hauled away; dirt contaminated only by heavy metals was left in place. Though relatively safe after a $20 million remediation, the site remained untouched and unwanted, even as two real estate booms swept across the region. Developers simply refused to consider the property for fear of being tangled in the environmental nightmare.

Changing attitudes and new retail shopping patterns recently have brought new life to the old mill site. After months of scouring metropolitan Denver, the Home Depot Corporation could find only one site that met its simple criteria for a giant home improvement retail store: at least 10 acres just off a major freeway. After being assured by the EPA that it would not be held liable for past pollution, Home Depot agreed to buy the old mill site from the Robinson family for $2.88 million. Earthmovers artfully arranged the contaminated soil, consolidating it in an area to be capped with an asphalt parking lot. The store itself was situated to avoid covering any contamination that might one day have to be removed.

James G. Wright

III

cycles of change in american industrial cities

To fully understand the challenges of brownfield redevelopment, one must first understand the rise and relative fall of the great American industrial cities. Most of them developed during the 1800s as trading centers serving a mainly rural, agrarian population. Manufacturing was limited to mill towns built on rivers and streams where water wheels provided power for small-scale factories.

Midway through the nineteenth century, emerging technology began to reshape the cities. Railroads and steam vessels, electrification, the telegraph and later telephones all permitted large-scale industrialization. Massive new plants created the classic core industrial city around rail nodes and ports, with Chicago and Cleveland as prime examples.[7]

Cities grew rapidly again in the 1920s, when mass production and more refined technologies came into general use. Improved transportation made it easier to ship goods long-distance, allowing corporations access to a national marketplace from ever-larger centralized manufacturing plants.

The cities changed form with their expanding manufacturing base. Around the plants, low-cost, high-density housing served a blue-collar army within an easy stroll or a short streetcar ride from the time clock. For the more affluent, automobiles, electrification, and expanded water and sewer systems allowed for a new lifestyle in suburban neighborhoods fanning out from the industrial heart of the city.[8]

While industrial growth was largely concentrated in the core city, congestion, rising land values and other forces prompted an outward movement of the growing population. With more widespread ownership of automobiles and easy access through federally funded highway systems, workers were able to move farther away from their downtown factories and offices.

By 1950, the population of most metropolitan areas was almost twice as great as the central city, indicating that urban and suburban populations were about equal. By 1990, the metropolitan population had surged to nearly four times that of the central city.[9]

While residential numbers in the core cities fell, employment remained strong until the 1970s, when many cities experienced a major loss of manufacturing jobs to suburban and exurban areas. Cities dependent on older, low-technology industries—tire manufacturing, automobile assembly and steel production, for example—were particularly hard-hit.[10]

Cleveland alone has lost 160,000 manufacturing jobs since employment in that sector peaked at 220,000 in the mid-1940s. Census data shows that many of those jobs still exist, although they have been decentralized within a seven-county region where manufacturing employment in total exceeds the historic high in the core city.

As manufacturing plants have moved out of the core cities, no heavy industry has taken their place. Core city employment has shifted to finance, insurance, real estate and related producer services, with only limited reuse of old industrial land.[11] In 1996, 14 percent of all industrial land in Pittsburgh was vacant, as was 12.9 percent in Philadelphia, 10.8 percent in Cleveland, 8.2 percent in Kansas City and 7.93 percent in Chicago.[12]

As inner-city industries spiraled into decline, so did the communities they had nurtured. Once-thriving blue-collar neighborhoods sank into disrepair with increased levels of poverty, crime and other social problems that further complicate redevelopment.

Complex and interrelated market forces and regulatory factors now limit the demand for core city industrial sites, leaving many as blighted, hazardous eyesores. As manufacturing technology has changed, so have industrial land use patterns. Most old factories are relatively small, multi-story structures, but modern assembly lines and

inventory operations are based on horizontal movement, which requires large-footprint, low-slung buildings. Lower land prices on the urban fringe make investment in such areas much more attractive than in high-priced downtown locations.

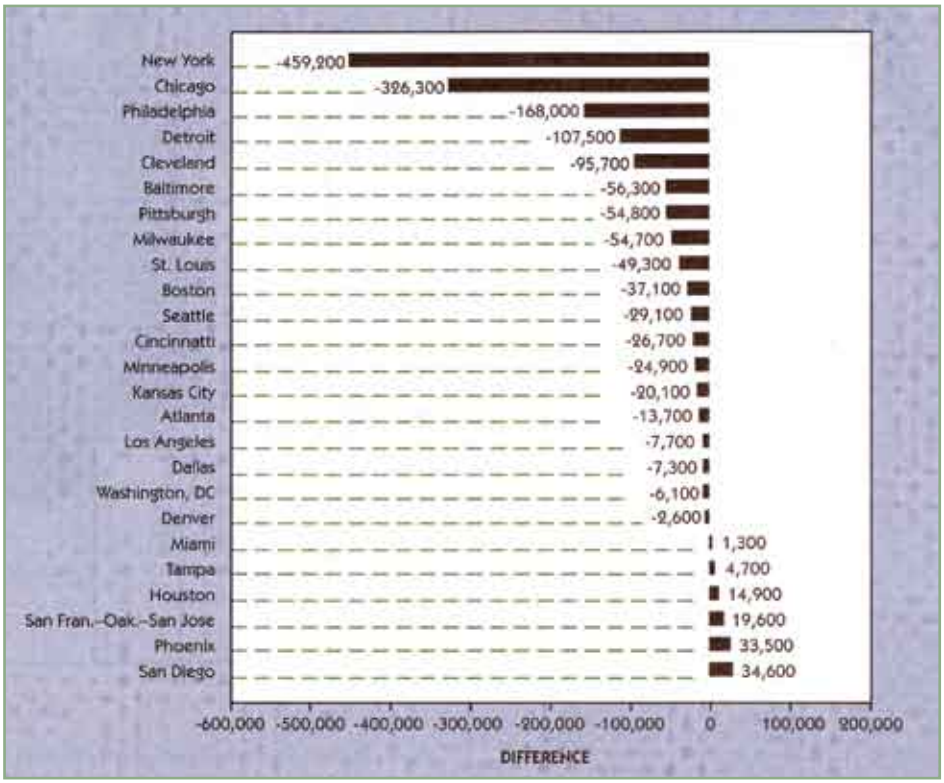
Increased reliance on truck transport allows greater flexibility in plant location, since industrial zones no longer require access to centralized rail lines. In fact, modern plants are better positioned far from urban cores, where commuter traffic, narrow streets and outdated infrastructure such as low bridges complicate or prevent truck access.

The workforce has also changed. Suburbs offer a larger pool of highly skilled, better-educated workers—and they are willing to share their wealth in return for jobs and a bigger tax base. In 1992, the Chicago suburb of Hoffman Estates offered $186 million in subsidies and incentives to lure the national headquarters of the Sears Company 37 miles from its longtime downtown home.

Minneapolis's retail scene also suffered a serious blow when suburban Bloomington offered $200 million for highway improvements and direct construction subsidies to win the massive shopping and entertainment center, the now-famous Mall of America. This kind of economic competition between core cities and suburbs is generally thought to undermine the ability of the core cities to replace their lost industrial employment and tax base.

Minnesota State Representative Myron Orfield has researched and written extensively about the increasing fiscal and social disparities between cities and their older, inner-ring suburbs and the newer suburbs developing ever farther from the core. Writing in *Metropolitics: A Regional Agenda for Community and Stability,* he notes that Minnesota's Twin Cities region enjoyed the creation of 240,000 net new jobs during the 1980s, with a large share of them in manufacturing. However, Minneapolis and St. Paul actually lost more than 20 percent of their manufacturing jobs.

Central City Employment Change by Industry: Manufacturing (1967–1987)



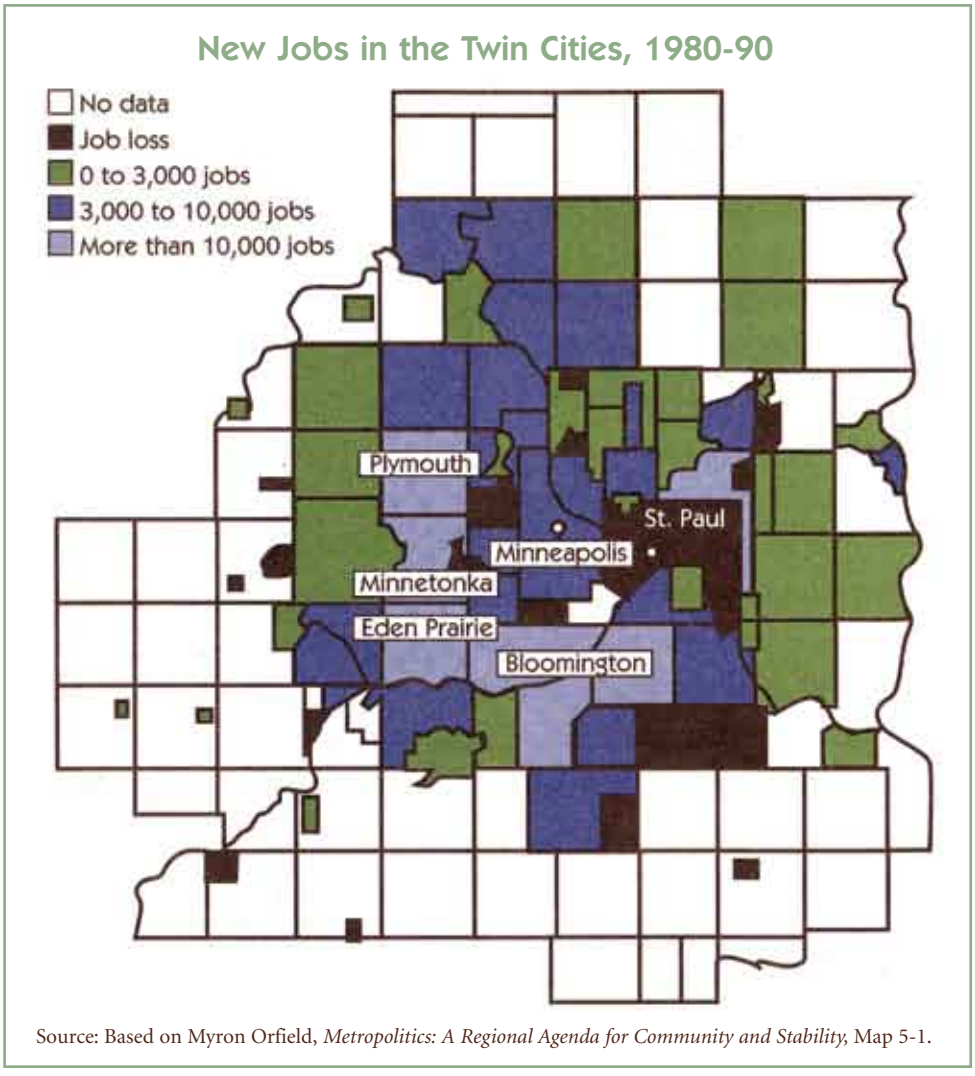
Source: U.S. Congress, *The Technological Reshaping of Metropolitan America,* p. 81.

Fully 61 percent of the new jobs went to affluent, low-density southern and western suburbs, where three cities alone (Eden Prairie, Minnetonka and Plymouth) represent only 7 percent of the region's population but captured 26 percent of the new jobs. Borrowing a term from real estate consulting, Orfield calls this job-rich region the "favored quarter," reflecting its ability to draw jobs, infrastructure and other resources away from less desirable core city industrial and residential areas.

Barnett and others who have studied brownfield redevelopment argue that government spending on infrastructure to serve suburban and exurban growth indirectly subsidizes businesses fleeing core cities and contributes to sprawl development. A Michigan study supports this contention with the finding that three-fourths of federal Clean Water Act spending improvements went to extend sewer works, creating new incentives for more popular low-density, fringe growth.[13]

J. Thomas Black acknowledges the damage done by direct government action, but describes the underlying problem as one of simple lack of demand. "When you have [a] high-density built environment in an economy which no longer values density the way it once did, you have a fundamental reuse and redevelopment problem," he said. "If you stack on top of that the brownfield problems of contamination and cleanup, you just exacerbate it."

Yet core cities are not without attraction to industry. A 1994 study of manufacturers in the Milwaukee area found many would consider locating all or part of their operations in the central city to take advantage of an unemployed labor pool—but only if environmental cleanup and crime problems could be solved.[14]



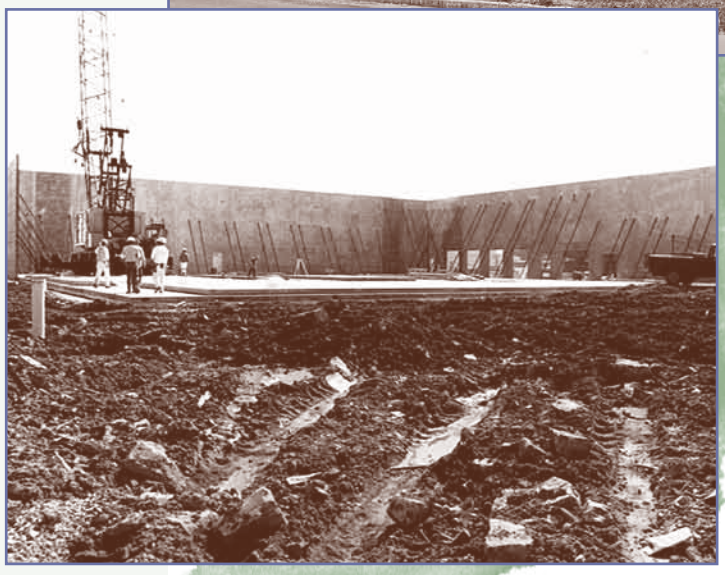
Source: Based on Myron Orfield, *Metropolitics: A Regional Agenda for Community and Stability,* Map 5-1.

Martin Luther King Business Park, St. Louis

Once an industrial powerhouse, St. Louis has long been a city in decline. Since World War II, St. Louis has lost half of its jobs and two-thirds of its population to its suburbs. Nearly a sixth of all St. Louis is now owned by the city itself, much of it former industrial property seized for failure to pay back taxes. With 2,000 such properties on its hands, St. Louis is heavily invested in brownfield redevelopment.

In 1995, armed with a $200,000 Environmental Protection Agency Brownfield Economic Redevelopment Initiative Pilot Project grant, St. Louis began the long process of reclaiming its industrial heritage, one acre at a time.

St. Louis Development Corporation



Bill Stover

Twenty-six acres of vacant lots and abandoned buildings in economically depressed north St. Louis have been designated the Martin Luther King Business Park. The federal money will help clean up the environmental residue of the former tenants—a metal plating company, two junk yards, several service stations, a dry cleaner and a mortuary. The area, only recently removed from the EPA's list of potential Superfund sites after an initial investigation showed only minor contamination, will be remediated by the Missouri Department of Natural Resources.

The business park is already attracting the attention of new industry. Medco Tool, a Philadelphia-based company, is building a 25,000-square-foot distribution center in the park, employing 30 workers.

Environmental Protection Legislation

Prior to the 1970s, brownfield sites were not a particular concern. Like the Bailey Smelter site in Denver, closed factories might become eyesores but eventually would be converted to other uses or demolished and replaced by new commercial or even residential development.

However, in 1976, the cycle of renewal was stopped for many old factories by passage of the Resource Conservation and Recovery Act. This groundbreaking federal legislation was aimed at regulating the treatment and disposal of hazardous substances and addressing environmental damage by requiring the parties responsible for the pollution to pay for its remediation.[15] It was the first federal statute to address land pollution specifically; prior environmental legislation focused only on air and water pollution.

In 1980, after the discovery of massive environmental problems in Denver and at New York's Love Canal and other sites, Congress passed the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) to govern the cleanup of abandoned hazardous waste disposal sites. Superfund, as it came to be called, gave the EPA authority to investigate all potentially contaminated sites, allocate responsibility for cleanup of soil, surface and ground water, and force responsible parties to pay.

Superfund imposes strict, joint and several liability—meaning that the cost of remediation falls on all parties in control of the polluted site, regardless of who was at fault, and that each party can be held liable for all cleanup costs. The liability is open-ended—the property owner can be forced to pay for future cleanup if more sophisticated tests detect additional or previously unknown contamination.[16]

In most cases, the EPA required that all former industrial sites meet the highest level of cleanliness—essentially, clean enough for residential use, or so clean that a child could eat soil without adverse health effects. By early 1995, the EPA had identified more than 38,000 sites with real or suspected contamination that could force future designation as a Superfund site. A crucial problem for implementing remediation is that many sites had long since been abandoned and past polluters no longer existed as corporate entities.[17]

EPA action on Superfund has been so mired in legal and bureaucratic gridlock since its inception that the program is widely considered a failure. In the first 15 years of the program, the agency had taken remedial action on only 300 properties nationwide.[18] "The current EPA laws are mainly lawyers' relief bills," said Edwin Mills. "The Superfund (spends about) $4 billion a year. About a third of it goes to attorneys." Others argue that the program has done little to help the environment while doing much to damage American cities.

Former EPA Administrator William D. Ruckelshaus has described Superfund as a program "characterized by confrontation and seemingly endless litigation" that has done little more than cast a pall over urban renewal efforts. Environmentalists, EPA officials and urban planners widely agree with the Urban Land Institute's assessment that "despite its good intentions, the federal Superfund law and implementing regulations have become a major deterrent to the redevelopment and reuse of older industrial urban areas."[19]

Fear of Liability

Because anyone working with a contaminated site could be held liable for all cleanup costs, business owners and developers tend to avoid old industrial sites, even if environmental problems are relatively minor. This diversion of capital from brownfield sites defeats hopes for investment to stem the tide of urban industrial decline.

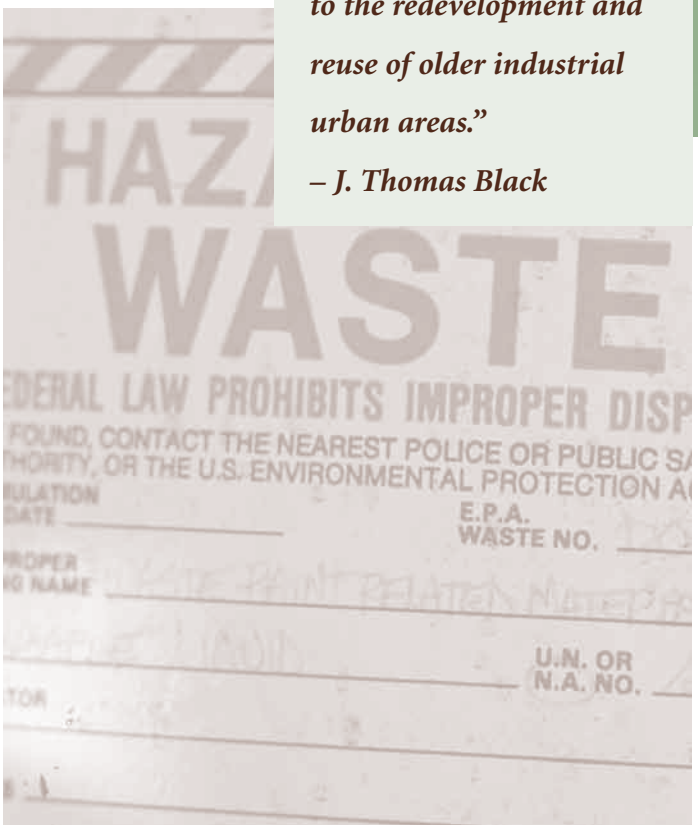
The flight from potential liability has been best documented by the banking industry. Under the terms of Superfund, lending institutions can, in some cases, be held liable if they become involved in the use of contaminated land or come into ownership through foreclosure. Mindful of this, loan officers often require time-consuming environmental assessments that can cost as much as $50,000 and add months to construction timetables, even when there is no reason to suspect contamination. The expense of testing and delays are often enough to cause a builder or prospective tenant to go elsewhere.

In 1990, an American Bankers Association (ABA) survey of 2,000 lending institutions found that 62.5 percent had rejected loan applications based on just the possibility of environmental liability. Some 45 percent had stopped making some loans to service stations and businesses dealing with chemicals because of liability concerns—a practice known as "brownlining."[20]

A follow-up survey of smaller ABA member institutions in 1995 showed a continuation of that pattern, and revealed that some banks have abandoned property held as collateral rather than foreclose and assume additional liability.[21] "Brownfields have emerged in recent years to replace redlining as an excuse for not investing in the city," said Hunter Morrison.

Owners of industrial sites have also altered their behavior in light of Superfund. Instead of putting old sites on the market for new uses, some have mothballed properties rather than risk discovery of contamination that might force an expensive cleanup. "Superfund has been a major, major catastrophe," J. Thomas Black said. "I don't think we will ever know what cost it has imposed upon our cities by driving investment away."

"Despite its good intentions, the federal Superfund law and implementing regulations have become a major deterrent to the redevelopment and reuse of older industrial urban areas."
– J. Thomas Black



Zoning, Codes and Related Regulations

As interest in brownfields has matured, policymakers have begun to recognize that redevelopment strategies must be carefully targeted on a site-by-site basis and that reindustrialization may not be practical or even desirable. In some cases—Chicago's Burnside Steel Plant, for example—reindustrialization is the best course (see page 16). But cities should consider a broad range of alternatives.

J. Thomas Black argues that residential development is often the best use for many brownfields, particularly if they are near downtowns, attractive waterways or other amenities. In Baltimore, for example, an old tin lithography plant on the Baltimore Harbor has been converted into luxury condos.

In his analysis for the Urban Land Institute, Black writes:

> In spite of the significant opportunities for industrial, service or office reuse, in many situations the only logical and market supportable reuse for former industrial sites may be housing. It seems unlikely that even over the long term nonresidential demand for existing industrial sites will require all the existing land. It is more likely that any net growth in industrial land use will involve the expansion of industrial areas in selected locations (such as near airports or university campuses) but not necessarily in former industrial areas.[22]

Yet in many cities, overlapping land use and building codes and zoning "tend to freeze urban landscapes in their current state. The rigid nature of zoning is a case in point, and other examples include occupancy standards, building bylaws, fire codes and parking requirements."[23]

Thus, in addition to shaping cleanup efforts to allow for non-industrial uses, some local governments must also create more flexible zoning laws and rezoning practices to reflect a less dense, more mixed use.

Michael E. Porter of the Harvard Business School found that the location of a brownfield site only adds to the problems of urban reinvestment. He noted that attempts to rebuild South Central Los Angeles following the 1992 riots were often thwarted because of land assembly problems: only nine of 200 vacant or underused properties were larger than one acre. In interviews in Boston, Los Angeles and Chicago, Porter encountered business managers frustrated by three- to five-year waits for building permits and site approvals.

"The cost of building in the inner city is significantly higher than in the suburbs," Porter writes, "because of the cost and delays associated with logistics, negotiations with community groups, strict urban regulations, restrictive zoning, architectural codes, permits, inspections, and government-required union contracts and minority set-asides. Ironically, despite the desperate need for new projects, construction in inner cities is far more regulated than it is in the suburbs—a legacy of big city politics and entrenched bureaucracies." [24]

"But perhaps the most important opportunity in brownfields rehabilitation is the chance to build a better society while reclaiming and recycling vacant urban land with the full participation of inner-city residents."
– Carl Anthony

Real-life Economics

Easing the regulatory burden may have little effect. "The problem is more than just blaming government—that government's in the way and won't allow us to do it," said Donald Iannone. "It's a vision problem. It has to do with how you build markets. It's not just a problem of trying to fill demand that's out there."

Even if a former industrial site is as clean as a greenfield and liability is not an issue, other forces often conspire to prevent redevelopment. "A lot of the political rhetoric, a lot of the discussion that's gone on in the legislative process in connection with brownfields has been very disconnected from real-life economics," Clement Dinsmore said. And real-life economics can be brutal.

"In many central cities, land is actually quite cheap," Edwin Mills noted. "[Even so,] it's horrible to say, some of the brownfield sites in central cities just aren't worth cleaning up." The cost of preparing a core city brownfield site for reuse can range from $250 to $350 per square-foot for assembly and infrastructure improvements alone.[25] Also, many brownfields are associated with small, outmoded factory buildings unsuitable for modern manufacturing. Demolition and new construction is cost-prohibitive, so attracting a new plant is generally not feasible.

One strategy now in vogue is a form of land use triage in which scarce resources are targeted on sites that have the greatest potential for reuse, rather than those with the worst environmental problems or the highest political profile. In Cleveland, brownfield recyclers have learned that cleanup alone will not prompt reuse if other factors make the site unattractive. "The environmental status of the property needs to be the deal-breaker," Virginia Aveni said. "One of the things that people are looking for is. . . a really pleasant environment."

This triage system must take into account the nature of the local economy, the marketability of the land itself, and the probability that the industry involved can be sustained over time. For example, a small building or site with little economic value for a major employer can still be cleaned and marketed to a small or startup company that can make do with less attractive space for lower rent. Many of these firms, such as graphic designers, electronic communications firms and printing companies, are already located in core cities and would prefer to stay near their downtown business clients.

Many advocates of brownfield revitalization argue that redevelopment strategies should focus on attracting new industries that provide high-paying jobs, preferably to local residents, and make a significant contribution to the local tax base in order to repay the typically high investment of public resources needed to revitalize the property in the first place. Others caution that such high expectations are difficult to meet and that scarce resources must be concentrated on those brownfield sites that have the greatest potential for reuse by existing businesses.

"It seems to me that cities should be thankful to any business willing to come in. Saddling them with any extraordinary requirements which they did not have to face in other situations is just making your job more difficult," Black said. "Regardless of whether the jobs are provided directly to the residents. . . the fact is that activity there will generate other activity."

With so many factors against reuse, advocates of brownfield recycling commonly caution that success requires broad-based, interdisciplinary action. "To be successful . . . brownfield initiatives must take place within the broader context of a community's industrial development strategy," Hunter Morrison said. "Among other things, this strategy must address the need to make serviced industrial land competitive within the regional marketplace."

Burnside Steel Plant, Chicago

In 1979, four men were killed and 20 injured when a fiery explosion of molten steel literally blew the roof off Chicago's Burnside Steel plant. The old plant never reopened. It didn't take long for scavengers to strip the plant's seven buildings of everything of value—including the building materials themselves. Soon all that remained was the old smokestack, which threatened to topple onto a rail spur that served an adjoining, still functioning steel plant. Midnight dumpers followed the looters, adding undefinable waste to the rubble and helping to frighten away buyers who feared the accumulated liability and cleanup costs.

The seven-acre site lay fallow—and festering—for nearly 15 years before the City of Chicago seized the property in a tax foreclosure. Initial estimates set the cost of cleanup alone as high as $1 million—enough to kill any private development deal.

But Chicago learned a good lesson for anyone leery of redeveloping old industrial sites. Though the Burnside site yielded more than 200 truck-loads of rubble and debris, only seven barrels of hazardous waste were found. The total cost of demolishing the smokestack and cleanup was $775,000.

"This is a good example of how, in some cases, the specter of it [contamination] is much worse than the reality," said Donna Ducharme, Deputy Commissioner of Chicago's Industrial Services and Development Division. "And it's an example of where environmental remediation has worked."

Verson Steel, which adjoins the Burnside property, had considered moving out of Chicago to escape the mess next door and the hazard of the shaky smokestack. Instead, Verson has expanded on its current site, adding 100 new jobs. Chicago is now marketing the seven-acre Burnside property for industrial development and is offering both state and federal assurances that the buyer will never be held liable for the cost of cleaning up the mistakes of the past.

Karen Gordon

Mark Farina

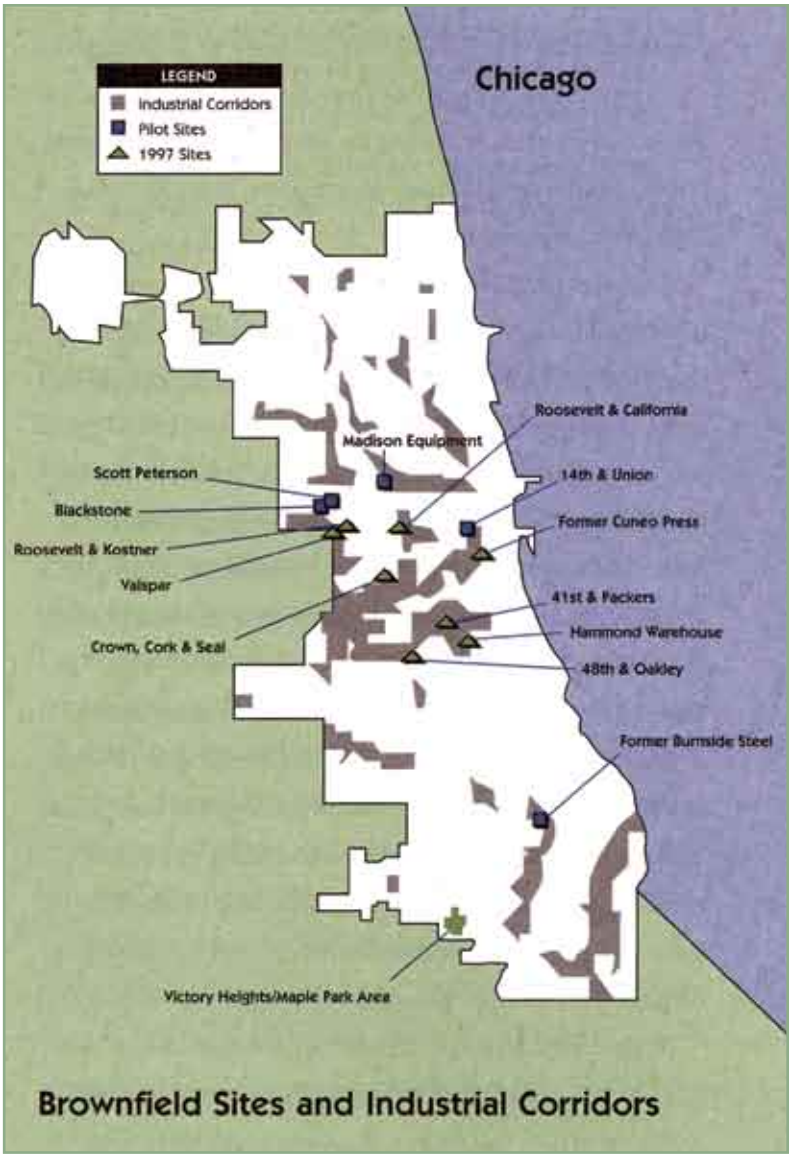
repairing the damage: city, state and federal initiatives

Reclaiming brownfield sites presents the opportunity to link environmental cleanup to other social and economic goals that benefit the neighborhood and broader community. A primary goal is jobs: remedial work in the cleanup itself, construction of new facilities and longer-term work in the new industrial or commercial enterprises built on the site. Affordable housing, retail establishments and open space are other important uses that can promote healthier, more productive communities. Initiatives toward these goals at all levels of government are beginning to repair the holes in our urban centers.

Chicago's Holistic Approach

An early leader in recognizing the problems and potential of brownfields, the City of Chicago has instituted several innovative programs worthy of consideration by other local governments. As described by Donna Ducharme, the Chicago approach is holistic in nature, melding brownfield redevelopment with ongoing industrial revitalization. "Cleaning up a brownfield site may be necessary, but it's certainly not sufficient," she said. "Redevelopment does not 'just happen' if you clean up a site."

To address brownfield needs, Chicago and the Illinois Legislature are rewriting basic land use laws and revamping city policies. For example, the city has long had the power to recover the cost of demolishing dangerous, abandoned buildings by placing liens on the property, with the lien satisfied when the land is sold. But in cases where environmental cleanup is needed and there is no structure, the city has no power to place a lien. The Legislature is considering a city-proposed environmental lien system to address the problem.



Source: City of Chicago, Department of Environment

The city has also defined brownfields broadly to cover entire industrial areas, which are being redeveloped to resemble modern suburban industrial parks. This reweaving of the urban fabric recognizes that redevelopment of bypassed areas in cities requires that they be as attractive and as useful as comparable areas on the urban fringe. In many cases, streets are being vacated and sold at nominal cost to nearby land owners who can use them for truck parking or expansion space.

A critical need identified in Chicago and other cities is increased security. Local officials working to redevelop brownfields report that fear of crime is the single largest factor cited by companies in opting out of core cities. "All of our industrial corridors should be safe. This is a very big issue in terms of companies feeling that they want to invest hundreds of thousands, or millions, of dollars in an area," Ducharme said. Chicago police have increased patrols in industrial zones. Streets have been closed off and fences have been built to allow better control of access.

On a related front, city officials are working to re-shape public perception of largely minority neighborhoods that are considered high crime areas. According to initial research in Chicago, "the biggest predictor of whether a site will be redeveloped is whether or not it's in an African-American neighborhood," Ducharme said.

Researchers have found that companies avoid predominantly African-American neighborhoods out of fear of increased crime, but do not associate lawlessness with areas dominated by any other minority, Ducharme said. So pronounced is the fear that a redevelopment site in the African-American community is valued about 26 percent less than a comparable site in any other area, she said.

In marketing Chicago industrial sites for redevelopment, the city specifically attempts to reassure prospective purchasers that the racial composition of an area does not necessarily predict its crime rate.

Other regulatory reforms instituted or under consideration in Chicago include:

- Revamping permitting processes to eliminate delays and bottlenecks that add to the cost of construction and prompt developers to build in low-regulation greenfield areas.
- Amending property condemnation laws to require judges to take into account the cost of environmental cleanup when setting the price paid by a government agency. Currently, courts tend to base land values on market rates alone.
- Acting as a land bank, assuming the financial and time costs of assembling properties and preparing them for development. Particularly in older districts, titles to properties are often obscure, missing, contested or tied up in court, which discourages private developers. This service is particularly important when it involves a brownfield that may be the subject of litigation and other delays.
- Ending the practice of reducing tax rates on unused factories and vacant land, which encourages mothballing rather than aggressive redevelopment when there is heightened fear of liability.

Innovative State Programs

An act of Congress created Superfund, yet state legislatures have done the most to address its unintended consequences. "Legislatures are doing the obvious," said Clement Dinsmore. "They're realizing that you're not going to get new capital to clean up and redevelop a site if you hit persons with liability who had nothing to do with the contamination—and if you hit the sources of credit for those entities."

State laws vary greatly, as does the sophistication shown by state officials in addressing environmental problems.

A 1995 inventory by the congressional Office of Technology Assessment found:

- Forty-five states operate their own Superfund programs.
- Forty-two apply risk assessment techniques to determine the extent of cleanup required.
- Forty allow cleanup only to remove health hazards, rather than remediation to pristine, pre-industrial use.
- Thirty have voluntary cleanup programs that allow property owners latitude in when and how remediation will be completed.
- Twenty have set specific cleanup standards based on a scientific evaluation of the contaminant and the site.
- More than half of the states have adopted laws or regulations to ease the threat of liability for brownfield purchasers, and many will assume direct ownership of a property, complete cleanup and recover costs from the sale or lease of the property.

Other differences among states may be subtle or simply a matter of local custom, and are too numerous to recount. However, much can be learned by examining selected programs in Minnesota, Pennsylvania, Michigan and Ohio, which have adopted most of the initiatives listed here.

Minnesota was one of the first states to adopt a program to "facilitate voluntary investigation and cleanup of contaminated property and to encourage productive reuse of the property."

The state's 1992 Land Recycling Act specifies:

- Parties that complete the Voluntary Investigation and Cleanup (VIC) program administered by the Minnesota Pollution Control Agency (MPCA) are protected from future legal liability under state law if they were not otherwise responsible for the original contamination.
- The state can certify that property owners will not be held liable in the future for remediation that leaves in place low-risk contamination or for future contamination the owner does not cause.
- Owners of property adjoining a contaminated site can be issued a "good neighbor letter" certifying that they have no liability for the contamination.
- Incentives such as lower tax rates on remediated sites than on contaminated sites that have not yet been addressed.

Minnesota's VIC program thus helps both buyers and sellers of possibly contaminated land resolve legal and financial concerns while expediting cleanup of these brownfield sites.[26]

The **Pennsylvania** Greenfields Initiative offers a regulatory break as an incentive to brownfield buyers and sellers who order comprehensive site assessments. The Department of Environmental Protection and the seller can then agree on remediation, with specific protection from future liability for the buyer. Pennsylvania also operates an Orphan Sites Program, financed by state grants to prospective buyers, to pay site assessment costs. The state will, in some cases, then limit the buyer's liability for existing contamination.

Michigan amended its 1982 Superfund-style Environmental Response Act in 1990 to allow the state to issue covenants not to sue buyers of sites found to have contamination that does not present a public health risk or safety hazard.

The state also allows property owners to select the level of cleanup they will meet, choosing either:

- Background standards, defined as pristine, pre-industrial, or at least as clean as surrounding land.
- Generic health-risk-based standards, established for various toxic and carcinogenic substances based largely on EPA standards.
- Site-specific, risk-based standards determined by the anticipated use of the site.

Government entities in **Ohio** that sell land may also exempt buyers from future liability, and the law specifically exempts lenders from liability. Ohio's law, which went into effect in late 1994, is considered one of the most progressive.

Key points include:

- Clear guidelines and definitions of cleanup standards.
- Privatization of remediation by licensing environmental engineers and laboratories to judge contamination levels, design cleanups and guarantee results will meet state standards.
- A pledge that once the voluntary remediation plan wins state approval, the state won't second-guess and order additional work.
- Cleanup standards that match the expected future use of the site as industrial, commercial or residential, and whether people will come in contact with pollutants. For example, if groundwater is undisturbed, it won't have to meet drinking water standards.
- A 10-year state property tax abatement for the increase in value attributable to cleanup, with authorization for local governments to abate real and personal property taxes.
- Spot-audits of cleanup projects to guard against fraud.
- A state-backed low-interest loan program.

Revised EPA Guidance

While slow to respond, the federal EPA has taken action through its "Brownfields Action Agenda" launched in January 1995. Working within the context of the existing Superfund law, the agency in 1995 and 1996 allocated up to $200,000 each to 76 pilot programs to study strategies that best prompt environmental cleanup through redevelopment. Another 25 pilot projects are to be funded in 1997.

"Guidance" issued to Environmental Protection Agency regulators under the agency's 1995 Brownfields Action Agenda:

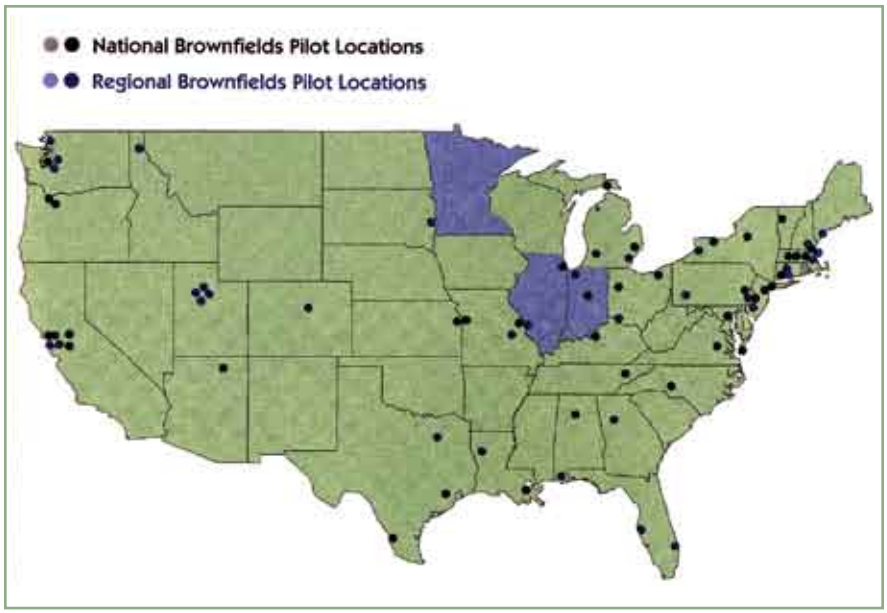
- Financial institutions that hold security interest in properties with underground storage tanks are limited in liability for environmental problems if they had no control of the property.
- Terms under which the agency will issue a "prospective purchaser agreement"- statement that it will not sue current owners for past pollution - are liberalized to increase the number of agreements.
- Property owners are relieved of responsibility for cleaning up contaminated aquifers under their land if they did not cause the pollution.
- The practice of pursuing lenders for cleanup costs if they were not actively involved in managing the property are dramatically limited.
- Municipalities are not held liable for cleanup costs on abandoned properties involuntarily obtained through tax foreclosure.
- Remediation is allowed to meet standards compatible with future industrial or commercial use, rather than residential standards.
- Banks may use brownfield redevelopment loans in meeting Community Reinvestment Act requirements.
- Some 27,000 properties are removed from the EPA's list of 38,000 potential Superfund sites after initial inspections find no pollution, or such minor contamination that they may be safely remediated under state and local oversight.[27]

The EPA has also issued "guidance" to regulators aimed at removing some uncertainties associated with brownfield properties and has removed some 27,000 sites from consideration for Superfund status after an initial examination, thus eliminating a stigma that has blocked development of many of the original 38,000 sites identified.

EPA officials stress, however, that its reforms have come through "very creative reinterpretation" of the existing Superfund law, and they say congressional action is needed to make them permanent. Attempts to rewrite the Superfund law to lower barriers to cleanup, encourage redevelopment of sites and ensure that major polluters pay the bulk of remediation costs have failed to win congressional approval. In 1996, Congress failed to reauthorize the tax on petroleum products that finances the Superfund program. While the tax is suspended pending reauthorization, EPA officials say the trust fund has ample funding to continue operation.

In spite of EPA's initiatives, developers and lenders are still hesitant. They are either unaware of the EPA and state-level reforms or fear a reversal in EPA policy if political winds shift and a new "creative reinterpretation" is applied.

"The general read is that we still have a problem here—lenders still are not comfortable; private property owners still aren't comfortable," Donald Iannone said. Because of this lack of information or trust, "future demand for remediated property is unclear, limited and unknown," he added. Only significant Superfund reform will ease developer fears.



Source: Based on EPA Office of Solid Waste and Emergency Response, November 1996

National Brownfield Pilots

Baltimore, MD
Birmingham, AL
Bridgeport, CT
Burlington, VT
Cape Charles-Northhampton County, VA
Charlotte, NC
Chicopee, MA
Chippewa County/Kinross Township, MI
Cleveland, OH
Detroit, MI
Emeryville, CA
Houston, TX
Indianapolis, IN
Kansas City, MO and KS
Knoxville, TN
Laredo, TX
Lawrence, MA
Lima, Ohio
Louisville, KY
Lowell, MA
Navajo Nation, AZ
New Orleans, LA
New York, NY
Newark, NJ
Oregon Mill Sites
Phoenixville, PA
Portland, OR
Richmond, CA
Richmond, VA
Rochester, NY
Rome, NY
Sacramento, CA
St. Louis, MO
State of Rhode Island
Stockton, CA
Tacoma, WA
Trenton, NJ
West Central Municipal Conference, IL
Worcester, MA

Regional Brownfield Pilots

Atlanta, GA
Bellingham, WA
Bonne Terre, MO
Boston, MA
Buffalo, NY
Camden, NJ
Cincinnati, OH
Clearwater, FL
Concord, NH
Dallas, TX
Downriver Community Conference, MI
Duwamish, WA
East St. Louis, IL
Illinois
Indiana
Kalamazoo, MI
Miami, FL
Minnesota
Murray City, UT
Naugatuck Valley, CT
New Haven, CT
Northwest Indiana Cities
Oakland, CA
Panhandle Health District, ID
Philadelphia, PA
Pittsburg, PA
Portland, ME
Prichard, AL
Provo, UT
Puyallup Tribe of Tacoma, WA
Salt Lake City, UT
San Francisco, CA
Sand Creek Corridor, CO
Shreveport, LA
Sioux Falls, SD
Somerville, MA
West Jordan, UT

SunarHauserman, Inc., Cleveland

When SunarHauserman Inc. declared bankruptcy in 1989, the Cleveland office furniture maker left behind more than a few desks and chairs. In manufacturing steel walls, doors, partitions and other office components, the company had allowed trichloroethene (TCE) and 1,1,1 tetrachloroethene (TCA), commonly used degreasing solvents, to leak under its 300,000-square-foot building.

The contamination was discovered in 1990 by a prospective buyer who quickly ran from the deal rather than risk liability for cleaning up decades of SunarHauserman's waste. Located between two interstate freeways, the SunarHauserman site suddenly was prime industrial property with no future. While contamination was known to be a problem, its extent and the cost of cleanup could not be determined because of circular legal logic: The bankruptcy court would not release funds to establish and pay for cleanup until the cost of cleanup could be established.

The property, which straddles the line between Cleveland and unincorporated Cuyahoga County, sat idle until 1993, when the U.S. Environmental Protection Agency authorized the Cuyahoga County Planning Commission to establish a Brownfield Pilot Program. The county identified the SunarHauserman property as its top priority.

As part of the pilot program, state and federal environmental officials performed a site assessment and issued a "comfort letter" stating that the federal government had no interest in taking action under the Superfund law, and the necessary cleanup would be handled by the state. Out from under the shadow of Superfund, the bankruptcy court released funds for the $500,000 cleanup to property owner William Hauserman, and a relatively unobtrusive cleanup effort was started in 1995. The remediation, which involves pumping air into the soil and then extracting the chemicals in vapor form, will continue for years.

Not long after remediation began, Hauserman sold the plant to Dedicated Transport, a warehouse distribution operation that moved to the site from the suburbs, bringing 100 jobs to the core city area.

No single program or approach can overcome the complex regulatory and economic barriers to brownfield redevelopment. Systemic changes, as well as a broad array of tools that can be applied in specific cases, are needed to meet the challenge.

Financing

The private market for real estate will determine how brownfields are reused, but government intervention appears necessary to help create the market and make brownfields more cost-competitive with greenfields. Various proposals would promote brownfield redevelopment through direct public subsidy since, in theory, all Americans would benefit from elimination of brownfields, thus all taxpayers should share the cost.

One potential source of brownfield redevelopment funding is the Superfund trust, which has in the past collected about $4 billion per year through a special tax on petroleum products. By law, the trust can only pay cleanup costs—not redevelopment expenses. Proponents of tapping the trust maintain that redevelopment is as important to remediation as is the removal of hazardous wastes.

Another direct public subsidy for brownfield revitalization would come in the form of tax abatements such as a moratorium on property taxes for a set period or federal tax credits to encourage private investment. In August 1996, President Bill Clinton proposed a three-year, $2 billion program that would provide $1.3 billion for cleanup costs, $300 million in incentives for companies that clean and reuse brownfields, and $196 million to improve dissemination of information about water and air pollution. The proposal, which would involve spending in the 1998-2001 budget years, would require congressional approval. Legislation to implement this proposal was introduced in the Senate in early 1997.

Congress could also amend the Intermodal Surface Transportation Efficiency Act (ISTEA) to shift federal highway spending away from new construction to modernize existing freeways and urban mass transit. This would improve truck access to inner-city brownfield sites while reducing public investment that is considered a subsidy for development on the urban fringe. Reauthorization of ISTEA is pending in the 105th Congress.

Other financing plans would rely on some public subsidy, but would also require property owners or developers to share in the cost of redevelopment. These include:

- Government backing for below-market-rate loans and guarantees for firms or nonprofit foundations willing to invest in redevelopment and repay the loan.
- Setting up government-backed insurance pools that would assume the liability for brownfield property owners, helping offset the cost of future remediation.
- Condemnation of brownfield sites with government assuming ownership and liability for cleanup and site preparation, then recovering the costs through sale or lease to private parties. This form of land banking would end confusion over property ownership, limit delays and ease the liability concerns that often kill private developments. However, local governments that have adopted this approach report only limited success. In many cases, the more expensive the cleanup, the less likely that costs can be recovered through an unsubsidized sale or lease.
- Creating special improvement districts that take in brownfield sites and neighboring properties. Through tax increment financing, government-backed bonds would be sold to pay for environmental cleanup and to underwrite redevelopment. With revitalization, property values would increase, and that added value would be captured in the form of a tax that would pay off the bonds. This approach has been used successfully to revitalize public areas in downtown commercial districts in many cities without shifting cost to taxpayers in other neighborhoods.

Information Sharing

More needs to be done to provide better information about known and potential brownfields, and efforts to make them available for recycling, but who is or should be responsible? Refining cleanup standards and regulation of contaminated sites is needed across all 50 states. Lack of knowledge delays redevelopment, adding to costs and making some projects cost-prohibitive. Simply adding environmental information about properties to geographic information systems or maintaining a separate inventory of known or suspected brownfield sites can speed remediation and reuse.

"In most cities we don't know exactly what's out there, we don't know the extent of the contamination," J. Thomas Black said. "For some prime redevelopment sites that are under private ownership, it's in the interest of the private owners not to even find out what the situation is, and certainly not to disclose it."

To encourage property owners to assess contamination, several states have adopted laws that treat such assessments as confidential documents that cannot be used to force remediation. Public agencies have also redoubled efforts to educate commercial real estate brokers and lenders about changes in state and federal policies that reduce brownfield liability. The EPA has sponsored several regional conferences to explain its new outlook on brownfield regulation to lenders and developers. In Chicago, major banks and a law firm have developed an information packet for use by smaller, less-sophisticated lenders to assess the risks and benefits of brownfield investment.

"In many cases, if we just identify the extent of the problem, the private sector may be willing to step in and pick up the ball," Donna Ducharme said.

Regionalization

In the words of Hunter Morrison, "The brownfields effort must take place within the broader context of regional competitiveness. [We need a] policy context that examines a region's public investment patterns and seeks to fairly compare the costs and social utility of reclaiming serviced urban land with the comparable costs and benefits of opening new suburban and exurban land to industrial development."

Frequently discussed proposals include:

- Strengthening ISTEA by linking federal initiatives on regional transportation funding, air quality, energy and land use policies to favor infill development, rather than greenfield construction.[28]
- Restrictions on the use of tax and other incentives to relocate industries from one jurisdiction to another within the same region.
- Imposition of impact fees on suburban developments to reflect increased infrastructure costs and help equalize the cost in comparison to urban sites.
- Creating metro-wide taxing districts to "burden share," or spread the cost of core-city redevelopment to more affluent suburbs.
- Shifting costs of popular central city institutions such as zoos and museums to a regional tax base to reflect their true user base and free the core city of their cost so that the money can be invested in brownfield redevelopment.

Regionalism is, however, an extremely hard sell. Attempts to share the burden may simply create an entirely new series of problems. Political realities also come into play in what Jonathan Barnett calls "a sort of defacto apartheid." He explained that "the people who have a choice are following the great tradition of city development and are moving on to the next available site to get away from the people whom they don't want to live next to. We've got a

political problem, in that . . . it's the suburbs that pay the bills, (and) there are more voters in the suburbs than there are in central cities. In political terms, brownfield redevelopment matters only if it matters to suburbs."

There is a general agreement that public spending is directly or indirectly slanted in favor of greenfield development; the extent of the imbalance is a matter of debate. For example, building interstate highways that ease the commute among suburban neighborhoods is seen as a subsidy for development of commercial centers on greenfields around new interchanges. On the other hand, government heavily subsidizes urban mass transit and a variety of social and economic development programs for inner-city residents.

While support for economically vibrant, growing suburban areas may be more popular politically than spending on seemingly intractable urban problems, policymakers must seek some balance, or at least recognize that urban areas need continuing support. "It's a very serious attitudinal problem that we have . . . that it's perfectly good to invest $100 million to promote the development of a large area of farmland, but it's not appropriate to invest $100 million to redevelop a portion of a city that has already been built," Thomas Bier said.

States have expressed concerns about loss of greenfields, but have so far focused on recycling brownfields rather than discouraging suburban development. Some states, notably Oregon, have adopted measures aimed at limiting sprawl and forcing development back into core cities—efforts that are not always effective and can have negative side-effects.[29]

Edwin Mills notes that in Korea and India, where cities are surrounded by no-growth zones, housing prices are 10 to 15 times annual incomes, compared to 1.8 times annual income in the United States. "Any legality that enforces compactness is simply not in the interest of low-income people," Mills said.

Channeling new development through a punitive tax on suburban growth is a more popular, less draconian approach that may do nothing to help brownfields while adding to sprawl on a regional, state and national scale.

"If you say, 'We're going to tax the suburbs to fix the problem in the central city,' suddenly you make the suburbs less competitive, and business and people will go elsewhere, where the problem doesn't exist," Black said. "In an economy as open and as competitive as ours . . . you drive development to other jurisdictions that are more receptive to development, rather than back into the city."

Prevention

Many brownfields are created when property owners suddenly discover that the cost of cleaning up their mess exceeds the value of their business and its assets. Some are forced to simply declare bankruptcy and walk away. In many cases, factory owners could save for remediation while still operating the plant, but federal tax law doesn't allow that option—all remediation must be charged off in one fiscal year. Tax-deferred savings accounts patterned on Individual Retirement Accounts would allow companies to set aside resources for future remediation, easing the burden on the public and reducing the tendency to abandon sites when hit with a large cleanup bill.

A more holistic approach could one day eliminate the need for remediation at all. "How do we institutionalize a process by which land can be recycled continuously?" Clement Dinsmore asked. "How can we create a regulatory process, how can we create a built environment that lends itself to recycling (when) we're not dealing with the need to reconsider statutory schemes every five to ten years?"

One method is to create closed-loop manufacturing processes where closely allied companies collaborate to reduce consumption and recycle byproducts from manufacturing. The best example of this is found in Kalundborg, Denmark, where several industries have formed a symbiotic relationship:

A power plant pipes residual steam to a nearby refinery and, in exchange, receives refinery gas that was once burned as waste. The plant burns the gas to generate electricity and steam, which power a fish farm and pharmaceutical plant. Sludge from the fish farm and plant are used for agricultural fertilizer, and surplus yeast from insulin production is fed to pigs. Fly ash from the power plant is used to make cement; gypsum and sulfur scrubbed from plant smokestacks is used to make wallboard and sulfuric acid, respectively.[30]

In 1993, the Clinton administration created the President's Council on Sustainable Development to create a national strategy to encourage this kind of cooperation. Brownsville, Texas, Chattanooga, Tennessee, Baltimore, Maryland, and Cape Charles, Virginia, have received Department of Commerce grants to build model eco-industrial parks. The program, still in its infancy, has yet to show results.

Another concept now under discussion would grant environmentally friendly companies pollution prevention tax credits. On a related but more limited basis, environmental protection agencies in Illinois and other states are helping manufacturers identify non-hazardous chemicals and manufacturing processes.

Early intervention is also urged when a manufacturing operation begins to falter. Often, still-viable plants are unable to attract new investment for updating and expansion because of historical contamination associated with the business.[31] Provision of capital and assistance with business plans could help keep potential brownfields from happening.

Finally, many local governments are studying reforms in tax policy to eliminate the long-standing practice of reducing tax rates on unused factories and vacant land, which encourages mothballing rather than aggressive redevelopment.

Former Rail Yards, Sacramento

With more than 300 acres of disused rail yards in and near its city center, Sacramento became one of the Environmental Protection Agency's first Brownfield Pilot Projects in September 1995. Using the $200,000 EPA grant as seed money, the city has created a community-based program to set standards for site cleanup and establish plans for sustainable redevelopment.

Key to the city's efforts are forums for lenders and developers to discuss obstacles and solutions for redevelopment of contaminated areas. The forums also help bring community groups and residents of nearby neighborhoods together to discuss the redevelopment process. The program is intended for application at any site considered to have potential development value, but is currently being applied to two major properties.

The 244-acre Sacramento Rail Yard, once a vibrant industrial site employing more than 3,000 workers, had become a largely vacant, blighted area by the mid-1980s. Though a prime location in the heart of the capital, the old Southern Pacific yard presented a frightening array of pollutants ranging from petroleum hydrocarbons to lead, benzene and chloroform.

The centerpiece of the redevelopment plan for this site is a $142 million federal courthouse complex made possible by a public-private partnership between the city, California Environmental Protection Agency and Southern Pacific Transportation Company. This partnership created a unique agency, the Environmental Oversight Authority, to monitor environmental aspects of site preparation. Health concerns were assuaged by placing deed restrictions on some contaminated areas, making it impossible to ever use them for residential sites but clearing the way for commercial or industrial development.

The 66-acre former Union Pacific yard south of the central business district, now known as Curtis Park West, adjoins desirable older neighborhoods on three sides. The existing railroad right-of-way is expected to house an extension of the city's light rail line, including two stations. Starting in 1992, a city-sponsored Union Pacific Land Use Committee (UPLUC) began formulating recommendations for redevelopment. The committee includes neighbors and representatives of local school districts and businesses. Its recommendations for mixed-use residential and retail development compatible with the existing community became the basis for a 1995 Memorandum of Understanding between the city and the land owner.

Union Pacific, through developers, KCS Properties, Inc., and planners, Lionakis-Beaumont Design Group, is facilitating a land use planning process that includes city officials and a 23-member Working Group to guide land use decisions and insure that redevelopment goals are met. An integral part of the Group's decision-making process is economic feasibility, including consideration of infrastructure costs, the varying cleanup costs associated with different land uses, and the results of a market analysis and pro forma.

Lionakis-Beaumont Design Group

VII conclusion

Hazardous waste cleanup is only the first step in mending the holes in the urban fabric caused by deindustrialization. In many cases cleanup is the lowest barrier to revitalization, and even clean sites are often left unused. Other factors ranging from fear of draconian regulation to outmoded local land use controls can make it practically impossible for the free market to act on brownfield redevelopment.

Simply eliminating unnecessary environmental regulation will not result in a renaissance for urban brownfields—the problem is far too complex and the options for moving to suburban greenfields are far too easy. In many cases, the environmental damage is real and must be addressed at a cost too high for any private enterprise to bear. In other instances, environmental problems may be the easiest barrier to overcome.

Creativity and flexibility are critical for success. Cities hungry for new factories and jobs may have to embrace redevelopment that adds housing. Neighborhoods desperate for better housing may have to accept economic realities and enjoy the former brownfield in the form of open space. With hundreds of thousands of properties in dozens of cities in need of attention, no one-size-fits-all solution will work. The fight to re-establish healthy urban environments is literally a house-to-house, block-by-block battle.

As Jonathan Barnett has said, "You can argue, if you have real faith in the real estate marketplace, that [free market solutions alone are] OK because this is a destruction as implicit as capitalism and in 25 years, the price of real estate in the city will be so low it'll be a tremendous bargain and everybody'll come back. This could be true, but it's not clear to me that we want to live through that."

Ultimately, the private real estate market will determine how brownfields are reused, but it is necessary for government to act to protect public interest. Just as government sets cleanup standards and undertakes remediation, so must it help close the gap between the cost of redevelopment and what the market will bear. To do less is to leave the work unfinished and the holes in the fabric of urban America unmended.

notes

1. U.S. Congress, Office of Technology Assessment, "The State of the States on Brownfields: Programs for Cleanup and Reuse of Contaminated Sites," June 21,1995, 4.
2. U.S. General Accounting Office, "Community Development: Reuse of Urban Industrial Sites," June 30, 1995, 3.
3. Black, "Toward Strategies for Revitalizing Urban Industrial Areas," March 1996.
4. "The State of the States on Brownfields: Programs for Cleanup and Reuse of Contaminated Sites," 4.
5. U.S. Department of Housing and Urban Development, "How to Promote Economic Reuse of Brownfields," December 12, 1994, 3.
6. U.S. Congress, Office of Technology Assessment, *The Technological Reshaping of Metropolitan America,* September 1995, 28.
7. *The Technological Reshaping of Metropolitan America,* 69.
8. *The Technological Reshaping of Metropolitan America,* 70.
9. *The Technological Reshaping of Metropolitan America,* 73.
10. *The Technological Reshaping of Metropolitan America,* 70-74.
11. *The Technological Reshaping of Metropolitan America,* 79.
12. "Toward Strategies for Revitalizing Urban Industrial Areas."
13. "How to Promote Economic Reuse of Brownfields," 12.
14. *The Technological Reshaping of Metropolitan America,* 225.
15. "The State of the States on Brownfields: Programs for Cleanup and Reuse of Contaminated Sites," 14.
16. Grayson and Palmer, "The Brownfields Phenomenon: An Analysis of Environment, Economic and Community Concerns," 12.
17. Meyer, Williams and Yount, *Contaminated Land,* 1995.
18. Black, "Brownfields Cleanup," *Urban Land,* June 1995, 47-51.
19. "Brownfields Cleanup."
20. Byrne and Greco. "Superfund Reform Needed to Keep Credit Flowing." *American Banker,* March 22, 1994, 10-11.
21. American Bankers Association, "Environmental Liability of Secured Parties and Fiduciaries," May 1995.
22. Black, " Recycling Inactive Urban Industrial Sites," *ULI On the Future: Urban Growth, Development, Prospects and Issues,* January 1994, 36-48.
23. *The Technological Reshaping of Metropolitan America,* 226.
24. Porter, "The Competitive Advantage of the Inner City," *Harvard Business Review,* May-June 1995, 55-71.
25. "Toward Strategies for Revitalizing Urban Industrial Areas."
26. Beaumont, *Smart States, Better Communities,* 1996, 128-132.
27. U.S. Environmental Protection Agency, "Federal Agency Brownfields Initiatives," March 28, 1995, 24.
28. "How to Promote Economic Reuse of Brownfields," 14.
29. Dinsmore, "Recycling Brownfields: The Legislative Climate," *The Journal of Urban Technology,* Spring 1995, 9-20.
30. Salvesen, "Making Industrial Parks Sustainable," *Urban Land,* February 1996, 29-32.
31. "The State of the States on Brownfields: Programs for Cleanup and Reuse of Contaminated Sites," 8.

bibliography

American Bankers Association, "Environmental Liability of Secured Parties and Fiduciaries." Washington, DC (May 1995).

Angelo, William J. "EPA and Cities See Green in Cleanup of Brownfield Sites." *Engineering News Record* 235, no. 19 (November 6, 1995).

Anthony, Carl. "Making Brownfields Bloom." *Land and People* 8, no. 2 (Fall 1996): 25-27.

Barnett, Jonathan. *The Fractured Metropolis: Improving the New City, Restoring the Old City, Reshaping the Region.* New York: Harper Collins, 1995.

_____ "Viewpoint: Don't Write Off Our Cities." *Planning* 61, no. 3 (March 1995): 46.

Beaumont, Constance. *Smart States, Better Communities.* Washington, DC: National Trust for Historic Preservation, 1996.

Berger, Robert S. et al, Recycling Industrial Sites in Erie County: Meeting the Challenge of Brownfield Redevelopment, 3 *Buffalo Environmental Law Journal* 69, (Spring 1995).

Bier, Thomas. "Future Development of Cuyahoga County and the Cleveland\Akron\Lorain Region." Paper prepared for Lincoln Institute Conference, March 1996.

Black, J. Thomas. "Brownfields Cleanup." *Urban Land* 54, no. 6 (June 1995): 47-51.

_____ "Recycling Inactive Urban Industrial Sites." *ULI On the Future: Urban Growth, Development, Prospects and Issues.* Washington DC: Urban Land Institute. (January 1994): 36-48.

_____ "Toward Strategies for Revitalizing Urban Industrial Areas." Paper prepared for Lincoln Institute Conference, March 1996.

Bourne, Larry S. "Reurbanization and Urban Land Development: U.S. Cities in a Comparative Context," May 1995. Available from the Office of Technology Assessment, 600 Pennsylvania Avenue, Washington, DC 20036; 202/546-4572.

Boyd, James, and Molly K. Macauley. "The Impact of Environmental Liability on Industrial Real Estate Development: Developing a Framework for Analysis." *Resources* no. 114 (Winter 1994): 19-23.

Brooks, Stephen G. "Cities Look to Brownfields for Greenbacks," *Nation's Cities Weekly* (September 4, 1995): 5.

Byrne, John J., and Thomas J. Greco. "Superfund Reform Needed to Keep Credit Flowing." *American Banker* (March 22, 1994): 10-11.

Carey, John. "Urban Fields of Dreams." *Business Week* (May 27, 1996).

Chandrasekar, Ashvin, and Diane Bickett, eds. "Reclaiming Our Brownfields." Cuyahoga County Brownfields Redevelopment Project (January 1995): 8.

Chicago Brownfields Forum. "Initial Report of Workgroups Review Draft." City of Chicago Department of Environment (March 31, 1995).

_____ "Recycling Land for Chicago's Future: Final Report and Action Plan." City of Chicago Department of Environment (October 1995).

Clark, Charles S. "Revitalizing the Cities." *CQ Researcher* 5, no. 38 (October 13, 1995): 897-920.

Clokey, Jane. Wisconsin's Land Recycling Act: From Brownfield to Greenfield, *Wisconsin Environmental Law Journal* (1995).

Collaton, Elizabeth, and Charles Bartsch. "Industrial Site Reuse and Urban Redevelopment: An Overview." *Cityscape: A Journal of Policy Development and Research* 2, no. 3 (September 1996): 17-61.

Connolly, Kathleen, and David Daddario. "How to Find the Green in Your City's Brownfields." *American City & County* (November 1995): 28-35.

de Jong, Barbra H. "Clean Sites Joins Forces with The Conservation Fund to Promote Site Use." *Forum* 10, no. 3 (Fall 1994).

Dennison, Mark S. "EPA and States Initiate Cleanup of Brownfield Sites." *Environment & Development* (August 1995): 1-4.

Diamond, Henry, and Patrick Noonan. *Land Use in America: The Report of the Sustainable Use of Land Project.* Washington, DC: Island Press, 1996.

Dinsmore, Clement. "Financial Barriers and Incentives to Brownfields Cleanup and Reuse." Paper prepared for Lincoln Institute Conference, March 1996.

_____ "Recycling Brownfields: The Legislative Climate." *The Journal of Urban Technology* 2, no. 3 (Spring 1995): 9-20.

_____ "State Initiatives on Brownfields." *Urban Land* 55, no. 6 (June 1996).

Environmental Law Institute. "Institutional Controls in Use." Report to the EPA (September 1995).

_____ "New State and Local Approaches to Environmental Protection." Office of Technology Assessment (August 1993).

Evans, Judith. "Cleaning Up the Nation's Brownfields." *The Washington Post* (November 25, 1995): E-1.

Gas Research Institute. "Brownfield Sites: A Briefing for the Gas Industry." Resource Strategies, Inc., Madison, WI (July 1995).

Geltman, Elizabeth. *Environmental Issues in Business Transactions.* Charlottesville, VA: Michie Co., 1994.

Glaser, Mark. "Economic and Environmental Repair in the Shadow of Superfund: Local Government Leadership in Building Strategic Partnerships." *Economic Development Quarterly* 8, no. 4 (1994): 647-659.

Goldberg, Stephanie B. "Let's Make a Deal." *ABA Journal* (March 1997): 42-46.

Grayson, E. Lynn, and Stephen A.K. Palmer. The Brownfields Phenomenon: An Analysis of Environmental, Economic, and Community Concerns, 25 *Environmental Law Reporter,* 10337 (July 1995).

Greenberg, Michael, and Dona Schneider. *Environmentally Devastated Neighborhoods: Perceptions, Policies, and Realities.* New Brunswick, NJ: Rutgers University Press, 1996.

Hall, David, ed. "Putting Cities Back to Work: Governor's Brainstorm for Cultivating Brownfields Could Help Revive Urban Industrial Wastelands." *The Plain Dealer* (June 13, 1995): 8-B.

Holusha, John. "EPA Helping Cities to Revive Industrial Sites," *New York Times* (December 4, 1995): A-1.

Iannone, Donald. "Redeveloping Urban Brownfields." *Land Lines* 7, no. 6 (November 1995).

_____ "Sparking Investment in Brownfield Sites." *Urban Land* 55, no. 6 (June 1996).

International City/County Management Association. "Brownfield Development: A Guide for Local Governments." Washington, DC (1997). Available from ICMA Distribution Center, PO Box 2011, Annapolis Junction, MD 20701; 800/745-8780 or 301/498-1227.

Johnson, Jeff. "Contractors Look Elsewhere as Superfund Faces Cuts, Turmoil." *Environmental Science & Technology News* 30, no. 4 (1996): 152A-153A.

Jones, Stephen. "Unless Congress Authorizes EPA to Grant Developers Releases from Liability, New Inner-city Cleanup Programs May Be of Limited Value." *National Law Journal* (May 15, 1995): B-6.

Jossi, Frank. "Minnesota's Superfund Shield." *Planning* 61, no. 6 (June 1995): 22-23.

Kohlhase, Janet E. "The Impact of Toxic Waste Sites on Housing Values." *Journal of Urban Economics* 30, no. 1 (July 1991): 1-26.

Kowalski, Joseph G., and Christos C. Paraskevopoulos. "The Impact of Location on Urban Industrial Land Prices." *Journal of Urban Economics* 27, no. 1 (January 1990): 16-24.

Leinberger, Christopher B. "The Changing Location of Developing and Investment Opportunities." *Urban Land* 54, no. 5 (May 1995): 31-38.

Lerner, Steve. "Brownfields of Dreams: Can EPA, Developers, and Local Communities Transform Old Industrial Sites into New Economic Hopes?" *Amicus Journal* 17 (Winter 1996):15-21

Lukermann, Barbara, Douglas Snyder and Thomas Luce. "An Examination of Factors Controlling the Location of Commercial and Industrial Development within the Metropolitan Area." University of Minnesota (June 1993).

Marsh, Lindell, Douglas Porter and David Salveson. "The Impact of Environmental Mandates on Urban Growth." *Cityscape: A Journal of Policy Development and Research* 2, no. 3 (September 1996): 127-154.

Massey, Douglas S. "The New Geography of Inequality in Urban America." Suburbs and Cities: Changing Patterns in Metropolitan Living. Aspen, CO: The Aspen Institute, 1995.

McClelland, Gary H., et al. "The Effect of Risk Beliefs on Property Values: A Case Study of a Hazardous Waste Site." *Risk Analysis* (December 1990).

McGrath, Daniel T. "An Investigation Into the Impact of Hazardous Waste Contamination Liability on Urban Industrial Land Redevelopment in the City of Chicago." University of Illinois at Chicago (December 5, 1995).

McWilliams, Douglas A. Environmental Justice and Industrial Redevelopment: Economics and Equality in Urban Revitalization, 21 *Ecology Law Quarterly* 705 (1994).

Meyer, Peter, Richard H. Williams and Kristen R. Yount. *Contaminated Land: Reclamation, Redevelopment and Reuse in the United States and the European Union.* Cheltenham, England: Edward Elgar Publishing Ltd., 1995.

Michel, Daniel. Great Lakes Symposium, The CERCLA Paradox and Ohio's Response to the Brownfield Problem: Senate Bill 221, 26 *University of Toledo Law Review* 435 (Winter 1995).

"Michigan's Act 307 Amended - Urban Redevelopment & More Clean-up per Dollar Spent." *Environmental Law Advisory* (May 26, 1995).

Minnesota Environmental Initiative. "The Brownfields Redevelopment Guide: Sources of Public and Private Financing in Minnesota." 1996. Available from MEI, 2420 Rand Tower, 527 Marquette Avenue South, Minneapolis, MN 55402; 612/334-3388.

Minnesota Pollution Control Agency. "Recycling Contaminated Land in Minnesota." (1995): 8.

National Environmental Policy Institute. "Beyond Brownfields, Idle Land, Suburban Sprawl and the Law." Washington, DC (October 16, 1995).

_____ "How Clean is Clean? First Phase Report." Washington, DC (September 1995).

Nichols, Jim. "Law May Offer Life to Industrial Brownfields." *The Plain Dealer* (March 26, 1996): 1-A, 6-A.

Orfield, Myron. *Metropolitics: A Regional Agenda for Community and Stability.* Washington, DC: Brookings Institution Press and Lincoln Institute of Land Policy, 1997.

Page, William G., and Harvey Rabinowitz. "Potential for Redevelopment of Contaminated Brownfield Sites." *Economic Development Quarterly* 8, no. 4 (1994): 353-363.

Peiser, Richard. "Profiting from Contaminated Sites." *Urban Land* 55, no. 2 (February 1996): 34.

Pennsylvania Horticultural Society. "Urban Vacant Land: Issues and Recommendations." (September 1995).

Persky, Joseph, et al. "Brownfields, Greenfields: The Costs and Benefits of Metropolitan Employment Decentralization." University of Illinois in Chicago (December 1995).

Porter, Michael E. "The Competitive Advantage of the Inner City." *Harvard Business Review* 73 no. 3 (May-June 1995): 55-72.

Resource Compensation and Recovery Act (RCRA) of 1976, 96th Congress, 42 U.S.C. 6901-6992; amended by the Superfund Amendment and Reauthorization Act (SARA) of 1986, 99th Congress, Public Law 99-499; 100 Stat. 1613.

Ritter, Don, and Joseph Schilling. "Removing Regulatory Uncertainty in Brownfield Redevelopment." *Corporate Environmental Strategy: The Journal of Environmental Leadership* 3, no. 3 (Spring 1996).

Salvesen, David. "Contamination and the Reuse of Land." *Urban Land* 52, no.12 (December 1993): 32-36.

_____ "Making Industrial Parks Sustainable." *Urban Land* 55, no. 2 (February 1996): 29-32.

Schwab, James. *Deeper Shades of Green: The Rise of Blue Collar and Minority Environmentalism in America.* San Francisco, CA: Sierra Club, 1994.

Sibley, Glen E. "Private Sector Insurers Solve Cleanup Liability Headaches." *Corporate Real Estate Executive* (May 1994): 30-31.

Slutzky, David, and Lawrence Jacobson. "EPA's Brownfields Initiatives." *Mortgage Banking* (July 1995): 91-93.

Solo, Julia A. Urban Decay and The Role of Superfund: Legal Barriers to Redevelopment and Prospects for Change, 43 *Buffalo Law Review* 285 (Spring 1995).

Stearns, Franklin G. "Environmental Aspects of Commercial Mortgage Loans from Wall Street Funding Sources." *National Real Estate Investor* (April 1995): 100-113.

Stern, Aliza. "Urban Solutions to Superfund Sites: The City of Wichita's Innovative Answer." *Corporate Environmental Strategy: The Journal of Environmental Leadership* 2, no. 4 (Spring 1995).

Swanston, Samara F. Environmental Justice: The Merging of Civil Rights and Environmental Activism; An Environmental Justice Perspective on Superfund Reauthorization, 9 *St. John's Journal of Legal Commentary* 437 (Spring 1994).

Swartz, Robert D. "Michigan's Approach to Urban Redevelopment Involving Contaminated Properties." *Economic Development Quarterly* 8, no. 4 (1994): 329-337.

Sweeney, R. Michael. "Brownfields Restoration and Voluntary Cleanup Legislation." *The Environmental Lawyer* 2, no. 1 (1995).

Synder, James D., ed. "EPA's Brownfields Initiative Earns Approval from Investors," *Environment Today* 6, no. 2 (March 1995): 17.

Tondro, Terry J. Reclaiming Brownfields to Save Greenfields: Shifting the Environmental Risks of Acquiring and Reusing Contaminated Land, 27 *Connecticut Law Review* 789 (Spring 1995).

U.S. Congress, Office of Technology Assessment. "The State of the States on Brownfields: Programs for Cleanup and Reuse of Contaminated Sites." Washington, DC (June 21, 1995).

_____ *The Technological Reshaping of Metropolitan America.* Washington, DC (September 1995).

U. S. Department of Housing and Urban Development, Office of Policy Development and Research. "How to Promote Economic Reuse of Brownfields." Summary of the Proceedings of the Symposium on the Relationship Between Environmental Protection and Opportunities for Inner City Economic Development. Washington, DC (December 12, 1994).

U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. "The Brownfields Economic Redevelopment Initiative: Application Guidelines for Demonstration Pilots." Washington, DC (September 1995).

_____ "Federal Agency Brownfields Initiatives." Presented at the Environmental Law Institute's Redeveloping Brownfields Workshop. Washington, DC (March 28, 1995).

_____ "Guidance on Settlements with Prospective Purchasers of Contaminated Property." Washington, DC (May 1995).

_____ "The Brownfields Action Agenda." Washington, DC (January 25, 1995).

_____ "The Brownfields Economic Redevelopment Initiative." Washington, DC (September 1995).

U. S. General Accounting Office. "Community Development: Reuse of Urban Industrial Sites." Washington, DC (June 30, 1995) GAO/RCED-95-172.

_____ "Superfund: Barriers to Brownfield Redevelopment." Washington, DC (June 17, 1996) GAO/RCED-96-125.

_____ "Superfund: More Emphasis Needed on Risk Reduction." Washington, DC (May 8, 1996) GAO/T-RCED-96-168.

Vuono, Mark, and Robert P. Hallenbeck. "Redeveloping Contaminated Properties." *Risk Management* (April 1995): 58-59, 62-64.

Weintraub, Bernard A. "The Redevelopment of Brownsites." *Natural Resources & Environment* 9, no. 4 (Spring 1995): 57-62.

Wilson, William Julius. *When Work Disappears: The World of the New Urban Poor.* New York: Alfred A. Knopf, 1996.

Yount, Kristen R., and Peter B. Meyer. "Bankers, Developers and New Investment in Brownfield Sites: Environmental Concerns and the Social Psychology of Risk." *Economic Development Quarterly* 8, no. 4 (1994): 338-344.

resources

These are just some of the many agencies and organizations that can provide additional information on brownfield redevelopment.

Federal Agencies

U.S. Environmental Protection Agency

401 M Street SW
Washington, DC 20460
202/260-1020 (EPA voice messaging system)

Superfund Hotline: 800/424-9346

Brownfields Office: 202/260-8770
Outreach and Special Projects Staff: 202/260-4039
Solid Waste & Emergency Response: 202/260-4610
Urban and Economic Development: 202/260-2750

EPA World Wide Web Brownfields Home Page:
http://www.epa.gov/brownfields

U.S. General Accounting Office

700 4th Street NW
Washington, DC 20548
202/512-6000
http://www.gao.gov

Superintendent of Documents

P.O. Box 371954
Pittsburgh, PA 15250-7954
202/512-1800

State and Local Programs

California

City Manager's Office
915 I Street
Sacramento, CA 95814
916/264-8196

California Environmental Protection Agency
Department of Toxic Substances and Control
400 P Street
Sacramento, CA 95814
916/255-3606

Colorado

Department of Public Health and Environment
Hazardous Materials and Waste Management Division
4300 Cherry Creek Drive South
Denver, CO 80222-1530
303/692-3387

Illinois

City of Chicago
Commercial and Industrial Development Division
City Hall, Room 1006
121 North La Salle Street
Chicago, IL 60602
312/744-8570

City of Chicago
Department of Environment
Brownfields Forum Clearinghouse
30 North La Salle Street, 25th Floor
Chicago, IL 60602-2575
312/744-8900

Michigan

Department of Environmental Quality
Environmental Response Division
PO Box 30426
300 South Washington Square
Lansing, MI 48909-7926
517/373-9837

Minnesota

Minnesota Information Referral Service
658 Cedar Street, 1st floor
St. Paul, MN 55155
612/296-6013

Minnesota Pollution Control Agency
Voluntary Investigation and Cleanup Program
520 Lafayette Road
St. Paul, MN 55155
612/296-0892

Missouri

Department of Natural Resources
Division of Environmental Quality
Hazardous Waste Program
Voluntary Cleanup Program
205 Jefferson Street, 13th floor
Jefferson City, MO 65101
573/751-6822

St. Louis Development Corporation
330 North 15th Street
St. Louis, MO 63103
314/622-3400

Ohio

Cleveland City Planning Commission
City Hall, Room 501
601 Lakeside Avenue
Cleveland, Ohio 44114
216/664-2210

Cuyahoga County Planning Commission
Cuyahoga County Brownfields Working Group
323 Lakeside Avenue West, Suite 400
Cleveland, Ohio 44113
216/443-3700

Pennsylvania

Department of Environmental Protection
Bureau of Land Recycling and Waste Management
Land Recycling and Cleanup Program
400 Market Street
Rachel Carson State Office Building, 14th floor
Harrisburg, PA 17105-8471
717/783-7509

Non-governmental Organizations

American Bankers Association
1120 Connecticut Avenue NW
Washington, DC 20036
202/663-5000

American Bar Association
Natural Resources, Energy and Environmental Law Section
750 North Lake Shore Drive
Chicago, IL 60611
312/988-5724

Carnegie Mellon University
Department of Civil and Environmental Engineering
Pittsburgh, PA 15213-3890
412/268-5675
http://www.ce.cmu.edu/Brownfields/

Clean Sites Inc.
901 North Washington Street, Suite 604
Alexandria, VA 22314
703/739-1283

Great Lakes Environmental Finance Center
The Urban Center at Maxine Goodman Levin College
of Urban Affairs
Cleveland State University
Cleveland, OH 44114
216/687-6947

National Environmental Policy Institute
1100 17th Street NW, Suite 330
Washington, DC 20036
202/857-4784

National Governors Association
444 North Capitol Street, Suite 267
Washington, DC 20036
202/624-5300

Northeast - Midwest Institute
218 D Street SE
Washington, DC 20003
202/544-5200
http://www.nemw.org

Trust for Public Land
California Center for Land Recycling
Brownfield Institute
116 New Montgomery Street, Suite 524
San Francisco, CA 94105
415/495-5660

Urban Land Institute
1025 Thomas Jefferson Street NW, Suite 500 West
Washington, DC 20007
202/624-7000

About the Lincoln Institute

The Lincoln Institute of Land Policy is a nonprofit and tax-exempt educational institution established in 1974. Its mission as a school is to study and teach land policy, including land economics and land taxation. The Institute is supported by the Lincoln Foundation, established in 1947 by John C. Lincoln, a Cleveland industrialist who drew inspiration from the ideas of Henry George, the nineteenth-century American political economist and social philosopher.

Integrating the theory and practice of land policy and understanding the multidisciplinary forces that influence it are the major goals of the Lincoln Institute. Through its research, courses, conferences and publications, the Lincoln Institute seeks to advance and disseminate knowledge about critical issues in land and tax policy.

The Institute does not take a particular point of view, but rather brings together scholars, policymakers and citizens with a variety of backgrounds and experience to study, reflect, exchange insights and work toward consensus in creating more complete and systematic land and tax policies. The Institute's objective is to have an impact–to make a difference today and to help policymakers plan for tomorrow.

Ordering Information

Use the attached order form or contact the Lincoln Institute of Land Policy to request current information on the list price, discount prices for bookstores and multiple-copy orders, and shipping and handling costs.

Mail

Publications Orders
Lincoln Institute of Land Policy
113 Brattle Street
Cambridge, MA 02138-3400

Fax

Publications Orders
Lincoln Institute of Land Policy
617/661-7235

Phone

617/661-3016
or 800/LAND-USE (800/526-3873)

Email

help@lincolninst.edu

Editor and Production Manager: Ann LeRoyer
Editorial and Research Assistants: Jennifer Kain and Gary Zerola
Design and Production: Mosaic Design, Inc.
Printing: Kirkwood Printing, Inc.

Product code: PF006

Lincoln Institute of Land Policy
113 Brattle Street, Cambridge, Massachusetts 02138-3400

Printed on Recycled Paper