

Evaluation of Effectiveness

Land Recycling and Environmental Remediation Standards Act

Submitted by
The Department of Environmental Protection
James M. Seif — Secretary

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Table of Contents

Introduction.	1
Program History.	3
Program Evaluation	15
Recommendations	19

Introduction

Since the passage of Pennsylvania's Land Recycling and Environmental Remediation Standards Act, (35 P.S. §§ 6026.101—6026.909), former industrial sites across Pennsylvania have been transformed into new opportunities for environmental and economic progress in ways that would have been impossible without this Act. Examples of the program's successes to date include:

- Completed more than 650 cleanups of contaminated sites, with hundreds more underway.
- Created the opportunity that attracted more than 17,000 jobs to Pennsylvania by encouraging development on remediated sites.
- Received the prestigious Top Ten Innovations in Government Award from the Ford Foundation and Harvard University for the program's innovative approach to site cleanup and reuse, and similar recognition of the program from the Council of State Governments, who selected the program for its 1997 Innovations Award. The American Legislative Exchange Council adopted the program as a national model and Renew America added the Land Recycling Program to the 1997 Environmental Success Index.
- Accelerated the development of Multi-Site Agreements (MSA). Current MSAs include the Department of Defense (DoD) MSA between the Army, Navy, Air Force and Defense Logistics Agency to study, assess and remediate more than 1,000 sites, as well as MSAs with Pennsylvania Power and Light (PP&L) and Penn Fuel Gas.
- Conducted joint brownfield initiative among the Great Lakes states with similar problems.
- Influenced countries as varied as Brazil, Eastern Europe, Scotland, the Netherlands and Canada to create their own Land Recycling Program based on Pennsylvania's.

*These results
are impressive.
PA has created
strong incentives
for businesses
to clean up
and revitalize
abandoned urban sites,
while preserving
farms and
undeveloped land
in the process.*

—David Gergen, editor-in-chief, U.S. News and World Report

Introduction

2

- Laid the foundation for a new relationship with the U.S. Environmental Protection Agency (EPA). The Land Recycling Program has proven to provide the voluntary framework for addressing federal Resource Conservation and Recovery Act (RCRA) corrective action and Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) cleanup issues, as program clients successfully eliminate environmental liabilities under state laws.
- Provided more than \$20 million in grants and loans to facilitate cleanups by teaming with the Pennsylvania Department of Community and Economic Development (DCED).

This report documents the developments that have contributed to the success of the Land Recycling Program and contains recommendations for program improvements based on the findings of a

recent statewide program evaluation and experience gained by implementing the program.

The Pennsylvania Department of Environmental Protection (DEP) respectfully submits this report to the General Assembly as required by Section 907 of the Act. This section of the statute requires DEP to “conduct and submit to the General Assembly an evaluation of the effectiveness of this Act in recycling existing industrial and commercial sites...and shall include any recommendations for additional incentives or changes...to improve the effectiveness of this Act in recycling such sites.” Annual reports from the Land Recycling Program are available for additional information.

—James M. Seif, Secretary

—Denise K. Chamberlain, Deputy Secretary

*We have a lot of problems like this and have
been looking for a way to come up with realistic, usable standards.
Your program is a very good one.*

—Gerald Keijzer, director, Spatial Planning and the Environment, Government of the Netherlands

Program History

The Department of Environmental Protection began to implement its voluntary cleanup provisions with the signing and enactment of Act 2 on May 18, 1995. A special technical guidance team, comprised of key field and central office staff, compiled a technical manual to help guide remediators through the Act 2 process. A series of fact sheets and a citizen's guide were prepared to enhance the working knowledge of this new program. All of these materials were available by the effective date of the statute—July 18, 1995.

The single most important task facing the department was the development of cleanup standards for regulated substances commonly found on used properties. The Act authorized the establishment of a Cleanup Standards Science Advisory Board (CSSAB) to assist the department. Appointments to the board included nationally recognized scientists, engineers, hydrogeologists, laboratory professionals, toxicologists and risk assessment experts. The board convened on September 28, 1995.

To keep the public abreast of new developments, a website was created to allow instantaneous access to information on program developments. Its initial use allowed the public to monitor the development of regulatory concepts and cleanup standards. Site decisions can be made based on the most recent technical program developments, which are easily tracked and accessed on the Pennsylvania Department of Environmental Protection (DEP) website at www.dep.state.pa.us.

The Pennsylvania Department of Community and Economic Development (DCED) played an active role in the formative stages of the Land Recycling Program by creating the application process and procedures for the Industrial Sites Reuse Program grants. DCED also promoted and helped the public learn about monies available in the Industrial Sites Reuse Fund.

Sound Standards

Two months after Act 2 went into effect, the Land Recycling Program received its first Notice of Intent to Remediate (NIR). This was possible because of the clarity and precision that went into the wording of Act 2. For example, because of the detailed procedural information included in the Act, specifying the use of maximum contaminant levels (MCLs) adopted by the U.S. Environmental Protection Agency (EPA), users were able to work a site through the Land Recycling Program before the state regulations were finalized.

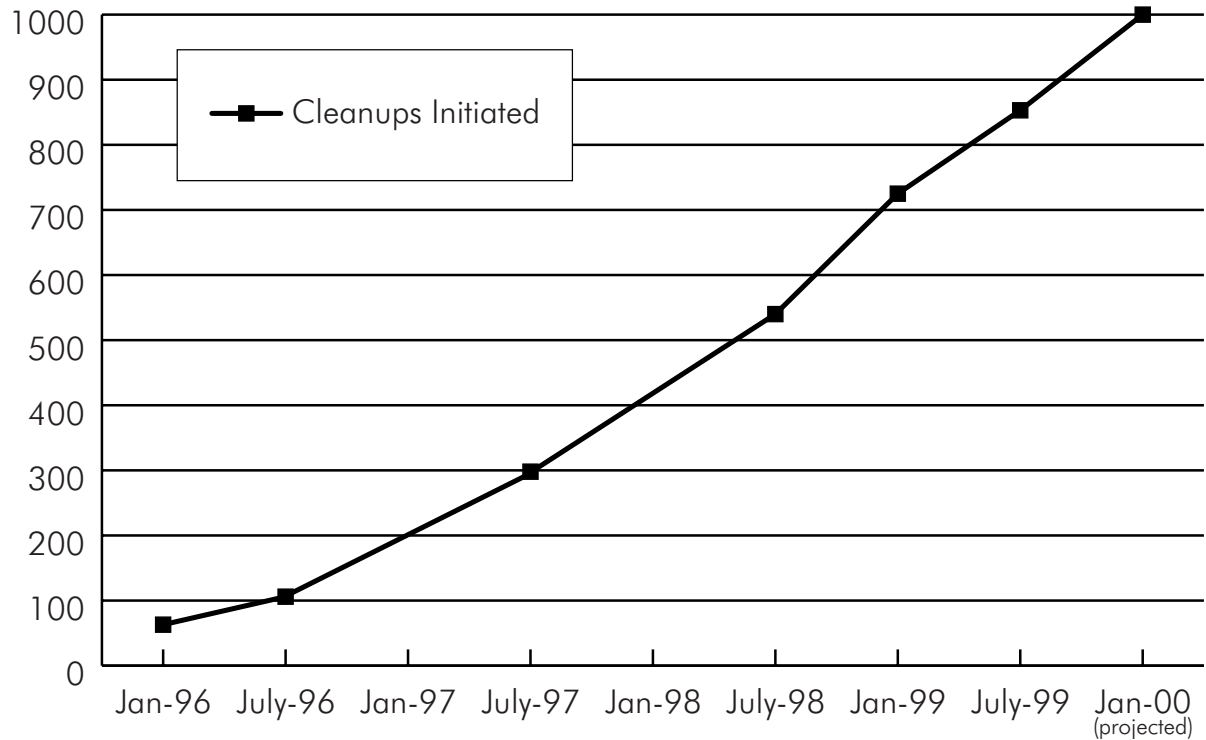
3

*It's a huge change from
several years ago.
Realistic standards and the
genuinely cooperative DEP
regional staff are the key to
making the project a success.*

—Matt Kenealy, consultant

Program History

Figure 1: Increase in Number of Sites in Program Since 1996



4

Figure 1 illustrates how participation in the Land Recycling Program has increased during the last four years. From July 1995 (the program implementation date) to July 1996, about 100 projects were initiated. By July 1998, nearly a year after the regulations and standards were formally promulgated, the number of land recycling projects had climbed dramatically to about 550 and has continued to climb to more than 700 at the start of this year.

The Land Recycling and Environmental Remediation Regulations were proposed to the Environmental Quality Board on July 16, 1996, and published in the *Pennsylvania Bulletin* on August 17, 1996. The

cornerstone of these regulations was the collaborative development of statewide health standards involving department staff, the CSSAB and representatives of the regulated community and the public.

DEP's Bureau of Land Recycling and Waste Management, in conjunction with the Bureau of Regulatory Counsel, drafted the regulations to implement Act 2. The rulemaking defined the procedures for site cleanups to attain one or a combination of three cleanup standard options:

- Background,
- Statewide health and
- Site-specific.

Program History

Also, a procedure was established for site cleanups of special industrial areas where no viable responsible party exists.

Under the **background standard**, a site is remediated to concentrations of substances present in soil and water that are not related to any release on the property. With the assistance of the CSSAB, **statewide health standards** were developed to provide clear and definite endpoints for cleanups. Under the **site-specific standard**, a risk-based cleanup may be completed based on exposure factors and physical conditions specific to a contaminated site.

The proposed rulemaking provided procedures and new statistical options for demonstrating attainment of the selected cleanup standard. Requirements were also established for public participation, notifying local government officials of proposed remediations, conducting remedial investigations, risk assessments, cleanup plans and final reports.

Cleanup Standards

The department received comments from 45 people during the 60-day public review and comment period. Because the proposed regulations were highly technical and complex, three public hearings were held at which persons provided formal testimony and solicited additional information from department staff. These hearings were conducted in Allentown on September 17, 1996, Pittsburgh on September 23, 1996 and York on October 3, 1996.

With the close of the public comment period in mid-October, the department carefully analyzed the key areas of concern and developed a process involving staff and the CSSAB to recommend alternatives to the existing regulatory proposal.

A survey of all states implementing cleanup initiatives was conducted to determine the full range of options for dealing with the regulatory issues of

*Without Act 2 we would
still be passing characterization
reports back and forth.
At 10 jobs per acre of saleable
land, the redevelopment
of this site will create
3,500 new jobs.
Without the liability sign-off,
no one will listen; there are
too many unknowns without Act 2.*

—Art Cordwell, Community Development Corporation, Butler

Program History

greatest concern. The survey solicited information from 24 states on a number of key areas including:

- How states define an “aquifer,”
- How separate phase liquids are addressed in groundwater cleanups and
- How the state establishes standards for soil that are protective of groundwater and other related issues.

Final regulations were presented and adopted by the Environmental Quality Board on June 17, 1997, and published in August 1997.

6

*This site can be used
as a working demonstration
of the rebuilding
of an Urban Center.
Working arm in arm
with not only the state
but with the local folks,
we were able to not only use the
Land Recycling Program
but to demonstrate its success.*

—Frank Brooks Robinson,
Regional Industrial Development Corporation, Pittsburgh

Unique attributes of the regulatory package include:

- Innovative concepts such as the removal or control of separate phase liquids in groundwater,
- Increased flexibility for groundwater cleanups in areas served by public water supplies,
- Performance-based site characterization requirements,
- Determination of soil remediation to protect groundwater quality and
- Rapid assessment of impacts upon ecological receptors of concern.

Development of Technical Guidance

With the help of a special DEP work group, a *Technical Guidance Manual* (outlining the entire land recycling process), a series of fact sheets and a citizen’s guide to the Land Recycling Program were developed by the July 18, 1995, effective date. In the first year alone, more than 4,000 copies of the *Technical Guidance Manual* were distributed.

On November 18, 1996, the department released a supplement to the *Technical Guidance Manual* incorporating policy and technical updates contained within proposed regulations.

Upon promulgation of the final regulations, the *Technical Guidance Manual* was revised to reflect the concepts adopted by the new regulation. The revised guidance, released in January 1998, explains in greater detail both administrative

Program History

requirements and technical concepts established in the final regulations.

This user-friendly manual describes the interface between DEP permitting programs and land recycling cleanup options, the use of fate and transport modeling in site characterization, options for combining standards in site cleanup, risk assessment approaches and acceptable standard attainment demonstration procedures.

The manual is designed to be a “living document.” The department provides consultants and other stakeholders the opportunity to continue to comment and offer suggestions for improvement. A copy of the manual can be accessed on the Land Recycling Program website or by contacting the department.

DEP Staff Training

The Land Recycling Program’s statewide “Making It Work” meeting on July 19 and 20, 1995, provided information to DEP regional managers and staff on the benefits and financial incentives associated with implementing a risk-based remediation program. This special session was followed by central office program staff visits to each regional office during autumn 1995. The visits were specifically tailored to the needs and interests of each region.

Two week-long training sessions were provided during October 1997 for all DEP program staff involved in the implementation of the final Act 2 regulations. Outside experts in the fields of hydrogeology, fate and transport analysis, human and ecological risk assessment and statistical approaches for application

to attainment samples, conducted the training. Members of the CSSAB assisted the department with this training process. The goal of this training was the consistent application of the regulations across the regional offices.

Client Training

The department co-sponsored workshops with the Pennsylvania Bar Institute, the Pennsylvania Council of Professional Geologists and the Pennsylvania Chamber of Business and Industry to educate various client audiences about the final regulations. After release of the new *Technical Guidance Manual* in January 1998, the department conducted client workshops in March 1998 in Allentown,

*Can you believe it. . .
2,000 new jobs!
We couldn't have done this
[project] without it.
To tell you how satisfied we are
with the program...we put our
money where our mouth is
and bought another property.
We'd like to do one of
these every year.*

—Mayor Tom McGroaty, Wilkes-Barre

Program History

Harrisburg and Butler. In response to many requests, the department conducted client workshops in September and October 1998 and 1999 in Monroeville and Valley Forge. More than 1,250 individuals and organizations received extensive training through these seven workshops.

Outreach

Outreach has always been a priority of the Land Recycling Program because it encourages program participation, assures compliance with standards, recognizes successful cleanups and spreads the word about Pennsylvania's innovative approach to brownfield redevelopment. Key outreach activities have included speaking engagements, participation in trade shows, advertising in trade and siting journals and distribution of program materials.

In addition to holding client workshops and staff training, central office and regional staff have made presentations to numerous small groups of clients, including consultants, developers, lawyers, the financial real estate community, economic development agencies, business and industry groups and others.

DEP has participated in and displayed program information at several national conferences dealing with brownfield issues. These included the EPA conferences in Kansas City, Los Angeles and Dallas, the Industrial Sites Recycling Conferences in Pittsburgh, the Globe '98 conference in Vancouver, Canada and the Environmental Management and Technology Expo '98 and Environmental Expo '99 conferences in Atlantic City.

Advertisements designed to raise awareness of the Land Recycling Program and promote participation were placed in several national magazines and trade journals such as *Brownfield News*, *Site Selection*, *The National Law Journal* and *Risk and Insurance*. Ads were also placed in regional business publications such as *PA Business Central*, *Pittsburgh Business Times* and the *Eastern PA Business Journal*. DEP recently published a program overview brochure, *Pennsylvania's Land Recycling Program: A Clear Road to Redevelopment*, designed to generate interest in the program among developers and others involved in brownfield conversion.

DEP has widely distributed information about the Land Recycling Program. Information is available through the DEP website and the program's information request line. Inquiries about the final regulations and final guidance came from many states throughout the country. Legislative research staff wanted to use the statute and regulations as models for similar programs in states such as California, Connecticut, Kansas, Massachusetts, Missouri, New York, Ohio, Texas, Utah and West Virginia. Puerto Rico also inquired about the department's approach to cleanups. DEP also provided information to New York City and presented the specifics of the program to the developers and planners of the city.

Press events were held in each of DEP's six regions to publicize the program and showcase success stories. Television and newspaper coverage was arranged for these events to publicize the availability of the program's third annual report. DEP mailed

Program History

5,200 of these reports to individuals and organizations listed in the program's client database.

With each new program initiative, whether it is passage of legislation, community outreach or dynamic new partnerships, the number of cleanups initiated continues to climb.

DEP has developed several new initiatives to further land recycling objectives. Described below are the Key Sites Initiative, the Brownfields Tax Incentive, DEP's new Brownfields Directory, the Brownfield Inventory Grants program, Multi-Site Agreements (MSAs), activities related to a Memorandum of Agreement with EPA and interstate cooperative activities.

Key Sites Initiative

Pennsylvania's most severely contaminated sites are addressed through response actions under the Hazardous Sites Cleanup Act (HSCA). Over the

past few years, DEP has explored ways to reinvent the Hazardous Sites Cleanup Program in a way that delivers more "environmental value"—a program that is more effective and efficient in cleaning up contaminated sites. Although HSCA continues to provide sound enforcement tools, many brownfield sites have problems that are more subtle than sites initially addressed under HSCA.

To address these sites, DEP saw the need to bridge the successful and proven Land Recycling Program and the Hazardous Sites Cleanup Program.

Discussions between DEP staff, economic development agencies and the lending community resulted in a next generation concept—the Key Sites Initiative. The Key Sites Initiative focuses the expenditure of HSCA funds on publicly owned sites where a release of contamination is suspected or documented and where a high potential for redevelopment exists. Community support, investor interest and economic development agency commitment to site reuse are key ingredients.

*The Land Recycling Program is a very important tool
to assist in refurbishing communities.*

*Most communities have a big problem trying to find
new places for commercial development.*

When we can use sites like these, it is a real benefit to these communities.

Program History

The Key Sites Initiative creates a partnership between local economic development agencies and DEP. Local agencies can best target sites having the greatest potential for reuse in communities, while DEP has the tools to assess sites and create work plans for cleanups. By joining forces, DEP and local economic development agencies have created a program that will cost-effectively identify and eliminate the risks posed by environmental contamination, revitalize vacant industrial sites and bring jobs to Pennsylvania communities.

10

The Key Sites Initiative uses state-funded contractors to conduct environmental site assessments and prepare work plans to encourage and facilitate the voluntary cleanup and reuse of abandoned industrial properties in prime locations. The initiative coordinates the use of a combination of resources provided by the state Hazardous Sites Cleanup Program, the Land Recycling Program and local economic development agencies.

Key Site Pilot Projects

DEP piloted the Key Sites concept by assigning contractors to assess several properties across the Commonwealth. These pilot projects allowed the program to streamline assessment procedures and to develop work plans that reflect each community's desire to reuse the properties. During that time, DEP worked with economic development agencies to establish screening criteria to make sure the sites addressed by the program were those that would most benefit the community. Criteria were established to identify sites in communities where an economic boost was really needed.

The four criteria are:

- Sites with an environmental threat,
- Sites where investors have expressed interest but were afraid of unknown liabilities,
- Sites with a prospective occupant willing to share cost of cleanup and
- Preference for public ownership.

The Key Sites Initiative complements the Industrial Sites Reuse Program (ISRP), a grant and low-interest loan program administered by DCED for municipalities, municipal and local authorities, non-profit economic development agencies and similar organizations that want to conduct environmental assessments of industrial sites located in areas designated by DCED as distressed. To apply for the Key Sites Initiative, a Letter of Intent (LOI) is submitted to DCED requesting consideration as a Key Sites project.

To date, nine Key Sites projects have been undertaken—two in the Southeast region, three in the Northeast region, two in the Southwest region and two in the Northwest region.

Brownfields Tax Incentive

The Brownfields Tax Incentive is a federal initiative designed to spur the cleanup and redevelopment of brownfields. Under the Brownfields Tax Incentive, environmental cleanup costs for eligible properties may be treated as fully deductible business expenses for the year in which costs are incurred or paid.

Program History

*This is just the beginning of
our plan for a mixed-use
commercial, residential and
institutional development that will
transform an already vibrant
Pittsburgh neighborhood.*

—Mayor Tom Murphy, Pittsburgh

To claim the tax incentive, the taxpayer must receive a statement of eligibility from the certifying agency for their state; in Pennsylvania, the certifying agency is DEP. Each state is responsible for creating a process by which eligibility is verified and certification is granted.

The Land Recycling Program created a quick process through which interested parties are able to determine their site's eligibility. The DEP website provides easy step-by-step instructions, directions and links to determine census tract information, and a certification request form and a checklist which may be downloaded by prospective applicants.

Upon learning about Pennsylvania's outstanding process, EPA adopted new techniques for its own webpage and recommended the process to other states.

Brownfields Directory

The Pennsylvania Brownfields Directory is designed to be a user-friendly, convenient method to market available brownfield sites. With a click of the computer mouse, users from around the world can view information about Pennsylvania brownfield sites available for sale or lease and can add available sites to the directory.

When viewing sites, users may choose to view all of the sites or view select sites using specific criteria such as county, property size and sale price. Adding sites to the Pennsylvania Brownfields Directory is quick and easy—site information is entered by the user and posted directly to the web.

The web-based system serves as a tool to increase awareness of site availability, increase the opportunity for site redevelopment and promote the reuse of brownfields in Pennsylvania.

Brownfield Inventory Grants

Under the Brownfield Inventory Grants (BIG) program, the department provides grants to municipalities, counties and redevelopment authorities to inventory the brownfield properties in their areas. If these properties are available for redevelopment, information about infrastructure, usable buildings on site, suspected or confirmed environmental contamination and other related facts are collected. After gathering this site information, DEP lists the site on the Pennsylvania Brownfields Directory.

Program History

The grants are issued pursuant to the authority of HSCA (35 P.S. §§ 6020.101—6020.1305), which authorizes the department to investigate and assess potential releases of hazardous substances. This includes collecting information concerning sites that are potentially contaminated with hazardous substances and that may need assessment or cleanup. Funds for the grants are provided from the Hazardous Sites Cleanup Fund.

Counties, municipalities and redevelopment authorities may apply to the department for these grants by submitting an application. If the application is approved, the grantee will be reimbursed \$1,000 for each brownfield site that is identified and entered into the Pennsylvania Brownfields Directory. Grants are currently limited to \$50,000 per grantee per grant cycle. Thirty-two applicants covering 39 counties were awarded grants, potentially amounting to more than \$1.5 million during the first grant cycle.

Multi-Site Agreements

Various groups of properties throughout the Commonwealth are owned by a single operator and have environmental contaminants that may require assessment and correction to make the property safe. Regardless of whether the current owner contributed to these conditions or not, such properties may present their owner (and potential tenants, developers and purchasers) with a liability of unknown magnitude. Furthermore, multiple sites present the owner with a proportionally bigger problem because, if regulated substances are present, correction may trigger large expenditures of non-budgeted

*Brownfields redevelopment
is an integral part of our
economic development strategy
because it generates jobs,
returns abandoned land to use
and revitalizes neighborhoods.*

—Mayor Edward Rendell, Philadelphia

capital. Through the development of an agreement with the department, both the environmental and business requirements of multiple sites can be effectively managed.

The MSA provides an opportunity to voluntarily address environmental conditions within the context of a single, cooperative, mutually beneficial statewide agreement.

Much like a strategic plan, an MSA directs resources to solve the most significant environmental problems while accommodating an individual company's revenue and resource allocation process. A specific strategy is developed through informal conferences and finalized as a legal agreement. During these discussions, a strong emphasis is placed on flexibility, common sense, sound science and innovative problem solving. Once finalized, the MSA, often using a flexible "point system," assures progress in meeting environmental requirements but provides the company with a large measure of control over year-to-year costs. The term of these agreements

Program History

is flexible. Past agreements have ranged from 10 to 15 years in duration.

The MSA is part of DEP's pledge to provide the necessary attention to environmental protection while promoting Pennsylvania as a good business setting.

Agreements with Pennsylvania Power and Light (PP&L) and Penn Fuel Gas follow this general format. In an even more innovative fashion, DEP has entered into an MSA with a format for evaluating and responding to sites at federal facilities in Pennsylvania. This agreement is between DEP and the U.S. Air Force, Army, Navy and the Defense Logistics Agency and includes more than 1,000 sites. The MSA is such a powerful environmental management tool that DoD has adopted the process as one of its top 10 priorities for implementation nationwide. Together, the three agreements address more than 1,260 sites in 26 counties.

Memorandum of Agreement (MOA) With the United States Environmental Protection Agency (EPA)

Although more than 650 site cleanups have been approved under the Act 2 program, EPA has not intervened in a single case. It is, however, in the best interest of the Commonwealth, owners of properties, prospective purchasers of property, business interests and the federal agency to clarify issues of state/federal environmental liability. The department's objective is to provide optimum opportunities and avoid duplication of efforts for persons to satisfy both state and federal liability by undertaking site cleanups under the Act 2 process.

*By working in partnership,
we can safely accelerate the
cleanup of our sites and protect
people and the environment.*

—**Sherri W. Goodman,**
deputy undersecretary of defense

Discussions to pursue an agreement—cutting the red tape and eliminating the duplication of actions—have been ongoing during the last year with EPA Region 3 staff and the assistant administrator of the Office of Solid Waste and Emergency Response at EPA headquarters in Washington.

A pilot project to allow both department and EPA staff explore the interrelationships of Act 2 concepts and EPA policies was initiated with the Bethlehem Steel Corporation (BSC) on sites in Bethlehem. A joint approval of site remediation has been conveyed to BSC for the 160-acre Beth Works property, the site of the future Smithsonian National Museum of Industrial History. Further experience is being gained as an additional 1,600 acres of Bethlehem Steel property are remediated through the Act 2 process to meet both state and federal environmental obligations.

At a press conference held in June 1999, Tim Fields, assistant administrator for Solid Waste and Emergency Response, EPA, said, "I am proud to say that the cleanup agreement reached by Bethlehem Steel, Pennsylvania DEP and EPA is a model for the Resource Conservation and Recovery

Program History

Act (RCRA) corrective action program that we would like to see duplicated across the country. The agreement was reached quickly through concerted collaboration by all parties, with a minimum of red tape and procedural requirements, and a focus on what matters most—cleanup standards that ensure full protection of public health and the environment as the Bethlehem Works facility evolves to support a diverse set of new uses. It is a victory for all parties involved, but most importantly it is a victory for the environment and for the people of Bethlehem.”

Interstate Cooperative Activities

The American Legislative Exchange Council (ALEC) recognized Pennsylvania’s Land Recycling Program as the national model for states to use in developing their voluntary cleanup legislation. Program staff worked closely with key members of ALEC from the Pennsylvania General Assembly to promote the Act 2 process. Presentations on Pennsylvania’s risk-based approach to cleanups have been made to forums of ALEC, the National Governors’ Association and the Risk-Based Corrective Action (RBCA) Leadership Council and meetings have been held with individual states. The Pennsylvania program is working and many others have adopted significant parts of the program for implementation in their own states.

The Council of Great Lakes Governors is a close bipartisan partnership of the governors of the eight Great Lakes states—Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania and Wisconsin. In 1983, the region’s governors decided to join forces to create the council and tackle the severe

The possibilities of this West Chester site are limitless. This program should go nationwide.

—Senya Isayeff, Alliance Environmental

environmental and economic challenges then facing their states. In recent years, the Canadian premiers of Ontario and Quebec have joined the council in advancing the high performance economy of the Great Lakes region.

Under the chairmanship of Gov. Tom Ridge, the Great Lakes governors are further developing state land recycling programs with regional unity and focus through their Brownfields Project. The council’s Brownfields Project is fully regional in scope in that it builds upon individual state and provincial successes to jointly promote land recycling for long-term economic and environmental benefit. It provides a forum for the Great Lakes states and provinces to come together to create mechanisms for ongoing coordination and communication of brownfields issues and develop tools for further promoting regional brownfields redevelopment. Tangible products have resulted through the efforts of a Brownfields Regional Advisory Group (BRAG) under the leadership of DEP Secretary Seif. BRAG created the first regional brownfields database, ROBIN, and a publication titled *Blueprint to Brownfield Redevelopment*, an excellent resource about all of the regional programs. This group also provided a database containing information about new and innovative remediation technologies developed through funding support provided by the department.

Program Evaluation

The Pennsylvania Department of Environmental Protection's (DEP) Bureau of Land Recycling and Waste Management conducted a field evaluation of the Land Recycling Program during 1998. The scope of this evaluation related specifically to voluntary cleanups conducted under Act 2 where a Notice of Intent to Remediate (NIR) was filed. The objective was simple: to determine if program improvements are necessary based on an analysis of actual case histories.

This program evaluation was among the most comprehensive ever conducted by the department and provided invaluable information to continue fine-tuning the program. Following the initial evaluation of 52 sites in April 1998, DEP evaluated another 79 approved projects completed from April 1 until December 31, 1998. In the third phase of the program evaluation, all case files (more than 500) prepared since the inception of the program were reviewed for program quality, completeness and review consistency.

The initial 52 sites were randomly selected for file evaluation representing from five to 12 sites per DEP region, or about 16 percent of sites where a final report was approved or disapproved by April 1998 (only one site was in the completed remedial investigation stage). A team of six central office staff conducted the evaluations at each regional office. In addition to case file reviews of the 52 projects, the evaluation staff conducted 10 site visits.

Specifically, the evaluation was designed to measure the effectiveness of the implementation of the Land Recycling Program based on the four objec-

tives of Section 102 of the statute: (1) human health and environmental protection, (2) land recycling principles, (3) compliance with rules and regulations and (4) use of new regulatory options.

Objective 1: Human Health and Environmental Protection

This objective presents the question, "Are Pennsylvanians safer and has the quality of the environment improved as a result of the Land Recycling Program?" To address this question, DEP examined the following elements of the selected cleanups:

- The environmental media affected by site contaminants,
- General types of contaminants impacting the environment,
- Categories of remediation techniques and
- The relationship between the size of the site and the area of total properties affected.

The contaminated area of each property represented, on average, about one-third of the total property size. Of the 2,315 total acres that comprise the evaluated sites, 767 acres or 33 percent of the property represented the area of contamination identified in the final reports. The average contaminated area per NIR was 21 acres. A closer examination of these contaminated areas or "sites" revealed that more than 50 percent involved both soils and groundwater impacts, while one-third (33 percent) involved

Program Evaluation

only soil. The remaining sites (approximately 12 percent) addressed groundwater contamination beneath the property. The nature of contaminants on these sites fell into three categories: petroleum products, organic and inorganic contaminants. About 33 percent had contamination associated with petroleum products, about 51 percent had some other kind of organic contaminant (e.g., solvents) and about 50 percent had inorganic contamination (e.g., lead or other heavy metal), with some sites having more than one category of contamination.

The measure of success for a site cleanup is whether it has met an Act 2 standard. This is achieved by using different categories of remediation methods such as “removal,” “treatment” or “pathway elimination.” In other cases, the process determines whether or not contaminants are present, and such work confirms the absence of an environmental or health threat, with “no action” required. The program evaluation found all sites to be protective. Many times sites have a “perceived” risk because prior to site assessment neither the public nor DEP knew if it was protective under Act 2. The unknown threat of contamination and health liabilities are eliminated once the site has gone through the Act 2 program, thereby enabling land transactions and subsequent reuse.

For future evaluations, DEP recommends that the Land Recycling Program broaden its methods of measuring the “success” of objective 1 as stated above.

Measuring the success of this objective could be improved by standardizing the kinds of information reported upon completion of the site cleanup process. For example, a standardized report format

will be implemented for documenting contaminants identified and how they are managed to meet cleanup standards on the site.

This recommendation is being implemented through changes in guidance and report forms with input from the Cleanup Standards Scientific Advisory Board (CSSAB).

Objective 2: Land Recycling Principles

This objective examines the impact that the clean-up of sites has had on their future reuse.

The evaluation also considered the status of the property and comments regarding future planned use. Not surprisingly, 38 percent of the acreage in the sites studied was not in use prior to the submission of the NIR. In all cases, however, there was either an intended use for the property, or the property was being prepared for purchase by a buyer planning to reuse it.

The significance of the amount of unused property put back into productive reuse is twofold. One, it is a measure of the economic contribution being made to the community—more than 17,000 jobs were added to the work force because of the redevelopment activities that took place on remediated sites. Second, it is a measure of the potential loss of greenspace if the cleanup did not occur.

DEP’s recommendation for supporting objective 2 is to develop a method to measure the impact of cleanup on the outcomes of property reuse.

Program Evaluation

To get more information about the effectiveness of the Land Recycling Program and its benefits to the public, DEP developed a voluntary survey form. The survey asks questions related to site selection, greenfield development consideration, status of the site, employment opportunities, infrastructure improvements, creation of greenspace or recreation space and other related issues. DEP will ask all remediators to complete the survey following the approval of the final report. Implementation is slated for January 2000.

Objective 3: Compliance With Rules and Regulations

This objective was designed to assess and analyze the level of compliance with regard to the Act, regulations, technical guidance and program policy.

The analysis of compliance with rules and regulations fell into two broad categories: administrative and technical. Administrative issues, including a lack of documentation supporting the publication of the cleanup notice in the newspaper or *Pennsylvania Bulletin* and municipal notices, were corrected by recovering the documentation. Site files evaluated with identified administrative shortcomings will be properly noticed in subsequent *Pennsylvania Bulletin* publications.

Out of the 52 sites that were initially evaluated, 13 case files were not complete from a paperwork standpoint. In these 13 cases, the final review was partly based on supplemental information not included in the formal case files. Upon evaluation

of the supplemental information in addition to the formal case files, these sites satisfied the department's paperwork requirements. As a result of this evaluation, the program will duplicate or record in the formal files any additional information (e.g., information contained in other program files, institutional knowledge of the site by program staff) that was considered in making an approval decision.

These identified issues were clearly the result of the six-month "learning curve" following the effective date of the final regulations. During that six-month period, several training sessions were conducted for DEP field staff and for remediators and environmental consultants who participate in the Land Recycling Program.

Objective 4: Use of New Regulatory Options

This objective analyzes non-typical site cleanups that did not 'fit' with existing DEP requirements or used new regulatory options (non-use aquifer, soil buffer, soil to groundwater equivalency determination, etc.) that are now available under Act 2.

Pennsylvania Code Title 25, Chapter 250 utilized creative and innovative approaches to meeting the objectives of Act 2. An examination was made as to how well these approaches were working. Only trends could be analyzed given the small amount of elapsed time between the implementation of the innovative options under Act 2 and the evaluation.

Analysis of some of the innovative approaches determined that they were both effective and easy

Program Evaluation

to implement, an example being the attainment demonstration rule, known as the 75 percent/10x rule, developed by the CSSAB.

Small excavation cleanups pose a unique challenge under the new regulations. Historically, professional field judgements were used instead of the three separate cleanup phases—scientific assessment and analysis, remediation and attainment demonstration. For example, an environmen-

tal professional directs the excavation of the contamination by a backhoe, applying both visual observation and use of field instruments, which is then confirmed by analytical sampling and analysis. DEP recommends a more streamlined approach to small excavation cleanups, including modifications to Chapter 250 to address the specific issues related to these projects.

The Act 2 program is one of the most innovative and promising approaches to environmental clean up and protection of the public we have seen.

This common sense approach will expedite many storage tank cleanups which have been stymied by previous ineffective policies.

—Gene Barr, executive director, Petroleum Industries of PA

Recommendations

Regulatory Changes

The Land Recycling Program is advised by the Cleanup Standards Scientific Advisory Board (CSSAB). This board was created for the purpose of assisting the Pennsylvania Department of Environmental Protection (DEP) and the Environmental Quality Board in developing statewide health standards, determining the appropriate statistically and scientifically valid procedures to be used, determining the appropriate risk factors and providing other technical and scientific advice as needed to implement the provisions of Act 2. Scientific information on which cleanup standards are based must be updated and continually refined. New information must be incorporated in periodic technical amendments to Title 25, Environmental Protection, Chapter 250, Administration of Land Recycling Program to update the statewide health standards and other requirements. These technical amendments to the regulations are also an opportunity to incorporate the recommendations contained in legislative reports such as this.

A discussion concerning regulatory changes was initiated at the February 1999 CSSAB meeting.

By early 2000, DEP will propose such an amendment to Chapter 250. Primarily the proposed changes will be modifications and additions to the statewide health standards based on the most recent scientific information on toxicity and other physical properties of the regulated substances. DEP is considering the following changes to requirements in Chapter 250:

- 1) For areas where the non-use aquifer designation criteria apply, additional public participation requirements are being proposed.
- 2) Additions to allow for specific attainment criteria for "small excavation" cleanups to incorporate the best practical and technically valid approaches to remediation of small-scale cleanups such as underground tank remediations, which make up a large portion of the cleanups utilizing Chapter 250 standards. A change for small excavation cleanups would in effect allow for fewer samples to be taken, but the results of all samples must be at or below the standard. Attainment is applied to the bottom of the excavation and if soil from the excavation is going to be left on site, that soil also must meet the same attainment standards. This method would allow general historical approaches to tank cleanup confirmations to be used.
- 3) Provisions for the maximum contaminant level (MCL) for PCBs as a group are expected to be incorporated into the groundwater medium-specific concentration (MSCs) tables.
- 4) Use of U.S. Environmental Protection Agency (EPA) MCLs for both chromium III and chromium VI substances.
- 5) Changes of the toxicity values of a few regulatory substances. The addition of more regulated substances may be included in existing tables to include compounds found at sites that may not have an MSC but that have toxicity values or MCLs or health advisory levels established. Due to continuous development of the toxicity values avail-

Recommendations

able, some of the threshold of regulation compounds may have toxicity values available for use now. The department is proposing to develop new MSCs for these compounds.

6) The solubility values (as one of the chemical properties) will be verified and new solubility values developed as appropriate.

7) Further clarification of 250.311(d) concerning the source of Constituents of Potential Ecological Concern (CPECs).

Changes to the regulations will be made in consultation with the CSSAB and will receive public comment as part of the standard regulatory review process. The final amendment is expected to be effective in January 2001.

Legislative Changes

The department proposes no legislative changes that are specific to Act 2. However, the department will explore and aggressively pursue ways to link Land Recycling concepts with newly spawned initiatives made possible through the "Growing Greener" legislation.

Conclusion

The Land Recycling Program has truly set Pennsylvania apart as a leader among states in the practice of risk-based environmental remediation. The program was recognized in 1997 as offering the most important innovation in public-sector environmental management by the prestigious Ford

Foundation and John F. Kennedy School of Government at Harvard. The American Legislative Exchange Council adopted the Land Recycling legislative package (Acts 2, 3 and 4) as a national model for state voluntary cleanup programs. Many states are using the Pennsylvania Land Recycling Program as a model for their site remediation programs. At least 11 states have contacted DEP for additional information about the laws, regulations and implementation strategies.

In addition, this program is responsible for establishing a new paradigm and philosophy in the field of contaminated site management, one which facilitates the redevelopment of previously used property, thereby reducing the encroachment of growth upon undeveloped land. In the past four years, more than 650 sites have been remediated and more than 1,000 site cleanups have been initiated through the voluntary process provided by Act 2.

This evaluation was conducted to discover methods to further enhance program effectiveness and implementation consistency. Findings from this Land Recycling Program evaluation are very encouraging. Although some "start-up" challenges were noted, further investigation concluded that human health and environmental quality were protected and enhanced. The review of evaluation findings and the development of recommendations for program improvement employed a collaborative process involving DEP central and field office staff and program stakeholders. The implementation of program improvement recommendations is on track to be completed by the end of 1999.

Recommendations

The number of sites in the program, the recognition earned, the results of the program evaluation and the adoption of program concepts by other states provide convincing evidence that the program is a very effective vehicle for managing contamination and for recycling old industrial sites. It also fills a void that was created by the over regulation and lawyer-intensive procedures of Federal

Superfund. The Land Recycling Program provides realistic standards, relief from liability, timely review of remediation work completed and financial assistance. The combination of these elements provides a realistic common sense solution to the cleanup and reuse of our abandoned and underutilized brownfield properties.



Department of Environmental Protection

Environmental information is available electronically via the Internet.
Visit DEP through the Pennsylvania homepage at

www.state.pa.us or directly at
www.dep.state.pa.us (directLINK "Land Recycling")

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GreenWorksChannel.org — A web space dedicated to helping you learn how to protect and improve the environment. The site features the largest collection of environmental videos available on the Internet and is produced by the nonprofit Environmental Fund for Pennsylvania, with financial support from the Pennsylvania DEP, 800-334-3190.

James M. Seif, Secretary



Tom Ridge, Governor

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