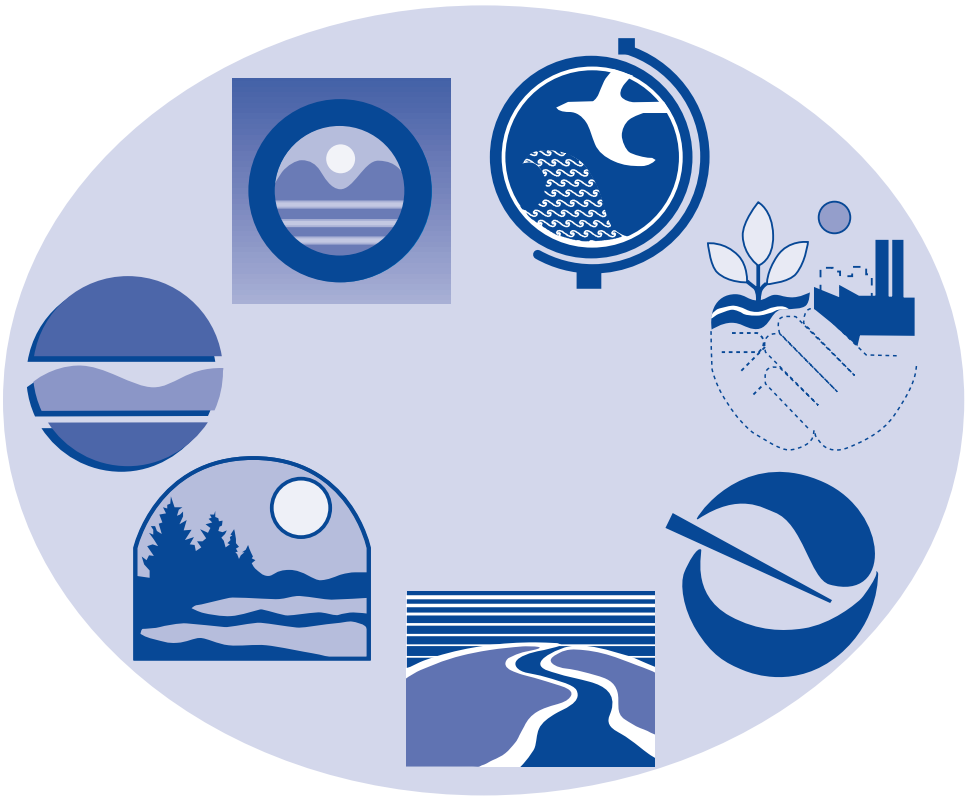
Strategy

Reciprocal State Acceptance of Environmental Technologies



2nd Edition
December 2000

Prepared by
Member States of the Six-State Memorandum of Understanding

Massachusetts
Pennsylvania
New Jersey
New York
California
Illinois

And accepted by
Virginia

Supported by
Environmental Council of States and
Interstate Technology & Regulatory Cooperation Work Group

Strategy

Reciprocal State Acceptance of Environmental Technologies

2nd Edition
December 2000

Prepared by
Member States of the Six-State Memorandum of Understanding

Massachusetts
Pennsylvania
New Jersey
New York
California
Illinois

And accepted by
Virginia

Supported by
Environmental Council of States and
Interstate Technology & Regulatory Cooperation Work Group

For more information, contact:

Marybeth P. Brenner
NJDEP Office of Innovative Technology and Market Development
CN 409
Trenton, NJ 08625
(609) 984-5418

Table of Contents

Strategy for Reciprocal State Acceptance of Environmental Technologies

Attachments

Strategy for Reciprocal State Acceptance

of Environmental Technologies

Summary

Six states have identified a common pathway for the reciprocal state approval and permitting of environmental technologies. The pathway is based on common protocols that define data requirements for specific technologies, beginning with general requirements for all technology classes and continuing through to a detailed, technology-specific template for regulatory and/or permitting decisions.

By assuring that technology data and performance tests were conducted according to agreed upon protocols, states can make the results of their ongoing technology evaluation and regulatory approval efforts accessible and useful to other states. Such reciprocity speeds technology deployment at reduced costs for both states and vendors. However, this form of reciprocity does not supersede individual state requirements or allow one state to simply "rubber stamp" the permits or approvals of another.

To implement interstate reciprocity and expand it to other states, the six states propose establishing a shared database of information on technologies that have been tested in accordance with the protocols. With the support of their environmental commissioners, the six states could create the database, participate in a pilot test of its use, and conduct outreach to help inform and train other states in achieving reciprocal technology approval.

Potential for Interstate Reciprocity

On June 4, 1996, the heads of the state environment agencies in California, Illinois, Massachusetts, New Jersey, New York, and Pennsylvania signed a memorandum of understanding (MOU) to define a process for the reciprocal evaluation, acceptance, and approval of environmental technologies among the six states (see Attachment A). According to the MOU document, the process would enable participating states to consider the data, approvals, and permits from another state as if they had been produced in their respective states.

To implement the MOU, the six states selected eleven sample technologies for a pilot project (see Attachment B). The sample technologies included at least one technology of particular interest to each state and represented the full range of environmental technologies for pollution prevention, measurement and monitoring, treatment and control, and remediation. Through the pilot project, the six states identified common data, performance testing, and regulatory review protocols for the sample technologies and defined the most efficient approval pathway for each technology class.

The six states used the pilot project results to push the boundaries of interstate cooperation and confirm the following assertions.

Reciprocity is possible. The six states can achieve reciprocal acceptance of environmental technologies. The six states devised a "tiered approach" through which state regulators can accept the data, performance tests, and regulatory templates for approvals or permits produced by and for other states.

Reciprocity can build on existing processes and protocols. The tiered approach devised by the six states formalizes the unwritten review process now commonly used by most states to exchange information on technology evaluation and approval. Because it emanates from existing state processes and protocols, the tiered approach streamlines but does not replace the states' systems. The tiered approach is also consistent with and supportive of nonregulatory and voluntary efforts

to facilitate technology acceptance, such as third-party verification programs and technical assistance programs, and therefore can integrate the results of these efforts.

Reciprocity can reduce costs and save time for state regulators. Use of the tiered approach would allow reciprocal state acceptance of environmental technologies without increasing the workloads of state regulators. In fact, interstate reciprocity would lessen the burden of regulators and permit writers by reducing duplicative testing and review performed by states.

Reciprocity can reduce costs and save time for technology vendors. Technology vendors would benefit from reduced duplication of performance testing and state review, saving time and resources and speeding technology deployment. By fostering greater consistency among state testing and review requirements, reciprocity also would allow technology vendors to more easily anticipate and comply with the requirements of numerous states at once.

All six states can support reciprocity for environmental technology data and performance testing. In addition, the six states can achieve regulatory reciprocity (accelerated permitting and/or approval) for remediation technologies, and Massachusetts, New Jersey, and Pennsylvania can support regulatory reciprocity for other types of environmental technology.

Interstate reciprocity has the greatest potential for expediting acceptance of treatment and control technologies. Treatment and control technologies can benefit most from reciprocal state acceptance because regulations and the decisions of state regulators largely drive their use. Although pollution prevention may be the area of highest growth for environmental technologies, it has less potential to benefit from regulatory reciprocity because regulatory drivers do not directly influence its market.

The "partnership approach" to environmental technology acceptance goes well beyond the scope of the MOU. The partnership established through the MOU has benefited the six states in many ways beyond the scope of the pilot project or the development of a pathway for multistate technology acceptance. It also has demonstrated the value of forging additional partnerships to advance the use of new technologies. The six states are becoming exposed to and involved in other environmental technology projects and programs, both nationally and internationally, which will provide environmental and economic benefits to their states. The six states also are establishing more productive relationships with technology vendors, developers, and other stakeholders within their own states to more effectively develop and deploy new environmental technologies.

Current Technology Development Cycle

The six states identified a common development cycle for those technologies that require state permits or regulatory approvals. Even when an environmental technology does not require a state permit or regulatory approval, the vendor typically proceeds through this common development cycle if a state is expected to purchase, use, or promote the technology. In those cases the development cycle raises the state's level of comfort with the technology's performance. The six states divided the development cycle into the following three tests.

A pilot or treatability study to test the technology under laboratory conditions.
A full-scale field demonstration test to obtain performance data.
A start-up/compliance test of the technology's ability to meet performance standards at the site where it will be deployed.

Generally states issue permits or grant approvals for full-scale operation only after the pilot/treatability study and full-scale demonstration test prove that a technology meets the state's environmental standards. As part of the full-scale demonstration, states require a startup/compliance test to ensure that the demonstrated technology will meet permit or approval limits.

In examining the common approval processes for the eleven pilot technologies, the six states determined that in many cases they could allow technology vendors to forego repeating test A (the pilot/treatability study) and test B (a full-scale field demonstration). However, the six states would require assurance that the data collection and tests for A and B were conducted in accordance with standard protocols.

Pathway to Reciprocal Technology Acceptance

The six states identified three tiers of data requirements for specific technologies, beginning with general requirements for all technology classes and continuing through to a detailed, technology-specific template for regulatory and/or permitting decisions. Through a "tiered approach" to reciprocal approval of environmental technologies, a state would provide assurance that a technology's data and performance tests adhered to the three tiers of protocols. Thus, other states could accept the results of tests conducted in accordance with the protocols and reduce duplicative testing of the same technology.

Tier I would offer vendor guidance for the development of credible data pertaining to all technology classes, with regulatory assurance that such data is acceptable to states. All technology developers and vendors would have to meet or address Tier I data standards as a condition for receiving further evaluation by the participating states. This document would also describe the "tiered approach" to interstate reciprocity and how the states could apply it to a range of technologies.

Tier II would provide vendor guidance for comprehensive performance testing for a specific technology class (pollution prevention, measurement and monitoring, treatment and control, or remediation). Tier II would cover minimum sampling and testing criteria common to all six states that would allow the technology to achieve maximum market penetration. The states would review and update these common criteria annually.

Tier II also would provide information on additional criteria, beyond the common criteria, required by individual states. By highlighting differences in state data requirements, Tier II would provide a basis for making regulatory changes to increase consistency among state programs. This information also would allow vendors to choose to initially deploy their technologies in a state with

testing and demonstration requirements that are most consistent with other states, so that later the technology could be more easily and cost effectively deployed in additional states.

Tier III would provide vendors and state permit writers with regulatory and technical guidance for permitting or approving specific technology types. The six states would base Tier III on the first full-scale commercial operation of the technology and use the results as a template for subsequent permitting decisions and regulatory guidance exchanged among states. Through their pilot project, the six states identified illustrative examples of Tier III guidelines.[**]

Tier III would incorporate protocols used by state agencies as well as existing protocols developed by federal agencies. These protocols may include the U.S. Environmental Protection Agency's Environmental Technology Verification (ETV) Program; public-private partnerships such as the New Jersey Corporation for Advanced Technology (NJCAT), the Massachusetts Strategic Envirotechnology Partnership (STEP), and the California Environmental Technology Certification Program; independent entities such as the National Sanitation Foundation, the American Society for Testing and Materials, and the American Water Works Association; and state organizations such as the Interstate Technology and Regulatory Cooperation (ITRC) working group.

The tiered approach is designed to provide guidance for both state regulators or permit writers and technology developers. The tiered approach would allow state regulators to accept technology performance data generated by and for other states for both regulatory approval and direct technology transfer. The approach is similar to individual states' informal processes for evaluating technologies and accepting data generated by third parties within their own states. This approach also resembles the informal method states use to exchange and accept other states' data. Technology vendors could follow the tiers to conduct performance tests and collect data that is acceptable to the participating states.

The six states found that as a rule, test C the startup/compliance test is required as part of a permit or approval and would be necessary to ensure that a technology met site-specific performance requirements. However, performance of test C according to an established technology-specific Tier III protocol could expedite interstate regulatory reciprocity based on one state's approval.

States could adopt the tiered approach to reciprocal technology acceptance through their existing media-based environmental programs without any change to their current structure. States also could institute the tiered approach through a verification or certification program as a single point of entry. The tiered approach would simply make the results of any state's ongoing technology evaluation and regulatory approval efforts performed in any of the states' media-specific programs accessible and useful to other states. The approach is also designed to use the results of federal, state, and independent verification and certification programs, which are consistent with and may surpass the requirements of the tiered approach.

Benefits of the Tiered Approach

By adopting the tiered approach to achieve reciprocal state acceptance of environmental technologies, states would accrue numerous benefits while helping to create or stabilize markets for new technologies.

Increased and enhanced state technology evaluation capabilities. States work cooperatively with various federal agencies, third-party verification and certification entities, and technology vendors to advance cleaner, cheaper, and smarter environmental technologies. For various reasons,

individual states may champion certain environmental technologies, in part based on experience and the technology's potential benefits to the state's environment and economy. The tiered approach could transfer the knowledge and experience of a technology's "champion" state to other states.

In a time of shrinking resources, no single state can champion all environmental technologies across the board. The tiered approach would allow states to share the data, performance tests, and expertise for those technologies they champion and thus reduce duplicative technology reviews in other states. This exchange would allow state regulators and permit writers more time to evaluate a greater number of technologies. It also would allow them to develop expertise in the applications and advantages of unfamiliar environmental technologies.

Reduced costs for states and vendors. By reducing duplicative demonstration and testing of technologies, the tiered approach would cut the states' costs for technology evaluation. For technology developers and vendors, reduction of duplicative tests would allow them to maximize their research and development dollars.

Accelerated removal of regulatory barriers. Regulatory and permit approval procedures are part of an iterative process that states adjust and revise to address new environmental issues and technologies. Through the tiered approach, states could accelerate identification and implementation of these changes to remove impediments to cleaner, cheaper, smarter environmental technologies. The six states illustrated this effect in their work on recycling technologies, identifying a mechanism for regulatory flexibility that can advance materials recovery and reuse.

Impetus for changing federal regulations. The tiered approach also would help states identify EPA regulations or regulatory interpretations that create impediments to accepting better environmental technologies. By following the Tier I and Tier II protocols and developing the technology-specific Tier III protocols for these technologies, states could urge EPA to acknowledge the states' review and remove impediments to the technologies' use.

Early notice of changing data and performance testing requirements. The participating states would periodically update the Tier II protocols to reflect changing requirements, whether they were common to all the participating states or pertained only to particular individual states. Thus, in using the Tier II protocols state regulators and technology developers and vendors would be alerted to imminent changes in the states' minimum data and performance testing requirements.

Exposed state regulatory anomalies. Because Tier II and Tier III protocols would be based on testing and data collection requirements common to the participating states, the tiers would reveal when one state imposed requirements that significantly exceeded the requirements common to the other states. In these cases, states with unusually stringent or lax requirements could examine them to determine whether they were justified by state-specific objectives. When states found their requirements are unjustified and excessive, they could consider revising them to align with the requirements common to the other states. Conversely, the other states might find that one state's additional requirement was reasonable and necessary to protect human health and the environment and might choose to adopt it.

Increased regulatory certainty to create or stabilize new technology markets. The tiered approach would create increased consistency and regulatory certainty for technology developers

and vendors. This certainty would help stabilize markets for technologies that had been demonstrated in accordance with the tiered approach, and enable vendors to develop, expand, and enter new markets more quickly and on a broader scale.

Applications to Specific Technology Classes

The tiered approach for reciprocal acceptance of data and performance tests could allow states to reduce duplicative demonstrations and deploy more effective environmental technologies. Based on review of the eleven pilot technologies, the six states also found opportunities for interstate regulatory reciprocity. A pathway for regulatory reciprocity would be similar to the pathway for reciprocal data and technology acceptance, using the demonstration accepted by one state as the basis and documentation for revising regulations. This pathway could lead to the development of conditional exemptions or general permits based on the tiered approach. The six states determined the potential for such reciprocal state acceptance for each of the following technology classes.

Recycling Technology

The six states examined two types of technology for recovering and reusing components of manufactured products or materials in a waste stream. The overall operation of these recycling technologies poses little environmental risk and provides significant environmental benefit by recovering and reusing a portion of a hazardous waste stream. However, federal and state regulations and policies can inadvertently discourage environmentally beneficial recycling.

Demanufacturing Technology: Demanufacturing systems collect and process discarded electronics that are obsolete, irreparable, or nonfunctioning. Demanufacturing recycles durable products, such as cathode ray tubes (CRTs) for reuse of their materials and components. The technology also can reduce the volume of heavy metals in the municipal waste stream.

Because some CRTs fail the hazardous waste classification test for lead, they are subject to manifesting and management as a hazardous waste under the Resource Conservation and Recovery Act (RCRA). RCRA hazardous waste management regulations impose substantial permitting and reporting requirements that can make the use of recycling technologies prohibitively time and resource intensive.

By applying two different RCRA exemptions, the six states can manage CRTs to allow their unencumbered movement to demanufacturing facilities and thus promote recycling over landfilling. California, Illinois, and New York propose using the RCRA universal waste exemption as New Jersey already does, while Massachusetts and Pennsylvania use the RCRA solid waste exemption. EPA also has addressed the management of CRTs through the Common Sense Initiative and is recommending a universal waste exemption for CRTs. Although all six states have delegated RCRA authority and would follow the same procedures for identifying and adopting RCRA exemptions, states are reluctant to accept another state's determination that the exemption applies.

Capacity for Reciprocity

Because exemption from RCRA requirements removes regulatory hurdles from the demanufacturing process, the six states believe the universal waste exemption could be revised to address its limitations in removing regulatory barriers for demanufacturing technology.

The six states could also promote greater stability in the demanufacturing market through expanded dialogue among seasoned regulatory professionals to resolve some contentious regulatory issues associated with interpretation and application of RCRA.

Four states California, Massachusetts, New Jersey, and Pennsylvania indicated their intent to use information transfer and market assistance to facilitate use of demanufacturing technology.

Zero Wastewater Discharge Systems: The six states examined a zero wastewater discharge system that fractionates wastewater into clean water and concentrated waste. In Massachusetts, certain applications of the zero wastewater discharge system are exempt from RCRA as a totally enclosed (zero-emissions) treatment system, and EPA Region 1 accepts this application of the exemption. The six states determined that use of this RCRA exemption would facilitate use of the technology.

All six states have delegated RCRA authority and generally follow the same technical guidance for determining the application of the RCRA exemption for totally enclosed treatment. However, states are very reluctant to accept another state's determination that the exemption applies, even if the determination was made according to standard federal guidance criteria. Moreover, states apply this exemption only to the specific type and application of a technology, so that each new zero discharge system must undergo the same time-intensive regulatory review to be designated as a totally enclosed treatment system. This uncertain regulatory pathway to approval slows commercialization of emerging zero discharge systems.

Capacity for Reciprocity

Because exemption from RCRA requirements removes regulatory hurdles from the zero discharge process, the six states determined that the states' use of the RCRA totally enclosed treatment system exemption would support the use of this technology. This exemption would help stabilize the technology's market by establishing more certain and less onerous regulatory requirements. However, the six states also believe the exemption could be revised to address its limitations in removing regulatory barriers for zero discharge technology.

The six states could also promote greater stability in the zero discharge technology market through expanded dialogue among seasoned regulatory professionals to resolve some contentious regulatory issues associated with interpretation and application of RCRA.

The six states have an opportunity to engage in discussions to clarify the regulatory pathway for zero discharge technologies and avoid subjecting users to onerous RCRA Part B requirements. This clarification may involve reviewing and accepting the regulatory and policy interpretations of other states.

Pollution Prevention Technology

Pollution prevention technologies and process changes reduce or eliminate pollution at its source. The use of these technologies can be driven by regulatory standards but generally they do not fall under a regulatory program. Therefore, environmental regulations do not directly create a market for pollution prevention technologies, and the private sector has complete discretion in deciding whether to use them.

The six states found that federal, state, and local governments can promote pollution prevention technologies by removing unnecessary barriers to resource reuse and conservation; emphasizing source reduction over control strategies; and encouraging companies to go beyond compliance

through process innovations. Governments also can help companies recognize the advantages of pollution prevention by developing a reference or context to highlight the technology's health and safety benefits and encouraging better cost accounting to reveal the savings from efficient use of resources.

Capacity for Reciprocity

Five of the six states (except Illinois) established reciprocal acceptance of data and performance tests through Tier I and Tier II protocols.

The six states can work to identify Tier III protocols for pollution prevention technologies by bringing together nonregulatory agencies, including technical assistance providers, the National Pollution Prevention Roundtable, the National Institute of Standards and Technology, manufacturing partnerships, and private pollution prevention consultants.

The greatest opportunity for increasing the acceptance and use of pollution prevention technologies is through technology transfer to industry using information gathered through interstate data exchange. All six states agreed to use information transfer to facilitate the use of pollution prevention technology.

Measurement and Monitoring Technology

Measurement technologies determine the presence, and in some cases the quantities, of specific contaminants in water and soil. These technologies may be used as a screening tool to identify the presence of contamination or as a compliance monitoring tool to verify that contamination does not exceed prescribed standards.

EPA technical guidance, such as SW 846, can be useful for identifying performance standards for measurement technologies. However, prescriptive methods and EPA's test methods approval process can inhibit states' acceptance of alternative measurement technologies when the guidance is incorporated directly or by reference into state regulatory requirements. Moreover, the process for approving new methods or revisions of methods to demonstrate compliance can be lengthy.

The inability of technology developers to move quickly through EPA's approval process slows commercialization of alternative measurement and monitoring technologies. In addition, some states have internal regulatory barriers that limit their ability to accept alternative methods for gathering compliance data. The six states have an opportunity to further expand reciprocity for

alternative measuring and monitoring technologies beyond their use as screening systems, but it will require additional work to accelerate the methods approval process and to remove internal state-specific regulatory barriers.

Capacity for Reciprocity

The six states established reciprocal acceptance of data and performance tests through Tier I and Tier II protocols. However, this acceptance is limited to use of the technology as a screening tool, rather than as a method to confirm compliance with standards or for site closure.

For screening technologies, the six states identified other potential protocols developed by the National Environmental Laboratory Accreditation Conference (NELAC) and the American Society for Testing and Materials, and the states will explore Title III protocols other than those approved by EPA.

The six states endorse streamlining the EPA Test Methods Approval Program for collecting data and monitoring compliance under the Clean Water Act and the Safe Drinking Water Act.

All six states can use information transfer to some degree to facilitate the use of alternative measurement and monitoring technologies. However, this approach may be very limited in Illinois in cases where state regulations prescribe measurement and monitoring methods.

Treatment and Control Technology

The six states examined three treatment and control technologies for drinking water treatment, wastewater treatment, and small septic systems. Treatment and control technologies provide the greatest opportunity for interstate reciprocity.

Because new environmental control technologies are permitted under the same approval mechanism as existing or proven technologies, the first several approvals in an individual state may be delayed as the state permit writer tries to either apply an existing permitting mechanism or create a new one to suit the technology. The tiered approach can be used to speed that process and support the accelerated transfer of the technology to other states.

Individual states have become champions of specific treatment and control technologies for various reasons. These states have worked with the technology vendors and/or a third party to fully demonstrate the technologies they champion according to the protocols established in Tier I and II. Furthermore, these states have developed the technology-specific Tier III protocols for their technologies' first commercial use. These Tier III protocols can serve as the regulatory templates for subsequent approvals within the state and for reciprocal approval in other states.

Capacity for Reciprocity

Four of the states Massachusetts, New Jersey, New York, and Pennsylvania established reciprocal acceptance of data and performance tests through Tier I and Tier II protocols for all three pilot technologies, and all six states achieved reciprocity for data on wastewater treatment systems.

For wastewater technologies, the six states identified potential Tier III templates developed by the American Water Works Association, the Small Flows Clearinghouse, the Great Lakes testing protocols, the National Sanitation Foundation, and the Buzzards Bay project in Massachusetts.

For drinking water systems, conformance of data and performance tests with Tier I and Tier II

protocols increases the level of comfort for permit writers, but regulatory reciprocity is not possible for drinking water systems because sensitivity to potential human health impacts requires full performance testing in all states.

Although state environment agencies are not responsible for approving some treatment and control technologies that are under the jurisdiction of state or local health agencies, environment officials can create linkages with other agencies to further support reciprocity for technologies beyond their jurisdiction. Through these linkages, environment agencies can cooperatively identify and adopt performance protocols for use as Tier III guidance.

Massachusetts and New Jersey have already demonstrated the potential of interagency linkages to facilitate technology transfer between states. Massachusetts provided New Jersey with testing and performance data for a small septic system that adhered to the tiered protocols. Although the New Jersey Department of Environmental Protection does not directly approve small septic systems, the department verified and lent credibility to the data and successfully gained its acceptance by the controlling authority in the state and the local health department.

Remediation Technology

Remediation units treat soils and groundwater contaminated with hazardous substances and hazardous wastes for small, short-term, on-site projects. State agencies that are unfamiliar with a new system's performance and unsure of its permit requirements can slow acceptance of remediation technology. However, because remediation technologies are highly regulated, they are particularly amenable to the tiered approach to data exchange.

Capacity for Reciprocity

All six states established reciprocal acceptance of data and performance tests through Tier I and Tier II protocols for three of the four pilot technologies. (For soil washing technology, all of the states except California achieved reciprocity.)

The multistate pathway for expedited technology deployment is very clear for remediation technology using the protocols of the Interstate Technology and Regulatory Cooperation (ITRC) working group.

For technologies that meet Tier I and Tier II protocols but have no ITRC protocol for use in Tier III, the six states can identify states that are examining similar technologies and engage them in developing a Tier III template.

Implementing Reciprocity and Expanding It to Additional States

The six states are challenged to institutionalize data exchange and technology acceptance to be accessible to other states and preserve the integrity of the tiered approach. The six states identified the following mechanisms to implement reciprocity and expand it to additional states whose environmental commissioners commit to using the tiered approach.

Shared database for tier information. The six states recommend establishing a shared database to serve as a vehicle to exchange information among the six states and extend opportunities for reciprocity to other states. Through the database, states could exchange information on those technologies with data and performance tests that adhere to the tiered protocols. Each participating

state would submit to the database only those technologies that had been through its approval process, had met the requirements of the Tier I and Tier II protocols, and whose vendor wished to enter new markets.

State regulators and technology developers could access the database through an Internet web site. The site would provide a profile and summary data on technologies with the assurance that the technology's performance data had met certain standards. The site also would identify a contact person in the host state who could provide detailed information on the technology and the state's process for approving it. Operation and use of the database could be piloted by the six states before extending it to additional states.

Outreach and training for using the tiered approach. In addition to the database, the six states would need management support and resources to conduct outreach to permit writers and other state agencies. Through this outreach, the states would disseminate information on the tiered process and pathways to reciprocal technology approval.

The six states recommend using a Commissioner-level meeting, perhaps in conjunction with a conference of the Environmental Council of the States or the ITRC Policy Advisory Board, to establish a management team to provide advice and direction to additional states and monitor the progress and expansion of reciprocity. The team would provide a mechanism for drawing states into the MOU effort and briefing permit writers on the components and benefits of the tiered approach. The Commissioners could establish annual goals and determine the desired level of interstate reciprocity for environmental technology acceptance.

In each state, teams of bureau chiefs assisted by MOU lead staff could deliver a series of presentations throughout the agency/regions/state to incrementally brief staff on the tiered approach. The presentations could be developed by a core group of the state technology reviewers and permit writers so that states could deliver consistent training to the regulators and technical assistance providers who would be responsible for implementing the tiered approach. The six states identified this core group for its permit writers' workshop. Each state could identify existing groups and structures to serve as vehicles for delivering information and training on the process.

Continuous improvement of the tiered approach. Over time, the six states could collect and evaluate case studies of the technologies that had been evaluated using the tiered approach to determine the effectiveness of the system and its benefits to the states and the public. This evaluation could serve as a basis for improving the tiered approach.

Additional Strategies for Speeding Interstate Technology Acceptance

Some impediments to introducing environmental technologies in a state do not stem from regulations and permits. Acceptance of a technology may be slowed because state agency staff, technology users, and the regulated community are unfamiliar with the technology. For technologies that have been evaluated using the tiered approach, regulatory agencies can encourage their use in the following ways.

Supporting and promoting interstate activities and organizations, such as permit writers' workshops, ITRC, the National Pollution Prevention Roundtable, and the Environmental Council of the States, which foster reciprocity by increasing confidence in other states' processes for approving environmental technologies.

Performing outreach through conferences, publications, and personal contacts.

Providing technology vendors with a single point of entry for permitting.

Using the state's procurement policy to purchase new environmental technologies.

Identifying potential technology investors.

Identifying tax credits.

Identifying other (non-state) market assistance programs.

Identifying technology needs specific to the state.

Publicizing technologies that have completed the state review process.

Attachment A

Amendment to the Memorandum of Understanding for the Evaluation and Promotion of Environmental Technologies

Amendment to the Memorandum of Understanding for the Evaluation and Promotion of Environmental Technologies

This amendment is made and entered into by and between the following parties:

The California Environmental Protection Agency, and

The Illinois Environmental Protection Agency, and

The New Jersey Department of Environmental Protection, and

The New York Department of Environmental Conservation, and

The Massachusetts Executive Office of Environmental Affairs, and

The Pennsylvania Department of Environmental Protection

Whereas, the States of New York and Pennsylvania support the agreements reached to promote environmental technologies in the original Memorandum of Understanding between the States of California, Illinois, Massachusetts and New Jersey.

Therefore Be It Resolved, that we the undersigned, agree to dedicate resources to aggressively implement the following actions within the indicated timeframes:

Within five months, complete a pilot program to evaluate 12 technologies (two from each of the six states) which represent a broad range of media and technology types (from pollution prevention to remediation). This pilot program will be used to gather the information needed to define a process for the reciprocal evaluation, acceptance and approval of environmental technologies among the six states.

Within the pilot program, the 12 technologies will be thoroughly evaluated in each state and will either:

- be given reciprocity which means that the information shared will be deemed acceptable to meet the review and evaluation processes of all the MOU states without duplication of technology demonstrations, evaluations, verifications or certifications, AND the appropriate approvals and/or permits will be granted after the completion of any necessary assessment of site-specific impacts and subject to any appropriate site-specific limitations or conditions (a completed application form and/or fee may be required as well as applicable public involvement); or

- be advised that shared data is insufficient to meet the review, approval and/or permit standards of another state, specifying the additional data needed or the differing standard(s), with an offer to work directly with the vendor to speed up the evaluation of any additional data submitted.

following:

- A standard format for information exchange on new environmental technologies among the MOU states to maximize the extent to which information evaluated in one state will be "acceptable" to any of the other five states, where acceptance is defined as each state agreeing to consider the data from technology demonstrations, evaluations, verifications and certifications from another state as if they had overseen the data gathering and analysis themselves;

- A clear description of the processes and specific standards in each state for the review, approval and/or permitting of environmental technologies in differing media, ranging from pollution prevention to remediation;

- To the extent feasible, a streamlined, coordinated process and standards for the review, approval and/or permitting of environmental technologies among the MOU states to maximize "acceptance" of information;

- Technology types which share common interstate standards for review, approval and/or permitting. These similar technology types can be expected to follow a streamlined application process and receive reciprocity with minimal auditing to the extent that the information shared will be deemed acceptable to meet the review and evaluation processes of all the MOU states without duplication of technology demonstrations, evaluations, verifications or certifications AND the appropriate approvals and/or permits will be granted after the completion of any necessary assessment of site-specific impactsand subject to any site specific limitations or conditions;

- Technology types which do not share common data requirements or approval standards but may be amenable to sharing common data requirements or approval standards. These technology types will be the focus of additional work to evaluate the differing data requirements and/or performance standards and to formulate recommendations for statutory and/or regulatory revisions eliminating unnecessary differences;

- Technology types which do not share common data requirements or approval standards and are not amenable to sharing common data requirements or approval standards; and

- A guidance document for technology developers, vendors and potential users and investors, based upon the experience and information gathered during the pilot project, which presents in a user-friendly style:

  A standard format for information exchange on new environmental technologies among the MOU states to maximize data acceptance.

  A clear description of the processes and specific standards in each state for the review, approval and/or permitting of environmental technologies.

  To the extent feasible, a well defined, streamlined, coordinated process for technology review, approval and/or permitting, and associated standards among the MOU states.

An identification of a range of technology types which can be expected to receive interstate reciprocity as described above.

A clear description of differing standards of review, approval and/or permitting to allow readers to adapt their data gathering, demonstrations, market assessments and financial decisions accordingly.

A list of contacts within each state who are responsible for the implementation of the interstate reciprocal reviews, approvals or permits and who will provide a range of services to vendors to assist them in better defining markets and speed technology dissemination. Such services include access to existing environmental and/or economic data, and may also include direct assistance with market assessments, and evaluation of commercial potential.

Depending upon each state's interests and environmental/economic priorities, the guidance may include a list of technologies sought for promotion in an individual state. Those technologies may be given assistance through demonstration at state sites, state purchasing or other mechanism.

By signing this amendment to the memorandum of understanding this Fourth Day of June, 1996 in Washington D.C., we the undersigned in no way abrogate our individual state statutory and regulatory authorities and responsibilities, nor remand, repeal, or otherwise alter the laws or regulations of the respective signatory agencies.

Mary A. Gade, Director
Illinois Environmental
Protection Agency

James M. Strock, Secretary
California Environmental
Protection Agency

Robert C. Shinn, Commissioner
New Jersey Department of
Environmental Protection

Trudy Coxe, Secretary
Massachusetts Executive Office
of Environmental Affairs

James M. Seif, Secretary
Pennsylvania Department of
Environmental Protection

Gary Spiegelman, Deputy Commissioner
New York Department of
Environmental Conservation

Attachment B

Technology Review of the Technologies in the Pilot Project of the Six-State Partnership for Environmental Technology

Six-State Partnership for Environmental Technology Pilot Project

Technology Review

Company	Aqua-Aerobic Systems, Inc.
Process	Sequential Batch Reactors
Host State	Illinois
Environmental Media	Wastewater Treatment

Technology Summary

Sequential Batch Reactors (SBRs) are a variation of the activated sludge process. SBRs develop a mixed culture of bacteria which is effective in removing BOD, COD and nutrients commonly found in wastewater. Instead of using an aeration tank and separate clarifier for solids removal, SBRs accomplish both in a single tank. This eliminates the need for secondary settling as well as sludge removal mechanisms. SBRs can be used to treat any wastewater that is amenable to treatment by activated sludge treatment. The reactor vessels are designed in parallel. An example provided by Illinois describes a 0.5 MGD facility. Here, three reaction tanks are used which cycle 6 times a day.

Environmental Benefits

SBRs can meet the same effluent limitations as conventional activated sludge treatment systems.

Cost Benefits

While no cost data was included with the technical information, capital costs of construction may be lower since it is not necessary to install secondary clarifiers and sludge removal mechanisms.

Company	Regenisis
Process	Biowall Using Oxygen Release Compound
Host State	New York
Environmental Media	Groundwater Treatment/Drinking water

Technology Summary

The biowall system is a reactive groundwater barrier technology using an oxygen release compound (magnesium peroxide) which enhances the bioremediation potential. This technology was tested at a coal gas site in New York using a series of wells drilled in close proximity perpendicular to groundwater flow. Solid MgO2 was inserted into the wells and replaced periodically as the oxygen depleted. Initial review of the data indicated that there was a reduction in contamination concentrations in groundwater without creating any other adverse impacts on the environment. Continued evaluation of the technologies effect the higher molecular weight components of coal gas sites is required for complete evaluation of this technology.

Environmental Benefits

The biowall system allows enhanced in-situ bioremediation, naturally reducing contaminant levels in the unconfined aquifer.

Cost Benefits

The biowall system can be installed at sites using low cost drilling techniques such as geoprobe. The benefits of in-situ bioremediation are well documented. There is good argument that the installation cost is so low that it might make sense to use the biowall technology immediately at a site as a method of containment while site assessment is completed.

Company	Maxymillian Technologies, Inc. (MTI)
Process	Indirect Thermal Desorber
Host State	New York
Environmental Media	Remediation/Dredging

Technology Summary

The MTI Indirect System is an indirectly fired mobile desorption system. The system uses indirect heating to thermally desorp contaminants from soil in a rotary drum volatizer. The indirect soil heating desorption is followed by a steam stripping unit. It is currently being used to remedied PCB contaminated soils at South Glen Falls dragstrip site in South Glen Falls New York. The technology can manage VOCs, SVOCs and PAHs with a moisture contact up to 20 percent. The project has been approved by NYDEC and the USEPA. The R&D tests have been completed and the facility is in interim operations.

Environmental Benefits

The air pollution control system (APCS) is a baghouse, quench (wet scrubber), condenser, carbon preheater, HEPA filter and vapor phase carbon adsorption. The APCS manages the flue gases from the indirect heating unit and the steam stripping system. The particulates from the bag house are recirculated with the cleaned soils. The level of PCBs is less than 2 ppm. The blowdown from the quench and condenser are managed by a wastewater treatment unit which includes PH adjustments, floculator, clarifier, particulate filtration and activated carbon polymer polish. The cleaned waste waters are recirculated to remoisturize the treated soils. The sludge from the wastewater treatment unit is consolidated with a filter press and the filter cake is disposed.

Cost Benefits

No quantitative data submitted.

Company	Electronics Processing Associates, Inc.
Process	Demanufacturinhg
Host State	New Jersey
Environmental Media	Solid Waste/ Recycling

Technology Summary

In demanufacturing, the usual manufacturing production cycle is reversed. Discarded products are used to create components for the manufacturing of new products. In this example, demanufacturing involves the collection and processing of consumer electronics and appliances (CEAs) that are obsolete, unrepairable or nonfunctioning. The materials are source separated from
the solid waste disposal stream and directed to a facility where they can be disassembled, marketed and processed into usable components.

Environmental Benefits

Use of this process can significantly reduce levels of lead, cadmium, and mercury as well as dioxin precursors from entering the waste stream from discarded CEAs. Reusing these large volume products will also increase recycling rates for durable goods and conserve valuable landfill space.

Cost Benefits

Reuse of these products can result in significant disposal cost savings.

Company	Applied Remediation Technologies (Heidemij)
Process	Soil Washing
Host State	New Jersey
Environmental Media	Remediation

Technology Summary

Heidemij is a soil washing technology. It was developed in the Netherlands and has been used minimally in the U.S. and only once in New Jersey to remedied soils at an abandoned waste recycling facility which was on the National Priorities List. This technology uses a physical/chemical process to remove contaminants that reside in specific grain-size domains. It is a batch process that separates the waste streams into “cuts” focusing treatment appropriate to the contaminant/grain size relationship. This technology is especially effective in removing contamination from sandy soils.

Environmental Benefits

This technology can successfully reduce levels of chromium, copper, nickel and other heavy metals to well-below federal standards. It also results in a significant volume reduction of contaminated soil (82% in the NJ case). Soil de-contamination also protects groundwater sources from contamination.

Cost Benefits

No cost data submitted.

Company	Fulton Boiler Works, Inc.
Process	Low NOx Boiler Technology
Host State	California
Environmental Media	Air

Technology Summary

The Fulton Boiler Works is a natural gas fired boiler which produces high and low pressure process steam and hot water. The air/gas is completely pre-mixed in the top portion of the burner and forced down into the ignition area to a spinning cyclonic flame. The flame travels downward inside the furnace creating overall even heating throughout the boiler. The increased flow velocity decreases the residence time of reactants in the flame zone and reduces NOx formation.

Environmental Benefits

Low Nox (precertified to operate at less than 25ppm @ 3% O2), low CO (several models currently perecertified at less than 50 ppm @ 3% O2) and high thermal efficiency (some models precertified at greater than 75%). Low particulate and low Sox emissions due to the use of natural gas.

Cost Benefits

No data submitted.

Company	Ohmicron
Process	BTEX Immunoassay
Host State	California
Environmental Media	Site Characterization/ Screening

Technology Summary

This is a field screening tool for the detection of petroleum hydrocarbons in soil and water. This technology can be used to determine the scope of contamination at a known site or as an initial tool to determine the presence of petroleum hydrocarbons, thus saving expensive laboratory analysis. In either application, this technology offers fast turnaround time with reliable data, all at a lower cost than traditional analysis.

Environmental Benefits

Not applicable

Cost Benefits

This technology will supply reliable data for the purposes of site characterization. By using an effective screening method such as the BTEX Immunoassay, up to 80% of field screening samples could be performed at a fraction of the cost of traditional lab methods with rapid turnaround.

Company	Mercury Recovery Services, Inc.
Process	Mercury Removal/ Recovery Process
Host State	Pennsylvania
Environmental Media	Hazardous Waste Treatment

Technology Summary

This technology is a medium - temperature thermal desorption process. The system is a truck - mounted mobile unit with a capacity of 12 tons per day. The system is a negative pressure low volume, low velocity, two stage heating process. The first stage involves low temperature heating (190° - 212°F) to vaporize the mercury contaminated soil/material including additives to facilitate decomposition of mercury. The second stage is a high temperature heating (1,000° - 1,200°F) to vaporize the mercury.

The low temperature air flow is treated through a carbon adsorption system and discharged. The high temperature air flow is condensed by a chiller and it treated through the carbon absorption system. This technology is being used to treat mercury contaminated soils (above TCLP) limits at a natural gas pipeline in PA and in NM under a Department of Energy R&D project. The R&D tests have been completed and the facility is operating in PA.

Environmental Benefits

The low temperature air flow air pollution control system (APCS) is a carbon absorption unit. The air flow from the APCS is vented to the atmosphere. The high temperature air flow APCS is a chiller (condenser) for the mercury followed by the carbon adsorption unit. Total mercury and mercury compounds is reduced to less than 1 ppm. The system minimizes liquid discharge by controlling the outlet air flow temperature. No discussion is presented regarding the air emissions data. The only solid waste generated would be from the carbon adsorption unit.

Cost Benefits

No data available.

Company	
Process	Membrane Filter Technology
Host State	Pennsylvania
Environmental Media	Groundwater Treatment/ Drinking Water

Technology Summary

Membrane filtration is used to produce high quality drinking water. This particular technology consists of two sets of membrane filtration units, operated in parallel, with each set consisting of five membrane filters in a spiral wound configuration. Each filter has a surface area of 96 square feet and has an absolute micron rating of 0.02um.

Environmental Benefits

This filter is designed for small community drinking water systems. The filter is particularly effective in the removal of Giardia and crypto sporidium.

Cost Benefits

The Membrane Filter technology will offer significant capitol cost savings over other technologies such as sand beds. This is particularly important for the small community systems that must now comply with the new Surface Water Rule. O&M costs should also be lower using this technology.

Company	Cellini Purification Systems
Process	Controlled Atmosphere Separation Tech. (CAST)
Host State	Massachusetts
Environmental Media	Pollution Prevention

Technology Summary

The CAST system uses flash distillation and vacuum evaporation for the treatment, recovery and reuse of industrial process waste waters. The CAST system also uses a proprietary baffle system in the liquid/vapor separator that increases the efficiency of the process by decreasing the volume of the extract through the system induced vapor/liquid phase change. Integral to the system is a spray injection component that uses a nozzle to introduce the wastewater into the system as a fine particulate spray that serves a dual purpose: wastewater dispersion in the separating chamber and foam control.

The CAST system uses are wide ranging however, for this review the system is used to recover rinse waters and/or selected chemical solutions from process operations routinely used in the metal finishing, electronic, photochemical, machining and other similar industrial operations. Specific industrial applications under review for this study include: chromic acid recovery, silver cyanide plating solution recovery and rinse water recovery and reuse.

Environmental Benefits

The CAST system is designed to offer industrial facilities a treatment system that has both high removal efficiencies (95-99%) and closed looping/waste minimization capabilities.

Cost Benefits

Because wastewater is not generated, the recovery system causes a reduction in wastewater treatment costs. This system does have a relatively high energy requirement. The cost associated with this would be dependant upon energy costs in the area or state.

Company	AWT Environmental
Process	Bioclere
Host State	Massachusetts
Environmental Media	Wastewater Treatment

Technology Summary

The Bioclere unit utilizes a trickling filter concept for enhanced wastewater treatment and nitrogen removal. The filter consists of a bed of highly permeable plastic media to which microorganisms are attached. Septic tank effluent is trickled through the filter. The base of the unit serves as a final settling basin which discharges to a traditional leaching area.

Environmental Benefits

The Bioclere unit has application to nitrogen sensitive areas. By lowering the nitrogen concentration, greater discharge rates can be applied to the leaching fields, thereby reducing the size of the disposal field.

Cost Benefits

The installation of the Bioclere system will allow a 50% reduction in the size of the leaching field, or a 2 ft. Reduction in the groundwater separation requirement. Depending upon site conditions, this could cut the cost of the disposal system in half. The savings might be more dramatic if the Bioclere system replaced an alternative design, such as a sand mound.