

THE KEYS TO SUCCESS

A COMPILATION OF WORKABLE P2 INTEGRATION TECHNIQUES

PREPARED FOR:
EPA REGION 8

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Bibliography

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Introduction

This booklet is an effort to compile a user-friendly set of *workable P2 integration techniques*. Let's explore the phrase "workable P2 integration techniques" in a little more depth. First, what do we mean by "workable"? Several years ago, Tellus Institute released the SPRINT Compendium, which identified and illustrated 50 practices that, in theory, could achieve P2 integration. While all of the practices were promising, not all were being practiced. With several more years of experimentation among states, we are now able to focus not on what could work, but what has actually worked. (Note that while we illustrate the practices with many real-world examples, this is not an exhaustive list of the P2 integration work of states.)

Second, we want to reiterate what we mean by P2. P2 in this context is strictly preventing pollution at the source. Not every creative idea that government employees have for making the environment cleaner is necessarily P2. For example, finding a clever way to recycle pollution or preserve open space or clean up hazardous waste sites are all important goals, but they do not usually constitute P2.

Third, what does it mean to have P2 integration? The difference between a good P2 idea and good P2 integration is that an idea is usually a one-shot effort while integration is systemic. A good P2 idea is to issue tickets for idling more than three minutes (as the city of Toronto does), which provides an incentive for drivers to turn off their cars or trucks while temporarily parked. Good P2 integration would be for the city government to systematically review its employee training, its signage, its public messages and other tools at its disposal for preventing air pollution from mobile sources.

Finally, we want to give credit to a set of actions that we call "enabling practices," which do not independently comprise workable P2 integration techniques, but which do lubricate or support the process. These practices include 1) information-sharing fora such as the P2 Roundtables, 2) symbolic efforts such as environmental agencies practicing energy efficiency themselves and thereby leading by example, and 3) meta-measurement practices such as measuring the rate of P2 adoption or P2 integration.

We close with a plea for agencies at all levels to embrace not only these practices but the enthusiasm to expand this ever-evolving list. There is an especially critical need for leadership at the regional level. State environmental agencies have said they are reluctant to take action on the P2 front without the solid support of the regional EPA offices. Often, this support is enthusiastically and genuinely proclaimed, but fails to trickle down into the programs where permission or approval can be withheld for experimenting with new ideas. We hope that this booklet will suggest concrete steps that regions and states can take in achieving a regulatory system in which the first line of defense is prevention.

Rules

Perhaps the most obvious source of P2 integration ideas is the rules that govern much of the day to day activity of environmental staff. Thus, creating systems whereby both existing rules and rules yet to be written are scrutinized for P2 opportunities is sure to have a broad impact.

Review Existing Rules for P2 Opportunities

<p>Practice Description</p>	<p>Experience has taught states that the way rules are written can preclude the option of P2 or create strong disincentives for it. As a result, a number of states have recognized that rules also have the potential to <i>promote</i> P2 or <i>create</i> incentives for it. Some states have therefore sought to systematically review existing rules for inherent P2 barriers and potential solutions and begun, where feasible, to modify these rules. Modifications can take many forms from simply allowing P2 as a compliance option to prescribing P2 measures directly to creating P2-linked incentives.</p> <p>Special or ad hoc committees are usually formed to conduct these reviews, generally comprising P2 program staff and regulatory rulemaking staff. Committees may include only the particular media regulatory program responsible for enforcing the rules under review or may have representatives from many or all media programs in addition to P2 program staff. In some states the number of rules reviewed and the numbers modified to include P2 are formally tracked. Finding sufficient time to review all of the regulations and shepherding revised rules through the approval process are important challenges.</p>
<p>Examples</p>	<p>The Texas Natural Resources Conservation Commission Rules and Policy Review Committee (RPRC) is in the process of reviewing each rulemaking package for its P2 potential as part of the committee review process. A P2 field has been added to a Rules Log data base to flag these rules. The RPRC also encourages the use of multi-media rule teams in developing applicable rules. In 1999, 8 rules with P2 components were completed. In 1998, there were 10 multi-media rulemaking teams and 24 in 1999.</p> <p>Indiana's Pollution Prevention Office conducts a review of all state environmental rules and suggests changes that can make them more P2-friendly or remove P2 disincentives. When developing the states non-CTG RACT rule, the Indiana Department of Environmental Management (IDEM) discovered that many facilities likely to be subject to the rule were planning to use materials substitution (P2) to reduce their VOCs. Region 5 EPA was skeptical of the enforceability of these of reductions and favored a RACT requiring an 81% reduction through pollution control. Together the state and EPA developed a three-tiered rule that permitted the use of P2 to reduce VOC emissions.</p>
<p>Contacts</p>	<p>Ken Zarker, Texas Natural Resource Conservation Commission, 512-239-3145, kzarker@tnrcc.state.tx.us</p> <p>J. McCabe, Indiana Department of Environmental Management.</p>
<p>Sources</p>	<p><i>State Experience Integrating Pollution Prevention in Permits</i></p> <p><i>Pollution Prevention Regulatory Integration Case Studies</i></p>

Integrate P2 into New Rulemaking

Practice Description	<p>In addition to reviewing existing rules for P2 potential and revising when appropriate, states have also worked to ensure that P2 is included in new rules. The steps states have taken reflect several barriers to successfully accomplishing this objective. All have changed rule development protocols to some degree, usually explicitly including a question or field regarding the potential for integrating P2 into the rule in rule development forms or databases. How that potential is evaluated and developed differs from state to state. In some cases the process is left mostly to the regulatory division writing the rule, frequently with input from the P2 technical assistance program, and in others it is overseen by an inter-agency multi-media committee.</p> <p>Doing rules right the first time is key. By considering P2 options or barriers early in the rule development process, regulators can create innovative approaches that are less likely to be introduced or accepted when revising existing rules. P2 training for staff with the responsibility of integrating P2 into new rules is a prerequisite for success.</p>
Examples	<p>The Wisconsin Department of Natural Resources (WDNR) changed its rule development process to highlight P2 as a potential alternative to pollution control. The new policy involves two concrete changes to the rule development process: 1) the addition of a question to the form completed by rule drafters at the beginning of the rule development process asking if the rule offers an opportunity to promote P2; 2) a requirement that any rule which has been so identified include a P2 analysis in the background memo attached when rules go out to hearing.</p> <p>The Texas Natural Resources Conservation Commission (TNRCC) has introduced several changes to ensure the inclusion of P2 into new rules whenever possible. The agency has a Rules and Policy Committee that revised its Rules Action Form such that rule drafters designate those rules that have P2 opportunities. When rules receive this designation, a cross-agency team is assigned to draft the rule. TNRCC has also developed a P2 rules training module to encourage P2 in the development of rules. The training workshops using this module encourage staff to view P2 as a new regulatory “tool” that offers opportunities for creative innovation.</p> <p>TNRCC has applied its cross-agency rulemaking team approach to regulating air sources. The team has developed a de minimis rule for air sources similar to the Conditionally Exempt Small Quantity Generator (CESQG) category used in Hazardous Waste regulation. By establishing a threshold for permitting, the program creates an incentive for P2— in the form of permit avoidance— to drop below that threshold.</p>
Contacts	<p>John Shenot, Wisconsin Department of Natural Resources, 608-867-0802, Shenoj@dnr.state.wi.us</p> <p>Kerry Drake, Texas Natural Resource Conservation Commission, 512-239-1112, kdrake@tnrcc.stat.tx.us</p> <p>Susi Ferguson, Texas Natural Resource Conservation Committee, 512-239-2320, sferguso@tnrcc.state.tx.us</p>

Sources

Pollution Prevention Solutions During Permitting, Inspections and Enforcement
Pollution Prevention Regulatory Integration Case Studies

Permits

Permits are often the first place that industry and environmental agencies interface. Thus, it is a powerful opportunity for agencies to convey early in the process their emphasis on P2 as a means to achieve and maintain compliance. States have taken a variety of approaches in this area, ranging from formal to informal, from general to precisely targeted, and from voluntary to mandatory.

These practices are arranged roughly in order of how early in the process they occur. The first few are steps to establish incentives and guidance to encourage facilities to consider how they can achieve less stringent permits or avoid permits altogether by planning in advance. Another set of practices highlights the importance of P2 planning as part of the permit process, a step that can occur anywhere in the permit process, though earlier is usually better. P2 plans often identify opportunities that not only benefit the environment but often result in cost savings as well. The practices in this section conclude with several creative practices that facilitate P2 in ways other than planning, such as incentives, pre-approval of changes, and multi-media permits.

Change Standard Permit and Compliance Documentation

<p>Practice Description</p>	<p>Standard printed permit and compliance materials are one of the principal ways state agencies' communicate, both internally and externally. Changing these documents to include P2 wherever possible is a powerful way to embed P2 in the regulatory process.</p> <p>Although relatively simple it is not without its obstacles and limitations. Changes, especially significant changes, may require complex approval procedures and the extent of changes are limited by existing rules. In addition, regulatory programs and regulated entities may not appreciate the changing of familiar forms.</p>
<p>Examples</p>	<p>The Texas Natural Resources Conservation Commission (TNRCC) is testing this approach in its New Source Review process. TNRCC is changing all permitting documents, including the permit application form, application instructions, and technical review document template to require "each permit applicant to address the potential for source reduction as part of the [BACT] consideration." TNRCC also identified "source reduction opportunities for BACT that can be integrated into technical guidance documents."</p> <p>TNRCC, aware of both limits and of potential pitfalls, has been careful to coordinate both with US EPA and affected regulatory programs to ensure changes are well-suited. Instead of changing documents wholesale they have capitalized on opportunities to insert P2 when documents are changed or created for other reasons. They have also made sure to cultivate the support of program management so that changes will be long-lived.</p> <p>At the end of FY1999, 10 documents had been changed to highlight P2. In FY1999, an estimated 20,000 tons per year criteria air emissions reductions (10% of total) could be attributed to source reduction. How much of this is to some degree attributable to document changes could not be determined for FY1999, but will be in FY2000.</p>
<p>Contacts</p>	<p>Ken Zarker, Texas Natural Resource Conservation Commission, 512-239-3145, kzarker@tnrcc.state.tx.us</p>
<p>Sources</p>	<p><i>Innovative Practices in P2 Integration: Case Study Examples from the States</i></p>

Pre-permit Communication

Practice Description

Providing technical P2 information and support early in the permit application or renewal process is a mechanism that many states are using to promote P2. Generally this pre-permit communication is itself technical assistance or offers an entrée to an interview with technical assistance providers to discuss possible P2 opportunities.

States have found that the earlier in the permit process P2 is introduced the more likely regulated entities are to implement P2 projects. Not all permit rules facilitate early introduction of P2 since many follow the pollution-control paradigm. Not surprisingly, state agency staff participating in facility interviews need to receive appropriate training, and printed technical assistance materials are most effective when they are industry-specific.

Examples

The Michigan Department of Environmental Quality (DEQ) Surface Water Division amended its NPDES permit applications with language encouraging consideration of P2 alternatives, highlighting the benefits of P2, including the possibility of permit avoidance and technical assistance (with contact information).

The Massachusetts DEP uses a voluntary pollution prevention worksheet in the Title V permit application process. The worksheet is designed to help permit writers determine which pollution prevention opportunities should be considered. It includes definitions and examples of different kinds of P2, e.g., input substitution and production unit redesign, and asks applicants to indicate whether opportunities of this type might be possible within their manufacturing setting.

The worksheet also encourages the permit applicant to contact the permit writer and the Office of Technical Assistance. The worksheet is believed to have had limited effectiveness because of limited funding for outreach, a low initial response rate, and the fact that permits are guaranteed in a certain timeline, which restricts the time for increased analysis needed for innovative P2 permits.

The Connecticut Department of Environmental Protection (DEP) includes pollution prevention information with the materials sent to all companies that apply for permits. This material includes information on the activities and services of the Connecticut DEP's Office of Pollution Prevention as well as information on industry-specific technical options for pollution prevention.

In Ohio, the Industrial and Hazardous Waste Division promotes consideration of P2 in permit renewal letters and subsequent pre-permit meetings. Applicants are encouraged to identify source reduction and waste minimization opportunities at the earliest stages of permit development or six months prior to the permit renewal call-in date. Representatives from the state technical assistance office participate the pre-permit meetings. In New Hampshire, a similar approach is taken in the permit process for facility modification or new facility construction.

In Texas, the Industrial and Hazardous Waste (I&HW) program permit renewal letter encourages a pre-application meeting. P2 technical assistance program

	<p>staff join in RCRA pre-application meetings, and distribute two "permit elimination" case studies showing cost savings and emissions reductions. Texas has had some success with this program. In 1999, the second year of the program, 100% of pre-permit meetings included P2 information, 90% of I&HW staff received P2 training, three P2 projects resulted from pre-permit meetings, and 100% of permit renewals contain P2 requirements.</p>
<p>Contacts</p>	<p>Carrie Monosmith, Pollution Prevention Section, Environmental Assistance Division, Michigan Department of Environmental Quality, 517-373-0604</p> <p>Keith Anderson, Central Regional Office, Massachusetts Department of Environmental Protection, 508-792-7692</p> <p>Bill Lampkin, Pollution Prevention/Multimedia Pilot Project, Northeast Regional Office, Massachusetts Department of Environmental Protection, 617-932-7657</p> <p>Paul Lockwood, Waste Management Division, NH Department of Environmental Services, 603-271-2956, P_Lockwood@des.state.nh.us</p> <p>Mary Sherwin, Office of Pollution Prevention, Connecticut Department of Environmental Programs, 203-424-3297</p> <p>Katherine Nelson, Texas Natural Resource Conservation Commission, 512-239-6622, knelson@tnrcc.state.tx.us</p>
<p>Sources</p>	<p><i>Pollution Prevention Solutions During Permitting, Inspection and Enforcement</i></p> <p><i>Innovative Practices in P2 Integration: Case Study Examples from the States</i></p> <p><i>State Experience Integrating Pollution Prevention in Permits</i></p> <p><i>Pollution Prevention Regulatory Integration Case Studies</i></p>

Targeted Intervention to Eliminate or Downgrade Permit

Practice Description	<p>At least one state proposed a program that seeks to help facilities reduce permit stringency or avoid the need for a permit altogether. Similar to the preemptive intervention enforcement programs (see <i>Preemptive Intervention</i> in the <i>Enforcement</i> section of this document), facilities within “striking distance” of avoiding a stricter permit or a permit altogether are systematically identified and offered technical assistance to reduce their emissions.</p>
Examples	<p>Minnesota’s Pollution Control Agency (MPCA) proposed to review total facility air quality permit applications awaiting action to identify those in sectors that could conceivably use P2 to lower their emissions below the threshold of their current or likely permit. MPCA and the Minnesota Technical Assistance Program (MnTAP) staff would contact these “striking distance” companies and offer to help them make reductions and apply for new lower-limit, more flexible, in some cases nonexpiring “registration” permits. MPCA also proposed to screen applications for companies that have taken steps to reduce their emissions via P2 or other means and have become eligible for the lower limit permits that may not have been available during the previous application cycle. In both cases, MPCA and companies benefit from the increased proportion of easier and quicker-to-process permits.</p>
Contacts	<p>Al Innes, Minnesota Pollution Control Agency 651-296-7330, alister.innes@pca.state.mn.us</p>
Sources	<p><i>Pollution Prevention Regulatory Integration Case Studies</i></p>

Pre-Permit Planning to Eliminate or Downgrade Permit

<p>Practice Description</p>	<p>Programs requiring pre-permit planning with the explicit goal of eliminating or down-grading a permit combine three key elements:</p> <ol style="list-style-type: none"> 1. Early introduction of P2 in the permitting process; 2. Mandatory planning so that regulated entities identify and evaluate P2 opportunities; and 3. A strong incentive to implement identified opportunities. <p>The Achilles heel of programs mandating P2 planning is that their success in actually promoting P2 depends on regulated entities seizing P2 opportunities brought to light by the planning process. A growing body of evidence, such as the joint National Resources Defense Council/Dow project, suggests that the general tendency to resist change as well as other factors common to many corporate cultures pose significant barriers to implementing even cost-effective P2. In addition, regulated entities are almost certain to use traditional flawed accounting methods that do not include indirect cost considerations such as labor associated with maintaining regulatory compliance or reduced liability for evaluating profitability.</p> <p>Making permit elimination or permit downgrading the explicit goal of pre-permit P2 planning requirements helps overcome the inherent weakness of P2 planning programs. Permit elimination or downgrading is an incentive that implicitly encompasses direct and indirect costs. Moreover, it is a focused goal with immediate gratification and is easy to sell to upper management.</p>
<p>Examples</p>	<p>Regulated entities in Washington state seeking new or renewed National Pollution Discharge Elimination System permits (NPDES) must examine the feasibility of zero discharge as part of a process in which they are required to:</p> <ol style="list-style-type: none"> 1. carry out a detailed investigation into the options available for reduction, recirculation, reuse, or elimination of water use; 2. choose an option; 3. define an implementation schedule; and 4. report on the entire process. <p>The Department of Ecology will cancel the permit of any company that claims to have achieved zero discharge, once it has passed a dry weather inspection.</p> <p>As a result of this NPDES permit program, Salmon Bay Steel eliminated 4 million gallons per day (gpd) of rolling mill process wastewater; Jorgensen Forge eliminated 1,000,000 gpd of vacuum de-gas wastewater and quench tank discharge; and Boeing eliminated a total of nearly 3 million gpd from six different facilities.</p>

Contacts	Pam Elardo, Water Quality Program, Washington Department of Ecology, 206-649-7000
Sources	<i>Pollution Prevention Solutions During Permitting, Inspections and Enforcement</i> <i>Innovative Practices in P2 Integration: Case Study Examples from the States</i>

Require P2 Plan as Part of Permit Application

<p>Practice Description</p>	<p>P2 planning is most frequently included as a post-permit requirement (see <i>Post-permit P2 plan required</i>). Less common is the introduction of the requirement that facilities submit a P2 plan as part of the permit application. This approach has advantages for both the permitting agency and the facilities seeking a permit. Unlike the post-permit planning requirement in which the permitting agency must both review a permit and then spend additional effort verifying or reviewing plans, when the P2 plan is included as part of the permit application, the permitting agency can review all material simultaneously.</p> <p>From a P2 perspective, the main advantage of this approach over post-permit planning requirements is that facilities have the additional incentive of possible permit avoidance if they implement P2 improvements that they identify during the planning process. However, requiring P2 planning prior to issuing a permit shares the challenges associated with the use of P2 planning as a means of promoting adoption of P2 in general, namely, 1) ensuring that facilities have made a thorough effort to identify potential options and 2) providing sufficient motivation to pursue those options.</p>
<p>Examples</p>	<p>Ohio EPA emphasizes P2, defined as reducing waste at the source, as a way to meet or exceed regulatory requirements and of perhaps saving money. The Secondary Aluminum Production Maximum Achievable Control Technology (MACT) features P2 as part of the means to compliance, as described in the Operation Maintenance and Monitoring (OM&M) plan. The owner or operator of a Group 1 furnace without add-on air pollution control devices must operate each furnace in accordance with the work practice/P2 measures documented in the OM&M plan and within the parameter values or ranges established in the OM&M plan. The owner or operator must prepare and implement a written operation, maintenance, and monitoring (OM&M) plan for each new or existing affected source and emission unit. The owner or operator must submit the plan to the applicable permitting authority for review and approval as part of the permit application and must comply with the provisions of the submitted plan. Each plan must contain the following information:</p> <ul style="list-style-type: none"> • Documentation of the work practice and P2 measures. • Site-specific requirements for secondary aluminum processing units. • The specific control technology or P2 measure to be used for each emission unit.
<p>Contacts</p>	<p>Anthony Sasson, Ohio EPA, Office of P2, 614-644-2810, anthony.sasson@epa.state.oh.us</p>
<p>Sources</p>	<p><i>P2 in Secondary Aluminum MACT</i></p>

Post-Permit P2 Plan Required

Practice Description

Some states have required facilities to develop P2 plans within some time period after the permit is issued. Some programs require facilities to submit these plans once developed or to submit a certification or proof of compliance with the planning requirement. In other cases, the facility must have the plan available and be able to produce it on request during an inspection. Some states and EPA regions require implementation of the plan, but only those elements that the facility believes are financially viable, which leaves complete discretion to the facilities. While this approach lacks the incentives of permit avoidance or a less stringent permit as well as the confirmation of a conscientious P2 plan (incentives that requiring P2 planning before or during permitting do have), it creates less of an immediate burden on permitting staff.

Some programs require general P2 plans; others only require plans for reducing or eliminating one or more priority pollutants. States implementing such programs are more successful at prompting new P2 initiatives from large facilities than from smaller ones. Most States offer free technical assistance through the non-regulatory P2 program as an additional incentive. In those cases where the population of regulated entities is small, such as toxic substance disposal facilities, the additional burden of work for the P2 assistance program is small, but when this population is large, such as the significant industrial users of POTW facility services, technical assistance programs have found themselves overwhelmed by a flood of requests.

Examples

Some Wisconsin Water Pollution Discharge Elimination permits contain requirements that the facility develop P2 plans that target chloride discharges. These are being applied to permits in the dairy sector and for POTW permits with the specific goal of reducing chloride emissions in the anticipation of statewide chloride standards. The permits prescribe certain elements of the plans, but no review of quality is made by the department.

North Carolina Department of Environment, Health, and Natural Resources (DEHNR) changed its administrative code for pretreatment programs to grant POTWs the authority to require their significant industrial users (SIUs) to develop a waste reduction plan and implement waste reduction techniques and technologies. POTWs have discretion as whether to make P2 planning mandatory for SIUs. Some have done so while others have left the planning voluntary, offering to conduct free P2 audits at the facility's request. A second change to the DEHNR's administrative code, the requirement that SIUs include a summary of their activities to minimize pollutant loadings when filing industrial waste surveys and permit applications, provides a strong incentive to develop and implement P2 projects even for those facilities that have not been required to develop P2 plans.

The Charlotte-Mecklenburg Utility Department requires its SIUs to submit a waste reduction plan within six months of the issuance of the SIU's permit. The North Carolina DEHNR conducts P2 assessments upon request, or the SIU can hire a private consultant to aid in the drafting of the waste reduction plan. Interestingly, the North Carolina DEHNR was inundated with SIU requests for P2 assessments. The program has been very successful, with some of the SIUs reducing their waste below the permitting threshold

The Ohio Environmental Protection Agency (OEPA) requires permitted hazardous waste management facilities to complete P2 plans as a condition of their RCRA permit. Permittees must certify they have a program in place to reduce the volume and toxicity of hazardous waste generated to the extent economically practicable. This is also known as the "program in place" requirement. The criteria for completing plans are contained in a planning guide. The Ohio EPA's Office of P2 (OPP) provides technical assistance to facilities in developing and writing plans and assists inspectors in reviewing plans. In similar programs, Arizona requires implementation of the plan, while EPA Region 7 requires an annual certification and report that documents compliance. EPA Regions 2 and 5, California, New York and New Jersey also have implemented similar programs.

New Jersey issues permits to asphalt manufacturers that require development of P2 plans. These are primarily based on maintenance and good operating practices. The permittees are required to submit forms to the state quarterly showing that they have taken some preventive maintenance or good operating practice steps during that quarter. This requirement was developed in conjunction with the industry trade group and has been very successful.

The Oregon Department of Environmental Quality (DEQ) issued Composite Technologies, Inc. an air contaminant discharge permit that requires subsequent development and eventual implementation of a P2 plan. The permit requires Composite to develop and submit a P2 plan to the Oregon DEQ within a certain time period after the permit's issuance. The plan must include the following:

- A summary of ways in which the permittee could modify its process, raw materials, or final product so as to reduce the quantity and or toxicity of VOCs and HAPs emitted by the facility.
- An analysis of the feasibility and effect of implementing such process, material, and product changes at the facility. Emission reductions shall be verified using several specified formulas.
- A comprehensive analysis of the ability to use vapor-suppressed resins and gel coats and a proposal for using these materials. The plan also must specify the proposed percentage of parts (based on square footage) that will be cast using vapor-suppressed resin and gel coats.
- A list of other P2 techniques that the permittee has or will implement and an implementation schedule.

The permit also stipulates that immediately after approval of the P2 plan, Composite must begin implementation. In addition, within six months of approval of the plan, Composite must submit a report detailing the plan's accomplishments, including any emission reductions and calculations supporting the reductions. Similar reports must be submitted to the Oregon DEQ semiannually.

<p>Contacts</p>	<p>Jerry Rodenberg, Wisconsin Department of Natural Resources, 608-266-7715</p> <p>Jackie Townsend, Charlotte-Mecklenburg Utility Department, 704-391-5100</p> <p>Lindsay L. Mize, Division of P2 and Environmental Assessment, North Carolina Department of Environment, Health, and Natural Resources, 919-715-6500</p> <p>William L. Meyer, Division of Solid Waste Management, North Carolina Department of Environment, Health, and Natural Resources 919-733-4996</p> <p>Gary Hunt, Office of Waste Reduction, North Carolina of Environment, Health, and Natural Resources, 919-571-4100</p> <p>Jane Pieczynski or Linda McSwain-Randall, Winston-Salem Industrial Waste Control, 910-765-0134</p> <p>Anthony Sasson, Office of Pollution Prevention, Ohio Environmental Protection Agency, 614-644-2810</p> <p>Gary L. Andes, Air Quality Program, Oregon Department of Environmental Quality, 503-378-8240 ext. 234</p>
<p>Sources</p>	<p><i>State Experience Integrating P2 in Permits</i></p> <p><i>P2 Solutions During Permitting, Inspections and Enforcement</i></p> <p><i>P2 Regulatory Integration Case Studies</i></p>

Pre-approval of P2 Changes

Practice Description

Regulated entities frequently assert that potential P2 improvements are not implemented because the process of modifying a permit is so time consuming and complex. States have sought to overcome this barrier by pre-approving future P2 changes in the initial permit. The practice enables facilities to implement pre-approved changes without going through the permit modification process. States have three types of pre-approval practices: 1) pre-approved specific changes detailed in a P2 plan approved as part of the permit, 2) pre-approval of industry-specific P2 modifications for permits issued to that sector, and 3) pre-approval of categories of P2 changes within general permits.

The first type of pre-approval practice is generally applied to complex permits and requires the development and inclusion of a P2 plan in the permit application. This practice provides facilities with additional work, but greater flexibility. In the most stringent cases, facilities may only implement changes explicitly specified in a P2 plan submitted as part of the original permit application. The utility of this approach is limited to the extent that the facility can predict future improvements. Other states provide more flexibility by allowing not only specific improvements included in a P2 plan or list, but also projects similar to those listed or approved. Writing such permits is time-intensive for permit writers, but the investment is balanced by the time saved in approving permit modifications. An interested facility must be willing and able to devote substantial resources to developing the permit, and only facilities with a good compliance record are likely to engender the level of trust necessary to allow development of such a permit.

Pre-approval of specific changes in permits issued to a sector is most effective when there are many P2 improvements likely to be shared by most facilities. Industry input into pre-approved categories is critical. Some outstanding P2 options may be foreclosed because they were unknown at the time of permit development. This practice does require substantial agency effort to develop appropriately customized pre-approvals for each industry sector.

Some states have written their rules for general permits to include pre-approval of general categories of P2 changes. General permits and hence this practice tends to apply to smaller firms. It offers much greater flexibility and creates no additional burden for permit writers.

Examples

Oregon's air regulations contain no *de minimis* exemption from Minor New Source Review meaning that any physical or operational change affecting its VOC emissions, no matter how small, could subject it to time-consuming and, as a result, costly review. To help minimize this disincentive for P2, the Department of Environmental Quality issued a permit to the Intel Corporation that pre-approves specific process changes affecting VOC emissions without triggering Minor New Source Review as long as Intel meets all applicable requirements including a federally enforced VOC emissions cap.

Minnesota uses pre-approved permit changes as a way to reduce the disincentives for P2 at the 3M plant in St. Paul. Specific changes allowed to production lines are listed in the permits. However, 3M is required to notify the state permitting agency before making a listed change and after the change has

	<p>been carried out. 3M can propose unlisted changes that are consistent with the listed ones, and can operate under the same permit if these are approved. 3M is now in a position to implement P2 changes to its production lines without requiring permit modifications. Both 3M and the Minnesota PCA have found the permit workable and applicable to other facilities.</p> <p>New Jersey has incorporated pre-approved changes into permits for auto plants. Existing manual painting operations are pre-approved to convert to robotic spray, generally considered to be more efficient and is a P2 measure.</p> <p>Massachusetts Department of Environmental Protection (DEP) pre-approves P2 changes in air permits. A company can implement formulation changes, equipment changes, and/or relocation of equipment that reduce air emission in order to achieve the goals of toxic use reduction, volatile organic compound (VOC) reduction, or waste minimization without modifying its permit. Modifications (such as moving equipment, changing solvents, or changing exhaust configurations) must be noted on the emission statement forms.</p>
<p>Contacts</p>	<p>Marianne Fitzgerald, Oregon Department of Environmental Quality, 503-229-5850</p> <p>Peggy Bartz, Air Quality Division, Minnesota Pollution Control Agency, 612-297-8113</p> <p>Melinda Dower, New Jersey Department of Environmental Protection, 609-292-3600</p> <p>Rich Bizzozero, Office of Technical Assistance for Toxics Use Reduction, Massachusetts Department of Environmental Protection, 617-727-3260</p>
<p>Sources</p>	<p><i>State Experience Integrating Pollution Prevention in Permits</i></p> <p><i>Pollution Prevention Solutions During Permitting, Inspections and Enforcement</i></p> <p><i>Pollution Prevention Regulatory Integration Case Studies</i></p>

P2 Conditions as Part of Permit

Practice Description	<p>States often issue permits that require facilities to consider P2 options and in some cases to develop formal P2 plans, but that sometimes do not require implementation of identified P2 opportunities. The programs work under the assumption that a cost-benefit analysis or some other incentive will be sufficient to motivate these facilities to implement P2. Often this is either not the case or the most attractive P2 projects do not address one or more priority pollutants. An alternative approach that states and other local and regional agencies have used where voluntary measures might not succeed is to incorporate P2 conditions into an operating permit.</p> <p>These conditions may specify P2 measures identified by the state or the facility in a P2 plan or set a goal but leave the choice of P2 solution to the facility. Even though compliance through P2 is being mandated in these practices, they often still give a significant degree of flexibility to the facilities.</p>
Examples	<p>The Massachusetts Department of Environmental Protection (DEP) issued Dow Jones & Company a permit that requires a technical evaluation of a specific substitute material to meet a "best available control technology" (BACT) standard. The facility was required to determine whether the material was a suitable replacement for the existing blanket wash and/or cleaning solution and submit a written report on its performance within 60 days of conditional permit approval.</p> <p>In Minnesota, the 1991 permit for Sheldahl, a manufacturer of electronic circuitry in Minnesota contains a P2 condition in the form of a required phase-out of methylene chloride (dichloromethane). The permit capped levels in 1991, and scheduled a facility-wide phase out, but did not specify what P2 methods must be used.</p> <p>The Ohio MACT for secondary aluminum production makes adherence to an Operation Maintenance and Monitoring plan, submitted as part of the permit for owners of furnace without pollution control devices, a condition of permit compliance (see P2 Plan required for Permit Compliance for a more detailed description of this program).</p> <p>In 1993, the Palo Alto Water Quality Control Plant (WQCP) began exploring pollution prevention approaches with six metal finishing and circuit board facilities that discharge to its system. The effort resulted in a set of pollution prevention measures called "Reasonable Control Measures" (RCMs) that are widely applicable, generally feasible for all operations, have a simple payback period of five years or less, and meet safety and product quality criteria. The RCMs are incorporated into pretreatment permits for metal finishers. Metal finishers have a choice of two permitting options:</p> <ul style="list-style-type: none"> • Concentration limit option. The metal finisher must install each of the RCMs and meet an annual average copper concentration limit of 0.4 mg/l of wastewater discharge. • Mass limit option. A metal finisher can request a pollution prevention assessment (completed by the WACP) to set facility-specific annual copper discharge mass limits that must be met using pollution prevention

	<p>measures identified in the P2 assessment.</p> <p>In Indiana, P2 conditions are prescribed in permits for VOC sources that are using materials substitution to comply with Indiana's non-control technology guideline RACT standard (see Review/Modify Existing Rules for a more detailed account). The P2 condition requires the facility to document reduced use of VOC-containing materials, analogous to the reduction documentation required for pollution control devices.</p> <p>A large fiberglass manufacturing facility in Oregon that emitted high levels of styrene was subject to prevention of significant deterioration (PSD) and BACT standards. The Oregon Department of Environmental Quality (DEQ) required this facility to install add-on controls within three years to reduce styrene emissions. In order to reduce styrene emissions in the interim, the facility agreed to investigate P2 measures. The framework for P2 implementation was specified in a permit issued by DEQ. This framework required the facility to submit a pollution prevention report to DEQ quarterly detailing progress made with VOC-related P2 measures.</p> <p>As a result of the P2 requirement in the permit, the facility completed a P2 plan and implemented several P2 measures. Source tests showed that the P2 measures accounted for at least 40 percent of the reduction in emissions.</p>
<p>Contacts</p>	<p>Robert Robertson, Texas Natural Resource Conservation Commission, 512-239-5553, rrobinso@tnrcc.state.tx.us</p> <p>Lewis Herrin, Texas Natural Resource Conservation Commission, 512-239-4552, lherrin@tnrcc.state.tx.us</p> <p>Peter Lloyd, North Carolina Department of Environment, Health, and Natural Resources, 919-715-6238</p> <p>Rich Bizzozero, Office of Technical Assistance for Toxics Use Reduction, Massachusetts Department of Environmental Protection, 617-727-3827</p> <p>J. McCabe, Indiana Department of Environmental Management</p> <p>Gary L. Andes, Air Quality Program, Oregon Department of Environmental Quality, 503-378-8240 ext. 234</p> <p>Marianne Fitzgerald, Oregon Department of Environmental Quality, 503-229-5850</p>
<p>Sources</p>	<p><i>State Experience Integrating Pollution Prevention in Permits</i></p> <p><i>Pollution Prevention Solutions During Permitting, Inspections and Enforcement</i></p> <p><i>Pollution Prevention Regulatory Integration Case Studies</i></p>

Permit-related Incentives

Practice Description

One of the major hurdles in promoting P2 has been convincing facilities to investigate opportunities. Even when facilities are persuaded to look for P2 opportunities, they often do not implement identified P2 projects because there is not a sufficient financial incentive. States and the US EPA have developed a number of programs that offer additional monetary and non-monetary incentives in an effort to overcome these and other barriers.

Non-monetary incentives

Expedited permit review is offered in several states to facilities submitting permit applications that include P2 components. This incentive also addresses the frequent complaint by regulated entities that the prospect of preparing and negotiating a new permit deters them from making many production process changes. Mandatory public notice periods can limit the extent of acceleration. Where permit processing deadlines are already strict and short or the process is already efficient, the incentive will be diminished. Although earlier implementation of the P2 project provides public benefit, these programs can lead to more incremental pollution rather than less, since expediting permitting usually means that permit applications of other facilities not engaged in P2 are processed more slowly and remain with their older less stringent permits for a longer time.

Extended compliance time to enable implementation of P2 is another non-monetary incentive some states are using. In these cases the extension allows the implementation of a P2 solution where a pollution control solution would otherwise be used. Since the pollution control solution is likely to transfer pollution between media rather than eliminate it, these programs generate a net environmental benefit so long as the long-term environmental benefits from the P2 project outweigh the short term environmental detriment caused by the extended time of higher releases.

Alternative or reduced monitoring is generally used by states as a means of encouraging P2 beyond compliance or for additional P2 unrelated to the permit in question. The rationale is that violations that would be missed by less frequent or stringent monitoring are likely to be less serious for facilities operating farther below permit thresholds.

Limited amnesty from civil penalties has been offered by at least one state to firms that should have been permitted but were not if they conduct a P2 assessment before applying for a permit.

Monetary incentives

Reduced permit fees for regulated entities that demonstrate they are implementing or have implemented P2 in their permitted activities is one of the monetary incentives used by states. Incentives of this type are most effective in cases such as air permits where the fee is based on the quantity of emissions and reductions can result in savings that are large enough to be meaningful for the facility. In many cases permit fees and hence any possible reductions are not sufficiently large to serve as incentives.

	<p>Tradable emissions credits have been used by at least one state as a monetary incentive for facilities participating in marketable emissions credits programs to implement P2 projects that will generate credits.</p>
<p>Examples</p>	<p><i>Non-Monetary Incentives</i></p> <p>Expedited Permit Review</p> <p>A joint EPA-state program in California (Project MERIT) offered expedited review of air permit modifications if the focus of the permit change was P2. The project successfully facilitated the implementation of P2 techniques and technologies in seven southern California metal finishing facilities that resulted in decreased air emissions and in most cases achieved payback periods of less than 2 years. The program, however, was set aside in favor of more comprehensive streamlining of permitting procedures in California. Illinois also offers expedited permit review for permits containing P2 components.</p> <p>Extended Compliance Time</p> <p>Wisconsin water quality permit applicants can extend their compliance schedule to enable implementation of P2 instead of a pollution control solution.</p> <p>Reduced Monitoring</p> <p>The Indiana non-Control Technology Guideline RACT standard for VOCs requires only recordkeeping for facilities that meet the RACT by substituting non-VOC materials for high-VOC ones. Facilities using control technologies to meet the RACT have additional monitoring and testing requirements. Other states with reduced monitoring incentives include Wisconsin and North Carolina.</p> <p>Limited Amnesty</p> <p>The Oregon Department of Environmental Quality (DEQ) created a VOC Limited Amnesty Project out of concern that many small sources of VOCs were operating without an air permit, either because they were unaware of their emissions or did not know they needed to inform DEQ. Businesses within the Portland Air Quality Management Area were offered amnesty from civil penalty if they voluntarily agreed to conduct a P2 assessment for VOCs. Businesses were given one month to sign a Participation Agreement. Of the 850 businesses that DEQ thought might emit VOCs based on SIC codes, 22 ultimately sought amnesty. Seven reduced emissions below the 10 ton/yr threshold; the remainder obtained air permits and implemented P2 where feasible.</p> <p><i>Monetary Incentives</i></p> <p>Reduced Permit Fees</p> <p>The Washington Department of Ecology charges permit fees based on emissions for facilities undergoing source review, general registration or operating permit applications and offers to reduce fees for regulated entities if they use P2 to cut emissions. Wisconsin has reduced permit fees for some of its stormwater programs.</p> <p>Marketable Emissions Credits</p> <p>The Illinois Environmental Protection Agency used the value of marketable emissions credits as an P2 incentive. The project targeted P2 technical assistance to facilities participating in an emissions marketing program in the</p>

	Chicago ozone non-attainment area with the argument that investing in P2 would bring an additional return in the form of marketable emissions credits.
Contacts	<p>Stu Clark, Washington Department of Ecology, Air Division, 360-407-6873</p> <p>Kevin Greene, Illinois Environmental Protection Agency, 212-782-8700, epa8603@epa.state.il.us</p> <p>D. Hantz, Wisconsin Department of Natural Resources.</p> <p>J. McCabe, Indiana Department of Environmental Management.</p> <p>R. Larson, Wisconsin Department of Natural Resources.</p> <p>P. Lloyd, North Carolina Department of Environmental Management.</p> <p>John Palmer, US EPA Region 10, 206-553-6521, palmer.john@epa.gov (Oregon Limited Amnesty Project)</p>
Sources	<p><i>State Experience Integrating Pollution Prevention in Permits</i></p> <p><i>Innovative Practices in P2 Integration: Case Study Examples from the States</i></p> <p><i>Pollution Prevention Solutions During Permitting, Inspections and Enforcement</i></p> <p><i>Pollution Prevention Regulatory Integration Case Studies</i></p>

Allow P2 for BACT/RACT/BAT Compliance

<p>Practice Description</p>	<p>The control technology standard method for regulating facility emissions is the classic example of the end-of-pipe philosophy of environmental regulation. These BACT (Best Available Control Technology), MACT (Maximum Available Control Technology), RACT (Reasonable Available Control Technology), etc. standards in their classic form are structured in such a way as to preclude the use of P2. Several states have succeeded in transforming this quintessential old school regulatory mechanism into a powerful tool for promoting P2 with almost sleight-of-hand elegance. The broadest approaches have simply defined elimination as the BACT for specific chemicals. Others have made more narrowly defined changes that allow specific types of material substitution. Still others require zero emissions to be considered as a first option.</p>
<p>Examples</p>	<p>North Carolina reasonably achievable control technology (RACT) rules allow use of a low-VOC emission "compliant coating" as an alternative to a permit-prescribed, numerical daily emission limit. Consequently, a company's required record-keeping is reduced from a daily calculation of emissions to merely certifying use of a compliant low-VOC emission coating. In addition to greatly reduced monitoring and record-keeping, the company that uses the low-emission coating does not have to worry about violating a permit-required emission limit, and resource demands on the permit agency are reduced.</p> <p>The West Virginia Air Toxics Law requires facilities to consider source reduction before permits are issued for pollution control devices. For 14 targeted chemicals at over 40 facilities in the state, chemical elimination has been defined the Best Available Technology (BAT) standard for compliance. These facilities can obtain technical assistance from the state before permit submission.</p> <p>The Texas Natural Resources Conservation Commission (TNRCC) requires that zero emissions option be considered prior to Best Available Control Technology (BACT). New Jersey and Minnesota have also required P2 to be considered as a first option.</p> <p>Indiana created a three tiered non-CTG RACT rule that permits the use of P2 to reduce VOC emissions. This rule still allows add-on controls as a control option, but sets the top tier reduction requirement so high (98%) that it is very unlikely to be achievable via technological controls exclusively. Facilities must demonstrate that they cannot achieve the 98% reduction in emissions before being allowed to qualify as Tier 2 facilities, which are required to achieve 81% reductions. Tier 3 facilities must demonstrate that they could not achieve even the Tier 2 reductions and receive a case-by-case RACT.</p>
<p>Contacts</p>	<p>Peter Lloyd, North Carolina Department of Environment, Health, and Natural Resources, 919-715-6238</p> <p>Ken Zarker, Texas Natural Resources Conservation Commission, Office of Pollution Prevention and Recycling, 512-239-3144, kzarker@tnrcc.state.tx.us</p> <p>J. McCabe, Indiana Department of Environmental Management</p>
<p>Sources</p>	<p><i>Pollution Prevention Regulatory Integration Case Studies</i></p> <p><i>Pollution Prevention Solutions During Permitting, Inspections and Enforcement</i></p> <p><i>State Experience Integrating Pollution Prevention in Permits</i></p>

Multi-Media Permits

Project Description	<p>Many companies find it onerous to have to apply for and maintain separate air, water, and hazardous waste management permits with sometimes-conflicting or duplicative requirements. Environmental regulators meanwhile have observed that apparent pollution reductions achieved to comply with a permit for one medium occasionally only transfer the pollution to another medium. Multi-media permitting, in which all media are regulated within a single permit, has emerged as a way of rectifying both problems simultaneously. While multi-media permitting is not by definition P2, states are trying to use such permits to leverage consideration and implementation of P2 projects. One advantage of evaluating P2 opportunities within this context is that the evaluation occurs with a whole-process perspective, and thus cross-media shifts are less likely to occur. Multi-media permitting itself is relatively new and not yet widely tested. Results have been largely negative.</p>
Examples	<p>The Delaware Department of Natural Resources and Environmental Conservation (DNREC) ran a multi-media permit pilot project in which a P2 assessment is part of the permit application. Before submitting a permit application, entities must consider P2 opportunities associated with each regulated pollutant. DNREC provides assistance with this assessment. One goal of the process is elimination of the need for all or parts of the permit.</p> <p>The Delaware pilot, based on a model jointly developed by DNREC and the DuPont Company, was relatively well received by the piloting company, a medium sized metal fabricator. However, a multi-media permit was ultimately not issued, and while the facility did explore options to eliminate its main air emission, none proved feasible.</p> <p>New York State Department of Environmental Conservation's (NYSDEC) ran a pilot program to explore multi-media facility-wide permitting at the General Electric Silicones (GES) site. GES felt that obtaining the multi-media permit was burdensome and time-consuming for a large facility and felt bundling P2, multi-media, and facility-wide permitting was inefficient and counterproductive. GES recommended that such programs only be undertaken after detailed planning and with clearly defined goals and rules.</p> <p>The Minnesota Pollution Control Agency (MPCA) has developed multi-media permit program designed to promote P2. To participate in the program facilities must both work with MPCA to develop a multi-media permit and reduce emissions below current regulatory limits (generally via P2). The project has seen some success. For example, Onan Construction in Minnesota reduced its VOC/HAP emissions by 50%, from 200 to 100 tons/year by switching to water-based dipping.</p> <p>New Jersey also ran a pilot program in which roughly 15 facilities were issued multi-media permits. The process of issuing the permits involved a painstaking review of each facility's operations and P2 plans, which brought some P2 opportunities to light. However, the multi-media pilot per se cannot be credited with the P2 actions as much as the scrutiny and advice of the permit writers.</p>

<p>Contacts</p>	<p>Andrea Kreiner, Delaware Dept. of Natural Resources and Env. Conservation, 302-739-3822, akreiner@dnrec.state.de.us</p> <p>Al Innes, Minnesota Pollution Control Agency, 651-296-7330, alister.innes@pca.state.mn.us</p> <p>Melinda Dower, New Jersey Department of Environmental Protection, 609-292-3600</p>
<p>Sources</p>	<p><i>ASTSWMO Waste Programs Pollution Prevention Compendium</i></p> <p><i>State Experience Integrating Pollution Prevention in Permits</i></p> <p><i>Pollution Prevention Solutions During Permitting, Inspections and Enforcement</i></p> <p><i>Pollution Prevention Regulatory Integration Case Studies</i></p>

Compliance Inspections

Many states have sought to use the compliance inspection process as a vehicle for introducing P2 options. It has been seen as an attractive alternative for several reasons. Inspectors get inside facilities and can observe specific opportunities for improvement. When potential violations are observed, relevant P2 options can be suggested. Because they occur within the context of a compliance inspection, facility's management is more likely to take note and action. Finally, information conveyed in person, regardless of the context, will have a greater impact and greater likelihood of leading to real changes.

Using compliance inspectors or the compliance inspection process as the means of P2 integration is by no means an uncomplicated proposition. A compliance inspector's primary objective is by definition collecting legal evidence of regulatory compliance/noncompliance. The P2 message and the type of personal relationship that best promotes it is not always consistent with this objective. A number of states have strictly limited the extent of P2 advice that inspectors can give both because of the potential conflict of interest and also out of a concern not to overburden the compliance inspectors. These methods also run the risk of misleading facility managers into believing that P2 recommendations are mandatory measures for compliance if this issue is not explicitly clarified.

States have used four methods for integrating P2 into compliance inspections. In these the compliance inspector either:

- 1) distributes printed P2 literature;
- 2) makes referrals to a technical assistance provider;
- 3) themselves make P2 recommendations; or
- 4) inspects jointly with a non-regulatory technical assistance person.

These methods are often used in conjunction with one another. For example, Ohio EPA inspectors are encouraged to promote P2 solutions during inspections. Some inspectors distribute P2 literature and/or refer facilities to Ohio's P2 technical assistance staff. Some examine facility operations and suggest P2 opportunities and/or include information on P2 in inspection follow-up letters.

In virtually all cases, inspectors receive P2 training, which may be extensive. In some cases, training covers other relevant topics such as cost-benefit analysis and communication skills.

At least one state, Delaware, ran a pilot in 1995 comparing the relative merits of the various compliance inspector's options, and based on the outcome chose to establish a joint-inspection program. In the pilot, three facilities received a joint visit, three facilities received P2 referrals, and one facility received a compliance inspection and P2 assistance from the inspector as well as a referral to the P2 program for additional assistance. The inspected facilities reacted most favorably to the joint inspection.

Compliance Inspectors Distribute P2 Literature

<p>Practice Description</p>	<p>Having inspectors distribute printed P2 literature during compliance inspections is the simplest method states have used to promote awareness of P2 options. It requires only that literature be prepared and provided to inspectors, and that minor modifications be made to inspection protocols. The literature may be generic or industry-specific, and generally takes the form of fact sheets, brochures, or case studies. While easy, the impact of this method is uncertain and may be quite limited, given that it is relatively impersonal and carries no explicit incentives. Of the four methods for using compliance inspections to introduce P2, this practice compromises the compliance inspection's enforcement objectives the least.</p>
<p>Examples</p>	<p>In Alaska, inspectors from the Department of Environmental Conservation are required to distribute P2 fact sheets and brochures and to discuss the benefits of P2 during opening or exit meetings with facilities. Inspectors do not, however, make specific P2 recommendations or decisions for the facility so as not to compromise their objectives or significantly increase their workloads.</p> <p>In Connecticut, Department of Environmental Protection compliance inspectors distribute booklets on pollution prevention options and fact sheets for specific industries. They also conduct a pollution prevention survey of P2 activity, institutions, and awareness.</p> <p>In Texas, the Texas Natural Resources Conservation Commission not only distributes information but monitors its progress through modified inspection checklists to track distribution of information and referrals.</p>
<p>Contacts</p>	<p>David Wigglesworth, Alaska Department of Environmental Conservation, 907-269-7500</p> <p>Mary Sherwin , Connecticut Department of Environmental Protection, 203-424-3297</p> <p>Tracy Callen, Texas Natural Resource Conservation Commission 512-239-4127, tcallen@tnrcc.state.tx.us</p>
<p>Sources</p>	<p><i>Pollution Prevention Regulatory Integration Case Studies</i></p> <p><i>State Experience Integrating Pollution Prevention in Permits</i></p> <p><i>Pollution Prevention Solutions During Permitting, Inspections and Enforcement</i></p>

Compliance Inspectors Make P2 Recommendations

<p>Practice Description</p>	<p>Inspectors in states employing this method will make P2 recommendations during the inspection, in the exit interview, or in follow-up letters. Of all the alternatives for integrating P2 into the compliance inspection process, this practice demands the most active promotion of P2 by the compliance inspector.</p> <p>To implement this approach, inspectors must be trained to identify P2 opportunities and solutions. The training may have to be substantial since the regulatory expertise that a good inspector needs is different from the engineering and process expertise that good P2 technical assistance provider needs. Even well-trained compliance inspectors are unlikely to be as skillful in identifying P2 options as technical assistance personnel, except perhaps when training and inspections are focused on a particular industry sector.</p> <p>The potential of added responsibilities creating an undue burden on the compliance inspector is a concern with this practice. Further, the potential conflict between asking compliance inspectors, who are typically seen as pollution police, to act as providers of friendly advice is cited as problematic. For example, EPA Region 9 abandoned plans for using inspectors to do waste minimization opportunity assessments at facilities in part because it would be at odds with their principal mission of compliance. Indiana's Department of Environmental Management attempted to balance the two issues by allowing inspectors to suggest only operational improvements but not reengineering.</p>
<p>Examples</p>	<p>In Virginia, RCRA inspectors are trained through workshops and joint inspections with staff from the Office of Pollution Prevention to conduct P2 assessments. Virginia's program has resulted in 1) an increase in the number of requests for P2 technical assistance; 2) a downgrading of generator status for small quantity generators; 3) reductions in air emissions and water effluent discharges, water conservation, and energy savings.</p> <p>In Washington, the Department of Ecology initiated compliance assistance inspections for selected industry sectors involving medium and small facilities. The "Snapshots" campaign focused on the printing industry. A workgroup of 10 to 12 government and industry representatives spent a year developing user-friendly compliance and pollution prevention materials for screen printers, lithographic printers, and photo processors. The materials addressed how waste is generated, compliance requirements, and pollution prevention strategies. Washington DOE staff conducted 1-day training sessions required for all site inspectors. About 1,000 field visits were completed. Inspectors make their compliance assistance role clear to shop managers during facility visits in order to avoid misinterpretation of pollution prevention suggestions as compliance requirements.</p> <p>In Delaware, the state's inspection policy resolves the potential conflict of interest raised by combining compliance inspection and P2 advocacy by focusing on regulated companies as clients, not as adversaries. The inspectors' primary goal is to educate businesses and to protect the environment. As a small state, Delaware has very few large industries, which allows inspectors to</p>

	<p>visit them annually. During the routine compliance visit, the inspector informs the business owner of any compliance problems and recommends pollution prevention and/or other strategies to resolve the problem, including, if possible, strategies to save money. If an inspector issues a notice of violation (NOV), the business has 30 days to comply. Most businesses are eager to cooperate in order to avoid fines. As a result, few fines are levied. If inspectors encounter a question or issue that exceeds their level of expertise, they refer the business to Delaware's P2 staff. Compliance inspectors also distribute industry-specific pollution prevention handouts compiled by the Delaware Hazardous Waste Management Branch.</p> <p>In Illinois, after extensive training, the state EPA field inspectors have been highly successful at identifying P2 opportunities. As of January 1, 2000, inspectors had identified 570 P2 opportunities at 334 facilities (36% of total # inspected). Eighty-four percent of facilities that received suggestions explored the possibilities and an estimated 31% implemented the recommendations. Inspectors also referred 130 facilities to P2 technical assistance providers.</p> <p>In Orange County, California, a compliance inspector identified several strategies a local manufacturer of fiberglass components could consider to substitute raw materials and reuse or modify its waste. For example, two of the recommendations were to substitute styrene into the gel coat process to eliminate the use of acetone as a cleaning solvent and switching to a batch mixing process to avoid waste. Implementation of these changes eliminated air and RCRA permit requirements and saved approximately \$3,000 per year in raw material costs and hundreds of dollars in state and local air and RCRA permit fees.</p>
<p>Contacts</p>	<p>Tom Eaton, Hazardous Waste and Toxics Reduction Program Washington Department of Ecology, 360-407-6086</p> <p>Bruce Cole, Delaware Department of Natural Resources and Environmental Control, 302-739-3689</p> <p>William Sarnecky, Virginia Department of Environmental Quality (DEQ), 804-698-4341, wjsarnecky@DEQ.state.va.us</p> <p>Leif Magnuson, US EPA Region 9, 415-744-2153, magnuson.leif@epa.gov</p> <p>T. Neltner, Indiana Department of Environmental Management</p>
<p>Sources</p>	<p><i>State Experience Integrating Pollution Prevention in Permits</i></p> <p><i>Pollution Prevention Regulatory Integration Case Studies</i></p> <p><i>Pollution Prevention Solutions During Permitting, Inspections and Enforcement</i></p> <p><i>Innovative Practices in P2 Integration: Case Study Examples from the States</i></p>

Compliance Inspectors Give Referrals To Technical Assistance Providers

<p>Practice Description</p>	<p>Instituting a practice in which compliance inspectors refer regulated entities to professional technical assistance providers is also a relatively simple and effective way to have P2 promoted through compliance inspections - as long as there are technical assistance resources locally available. It is used both in a stand-alone fashion, as the principal means of introducing P2, and as supplement in programs where compliance inspectors actively recommend P2 options. When used as a stand-alone practice, it avoids the need to give extensive P2 training .</p> <p>As a supplement, this practice provides a mechanism for solving problems that are beyond the capabilities of P2-trained compliance inspectors or simply a means of insuring that facilities get a thorough assessment when inspectors' time constraints prevent more detailed reviews.</p> <p>Technical assistance in programs using referral systems is usually provided through state P2 offices, but other sources such as university-based providers are also used.</p> <p>Since referrals under these programs are usually because of a non-compliance problem, facilities have a strong incentive to actively engage with the technical assistance provider.</p>
<p>Examples</p>	<p>In Nevada, the Department of Environmental Protection uses RCRA 3011 state grant money to contract for compliance and waste minimization assistance with the University of Nevada-Reno's Small Business Development Center's Business Environmental Program (BEP). DEP RCRA inspectors distribute BEP brochures during inspections and refer noncompliant facilities to the BEP. BEP staff meet with Nevada DEP inspectors and enforcement personnel in a monthly "regulatory forum" to discuss regulatory issues, ensure consistent interpretation of regulations, and develop P2 fact sheets. BEP's principal services include response to toll-free hotline inquiries, training seminars, and onsite consultations and reports.</p> <p>All BEP assistance and onsite consultations are confidential. The Nevada DEP has awarded BEP additional contacts to provide air and solid waste assistance. The BEP is now the largest provider of environmental assistance to over 2,500 businesses in Nevada and had trained 10,000 business representatives (as of 1995). As a direct result of BEP's assistance (1995 survey), 89% of clients indicated they improved their compliance, and 61% stated they reduced their waste generation.</p> <p>Massachusetts has a program whereby several different agencies' enforcement personnel, primarily the state's Department of Environmental Protection (DEP) and the Massachusetts Water Resources Authority, refer regulated entities to the Massachusetts Office of technical Assistance (OTA). Referrals come from enforcement staff in all media. The program grew out of DEP's first multi-media inspection pilot begun in 1990.</p> <p>In Iowa, the Department of Natural Resources designed a sector-specific program for metal-finishing facilities featuring referrals to technical assistance</p>

	<p>for all media areas by POTW wastewater inspectors.</p> <p>Other state and local governments using referrals in conjunction with P2 recommendations from inspectors include Ohio, Delaware, and Orange County, California, among others.</p>
Contacts	<p>Massachusetts Office of Technical Assistance for Toxic Use Reduction, 617-727-3260</p> <p>Jeff Fiagle, Iowa Department of Natural Resources, 515-281-5353</p> <p>Tony Sasson, Office of Pollution Prevention, Ohio Environmental Protection Agency, 614-644-3469</p> <p>Pearl Hoftiezer, Supervising Hazardous Waste Specialist, Orange County, California, 714-667-3629</p> <p>Bruce Cole, Delaware Department of Natural Resources and Environmental Control, 302-739-3689</p> <p>Kevin Dinck, Business Environmental Program, Small Business Development Center, University of Nevada-Reno, 702-784-1717</p>
Sources	<p><i>Pollution Prevention Solutions During Permitting, Inspections and Enforcement</i></p> <p><i>Pollution Prevention Regulatory Integration Case Studies</i></p>

Joint Inspection by Compliance and P2 Staff

<p>Practice Description</p>	<p>Joint inspections by compliance and P2 assistance personnel would appear on the surface to be a more labor-intensive option, given its requirement for two staff members at each inspection. Interestingly, this is not necessarily the case. Joint inspections may actually improve efficiency through elimination of multiple visits and conflicting messages from compliance and technical assistance inspectors, as well as increased information sharing among staff and minimized administrative and logistical problems. An additional benefit of this approach is that it enables the compliance inspector to maintain a clearly defined role.</p>
<p>Examples</p>	<p>Washington reorganized its Toxics Reduction Program and Hazardous Waste Compliance Program in 1994 to, among other things, facilitate joint inspections. The pilot program had toxics reduction engineers and RCRA inspectors conduct joint inspections. Before proceeding with the inspection, the staff clarified their roles as either a compliance inspector or a P2 technical assistance staff person. While conducting a technical assistance visit, the inspector cannot use information gathered for enforcement purposes unless a substantial threat to public health and the environment is observed.</p> <p>In Illinois and Virginia, joint inspections have been used on a temporary basis as a way of teaching compliance inspectors about the options available in a particular industry sector. In Illinois, as part of a program to promote P2 in POTW inspections of metal finishers, POTW field inspectors were trained in P2 options related to discharges causing exceedences of POTW limits for metals. P2 engineers from Illinois EPA and Illinois Waste Management and Research Center then accompanied inspectors to provide additional training through technical support on initial inspections. Virginia uses a similar protocol to train RCRA inspectors in P2 assessment.</p>
<p>Contacts</p>	<p>Tom Eaton, Hazardous Waste and Toxics Reduction Program Washington Department of Ecology, 360-407-6086</p> <p>Andrea Kreiner, Pollution Prevention Program Delaware Department of Natural Resources and Environmental Control, 302-739-3822</p> <p>Jim Janssen, Illinois EPA, 708-338-7863</p>
<p>Sources</p>	<p><i>Pollution Prevention Solutions During Permitting, Inspections and Enforcement</i></p> <p><i>Pollution Prevention Regulatory Integration Case Studies</i></p>

Multi-Media Inspections

Practice Description	<p>Multi-media inspections offer the opportunity to reap many of the benefits associated with multi-media permitting (see <i>Multi-Media Permitting</i>, in this volume), without the complicated and difficult task of integrating disparate and diverse rules and regulations for air, water, and hazardous waste. Coordination across media programs can be a challenge and some have found that multi-media inspections are more resource-intensive than multiple single-medium inspections. Regulatory or statutory requirements can also constrain agencies' ability to reduce single-medium inspections.</p> <p>Like multi-media permitting, multi-media inspections are not by definition P2; however, states are using such programs to promote P2. Since many control technologies lead to cross-media transfers, which multi-media inspections discourage, P2 is likely to emerge as the best option for attaining compliance. The whole-process perspective afforded by multi-media programs increases the likelihood of identifying more and better P2 opportunities.</p> <p>Unlike states that have tried multi-media permitting, those trying multi-media inspections have found it very efficient for both the agency and industry. Efficiencies come from the elimination of multiple visits and of conflicting and even contradictory instructions from air, water, and hazardous waste inspectors, increased information sharing among staff, and minimized administrative and logistical problems.</p> <p>In several cases, programs identified are not only focused on performing inspections covering all media simultaneously, but also on inspecting all plants on an industrial campus as opposed to treating closely-related facilities with separate permits as independent entities (facility-wide inspections). Pollution prevention is an explicit objective in the programs states have developed so far, although the means by which it is integrated and the level of emphasis vary.</p>
Examples	<p>The New York State Department of Environmental Conservation (NYSDEC) created a program called Multi-Media Pollution Prevention (M2P2) a comprehensive planning, analytical, and management approach. A key feature of this program is the Integrated Facility Management Initiative (IFM), a facility-wide multi-media inspection program that focuses on the subset of large industrial facilities responsible for the generation and release of 95% of New York's toxic and hazardous substances. The IFM involves a team of DEC regional staff from all relevant units, coordinating information, jointly conducting a multimedia inspection, followed by a comprehensive evaluation. The program is making some progress. In 1999, 5 of 119 active facilities were developing P2 plans or projects (either voluntarily or as a result of a consent order). More P2 may occur as a result of an "environmental management systems" approach encouraged by NYSDEC. New York found that their program leads to better communication and joint problem solving between the units and the facilities, which in turn produces more and better P2 initiatives.</p> <p>The Massachusetts Department of Environmental Protection (MA DEP) undertook a comprehensive reorganization to convert all inspections to a multi-media, facility-wide, P2-based approach called Waste Prevention Facility-wide Inspections to Reduce Sources of Toxics (Waste Prevention FIRST), a program</p>

	<p>designed to serve the small businesses that make up most of the state's regulated community. The training of inspection and enforcement personnel in multi-media P2 has led compliance inspectors to look for the sources of waste generation and an increased likelihood of suggesting a P2 approach for return to compliance. Similarly, enforcement officers are more likely to incorporate specific P2 recommendations into enforcement. MADEP found that it was important to clearly define inspectors' compliance and technical assistance roles. Businesses are often referred to the non-regulatory Office of Technical Assistance for more complete and sophisticated recommendations. In the pilot version of Waste Prevention FIRST, the state found that the approach achieves more environmental protection for each dollar spent compared to the old compliance inspections.</p> <p>Vermont Department of Environmental Control (VDEC) concentrates its multi-media inspections on industrial facilities that have compliance problems. These inspections are explicitly P2-oriented and carried out by teams from the Pollution Prevention Division. To maximize opportunities for identifying P2 opportunities, the team leader and a pollution prevention expert review a team's reports.</p>
<p>Contacts</p>	<p>Lee Dillard, Massachusetts Department of Environmental Protection, 508-792-7692</p> <p>Dennis Lucia, New York State Department of Environmental Conservation, 518-485-5857, djlucia@gw.dec.state.ny.us</p> <p>Paul Van Hollebeke, Vermont Department of Environmental Control, 802-241-3629</p>
<p>Sources</p>	<p><i>Multi-Media Pollution Prevention (M2P2)</i> (NEWMOA website) <i>Regulatory Integration</i> (Illinois EPA website)</p> <p><i>Pollution Prevention Solutions During Permitting, Inspections and Enforcement</i></p> <p><i>Pollution Prevention Regulatory Integration Case Studies</i></p> <p><i>Innovative Practices in P2 Integration: Case Study Examples from the States</i></p>

Enforcement

A number of states and the federal government have used the enforcement process as means of promoting P2. Most programs either seek to encourage or mandate P2 as a way to return to compliance or seek to use the settlement process to encourage voluntary improvements beyond compliance. These voluntary projects usually take the form of Supplemental Environmental Projects (SEPs). A few states have developed innovative programs that take enforcement to the next—or more accurately the previous—level by intervening preemptively to prevent facilities from committing violations or becoming subject to new regulations.

The relative success of programs working to integrate P2 into enforcement-related activities can be largely attributed to the fact that enforcement activities focus facility management attention in ways difficult to achieve elsewhere and offer the state or federal agency considerable leverage. However, lack of receptiveness by enforcement attorneys to the possibility of incorporating P2 into orders can be a significant institutional barrier.

Preemptive Intervention

<p>Practice Description</p>	<p>Preemptive intervention is the regulatory equivalent to preventive medicine—act early to avoid more serious problems in the future. States have engaged in two types of preemptive intervention. One is designed to avert potential regulatory violations, the other to prevent entities from becoming subject to regulation in the first place.</p> <p>Identifying facilities is a central challenge for these programs. Success generally requires an existing database of facilities usually containing some type of reporting data that can be used to screen for potential candidates. Programs have also tapped the “biological databases” of compliance inspectors, in other words, the knowledge of those who are most familiar with a particular sector. Vendors and trade unions are other potential “biological databases”.</p> <p>Because identification must be followed up with expert compliance assistance and because the number of facilities in question may be large, finding sufficient human and financial resources is critical to success. Programs have teamed up with existing technical assistance programs. Trade associations, unions, and vendors might also serve as resources.</p> <p>Like preventive medicine, preemptive intervention has an inherent appeal to both regulatory and facility management. The promise of improved agency and facility resource efficiency tends to minimize institutional and external barriers.</p>
<p>Examples</p>	<p>The Texas Natural Resource Conservation Commission has developed a program to prevent wastewater discharge violations before they happen and use P2 as the principal method of control. Self-reporting data required as part of the discharge permit is used to identify facilities that may be close to exceeding permit requirements. These facilities are then offered voluntary P2 technical assistance to reduce discharges.</p> <p>The Colorado DPHE Air Pollution Control Division saw in a new solvent degreasing MACT the potentially for a new large regulatory burden to both agency and facilities. Because of the “once in, always in” rule, they realized that if they did not do something this would be a permanent burden. So they decided to preemptively intervene. Using low-level toxics emissions reporting data required by the state and by talking with local health department inspectors, they identified facilities that might be affected by the pending regulation. Identified facilities were contacted by phone. Any that expressed interested received compliance assistance visits designed to identify appropriate substitutes or reduce chemical use. The intervention was extremely successful: 70% of facilities replaced solvents and avoided the new regulatory loop, resulting in less Air Division and EPA oversight.</p>
<p>Contacts</p>	<p>Sally Gutierrez, Texas Natural Resource Conservation Commission, 512-239-6056, sgutierrez@tnrcc.state.tx.us</p> <p>Julie Wrend, Air Quality, Colorado Dept of Public Health and the Environment, jwrend@smtpgate.dphe.state.co.us</p>
<p>Sources</p>	<p><i>Pollution Prevention Regulatory Integration Case Studies</i></p> <p><i>Innovative Practices in P2 Integration: Case Study Examples from the States</i></p>

P2 Specified in Enforcement Orders

Practice Description	<p>Enforcement orders are one of the main vehicles states and the federal government have used as a means of promoting P2. In some cases, programs mandate P2 as a method for returning to compliance. Other programs simply encourage the use of P2 for reestablishing compliance. These efforts are distinct from Supplemental Environmental Projects (SEPs) in that they are generally unilateral findings and orders instead of negotiated (consensual) ones and there is no requirement that the P2 activities bring the facility beyond compliance. States have also incorporated language recommending P2 as the tool for returning to compliance into notices of violations (NOVs). Success of these programs depends on the receptivity of enforcement attorneys.</p>
Examples	<p>The Alaska Department of Environmental Conservation (DEC) and Pollution Prevention Policy Council require all NOVs to:</p> <ul style="list-style-type: none"> • recommend implementation of P2 and recycling strategies to correct violations and prevent violations in future; • refer the facility to the DEC's non-regulatory Pollution Prevention Office for technical assistance; • request a description of written P2 plans; and • request information on the steps the facility takes to correct violations using P2 strategies. <p>DEC staff have found that this language can yield positive results, but that the effectiveness depends on inspectors having familiarity with P2 and cooperation between media and P2 programs.</p> <p>The Texas Natural Resources Conservation Commission (TNRCC) has increased the extent to which P2 is included in orders or judgements originating in its Enforcement and Litigation Divisions (ELD), as part of its Pollution Prevention Integration Project. Enforcement staff determine "Case Conclusion Data" after TNRCC orders are issued that include data on both activities and environmental results. In FY 1998, 238 actions resulted from orders/judgements and an estimated 2.5 billion pounds of pollution were avoided by the 25 largest pollution reductions.</p> <p>Iowa's Department of Natural Resources (DNR) has integrated P2 into its wastewater compliance enforcement activities, by instituting a new protocol in which all administrative orders are evaluated for the applicability of P2 options. When identified, P2 options are incorporated into the administrative order.</p>
Contacts	<p>David Wigglesworth, Alaska Department of Environmental Conservation, 907-269-7500</p> <p>Ken Zarker, Texas Natural Resources Conservation Commission, Office of Pollution Prevention and Recycling, 512-239-3144, kzarker@tnrcc.state.tx.us</p> <p>Jeff Fiagle, Iowa Department of Natural Resources, 515-281-5353, jfiagle@max.state.ia.us</p>
Sources	<p><i>Pollution Prevention Regulatory Integration Case Studies</i></p> <p><i>State Experience Integrating Pollution Prevention in Permits</i></p> <p><i>TNRCC Pollution Prevention Integration Project: Draft Projects Summary</i></p>

Supplemental Environmental Projects

<p>Practice Description</p>	<p>In Supplemental Environmental Project (SEP) programs, the state or federal government negotiates a consent agreement or the equivalent with a non-compliant facility. The agreement generally involves the implementation of an environmentally beneficial project above and beyond any steps taken to correct the violation in exchange for a reduction in the facility's fine.</p> <p>The degree to which fines are offset varies from state to state and can be as much as 100% or less than 15%. Factors that states may include in determining the amount of penalty mitigation include the economic attractiveness of the project, level of technical risk, and the need to create an additional incentive to increase the interest of facility management.</p> <p>Although these projects do not necessarily have to involve P2 – they could for instance take the form of implementing an environmental management system – they often do. P2 conditions may be specific projects resulting in quantifiable reductions in pollution or the development and implementation of a facility P2 program, usually including a multi-media assessment and plan. Less frequently they involve sponsorship of offsite activities carried out by others such as local NGOs. Often the SEP requires more than one action or improvement by the facility.</p> <p>Programs have obtained the best results when the SEP option is introduced early in the settlement process.</p>
<p>Examples</p>	<p>The Washington Department of Ecology (DOE) accepted an innovative SEP proposed by Klein Bicycle in which Klein agreed to pay \$40,000 in cash, carry out \$100,000 worth of P2 actions, and pay \$50,000 to “a party , program, or project that benefits water quality in Lewis County or the State of Washington.” In exchange, DOE agreed to suspend \$50,000 of the penalty contingent on Klein's continued compliance.</p> <p>EPA Region 2 developed a SEP with The Eastman Kodak Company that required completion of six separate P2 projects focused on the reduction of five specific chemical compounds, the recycling of another, and general toxicity reduction at a cost of \$12 million. In exchange, EPA reduced the cash penalty from \$8 to \$5 million.</p> <p>The Colorado Department of Public Health and Environment (CDPHE) has incorporated a SEP option into its RCRA regulations. As a P2 SEP in 1995, a Colorado bus manufacturer purchased two enclosed paint gun cleaning units resulting in an 83% (44,000-lb.) reduction in solvent waste from paint gun cleaning and reduced VOC emissions. The company received a \$11,000 reduction in its penalty, offsetting entirely the cost of the new equipment.</p> <p>The Texas Natural Resources Conservation Commission (TNRCC) has increased the emphasis and marketing of P2 SEPs within its Enforcement and Litigation Divisions (ELD) during the settlement process. The agency developed two new P2 SEP case studies for training in regional offices and outreach to the regulated community. In FY 1998: 7.5% (41) orders include SEPs of which 29% (12) included P2. In June of 1999 the number of</p>

	<p>SEPs issued by TNRCC was looked to double for FY 1999.</p> <p>Some other states with SEP programs or activities include Indiana, Florida, New Hampshire, Montana, New York, North Carolina, and Ohio.</p>
Contacts	<p>Tom Eaton, Washington Department of Ecology, 360-407-6086</p> <p>George Meyer, RCRA Compliance Branch, EPA Region 2, 212-637-4144</p> <p>Fred Dowsett, Colorado Department of Public Health and Environment, 303-692-3342, fred.dowsett@state.co.us</p> <p>Jeff Fiagle, Indiana Department of Environmental Management, 515-281-5353, fiagle@max.state.ia.us</p> <p>Ken Zarker, Texas Natural Resources Conservation Commission, Office of Pollution Prevention and Recycling, 512-239-3144, kzarker@tnrcc.state.tx.us</p>
Sources	<p><i>ASTSWMO Waste Programs Pollution Prevention Compendium, Vol. 1 and 2</i></p> <p><i>Pollution Prevention Regulatory Integration Case Studies</i></p> <p><i>Pollution Prevention Solutions During Permitting, Inspections and Enforcement</i></p> <p><i>State Experience Integrating Pollution Prevention in Permits</i></p> <p><i>TNRCC Pollution Prevention Integration Project: Draft Projects Summary Report</i></p>

Miscellaneous

Certain P2 integration practices do not fit neatly into one of the specific responsibilities of environmental agencies. These are reminders that creative ideas do not need to fit into a pigeon hole but can be overarching. In the future, it may be that most of the workable P2 ideas arise, as these practices did, with the goal of creating an atmosphere – through incentives, measurement techniques and education – where P2 can thrive.

Environmental Leadership Programs (ELPs)

<p>Practice Description</p>	<p>Numerous states have instituted programs that encourage facilities to engage in P2. The strongest ones provide meaningful incentives and require solid commitments in return. The ones that simply offer recognition and/or technical assistance are important, but difficult to define as regulatory integration. The ones that include mandatory adoption of P2 are stronger.</p> <p>Each of the programs with mandatory elements requires facilities to have a P2 Plan to participate. In Colorado's Environmental Leadership Program, for example, the P2 plan must detail the management system for P2, assessment of P2 and resource conservation opportunities, P2 goals, and quantitative measurement of progress. In Michigan, participation in the Clean Corporate Citizen program requires a source-reduction program as well. New Jersey's Green and Gold Tracks require schedules for implementation of definitive non-product output (NPO) and/or use reduction goals. And in Oregon, facilities receiving a Green Permit must commit to applying the pollution prevention definition and hierarchy in setting objectives and targets and to developing an environmental management program.</p> <p>It should be noted that participation in these programs has not been very high to date, often numbering in the single digits. The more meaningful the incentives, the higher the transaction costs for both the facility and the agency. Thus, states should consider the costs and benefits carefully prior to establishing an ELP and should streamline the process wherever possible, avoiding custom-made agreements.</p> <p>Among the many incentives offered under these programs are credits on permit and emissions fees, reduced inspections and monitoring, consolidated reporting requirements, streamlined permits (such as Plant-wide Applicability Limits, or PALs), longer permit life, expedited permit review either in all cases or for RD&D projects, a single point of contact at the department, and MACT "once in, always in" flexibility.</p>
<p>Examples</p>	<p>PacifiCorp in Medford, Oregon has a Green Permit and in return has committed in its plan to eliminate the use of all enamel-based paint, reduce treated poles and wood reels being sent to landfill and reduce the number of spills. In exchange for these and other measures, PacifiCorp requested a single point of contact at the agency, permission for consolidated spill reporting, a waiver for oversight fees, and advance notice of environmental inspections.</p>

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<p>Sources</p>	<p><i>Designing Environmental Leadership Legislation in the State of Florida</i></p>

P2 Metrics

<p>Practice Description</p>	<p>States have developed metrics for measuring P2 integration activities for several reasons: to evaluate and reform their own activities, to justify and report progress to upper management, the legislature, and EPA, to hold programs and staff accountable for progress, and to remind staff of the requirement to integrate P2. They are using a variety of metrics, many of which are linked to pilot projects. However, most states appear to have at least some institutionalized metrics. States with the least measurement activities cite limited resources and lack of coordination among agency programs.</p> <p>Metrics tend to track either activities or outcomes. Activity metrics track only agency activities, such as the number of rules changed to include P2. Outcome metrics track the effects of those activities usually in terms of: (1) facility actions motivated by agency activities, such as the number of P2 suggestions by inspectors that were implemented by facilities, (2) financial results, such as savings by facilities implementing P2 suggestions, or (3) environmental results, such as pounds of pollution reduced due to including P2 in permits. Currently, most of the metrics focus on agency activities, probably because this is the logical first step in developing a measurement system, and because activity measurement is simpler than outcome measurement.</p> <p>Despite growing national concern over a lack of standardized P2 regulatory integration metrics, most states do not appear to be focusing on standardizing the metrics they are collecting. A more pressing concern is simply trying to be creative and find metrics that are applicable to the wide array of integration experiments developing in these states.</p> <p>A key issue in these efforts is how to effectively collect data to support the metric without creating a significant additional burden on staff or regulated facilities. Some metrics use existing databases such as TRI and so avoid this problem. Others incorporate the data gathering into an existing tool such as adding the P2 tracking item to the inspection report form. Still, many of the metrics in use rely on surveys and extensive follow up by P2 or compliance staff.</p>
<p>Examples</p>	<p>Activity-Based Metrics</p> <p>Several states collect data to gauge the extent to which staff have changed their ways, e.g., the number of times P2 was included in inspections / pre-permit meetings / etc. This information is most typically collected via checklists that are sent to P2 staff. Collection seems to be most effective when the P2 data has been integrated into a standard form. It is then perceived as less new and burdensome than stand-alone checklists. In addition, that information is often automatically entered into a database, providing a reliable collection mechanism.</p> <p>Several states are also tracking the number of times P2 was included in compliance notices, enforcement orders, and/or SEPs. One of the most effective and easy methods, which is used in Oregon, appears to be inclusion of a P2 question in an enforcement tracking database.</p> <p>Illinois is tracking the number and types of P2 suggestions made by inspectors via a P2 checklist inspectors submit to the P2 office whenever P2 has been included. The Illinois P2 office uses this information to refocus its training and</p>

support for inspectors.

Several states are tracking the number of referrals to P2 assistance made by program staff, which they can acquire from either the program staff or the P2 assistance staff. Such a method may be useful when the inspectors who make the referral are considered less likely to reliably notify the P2 unit of the referrals—or can simply be a good cross-checking mechanism.

A few states are collecting information on all of a program's integration activities. Alabama has recently conducted an extensive survey of all its programs. This survey enables the department to capture and understand the extent to which media programs have made progress on their own in P2 integration and the measures they have used to gauge their own progress. This technique may be especially useful in states where integration activities are fairly decentralized. It also serves to remind divisions that their progress is being measured.

Texas appears to be one of the few states focusing on integrating P2 into rulemaking, which it tracks via a P2 question in the agency database used to keep track of new regulations.

Outcome-based Metrics

Texas gathers outcome-based information from a permitting database to determine the percentage of emission reductions attributable to source reduction through New Source Review (NSR) permitting. NSR permittees record reduction information as a standard practice on their permit application review forms.

Using data required by the Toxics Use Reduction Act (TURA), Massachusetts can establish a correlation between reductions in chemical use and information included in P2 Plans. In addition, as part of its Environmental Results Program, Massachusetts requires facilities to note their use of key chemicals, such as perchlorethylene, in three industrial sectors dominated by small firms. Changes can be linked to the P2 guidance provided as part of the program. The NEWMOA P2 Metrics Menu also suggests tracking chemical usage, using purchasing and use records for chemical inventories that are required as part of environmental management systems under ISO 14000.

Several states track the number of P2 recommendations implemented by facilities, through frequent follow-up contact with facilities by P2 program staff, technical assistance staff, or media program staff. Response to such follow-up can be quite low, attributed to facility staff turnover or disinterest.

Several states track cost savings by facilities as a result of P2 implementation via agency follow-up.

A few states are tracking the number of companies no longer required to report. Texas is tracking the number of facilities, originally above eligibility thresholds for wastewater general permits, that become eligible for general permits.

Texas tracks enforcement activity and outcome data via a P2 section it has placed in the enforcement tracking database, into which all inspectors must enter data. This method may be the most likely to succeed, because institutional collection mechanisms already exist (and may not require direct P2 program resources), and staff providing data may not view data provision as a new burden.

	<p>Iowa tracks referrals to technical assistance and results of those referrals via contact with technical assistance staff, rather than program staff. With this approach, technical assistance providers provide information on referrals and results. P2 technical assistance staff may be more interested in collecting this information than program staff, as it is more closely related to their job purpose and activities.</p>
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Sources	<p><i>Measuring Pollution Prevention Regulatory Integration: Review of Other States' Efforts and Recommendations for Action</i></p>

P2 Training

Practice Description

Most examples of P2 integration in this compendium require state, federal, or local agency staff to perform new and often complex tasks that require information and skills they are unfamiliar with. It is for this reason that, although not an end in itself, training of various kinds is an absolutely essential component of many P2 integration projects. States with programs to integrate P2 into rule making have provided P2 training for rule writers. States integrating P2 into inspections have trained their inspectors. States integrating P2 into the permit process may offer training for permit writers. States interested in improving the regulatory integration have sponsored training on P2 integration for agency staff. In some cases, the state's P2 technical assistance program provides the training. In other cases, states have worked with specialized consultants.

Field inspectors generally receive the most extensive training, no doubt because successfully catalyzing the adoption of P2 projects demands acquiring a substantial amount of new knowledge and new skills. If they are being required to identify P2 opportunities, they must have a solid grasp of the general principals of P2. If they are being asked to give P2 advice, they must have some familiarity with the technical details of P2 options for the sectors they inspect. If they are being asked to promote serious consideration and adoption of P2 options, they need to acquire effective promotional skills and be able to talk to business people in their own language. Good communication skills will also be essential in many cases. Various states have sponsored trainings intended to do some or all of these things.

The training itself has been accomplished using a variety of techniques. Workshops use instructional techniques, from traditional teaching to role playing to facility site visits for real-world practice. Peer education via newsletters or joint inspections with technical assistance personnel is another frequently applied technique.

Examples

The Texas Natural Resources Conservation Commission (TNRCC) has introduced several changes to ensure the inclusion of P2 into new rules whenever possible. The agency has a Rules and Policy Committee that revised its Rules Action Form such that rule drafters designate those rules that have P2 opportunities. When rules receive this designation, a cross-agency team is assigned to draft the rule. TNRCC has also developed a P2 rules training module to encourage P2 in the development of rules. The training workshops using this module encourage staff to view P2 as a new regulatory "tool" that offers opportunities for creative innovation and ways to incorporate P2 strategies into rulemaking.

The Florida Pollution Prevention Program sponsored a workshop conducted by Tellus Institute on other States' P2 regulatory integration efforts primarily to assist program staff and P2 coordinators from each of the six different districts in Florida to initiate and support further P2 integration efforts. Some media program personnel, field inspectors, and staff with permit and rule writing responsibilities also attended. The workshop examined case studies of a variety of programs in other states highlighting the approach, key challenges (regulatory, financial, institutional, external, etc.), steps taken to overcome those challenges, method of measurement and outcomes.

Washington state developed a project, called TREE (Toxics Reduction Engineering Exchange), to reduce pollution from industrial rinsing processes. The project promotes adoption of proven resource-efficient and cost-effective P2 measures that have not been universally adopted. The project has two components: a P2 tool kit, designed using input from a needs survey of water quality permit staff, and training workshops. The toolkit includes:

- a cost analysis spreadsheet specific to wastewater conservation,
- a summary of high-payoff engineering strategies,
- regulatory strategies and a summary of legal precedence, and
- annotated summary of the best-of-the-web Internet resources.

Inspectors and technical assistance staff were offered two workshops. The first one, "Water, Chemical, and Cost Conservation in Metal Finishing Processes Workshop," provided specialized technical training on superior rinsing processes. The second, "Structured Sales Training Seminar for Regulatory and Technical Assistance Staff," offered tools for more effective promotion of P2.

The program has had a dramatic effect on reducing loadings of metals and wastewater flows, the amount of treatment chemicals used, and operating costs at participating facilities. For example, each of the first two participating facilities reduced wastewater flows by > 75% and saved > \$100,000 per year.

The Colorado Department of Public Health and Environment retained the Tellus Institute to conduct a full day training for its hazardous waste inspectors. The training focused on teaching five basic tools: technical training and knowledge, information resources, communication skills, potential motivators for business owners and managers, and accountability. The final portion of the workshop engaged participants in a discussion of lessons the attendees had found most valuable and the steps that should be taken to integrate the lessons into inspectors' daily activities.

Ohio EPA Division of Hazardous Waste Management also hired Tellus Institute to offer an interactive workshop for inspectors focusing in detail on the key elements necessary to motivate facility owners or managers to actively pursue P2.

The Illinois EPA Office of Pollution Prevention (OPP), with assistance from Kerr & Associates, provided P2 training for field inspectors to increase awareness and understanding of P2. The training encourages them to emphasize P2 as a way for facilities to comply with environmental requirements. Three training workshops were held for 90 inspectors and other field personnel at the Maywood Regional Office. On the final day of training, workshop participants toured Steiner Company, a steel locker and towel cabinet manufacturer in Aurora, to evaluate its operations and identify P2 opportunities. Each training class identified over 15 ways the firm could improve its P2 program.

The Texas Natural Resources Conservation Commission developed and implemented a multi-component strategy for integrating P2 into field operations that incorporated:

- a P2 training module into the Basic Inspector Training
- a P2 training requirement into the Inspector P2 Certification Program
- P2 training modules into annual investigator training events

	<ul style="list-style-type: none"> • a P2 chapter in all Inspector Training Manuals • distribution of P2 fact sheets at exit interviews and referrals of entities to the Office of Pollution Prevention and Recycling (OPPR) for further technical assistance • distribution of P2 materials to regional staff via the Internet. <p>As of 1999, nearly 700 inspectors had received P2 training under this initiative.</p>
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<p>Sources</p>	<p><i>Pollution Prevention Regulatory Integration Case Studies</i></p> <p><i>Innovative Practices in P2 Integration: Case Study Examples from the States.</i></p> <p><i>Regulatory Integration</i></p> <p><i>Becoming A P2 Catalyst During Inspections</i></p> <p><i>Tools for Promoting Pollution Prevention</i></p>

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