



Ohio EPA Pollution Prevention Training Plan

A Long-term Pollution Prevention Training Plan for the:

Division of Hazardous Waste Management

Division of Air Pollution Control

Division of Surface Water

Revised Version

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Ohio EPA Pollution Prevention Training Plan

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I. EXECUTIVE SUMMARY

This document has been prepared as a long-term comprehensive pollution prevention (P2) training plan for the Ohio EPA. The training plan focuses on how pollution prevention can be integrated into Ohio EPA district offices and the Divisions of Hazardous Waste Management (DHWM), Air Pollution Control (DAPC), and Surface Water (DSW). The project was originally meant to examine P2 training needs in other Ohio EPA divisions (such as Solid and Infectious Waste, Drinking and Ground Waters, and Emergency & Remedial Response). However, the scope was narrowed to focus on the three Ohio EPA divisions where pollution prevention integration offers the greatest potential environmental results.

Methods

Several different research tools were used to evaluate the Agency's pollution prevention training needs. First, a written survey was administered to over 400 DAPC, DHWM, and DSW employees. The survey assessed the current level of P2 activity practiced in the Agency and identified specific P2 training needs. Second, over twenty separate meetings with senior, mid-level, and line management were conducted in the Central Office as well as the Southwest, Northeast, and Central District Offices. Meetings were also held with Columbus legal staff and managers from four Local Air Agencies as well as two Publicly Owned Treatment Works (POTW) pretreatment programs. Third, focus groups were conducted with staff (i.e., permit writers, inspectors, enforcement staff, and compliance assistance staff). Some of these focus groups involved preparation of process maps for significant program activities. Fourth, teams from each of these Divisions participated in a conference call and provided written and oral feedback on various training options. Lastly, training plan presentations were made to managers and staff from DAPC, DSW, and DHWM as well as the Agency Director and Deputy Director for Policy and Legislation.

P2 Integration in the Ohio EPA

While the Agency has made headway integrating P2 into its enforcement process, and to a lesser extent, into its inspection procedures, P2 for the most part has been viewed by management and staff as a voluntary activity. In many cases, P2 is viewed as an additional burden on already overstrained resources -- rather than as a means to effectively utilize Agency resources. There is some movement, however, toward integrating pollution prevention into the Agency, particularly DHWM and in the District Offices.

- DHWM recently held four P2 assessment trainings and has formed a P2 Integration Team to examine how P2 could better be integrated into the Division and the District Offices.

- Management in some of the District Offices is supportive of P2 integration. The Northwest and Central District Offices, for example, have established P2 integration teams to examine P2 opportunities in inspection and permit activities.

To move P2 integration forward in the Agency *training should be linked to P2 objectives developed by management* Setting objectives is often an iterative process, with the training session raising new options, issues, and opportunities that require management consideration.

OPP's role in promoting P2 integration needs to move beyond its traditional function of acting as an internal consulting team and focus on leading efforts under the authority of a Director's mandate to identify and implement specific P2 initiatives OPP needs to enhance its ability to effect change by doing more than simply suggesting P2 strategies that can be adopted by Ohio EPA's other environmental programs. OPP needs to assist the Divisions in implementing these strategies to help assure that P2 becomes an integral part of these programs. A clear mandate emphasizing P2 will enable OPP to operate more effectively in this role. A formal team with clearly stated expectations and goals should be established to ensure implementation.

P2 Training Plan Implementation

A number of recommended actions to implement the training plan were reviewed with Ohio EPA Director Donald R. Schregardus and Deputy Director for Policy and Legislation, Kate Bartter. These recommendations include:

- emphasizing that pollution prevention is one of the Agency's top priorities and establishing expectations for pollution prevention integration progress;
- allocating Office of Pollution Prevention staff to other sections of the Agency in order to focus more attention to pollution prevention integration efforts;
- developing division and/or district office pollution prevention integration teams or workgroups to foster intra-divisional/district communication on pollution prevention integration and training, and to assist in coordinating these efforts;
- developing an Agency-wide pollution prevention integration team to assist OPP in coordinating multi-media pollution prevention integration and training efforts;
- improving reporting of pollution prevention integration efforts to identify progress in and barriers to pollution prevention integration.

Elements of a Pollution Prevention Training Plan

P2 training options include a wide range of approaches, of which traditional "classroom" training is only one. Consideration should also be given to training that include on-the-job mentoring, on-site experiences focused on technical or managerial topics, or collaborative problem-solving. P2 training need not be a one-time, substantial training program. One effective approach is the use of shorter, periodic training sessions interspersed with

opportunities to practice skills and measure their impact or value. The table below lists a number of different approaches to providing pollution prevention training.

Table 1: Pollution Prevention Training Options

<ul style="list-style-type: none"> • Content-specific shorter classroom approaches • Sequence of shorter training sessions over an extended time period • Classroom approaches combined with shorter on-site training • Longer classroom sessions combining content options 	<ul style="list-style-type: none"> • Mentorships for staff provided by experts • Mentorships provided to staff by other staff who have developed specific areas of expertise • Longer on-site training for special technical areas • On-site internships • Collaborative problem-solving sessions -- with other staff, with OPP, and/or with industry
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Generally, training is most valuable when participants are actively involved in doing or discussing what they are learning. Even classroom-oriented work, therefore, should involve working through real-world-based case studies, and involve a high proportion of small group and interactive activities. To the extent that training can be integrated into regular work situations, or the training can be carried out in real settings involving industrial facilities, the effectiveness is likely to increase.

“Training” need not be considered a one-time event, but a longer-term effort, possibly over several years, designed to meet the Agency’s P2 objectives.

Pollution Prevention Integration Training Options

The approach for Agency-wide P2 training might consist of one basic course for all Agency staff and managers followed up at one or two month intervals with specialty training sessions or activities that staff would select based on their program area, function within a program area, common industry sector or process, or other criteria. Rather than attempting to train all staff to be experts, certain staff could be trained to become the program or regional resource in certain areas.

A menu of pollution prevention training options has been outlined in this report. Some options are germane to each of the divisions. These training options include:

- Basic Pollution Prevention Training
- Defining Pollution Prevention Roles and Responsibilities
- Industry/Process Technical Training
- Regulatory versus Assistance Roles
- Pollution Prevention Resources

Additional specific pollution prevention training options for the Divisions of Air Pollution Control, Surface Water, and Hazardous Waste Management are listed below. The components are presented as a menu of training options to be addressed over a number of

years. The overall design of the training should be logically sequenced, with later courses building on the success of previous courses and on experience gained from P2 integration projects.

Division of Air Pollution Control Training Options:

- Senior Management Training
- Rule Development Training
- New Rules/Permitting Training
- Permits to Install (PTI's) Training
- Permits to Operate (PTO's) Training
- De minimus Rule Training
- Inspection Training
- Enforcement Training

Division of Surface Water Training Options:

- Senior Management Training
- Stormwater Training
- Nonpoint Source Training
- Antidegradation Training
- Industrial Training
- Great Lakes Water Quality Initiative Training

Division of Hazardous Waste Management Training Options:

- Senior/Middle Management Training
- Inspection Training

Funding Pollution Prevention Training

Successful implementation of the training plan depends in part upon funding for training activities. There are a number of funding sources available to a district office or division to use for the purpose of pollution prevention training. These sources include Federal U.S. EPA funds such as the Performance Partnership Grant Program, the Great Lakes National Program Office, and Farm*A*Syst. State sources include the Special Revenue Fund, General Revenue Fund, and Environmental Education Fund. A third category of funds -- Multi-State Grant Funds -- is resource for pollution prevention training projects. Multi-state grant funds include the Great Lakes Protection Fund and The Lake Erie Protection Fund.

Conclusion

As the Agency begins choosing from the menu of training options outlined in this plan, it is extremely important -- whatever combination of approaches is adopted for training -- that the P2 training be designed and implemented to meet specific P2 work-goals. Otherwise, the effort and resources put into the training may have little positive impact, and may breed skepticism on the part of staff. Pollution prevention training that supports a management directive -- whether it be a pilot project or full scale attempt to integrate P2 into a division, district office, or job function -- plays an important role in transforming the Agency's environmental management system from pollution control to a system based on pollution prevention.

II. INTRODUCTION

This document has been prepared as a long-term comprehensive pollution prevention (P2) training plan for the Ohio EPA. The main objective of the effort was to develop a P2 training plan that could be used to integrate P2 into the Agency's media-specific divisions. The training plan focuses on how pollution prevention can be integrated into existing and future Agency programs and be used to achieve the Agency's environmental goals. The Ohio EPA Office of Pollution Prevention (OPP) was responsible for direct management of the project.

Funding for this project is provided from the 1997 Pollution Prevention Incentives for States (PPIS) grant (\$9,261) and the 1996-1997 biennium State of Ohio General Revenue Funds (\$30,000).

The training plan focuses on P2 integration opportunities and related training needs in the Division of Hazardous Waste Management (DHWM), Division of Air Pollution Control (DAPC), and Division of Surface Water (DSW). The project was originally meant to examine P2 training needs in other Ohio EPA divisions (such as Solid and Infectious Waste, Drinking and Ground Waters, and Emergency & Remedial Response). However, the scope was narrowed to focus on the three Ohio EPA divisions where pollution prevention integration offers the greatest potential environmental results.

II.A. Research and Data Collection

Research was conducted to evaluate the Agency's pollution prevention training needs using four data collection tools: a written survey, management meetings, focus groups with staff, and peer review of the training plan options.

A written survey was administered to over 400 Ohio EPA employees in DAPC, DHWM, and DSW. The survey's purpose was to assess the current level of P2 activity within the Agency and to identify specific P2 training needs. A written analysis of the survey results and a copy of the two-page survey are located in the Pollution Prevention Training Needs Survey on page 62.

Over twenty separate meetings with senior, mid-level, and line management were conducted in the Central Office as well as the Southwest, Northeast, and Central District Offices. Senior managers from the Southeast and Northwest District Offices participated in several of the meetings in person or via conference call. Meetings were also held with Columbus legal staff and managers from four Local Air Agencies as well as two Publicly Owned Treatment Works (POTW) pretreatment programs.

Nine separate focus groups were conducted with line staff (i.e., permit writers, inspectors, enforcement staff, and compliance assistance staff). Some of these focus groups involved preparation of process maps of significant program activities. A process map is a type of

flow diagram of the activities and “business” functions performed by a program -- such as permitting, inspections, enforcement, rule development, etc. The maps were used as a device for identifying specific P2-integration opportunities. Process maps developed during this project are located in Process Maps on page 72.

In total, over 100 Ohio EPA and Local Air Agency employees were interviewed in person at the management meetings and staff focus groups. Data was collected on the current level of P2 integration, future P2 opportunities, barriers to such opportunities, and training mechanisms to overcome these barriers. This information was used to draft a series of training plan options for review by DAPC, DHWM, and DSW teams. Teams from each of these divisions participated in a conference call and provided written and oral feedback on various training options. The training plan was drafted and presented to the Ohio EPA Director and Deputy Directors, division senior managers, Agency P2 contacts, and OPP personnel.

II.B. Current Status/Priorities

While the Agency has made headway in integration of P2 into its enforcement process, and to a lesser extent, into its inspection procedures, P2 is for the most part a voluntary activity for management and staff. In many cases, P2 is viewed as an additional burden on already overstrained resources -- rather than as a means to effectively utilize Agency resources. There is some movement, however, toward integrating pollution prevention into regulatory programs, particularly in DHWM and in the district offices. The text that follows reviews the current status of P2 integration in DHWM, DAPC, and DSW and was collected via survey, focus groups, and individual interviews.

- DHWM upper management and staff (the P2 contacts in particular) increasingly view P2 as one of their prime duties. DHWM recently held four P2 assessment trainings and has formed a P2 Integration Team to examine how P2 could better be integrated into the Divisions. DHWM is the furthest along of the three divisions in working to implement P2 into its core functions.
- DAPC district office staff as well as Local Air Agency (LAA) staff and managers see that P2 could become a prime duty (but currently it is not). DAPC management in the Central Office were not convinced of the technical merits of P2 and view P2 predominately as OPP’s job. Although the Division has pledged to include P2 into 10 enforcement actions during 1997, progress in this area has been slow.
- DSW managers and staff have a difficult time seeing pollution prevention as providing a major benefit to their program -- to the extent that P2 is defined narrowly as an approach only associated with industrial operations. Industrial sources are not one of DSW’s work priorities. Nonpoint sources, stormwater, and sewer extensions contribute to the majority of water quality problems in the state, even in urban areas such as Akron and Columbus. When the concept of P2 is broadened to these issues (such as agriculture run-off, riparian zones, or stormwater), some DSW managers and

staff see P2 as a viable approach. With respect to industrial sources, a committee of DSW staff developed and presented to management an analysis of several P2 options three years ago, but no action resulted from their initiative.

II.B.1. Permitting

P2 integration in permitting was examined for DAPC, DHWM, and DSW. Compared to the other two divisions, there is relatively little opportunity in DHWM. DHWM issues relatively few permits each year (and DHWM has incorporated some P2 requirements into these permits). In DSW, incorporating P2 into the permitting process is complicated by the fact that (1) the majority of industrial dischargers discharge to POTWs not to surface water, (2) requiring P2 in NPDES permits would in all likelihood require a change in statutory authority, and (3) the majority of Ohio water quality problems stem from non-industrial sources. Thus, P2 integration into DSW through the National Pollution Discharge Elimination System (NPDES) permits should be a second tier priority for the Agency.

P2 integration in permitting holds the greatest promise in DAPC. However several difficulties limit the potential to promote P2 in permits in the air program:

- the high volume of permits for which staff have responsibility limits the feasible extent of review, as do the tight time-constraints imposed on the review of each permit;
- the fact that, by the time the permit applications are received, most of the basic engineering decisions have already been made by the source;
- lack of awareness or understanding of P2 technical alternatives by staff responsible for reviewing permit applications;
- lack of adequate institutionalized criteria or processes for effectively incorporating P2 into permit decisions.

II.B.2. Inspections

Except for the P2 contacts, few managers or staff have received P2 training for inspectors (except for DHWM). Managers and staff consider inspector P2 to be voluntary and many expressed uncertainty regarding their role in promoting P2. In incorporating P2 into the inspection process, managers and staff expressed a number of practical concerns:

- lack of certainty as to role and level of expertise (e.g., handing out literature, referring to OPP or elsewhere, or providing technical advice);
- low comfort level with supplying P2 advice to facility staff with more technical knowledge of their own processes; and
- uncertainty as to how to balance the competing command and control (enforcement) persona with the Agency's pollution prevention assistance persona.

An additional issue with respect to DSW staff is that pollution problems related to releases by industrial facilities comprise only a small part of the surface water problem for which

they are responsible. As noted previously, P2 approaches have typically been characterized as applicable primarily to industrial facilities.

II.B.3. Enforcement

In general, there is broad agreement in the agency that P2 should be incorporated into the enforcement process. DHWM has a systematic program in place to encourage P2 in enforcement; currently roughly a third of DHWM enforcement actions include P2. DSW and DAPC lack effective mechanisms for incorporating P2 in the referral package sent to the Central Office. DAPC has made a commitment to introduce P2 into 10 enforcement actions this fiscal year. However the process by which such referrals would be made by DAPC staff (early in the enforcement process) has yet to be established.

For staff to become engaged in incorporating P2 more extensively in their jobs would require more extensive commitment from managers. In most cases, however, managers are concerned both about limited resources and about the amorphous nature of current expectations to integrate pollution prevention into the activities for which they are responsible. Managers noted the importance of managing for measurable outcomes. However, tools for measuring P2 outcomes (both environmental measures as well as administrative measures) are lacking, as are P2 provisions in employee job descriptions, professional development plans, and performance evaluations.

II.B.4. Positive Developments

There are, however, some emerging efforts involving increased management support for P2 integration, including:

- The Division of Hazardous Waste Management has recently established a Pollution Prevention Team with a charter to increase "in-the-field" promotion of P2. While the Division has not yet set up a formal system to encourage, reward or support implementation of P2, the Team "has the authority to consider all [P2 integration] options," and is "not [to] let budgetary issues keep it from making a recommendation that it feels is otherwise worthwhile."
- Management in some of the district offices is supportive of increasing efforts to integrate P2 into regulatory activities. The Assistant Chief of the Northwest District Office (NWDO), for example, has written a memo outlining the benefits of P2 integration. The memo also outlines a number of steps district management could take to integrate P2 into inspection and permitting activities.

III. POLLUTION PREVENTION INTEGRATION IN THE OHIO EPA

III.A. Linking Training to Management Decisions

Training is an important component in any effort to expand P2 integration into the Agency's regulatory programs. Training by itself however is insufficient to bring about increased implementation of P2. Instead, well-defined management objectives for P2 integration should precede resource commitments to training. From these management objectives stem specific work-goals that training is designed to support. Currently, only DHWM has a process in place to develop such objectives.

This document outlines several approaches to training staff (see Section IV). In evaluating these approaches, consideration needs to be given to how to link the training to specific roles and activities for which both staff and managers will be subsequently responsible. Some options for such connections are suggested in Section V. DHWM's planning initiative is moving in the right direction by making an effort to tie its current training program to newly-prioritized, specific staff responsibilities involving P2. Another area for exploration may be options for coordinated multi-media efforts in the district offices.

In making those decisions, managers can use existing tools to define both objectives and responsibilities for integration of P2. For example, in the Strategic Management Process (SMP), the Phase 3

Strategy Development (long term goals) and the Phase 5 Annual Plans provide a mechanism for specifying both broad objectives and specific goals for P2 implementation. In addition, it is important to build P2 integration responsibilities and

P2 Integration Tools

- Professional Development Plans
- Staff Job Descriptions
- Management and Staff Performance Evaluations
- District/Central Office Accountability Agreements
- Environmental Measures of P2 Integration
- Administrative Measures of P2 Integration
- SMP Phase 3 Strategy Development (Long Term Goals)
- SMP Phase 5 Annual Plans

objectives into Agency/division accountability agreements and evaluation criteria, and to make P2 part of the employee's professional development plan. The management tools discussed in this section are an effective means to encourage, monitor, and measure P2 integration in the Agency.

III.B. Pollution Prevention as a Multi-media Issue

Pollution prevention involves a fundamentally different way of looking at environmental management. Effective implementation of pollution prevention requires looking at the affected operation -- whether manufacturing, commercial, agricultural or domestic -- as a

whole. Tracking the relation between the various phases of those operations and the ultimate release of pollutants to any environmental medium is an important part of this endeavor. While some environmental problems may for the most part involve a single medium (e.g., requirements for reduced VOC coatings), multi-media approaches offer the potential for greater environmental protection.

Currently, the Agency's major multi-media P2 initiative has been a pilot in each district office of multi-media P2 inspections (the "M2P2" pilot program). Focusing such multi-media P2 pilot efforts at the field operations level in the Districts provides an opportunity for district office management to serve as a fulcrum for targeting and implementing multi-media opportunities. The perceived value of these inspections varied widely from district to district. Some of the problems associated with M2P2 include:

- as many as five programs participated in a single inspection. Staff found that they had too little time for each program to ask their questions and gather the information they needed;
- facility personnel were often overwhelmed and in some cases intimidated by the number of inspectors, questions, and time involved in the inspection; and
- many Districts chose facilities that were complex and had problems in as many as five program areas. Such facilities are extremely difficult to tackle from a multi-media inspection -- a condition aggravated by the fact that most staff have little experience in conducting multi-media inspections.

While there were problems with some of the inspections, many district offices are still very much in favor of multi-media inspections that promote P2. Some of the positive aspects of M2P2 include:

- the tremendous potential environmental benefit from having staff inspect for unregulated waste streams and obvious violations in the other media programs (the "multi-media" perspective);
- the cross-training provided by M2P2 gave inspectors insight into the inspection procedures and priorities for other divisions/programs;
- the inspectors and the facilities liked the focus on pollution prevention. This helped to promote a positive relationship between the companies and Ohio EPA.

Since responsibility for some aspects of water and air regulation is held by local agencies such as local air agencies and POTWs, it is important to involve these agencies in any pilot efforts. This is a role which district office management could lead and parallels multi-media efforts in other states (e.g. the Blackstone Project in Massachusetts). In Ohio, NWDO has initiated cooperative efforts with the cities of Lima and Toledo and several county local government agencies.

III.C. A District Office Approach to Pollution Prevention Integration

For integrating P2 into inspection activities, working with the district offices offers the most straightforward approach. The Northwest and Central District Offices have established their own P2 integration teams. Several staff and managers in the Southwest District Office see potential for such an approach to P2 integration.

A district office approach to P2 integration would include a series of periodic (monthly or bi-weekly) multi-media meetings attended by first line managers and staff from DAPC, DHWM, DSW, and OPP. Local Air Agency staff and POTW pretreatment staff could be invited as well. Potential topics to be covered at these meetings include:

- Technical training on various sources/pollutants/wastes/industries coordinated by a district office manager using OPP, vendors, suppliers, and P2-orientated district office staff to provide technical content;
- Attempts by staff to incorporate P2 into their job duties. For example, during such a meeting, staff would discuss recent inspections and their attempts to promote P2. OPP and other participants would offer suggestions and advice on P2 promotion;
- P2 roles and responsibilities (see Defining Pollution Prevention Roles and Responsibilities on page 17);
- Regulatory versus Assistance roles (see page 8); and
- P2 resources (see Pollution Prevention Resources section on page 19).

III.D. Role of the Office of Pollution Prevention

OPP plays an important supporting role in integrating P2 into Agency functions. The Office provides not only P2 technical recommendations and suggestions, but also it brings regulatory innovations developed in other states to the attention of DSW, DAPC, and DHWM.

Some staff and managers in DAPC, DSW, and DHWM view pollution prevention solely as “OPP’s job”. These managers and staff see P2 integration as limited to a familiarity with OPP’s capabilities so that they might refer firms to OPP services (i.e., hand out OPP pamphlets, business cards, names, and phone numbers). This limited view undersells the tremendous potential pollution prevention holds for combining environmental improvement with economic competitiveness.

A minority of managers and staff view pollution prevention and OPP differently. They see P2 as one of their prime duties. These managers and staff see OPP’s role as supporting integration of P2 into division or district operations through training, joint site visits, providing P2 information, mentoring programs, and jointly focused P2 technical efforts with industry.

OPP’s role in promoting P2 integration needs to move beyond its traditional function of acting as an internal consulting team and focus on leading efforts under the authority of a

Director's mandate to identify and implement specific P2 initiatives OPP needs to enhance its ability to effect change by doing more than simply suggesting P2 strategies that can be adopted by Ohio EPA's other environmental programs. OPP needs to assist the Divisions in implementing these strategies to help assure that P2 becomes an integral part of these programs. A clear mandate emphasizing P2 will enable OPP to operate more effectively in this role. A formal team with clearly stated expectations and goals should be established to ensure implementation.

In addition, numerous district office personnel suggested an OPP person be assigned to their district office. Such an assignment makes sense where a district office or a division in a district office has initiated a project to integrate P2.

III.E. Implementing the Pollution Prevention Training Plan

Implementing the training plan will require OPP and the divisions to allocate resources. During the final stages in the training plan's development, a meeting was held with Ohio EPA Director Donald R. Schregardus and Deputy Director for Policy and Legislation, Kate Bartter. This meeting focused on:

- 1) A review of the Pollution Prevention Training Plan modules presented to the Divisions of Hazardous Waste Management, Surface Water and Air Pollution Control;
- 2) A review of the issues raised by these divisions and how they may be potentially dealt with in the scope of the Pollution Prevention Training Plan;
- 3) A review of how Ohio EPA District Offices could be involved in the Pollution Prevention Training Plan and specific pollution prevention training concerns that are unique to the districts;
- 4) Various multi-media issues and how they may affect the Pollution Prevention Training Plan, focusing on the interaction between the district office and Central Office staff in regard to pollution prevention training;
- 5) The Office of Pollution Prevention's role with respect to Pollution Prevention Training Plan implementation - focusing on the need for OPP assistance in implementing pollution prevention training throughout the Agency; and
- 6) The need to conduct pollution prevention training sessions for management as identified during the development of the Pollution Prevention Training Plan.

These points were used as a basis for moving the Pollution Prevention Training Plan forward. The following recommendations were discussed as a set of tools for implementing the Pollution Prevention Training Plan:

- a) Re-emphasizing the Agency's commitment to pollution prevention, ensuring that all employees are aware that pollution prevention is one of the Agency's top priorities, and establishing expectations for pollution prevention integration progress.
- b) Having Office of Pollution Prevention staff located, or spending a significant portion of their time, in different parts of the Agency (including the district offices) in order to provide more attention to pollution prevention integration efforts.
- c) The development of division and/or district office pollution prevention integration teams or workgroups. The purpose of these teams/workgroups would be to foster intra-divisional/district communication on pollution prevention integration and training, to assist in coordinating these efforts, and to help identify the feasibility of pollution prevention integration efforts.
- d) The development of an Agency-wide pollution prevention integration team to assist the Office of Pollution Prevention in coordinating multi-media pollution prevention integration and training efforts, to improve communication throughout the Agency on pollution prevention efforts, and to help identify the feasibility of pollution prevention integration efforts.
- e) The need for improved ongoing reporting of pollution prevention integration efforts to identify progress and determine what barriers to pollution prevention integration exist.

The Director's Office and the Office of Pollution Prevention in cooperation with Agency divisions will work to identify some initial steps to begin implementation of the Pollution Prevention Training Plan.

IV. ELEMENTS OF A POLLUTION PREVENTION TRAINING PLAN

P2 Training Plan options include a wide range of approaches, of which traditional "classroom" training is only one. Consideration should also be given to training options such as on-the-job mentoring, on-site experiences focused on technical or managerial aspects of manufacturing processes, and collaborative problem-solving. P2 training also need not be a one-time, substantial training. In many cases, several shorter training elements that provide the opportunity to put ideas into practice, identify what works and what problems arise, and re-focus subsequent training around the problem areas, may be more appropriate. Smaller training sessions are particularly valuable where the agency has chosen to develop differing areas of staff expertise. Possible approaches which take into account these varying opportunities are discussed below.

As noted in the previous section, it is extremely important -- whatever combination of approaches is adopted for training -- that the P2 training be designed and implemented to meet specific P2 work-goals. Otherwise the effort and resources put into the training will have little positive impact, and may breed skepticism on the part of staff that the training relates to any real Agency goal. Thus, it is important to make decisions with regard to the P2 integration before training Agency personnel.

The components presented in this training plan are expected to be addressed over a number of years. The overall design of the training should be logically sequenced, with later courses building on the successes both of previous courses and of experience gained in using P2 tools and approaches.

IV.A. Senior/Middle Management Training

Before implementing P2 training for staff, it is essential that managers understand not only the basic concepts of P2, but also their own unique role in managing P2 efforts in their divisions or work units. This can be accomplished by conducting a full day session for all managers that combines training in P2 topics with a facilitated strategy meeting. The strategy meeting gives managers an opportunity to define the effective ways to support their staff in P2 efforts and to consider processes for reviewing of P2 options and training needs. A sample course outline is provided in Section VI (page 43).

IV.B. Staff/Management Training

Staff/management training options should be considered both in terms of content and approach. Which combination of content and approach are appropriate will depend on the specific goals the training is intended to realize. It is not expected that all options would be appropriate for particular staff or managers.

The content options presented below include:

1. *Basic P2 principles and practices*
2. *Technical sector/process-specific P2 technology options*
3. *Communication of P2 opportunities*
4. *Environmental accounting*
5. *Manufacturing environments*
6. *P2 in inspections*
7. *P2 in permitting*
8. *P2 in enforcement actions*
9. *P2 information resources*

1. *Basic P2 principles and practice*

- ☛ Roles that staff play in promoting P2
- ☛ Review how regulatory personnel can facilitate P2 in industry (regulatory and non-regulatory perspectives)
- ☛ Define OPP's role vis-à-vis integration in the division or staff person's job function

2. *Technical sector/process-specific P2 technology options*

- ☛ Overview of the industry
- ☛ Flow diagrams of primary industrial processes (how to develop and use flow diagrams in P2 activities)
- ☛ Typical P2 opportunities within this sector or process
- ☛ What to look for during inspections or facility visits
- ☛ Available technologies for improving P2 results
- ☛ Available resources for this industry

3. *Communication of P2 opportunities*

- ☛ Establishing good relationships with facilities
- ☛ Inspector vs. technical assistance roles
- ☛ Using open-ended questions to start P2 discussions
- ☛ Using active-listening techniques to facilitate discussions
- ☛ How to give "bad news"
- ☛ Dealing with difficult people

4. *Environmental accounting*

- ✦ How environmental accounting is different from "traditional" accounting practices
- ✦ Benefits of using environmental accounting methods
- ✦ Obstacles that organizations face in changing to and practicing environmental accounting methods
- ✦ How to discuss this with a facility to encourage this method

5. Manufacturing environment

- ✦ How operating budgets are created and managed
- ✦ Production processes and issues
- ✦ Customer service and sales priorities and issues
- ✦ Quality assurance practices
- ✦ Employee relations/labor relations issues

6. P2 in inspections

- ✦ Identification of potential P2 opportunities to explore during pre-visit preparation
- ✦ How to use other available information on facilities (e.g., waste reduction plans required for some facilities) to identify P2 activities and options at facility prior to visit
- ✦ Identification of P2 opportunities during inspections
- ✦ Agency policy on appropriate balancing of providing P2 suggestions for exploration with inspector's compliance role
- ✦ Facilitating company access to technical P2 information -- referrals to OPP, other technical assistance sources, other companies, etc.
- ✦ Need for technical process/sector information

7. P2 in permitting

- ✦ Identification of opportunities to provide P2 information to new sources before submission of permit applications
- ✦ Identification of opportunities for targeting P2 information for facilities nearing permit renewal

- ✚ Coordination with OPP for exploration with industry on identification of P2 technologies for sources facing new rules or limits
- ✚ Methods for utilizing permit-review criteria for promoting P2
- ✚ Exploration of opportunities to promote P2 in permit-review process
- ✚ How to use other available information on facilities (e.g., waste reduction plans required for some facilities) to identify P2 options to explore with facility during permitting

8. P2 in enforcement actions

- ✚ Communicating with facilities about opportunities for P2 for achieving compliance or for P2 supplemental environmental projects (SEPs)
- ✚ Identifying ways to incorporate P2 into the enforcement process
- ✚ Identification of facility-specific P2 opportunities for inclusion in referrals to legal and enforcement staff
- ✚ Training on P2 SEP guidance

9. Information resources

- ✚ Providing information about sources of technical information -- both written and electronic -- including agency, trade associations, vendors, P2 networks
- ✚ Technical problem-solving using internet resources
- ✚ Role of OPP, and support available
- ✚ Other organizations outside the Ohio EPA providing technical P2 support

Many of the topics listed above allow for a variety of different approaches in presentation, from classroom to hands-on involvement.

IV.C. Training Approaches

Possible training approaches include:

- ✚ Longer classroom sessions combining content options
- ✚ Content-specific shorter classroom approaches
- ✚ Sequence of shorter training sessions over an extended time period
- ✚ Classroom approaches combined with shorter on-site training

- ✦ Mentorships for staff provided by experts (e.g., OPP staff, Cleveland Advanced Manufacturing Program (CAMP), Institute of Advanced Manufacturing Sciences (IAMS), or other industry specialists)
- ✦ Mentorships provided to staff by other staff who have developed specific areas of expertise
- ✦ Longer on-site training for special technical areas
- ✦ On-site internships
- ✦ Collaborative problem-solving sessions -- with other staff, with OPP, and/or with industry

When selecting P2 training approaches, the most important factor to consider is that the training must be designed to meet defined, work-related P2 objectives.

“Training” need not be considered a one-time event, but a longer-term effort, possibly over several years, designed to facilitate meeting the Agency's P2 objectives.

Training should also not be considered equivalent to a classroom activity. Each of the approaches above can be appropriate to a particular training need or level of training. Not all are equally appropriate to each of the content areas.

Depending on the objective, the most appropriate approach is likely to be a combination -- e.g., classroom training with an on-site visit followed by mentoring for incorporating promotion of P2 into the role of the inspector.

Generally, training is most valuable when participants are actively involved in doing or discussing what they are learning. Even classroom-oriented work, therefore, should involve working through real-world-based case studies, and involve a high proportion of small group and interactive activities. To the extent that training can be integrated into regular work situations, or the training can be carried out in real settings involving industrial facilities, the effectiveness is likely to increase.

Ohio EPA has a number of options available for training staff to promote P2 in their work. Some examples of options are presented on the following page:

- The approach for Agency-wide P2 training might consist of one basic course that all Agency staff and managers attend to learn the general concepts of P2. This basic course could be followed up at one or two month intervals with specialty training sessions or activities. Staff would select training based on their program area, function within a program area, common industry sector or process, areas of individual interest, or other criteria.

- A flexible approach to P2 training would enable the Agency to develop P2 “expertise” in a variety of sector areas and geographic locations. Rather than attempting to train all staff to be experts, certain staff could be trained to become the program or regional resource in certain areas. Managers could develop a wide range of P2 capabilities within their program area by actively encouraging staff to develop skills in different specialty areas.
- An option for conducting industry/process specific P2 training is to schedule a full day training at a facility with a technical expert who also has good training skills. An alternative is to put together training teams of technical experts and trainers to co-train the sessions. Participants would learn from presentations, discussions and from observation of the actual processes.
- If training at a facility is not feasible, a half day session by a technical expert/trainer would also be appropriate. The trainer would use slides and a video, if available, to show parts of the process.
- Another option for on-site training involving manufacturing environments or technical processes would be through a partnership with specific companies. Staff would be paired up in teams with technical/managerial personnel and spend a day or more in a facility. They would follow a structured training plan that would require them to interview key managers and operations staff, observe production line operations, and spend time with quality assurance, etc. A half day follow up session would be scheduled to process what they learned and to figure out how to apply it in promoting P2 within the scope of their own jobs.
- On-the-job mentoring might involve OPP staff working with program staff on specific inspections and/or enforcement referrals. OPP would educate program staff on P2 opportunities for facility, cost implications of P2 options, resources for the facility, and methods for accessing P2 information. Such training could be a sequel either to a more general classroom P2 training course or to technical P2 training. The advantage of this approach is that training occurs within the context of real work. Agency staff are learning how to implement P2 while they are actually doing it.

These options are meant only as examples of the broad range of approaches possible in designing a P2 training plan for the Agency. Developing a specific plan requires some determination of shorter- and longer-term goals for staff P2 activities.

V. POLLUTION PREVENTION INTEGRATION TRAINING OPTIONS

This part of the report outlines P2-integration training options and is divided into the following four sections:

- Multi-division Training Needs
- Division of Air Pollution Control
- Division of Surface Water
- Division of Hazardous Waste Management

The section on “Multi-division Training Needs” addresses P2 integration issues and training options that apply to all three divisions. Division-specific P2 integration opportunities and training options designed to capitalize on those opportunities are addressed under each division’s respective section. Each training option includes a listing of key training attributes:

Priority: -- ranging from low, medium to high. Recommended priorities are based upon the current state of P2 integration in the Agency and divisional input.

Degree of Difficulty -- ranging from low, medium to high. The degree of difficulty is based upon the resources, coordination, policy, programmatic, and procedural changes needed for the proposed training options.

Audience -- personnel within the Agency as well as stakeholders and local government entities who would benefit from such a training program.

Example Agenda-- sample training agendas and formats contained in Section VI of this report (page 43).

As stated elsewhere in the report, management decisions regarding the Agency/division’s P2-integration focus are needed before deciding upon training options. Therefore, while the training plan prioritizes some training options over others, the report does not contain a training timeline.

V.A. Multi-division Training Needs

As previously mentioned, many of the P2 integration issues and training needs were observed in multiple divisions. The training courses and modules presented on the following pages have been designed to address these multi-division training opportunities.

V.A.1. Basic Pollution Prevention Training

Some staff and divisions (notably the P2 Contacts, DSW staff involved with industrial dischargers, and DHWM staff) have already received introductory and (in some cases) advanced P2 training. However, a sizable majority of staff have not had introductory P2 training. This training encourages employees to think creatively about using P2 in their jobs and to provide P2 technical assistance to their customers by either giving them information directly or referring them to the Office of Pollution Prevention. Through this training effort, employees will gain a working knowledge of P2 that will act to enhance the integration of P2 throughout the Agency.

The introductory training would include modules on the following topics:

- basic P2 concepts and associated techniques;
- case studies from Ohio companies that have successfully implemented P2 to give the participants "real-life" experiences;
- role plays to practice communicating P2 concepts and information;
- a pollution prevention exercise where participants operate a manufacturing facility and actually control the quality of product made and amount of waste generated. From this exercise, participants can decide which P2 techniques to implement to generate less waste and improve product quality;
- attendees are also made aware of OPP's services, including its WWW site.

Priority: High for DAPC -- especially district office staff; low for DHWM and medium for DSW.

Degree-of-Difficulty Low -- Ohio EPA has experience in coordinating/running introductory P2 courses.

Audience: Ohio EPA staff (and potentially POTW pretreatment and LAA staff) who have had little or no prior P2 training. This training will have DSW applicability only for staff that work with industrial sources. A different P2 course focusing on non-industrial sources is most appropriate for the majority of DSW staff.

Comments: Short term and in concert with Agency/division decisions to integrate P2 into daily operations

Example Agenda see Introductory Pollution Prevention Course on page 52.

V.A.2. Defining Pollution Prevention Roles and Responsibilities

Generally speaking, staff were uncertain as to the extent they should incorporate P2 into their daily duties. For example, are inspectors expected to hand-out P2 literature, refer

companies to OPP, identify P2 opportunities and recommend solutions to companies, or become P2 experts in one or more process or industries? There is no simple, single correct answer that will define the P2 roles and responsibilities for staff. Some staff are likely to develop strong P2 technical skills based upon factors such as prior work experience in industry or strong personal interest. A training module should be included in different training programs where management and staff can explore answers to these questions.

Priority: High -- defining roles and responsibilities is important before asking staff to incorporate P2 into their job duties.

Degree-of-Difficulty Low -- This module is basically a facilitated discussion of roles and responsibilities.

Audience: To some extent DHWM has addressed this issue in their assessment trainings. DAPC and DSW industrial staff have not had such an opportunity.

Example Agenda: see Introductory Pollution Prevention Course on page 52.

Comments: No single training course will define staff P2 roles and responsibilities. Such a definition will be developed over time through numerous management, staff, district office and Central Office meetings.

V.A.3. Industry/Process Technical Training

Many staff were reluctant to discuss P2 with facilities because they felt unqualified. Technical training on tools to analyze production processes as well as P2 options for specific sources, wastes, and pollutants will increase staff expertise. An example of industry-specific training is metal surface coating P2 training (see Metal Surface Coating Pollution Prevention Course, page 54). An example of process training would be a course on vapor degreasing alternatives. This training could be developed by the interested division(s) and OPP, perhaps with the aid of an outside P2 training contractor.

Priority: Low (Medium for DHWM)-- although concrete technical material should be part of any P2 training course, industry/source/pollutant specific courses should be offered after management has made key decisions regarding what level of technical expertise they envision for staff.

Degree-of-Difficulty Medium -- Industry-specific course could be taught using a variety of OPP, vendor, supplier, trade association, and consultant resources.

Audience: Staff and line managers. In DSW, the training will have applicability only for staff that work with industrial facilities. A different P2 course focusing on non-industrial sources is most appropriate for the majority of DSW staff.

Example Agenda: see Metal Surface Coating Pollution Prevention Course on page 53.

V.A.4. Regulatory versus Assistance Roles

District office staff expressed concern over how to balance the Agency's command and control directives with its pollution prevention directive. For example, inspectors wondered in what situations they should come down hard on a company versus taking a

more compliance and P2 assistance approach. Training modules should be offered that use simulated dialogues where inspectors are trained to make such determinations.

Field staff are also concerned that it will be difficult to overcome industry's perception that Ohio EPA exists only for compliance/enforcement purposes. Training using real-life scenarios where inspectors practice communicating P2 options would help address this concern.

Priority: High -- should be part of all P2 training courses for the next few years.

Degree-of-Difficulty Low

Audience: Staff and line managers. In DSW, the training will have applicability only for staff that work with industrial facilities.

Example Agenda see Module #8: Communicating P2 To Industry on page 49.

V.A.5. Pollution Prevention Resources

Many staff are not familiar with P2 resources available to them such as OPP expertise, reports and fact sheets, P2-orientated WWW sites (including OPP's WWW site), trade associations, vendors and suppliers of green chemistry and cleaner manufacturing equipment, trade associations, etc. Knowledge of such resources is key in any effort to direct industry towards pollution prevention. Training on P2 resources could be conducted as a discrete training (e.g., one hour training in each district office) or as part of a larger training program (e.g., training around an industry-specific P2 training event). P2 resources include:

- OPP, U.S. EPA, Cleveland Advanced Manufacturing Program (CAMP), and other government and semi-public agencies;
- WWW P2 sites; and
- specialists in particular industries or processes.

Priority: High -- should be part of all P2 training courses.

Degree-of-Difficulty Low -- OPP has experience with such training.

Audience: Staff and line managers. For non-industrial DSW staff, resources on topics such as non-point source pollution and stormwater pollution would have to be developed.

Example Agenda see Module #5: Resources on page 47.

V.B. Division of Air Pollution Control (DAPC)

Training options have been developed for several DAPC program areas. When considering the various options, it is important to keep in mind that any decision about what areas to focus training on should also be linked to management decisions that support staff in using the skills they have received in training. For example, if training on how to evaluate P2 in inspections is chosen, DAPC should decide how management will reward/encourage/support/require staff to make such analyses part of their job.

Current DAPC priorities include permits to install (PTI's), Title V Permits & fee reports, state permits to operate (PTO's) (first issues before renewals), and enforcement. For effective P2 integration, P2 should rank among the top DAPC priorities. Both staff and managers pointed out that in addition to placing P2 higher on the priority list, the Division lacks refined P2 goals. Such goals could be included in DAPC's Phases III and V of the SMP as well as in accountability agreements established with district offices and local air agencies (LAA).

When reviewing the P2 options, keep in mind that P2 approaches are generally considered more effective when incorporated up front in rulemaking and permitting than in activities such as inspections and enforcement. Many more facilities will be affected by rules and permitting requirements, of which some fraction will be inspected and a much smaller fraction of which will receive enforcement. To illustrate this point, consider that while there are roughly 10,000 permitted sources in the state, DAPC conducts enforcement actions against roughly 130 firms per year.

V.B.1. Senior Management Training

Before implementing P2 training for staff, it is important that managers understand not only the basic concepts of P2, but also their unique role in managing P2 efforts in their division or work unit. This can be accomplished by conducting a full day session for all managers that combines training in P2 knowledge with a facilitated strategy meeting. During such a strategy meeting, managers would define the effective ways to support their staff's P2 efforts and consider processes to review P2 options and training needs. A sample course would include modules on:

- Roles and responsibilities of managers in promoting P2 in air
- Specific examples of successful P2 initiatives in air from other state programs; measurability of specific program benefits
- Applicability of such initiatives, and other alternatives, within Ohio program context
- P2 measures/results/accountability (environmental and administrative)
- P2 in job descriptions and professional development plans
- Methods of supporting staff

Priority: High -- such training is necessary for P2 integration in DAPC.

Degree-of-Difficulty Low -- such training is relatively straightforward to organize. Compilations of success stories are readily available.

Audience: Senior DAPC management in Columbus and the district offices

Comments: This course would consist of interactive presentations, discussions, case studies and examples, as well as facilitated problem solving sessions. Options would include (1) a longer training program (up to a day-and-a-half), with breakout sessions for discussing issues specific to particular programs or (2) a series of shorter sessions over several months.

V.B.2. Pollution Prevention in Rule Development

Incorporating P2 into the rulemaking process is one of the most effective tools DAPC has to encourage sources to examine P2 options. Currently, there is no formal mechanism to incorporate P2 into new Ohio EPA rules. A recommended mechanism would be the establishment of a Rules and Policy Review Committee (RPRC) similar to that used by the Texas Natural Resources Conservation Commission (TNRCC). TNRCC's committee reviews every rulemaking prior to initiation and encourages P2 during the development of the rules process. Such a committee would be comprised of DAPC Central Office rulemaking staff, OPP staff, district office, and LAA staff. A DAPC staff member suggested that the committee could require that P2 become an integral part of the ORC 119.032 five-year regulatory review process.

If DAPC formed a P2-orientated Rules and Policy Review Committee, the committee would benefit from training and education on how other states have successfully incorporated P2 into the rulemaking process.

Priority: High -- rules are a point of significant P2 leverage.

Degree-of-Difficulty Medium -- OPP's involvement would be especially important.

Audience: Senior DAPC management and staff in Columbus and the district offices

Comments: Such a program would require a significant change in current DAPC policy.

V.B.3. Pollution Prevention Training for New Rules/Permitting Programs

According to DAPC and LAA managers and staff, the best time to emphasize P2 to industry is in advance of a new rule (e.g., Dry Cleaner MACT standard) or permitting program (e.g., Title V). Such training would emphasize the technical and financial advantages of using P2 approaches to achieve and/or go beyond compliance. Several LAA and DAPC staff commented that this type of training approach gets to sources *before* they have made end-of-pipe technology choices.

This training would be targeted towards DAPC/LAA staff as well as industry. It would (ideally) be developed in coordination with DAPC, the LAA, OPP, the trade associations of the affected sources, as well as manufacturers of greener production technologies and materials (e.g., coating application equipment manufacturers and coating suppliers).

Priority: High -- such training is high-value added to industry and to DAPC/LAA staff who would benefit from industry/source-specific P2 training.

Degree-of-Difficulty Low -- especially with cooperation from DAPC district office supervisors, OPP, and industry associations.

Audience: The audience for the training would include industry and DAPC/LAA staff (meaning that all DAPC and LAA staff in a geographic area would be invited and encouraged to attend). Such a training format provides DAPC/LAA staff with a training opportunity and gives them a chance to interact with industry in a compliance assistance/P2 mode (as opposed to a regulatory permit, compliance, and enforcement mode). Such training could be targeted towards upcoming rules and standards.

Comments: Training should precede maximum achievable control standards (MACT) issued by U.S. EPA by up to one year. Planning for such training should occur 12-15 months prior to the date standards are issued. A list of MACT standards and promulgation dates are listed in the table below.

Table 2: MACT Schedule

Source Categories	Date for Emission Standards	Source Categories	Date for Emission Standards
Aerospace Industries	9/1/95	Metal Furniture	11/15/00
Auto and Light Duty Truck	11/15/00	Misc. Metal Parts & Products	11/15/00
Flat Wood Paneling	11/15/00	Paper & Other Webs	11/15/00
Large Appliance	11/15/94	Plastic Parts & Products	11/15/00
Magnetic Tapes	12/15/96	Fabric Printing, Coating, & Dying	11/15/94
Paint, Coatings & Adhesive Manf	11/15/00	Printing/Publishing	5/30/96
Metal Can	11/15/00	Shipbuilding & Ship Repair	12/15/95
Metal Coil	11/15/00	Wood Furniture	2/9/96

V.B.4. Pollution Prevention in Permits to Install (PTI's)

DAPC and LAA staff suggested P2 could be incorporated into the PTI process as well as the best available technology (BAT) determination process. Incorporation into the PTI process would involve modifications or addendum to the PTI application package, placing P2 in emission activity forms for specific emissions units, and inserting P2 language into the engineering guidelines. Roughly 150 Permits to Install are issued by DAPC each month.

For BAT, P2 could be evaluated prior to control options. This method is known as a “top down” analysis where source reduction options are considered before capture, control, and treatment options. Such top down analyses are conducted in best achievable control technology (BACT) determinations in West Virginia’s air toxics rules and in Massachusetts VOC and air toxics rules.

District office and LAA staff commented that the BAT process is ambiguous in its current form. For example, district office and LAA managers lacked guidance on the threshold dollar amount under which BAT is required. According to one district office manager,

“the release of a new BAT database is a step in the right direction, but the process is still confusing.”

If DAPC were to re-engineer its PTI process to emphasize P2, it would need to:

- develop P2 language and perhaps a P2 insert in the PTI application package;
- review its engineering guidelines to emphasize P2 approaches;
- modify the BAT process to require firms to investigate P2 approaches first, capture and recovery second, and then control last. Such a policy may require a rule change;
- modify its BAT database by flagging P2 technologies (as opposed to treatment and control). The database could be reviewed to see if additional P2 technologies could be added -- especially for the common types of sources (e.g., paint booths or continuous coating lines); and
- resolve some of the ambiguity in the BAT process (perhaps by setting up meetings between Central Office, the district offices, and LAA's to discuss and resolve communication and procedural breakdowns).

Once such changes were made, then training could be conducted for permit writers and industry on how to perform top-down, source reduction-biased BAT evaluations. Such training would need to be technical in nature and focus on specific sources (the more common ones).

Incorporating P2 into the permit process has the potential to prevent pollution from a source before it ever begins operating. According to DAPC staff, for new sources, P2 is most effective when introduced to the facility *in advance of its permit application*. Thus while placing P2 language into PTI guidance documents and engineering guidelines is a valuable effort, staff stated that the real leverage exists in communications with a facility early in process design. For example, the firm may contact an inspector/permit writer in the early process design stages to discuss how the proposed changes will effect their regulatory status.

Priority: High -- training permit writers to emphasize pollution prevention in pre-application meetings and in the BAT determination process may be an effective way for the Agency to promote less-polluting sources.

Degree-of-Difficulty: High -- the current BAT determination process is ambiguous to begin with and trying to fit P2 into this process may result in failure. Giving permit writers basic P2 and industry specific P2 training to use in their pre-application discussions with industry would be simpler than re-engineering the BAT process and database.

Audience: DAPC Central and district office staff and LAA staff.

V.B.5. Pollution Prevention in Permits to Operate (PTO's)

For existing sources, P2 provisions in Permits to Operate -- such as the preparation of a P2 plan -- were considered to be potentially effective. Such provisions require legislative or rule-making changes; however, some mechanism could be put in place for review of permit renewals. Training in this area would involve:

- information on how P2 -biased permit reviews are done by other states in Region V and by states in other U.S. EPA regions;
- development and training on P2-biased permit preparation for both industry and DAPC/LAA staff.

Priority: Low -- several DAPC staff commented that P2 opportunities are greatest when installing new sources as opposed to renewing old permits. Given the volume of PTOs, the need to expedite them, and the fact that P2 opportunities are greater in other areas, incorporating P2 into PTO's is a low priority item.

Degree-of-Difficulty Medium -- significant effort would be required to prepare guidance documents and training for staff and industry on P2 integration into PTO's.

Audience: DAPC Central and district office staff and LAA staff.

V.B.6. Pollution Prevention and the De minimus Rule

According to DAPC staff, field inspectors continuously find unpermitted sources. Under current DAPC policy, the Agency requires the unpermitted source to apply for a permit. Such a policy makes sense in cases where the source represents a compliance or emission problem. However, the policy immediately forces smaller sources that are in administrative violation into obtaining a permit (thus increasing the permitting burden on DAPC). DAPC could reduce its permitting burden and accomplish greater P2 if small sources in administrative violation were given time (90 days for example) to use P2 to get below the de minimus level. Under such a policy, if the source were unable to get below the de minimus level within the time allotted by the Division, the source would be required to obtain a permit.

U.S. EPA's de minimus rule is applicable to sources of <10 lbs per day and < 1 ton of hazardous air pollutants (HAPs) per year. Such a policy change might lead small sources such as parts degreasers in a print shop or auto repair shop to turn to aqueous cleaning or lower VOC cleaning solvents.

Were such a policy change made, training would be required on the following:

- how to determine whether the firm is eligible for the grace period to investigate P2 options to get below the de minimus level; and
- information and resources that the inspector could provide to the company to help them examine P2 options (technical training, referral mechanisms to the Small Business Assistance Program (SBAP) and OPP, etc.).

Priority: Medium -- such a program could reduce the permitting burden on the Agency.

Degree-of-Difficulty Low -- requires a policy change and minimal training for staff.

Audience: DAPC staff in Columbus and in the district offices as well as LAA staff.

Possible Problems: This policy may require a rule change since the current regulations require unpermitted sources to obtain a permit immediately. Also, some DAPC staff view such a policy as being too lenient on unpermitted sources. The tradeoff between source

reduction and lowering the Agency's permitting burden must be balanced with arguments for a "level" playing field.

Other Comments: Applies only to small sources.

V.B.7. Pollution Prevention in Inspections

Except for the P2 contacts, few managers or staff have received P2 inspector training. Managers and staff consider inspector P2 to be voluntary and most expressed uncertainty regarding their role in promoting P2. In incorporating P2 into the inspection process, managers and staff expressed a number of practical concerns:

- how to balance the competing command and control (enforcement) persona with the Agency's pollution prevention assistance persona;
- a lack of technical training -- staff feel underqualified to provide P2 technical assistance and information to industry.

Few DAPC staff members reported receiving P2 inspector training. Of those that have received training, most were P2 contacts with OPP. There appears to be no formal plan to broaden the training to the rest of DAPC. Both LAA and district office managers and staff expressed interest in incorporating P2 into the inspection process.

Priority: High -- this is one of the first areas other states have focused P2 integration efforts.

Degree-of-Difficulty: Medium -- requires multi-day staff training.

Audience: District office/LAA staff and managers.

Possible Problems: The district offices and LAA's with the greatest permit backlogs will be less able to free up staff time for training.

Example Agenda: see Pollution Prevention Inspector Training Course on page 42.

V.B.8. Pollution Prevention in Enforcement

DAPC has made a commitment to introduce P2 into 10 enforcement actions this fiscal year. However, the process by which such referrals would be made by staff (early in the enforcement process) has yet to be established. According to LAA and DAPC staff, there is no formal mechanism for incorporating P2 into enforcement referral packages sent to Central Office. For small cases (<\$50,000), LAA enforcement actions are developed and settled at the local level. However even for these small cases, LAA managers and staff had no formal mechanism to incorporate P2 into an enforcement action.

DAPC has successfully incorporated P2 into several enforcement actions -- for example, Mead Paper and Bronze Shoe. DAPC is involved in approximately 130 enforcement cases per year of which:

- ~ 30 are referred to the Attorney General's Office;
- ~ 3 end up in court; and
- ~ 90-100 are resolved by the Agency.

Training designed to better integrate P2 into DAPC enforcement actions would involve the following:

- establishing a management directive that would require DAPC staff to pursue P2 in enforcement settlements;
- establishing a protocol for inspectors to note whether P2 is applicable to a particular enforcement case;
- train inspection staff (district office and LAA) on spotting potential P2 opportunities to include in an enforcement action; and
- train DAPC Central Office enforcement staff and legal staff on how to negotiate P2 in enforcement cases.
- training on Agency P2 Supplemental Environmental Projects (P2 SEPs) policy

Priority: High -- incorporating P2 into enforcement is an objective of the Agency.

Degree-of-Difficulty: Moderate -- requires coordination between field staff (who must be trained on how to spot P2 opportunities to include in the enforcement referral package sent to Columbus) and setting up a mechanism to include P2 early in negotiations with the facility.

Audience: DAPC enforcement staff and district office field staff.

Possible Problems: The district offices and LAA's with the greatest permit backlogs will be less able to free up staff time for training.

V.B.9. Pollution Prevention Resources

Most DAPC and LAA staff have little familiarity with P2 resources. Such resources include case studies, reports, fact sheets, P2-orientated WWW sites, trade associations, vendors and suppliers of green chemistry and cleaner manufacturing equipment, etc. Knowledge of such resources is key in any effort to direct industry towards pollution prevention. Training on P2 resources could be conducted as a discrete training (e.g., one hour training in each district office for Ohio EPA and LAA staff) or as part of a larger training program (e.g., training around a new MACT standard or an industry-specific P2 training event). P2 resource training would include:

- resources available through OPP, U.S. EPA, Cleveland Advance Manufacturing Program (CAMP), and other government and semi-public agencies;
- WWW P2 sites and search techniques; and
- Contact names and phone numbers of specialists in particular industries or processes.

Priority: Medium -- educating staff on P2 resources makes sense only after management has made a decision to integrate P2 into Agency activities

Degree-of-Difficulty: Low -- OPP has experience with training on P2 resources.

Audience: District office/LAA staff and managers.

Example Agenda: see Module #5: Resources on page 47.

Comments: Makes most sense as part of a larger P2 training program (e.g., P2 in Inspections or Industry-specific P2 training).

V.C. Division of Surface Water (DSW)

Training options have been developed for several DSW program areas. When considering the various options, it is important to keep in mind that decisions regarding training should also be linked to management decisions that support staff in using the skills they have received in training. For example, if training on how to evaluate P2 in an antidegradation review is chosen, DSW should decide how management will reward, encourage, support, and require staff to make such analyses part of their job.

V.C.1. Senior Management Training

Before implementing P2 training for staff, it is essential that managers understand not only the basic concepts of P2, but also their unique role in managing P2 efforts in their division or work unit. This can be accomplished by conducting a full day session for all managers that combines training in P2 knowledge with a facilitated strategy meeting. During the strategy part of the training, managers could define effective ways to support staff P2 efforts and develop processes for reviewing P2 integration options and training needs. A sample course outline is listed below.

Senior Management Training

- Roles and responsibilities of managers in promoting P2
- Specific examples of successful P2 initiatives for surface water from other state programs; measurability of specific program benefits
- Applicability of such initiatives, and other alternatives, within Ohio program context
- P2 measures/results/accountability (environmental and administrative)
- P2 in job descriptions and professional development plans
- Methods of supporting staff

Priority: High -- such training is necessary for P2 integration in DSW.

Degree-of-Difficulty: Low -- such training is relatively straightforward to organize.

Audience: Senior DSW management in Columbus and the district offices.

Methods: An interactive course consisting of presentation, discussion, case studies and examples, and facilitated problem solving. Options would include (1) a longer training program (up to a day-and-a-half), with breakout sessions for discussing issues specific to particular programs and (2) a series of shorter sessions over several months.

Comments: P2 integration in DSW differs from DAPC and DHWM since most of DSW staff focuses on non-industrial sources. Developing programs, resources, and information for nonpoint source, stormwater, Great Lakes Water Quality Initiative (GLI), and antidegradation would be priorities for the division.

V.C.2. Stormwater Training

In response to the need for comprehensive National Pollutant Discharge Elimination System (NPDES) requirements for discharges of stormwater, Congress amended the Clean Water Act in 1987 to require the U.S. EPA to establish phased NPDES requirements for stormwater discharges. As a NPDES delegated state, Ohio EPA is currently implementing the federal stormwater program. The categories of permits in the NPDES program include construction, industrial, group applicants (industrial) and municipal.

Based on interviews with DSW managers and staff, it appears that stormwater permit inspection is infrequent. Compliance rates are fairly low (estimated to be as low as 10-20% by a district office engineer). In general, district office staff know construction site pollution prevention practices well, but staff said they would like more industry-specific P2 on industrial sources (e.g., P2 in stormwater permits for iron and steel facilities). For example, staff wanted more training on how to inspect and review best management practices (BMPs) that are in the permit.

V.C.2.(a) Highway Stormwater Construction Permits:

Highway construction sites, which are limited to right of way areas, are typically too small to implement effective sediment and erosion controls. Training in this area could focus on some of the more successful state programs (e.g., Maryland, New Jersey and Florida). The timing of such training/information is critical as Ohio is in the process of renewing its construction permits.

Priority: Unknown

Degree-of-Difficulty: High -- research is necessary to develop a course in this area. OPP has little expertise on this topic.

Audience: The training would be targeted for Ohio EPA DSW Central Office and district office staff, the regulated entities and other stakeholders (local government, Soil and Water Conservation Districts, etc.)

Comments: Such training would review information resources including written materials, other state agency programs, and internet resources. Developing some of these resources may be necessary if they do not exist in a readily accessible format. Some construction site BMP's are not considered pollution prevention since they control pollution rather than prevent it from being generated. Any training in this area is likely to focus on P2 and controls. DSW staff also commented on the need for additional information, that while not explicitly training, are worth reproducing here:

- how the Army Corps of Engineers new Nationwide permits may integrate into the Stormwater Pollution Prevention Plan required under our General Permit.
- the cost and maintenance of Sediment and Erosion Controls to aid in preparing enforcement actions.

V.C.2.(b) Industry-Specific P2 Training (that includes a stormwater component):

Because district office staff encounter a variety of industries when reviewing, inspecting, or enforcing industrial permits, staff feel that industry-specific training seminars would give them the knowledge they need prior to discussing pollution prevention with an industry (e.g., an entire seminar devoted to the printing industry). This training would include methods for communicating P2 options to facilities and spotting P2 opportunities during inspections. P2 information resources would also be reviewed. The training might include plant tours, mock industrial processes, and testimonials from industry.

Priority: Medium

Degree-of-Difficulty: Medium -- while OPP has experience delivering some courses in this area, there are numerous sectors for which training has not been developed.

Audience: DSW (and even DAPC and DHWM) staff. The training could also be opened up to include LAA and POTW pretreatment staff and managers.

Example Agenda: See Industry-specific P2 Training on page 32.

Comments: Multi-media training

V.C.3. Inspector Cross Training:

Cross training of DSW Water Resource Management permitting staff, DAPC staff, and DHWM staff would increase the number of stormwater inspections. DSW Water Resource Management permitters could inspect individual NPDES permitters for stormwater. Training for DAPC and DHWM could include stormwater issues as part of their regular inspection process.

Priority: Unknown

Degree-of-Difficulty: Low -- DSW staff have experience delivering industrial stormwater training courses and materials.

Comments: This training would review an easy-to-follow check list that could be used by any inspector, with or without stormwater experience, to (at a minimum) determine non-compliance. It would be part of district office training for all field staff that visit industrial facilities.

Audience: Training would be done in each of the district offices for all field staff that visit industrial facilities (could include DSW, DHWM, DAPC, DERR, etc.)

V.C.4. Nonpoint Source Training

The Nonpoint Source (NPS) program in Ohio has the authority to administer grants through section 319 of the Clean Water Act. Ohio EPA passes funding on to Ohio Department of Natural Resources (ODNR) and local groups, such as watershed groups. Applicants typically include ODNR Soil and Water Conservation Districts. The NPS program calls for the implementation of best management practices which includes pollution prevention.

Ohio EPA DSW has little or no contact with individual entities such as landowners or farmers so they must coordinate with entities that do in order to implement the NPS program. Ohio EPA's role is to administer a grant program, enforce where appropriate (and where authority exists), and to educate the public. Ohio EPA works closely with the ODNR Soil and Water Conservation Districts (SWCD), which are local and technical assistance oriented. These districts are funded by state and county. The Natural Resource Conservation Service (NRCS), which is a Federal Department of Agriculture Division, typically has one staff person in each SWCD Office.

Several district office managers saw the need to target more resources towards NPS problems. They have insufficient resources to do this at the present time.

V.C.4.(a) Workshop NPS Roles and Responsibilities:

The purpose of this training session would be to discuss and define the roles and responsibilities of local government, DSW, and ODNR in NPS pollution. A workshop that involved various stakeholders in each district could be conducted on how the current process works and how it could be improved. This could include cooperative projects for local entities as well as coordination with the federal Farm*A*Syst program.

Priority: Unknown

Degree-of-Difficulty: Medium -- requires coordination with multiple entities.

Suggested Format: Facilitated meeting

Audience: NPS staff from DSW, ODNR, local government and NRCS.

Comments: Trainings should be conducted in each of the district offices

V.C.4.(b) BMP Technical Training:

This training would focus on NPS best management practices (BMPs). Such a training could be problem based. For example, how to prevent sediment from reaching a stream in construction activity. On site training to examine practices such as herbicide application or how to evaluate a manure nutrient management plan. A component of the training should focus on communication skills -- i.e., how to persuade entities to adopt BMPs. The training should also discuss which approaches work when selling BMP's to farmers, land developers, etc.

Priority: Unknown

Degree-of-Difficulty: Medium -- requires coordination with multiple entities.

Suggested Format: Interactive training conducted in each of the district offices

Training Audience: NPS staff from DSW, ODNR, local government and NRCS.

Comments: Could be combined in conjunction with the NPS Roles and Responsibilities workshop.

V.C.5. Antidegradation Training

The Clean Water Act and federal regulations call for an antidegradation rule in any state that wishes to implement a state permitting and water quality standards program. The revised antidegradation rule in Ohio outlines the procedures and responsibilities of both the applicant and Ohio EPA for review of NPDES and PTI applications. If these applications are approved, they may authorize an increase in the discharge of pollutants to waters of the state.

The antidegradation rule in Ohio establishes requirements that must be met in order to discharge wastewater/pollutants into surface waters of the state. In general, the antidegradation rule applies to all new or increased discharges from wastewater treatment facilities and for other specifically listed circumstances. The rule requires applicants to evaluate options to reduce pollutants to be discharged from the facility (which could include P2 alternatives). Ohio EPA can require an option (such as an alternative that includes P2) to be implemented.

Prior to any meaningful P2-focus in the antidegradation program, DSW would need to determine how regulated entities would perform P2 analyses, what guidance should/could be developed for the entities, and how permit writers would evaluate such analyses. Guidance on P2 options for specific sources and pollutants should be developed as well. Only after DSW has developed policy and guidance in this area, does staff training on antidegradation P2 options make sense.

V.C.5.(a) Technical Training on P2 Options:

Such training would be conducted for regulated entities as well as staff. Training would require the development and cataloging of P2 options for various sources. Information resources (including internet and written media) could also be covered.

Priority: Unknown

Degree-of-Difficulty: Medium -- requires coordination with multiple entities.

Audience: Central and district office staff as well as regulated entities involved in antidegradation issues.

Methods: Interactive training

V.C.5.(b) Pollutant Trading:

Managers from the Central Office and district offices cited interest in learning more about pollutant trading. Such a training would focus on opportunities to gain greater reductions in pollutants (typically conventional pollutants) through leveraging resources from permitted facilities to assist in higher-volume, lower-cost reductions from unregulated point sources or nonpoint sources.

Priority: Unknown

Degree-of-Difficulty High -- requires site-specific analyses of trading opportunities, including comparison of pollutant loads and reduction costs.

Audience: DSW staff and management in the Central Office and district offices.

Methods: Interactive training

V.C.5.(c) Other Potential Training Topics:

- workshops on how to work with landowners etc. on reducing pollutant loading
- how to form cooperative/education programs with the public and/or trade associations (e.g., a project working with a dentist association on reducing mercury use/discharge)

V.C.6. Industrial Training

Numerous firms in Ohio discharge directly and indirectly into the state's waterways. Previous P2 efforts in Ohio have focused on industrial sources. For example, the Water Environment Federation has provided P2 training for POTW pretreatment operators. In 1994, DSW hired a contractor to provide P2 training on industrial sources. A Division of Water Pollution Control P2 Task Team prepared a report entitled "Pollution Prevention Suggestions". While little action has taken on those suggestions in 1994, they are still relevant today and have been incorporated into this section.

There are numerous ways to combine the P2 training options listed below to fit the needs of a particular DSW audience. For example, one two-day training session could cover P2 in inspections, industry specific information for a sector, multi-media regulatory issues, and industrial stormwater permitting (with a focus on the P2 plan component of the stormwater permit).

V.C.6.(a) Industry-specific P2 Training

This training would review P2 options for specific industries. Methods for communicating P2 options to facilities, spotting P2 opportunities during inspections, and P2 information resources would also be reviewed. The training might include plant tours, mock industrial processes, and testimonials from industry.

Priority: Medium -- training targeted towards non-industrial sources are a higher priority.

Degree-of-Difficulty: Low -- such training is relatively straightforward to organize. DSW offered such a training course in the past. OPP has experience in this area.

Audience: DSW staff working on industrial NPDES permits and POTW pretreatment programs, POTW pretreatment staff and managers.

Example Agenda: See Pollution Prevention Inspector Training Course on page 43.

Comments: To have an impact, this training should be offered to pretreatment programs.

V.C.6.(b) P2 in Permits

Although many opportunities exist for incorporating P2 in the DSW permitting program (whether to municipal and industrial NPDES or in the pretreatment program itself --Part II

NPDES permit language), such opportunities may require legislative changes. These P2 options include requiring P2 process evaluations as a condition of permit renewal or encouraging POTWs to require indirect discharges to submit P2 analyses.

V.C.6.(c) P2 in Inspections

Some DSW staff (particularly the P2 contacts) have received P2 inspector training. Regarding incorporating P2 into the inspection process, managers and staff expressed a number of practical concerns:

- how to balance the competing command and control (enforcement) persona with the Agency's pollution prevention assistance persona;
- a lack of technical training -- staff feel underqualified to provide P2 assistance/information to industry.

This training would cover how to incorporate P2 into inspections. It would include many of the elements of an industry-specific P2 training combined with modules on how to assess a process for P2 options and how to use P2 checklists and distribute P2 information during an inspection.

Priority: Medium -- training targeted towards non-industrial sources are a higher priority.

Degree-of-Difficulty Moderate -- requires multi-day staff training.

Audience: District office/POTW staff and managers.

Example Agenda see Pollution Prevention Inspector Training Course on page 42.

Comments: To have an impact, this training should be offered to pretreatment programs.

V.C.6.(d) P2 in Enforcement

At this time there are no formal procedures for incorporating P2 into the DSW enforcement process. Some of this may be due to philosophical differences between some DSW staff and OPP. As one DSW training plan reviewer wrote, "OPP likes the SEP to provide something (financially) back to the non-compliant industry. They received their economic benefit by not complying. The SEPs should take money from their pocket and provide something that does not benefit them. P2 assessments however should be required, but not allowed to impact penalties." The P2 SEPs are intended to achieve an additional environmental benefit, but the P2 project can save the company money, too. Clearly, OPP and DSW need to work on a mutually agreeable policy regarding P2 in enforcement before training on the topic would be meaningful.

Such a policy development would include:

- guidance for inspectors to identify potential P2 options during the inspection process;
- establishing mechanisms whereby district office inspection staff could communicate P2 options in the enforcement referral package sent to Columbus;
- an emphasis on introducing P2 early in the enforcement process; and

- guidance and training for DSW enforcement staff on incorporating P2 into enforcement actions.

Priority: Medium -- while incorporating P2 into enforcement is an objective of the Agency, the majority of water quality problems in Ohio are due to non-industrial sources.
Degree-of-Difficulty: Medium -- requires coordination between field staff (who must be trained to spot P2 opportunities for the enforcement referral package) and setting up a mechanism to include P2 early in negotiations with the facility.

Audience: DSW enforcement staff and district office field staff.

Possible Problems: Differing philosophies between OPP and DSW concerning the applicability of P2 in enforcement.

V.C.7. Great Lakes Water Quality Initiative Training

The Great Lakes Water Quality Initiative (GLI) regulates bioaccumulative chemicals of concern (BCC) in the states and provinces surrounding the Great Lakes. The GLI targets chemicals such as PCB's, dioxin, and mercury. The mercury standards will have the greatest impact in Ohio. The current limits on mercury affect 254 dischargers, and new detection methods will affect even more. Of the 254 dischargers currently affected, 60% are POTWs and 40% are industrial. For dischargers, removing BCC's from the waste stream could involve expensive technologies such as reverse osmosis; however, P2 methods could offer a more cost effective alternative.

New and amended rules to implement the GLI became effective on October 31, 1997. Many staff members still need training on these rules and the pollution minimization plans in them. Thus, training on the GLI itself and how to evaluate the P2 opportunities in the pollution minimization plans would be necessary precursors to any further staff P2 training in this area.

V.C.7.(a) Developing Cooperative Projects

This training would cover ways to bring together trade associations, POTWs, and other organizations to talk about mercury materials substitution. Based on our experience in other states, cooperative projects are an effective approach for preventing pollution.

Priority: High -- GLI-related training is a high priority since the rules have been adopted by the State of Ohio.

Degree-of-Difficulty: Medium -- requires coordination between DSW, OPP, and various entities (e.g., dentist trade associations, hospitals, etc.)

Audience: DSW district office staff and POTW pretreatment staff

Methods: Interactive training involving all stakeholders

V.C.7.(b) Mercury P2 Information Resources

This training would review how to get access to and use mercury-related P2 information resources including internet-based and written information. Such a training could be

conducted as part of a sector initiative (e.g., dentists or hospitals) or generically for any mercury source.

Priority: High -- GLI-related training is a high priority since the rules have been adopted by the State of Ohio.

Degree-of-Difficulty Low -- OPP has already put together a compilation of mercury-related P2 information and internet resources.

Audience: DSW staff, POTW pretreatment staff, regulated and non-regulated entities.

Methods: Interactive training utilizing web hook-up and experts on mercury.

V.D. Division of Hazardous Waste Management (DHWM)

DHWM has integrated P2 into its core functions more so than any other Ohio EPA division. P2 integration has the strong support of upper management, district office management, and field staff. The level of commitment to P2 integration is reflected in the following Division activities:

Incorporating P2 into Enforcement:The Division is integrating P2 components into the majority of enforcement actions that are amenable to P2. Currently, roughly 30% of DHWM enforcement settlements include pollution prevention.

Assessment Training: DHWM has provided P2 assessment training sessions for all staff. The training has provided DHWM staff with communication and technical tools to facilitate industrial pollution prevention. The assessment training will be most useful for incorporating P2 into their inspection activities.

P2 in Division Initiatives The Division incorporated P2 into prior high priority initiatives such as the Dry Cleaner Initiative. To some extent, P2 integration into the Division can be measured by the degree to which P2 is an integral part of high priority Division initiatives.

P2 in TSDF Permits DHWM requires transport, storage, and disposal facilities (TSDFs) (both captive and commercial facilities) to prepare P2 plans and report on their P2 progress to the Agency. Copies of plans and biannual reports are kept in the district offices.

P2 Integration Team The Division has established a team to develop a strategy for further integrating pollution prevention (P2) into the division's activities.

V.D.1. Senior/Middle Management Training

While the Division has made headway in P2 integration, management has yet to set up formal systems to encourage, reward, and support it. Several managers noted that tools for measuring P2 outcomes (both environmental measures as well as administrative measures) are lacking, as are P2 provisions in employee job descriptions and professional development plans. Several managers suggested that P2 measures should be incorporated into performance evaluations, accountability agreements and Phase III and Phase V Strategic Management Plan priorities.

Thus, successful P2 integration requires that managers understand not only the basic concepts of P2, but also their unique role in managing P2 efforts in their division or work unit. This can be accomplished by conducting a full day for all managers that combines training in P2 knowledge with a facilitated strategy meeting. During the strategy meeting, managers would define the effective ways to support their staff's P2 efforts and consider

processes for reviewing P2 integration options and training needs. A sample course outline is listed below.

Management training includes the following topics:

- Roles and responsibilities of managers in promoting P2
- Specific examples of successful P2 initiatives, by media, from other state programs; measurability of specific program benefits
- Applicability of such initiatives, and other alternatives, within Ohio program context
- P2 measures/results/accountability (environmental and administrative)
- P2 in job descriptions and professional development plans
- Methods of supporting staff

Methods:

This is an interactive course consisting of presentation, discussion, case studies and examples, and facilitated problem solving.

Options would include:

- a longer training program (up to a day-and-a-half), with breakout sessions for discussing issues specific to particular programs;
- a series of shorter sessions, some for all managers, some program-specific.

Priority: High

Degree-of-Difficulty Medium -- researching how other states have worked to integrate P2 into the hazardous waste programs would be time-intensive.

Audience: Central Office and district office managers as well as key staff (e.g., P2 contacts).

Methods: Interactive training

V.D.2. Pollution Prevention in Inspections

While the majority of DHWM staff received P2 training, the training focused on how to perform P2 assessments as opposed to how to conduct P2-based inspections. A series of training sessions emphasizing how to incorporate P2 into the inspection protocol will aid DHWM field staff in applying the principals learned in the assessment training.

Training for DHWM field staff on P2 integration into inspections could include an examination of whether and how to re-orient the DHWM inspection protocol. The Commonwealth of Massachusetts has reconfigured its inspection protocol to make it more pollution prevention focused. Under the Massachusetts P2-biased protocol (known as FIRST - Facility-wide Inspections to Reduce the Source of Toxics), an inspection involves:

- starting at the receiving dock, proceed through the manufacturing area, and end in the shipping and waste treatment/storage area;
- inspectors taking notes on material inputs and outputs to the manufacturing process;

- places during the inspection where the inspector mentions P2 opportunities;
- a mechanism to refer companies to the state's non-regulatory technical assistance program; and
- the program/media parts of a tradition inspection.

Inspector training for DHWM staff could include some of the Massachusetts components as well as components specific to Ohio. For example, the training could also cover how inspectors could use the P2 plan prepared under DHWM's TSDf permitting rules. Under the TSDf rules, two types of plans are especially valuable from a P2 standpoint:

1. Captive TSDf's must prepare waste minimization plans. Inspectors could review these plans prior to going out into the field. A plan review will help the inspector to (a) decide what types of P2 information to bring on the inspection to give to the company, (b) choose where to focus the P2 component of the inspection, (c) to evaluate where the extent to which the company has made progress implementing its P2 plan, and (d) to decide what types of P2 projects are possible in cases where the facility is being referred to Columbus for escalated enforcement.
2. Generators who send >100 tons of hazardous waste to Ohio TSDfs must prepare waste minimization plans. Inspectors could use these plans in the same ways outlined above.

Other material to include in the inspector training program could include modules on communicating P2 information to industry, dealing with regulatory versus non-regulatory roles, and technical training on common processes/sectors.

Priority: High -- this is type of training is a natural extension of the assessment training conducted by DHWM and its contractor.

Degree-of-Difficulty Medium -- requires multi-day staff training.

Audience: District office staff and managers.

Example Agenda see Pollution Prevention Inspector Training Course on page 43.

V.D.3. Industry/Process Technical Training

Technical training for DHWM staff is key to the Division's efforts to better integrate P2 into inspection and enforcement processes. In developing technical training, the Division should consider a flexible approach to P2 training which would enable DHWM to develop P2 "expertise" in a variety of sector areas and geographic locations. Rather than attempting to train all staff to an expert level, certain staff could be trained to become the program or regional resource in certain areas. Please see Section IV.C., Training Approaches (page 13), and Section V.A.3., Industry/Process Technical Training (page 18) for additional information regarding this training option.

V.D.4. DHWM Pollution Prevention Integration Gaps

While Division staff are familiar with P2 concepts, a number of P2 integration "gaps" were identified. Many of the gaps that follow are interrelated and therefore are presented as a series of discussion points for DHWM to consider in its P2 integration efforts (and when

considering the training options identified in the previous sections). However, it should be noted that these gaps are even more pronounced for other divisions.

Integration of P2 into DHWM Staff Job Functions is Voluntary

District office staff and managers perceive that P2 is a voluntary activity, as opposed to a mandatory activity. Some staff see P2 as OPP's job, not DHWM's job. In those cases, staff view P2 integration merely as giving out OPP's business cards, pamphlets, and phone numbers. As one inspector put it, "why do we have to do OPP's job?" In some cases, district office first line managers discourage staff from pursuing P2. These managers are unfamiliar with P2 methods, and believed their staff lack the expertise to incorporate it into their job duties. The decision to make P2 mandatory is an important step in moving P2 forward.

Expected Level of Inspector P2 Skill is Unknown

Inspectors were uncertain as to the extent they should incorporate P2 into their daily duties. For example, are inspectors expected to:

- hand-out P2 literature?
- refer companies to OPP?
- identify P2 opportunities and recommend solutions to companies?
- talk to firms about waste issues only or also discuss product design and raw material inputs?
- become P2 experts in one or more processes or industries?

Practically speaking, there is no single correct answer for all inspectors. Some inspectors are likely to develop strong P2 technical skills based upon factors such as prior work experience in industry or strong personal interest. Other inspectors may have little proclivity for the topic. The Division should consider:

- the minimum level of skill and practice for its inspection staff; and
- other levels of skill and practice.

Technical Training

Many staff were reluctant to discuss P2 with facilities because they felt unqualified. Such reluctance is common for inspectors in other programs and in other states. While the assessment training should provide staff with a minimum level of comfort, based upon our experience such training sessions are the first step among many in improving inspector comfort when providing P2 assistance.

However, those unfamiliar with providing P2 assistance often overestimate the necessity of high levels of expertise. Proper training in analyzing production processes can provide an inspector with sufficient skill to identify general P2 opportunities. In addition, inspectors have more to offer than they might otherwise think. They cannot only act as a fresh set of eyes, but they also see a wide variety of production operations. Hence, inspection staff have access to technologies and P2 strategies employed at numerous facilities.

Regulatory versus Assistance Roles

In district office focus groups, staff expressed concern regarding how to balance the competing command and control (enforcement) persona with the Division's new pollution prevention (assistance) persona. As one staff member stated, "how can we expect them to listen to us after we've been beating them up for the past few decades?" Staff and managers also commented that the Division's unannounced inspection policy made facilities less likely to see a DHWM inspection as potentially assistance orientated. Surprise inspections were more likely to encourage firms to act defensively as opposed to openly discussing process-related P2 issues.

Thus, inspectors had difficulty determining how to switch between roles while conducting an inspection. For example, inspectors wondered when they should come down hard on a company versus taking a more compliance and P2 assistance approach. Training using real-life scenarios where inspectors practice communicating P2 options would aid in addressing this area of concern.

P2 Technical Expertise in the District Offices

The Division needs P2 technical expertise in the district offices in order to take its P2 integration efforts to the next level. Such an expert would be a person familiar with:

- P2 technologies in various industries;
- vendors and suppliers of "green" process equipment and raw materials;
- various P2 networks (i.e., P2 experts from other states, trade associations such as metal finishing or printing, U.S. EPA, etc.)
- P2 information resources in print and available on the web.

This expert could act as a technical and resource expert for DHWM colleagues and help them build their P2 expertise and skill. Such expertise could be developed internally within DHWM, could be provided by OPP (if they had a district office presence), or could be an ES-3 level person working for the district office chief and charged with serving the P2 integration needs of DHWM, DAPC, and DSW.

P2 in DHWM Permits

The Division has not developed a program to review the plans. Currently DHWM staff visit such facilities but do not review nor generally have access to the on-site plan nor the P2 report. In addition, generator plans required of firms that send >100 tons per year to a subset of TSDFs are not available in the district offices. Staff suggested that an assessment of the value of these plans could be conducted to determine their adequacy, content, etc. If valuable, generator plans could be made available to the district offices.

P2 Resources

Most DHWM staff have limited familiarity with P2 resources. Such resources include reports and fact sheets, P2-orientated WWW sites, trade associations, vendors and suppliers of green chemistry and cleaner manufacturing equipment, trade associations, etc. Knowledge of such resources is key in any effort to direct industry towards pollution prevention. Training on P2 resources could be conducted as a discrete training (e.g., one hour training in each district office) or as part of a larger training program (e.g., training around an industry-specific P2 training event). P2 resource training was part of the recent P2 assessment trainings offered by the Division. P2 resources include:

- OPP, U.S. EPA, CAMP, and other government and semi-public agencies;
- WWW P2 sites; and
- specialists in particular industries or processes.

DHWM P2 Integration Plan

The various issues laid out in the prior sections of this training plan reflect the need for the type of planning process DHWM has initiated to examine how to integrate P2 into the Division. Such a plan should examine questions such as:

- What are the roles, responsibilities, and accountability for staff and managers vis-à-vis P2?
- What level of P2 training/skill is expected of DHWM staff?
- What types of rewards, incentives, and measures could be established to encourage P2 integration (i.e., how should the Division manage for P2)?
- What role will OPP play in DHWM's P2 integration efforts?
- Since P2 is multi-media in nature, what role will the other divisions play in DHWM's P2 integration efforts?
- What role should the district offices play in the development of the plan?

VI. EXAMPLES OF TRAINING MODULES:

VI.A. Pollution Prevention Inspector Training Course

The following training program was developed to illustrate what a multi-day training course for regulatory inspectors could look like. This type of course would be targeted towards DAPC inspectors and managers in the district offices, LAA staff and managers, DSW staff that work directly with industrial NPDES permittees, and POTW pretreatment operators. While such a course could be offered to DHWM staff, the Division sponsored four such trainings during the summer and fall of 1997. A course outline is provided below, followed by detailed descriptions of each of the modules. *NOTE: the modules are designed to be used alone or in combination with other courses as well.*

Day 1

Introduction (35 minutes)

- Opening remarks by senior manager.
- Participant introductions.
- Course expectations, objectives and agenda

Module 1: New Directions: Policy and Program (45 minutes)

- Presentation and discussion of current Ohio EPA goals, approaches and methods.
- Changing approach of business to meeting environmental requirements

Module 2: Pollution Prevention: Key Elements (2 hours)

- P2 Definition Activity.
- Small group discussion of own P2 experiences and potential roles inspectors play
- Slides and/or video of examples of P2 opportunities and corporate programs.
- Review of P2 approaches implemented by programs in other states.

Lunch

Module 3: P2 Assessment Tools (2 hours)

- Brief review of P2 assessment tools:
 - ⇒ process flow diagram's and their role in P2 opportunity assessments
 - ⇒ materials accounting and its role in P2 opportunity assessments
 - ⇒ fishbone diagram (TQM) tool to understand process losses
 - ⇒ brainstorming tools to identify P2 opportunities
- Review of articles on these P2 assessment tools in the Workshop Manual.
- Integrated activity to use P2 assessment tools in an industrial process.

Module 4: Evaluating P2 Assessment Plans (1 hour)

- Discussion of the components of P2 assessment plans
- Development of P2 assessment plan evaluation criteria
- Activity: evaluating an industrial P2 assessment plan

Day 2

Module 5: Resources (45 minutes)

- Presentation of P2 resources -- LAN, internet, P2 staff.
- Practice activity -- searching for P2 information.
- Presentation on technical assistance and staff specialists.

Module 6: Mapping of Regulatory Roles (90 minutes)

- Small group activity - mapping the steps and activities of regulatory roles.
- Discussion of how these steps met previous environmental goals.
- Small groups activity - identifying changes in roles
- Large group discussion and summary of changes.

Module 7: Overcoming Obstacles to Implementing P2 in Ohio EPA Job (90 minutes)

- In small groups, brainstorm obstacles to implementing P2.
- In large group, categorize obstacles as internal or external to self.
- Large group problem solving to overcome both types of obstacles.

Lunch

Module 8: Communicating P2 to Industry (90 minutes)

- Critique of script -- examples of effective and ineffective communication skills.
- Presentation and examples of effective skills: communication barriers, active listening, questioning, and managing own expectations.
- Role play - practice P2 discussions using good communication skills.

Module 9: Industry and Waste/Specific Training (90 minutes)

- Presentation of basic processes, common P2 opportunities, common alternatives, etc.

Module 10a: Orientation to Site-Visit Plant (60 minutes)

- slide show of plant processes and P2 technology highlights
- logistics of site visit (i.e. getting there and back)
- roles of inspectors during the visit
 - ⇒ opening meeting at facility
 - ⇒ site tour in small groups
 - ⇒ closing meeting at facility

Day 3

Module 10b: Plant Visit (3 hours)

- Participants tour facility with a company representative.

Lunch

Module 11: P2 Opportunities at Facility(1 hour)

- Small group discussion of what plant is doing well in terms of P2 and what opportunities for improvement were observed.

Evaluation (25 minutes)

- Plus/delta feedback on training.
- Participants complete action plans.

Module Descriptions:

Module #1: New Directions: Policy/Programs

Objectives:

After completing this module, participants will be able to:

- Describe and understand the basis for the new emphases and directions in Ohio EPA policy, particularly with respect to the increased emphasis on P2 approaches, and how the new approaches relate to current state and federal regulations.
- Identify some of the changes taking place in environmental management in businesses.

Content:

This module will provide initial perspective on questions such as: Where Are We Going? What's Changing? Why? It will accomplish this by addressing the following topics:

- What were major environmental problems and goals when environmental laws/regulations initially developed?.
- Current major environmental goals and problems. Why beyond-compliance approach is needed.
- How environmental management is changing for companies. Moving from seeing as external imposition to element of process efficiency and competitiveness. Moving from top-down to collaborative approach between EPA and states (Performance Partnership Agreements/grants).
- New tools available for new context -- just presenting what they are and how they may promote pollution prevention, and often beyond-compliance, orientation. (Examples could include Project XL, compliance assistance, trading, P2 planning, flexible permits, EMS & ISO 14000, environmental accounting, materials accounting.)

Methodology:

1. “*Back in Time*” small group activity -- Participants go back to the early 1970's and draw map depicting the relationship between environmental goals and the measures used to achieve these goals. This becomes the basis for a discussion of changes in goals and approaches.
2. Presentation and discussion of Ohio EPA goals, approaches and methods -- Current environmental status in Ohio, trends in compliance, current goals, how goals are related to compliance, which problems are most difficult to solve through plant-by-plant compliance requirements and alternative approaches.
3. Presentation and discussion on the changing relationship between Ohio EPA and U.S. EPA.
4. Discussion of examples of changes in environmental management in companies over a long period of time (20 years).
5. Presentation -- Overview of new tools.

Module #2: Pollution Prevention: Key Elements

Objectives:

- After completing this module, participants will be able to:
- Explain the core ideas of P2, how P2 changes the focus of environmental improvement, and why this focus fits beyond-compliance objectives.
- Describe the relationship of Ohio EPA to the regulated community, U.S. EPA, and others.
- Explain how P2 implementation strategies are different in small businesses than in big businesses.

Content:

This module explains the core ideas of P2 and how it changes the focus of environmental improvement. It helps participants understand why this focus fits beyond compliance objectives and is not just the latest fad. It will accomplish this by addressing the following topics:

- The basic concepts of pollution prevention.
- Incentives/disincentives for companies to implement P2.
- Why a company could easily miss simple P2 opportunities.
- Simple pollution prevention opportunities in companies.
- Different approaches to P2 in small vs. big companies.

Methodology:

1. Activity -- Development of basic concepts of P2 including the different roles that a regulator can play in facilitating P2.
2. Small group discussion -- Their own experiences with P2 in companies, examples of opportunities taken and missed, cost effectiveness issues. If possible, a company representative could participate and respond to issues raised in the discussions.
3. Slides (or possibly video) of examples of P2 opportunities in a plant.

4. Presentation of examples of P2 approaches in regulatory programs in other states in permitting, inspections, enforcement; ways in which promoting P2 may help in meeting both compliance and beyond-compliance goals.

Module #3: P2 Assessment Tools

Objective(s):

After completing this module, participants will learn the basics of P2 assessment tools used in industry.

Content:

This module is designed to give participants an opportunity to become familiar with and to work with P2 assessment tools used in industry. It will give inspectors hands-on work with:

- process flow diagrams used in P2 assessments
- materials accounting tools used in P2 assessments
- fishbone diagrams used to understand the causes of process losses
- brain-storming techniques used to develop P2 options

Methodology:

Brief presentation to staff (~20 minutes) reviewing the function and mechanics of preparing process flow diagrams, material balances, fishbone diagram analyses, brainstorming tools, and financial analysis methods. The Training Workbook location of articles and other written materials summarizing how to use these tools will be pointed out to attendees. Attendees will be instructed to refer to these materials during the activity.

Small group activity -- Trainers will present a process flow diagram from a real industrial facility (we have tentatively chosen one based on a batch chemical manufacturing process to make alkyd resins). The trainer will review how the process is operated and will act as a resource to answer questions regarding process operations. After the process flow diagram presentation, participants will be divided up into small groups to perform the following functions:

- complete the process flow diagram (based on information provided during the review);
- using data provided by the trainer on one of the chemicals in the process, prepare a materials accounting of inputs and outputs to the process;
- use fishbone diagramming (TQM) tools to identify the methods, materials, manpower, and equipment causes of waste in the process;
- use brainstorming techniques to brainstorm P2 opportunities;
- use bubble-up/bubble-down tools to rank order the options;

Trainers will facilitate a discussion following the activity reviewing the process flow diagrams, materials accounting data, fishbone diagrams, and P2 options.

Module #4: Evaluating P2 Assessment Plans*Objective(s):*

After completing this module, participants will learn techniques for evaluating P2 assessment plans.

Content:

This module is designed to give participants an opportunity to practice evaluating P2 assessment plans prepared as result of a permit requirement, enforcement settlement or other regulatory process. Inspectors will gain hands on experience with evaluating industry P2 assessment plans.

Methodology:

Facilitated Discussion - Participants will aid in the development of evaluation criteria for industry P2 assessment plans. The discussion will cover (1) the chief elements of an assessment plan and (2) evaluation criteria.

Small group activity - Participants will be divided into small groups and given a firm's P2 assessment plan to evaluate using the criteria developed in the facilitated discussion as well as materials in the Training Workbook.

Module #5: Resources*Objectives:*

After completing this module, participants will be able to:

- List, describe, and understand resources available to support P2 efforts (including staff and technical resources).

Content:

This module is intended to provide an awareness of the different types of resources available to Ohio EPA staff to enable them to integrate P2 activities in their own jobs. It will accomplish this by addressing the following topics:

- Information resources available on the agency LAN, internet and through P2 staff.
- Skills needed to better use computer-based resources.
- Information on P2 list servers to facilitate communications among agency staff and others on P2.
- Availability of direct P2 technical assistance where needed (from OPP, or other sources of help).

Methodology:

1. Presentation of P2 resources available on LAN, internet (e.g., technical resources available at Ohio EPA website) or through contact with P2 staff.

2. Activity - Using scenario situations, participants identify or search for needed resource information on the internet, list servers, in hard copy manuals, etc. [This activity depends on availability of several computers for practice -- preferably at least one for every two students.]
3. Presentation on direct technical assistance available to field office or other staffs, etc. It is best to have actual people who provide technical assistance to present some of this section.

Module #6: Mapping Of Regulatory Roles

Objectives:

After completing this module, participants will be able to:

- Identify specific strategies to promote integration of P2 activities by companies into their current jobs.

Content:

This module is designed to help participants understanding how to integrate P2 responsibilities into their current job. Topics include:

- The current regulatory process including major steps, requirements that drive activities in those steps, the relationship of steps to the goals of the particular process and environmental goals, interrelationships of different parts of the regulatory system (across either media or functional boundaries).
- The extent to which current activities really meet requirements, and the extent to which requirements really help fulfill overall goals.
- The opportunities for changes which would promote pollution prevention and beyond compliance efforts.

Methodology:

1. Small group activity - Participants are grouped by functional roles. Each group maps the major steps in their jobs, major activities in each step, and requirements driving those activities. Process is evaluated in terms of whether or not activities are important to meeting current Agency/division/district office objectives.
2. Discussion - Groups share and discuss results. How and why did current activities identified as having limited value develop?
3. Small group activity - Using maps developed in (1) above and the changes in goals discussed in Module #1, participants will discuss the Agency's new emphasis on pollution prevention. Following a set of discussion questions, participants brainstorm changes to their job process which will support these new objectives.
4. Discussion - Groups share and discuss results. These results (along with the information from the Overcoming Obstacles module [#7]) will be summarized in the final report for management/staff review.

Module #7: Overcoming Obstacles To Implementing P2 In Ohio EPA Jobs

Objectives:

After completing this module, participants will be able to:

- List factors that will make it difficult to implement P2 in their jobs.
- Identify strategies for overcoming these obstacles

Content:

This module will allow participants to express their concerns about implementing P2 in their jobs and it will enable them to solve (or at least identify solutions) to these problems.

Topics include:

- External obstacles to P2 (external to self) including difficult people in the companies, U.S. EPA, and Ohio EPA; few incentives, too busy, not enough time, etc.
- Internal obstacles to P2 including lack of technical knowledge, fear of looking incompetent, discomfort with a collaborative approach after years of command and control, etc.
- Strategies for dealing with difficult people.

Methodology:

1. In small groups, participants brainstorm factors that will make it difficult for them to integrate P2 into their jobs (i.e., to implement some of the opportunities identified in the previous module). Small groups report by having each group explain one factor and then continuing to call on each group until all ideas have been shared. As factors are explained, the trainer writes them on a flip chart under the category of internal or external barrier.
2. With list of external barriers, ask people for their ideas for overcoming them. Some should be a review of previous learning points in the course. Record on a flip chart ideas they have about things that management could change and explain that they will receive this information.
3. One external barrier is usually difficult or uncooperative people. Ask participants to describe specifically what makes people difficult. Explore the different types and discuss strategies for dealing with each.
4. Review the list of internal barriers. Ask people for ideas on overcoming these. Reiterate that one does not have to be a technical expert to help a company identify P2 options.

Module #8: Communicating P2 To Industry

Objectives:

After completing this module, participants will be able to:

- Practice effective communication skills while integrating P2 responsibilities into their current jobs. Specific skills include managing expectations, avoiding communication barriers, active listening and questioning skills.

Content:

This module is intended to help participants develop collaborative relationships with industry and with coworkers by using effective communication skills. Topics include:

- How expectations can influence interactions and outcomes in relationships with industry.
- Communication barriers that block effective communication and strategies to avoid them.
- Active listening skills including listening for the main point, making understanding statements, clarifying and summarizing.
- Questioning skills to help ask the right type of questions to get the information that is needed.
- Presenting information clearly by engaging in two-way communication. Includes a model of communication between a speaker and a listener.

Methodology:

1. Demonstration Script - Participants read a script of a conversation about P2 opportunities between a company representative and an Ohio EPA staff member. Participants identify examples of effective interpersonal skills and make suggestions for improvements.
As skills are identified, a brief review of the corresponding communications skill will be presented. They will include: how expectations affect interactions, communication barriers, active listening, and questioning skills.
2. Role play - Participants will use either prepared role play scenarios, or will make up their own roles. In pairs, participants will practice an interaction between a company representative and an Ohio EPA staff person to rehearse the interpersonal skills. In a large group, participants will discuss what went well, and what didn't work well in their role plays. Specific skills that they can apply in their actual work situations will be emphasized.

Module #9: Industry- And Waste-Specific Training

Objectives:

After completing this module, participants will be able to:

- Describe common P2 alternatives that exist in certain processes or sectors. Identify potential P2 opportunities in particular types of processes such as painting, plating, cleaning, printing, etc.

Content:

This module provides information that will increase the participants' ability to identify P2 opportunities in specific industry sectors or with specific processes. It will also increase the participants' comfort level and confidence in discussing P2 opportunities with companies.

Methodology:

1. Presentation and Discussion - Basic processes, common problems, common alternatives, questions you can ask, who you can refer them to for assistance. Will

include slides or video, or other visual aids. An industry process that is commonly regulated by the division or is in the district office's region is presented and common P2 alternatives for those processes are discussed. A process that they will observe during the site visit would be ideal.

Modules #10 & 11: Plant Visit & P2 Opportunities At Facility

Objectives:

After completing this module, participants will be able to:

- Describe P2 opportunities discovered during an actual facility visit and explain strategies for communicating these to the company.

Content:

This module enables participants to practice and observe others using all of the knowledge and skills learned during this course during an actual site visit to a facility. By showing how to apply these skills, this module is intended to increase the transfer of learning from the training room to the job.

Methodology:

1. Participants tour a plant in small groups. They are encouraged to ask questions of the plant representative, make suggestions, etc.
2. Small group activity - After the tour, participants work in small groups to review waste creating processes, and to share what they think the facility was doing well in terms of P2, and what some of their opportunities for improvement might be.

VI.B. Introductory Pollution Prevention Course

The purpose of this training is to integrate pollution prevention (P2) into all Agency programs. All new employees in the environmental divisions with a technical classification could be required to attend the training. Mandated training on P2 is consistent with the Agency's goal to promote P2 and waste reduction.

Training new employees is an excellent opportunity to reach individuals that are typically excited about their new jobs and eager to learn. This training encourages new employees to think creatively about using P2 in their jobs and to provide P2 technical assistance to their customers by either giving them information directly or referring them to the Office of Pollution Prevention. Through this training effort, new employees should have a working knowledge of P2 that will act to enhance the integration of P2 throughout the Agency.

The introductory training would include modules on the following topics:

- basic P2 concepts and associated techniques;
- case studies from Ohio companies that have successfully implemented P2 to give the participants "real-life" experiences;
- role plays to practice communicating P2 concepts and information;
- a pollution prevention exercise where participants operate a manufacturing facility and actually control the quality of product made and amount of waste generated. From this exercise, participants can decide which P2 techniques to implement to generate less waste and improve product quality;
- attendees are also made aware of OPP's services, including its WWW site.

Each session should be limited to roughly 20 attendees. The small session size enhances interaction between the participants and instructor and makes the exercises more manageable. While this training is primarily for new employees, it could also open to any Ohio EPA employee who would like to learn about P2.

VI.C. Metal Surface Coating Pollution Prevention Course

The following course has been included in the training plan to demonstrate an industry-specific training targeted towards regulatory staff. The goals of such a training are:

1. to identify and describe innovative surface coating environmental technology options.
2. to identify opportunities for facilities to implement alternative surface coating technologies
3. to work innovative surface coating technologies into interactions they have with facility personnel (e.g. during permitting review, compliance inspections, and enforcement actions).

The audience for such a training would be Ohio EPA staff, LAA staff, and POTW pretreatment staff involved in permitting, compliance inspections, and/or enforcement. Participants are expected to have introductory knowledge of pollution prevention concepts. However, most participants will not have applied pollution prevention principles in their jobs in a systematic manner. It is important to establish performance goals for the training, such as those listed below. Following the training, participants will be able to:

1. ask specific and clarifying questions during an inspection, permit review, or enforcement action, to make the facility aware of opportunities to implement alternative surface coating technologies.
2. use the basic approach outlined for evaluating surface coating options and apply it to other unit operations.
3. increase the frequency with which they bring alternative surface coating technology options to industry's attention.

<u>SECTION TITLE</u>	<u>TRAINING STYLE</u>	<u>APPROXIMATE TIME</u>
<i>Introductions/Expectations</i>	<i>Interactive</i>	<i>20 minutes</i>
Briefly introduce participants and solicit a list of training expectations from the group. Review the list and highlight which areas the training will and will not cover.		
<i>Coating Basics</i>	<i>Interactive Discussion and Lecture</i>	<i>45 minutes</i>
Review basic types of coating operations and their impact on environment, health, and safety. Review basic coating formulation components (resin, solvent, pigment, extenders). Review basic coating terms and concepts.		
<i>Alternative Coating Systems</i>	<i>Lecture</i>	<i>45 minutes</i>
Review of High Solids Coatings, Waterborne Coatings, Powder Coatings, Unicarb Spray System, Radiation Cured Coatings, Vapor Injection-Cured Coatings, Autodeposition Coatings.		

Surface Coating Regulation *Activity* *60 minutes*
Participants will develop a map of coatings industry regulatory requirements. The discussion will focus on how the requirements impact pollution prevention.

Spray Application Systems *Lecture* *45 minutes*
A review of conventional, HVLP, airless air-assisted airless, and rotary atomizer spray systems. The review will examine the technology, environmental impact, and basic cost information.

Surface Coating P2 *Role Play* *90 minutes*
Participants will break into small groups and will be given a coatings problem. The group will examine the problem and use written references and basic problem solving skills to develop a set of coating alternatives.

Resource Review *World Wide Web Presentation* *20 minutes*
Using an internet hook-up, participants will learn to search the world wide web for information on alternative coatings. The resource review will examine how to search for coatings information on the net. A list of written resources will also be distributed.

Closing/Evaluation *Activity* *20 minutes*
Trainer will use a plus/delta evaluation to solicit feedback on the training.

VII. FUNDING POLLUTION PREVENTION TRAINING

Adequate funding is necessary in order for the Agency to implement this training plan. Most Agency programs lack sufficient resources to carry out their mandated function -- making them reluctant to divert existing funds towards P2 training. In the past, the Agency relied on U.S. Environmental Protection Agency (U.S. EPA) special grants and programs to fund P2 projects. However, such funding is highly variable and subject to competitive pressures. Therefore, the Agency should establish a more stable funding mechanism in addition to the specialized Federal funding resources currently used.

This section reviews the various sources of Federal, state, and multi-state sources of funding for P2 training. The table below delineates current and projected Agency Funding.

Table 3: Ohio EPA Budget

Fund Group	FY 1996 \$ Actual	FY 1997 \$ Estimate	% Change 96-97	FY 1998 \$ Recommended	% Change 97-98	FY 1999 \$ Recommended	% Change 98-99
Federal Special Revenue Fund	28,651,550	35,388,617	23.5	37,662,027	6.4	37,243,828	-1.1
General Revenue Fund	18,846,218	20,008,382	6.2	21,169,732	5.8	22,096,481	4.4
General Services Fund	2,350,386	2,226,000	-5.3	3,848,826	72.9	3,848,680	0.0
State Special Revenue Fund	67,252,137	85,577,281	27.2	86,919,310	1.6	86,105,058	-1.9
TOTAL	117,100,291	143,200,280	22.3	149,599,895	4.5	149,294,047	-0.2

VII.A. Federal Programs

Ohio EPA receives roughly 25% of its funding from the Federal Special Revenue Fund -- mostly from U.S. EPA. Traditionally these funds were received predominately through U.S. EPA Media Specific Grants (especially air, hazardous waste, and water). For FFY 1997, Ohio EPA signed a workplan agreement (known as an Environmental Performance Agreement) with U.S. EPA under the Performance Partnership Grant Program (PPG). U.S. EPA and the states established PPG's in an effort to consolidate and streamline the grant making process.

VII.A.1. Performance Partnership Grants

A Performance Partnership Grant (PPG) is a multi-program grant made to a State or Tribal agency by the U.S. EPA from funds allocated and otherwise available for categorical grant programs. PPGs provide states with the option to combine funds from two or more categorical grants into one or more PPG's.

PPG's allow states the flexibility to address their highest environmental priorities across all media and establish resource allocations based on those priorities, while continuing to address core program commitments. States can more effectively link program activities with environmental goals and program outcomes and develop innovative pollution prevention, ecosystem, and community based strategies. Grant recipients and U.S. EPA can reduce administrative burdens and costs by greatly reducing the numbers of grant applications, budgets, workplans, and reports. U.S. EPA is developing partnerships with states where both parties share the same environmental and program goals and deploy their unique resources and abilities jointly to accomplish those goals. U.S. EPA's Regional Administrators are the designated approval and award officials for PPG's, with the ability to redelegate authority within their Regions.

The PPG program offers the Ohio EPA flexibility to integrate pollution prevention into its policies and programs. PPG commitments may consist of environmental indicators, performance measures, and narrative descriptions of program activities or elements. PPG funds can be used for the purpose of P2 integration projects and training under current U.S. EPA policy.

VII.A.2. Federal Media Specific Grants

In the past, Ohio EPA received its funding primarily from the U.S. EPA as Media Specific Grants (especially air, hazardous waste, and water). Media specific grant programs include the Clean Air Act, Section 105 Air Pollution Planning and Control; Resource Conservation and Recovery Act, Section 3011 Hazardous Waste; Toxic Substance Control Act, Section 28 Enforcement and Enforcement Activities under Section 313 of the Emergency Planning and community Right-to-Know Act; and Clean Water Act, Section 106 Surface Water, 104 (b)(3) Wetlands and Water Quality Management, and Section 319 (h) Nonpoint Source Management. Ohio EPA has used some of this media program funding for P2 activities. Examples include OPP's GLI activities and training efforts by the Division of Hazardous Waste Management.

VII.A.3. Pollution Prevention Incentives for States

Section 6605 of the federal Pollution Prevention Act of 1990 authorized U.S. EPA to make matching grants to States for projects to promote source reduction techniques. Under this program, known as the Pollution Prevention Incentives for States (PPIS) grant program, the Ohio EPA received an FFY 1997 PPIS grant to develop this training plan as well as hire an additional staff member to the Office of Pollution Prevention. Only those entities that address all environmental media (air, water, and waste) are eligible to apply for funds. Since Ohio recently received a PPIS grant, the state would probably not be considered for another grant until FFY 1999 or later.

VII.A.4. Great Lakes National Program Office

The Great Lakes National Program Office (GLNPO) was created in 1978 to meet the United States' requirements under the Great Lakes Water Quality Agreement with

Canada. The agreement emphasized a comprehensive ecosystem approach. In 1991, a new strategy was developed for enhancing the environment of the Great Lakes. GLNPO took an integrated program approach combining all agency programs to address problems on an ecosystem wide basis. Pollution prevention was identified as the preferred option for environmental protection efforts and the centerpiece of the program.

GLNPO published the 1994 Great Lakes Guidance which lists enhancing pollution prevention as a priority. In this guidance, GLNPO has made \$1.1 million available to promote pollution prevention throughout the Great Lakes Basin. Ohio EPA, as a state agency, qualifies for some of this money. To be eligible, projects should support the U.S. EPA's National Pollution Prevention Strategy and the Great Lakes Pollution Prevention Action Plan.

VII.A.5. Farm*A*Syst

Farm*A*Syst is a voluntary farmstead groundwater pollution potential assessment program supported by the U.S. EPA. This national program provides guidelines and educational support to states looking to establish their own Farm*A*Syst programs to integrate farmstead pollution prevention assessments into existing water quality protection programs. The program provides farmers with the ability to assess their farmstead structures, soil geology, and management practices for the potential of ground water contamination.

U.S. EPA funding is available for Farm*A*Syst pollution prevention programs if they support the establishment and expansion of state pollution prevention programs. Money obtained through Farm*A*Syst is separate from the Clean Water Act Section 319 money.

VII.B. State Funding

The Ohio EPA receives roughly 75% of its funding from state sources. State sources include (in order of funding amount) the State Special Revenue Fund, General Revenue Fund, and the General Services Fund. Each of these funding categories is discussed in further detail below.

VII.B.1. State Special Revenue Funds

This category of agency funding is comprised of fee revenues, civil penalties, and money derived through cost recovery activities. State special revenue funds are the Agency's fastest growing source of revenue. In 1997, this category accounted for roughly 60% of total Ohio EPA funding. Civil penalties collected by an Agency Division are deposited into a fund created specifically to receive those penalties. The fund is then used to support that Division's operations, as stipulated by the law allowing the penalty to be assessed. Because the purposes for which the fund can be used are usually clearly outlined in federal mandates, there is limited opportunity to divert penalty receipts for other activities.

Some opportunity does exist, however. For example, in the past some of the Agency's pollution prevention activities have been financed throughout this fund. Specifically, this was through the Hazardous Waste Facility Management State Special Revenue Fund, which receives a portion of the penalties collected by the Division of Hazardous Waste Management. Funding through the Hazardous Waste and other Special Revenue Funds should be explored as a means to support future Agency pollution prevention training efforts.

VII.B.2. The General Revenue Fund

The General Revenue Fund (GRF) moneys are received from numerous sources and fund various agencies and programs as well as match funds from federal sources. In 1997, this category accounted for roughly 14% of total Ohio EPA funding. The Ohio EPA budget is submitted and must be approved by the Ohio General Assembly. Ohio EPA has seen recent spending restrictions and lower than requested budget allotments.

Until 1991, the GRF represented the largest single source of Agency funding. Over the past several years, the amount of money that the Agency receives from the GRF has been steadily decreasing. As a result, the Agency is focusing on ways of making programs self-sustaining through new and increased fee revenue -- such as the State Special Revenue Fund discussed above.

The General Revenue Fund (GRF) is a significant funding source for future Ohio EPA pollution prevention activities. Prior to State FY '94, GRF money was not used to support Ohio EPA pollution prevention efforts. However, an allotment was made to support ten staff for State FY '94-95. This GRF money was used to match federal grant money for expanding P2 projects and additional staff in the Office of Pollution Prevention and the Agency Divisions. Although the GRF is especially subject to exogenous factors such as the health of the economy and administrative decision, it holds serious potential as a funding source for P2 training activities.

VII.B.3. General Services Fund

The Ohio General Services Fund accounts for the smallest share of the Ohio EPA budget - roughly 1.5% of the total Agency budget. Moneys deposited in this fund originate from two sources, laboratory services and sale of goods and services. The laboratory services section receives payments from non-EPA entities for laboratory services the Agency provides. Sales of goods and services includes sale of salvaged equipment. Given the limited size and the specific nature of this fund, it is unlikely to be used for pollution prevention purposes.

VII.B.4. Ohio Environmental Education Fund

The Ohio Environmental Education Fund (OEEF) was created in 1990 through H.B. 804. The mandated goal of the OEEF is "to enhance public awareness and the objective understanding within this State of issues affecting environmental quality." Numerous

organizations are eligible to apply for the Fund, including state and local units of government. The fund is supplied by money collected in civil penalties by the Ohio EPA's air and water pollution control programs, and from gifts, grants, and contributions. A maximum of \$1.5 million can be awarded in grants from the fund annually.

The fund provides grants designated for several activities, and pollution prevention can be incorporated into these. A Board of Trustees is responsible for distributing the grants. The Trustees give priority consideration to applicants who demonstrate that the overall goals, objectives, and strategies of their proposed projects have been conceived and will be implemented by a partnership of agencies, organizations, industries, and citizens. Ohio EPA would be judged equally with the other applicants, and there is a potential for a pollution prevention grant for the agency.

Pollution prevention-orientated grants from OEEF have been made in previous years. In 1994 for example, grants were awarded to the Ohio EPA Division of Surface Water, and the Institute of Advanced Manufacturing Sciences (IAMS) and the Cleveland Advanced Manufacturing Program (CAMP) for a joint project. This funding source is an especially useful source for cooperative government-industry pollution prevention projects that focus on training and capacity building in both the public and private sectors.

VII.C. State/Multi-State Grant Funds

VII.C.1. Great Lakes Protection Fund

The Great Lakes Protection Fund was established in 1989 by the Council of Great Lakes Governors to support projects dedicated to controlling toxins in the Great Lakes. In 1992, the fund made pollution prevention projects a priority. Each Great Lakes state is expected to contribute to the planned \$100 million endowment. The fund has four principal goals:

1. prevent toxic pollution
2. identify effective clean up approaches in areas of concern
3. demonstrate natural resources stewardship
4. clarify effects of toxic pollution on humans and wildlife

Proposals must be relevant to the Great Lakes Toxic Substances Control Agreement and the Great Lakes Water Quality Agreement. Projects must have regional impact, either directly or through dissemination of findings throughout the Great Lakes Basin. Proposals must demonstrate that the data gathered or work undertaken will lead to specific action by governments, industry, or citizens to improve water quality or reduce exposure to toxins.

Several of the fund's previous projects have emphasized pollution prevention as the primary activity. The State University College of Buffalo, New York received a grant for public education and outreach programs on P2. The Lake Michigan Foundation received a grant to assist sewage districts throughout the region to increase P2 activities. The fund

represents an untapped source of resources for financing P2 training activities in the Agency.

VII.C.2. The Lake Erie Protection Fund

The Lake Erie Protection Fund was created in 1990 to support outreach activities which propose to protect and improve the environmental quality of the Lake Erie Basin and increase the understanding of the resources of the Lake and its tributaries. The fund is financed by the interest on Ohio's contribution to the Great Lakes Protection Fund and is managed by the Lake Erie Commission. Ohio EPA is eligible to receive funding as a state agency. Further conditions for eligibility include the following items:

- The degree to which the project addresses specific water quality or resource protection objectives in Ohio
- The degree to which the project is eligible for other funds
- The amount of intergovernmental or interagency cooperation
- The indirect costs shall not exceed 25% of total direct costs
- Whether or not the project is a new, continuing, or expanded effort
- The creativity or originality of the project
- The support from the affected community

Although matching funds are not required, a 25% minimum match will enhance application acceptance. The Lake Erie Protection Fund's emphasis on water resources as well as research may limit some pollution prevention funding proposals. Even so, there are no restrictions placed on how the grants are awarded. If Ohio EPA were to receive a grant for pollution prevention in the Lake Erie Basin, it could set a precedent for future projects. An area of study which may generate fundable projects is nonpoint source pollution. The Ohio EPA should consider supplementing funding for its nonpoint source pollution program by submitting proposals for Lake Erie Protection Fund research projects.

VIII. POLLUTION PREVENTION TRAINING NEEDS SURVEY

P2 Training Needs Survey Summary Report

prepared for:

Ohio EPA Office of Pollution Prevention

prepared by:

Greiner Environmental

May, 1997

P2 Training Needs Survey

To assess the current level of P2 activities at Ohio EPA and the Agency's P2 Training needs, Greiner Environmental prepared and administered a two-page written survey. The survey was given to staff (e.g., Environmental Specialist 2) and some managers in the divisions of Air Pollution Control, Surface Water, and Hazardous Waste Management. This report summarizes the results of this survey.

Survey Goals

The Survey was designed to meet the four goals listed below (a copy of the survey is located in Appendix A of this report):

1. to assess the level of P2 behaviors currently practiced in the Agency;
2. to examine the P2 training needs of Agency staff;
3. to assess the level of P2 training already achieved; and
4. to allow for repeated use over time to (1) assess training needs in the future and (2) to assess changes in P2 activity.

Survey Design

The survey was comprised of three sections. The first section asked respondents to provide demographic information such as:

- Office (i.e., Northwest, Southeast, Northeast, Southwest, or Central);
- Division (i.e., Air, Water, Hazardous Waste, Solid Waste, etc.);
- function (i.e., permit writer, inspector, etc.); and
- experience in the agency (i.e., 0-1 years, 1-4 years, 4-7 years, etc.).

The second section of the survey assessed P2 activities respondents had taken part in over the previous two months and previous 12 months. This section also included an open-ended question asking respondents to write in specific activities not already listed.

The third section of the survey assessed the Agency's training needs. Respondents were presented with a list of possible training events and were asked to rate their interest in attending such an event on a scale of 1 to 5 (where 1 represents the least interest and 5 represents the greatest interest). This section also included an open-ended question asking respondents to recommend specific training events not already listed.

Survey Administration & Response

The survey was distributed via internal mail to 422 Agency personnel. A cover letter from Mike Kelly through Kate Bartter accompanied the survey. A total of 193 surveys were returned. Six surveys could not be used since the surveys did not contain division and location information. Such information is needed to compile the survey results.

Consequently, a total of 187 usable surveys with complete responses were received. The survey population and response rate are presented in Tables 1 through 5 on the following page. Table 1 lists the population that received the survey by division and office. Table 2 lists the response rate for completed surveys by division and office. Table 3 lists the

number of respondents indicating specific job/functions. Table 4 lists the number of respondents by experience level. Table 5 lists the number of management and non-management respondents.

Survey Evaluation

All survey data was entered into a survey database and response rates were computed. Summaries and cross tabulations were run on the P2 activities and training needs questions. The data was manipulated to examine responses as a function of office, division, and job function.

Table 1: Survey Population

Office	DAPC	DHWM	DSW	TOTAL
CO	48	30	88	166
CDO	13	8	16	37
SWDO	3	15	25	43
SEDO	14	11	22	47
NEDO	16	25	30	71
NWDO	21	16	21	58
TOTAL	115	105	202	422

Table 2: Survey Response Rate

Office	DAPC	DHWM	DSW	TOTAL
CO	33%	67%	43%	45%
CDO	38%	38%	38%	38%
SWDO	0%	67%	60%	58%
SEDO	43%	64%	55%	53%
NEDO	19%	24%	20%	21%
NWDO	43%	75%	62%	59%
TOTAL	34%	55%	45%	44%

Table 3: Job Function of Respondents

Job/Function	No. Responses
Inspector	108
Permits	104
Technical Assistance	145
Enforcement	112
Policy	44
Compliance Assistance	99
Other	56

Table 4: Experience of Respondents

Experience	No. Responses
0-1y Average	9
1-4y Average	41
4-7y Average	47
8-11y Average	36
11+y Average	40

Table 5: Management Responsibility of Respondents

Respondent Position	No. Responses
Management	20
Non-Management	167

Survey Results -- P2 Activities

This section highlights the major findings from the P2 activity section of the survey. All results in this section are based on activities carried out by respondents in the past 12 months. A complete table of results is located in Appendix B of this report.

P2 integration seems limited mostly to simple activities.

Respondents reported engaging in simple P2 activities that do not require significant changes in work practices such as incorporating P2 into office activities. More complex activities, such as using P2 in enforcement actions, permits, and suggesting specific P2 changes during an inspection, were reported less frequently.

Table 6: Percent of Respondents Practicing P2 Activity in Past 12 Months

P2 Activity	% Practicing
Incorporated P2 into office activities (eg double-sided copying)	90
Used/recommended the services of OPP	63
When providing technical assistance, discussed P2	61
When providing compliance assistance, discussed P2	58
Discussed P2 with a facility over the phone	57
Encourage staff/co-workers to promote/use P2 in their activities	50
Included P2 in written communication sent to a firm	47
Suggested specific P2 changes during an inspection	41
Participated in multi-media inspection efforts	36
Discussed P2 with a facility face-to-face (e.g., during a site visit)	35
Recommended or required P2 in an enforcement action	32
Incorporated P2 into a permit	23
MEAN	50

DHWM reported the highest level of P2 activity

DHWM had the highest reported rate of P2 activities. These results were consistent for all 12 P2 Activity questions in Section 2 of the survey. For example, 53% of DHWM respondents reported using P2 in enforcement actions compared to 12% of DAPC and 28% of DSW respondents.

Table 7: Percent of Respondents Practicing P2 Activity in Past 12 Months by Division

P2 Activity	DAPC	DHWM	DSW
Incorporated P2 into a permit	21%	26%	22%
Discussed P2 with a facility face-to-face (eg during a site visit)	58%	83%	57%
Discussed P2 with a facility over the phone	58%	76%	45%
Suggested specific P2 changes during an inspection	31%	62%	32%
Recommended or required P2 in an enforcement action	12%	53%	28%
Included P2 in written communication sent to a firm	28%	62%	47%
When providing compliance assistance, discussed P2	43%	91%	41%
When providing technical assistance, discussed P2	53%	72%	56%
Participated in multi-media inspection efforts	30%	50%	29%
Incorporated P2 into office activities (eg double-sided copying)	84%	98%	88%
Used/recommended the services of OPP	47%	86%	56%
Encourage staff/co-workers to promote/use P2 in their activities	46%	62%	45%
MEAN (sum of yes responses/sum of no responses)	45%	71%	48%

There was little reported difference in District Office P2 Activity.

While the SEDO reported the highest level of P2 activity, there was little difference between SEDO and NEDO, SWDO, and NWDO. The lowest level of activity was reported by the CDO.

Table 8: Percent of Respondents Practicing P2 Activity in Past 12 Months by Division (total yes responses/total no responses)

Location	Percent
CDO Average	44%
CO Average	51%
NEDO Average	55%
NWDO Average	54%
SEDO Average	61%
SWDO Average	57%
Grand Average	54%

For several P2 activities, there was significance difference between the highest and lowest reported rate. The table below presents offices with the highest and lowest responses.

Table 9: Percent of Respondents Practicing P2 Activity in Past 12 Months

P2 Activity	High (Office)	Low (Office)
1. Incorporated P2 into a permit	42%	10%
2. Discussed P2 with a facility face-to-face	80%	49%
3. Discussed P2 with a facility over the phone	76%	38%
4. Suggested specific P2 changes during an inspection	61%	18%
5. Recommended or required P2 in an enforcement	41%	17%
6. Included P2 in written communication sent to a	60% (1)	25%
7. When providing compliance assistance, discussed	65%	50%
8. When providing technical assistance, discussed P2	79%	45%
9. Participated in multi-media inspection efforts	57%	10%
10. Incorporated P2 into office activities	100%	85%
11. Used/recommended the services of OPP	78%	50%
12. Encourage staff/co-workers to promote/use P2	62%	38% (2)

(1) NEDO and NWDO both reported 60%

(2) CDO and NWDO both reported 38%

More work experience was related to higher levels of P2 activity.

The level of P2 activity increased with increasing work experience up until greater than 11 years of experience where the level of P2 activity dropped off.

Table 10: P2 Activity Practices as a Function of Experience over the Past 12 Months

Years of Experience	Average Response
0-1	30%
1-4	51%
4-7	59%
8-11	62%
11+	50%
Grand Average	54%

In all cases, the level of reported P2 Activity was greater in the past 12 months than in the past 2 months

In all 12 P2 activities, respondents were more likely to have practiced the activity over the past 12 months versus the past 2 months. This result was found as a function of division, office, and experience.

Survey Results -- P2 Training Needs

This section highlights the major findings from the P2 training needs section of the survey. A complete table of results is located in Appendix C of this report.

To a large extent, managers and staff have similar training interests.

Managers and staff had four of the same top five P2 training priorities. These four areas were:

- Methods to incorporate P2 into technical assistance
- Multi-media / Cross media transfer of pollution and P2
- Methods to incorporate P2 into compliance assistance
- Tools for talking to facilities about P2

Staff were also interested in training on “How to incorporate P2 into inspections”. Managers were interested in “Methods to incorporate P2 into enforcement actions” and “Training for managers”. The tables on the following page rank in order the types of P2 training from greatest to least interest for non-managers and managers.

Table 12: P2 Training Interest: Non-management Response

Type of Pollution Prevention Training	Interest Level (1-least; 5-most)
Methods to incorporate P2 into technical assistance	3.4
Methods to incorporate P2 into inspections	3.1
Multi-media / Cross media transfer of pollution and P2	3.1
Methods to incorporate P2 into compliance assistance	3.0
Tools for talking to facilities about P2	3.0
Review of P2 resources & research tools (e.g. internet, OPP, etc.)	2.9
General pollution prevention training	2.8
Methods to incorporate P2 into permits	2.7
Methods to incorporate P2 into enforcement actions	2.5
Organize Agency around functions/customers (as opposed to media)	2.2
Methods to promote P2 through fees	2.0
Methods to promote P2 through the tax system	2.0
Train selected staff to become P2 trainers (e.g. train-the-trainer)	2.0
Manager's Training (e.g. how P2 can help managers achieve goals)	1.6

Table 13: P2 Training Interest: Management Responses

Type of Pollution Prevention Training	Managers Interest Level (1-least; 5-most)
Methods to incorporate P2 into technical assistance	3.5
Multi-media / Cross media transfer of pollution and P2	3.5
Methods to incorporate P2 into compliance assistance	3.4
Tools for talking to facilities about P2	3.3
Methods to incorporate P2 into enforcement actions	3.3
Manager's Training (e.g. how P2 can help managers achieve goals)	3.3
Methods to incorporate P2 into inspections	3.2
Review of P2 resources & research tools (e.g. internet, OPP, etc.)	3.2
General pollution prevention training	3.0
Organize Agency around functions/customers (as opposed to media)	3.0
Train selected staff to become P2 trainers (e.g. train-the-trainer)	2.8
Methods to incorporate P2 into permits	2.5
Methods to promote P2 through fees	2.4
Methods to promote P2 through the tax system	2.2

Divisions had different training priorities

Training interest differed by division. In the area of general P2 training:

- DAPC was most interested in multi-media/cross media transfer of pollution and P2 training.

- DHWM was most interested in methods to incorporate P2 into technical assistance and inspections.
- DSW was most interested in methods to incorporate P2 into technical assistance.

Respondents were more interested in process specific training compared with industry-specific training.

Respondents were most interested in process specific training such as degreasing and metal finishing and less interested in sector-based training. There were however some district specific training interests -- these interests tended to correspond to differences in each region's economic-base. For example:

- Although mining was the least popular training overall, it was the highest rated training for respondents from SEDO.
- Petroleum refining training was rated higher in NWDO than in other locations.
- Automotive manufacturing training was rated highest in the NWDO and SWDO.

In the area of industry and process specific training:

- DAPC was most interested in painting/coating application training and paint and coating manufacturing training.
- DHWM was most interested in degreasing and parts cleaning/solvent substitution, plating and metal finishing, and painting/coating application training.
- DSW was most interested in water conservation training.

Table 14: Interest in Industry/Process Specific Training

P2 training for specific industrial sectors/specific processes:	Interest Level (1-least; 5-most)
degreasing/parts cleaning and solvent substitution	3.3
plating/metal finishing	3.3
painting/coating application	3.2
paint & coating manufacturing	3.1
water conservation	3.1
iron and steel manufacturing	3.0
chemical manufacturing	2.9
energy efficiency	2.9
auto manufacturing	2.8
printing	2.7
paper manufacturing	2.6
dry cleaning	2.5
petroleum refining	2.5
food manufacturing	2.5
rubber manufacturing	2.4
mining	2.3

Less experienced staff are more interested in training

The less experienced the respondent, the more interested they are in training.

Table 15: Training Interest as a Function of Experience

Years of Experience	Average Response
0-1	3.3
1-4	3.0
4-7	2.9
8-11	2.7
11+	2.2

POTW and Nonpoint Source P2 Training Requested by DSW staff

In the write in portion of the survey, three respondents suggested POTW P2 training. Three other respondents requested nonpoint source P2 training. Additional training ideas are listed in the Comments section of this report which begins on the following page.

COMMENTS

P2 activities respondents engaged in over the past year not listed in Section 2:

1. attempted to reduce paper usage by using e-mail whenever possible and by using 2-sided copies
2. serve as a community resource--provide programs as agency rep for the division during the discussion promoting P2
3. I am the DHWM P2 contact person. I try to promote/integrate P2 activities within the division. Examples: p2 strategy, dry cleaning initiative, p2 assessment training for DHWM inspectors
4. wash/re-use cafeteria plasticware, use my own ceramic mug instead of cafe styrofoam, turn pod lights off at lunch, re-use paper printed on one side for other uses
5. during RCRA inspections, I talk about P2 visits to facilities upon request by the facility for purposes of P2
6. participated on CDO/P2 committee (monthly meetings), attended P2/waste minimization conference sponsored by USEPA
7. Most of my P2 involvement is in the 401 program & stormwater program-- trying to get landowners to implement BMP's to reduce the amount of sediment delivered to streams and wetlands.
8. US Coast Guard reservist responsible for P2 activities.
9. Great Lake initiative--rule development and implementation
10. grant administration & technical assistance for the Toledo P2 project
11. use smallest vehicle available
12. P2 contact for SEDO, P2 assess training, participation in P2ATC, notify OPP of potential opps for P2 in enforcement negotiations
13. Use paperless office practices. Suggest you do also. Seems offensive that you're surveying me to determine my needs when my perception is that you need trained [sic] first.
14. development & organization of M2P2 inspection teams/ marketed the need for P2 during talks
15. Assisted filers of the Annual Hazardous Waste Reports in completing the waste minimization portions of their reports. Provide information to requesters in electronic format whenever possible.
16. Carpooling to district offices whenever possible.
17. Source reduction and recycling at home
18. For #12 above, have tried to get SEDO office admin. to recycle spent fluorescent bulbs, but met with strong opposition from CO
19. Our section 319 nonpoint grant funds many P2 education and demonstration projects to reduce sediment, herbicide, pesticide, and insecticide pollution in Ohio surface and ground water
20. Have been on the district's P2 committee to promote multi-media inspections and have discussed P2 (as part of the committee) at my division group meetings
21. provided P2 handouts to facilities during inspections
22. included P2 literature with available handouts at an OEPA booth at a water pollution control conference
23. Advised/recommended the two sites I cover to improve their stormwater erosion control
24. as part of a technical support document I was involved in writing, there was a section called spills. This section included any spills occurring in the SWDO counties over a ten year period. I spoke with a P2 representative in our office about identifying repeating facilities and looking at the cause of the spill for potential modifications in design, equipment etc.
25. reference to OPP in all SEAP-developed fact sheets and facility correspondence
26. Large increase in use of web page has decreased copying and mailing by 50% in the last 10 months.

Other types of training requested by respondents (not listed on the survey)

1. P2 training related to wastewater treatment plants
2. P2 training specifically related to wastewater treatment processes
3. P2 training for publicly owned wastewater treatment plants
4. P2 training in natural disasters, life cycle analysis training, measuring success training
5. P2 training in automotive garages, alternatives to parts washers

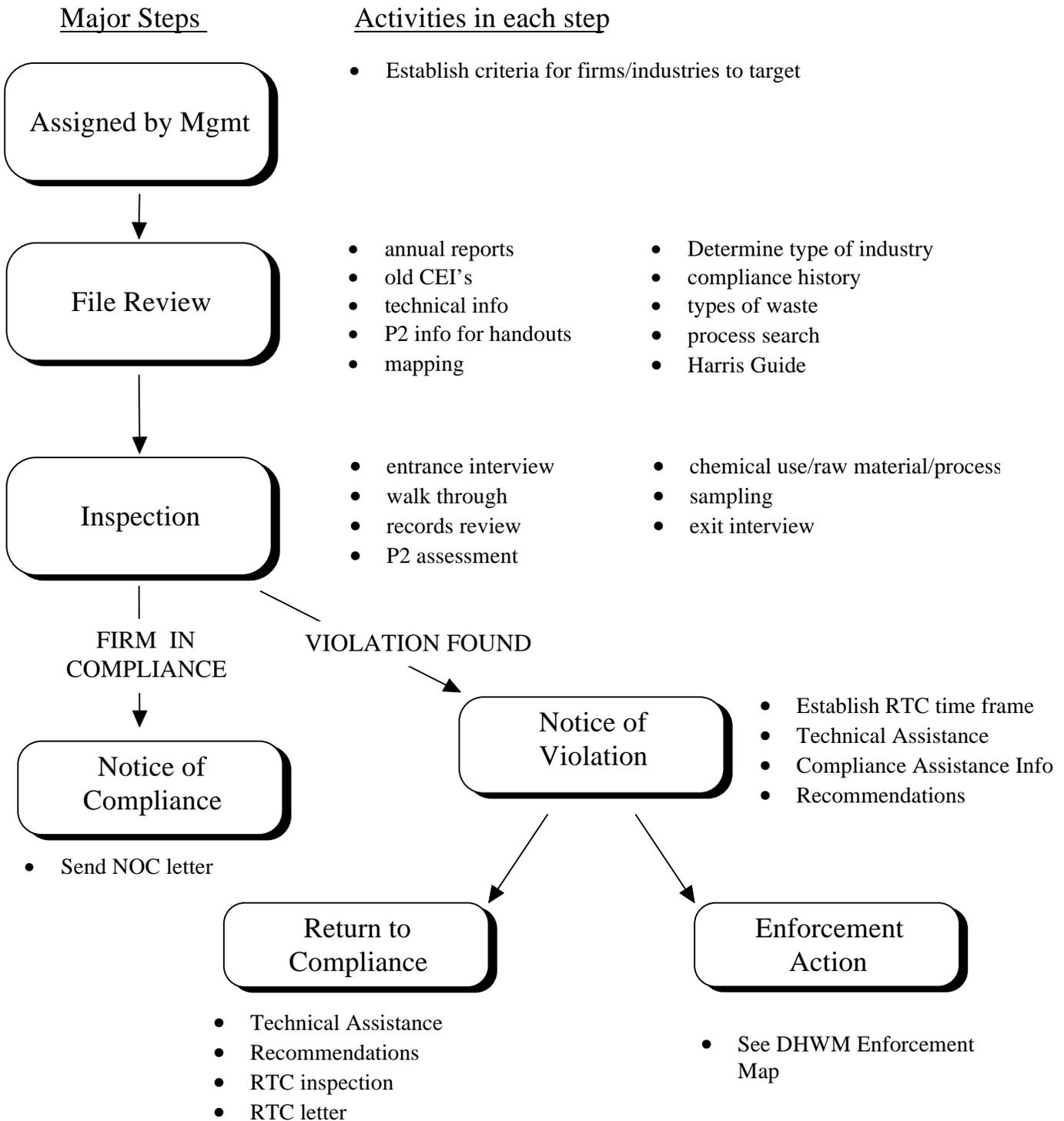
6. P2 training in office activities
7. I would look at training for items 4, 5, & 6 above to be incorporated into the same training event (inspections, compliance assistance, and technical assistance).
8. Training on conducting P2 assessments (eg. how to better recognize opportunities for implementing P2)
9. refresher courses
10. It appears that most P2 activities are oriented to manufacturing industries. Ohio's water resource inventory (a.k.a. 305b report) however, lists sedimentation & habitat destruction as some of the most significant reasons for not meeting the Clean Water Act's goals. There needs to be a shift in thinking. Sediment can be a pollutant. Loss of vegetation & habitat has an impact and can be prevented. The costs associated with increased treatment needed for drinking water, dredging sediment choked channels, increased flooding, etc. are significant and need to be addressed.
11. P2 training for Nonpoint Sources-- the leading cause of in-stream impacts
12. Introduction to all internet resources available, what's there, how to access, how often updated
13. Training in excessive BOD5 loading slaughterhouse operation, milk producers, feedlot/high density livestock pens.
14. For my position, general knowledge of P2, where to get assistance, knowing the capabilities of our P2 group are what I need to keep abreast of.
15. How to make haz waste inspections more oriented towards P2
16. P2 training for major sources with minor modifications or changes. What to look for? How to present to company so they can see their benefit?
17. How P2 can better be incorporated into office activities/how P2 can be applied to field activities such as chemical sample solution.
18. No theoretical training would be helpful--we had enough of that. On-site specific training for facilities that have implemented P2 is required.
19. Integration of P2 in remedial actions. Grant availability for P2 activity within watershed groups. P2 training relative to construction and stormwater activity.
20. General cross media. Inspection/permitting cross media training, especially if agency moves to this type of program
21. Although my responsibilities do not currently include industrial facilities, they may include these in the future so there is an interest in all the P2 sections for industries
22. I would prefer specific training-do not need more general training

Other responses

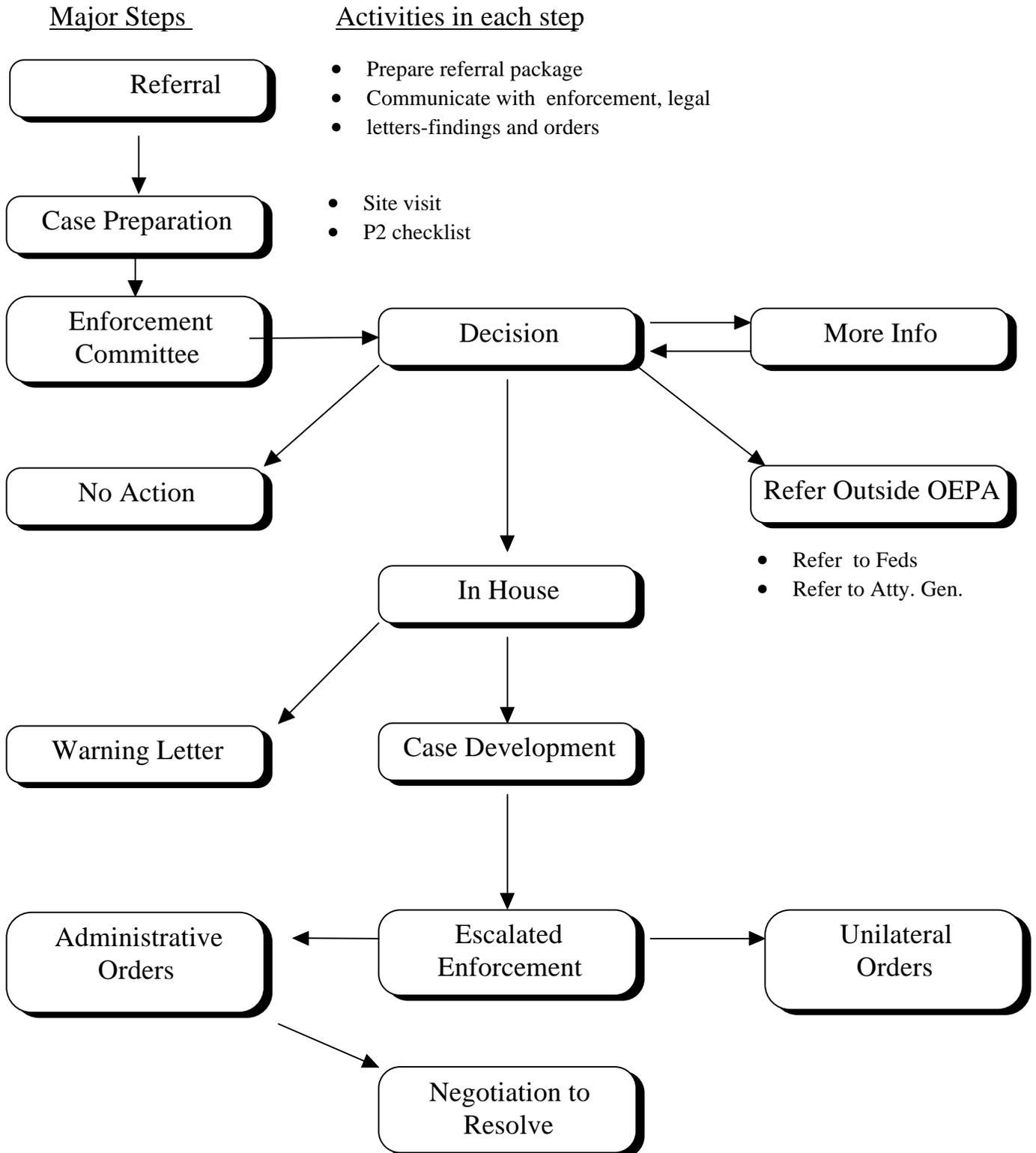
1. My frustration lies in the fact that our division's P2 team (of which I was a contributing member) spent significant time and submitted P2 strategy but it was not implemented. I prepared a P2 checklist for industrial units based on my technical experience, but it was not included in the P2 program. This checklist would have been immensely helpful for entities to look at their units and consider implementing specific methods while renewing and submitting their permit applications to Ohio EPA.
2. Your handout states that treatment & disposal of waste is not P2. How about re-using wastewater (treated) as irrigation water for agricultural purposes? (No impacts to surface or groundwater)
3. Most P2 ideas have come after a situation has gone bad and the parties are at odds with the EPA and mistrust the P2 motives.
4. I am absolutely not interested in attending any training. I would enjoy reading this information to increase my awareness on your website.
5. P2 activities are generally not applicable to my job.

IX. PROCESS MAPS

IX.A. DHWM Inspection Process Map



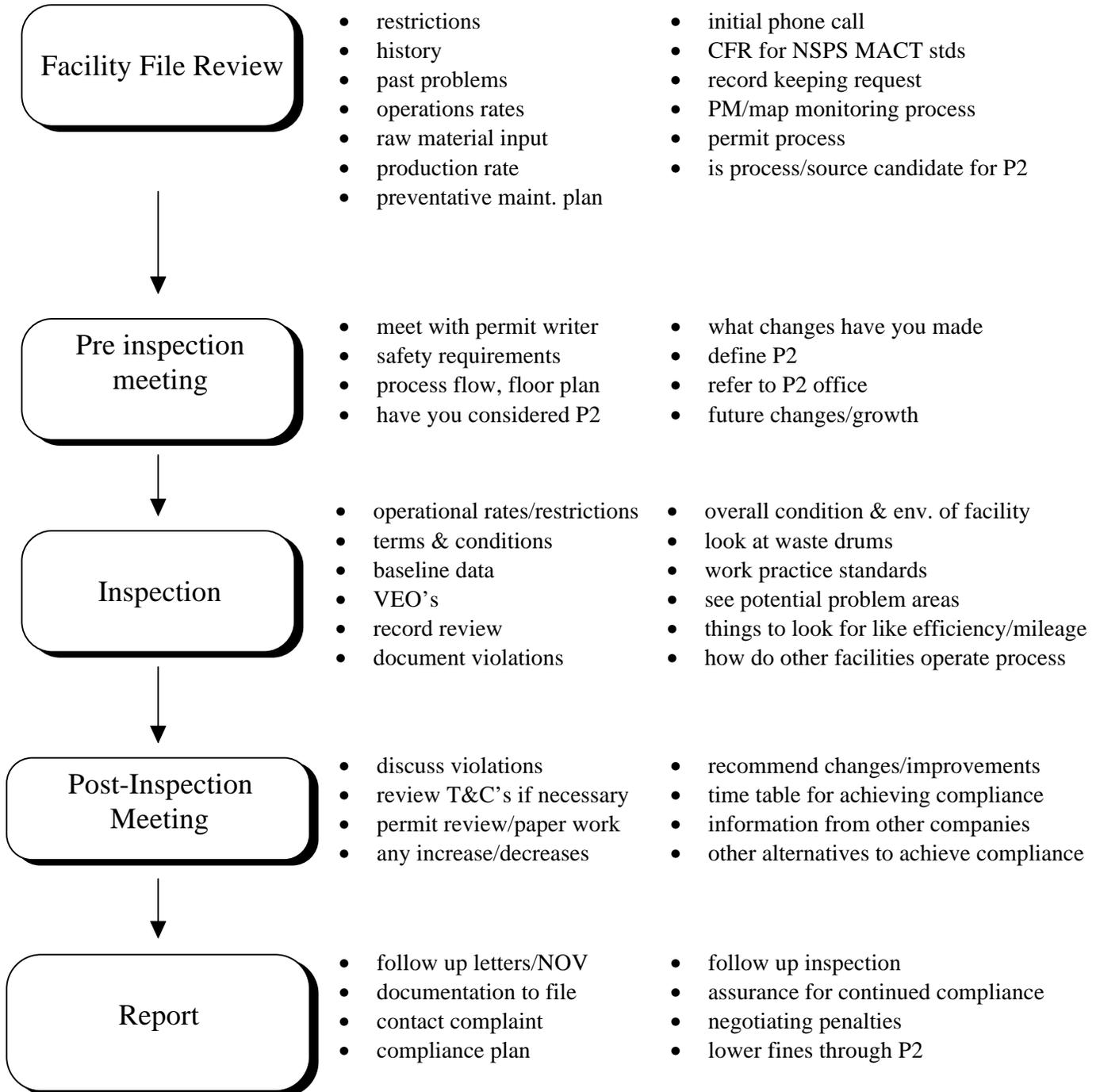
IX.B. DHWM Enforcement Process Map



IX.C. DAPC Inspection Process Map

Major Steps

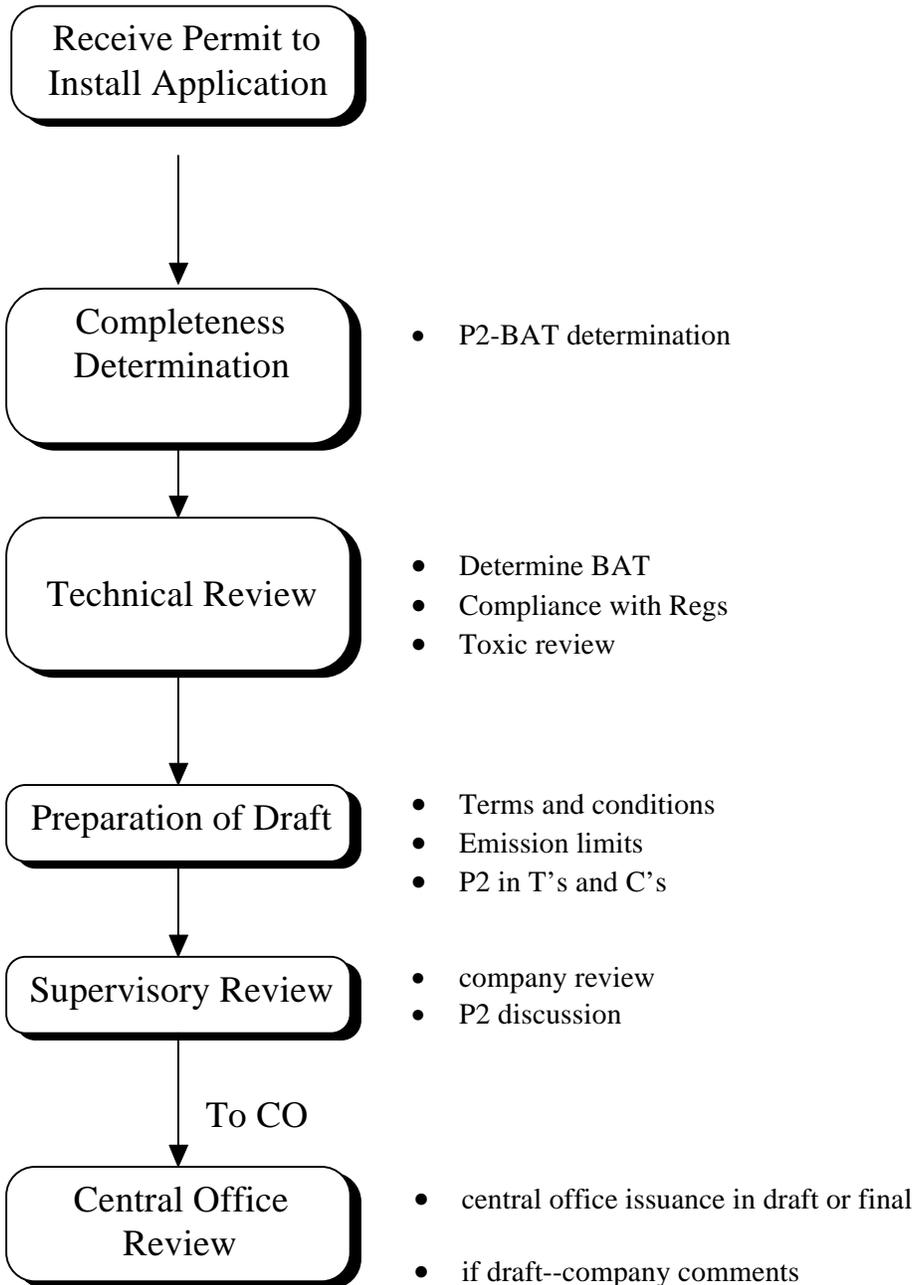
Activities in Each Step



IX.D. DAPC Permitting Process Map

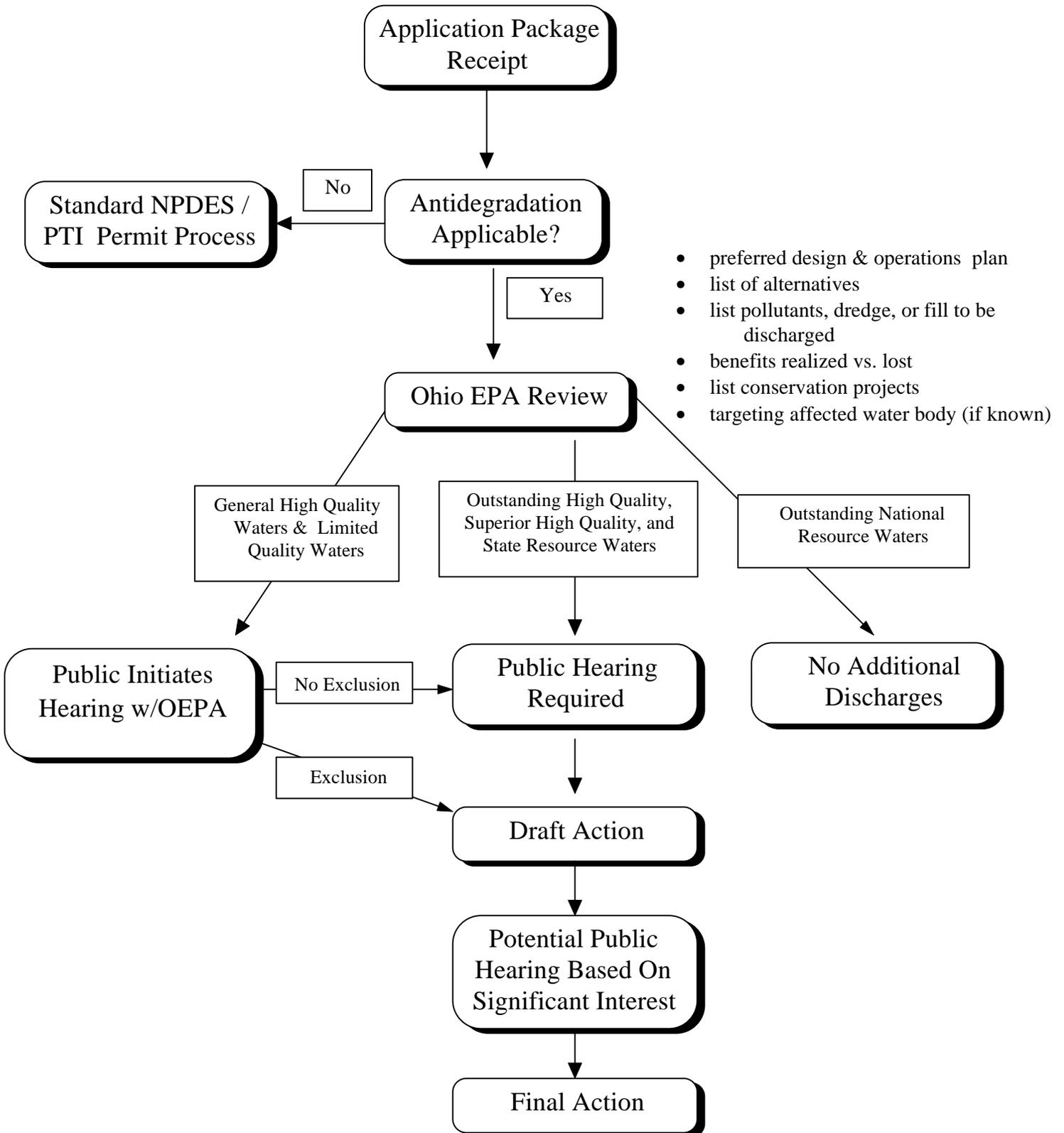
Major Steps

Activities in Each Step



IX.E. DSW Antidegradation Permitting Process Map

Major Steps



- preferred design & operations plan
- list of alternatives
- list pollutants, dredge, or fill to be discharged
- benefits realized vs. lost
- list conservation projects
- targeting affected water body (if known)