

Beyond Waste Consultant Team Issue Paper #6  
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# **Potential Enhancements to Ecology's Pollution Prevention Planning Program**

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**and**

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# 1. Introduction

The purpose of this report is to identify and assess various potential enhancements to Washington Department of Ecology's Pollution Prevention (P2) planning program. Research for the report is being conducted under Task 3 of the "Research on Hazardous and Solid Waste Topics" project established by the Washington State Department of Ecology under the Beyond Waste project.

The P2 planning program works primarily with major hazardous substance users and hazardous waste generators across the state to reduce the volume, risk, and resource intensity of the substances those entities use. Set in motion by state legislation in 1990, the program focuses on material inputs to manufacturing processes, rather than waste outputs and management. This critical feature distinguishes the P2 planning program from other programs at Ecology.

The report focuses on the following aspects of the P2 planning program: the timing and breadth of P2 planning across Washington state; the plan/planning requirement itself; and opportunities to promote regulated entities' implementation of P2 activities. These aspects of the program were selected, in part, because they appear to present natural opportunities to encourage earlier, more regular, and broader implementation of pollution prevention activities and, ultimately, to encourage a shift in the way businesses think about the wastes they generate and the substances they use. The report does not attempt to provide an exhaustive evaluation of the current P2 program, nor does it address the full range of program enhancements. Rather, it concentrates primarily on enhancements that are anticipated to help strengthen the overall program in the context of the agency's emerging Beyond Waste vision, with a special focus on those program enhancements that help to align environmental improvement behaviors with activities and behaviors needed for business success and competitiveness.

Ultimately, the report offers Ecology a variety of tools to help encourage Washington state businesses enact the following desired behaviors:

1. **Plan (for pollution prevention) earlier**—through an exploration of enhancements that can encourage businesses to incorporate pollution prevention considerations into design of facilities, processes, or products;
2. **Plan (for pollution prevention) better**—by developing tools that help refine P2 planners' understanding of the costs and inherent hazards posed by specific material flows;
3. **Implement more pollution prevention activities**—via the introduction of different incentives or means to encourage greater implementation of P2 plan activities; and
4. **Access useful Pollution Prevention planning program tools**—by enhancing the accessibility of the Ecology website.

## REPORT OVERVIEW

In Chapter 2, the report considers the connection between pollution prevention and the Beyond Waste vision, and begins to build the case that pollution prevention planning and implementation form a cornerstone of the Ecology Beyond Waste vision strategy. This

brief discussion is followed by a high-level review of the program's history and requirements and recent accomplishments, drawn primarily from the 2000 Annual Report to the Legislature. Building on this information baseline, the report then focuses on identifying and assessing specific ways to strengthen various aspects of the P2 planning program. Each option is evaluated in terms of its feasibility of implementation (political and technical), the costs it may represent, expected outcomes, and key challenges and success factors that will influence how successful the option may be. The final chapter of the report lays out specific goals and action steps Ecology can consider taking to implement any of the enhancements recommended by the consultant team.

## 2. Pollution Prevention and the Beyond Waste Vision

Ecology's Beyond Waste Project seeks to motivate the citizens of Washington to "transition to a society that views wastes as inefficient uses of resources and believes that most wastes can be eliminated" in pursuit of the belief that "eliminating wastes will contribute to environmental, economic and social vitality." To catalyze the changes need to achieve the Beyond Waste vision, the project's proponents are searching out and devising a strategy to capitalize on tools, programs, initiatives, and opportunities to reduce the volumes and toxicities of substances that are both used and generated in Washington State.

Pollution prevention's core focus on "source reduction and other practices that reduce or eliminate the creation of pollutants through increased efficiency in the use of raw materials, energy, water, or other resources or protecting resources through conservation"<sup>1</sup> clearly embodies the spirit of Beyond Waste (for avoiding the generation of wastes altogether is perhaps the ultimate expression of Beyond Waste thinking).<sup>2</sup> Pollution prevention planning, the systematic identification and assessment of opportunities to avoid generating wastes in the first place, provides an important, regular opportunity for industries (and, through the program's technical assistance function, Ecology) to incorporate environmental considerations into decisions related to the design of manufacturing facilities, products, and processes.

Pollution prevention planning also highlights opportunities for businesses to reduce their negative impacts on all environmental media (air, water, waste), again in keeping with the Beyond Waste vision. In return, driving toward "Beyond Waste" can provide businesses with new motivation and a framework for pushing pollution prevention thinking and behaviors deeper into their practices and cultures and can create strong opportunities for businesses to see (and experience) how environmentally beneficial decisions can, in fact, be strong business decisions.

### THE P2 CONNECTION TO BEYOND WASTE KEY QUESTIONS

An earlier Beyond Waste project team report<sup>3</sup> proposed that at least eight 'key questions' embedded in the Beyond Waste vision can help guide the selection of Beyond Waste activities and inform the agency and individuals' (or facilities') progress toward "Beyond

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<sup>1</sup> Pollution Prevention Act of 1990, Title 42m Chapter 133, United States Code, 1990.

<sup>2</sup> A case can also be made that pollution prevention is completely antithetical to Beyond Waste. In a Beyond Waste world, there should be no "pollutants" because all material resources are taken to their highest possible use and "wastes" (i.e., material resources that hold no value) are never generated. In a Beyond Waste world, pollution prevention and P2 planning may ultimately become unnecessary. However, until we as a society are able to effectively transition to Beyond Waste thinking and as long as we treat certain materials as "wastes," pollution prevention will continue to be a necessary and vital construct.

<sup>3</sup> Cascadia Consulting Group et al., Measuring Progress Toward Beyond Waste: Improving Materials Tracking in Washington State, August 23, 2002 draft report to Washington Department of Ecology.

Waste.” At least three of these can also directly serve as critical barometers of the success of Ecology’s P2 planning program and facilities’ performance under P2 reduction goals. They are:

1. **Inputs & Efficiency: Are we reducing the use of materials over time?** This question pertains to the P2 planning goal of reducing the volumes of material inputs to manufacturing processes.
2. **Risk & Inherent Hazard: Are we reducing the risk from toxic materials and wastes?** This question ties directly to the P2 goal of reducing the inherent hazard of material inputs to manufacturing processes.
3. **Behavior Change: Are residents, businesses, and institutions taking actions to achieve the Beyond Waste vision?** This question relates directly to facilities’ success in implementing specific P2 activities identified in their P2 plans and, ultimately, in making systemic environmentally beneficial improvements across its entire business.

Taking positive steps in the context of these questions can help a business make progress against its pollution prevention goal and, at the same time, help the state move closer to being a Beyond Waste society.

# 3. Pollution Prevention Planning Program Overview and Summary Results

The Washington State Department of Ecology has been administering the Pollution Prevention (P2) planning program since 1990, when the state Legislature passed the Hazardous Waste Reduction Act (Chapter 70.95C RCW). Passage of the Act led to establishment of state policies and goals<sup>4</sup> to encourage reductions in hazardous substance use and hazardous waste generation. Under Washington’s law, certain hazardous waste generators and Toxic Release Inventory (TRI) reporters<sup>5</sup> are required, every five years, to prepare plans for voluntarily reducing hazardous substance use and waste generation. These plans are required to contain specific elements (including specific performance goals) to be reported on annually.

Embedded within the regulations are a few important concepts that may affect how quickly or efficiently the state moves toward a “Beyond Waste society.” They include the following.

- 1. Mandatory plan preparation/voluntary implementation:** While preparation of the plan is mandatory, P2 planners (i.e., those facilities that prepare P2 plans) are not required to implement any of the specific actions described in their plans.
- 2. P2 Plan quality reviews:** Ecology P2 planning staff are able to review the completeness or adequacy of any P2 plan, but not the quality of the plan’s analysis. Thus, a facility could submit a P2 plan that contains all of the required elements, but which is challenging to implement.
- 3. Minimal agency influence on facility design decisions:** To trigger the P2 planning requirement, a facility will generally have reported generating at least 2,640 pounds of hazardous waste. P2 planning in Washington state, therefore, focuses primarily on ways to help existing facilities optimize their ongoing operations. As a result, Ecology’s opportunities to help businesses prospectively incorporate P2 elements into facility, process/manufacturing, or product design decisions are necessarily more limited than if Ecology were able to interact with the business before it designs waste and risk into its products, processes, or facilities.

## THE EMS ALTERNATIVE

In 1997, Ecology launched its “EMS Alternative Program.” The program allows companies to submit an environmental management system (EMS) as a substitute for the state-required P2 plan. The EMS Alternative Program was introduced to respond to

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<sup>4</sup> With the Act’s passage, Ecology adopted, as policy, the goal to reduce hazardous waste generation by fifty percent by 1995.

<sup>5</sup> According to RCW 70.95C.200, “Each hazardous waste generator who generates more than two thousand six hundred forty pounds of hazardous waste per year and each hazardous substance user, “excepting permitted treatment, storage, and disposal facilities” is required to prepare a pollution prevention plan.

concerns that EMS development and implementation may be redundant with P2 planning efforts and to encourage more businesses to develop EMSs.

An EMS provides a business with a means for undertaking a comprehensive program to identify and take advantage of opportunities to make continual process improvements to improve its overall environmental performance. EMSs are built on a continual improvement model that seeks to integrate environmental management into regular business operations as well as strategic decisionmaking.<sup>6</sup> While pollution prevention may not necessarily be a component of all EMSs, facilities participating in the Ecology “EMS Alternative” program must demonstrate that P2 is addressed in several aspects of their system. Since the program’s inception, 35 facilities have taken advantage of the EMS option; twenty-three facilities are currently enrolled in the program.

## **P2 PLANNING PROGRAM RESULTS**

From 1990 to 2000, Washington state pollution prevention planners reported generating 48 million pounds less hazardous waste, which (adjusted for economic conditions, including business levels) represents a 59% reduction from the 1992 baseline, the first year facilities were required to submit P2 plans.<sup>7</sup> While these reductions are not all directly attributable to pollution prevention planning, many hazardous waste generators point to pollution prevention planning and P2 activity implementation as being instrumental in their efforts to reduce the use of hazardous substances and/or generation of hazardous waste. In 1995, 92% of P2 planners participating in a survey indicated that they implemented one or more pollution prevention opportunities identified in their P2 plans.<sup>8</sup>

Furthermore, since 1995, approximately 165 facilities have dropped below the P2 planning threshold by conscientiously implementing opportunities described in their P2 plan submissions.<sup>9</sup> In fact, of the those facilities exiting the P2 planning requirements, the most common reason reported for dropping below the reporting threshold is facilities’ success in achieving their pollution prevention goals.<sup>10</sup> The data clearly indicate that pollution prevention planning can encourage and better prepare facilities to identify and implement environmentally beneficial actions.

### **IMPLEMENTATION HAS STABILIZED**

In the last four years of P2 plan reporting (1997-2000), traditional P2 planners and EMS planners have reported implementing, on average, very similar numbers of pollution prevention opportunities. Both types of planners demonstrated a modest “spike” in implementing P2 opportunities from 1998 to 1999. Then, in 2000<sup>11 12</sup>, P2 implementation declined again.

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<sup>6</sup> Stapleton and Glover, *Environmental Management Systems: An Implementation Guide for Small and Medium-Sized Organizations*, 2<sup>nd</sup> Edition, 2001, provides a detailed look at several EMS models.

<sup>7</sup> Washington Department of Ecology, *Reducing Toxics in Washington: 2000 Annual Progress Report*, Publication # 02-04-034, November 2002.

<sup>8</sup> Ross & Associates Environmental Consulting, Ltd., *P2 Planning Effectiveness Study*, 1995.

<sup>9</sup> Washington Department of Ecology, *Moving Beyond Toxics: Planning for the Future of Hazardous Waste: A Report to the Legislature*, Publication # 02-04-026, September 2002.

<sup>10</sup> Washington Department of Ecology, *Pollution Prevention Planning Issue Paper Self Assessment*, November 4, 2002 draft.

<sup>11</sup> Ibid.

It is not clear why Washington state businesses have not continued to explore and implement new or greater P2 opportunities in recent years. Several possible explanations may exist.

- 1. The competition for limited capital resources is fierce.** At all times, pollution prevention implementation must compete with other potential investments (including pollution control technologies) for funding within an organization. As a result, P2 opportunities that promise to save a company money are often “left on the table.” The recent economic downturn in Washington state may further restrict businesses’ ability to commit resources to identifying and implementing P2 opportunities.
- 2. Facilities’ environmental health and safety departments are restructuring.** Ecology P2 staff estimate that approximately one-third of their P2 contacts at Washington facilities turn over each year. The recent economic downturn is expected to cause further restructuring as companies seek to streamline their operations and practices. Although the full impact of these streamlining/refocusing initiatives is unknown at this time, it is likely that environmental health and safety departments at several more facilities will be restructured.
- 3. The regulatory environment is stable.** In their November 4, 2002 draft Pollution Prevention Planning Issue Paper Self-Assessment, Ecology’s P2 Planning experts posit that the slowdown in recent years of environmental regulation development may have softened the regulatory incentives for current Washington state P2 planners to invest in pollution prevention activities. As a result, facilities may be less inclined to take proactive pollution prevention steps than they might have been in the past.
- 4. Critical customers are focused elsewhere.** It may also be the case that companies have felt less pressured by shareholders, customers, or others to actively pursue P2 opportunities in recent years. This may be due to a number of factors. In Washington state, water and air quality and endangered species protection are environmental issues that seem to have garnered the most attention in recent years. As well, challenging economic times may have also caused critical customers (both within and outside the companies) to focus their attention on other aspects of a business’ operations. And, too, there may just be a general lack of “knowledge, drivers, and incentives for hazardous substance use reduction (and generally P2 plan implementation) at many facilities.”
- 5. Environmental agencies have fewer resources to devote to P2 outreach and support.** As Ecology’s TREE (Toxics Reduction Engineer Efficiency) program demonstrates, focused interactions through onsite visits can create substantial momentum for undertaking P2 actions at a facility. Due to state government budget shortfalls and cutbacks, however, fewer P2 experts are available at Ecology to provide outreach or technical assistance to hazardous waste generators and other P2 actors. As a result, companies that may be reluctant or unsure how to implement some of their P2 opportunities will have fewer opportunities to interact with Ecology P2 staff and may be less motivated or able to take action. Furthermore, with fewer staff on board, the P2 program

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<sup>12</sup> It should be noted that the data do not reflect the relative impact or effectiveness of the specific P2 opportunities that were selected by facilities for implementation.

also has less time to interface and coordinate with other programs at Ecology (e.g., water and air permit writers, inspectors, etc.) who might also encourage their customers to undertake better P2 planning and implementation.

## **P2 PLANNING, WASTE PROJECTIONS, AND THE BEYOND WASTE VISION**

Today, more than 670 facilities across Washington state engage in P2 planning activities, as some have been doing for more than a decade. Many of these companies understand and embrace pollution prevention, have demonstrated success in implementing pollution prevention opportunities, and have established productive relationships with Ecology. As a result of these advances, Washington state industries have made steady progress toward meeting the state's thirteen-year old 50% hazardous waste reduction goal.<sup>13</sup> Still, many industries continue to rely on hazardous substances for their processes and products and to generate a substantial percentage of the state's hazardous (and other) wastes. Together, in fact, the facilities engaged in P2 planning account for more than 90% of the hazardous waste reported in the state.

Beyond Waste Project team projections of dangerous waste generation (starting with a 2000 baseline) predict that in the absence of future pollution prevention gains, hazardous waste generation in Washington state over the next ten years will remain fairly constant. Some industries are expected to increase their hazardous waste generation (notably the Chemical and Allied Products and petroleum refining); others are expected to see decreases (especially primary metals—due to halts in production in the aluminum industry—and aerospace).<sup>14</sup>

To lead the state toward a Beyond Waste society, a society in which most wastes are eliminated, Ecology should focus considerable attention on these important actors.<sup>15</sup> And, because Ecology's Pollution Prevention program already works closely with these industries to identify opportunities to prevent the generation of the very material flows the agency wants to eliminate, it makes further sense that the P2 program play an active role through its regular planning process and technical assistance/outreach activities to help industry leverage and encourage Beyond Waste behaviors.

A series of potential enhancements, described below, suggest some ways in which the Pollution Prevention program can take action, primarily through the P2 planning process, to encourage more aggressive P2 planning and performance.

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<sup>13</sup> Ecology reports that in 2000, hazardous waste generators achieved a 49% reduction from the 1990 baseline in hazardous waste generation. Washington Department of Ecology, Reducing Toxics in Washington: 2000 Annual Progress Report, Publication # 02-04-034, November 2002.

<sup>14</sup> Cascadia Consulting Group and Ross & Associates, Beyond Waste Task 2—Trends and Targeting, July 31, 2002.

<sup>15</sup> See the Project Consultant Team report, Moving Toward Beyond Waste in the Industrial Sector (2003) for a deeper look at the Beyond Waste opportunities and approaches for the industrial sector.

## 4. Encouraging a New Corporate Cultural Paradigm

Across the United States, and across the world, companies have begun to embrace new corporate cultural paradigms that focus on creating systematic, waste eliminating, and “continual improvement” business environments. These companies look for ways to incrementally build efficiency and cost savings into all aspects of their operations in an attempt to produce the highest quality product or service at the lowest cost, while simultaneously being as responsive to customer demands and interests as possible.

Lean manufacturing is one such paradigm that calls for the systematic elimination of waste from all aspects of an organization’s operation. Lean manufacturing views waste as any use or loss of resources that does not lead directly to creating the product or service a customer wants when they want it. Under lean, waste can result from the inefficient use of raw materials, process downtime, or generation of process by-products, among other things. As a rule, companies predominantly employ lean manufacturing and related concepts to boost company profits and competitiveness. Some lean experts indicate that between 30 and 40 percent of all U.S. manufacturers claim to have begun implementing lean methods, approximately 5 percent of whom report aggressively implementing multiple advanced manufacturing tools.<sup>16</sup>

Although pollution prevention and related environmental considerations have clear implications for a business’ bottom line, few advanced manufacturing paradigms actively incorporate environmental performance considerations into their methodologies. This may be attributable to a variety of factors.

1. **Modest cost savings:** The cost savings associated with improving environmental performance may appear modest compared with other incentives. As a result, even companies that employ progressive manufacturing techniques such as “lean thinking” can easily overlook opportunities to implement environmental improvements (including preventing the generation of hazardous wastes or use of hazardous substances).
2. **Low company value:** Some companies do not place a strong institutional value on environmental savings (e.g., by rewarding or acknowledging individuals who identify and pursue environmental cost savings opportunities).<sup>17</sup> As a result, individual managers’ incentive to explore P2 opportunities as part of their search for “continual improvements” may not be sufficient to produce change.
3. **Regulatory friction:** Many advanced manufacturing techniques depend on the business’ ability to make rapid, iterative changes to manufacturing processes and equipment (e.g., moving equipment around the facility floor). Such a change in location or type of equipment can sometimes trigger the need to obtain a construction permits, modify an existing permit (e.g., an air operating permit) and may, in some cases, trigger new source reviews. Having to wait for permits to be

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<sup>16</sup> Rick Harris, President of Harris Lean Systems, Inc. as quoted in Austin Weber, “Lean Machines,” *Assembly Magazine* (March 2002). Also based on interviews with lean experts.

<sup>17</sup> Preventing Industrial Pollution at its Source: A Final Report of the Michigan Source Reduction Initiative, July 1999.

processed can delay other planned changes and lead to considerable friction. As a result, certain environmentally sensitive processes may be excluded from advanced manufacturing initiatives or activities.<sup>18</sup>

While viable pollution prevention opportunities are often “left on the table” by advanced manufacturing practitioners, some “lean” companies do report substantial environmental improvements resulting from their lean initiatives. The Boeing Company, for example, reported in 2000 that it was able to lower chemical usage by 12 percent per plane as a result of implementing a lean chemical point-of-use system designed to reduce mechanic movement and downtime.<sup>19</sup> Reducing the chemical usage was not the primary motivation for moving to a new system (reducing machinist downtime was); rather, it was an environmental (and pollution prevention) benefit that resulted from implementation of a cost-savings, business-motivated activity.

Although it is not Ecology's primary responsibility to help businesses improve their bottom line, the Pollution Prevention program has already helped numerous Washington industries realize important cost savings through P2 implementation. Moving Beyond Waste will likely require Washington's businesses to drive deeper into their operations to locate and seize yet more P2 opportunities. Ecology's challenge, therefore, is to work through its P2 program outreach or elsewhere, to help foster pollution prevention thinking and advance tools (e.g., refined cost accounting) that encourage businesses to see that waste elimination, continual improvement culture and behaviors strengthen their marketplace position and enhance their profitability. If Ecology can be successful, then it is likely that more facilities will seek out and take advantage of P2 opportunities. Through the resulting implementation of pollution prevention activities, the state can (again) move that much more quickly toward fully realizing its Beyond Waste vision.

Moving Beyond Waste will likely require Washington's businesses to drive deeper into their operations to locate and seize yet more P2 opportunities. Ecology's challenge, therefore, is to help foster P2 thinking and advance tools that encourage businesses to see that waste elimination and continual improvement culture and behaviors strengthen their marketplace position.

<sup>18</sup> Ross & Associates Environmental Consulting, Ltd., Lean Manufacturing and the Environment: Research on Advanced Manufacturing Systems and their Relationship to Environmental Performance and the Regulatory Framework, forthcoming.

<sup>19</sup> Pursuing Perfection: Case Studies Examining Lean Manufacturing Strategies, Pollution Prevention, and Environmental Regulatory Management Implications, U.S. EPA Contract #68-W50012, August 20, 2000.

## 5. Potential Program Enhancements: Encourage Earlier P2 Planning

In an ideal Beyond Waste society, pollution prevention would be considered at the start-up of a business venture so that all aspects of a business could be examined for P2 opportunities. However, because the current Washington state P2 planning requirements trigger pollution prevention planning after a facility reports generating a significant volume of hazardous waste (or releasing toxics to the environment), Ecology generally has very limited opportunities to prompt consideration of alternatives related to the design of the facility itself, the manufacturing/industrial processes, or the product.<sup>2021</sup> As a result, pre-production opportunities (e.g., designing out of processes the need to clean parts with solvents between manufacturing steps) may be lost.

Ecology generally has limited opportunities to influence decisions related to the design of a facility, manufacturing/industrial processes, or a product. As a result, pre-production P2 opportunities may be lost.

Notwithstanding the timing constraint imposed on Ecology by the current regulatory framework, there may be ways, short of mandating earlier pollution prevention planning, that Ecology could influence and help shape businesses' decisions around facility, process, and product design. By engaging with facilities at critical design touchpoints, discussed below, Ecology can help facilities avoid having to develop P2 plans altogether, by helping them operate below waste generation/release reporting thresholds.

### POTENTIAL ENHANCEMENT #1:

**Include a pollution prevention question with the SEPA checklist to elicit desired information and/or design behavior from applicants.**

The Washington State Environmental Policy Act, chapter 43.21C RCW, as amended (or, SEPA) requires any person or entity, including an agency, applying for a license from an agency to undergo a SEPA review by the agency. The SEPA process provides a way to identify possible environmental impacts that may result from governmental decisions related to issuing permits for private projects, constructing public facilities, or adopting regulations, policies or plans. Washington Department of Ecology is one of many agencies, both local and state, that conducts SEPA reviews.

Information provided by applicants during the SEPA review process helps agency decision-makers, applicants, and the public understand how a proposal will affect the environment. This information can be used to change a proposal to reduce likely

<sup>20</sup> It is interesting to note that other researchers who recently expressed an interest in learning about facilities that incorporate pollution prevention considerations into proposed manufacturing facilities were unable to collect information on a single facility that undertook such an analysis.

<sup>21</sup> Through its TREE program, Ecology staff are able to work closely with a small number of small to medium facilities to help analyze and redesign or retool specific industrial processes to incorporate pollution prevention considerations. The results to-date have been impressive. One challenge of the P2 program is to find ways to replicate the TREE experience in different industrial sectors and facilities of all sizes.

impacts, or to condition or deny a proposal when adverse environmental impacts are identified. As an early step in the SEPA process, applicants submit an “environmental checklist” found in WAC 197–11–960, along with their proposal. A lead agency (which may/not be Ecology) is assigned to review the applicant’s proposal to make a “threshold determination” assessing whether the proposed action is likely to have a probable significant adverse environmental impact (and thus require an EIS).

The current SEPA checklist, found at WAC 197-11-960, requests some information that could help Ecology (and or the facility itself) identify potential pollution prevention opportunities. For example, Section B, Question 2A. asks “*What types of emissions to the air would result from the proposal (i.e., dust, automobile odors, industrial woodsmoke) during construction and when the project is completed? If any, generally describe and give any quantities if known.*” Section B, Question 7A. asks the applicant to describe “*any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal.*” The question then goes on to ask what measures are proposed to reduce or control environmental health hazards. These questions, certainly, can provide insight into opportunities to reduce emissions, target toxic substance inputs, and generally reduce either the volumes or toxicity associated with proposed new activities. And, because the information is being furnished before actual construction begins, Ecology (or others) may have an opportunity to influence an applicant’s design decision.

It is notable, however, that the SEPA checklist does not include a specific question asking the applicant to identify either (1) existing pollution prevention opportunities or (2) P2 opportunities or activities that have already been pursued during design phases.

Adding a pollution prevention question to the SEPA checklist may, in fact, motivate individuals or entities applying for licenses in Washington State to consider what proactive steps they can take to reduce their reliance on hazardous substances or generation of hazardous wastes or toxic emissions.

Including a P2 question with the SEPA checklist may motivate license applicants to consider what steps they can take to reduce their reliance on hazardous substances or generation of hazardous wastes or toxic emissions.

The applicant’s response to the new question could fulfill a continuum of goals for Ecology in the context of Beyond Waste and beyond. First, it could serve to alert the applicant to available resources on pollution prevention that s/he may not be otherwise aware of.

Next, Ecology P2 staff could use the response to help identify specific design stage P2 opportunities related to the building itself or key processes and products.

Ultimately, depending on how the question were worded, the applicant’s response could also signal that the proposed project represents a significant effort to prevent the generation of pollution in the first place and deserves some sort of recognition by Ecology (and/or the other agencies engaged in SEPA review). For example, if the applicant were able to certify that steps had been taken to design waste out the proposed project (e.g., by validating that the building s/he intends to complete will achieve LEED certification), then Ecology could possibly offer to streamline its permitting process in some ways and/or offer some other kind of regulatory responsiveness incentives. If interest were sufficient in such a program or initiative, Ecology could even consider offering an “enhanced SEPA track” that links the desired environmentally beneficial behavior (on the part of the applicant) to the specialized response (e.g., streamlined permitting) offered by Ecology.

**Political Feasibility:** According to RCW 43.21C.120, each agency is required by SEPA to adopt its own rules and procedures for implementing SEPA. The SEPA checklist is included in the list of agency procedures to be used substantially as set forth in the rulemaking. According to WAC 197-11-906(4), Content and consistency of agency procedures, however, “Minor changes are allowed to make the forms more useful to agencies, applicants, and the public, as long as the changes do not eliminate requested information or impose burdens on applicants. **The questions in Part Two of the environmental checklist shall not be altered** (emphasis added).” Ecology can therefore take one of several approaches to including the P2 question with the SEPA checklist. If the agency were to make the information request voluntary, Ecology clearly could avoid imposing additional reporting burdens and is less likely to encounter applicants’ opposition to the additional information request. Keeping the question entirely separate from the SEPA checklist, too, can help ensure that Ecology is not violating the WAC. The potential downside of this approach is that applicants may be less likely to develop and submit the additional P2 information. As a result, important P2 opportunities may continue to be missed during the critical design stage. Providing incentives (along the lines of an “enhanced SEPA track” or something similar) might increase the likelihood that more applicants will consider and submit responses to the optional P2 question. Alternatively, Ecology could pilot the question with a subset of applicants, determine whether the question poses an additional burden, and assess the value of the responses. If Ecology were to find that the responses are useful, it could move to convince other implementing agencies (primarily, local governments) that the P2 question adds a valuable dimension to the application and should be incorporated into the checklist by regulation. With broad support, the feasibility of modifying the regulations is heightened.

**Technical Feasibility:** Three major “technical feasibility” issues associated with this potential enhancement are: (1) defining the desired design behaviors (e.g., LEED certification) that are desired/will be rewarded, (2) developing a validation system to ensure that the behavior was real, and (3) brokering an agreement among Ecology and the other local agencies sharing SEPA responsibilities on how the program should be implemented.

**Cost Considerations:** No specific information is currently available to assess the full range of potential costs or economic impacts of this enhancement. It merits considering that several thousand SEPA documents are sent to Ecology each year and few staff are presently dedicated to SEPA review. Asking those staff to review responses to yet another question may further strain limited resources. It is anticipated that designing a new question, asking Ecology staff to review applicants’ responses and, if selected, designing an enhanced SEPA track could require significant agency resources. Undertaking the process to revise the regulations could be resource- and time-consuming as well. Designing the new question and developing a means for assessing how real the reported behavior is probably can be accomplished with a modest amount of Ecology staff time. And, then, the resources needed to review applicants’ responses to the additional question depend entirely on how many permit applicants choose to submit the voluntary information. It is likely that participation will be low to start with but will ramp up over time, especially if incentives are introduced. Designing the enhanced SEPA track, especially if Ecology wants its SEPA review partners to offer the same incentives, is likely to require substantial resources, especially if undertaken as a focused initiative. Based on the consultant team’s experience with Oregon Green Permits, *minimum* program development costs are likely between \$100,000 and

\$250,000. Administrative management requirements during program development would likely be between 1 and 1.5 FTEs. As the incentives generate interest among applicants, the FTEs required to fulfill permitting agencies' obligations would grow. If, however, Ecology were to build support and participation in a stepwise fashion over the span of several years, costs would be more gradually realized.

**Expected Outcomes:** Adding a new question to accompany the SEPA checklist and offering incentives to design out waste could encourage a facility to consider pollution prevention at an appropriate time. However, it is difficult to project outcomes without defining the desired design behaviors or the incentives offered in return. The applicants will only choose to answer the question and possible gain access to the enhanced track if the costs of the behaviors (if there are any) are less than the benefits.

Adding a new question to accompany the SEPA checklist and offering incentives to design out waste could encourage a facility to consider pollution prevention.

**Challenges and Key Success Factors:** To be a useful tool, the P2 question will need to be carefully designed to elicit helpful information (both to the applicant and the reviewer) without creating an undue burden on either party. Working with a subset of applicants (current or past) to design the question may enhance its usefulness. It is likely that the single largest challenge to this enhancement will be brokering an agreement among Ecology and the various other agencies with SEPA responsibilities. This is especially true if Ecology opts to design an enhanced SEPA track. In the past, these types of programs have not run into difficulty agreeing on *how* you create incentives, but whether you *should* create incentives.

## POTENTIAL ENHANCEMENT #2:

**Build strong partnerships with the local Manufacturing Extension Partnership (MEP) affiliate to drive better P2 planning at small and medium-sized manufacturers.**

The MEP is a nationwide network of non-profits established for the sole purpose of providing “small and medium-sized manufacturers with the help they need to succeed.”<sup>22</sup> Four hundred strong, the “Centers” are loosely affiliated through the United States Department of Commerce’s National Institute of Standards and Technology (NIST). This structure creates a knowledge base that small and medium manufacturers can search for assistance with their evolving business needs.

MEP clients are reportedly six times more likely to plan important changes in their operations compared to similar manufacturers.

It has been demonstrated that MEP Centers are very good at getting businesses to change their behaviors. A survey taken by Nexus Associates indicates that MEP clients are **six times more likely to plan important changes in their operations** compared to similar manufacturers that have not participated in MEP programs.<sup>23</sup>

Each MEP center focuses on different practice areas, depending on the particular needs of its clients. Important practice areas may include:

<sup>22</sup> <http://www.mep.nist.gov/index2.html>

<sup>23</sup> [http://www.nexus-associates.com/centers\\_vs\\_consult\\_sec.pdf](http://www.nexus-associates.com/centers_vs_consult_sec.pdf)

- Process improvement;
- Business management systems;
- Materials engineering;
- Plant layout;
- Product development;
- Energy audits; and
- Environmental issues, including waste reduction and pollution prevention.<sup>24</sup>

In its 1995 report “Delivering Results: Manufacturing Extension Partnerships,” NIST states that 6% of the current services delivered by MEPs are “Environmental”<sup>25</sup> in nature. And, while this statistic offers only a limited view of how MEP services impact businesses’ environmental behaviors, the opportunity for more focused attention to environmental concerns clearly exists.

Washington Manufacturing Services (WMS)<sup>26</sup>, the Washington state MEP Center, offers a range of experience, relationships, and programs that Ecology could leverage to encourage better pollution prevention planning and implementation by small and medium-sized manufacturers. And, while pollution prevention is not WMS’ primary objective, the center does offer Environmental Health and Safety service support. This program could likely benefit from Ecology’s P2 expertise and resources.

WMS’s non-profit status and its full independence from regulatory association likely provide the opportunity to develop a larger market place for its services.

Furthermore, WMS employs industry sector specialists (e.g., for aerospace, food processing, and wood products businesses) who can help Ecology bridge to those industries. Conversely, Ecology, with its access to regulatory reporting databases, likely has superior

access to information on specific potential clients and is better able to pinpoint facilities that would benefit most from P2 assistance. Working together, the two entities could have a significant impact on small and medium manufacturers’ understanding of and interest in P2 opportunities. Potential joint activities and initiatives include:

- Knowledge sharing;
- Client focus (i.e., industrial sector, size of facility, or technical issue);
- Client referral; and
- Staff cross-training.

Many other options exist—the key is to capitalize on the strengths of each individual organization, enhance the pollution prevention planning process, and provide a wider audience of facilities with a valuable service.

Working together, Ecology and WMS could have a significant impact on small and medium manufacturers’ P2 activities.

<sup>24</sup> In 1994, MEP partnered with EPA to establish a \$3 million initiative to help smaller manufacturers lower their costs through waste reduction activities.

<sup>25</sup> [http://www.nist.gov/public\\_affairs/results/res-mep.html](http://www.nist.gov/public_affairs/results/res-mep.html)

<sup>26</sup> <http://www.wamfg.org>

Ecology should also consider searching out ways to take advantage of the MEP's national reach. Around the country, MEP Centers are developing interesting programs that combine new business innovations with environmental behavior that would be beneficial to P2 planning. For example, CONNSTEP, the Connecticut State Technology Extension Program, in conjunction with national NIST-MEP office is leading a national initiative to help manufacturers integrate "clean manufacturing" into their "lean" continual improvement efforts.<sup>27</sup> Clean optimizes the use and selection of resources and technologies to improve a business' processes and products and aims for zero environmental waste.<sup>28</sup> The program focuses on the value "clean" potentially contributes to "lean" and directs participants in how to teach the clean methodology to others in their companies. "**Clean 101**" is a training workshop currently run by CONNSTEP for MEP field engineers and service providers who agree to share the concepts with manufacturers. Participating in Clean 101 may provide an excellent opportunity to quickly generate institutional capacity at Ecology and begin developing a new relationship with the network and WMS.

**Political Feasibility:** Potential competition with Ecology for clients and maintaining independence from a regulatory agency may initially cause discomfort at the WMS office (and, possibly, vice versa). As well, WMS' primary emphasis on competitiveness and economic development may make it challenging, initially, for the two parties to find common ground.<sup>29</sup> However,

A Clean 101 workshop would enhance Ecology's ability to market P2 in new ways and generate interest in continual improvement systems.

previous and ongoing MEP collaborations at the Federal level and in other states demonstrate that a clear delineation of participant roles can mitigate the competition and independence issues. A collaborative venture, focusing on both improving Washington State's business competitiveness and environmental goals, could potentially generate support from the regulated community and the state Legislature. As there is no regulatory relief resulting from collaboration, it is unlikely that environmental stakeholders would mount any sustained opposition to this enhancement.

**Technical Feasibility:** Developing a productive collaboration between Ecology and the MEP faces a few, limited technical challenges. As noted above, the P2 Program and the MEP overlap in certain focus areas and complement each other in others. As well, the programs can turn to their partners and counterparts in Washington state and elsewhere for outreach and/or training materials. Beyond the inherent difficulties associated with any *effective* collaboration (predominantly communication), there does not appear to be any other significant technical challenges to this enhancement.

**Cost Considerations:** The main goal of coordinating P2 planning with WMS and other MEP Centers should be to use current resources in the most effective manner. Depending on the relationship developed and the initiatives chosen, the main costs are likely to be related to staff time used to plan, develop, cross-train, and monitor coordination efforts. Collaboration can be resource-intensive. There may, in fact, be an opportunity to tap into federal funds and matching grants. For example, in 2001

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<sup>27</sup> <http://www.connstep.org>

<sup>28</sup> Ibid.

<sup>29</sup> Washington State Department of Community, Trade, and Economic Development has successfully partnered with Ecology and WMS and may be available to help facilitate this collaboration.

CONNSTEP received an EPA Pollution Prevention Incentives for States (PPIS) Grant to develop a partnership with the Connecticut Department of Environmental Protection.<sup>30</sup>

**Expected Outcomes:** It is difficult to project expected outcomes for this enhancement. The range of possible working relationships implies a continuum of possibilities, from very limited results to significant changes in service delivery. As WMS targets small and medium sized manufacturing enterprises, Ecology's client base for P2 planning activities could expand significantly to include a more diverse market. Knowledge sharing would enhance both organizations' ability to identify P2 opportunities. Sending Ecology P2 staff to the Clean 101 workshop would raise the agency's ability to market P2 in new ways and generate interest in continual improvement systems.

**Challenges and Key Success Factors:** As mentioned above, mitigating internal and client concerns likely pose the most significant challenges to building an effective collaboration between WMS and the P2 program. The two organizations have different origins, different cultures, and different goals. To minimize any friction, a clearly defined set of responsibilities and expectations should be established for each party. A related challenge will be to build enough momentum to create a sustainable relationship between the two organizations. Finally, the collaboration should be well-publicized by both organizations. Reporting demonstrated benefits for individual businesses will likely be the most effective marketing tool.

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<sup>30</sup> <http://www.epa.gov/oppt/p2home/grants/ppis/1998.htm>

## 6. Potential Program Enhancements: Encourage Better Pollution Prevention Planning—P2 Planning Form Improvements to Financial Analysis and Toxicity Information

Recently, Ecology substantially revamped its P2 planning forms and created a new, streamlined format that enabled facilities to submit their reports electronically. Although it remains to be seen how facilities respond to these improvements, it is likely that other modifications to the form might be welcome, especially if they help facilities identify new P2 opportunities without necessitating additional research or planning time. This section reviews a series of potential enhancements that will help improve the quality and usefulness of information reported on facilities P2 plans.

### POTENTIAL ENHANCEMENT #3:

**Encourage P2 planners to adopt Materials Accounting to identify P2 opportunities and use Total Cost Assessment for more robust and precise P2 opportunity assessments as facilities complete their P2 plans.**

Many P2 planners report indicate that they do not understand or are unable to complete thorough adequate economic analyses or cost savings projects, as required in the “Cost Accounting” section of the P2 plans.<sup>31</sup> Ecology currently offers support in the form of Ecology Publication # 95-400, “Cost Analysis for Pollution Prevention” (available at: <http://www.ecy.wa.gov/pubs/95400.pdf>), which provides instructions for calculating the Net Present Value (NPV) of specific practices. The goal of an NPV analysis is to assess the financial implications of P2 opportunities and calculate if “P2 Pays.” The publication helps P2 planners calculate the financial costs of using hazardous materials, so a rational decision can be made for or against change.

New accounting tools may be needed to help facilities perform deeper and more thorough analyses to uncover profitable P2 opportunities that surpass minimum return rates. In addition, many businesses’ reporting systems currently do not provide needed data in easy to use formats. Under these circumstances, it can be quite challenging for facilities to develop a compelling financial case for changing environmental behavior.

### IDENTIFYING MATERIAL LOSSES: MATERIALS ACCOUNTING

As described in the Beyond Waste consultant team’s Task 1 Report, Materials Accounting is a conceptual approach to tracking material flows moving through a given system—mapping their final fate. Under this approach, total quantities of material inputs and outputs are tracked and should, theoretically, be equal at all times. The detailed analysis associated with Materials Accounting helps uncover material losses during

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<sup>31</sup> As well, some Ecology staff note that not all Ecology P2 program staff are entirely comfortable with the cost accounting requirements/methodologies.

manufacturing processes. Ultimately, these losses may directly affect a business' materials efficiency and bottom line. Materials Accounting can identify losses that individually, or when coupled with the regulatory burden of hazardous material use, represent hidden P2 opportunities. Materials Accounting by design also facilitates the allocation of hazardous material costs to specific processes.

In some applications, Materials Accounting has proven more effective at analyzing toxic and hazardous materials use than other federally mandated programs like TRI.<sup>32</sup>

Advocates state that current TRI (Toxics Release Inventory) and other reporting programs only capture a small portion of the toxic flows moving within a given facility. Some assert that Materials Accounting helps detect chemical leakages that would otherwise go unnoticed and underreported under TRI.<sup>33</sup> New Jersey's Department of Environmental Protection has found that Materials Accounting tracks 20% to 80% more polluting releases than previously reported under TRI and associated requirements.<sup>34</sup> On the other hand, some Materials Accounting critics point out that Eugene, Oregon's program expands the number of materials tracked over TRI by a factor of nine, but that TRI still captures more than 90% of the total volume of a facility's pollution releases.

### **ALLOCATION OF COSTS ASSOCIATED WITH HAZARDOUS MATERIALS USE: TOTAL COST ACCOUNTING**

Many facilities understand that the financial resources needed to manage, use, and maintain compliance with local, state, and national environmental regulations are a "cost of doing business." What they may not realize when assessing P2 opportunities is that a variety of costs, including labor, storage, testing, monitoring, disposal, and liability, are also potentially affected by hazardous material use and generation. Total Cost Assessment (TCA) applies the accounting principles of Activity-Based Cost Accounting to ensure that an activity responsible for creating environmental costs carries that full cost burden during financial analysis.<sup>35</sup> For example, rather than incorporating hazardous waste disposal fees for a specific process into general overhead (which is then allocated enterprise-wide based on, for instance, a square foot basis for all operations), Total Cost Assessment allows managers to allocate those disposal fees based on the volume of hazardous waste that the given process generates. In this way, Total Cost Assessment helps eliminate internal financial subsidies that can cause managers to underestimate the financial attractiveness of reducing or eliminating hazardous waste from a process. As subsidies disappear, the profitability of each individual process will change. Understanding the full regulatory and financial costs of using harmful materials or generating hazardous waste at the process level can lead facilities to support and implement P2 opportunities that previously failed to generate the required return on investment.

Understanding the full regulatory and financial costs of using harmful materials or generating hazardous waste at the process level could encourage facilities to adopt P2 options that previously failed to generate the required return on investment.

<sup>32</sup> INFORM, "Tracking Toxic Chemicals, the Value of Materials Accounting Data," 1997.

<sup>33</sup> Ibid

<sup>34</sup> Ibid.

<sup>35</sup> Ultimately, TCA serves as a capital budgeting method that allows a company to compare the relevant costs and benefits of different investment options or process changes.

**Political Feasibility:** Other states have required Materials Accounting *reporting* in order to measure the volume of hazardous materials moving through its borders. To enact these requirements, New Jersey and Massachusetts passed legislation in the late 1980s.<sup>36</sup> Emulating Massachusetts and New Jersey's Materials Accounting reporting requirement (through passage of legislation requiring materials accounting) is likely politically difficult in Washington state at this time. Similarly, any required reporting program for Total Cost Assessment is also likely difficult at this time. Both approaches can impose significant costs on a facility and reveal confidential business information. However, encouraging P2 planners to use these tools to drive more complete P2 opportunity assessments may be quite feasible, especially if the information remains confidential on-site (at facilities) and businesses can be shown that application of the tools helps identify important cost-saving opportunities. Ecology could take several different steps to encourage widespread use of these accounting tools. Possible directions include: (1) conducting education outreach efforts (directly, and through partners, such as the Washington Manufacturing Services); (2) developing and providing technical guides and free accounting resources (to help lower the cost of adoption) and/or; (3) linking the use of materials and/or activity-based cost accounting to participation in regulatory responsiveness<sup>37</sup> activities. Without compulsory requirements, political opposition would likely be minimal.

**Technical Feasibility:** From Ecology's perspective, the technical feasibility of using Materials Accounting or Total Cost Assessment is a matter of ensuring the agency has access to, or can develop, the knowledge-base required for developing effective internal and external training programs. Extensive research on Materials Accounting systems and methodologies is underway at the state, national, and international level. TCA generally requires a thorough understanding (and application) of Activity-Based Cost Accounting principles. The skill-set needed to conduct intensive hands-on staff and/or P2 planner training may not currently be available within Ecology. Outside assistance may be required until institutional capacity can be developed around TCA/Activity-Based Cost Accounting.

**Cost Considerations:** The cost of encouraging these methodologies is challenging to estimate. Most of the available information on Materials Accounting program costs focus on the required reporting programs in New Jersey and Massachusetts and not directly comparable. Information on TCA is somewhat limited. Internal and external training costs are highly dependent on institutional knowledge and capacity. Although several P2 staff members are already familiar with Materials Accounting principles and applications, others will need to be trained before the program can reliably support a thoughtful and comprehensive implementation. Developing sufficient reference materials and resources may be somewhat resource-intensive. To the greatest extent, Ecology should rely on materials developed by others (including the Tellus Institute) to build that information base.

From an individual business' perspective, although TCA and Materials Accounting help allocate costs effectively and identifies material loss, adopting their use has an unknowable payback. In addition to significant implementation costs, studies estimate

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<sup>36</sup> The New Jersey legislature passed the Worker and Community Right-to-Know Act (NJRTK) enacted in 1986. Massachusetts passed similar, but less comprehensive, legislation in 1989 (Toxics Use Reduction Law).

<sup>37</sup> See the Project Consultant Team report, [Moving Toward Beyond Waste in the Industrial Sector](#), for a detailed discussion of Regulatory Responsiveness options.

the additional cost to a facility of Materials Accounting over and above other reporting requirements to be between \$366 and \$596 per chemical.<sup>38</sup> Undertaking TCA during P2 assessment requires reviewing accounting data. The associated cost is highly dependent on several factors and is difficult to generalize. If facilities do not believe their investment into either methodology will be worthwhile, adoption will be limited.

**Expected Outcomes:** The National Pollution Prevention Roundtable's Materials Accounting Project found that when Materials Accounting systems report at the facility level, the data provide limited insight into the P2 opportunities in specific processes and steps.<sup>39</sup> Nevertheless, the data were found to be useful in terms of target setting and progress measurement for pollution prevention.<sup>40</sup> More detailed process reporting, like that in Massachusetts, may be more useful. A 1996 Toxic Use Reduction Institute (TURI) study of 434 Massachusetts firms revealed that materials accounting of toxic chemical use and byproduct generation was considered the most valuable component of the state-required toxic use reduction plans.<sup>41</sup> In addition, during another TURI survey, six of 22 firms reported that materials accounting information provided:

- Better information on materials in products, in processes and in waste streams;
- Direction for P2 efforts;
- Better understanding of materials flows through the production processes; and
- Process-level performance measures to measure and motivate pollution prevention activities.<sup>42</sup>

The hazardous waste reductions associated with required Materials Accounting reporting were substantial, but approaches in other states have enjoyed similar results.<sup>43</sup> However, other approaches may not complement continual improvement efforts. Data on Activity-Based Cost Accounting's direct effects on pollution prevention are limited.

**Challenges and Key Success Factors:** The mixed results experienced in Massachusetts and New Jersey does not present a clear signal that using Materials Accounting to identify P2 opportunities will translate into reductions in hazardous material use or hazardous waste generation. However, this enhancement is geared toward better planning that uncovers potentially profitable P2 opportunities. The key success factor for widespread adoption of either practice will be to improve a facility's expected return on investment. To this end, Ecology can lower a facility's cost of adopting Materials Accounting and TCA by developing a well-structured and detailed training program and

This enhancement is geared toward better planning that uncovers potentially profitable P2 opportunities.

<sup>38</sup> National Pollution Prevention Roundtable and Industrial Pollution Prevention Council. Materials Accounting Project: Final Report – Stakeholder and NJ/MA Facility Interviews. April 1999.

<sup>39</sup> Kerr, Greiner, Anderson & April, Inc and members of the Roundtable's Materials Accounting Project (MAP) Team, Materials Accounting and P2: A Good Team? October 1, 2000, p. 29.

<sup>40</sup> Ibid.

<sup>41</sup> TURI, In-depth Investigation of Toxics Use Reduction in Massachusetts Industry. March 1997.

<sup>42</sup> TURI, Survey Evaluation of the Massachusetts Toxics Use Reduction Program. February 1997.

<sup>43</sup> Ross & Associates Environmental Consulting, Ltd., Moving Toward Beyond Waste in the Industrial Sector. February 2003.

resource library. Training and easily accessible technical assistance would lower the cost absorbed by individual businesses and increase the motivation for adoption.

## POTENTIAL ENHANCEMENT #4:

**Incorporate a toxicity weighting methodology/tool into the P2 planning process to help P2 planners assess the full impact (volume plus inherent hazard) of substances they use or wastes they generate.**

When asking facilities to consider which processes to include in their P2 plans, Ecology directs facility P2 planners to create two lists of all of the hazardous products (and hazardous wastes) that were used (or generated) during the last completed calendar, from largest to smallest quantity. The facility is then directed to subject processes representing the top 95% (by weight) of wastes and hazardous substances to P2 planning consideration. Under this approach, small amounts of highly toxic materials can be passed over for P2 attention. As a rule, the primary focus is on strict waste/substance volumes.<sup>44</sup> If, however, Ecology were to encourage facilities (or to work with P2 planners) to employ a toxicity weighting methodology as part of the “95% rule”, the facility could target not only the largest material flows, but also those that are most toxic.<sup>45</sup>

Toxicity weighting methodologies<sup>46</sup>, such as the Risk Screening Environmental Indicators tool developed by U.S. EPA, assign each material flow of interest a toxicity weight (in essence, a multiplication factor) based on the single most adverse human health effect for any given exposure pathway (generally oral and/or inhalation) for the constituent chemical(s). The resulting “weight” combines risk and volume information.

Toxicity weighting methodologies can become powerful tools for pollution prevention planning as they provide a relative picture of the inherent hazard (and, one can infer, the subsequent necessary types of vigilance required to manage the waste—e.g., control technologies, cradle-to-grave management, compliance monitoring) of material flows in a facility. As such, these tools offer P2 planners a more nuanced means of determining which material flows merit the greatest P2 attention. However, because the methodologies do not provide reliable absolute values or weights, they should not be incorporated into the P2 plan reporting requirements. Rather, toxicity weighting information should always reside with the facility itself.

**Political Feasibility:** The political feasibility of Ecology incorporating a toxicity weighting methodology into the P2 planning exercise can be maximized in at least two ways: (1) P2 planners are not asked to report the

Toxicity weighting tools that assign each material flow a “toxicity weight” offer P2 planners a more nuanced means of determining which material flows merit the greatest P2 attention.

<sup>44</sup> Previous versions of the P2 planning guidance directed facilities to “List hazardous substances and products containing hazardous substances that were used. Include enough to cover 95 percent of all hazardous substances or products used that contain hazardous substances. Start with those that contain the highest concentrations of hazardous substances and the most toxic hazardous substances.” (Pollution Prevention Planning Guidance Manual, Worksheet E: Identification of Hazardous Substances (-030(2)(a)(iv)(B); <http://www.ecy.wa.gov/pubs/912.pdf>).

<sup>45</sup> For additional discussion of the concept of vigilance as it relates to waste management, see the Beyond Waste Project Consultant Team’s report, Overview and Characterization of Material Flows and Wastes in Washington State.

<sup>46</sup> See also the Beyond Waste Project Consultant Team’s report, Improving Waste and Materials Tracking in Washington State for an additional discussion of toxicity weighting methodologies.

“weighted” values on their P2 plans; and (2) P2 planners are not required to place the highest P2 priority on those flows that score the highest weights. Toxicity weighting will be most powerful, and most willingly accepted by the industrial sector, if it is presented as an optional tool to help highlight the most toxic substances and wastes in a P2 planner’s facility. Over time, as P2 planners begin to make the connection between toxicity weights and company resources (staff, technological, and budget) needed to manage those flows, Ecology can consider whether there is a value to requiring the use of the tool and/or, less likely, requiring facilities to use weighted values to establish which material flows fall within the top 95% for purposes of P2 planning.

**Technical Feasibility:** The current P2 planning requirement is fairly well suited to employ a toxicity weighting methodology because it already directs P2 planners to report the Chemical Abstract Service (CAS) number, a unique identifier that establishes the chemical makeup of a given substance. This information can then be plugged into a toxicity weighting model that generates a weighted “weight” of a given material flow under consideration.

Because several toxicity weighting methodologies have been developed in recent years, it is unlikely that the Pollution Prevention program would need to develop its own methodology to support pollution prevention planning.<sup>47</sup> Instead, the agency could review the range of methodologies available and select the one that best meets its needs. Depending on which methodology is/could be selected, the P2 program may be able to modify its electronic pollution prevention planning forms to calculate (in real-time) the toxicity weight of any material flow noted in a facility’s P2 plan. In this way, the tool works “invisibly” behind the electronic reporting form.

**Cost Considerations:** The major costs associated with implementing a toxicity methodology are related to the staff resources needed to (1) research and compare the various methodologies; (2) connect the methodology/model to the electronic reporting forms; (3) modify the forms; and (4) explain to facilities and Ecology staff how to use the methodology.<sup>48</sup> For facilities that opt to submit paper P2 plans, there would be an additional cost to the agency associated with entering the data into the model (for those facilities that request it). It is unlikely that facility P2 planners would realize any additional costs, especially if the model could run “invisibly” behind the electronic forms.

**Expected Outcomes:** By focusing on reducing the volume and inherent hazard of specific material flows, the P2 program can help the agency and the regulated community identify and focus on those material flows that are most significant. The dual emphasis on hazard and volumes helps enact the two major aspects of the Beyond Waste vision.

**Challenges and Key Success Factors:** The greatest challenge to Ecology’s implementing a toxicity weighting methodology may be judging which methodology can best meet Ecology’s needs. A second challenge for Ecology staff is learning how to run the model and to connect it to the electronic reporting forms. A third challenge may be to convince the P2 planners that toxicity weighted information adds a richness to the P2

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<sup>47</sup> It should be noted that the Beyond Waste Project Consultant Team has recommended elsewhere that Ecology implement a toxicity weighting methodology to address data gaps related to the inherent hazard of specific wastes. If such a recommendation were to be implemented, the P2 planning program could simply adapt the selected methodology.

<sup>48</sup> U.S. EPA’s RSEI Version 1.0 is available on CD-ROM from the TSCA Assistance Information Service at (202) 554-1404 or [tsca-hotline@epa.gov](mailto:tsca-hotline@epa.gov). As well, EPA plans to release RSEI Version 2.0 in 2002 (1988-2000 TRI reporting data).

planning exercise by focusing on the material flows that will, in the long run, cost facilities the most to use and/or manage.

## **POTENTIAL ENHANCEMENT #5:**

**Strengthen EMS resources by expanding EMS guidance and establishing an advanced EMS reporting track that focuses reporting on changes to product or process design.**

The EMS alternative introduced by Ecology in 1997 was designed to enable environmentally progressive facilities to “apply” their Environmental Management System toward their pollution prevention planning requirements, assuming the EMS met certain criteria (e.g., considered pollution prevention explicitly).

On their face, EMSs offer a number of prevention planning (and implementation) features that are superior to traditional P2 plans.

1. Their focus on continual improvement helps ensure that P2 opportunities can be identified systematically and pursued quickly.
2. EMSs integrate environmental goals into business decisionmaking (in possible contrast to other advanced manufacturing approaches, such as lean manufacturing), thereby elevating environmental concerns to management’s attention.
3. They can bring about a facility-wide, employee-focused emphasis on pollution prevention.
4. They address all environmental impacts (beyond hazardous substance use and hazardous waste generation), thereby enabling facilities to identify and realize more P2 opportunities.<sup>49</sup>

To be considered for the existing Ecology EMS alternative track, facilities are required to submit a written application describing how their EMS will meet all necessary pollution prevention criteria.<sup>50</sup> EMS participants then submit annual pollution prevention performance reports describing their progress toward pollution prevention objectives and targets. Since its inception, more than 35 facilities have taken advantage of the EMS program option. Currently, 23 facilities participate, representing less than five percent of the total Washington state P2 planning universe.

Ecology could take a few simple steps to encourage broader participation in the EMS program that, at the same time, bring about development of even stronger EMSs. First, Ecology could expand and update its EMS guidance, possibly to include case studies and information (or cross-references to information) on environmental accounting tools. This step would provide interested P2 planners with a deeper understanding of “what it takes” to implement an EMS. Conversely, Ecology could refine the criteria for

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<sup>49</sup> Washington Department of Ecology, The EMS Alternative to P2 Planning: Results of the First Year—An Evaluation Conducted by the EMS Team for the Hazardous Waste and Toxics Reduction Program, February 3, 1999.

<sup>50</sup> The criteria include developing pollution prevention policies, adopting and implementing continual improvement activities, establishing and maintaining documented pollution prevention targets and objectives, identifying the roles, responsibilities, and resources needed to implement the targets and objectives, and providing training in pollution prevention concepts and implementation to employees, as appropriate.

participating by establishing a separate advanced EMS track for facilities that incorporate materials accounting or supply chain management considerations in their EMSs. In exchange for meeting the enhanced EMS requirements, then, high-performing facilities could be invited to focus P2 plan updates only on design change opportunities surfaced through the EMS continual planning process.<sup>51</sup> This shift enables P2 planners to more easily integrate the P2 planning exercise into ongoing business activities (rather than approach it as a distracting paper exercise that takes time from other work). And, too, it promises to help advance Ecology's work and the Beyond Waste vision by encouraging facilities to concentrate their energies and P2 explorations on the decisions that drive design (which are, as it turns out, where the greatest opportunities for preventing pollution often can be found). The modified reporting requirement may also encourage greater participation in the EMS alternative altogether by providing further enticement to P2 planners who are interested in participating but who did not see sufficient incentive to take the EMS alternative track in the past.

**Political Feasibility:** Expanding/refining the EMS guidance to highlight key features or success stories would likely be well-supported by current and prospective EMS planners. It is likewise anticipated that several of the 23 facilities currently participating in the EMS alternative would be interested in the advanced EMS track, especially if it were offered as a voluntary enhancement of the current EMS program. EMSs, by design, continually seek ways to improve businesses' operations, including through pollution prevention. Thus, reporting on the pollution prevention opportunities associated with design (or redesign) decisions is a natural fit for EMS participants and may, in fact, bring about more meaningful reporting. Less certain, however, is how the environmental community would respond to the advanced track option, given that it focuses less on P2 performance and more on opportunities. However, because the EMS alternative participants are historically high performers, it is expected that environmentalists and others will support an even greater focus on continual improvement.

**Technical Feasibility:** Modifying the reporting on the EMS alternative, as described above, does not appear to pose any technical challenges, either at Ecology or at the facility level, assuming the agency has the expertise to support advanced track requirements. Updating the EMS guidance does not, on its face, pose significant technical challenges. However, depending on what topics are explored in the updated document, significant technical expertise may be required to prepare the new sections.

**Cost Considerations:** The major costs associated with modifying the reporting requirements are related to testing this option with the regulated community (both current and prospective EMS alternative participants) and refining the guidance document itself. No specific regulatory changes appear to be needed, however, as the proposed changes would modify an existing voluntary program. As with technical considerations, above, the costs associated with updating the EMS guidance depend on what enhancements are pursued.

**Expected Outcomes:** Focusing the reporting requirements for advanced track EMS participants to identify and zero in on specific pollution prevention options related to design decisions may provide new motivation and sufficient incentive for EMS participants to update their EMSs in ways that in fact help to surface new P2

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<sup>51</sup> Other "incentives" or types of acknowledgment may make better sense. For example, if Ecology were to raise the cap on its hazardous waste fee, it might be able to assess fees under the existing fee cap for advanced EMS track participants.

opportunities. The advanced alternative may also help draw in other P2 planners who in the past did not want to invest in developing and/or “registering” EMSs with Ecology for lack of sufficient incentives.

**Challenges and Key Success Factors:** As with any change, Ecology’s greatest challenge will be to convince prospective candidates that the advanced track requirements do not represent an additional reporting burden and can help their advance business and environmental goals. To be successful in this endeavor, Ecology will have to provide some examples of how the advanced EMS features can strengthen facilities’ ability to identify P2 opportunities that help the business’ bottom line as well as specific guidance to help P2 planners target the most promising design stage pollution prevention opportunities at their facilities. A second challenge will be to convince the environmental community that the participating facilities are meeting their commitments to the P2 planning program.

# 7. Potential Program Enhancements: Encourage/Leverage Implementation of P2 Opportunities

Ecology staff recognize that P2 planning is an important first step in encouraging facilities to engage in P2 behaviors. At the same time, however, they note that the development of a P2 plan (alone) often provides insufficient motivation for facilities to implement additional pollution prevention measures, especially in uncertain or difficult economic times. For some P2 planners, the P2 plan can serve as a blueprint for taking action to reduce waste. For others, P2 planning is seen as a necessary (and often unwelcome) paper exercise that comes about because their facility generated enough hazardous waste in the previous year(s) to “trigger” a Washington state regulatory P2 planning/reporting requirement. Either way, to successfully move Beyond Waste, Ecology will need to devise ways to bring about wide-ranging implementation of P2 plans.

To successfully move Beyond Waste, Ecology will need to devise ways to bring about wide-ranging implementation of P2 plans.

Beginning in 1997, Ecology’s Industrial Section (which works with three major industry types—Aluminum Smelters, Pulp and Paper Mills, and Oil Refineries) began to require P2 activity implementation by certain facilities as part of an NPDES reissuance process. The effort was designed to accomplish two major goals. First, it tested the validity of requiring P2 in state-issued permits through application of the state’s policy “requir[ing] the use of all known available and reasonable methods (also called “AKART”) by industries and others to prevent and control the pollution of the waters of the state of Washington” (RCW 90.48.010).<sup>52</sup> The project was also designed to explore ways to boost P2 activity implementation at regulated facilities.

Not surprisingly, the effort encountered resistance, both from permittees, who objected to additional permit requirements that they felt exceeded the minimum requirements, and from Ecology staff, who expressed concerns about the additional workload and doubts about Ecology’s ability to impose and enforce additional regulations.<sup>53</sup> The permittees objected to the permits’ P2 plan requirements and pursued legal recourse. A Washington state court of appeals ultimately ruled that facilities can be required to implement P2 actions to help control water pollution and meet NPDES permit limits.

It is interesting to note that the project’s early participants confirmed (offline) that the P2 planning process had proven useful: one facility reported that it had identified significant

<sup>52</sup> Ecology has since tested the Clean Air Act’s Best Available Control Technology permitting requirement with similar success through a collaboration with the local air agency in Spokane. Because air permitting is generally overseen by other, local, air permitting authorities, Ecology would generally play a more coordinative/advisory role in such efforts.

<sup>53</sup> Model for Pollution Prevention Planning As a part of NPDES Permits—Project Summary and Recommendations, Stan Springer, Washington Department of Ecology, July 10, 2002.

P2 opportunities that had not otherwise surfaced; the other indicated that the project enabled them to secure funding to enact pollution prevention measures.

The Industrial Section's experience clearly shows that connecting pollution prevention implementation to a permit reissuance can provide a very strong incentive (and, in some cases, mandate) for facilities to embrace pollution prevention behaviors. The experience also suggests that it could prove challenging for Ecology to muster the political support to modify the state's pollution prevention regulations to mandate P2 plan implementation. Either way, it is incumbent upon Ecology to explore whatever means possible to turn P2 plans into actions.

## POTENTIAL ENHANCEMENT #6:

### Require Implementation of Activities identified in P2 plans.

Requiring facilities to implement all of the activities identified in their P2 plans represents one dramatic means of ensuring that P2 plans avoid becoming meaningless paper exercises that languish on the shelf. And, in fact, some businesses across the country have commented that they would likely implement more P2 opportunities if required to do so.<sup>54</sup> On the other hand, many P2 planners strongly support keeping P2 plan implementation voluntary. These individuals indicate that they feel freer to think creatively and broadly about where P2 opportunities exist at their facilities because they know they will not be penalized for thinking "outside the box" or be required to undertake all the P2 activities they describe.

Some P2 program staff (at Ecology and in other states' programs) express concerns that mandating full-scale implementation of P2 opportunities may in fact cause some P2 planners to describe (and therefore, pursue) only the "low hanging fruit." Clearly, this strategy would not advance P2 implementation or encourage pollution prevention innovation. As well, staff are skeptical about the program's ability to ensure that all P2 opportunities are being implemented. While full implementation of P2 plans may dramatically increase pollution prevention activities across Washington state, this move may also have the unintended consequence of discouraging businesses from establishing manufacturing facilities in Washington state, for fear of having to implement costly P2 steps that can hurt a company's competitive edge.

Targeted mandatory implementation of pollution prevention opportunities through a permit application/modification process is another option, especially if the permitting process can draw upon existing P2 plans. While the implementation rates for this approach may be less dramatic at first, it is expected that, over time, steady progress can be made.

**Political Feasibility:** Central to the 1990 Washington state P2 planning law passed by a unanimous vote of the State Legislature was the concept that P2 planning would be mandatory while P2 activities would be undertaken at the discretion of the individual business. To require across-the-board implementation of P2 activities, therefore, would likely require a significant change in the state law. In light of the recent economic downturn and the resistance likely to be mounted by industry against new P2 plan implementation requirements, the feasibility of pushing such a change through the Legislature is fairly low. On the other hand, Ecology has already demonstrated through

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<sup>54</sup> Based on comments extracted from a P2 electronic discussion forum hosted on the National Pollution Prevention Roundtable website.

the Industrial Section's effort that the agency can require pollution prevention activity implementation, at least in the context of media-specific permitting processes. While it is likely that industry will also challenge mandatory P2 implementation under AKART (and other, like, requirements), the validity of this more targeted approach has already been tested and affirmed, and a revision to the RCW or the WAC is likely unnecessary. Therefore, the political feasibility of enacting targeted P2 plan implementation is somewhat higher overall.

**Technical Feasibility:** Technically, there are few challenges to requiring facilities to implement the P2 opportunities they identify in their plans. One possible technical challenge would be for Ecology to fully and consistently review P2 planners' technical justifications for rejecting specific options.

**Cost Considerations:** Possible costs associated with mandating pollution prevention implementation would be felt at various stages.

- 1. Regulatory development:** If Ecology opts to push for full-scale implementation of P2 plans, the costs of drafting new legislation would be significant. However, these costs are likely to be modest compared with the resources needed to educate the regulated community and the Legislature about the value of mandatory P2 implementation.
- 2. Plan review:** P2 plans may need to be more carefully scrutinized to ensure facilities have identified meaningful and practicable ways to reduce the most significant wastes, rather than listing only the "low hanging fruit." Ecology P2 program staff already must follow up on approximately 80% of the P2 plans in circulation; this number is likely to increase if P2 planning is linked to mandatory P2 implementation.
- 3. Enforcement:** Ecology would likely need to expand its inspections to examine whether facilities are complying with any new requirements. The expanded inspections could place an additional administrative burden on program staff and possibly reduce the time staff can devote technical assistance activities (vs. compliance).<sup>55</sup> This burden may not be quite as significant if P2 activity implementation were buckled to a facility's existing environmental permit. Under this scenario, it is expected that progress toward P2 activity implementation could be assessed during regular site inspection visits.
- 4. Legal Costs:** It is likely that other industries will object to Ecology's efforts to require P2 implementation through media-specific permits or otherwise. Program and legal counsel costs associated with these transactions could be considerable.
- 5. Cross-Media Coordination:** If Ecology opts to require P2 plan implementation via some other regulatory vehicle (e.g., a license or permit), P2 program staff will likely need to coordinate closely with the other media programs.<sup>56</sup>

**Expected Outcomes:** It is unclear what outcomes could be expected from requiring facilities to implement their P2 plans (either directly or through specific environmental

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<sup>55</sup> Ibid.

<sup>56</sup> The Industrial Section's experience is somewhat unique in that it provides all environmental permitting, site inspections/compliance, cleanup, and technical assistance (including pollution prevention assistance) support for specific industries. For all other industries, P2 program staff would need to coordinate with individual media program staff (e.g., representing water and air quality, shorelines, etc.).

permits). On the one hand, P2 activity implementation could increase dramatically. Mandatory implementation could provide P2 planners with additional influence to secure and/or commit capital funding for P2 projects. Tying P2 activity implementation to permits could strongly encourage facilities to focus their P2 planning efforts on critical processes and waste flows and help them prioritize capital expenditures for pollution or waste prevention, rather than control, technology options. The expected result would be stronger, more effective, and better-planned (and executed) pollution prevention at the facility. On the other hand, mandatory implementation might cause P2 plans to be revised to capture those projects that are more easily implemented, but that might not produce the greatest results. The resulting P2 gains would be less significant. Mandatory implementation might also have the unintended effect of discouraging businesses from locating in Washington state by creating the perception that Washington state permits are more onerous than those issued in other states.

**Challenges and Success Factors:** The greatest challenges to requiring full-scale P2 plan implementation will be to convince the Legislature and the regulated community that the P2 planning law should be revised to mandate pollution prevention implementation and/or convince them that the current regulatory framework allows Ecology to enact such requirements across a wider spectrum of industries (albeit in a targeted fashion). Powerful lobbying forces could be expected to oppose such legislation, and will likely push forcefully to maintain the current requirement. However, if Ecology were to gain support for this new direction (and, as needed the Legislature were to amend the P2 legislation), having well-trained P2 program staff to help facilities develop robust P2 plans and provide extensive technical assistance will be a critical success factor.

Political opposition to the targeted implementation of P2 activities through other media processes (e.g., air or water permits) may likewise pose a challenge, even as this option does not appear to require a regulatory statutory change. Testimonials of facility participants from the Industrial Sector may be helpful in this effort (as may the testimonials of facilities from other states that have enacted P2 opportunities through their permits). The success of a targeted implementation approach will strongly depend on the active involvement and support of the media offices at Ecology (and, in some cases, local agencies). Coordinating the efforts of Ecology's P2 staff and permitwriters through the permit-writing process is an important starting point for this venture.

## POTENTIAL ENHANCEMENT #7:

### **Offer Specific Incentives or Recognition to Facilities that Voluntarily Enact P2 Activities.**

On the national level and in states across the country, environmental regulators are experimenting with "regulatory responsiveness programs" as a means of encouraging environmentally beneficial "beyond compliance behaviors," such as voluntary implementation of pollution prevention measures. Regulatory responsiveness programs recognize that "compliance [with regulatory requirements] can only take environmental improvement so far [and that] many important areas of performance are not subject to regulation, such as energy use, water use, materials use, and product impacts."<sup>57</sup> The goal of many regulatory responsiveness programs, therefore, is to focus on these

<sup>57</sup> Daniel J. Fiorino, "Performance Track Places Trust in the Carrot over the Stick," *Environmental Quality Management*, Spring 2001, pp.9-22.

Regulatory responsiveness programs are often designed to promote environmentally beneficial behaviors that can also reduce a business' costs and catalyze technological innovation.

“performance areas,” many of which are also of interest to Ecology’s Pollution Prevention program and in line with the Beyond Waste vision.

Regulatory responsiveness programs are often designed to promote environmentally beneficial behaviors that can also reduce a business’ costs and catalyze technological innovation. To drive participation, they generally provide a variety of incentives and rewards (either as a package or in tiers) to acknowledge the efforts of environmental performers who meet a set of stringent criteria (e.g., agree to implement an EMS; demonstrate a commitment to specific, measurable continual improvement; report a record of sustained compliance with environmental regulations; or commit to annual reporting on progress toward environmental commitments). Possible regulatory responsiveness benefits may include: single agency point of contact; specialized technical assistance; reduced/streamlined reporting requirements; or special recognition (e.g., “green certifications”).

Ecology can encourage P2 activity implementation using regulatory responsiveness program elements in a few different ways.

- 1. Pollution Prevention as a Requirement for Participation:** If Ecology were to establish a regulatory responsiveness program<sup>58</sup>, it could require applicants to demonstrate that they have successfully, continually implemented pollution prevention opportunities identified in their P2 plans or elsewhere<sup>59</sup> as a requirement for participation. Conversely (or, additionally), Ecology could direct program candidates to describe in their applications specific actions they plan take over the next X number of years<sup>60</sup> to reduce key hazardous materials flows defined in their P2 plans. (NOTE: Likewise, Ecology could require program participants to implement an EMS, if this were perceived to encourage stronger P2 planning and P2 plan implementation).
- 2. Provide Specialized Assistance, Incentives or Recognition to Facilities that Implement P2:** Even in the absence of a full-scale regulatory responsiveness program, Ecology could offer specific incentives to P2 planners who incorporate P2 elements into permit levels during permit application or reissuance or who continually demonstrate pollution preventing behaviors. For example, Ecology could offer a cooperating facility access to specialized technical assistance resources (perhaps akin to the Cleaner Production Challenge or Toxics Reduction Engineering Efficiency [TREE] program), a single agency point-of-contact, or possibly reduced reporting requirements, etc.
- 3. Offer Permit Review Support to Facilities that Demonstrate P2 Behaviors:** Research shows that for certain industries, especially those that experience high process and product turnover rates such as the computer chip or electronics industry, delays in permit approvals can erase a company’s competitive edge. Permit review support may be of special interest to these industries, especially if

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<sup>58</sup> Please see the Beyond Waste Project Consultant Team report, [Moving Toward Beyond Waste in the Industrial Sector](#), for further discussion on the topic of developing an Ecology regulatory responsiveness program.

<sup>59</sup> U.S. EPA’s National Performance Track program requires participants to demonstrate specific environmental performance and a commitment to continued improvements. The categories against which participants can report include energy, water and material use, as well as air emissions, waste generation, water discharges, and accidental releases. Pollution prevention activity implementation is not an explicitly named category (although it is related to most of the listed categories).

<sup>60</sup> U.S. EPA’s National Performance Track runs on a three-year cycle.

facilities could undertake (or commit to undertake) P2 opportunities *as already developed and described in their P2 plans* in exchange for expedited permit reviews.<sup>61</sup> Such programs have been successfully explored in both California (involving air permits for seven metal finishers) and in Illinois. For such an option to be viable, however, the pollution prevention activity implementation must be linked to underlying applicable regulatory requirements.

**Political Feasibility:** Regulatory responsiveness programs are already gaining support, interest, and recognition at the national level and across the country. Tying into an established regulatory responsiveness program (such as EPA's Performance Track) may therefore make the first option more politically feasible. On the other hand, Washington state facilities may be more willing to incorporate pollution prevention activities into their permits or licenses if they did not necessarily need to meet all the requirements of a pre-established program. A program that offers different incentives or "rewards" at different steps may be easier and more cost-efficient for Ecology and participating facilities. Some states (e.g., Illinois) have successfully pursued this second approach. For either option, to be politically feasible, a critical feature is that the programs are entirely voluntary. Participants may expend more resources implementing P2 activities but, on the other hand, they may also be able to get their products developed and moved to market faster, thereby gaining an advantage over their competitors. It is not clear at this time whether Ecology would need to revise any of its regulations (e.g., the P2 planning requirements, permitting requirements, etc.) to implement regulatory responsiveness initiatives. In part, the answer will depend on what features Ecology chooses to highlight in whatever program it develops.

**Technical Feasibility:** There are no specific apparent technical challenges to implementing such a program, as no new technologies are required to be implemented.

**Cost Considerations:** Startup costs associated with implementing a new approach such as this are variable, as are the staff time and energy requirements. Establishing a new program will require considerable staff and management involvement and, may necessitate changes to the RCW or WAC. Clearly, tying permit/licensing activities to P2 activity implementation further contemplates either that permitwriters are familiar with pollution prevention concepts and/or are able to judge the merits of proposed pollution prevention activities, or that Ecology P2 staff coordinate closely with their counterparts in the air<sup>62</sup>, water, and possibly shorelines permitting programs to ensure that viable pollution prevention options are incorporated into permits. Historically, these collaborations have not been especially successful at Ecology. However, if carefully focused around the permitting processes, they may have a better chance of succeeding in this model.

**Expected Outcomes:** It is hoped and anticipated that regulated entities in Washington state will see this option as an opportunity to gain a competitive advantage at a small cost (the cost of implementing P2 measures). And, while it is true that Washington state companies may not seem especially eager to embrace beyond compliance behaviors

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<sup>61</sup> Jerry Speir, "EMS and Tiered Regulation, or Getting the Deal Right," Regulating from the Inside: Can Environmental Management Systems Achieve Policy Goals, Cary Coglianese and Jennifer Nash, eds., Resources for the Future, 2001.

<sup>62</sup> If Ecology finds that it is valuable to promote P2 via permits, the P2 staff may also need to coordinate with the local air agencies that negotiate the majority of Washington state's air quality permits. Interagency coordination can pose even greater challenges, and may necessitate active involvement and promotion by senior managers and Ecology's senior executives.

(e.g., only two Washington state facilities are currently enrolled in the Performance Track program—out of more than 280 participants nationwide), if Ecology can provide interesting benefits/incentives, in addition to technical assistance, companies' interest may increase.

**Challenges and Key Success Factors:** Cross-program coordination (both within Ecology and, depending on whether the permit review option is pursued, with local air agencies) may pose a considerable challenge to implementing a regulatory responsiveness program (or regulatory responsiveness-type incentives). It is likely, however, that the involvement of other program staff will be critical to the success of any regulatory responsiveness initiative Ecology plans to introduce. Another likely challenge may be overcoming environmental community concerns that the new initiative(s) “relax” regulatory requirements. To be successful, therefore, any regulatory responsiveness initiatives launched by Ecology will likely need to be linked directly to regulatory requirements, clearly delineate what “benefits” accrue by facilities for what level or types of P2 activity implementation and will need to monitor both P2 activity implementation and environmental benefits.

## **POTENTIAL ENHANCEMENT #8:**

**Encourage P2 Plan implementation with a coordinated agency-wide P2 Supplemental Environmental Projects (SEP) initiative that leverages existing P2 Plans to quickly identify viable projects.**

Supplemental Environmental Projects (SEPs) are projects which a facility, found in violation of applicable state and/or federal requirements, agrees to undertake in exchange for partial settlement of an infraction.<sup>63</sup> U.S. EPA and several states have adopted official policies regarding the use of SEPs during settlement proceedings for environmental infractions. Currently Ecology does not have an official SEP policy and/or program.

In its May 1998 *Final SEP Policy*, U.S. EPA identified seven different categories of acceptable SEPs at EPA: public health, pollution prevention, pollution reduction, environmental restoration or protection, emergency planning and preparedness, assessments and audits, and environmental compliance promotion projects. The policy went on to define the conditions under which a SEP may be negotiated, including, but not limited to the following:

1. The project cannot be inconsistent with the EPA's statutes;
2. The project must advance an objective of a statute that is the subject of an EPA enforcement action and have adequate “nexus”. Nexus is the relationship between the violation and the proposed project. Projects that address harm or potential harm caused by a violation generally have adequate nexus;
3. The EPA must not play a direct role in controlling or managing the SEP;
4. The project must be specifically defined in the settlement agreement that is approved by the EPA or Department of Justice; and

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<sup>63</sup> U.S. EPA, U.S. EPA Region 5 Annual Report, 1998

5. The project cannot fund activities the EPA already requires.<sup>64</sup>

As generally practiced, the goal of including SEPs in enforcement settlements is to gain additional environmental benefits while maintaining the deterrence factor associated with traditional enforcement penalties. SEPs require facilities to meet and exceed the requirements for compliance with federal or state environmental laws and, as such, represent a direct investment by the facility to fund environmental improvements. In some instances, P2 SEPs can encourage pollution prevention activities that would not otherwise be implemented by a company in the normal course of business due to factors such as: long payback periods, considerable technical risk, adverse effects on production scheduling, or availability of capital.<sup>65</sup>

The goal of including SEPs in enforcement settlements is to gain additional environmental benefits while maintaining the deterrence factor associated with traditional enforcement penalties.

Some agencies employ an “off-set” ratio that defines the dollars invested per dollar of penalty mitigated (i.e., for every \$1.50 invested in the SEP, \$1.00 of the penalty may be avoided) and impose limits on the percentage of the total penalty a set of SEPs can be counted against, (i.e., only 50% of the total penalty can be satisfied by SEPs.) In general, a company may only receive credit for the capital costs needed to implement the SEP and not for the operations and maintenance costs. Many of the policies limiting the scope of SEPs enjoy flexibility based on the status of the violator as a public entity (providing services to citizens) or a private business (seeking profits). Other factors that may push an agency to adjust its off-set ratios, percentages, and credit policies are the potential benefit to the environment and/or public health created by the SEP(s).

**Political Feasibility:** The most likely political barrier to a P2 SEP initiative is the possible public perception of leniency and/or financial benefits accruing to offending facilities. This largely emanates from a misunderstanding by the public of the SEP process and goals. Jurisdictions employing SEPs believe that violators should not receive substantial financial windfalls for non-compliance and have access to several policy tools to handle this issue (e.g., off-set ratios, percentages, etc.).<sup>66</sup> For this enhancement to gain traction, however, legislators and other stakeholders must be educated on these important issues. Also, because SEP initiatives can require extensive cross-program collaboration within an agency, widespread implementation of this enhancement may encounter management challenges and/or internal agency resistance. If Ecology SEP initiative leaders are able to educate the different media departments and create a productive relationship between P2 and enforcement staff, the agency will likely avoid some implementation challenges commonly experienced by other states.

**Technical Feasibility:** There are no major apparent technical challenges to creating a P2 SEP initiative, as no significant new expertise is required. In many enforcement actions with participants willing to make the direct investment in a SEP, identifying a P2 SEP with adequate nexus to the infraction can be difficult. It is expected that a facility's P2 plan provides a good sample of SEPs with which to begin negotiations. Facilities

<sup>64</sup> Mason, Thomas R., “Facts and Fiction about Supplemental Environmental Projects,” Environment News Magazines, Inc., 2000.

<sup>65</sup> <http://www.epa.state.oh.us/app/p2regint/p2sepinf.html>

<sup>66</sup> To minimize this issue the EPA has created a computer model to estimate after-tax value of a SEP. Under EPA policy, financial windfalls may eliminate a specific SEP from settlement negotiations.

have already done some analysis of the projects listed on the P2 plan and have identified them as candidates worth considering.

**Cost Considerations:** Undertaking a P2 SEP initiative can be costly. A modest, yet thorough outreach and education program would likely be required at the outset and continuously over time to inform agency staff, regulated facilities, legislators, and other interested stakeholders about the SEP process and benefits. These startup costs are likely small compared to implementation of this option on a project basis. Negotiating a SEP agreement is a time-intensive effort requiring input and participation from staff from various departments. SEPs are usually negotiated between the agency and the facility by several parties representing both sides. For instance the agency may be represented by a specific media division, the enforcement division, and the state Attorney General. A facility would likely want to include legal, management, site, and technical staff at different times during the process. Coordinating all parties and reaching consensus may take a significant amount of highly-valued time. Throughout the process, too, different stakeholders may try to influence the direction of the initiative, creating unproductive and costly friction.

**Expected Outcomes:** It is difficult to project the outcomes of a P2 SEP initiative. In fiscal year 2002, Ecology was involved in 110 enforcement actions with penalties over \$1000. Of these, a smaller subset likely involved infractions where a P2 SEP may be appropriate. Identifying interested parties and negotiating P2 SEP agreements could further decrease the total number of candidates. In the past, Colorado and Ohio, states with existing SEP initiatives, have been able to negotiate 10-20 agreements per year. However, as their budgets have been cut and staff re-allocated to the agency's core responsibilities, these states have seen their productivity (in terms of agreements signed) decline. Ohio set a goal of including P2 SEPs in at least 15% of their enforcement settlements, but has been unable to reach it. In 2001, only 8 of Ohio's 200 settlements (4%) included a SEP.<sup>67</sup>

Because P2 SEPs may target different processes and wastes, it is also difficult to consolidate their results into a meaningful statistic to characterize P2 outcomes. And, in fact, the results of an individual SEP depends on many site-specific factors. Colorado has written reporting requirements that measure the actual environmental results achieved (i.e., pounds of hazardous waste avoided) into SEPs. Ecology may choose to implement similar reporting requirements to determine P2 progress. Ohio and other states have compiled some case studies demonstrating SEP pollution prevention outcomes.<sup>68</sup> Unfortunately, a cost/benefit analysis of these results and the agency resources used to achieve them has not been completed at this time.

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<sup>67</sup> <http://www.epa.state.oh.us/opp/sepupdate2002.pdf>

<sup>68</sup> <http://www.epa.state.oh.us/opp/p2regint/enforce2.html>

## 8. Potential Program Enhancements: General Program Tool Improvements

The P2 program rightly focuses its efforts on industrial facilities that use large amounts of hazardous substances or that generate large amounts of hazardous waste. However, if under Ecology's leadership the state is to truly move to a Beyond Waste society, then the P2 program will likely want to reach out to smaller users and generators of hazardous materials. A modest enhancement to the agency's electronic resources may help advance this activity.

### POTENTIAL ENHANCEMENT #9:

**Improve the accessibility of the P2 planning information and P2 program tools on Ecology's website.**

Pollution prevention is not prominently displayed on Ecology's website. While it is true that Ecology's "Home" page (<http://www.ecy.wa.gov>) does provide a direct link to the page listing the P2 planning requirements, the link is built into a paragraph of text, rather than highlighted as a stand-alone button along the sidebar. As a result, web users may overlook this opportunity to learn about P2 planning requirements or program resources. If one overlooks the opening page reference, the other major way to learn about the P2 planning requirements or to locate a copy of the planning tool or the associated "help" guide online is to go to the Department of Ecology website, click on "Programs," then on "Hazardous Wastes and Toxic Reduction," and finally on "Reporting Requirements, Forms, and Instructions." This series of steps may not be intuitive to all interested parties. To find other types of pollution prevention information, an Internet user must follow the steps to the "Hazardous Wastes and Toxic Reduction" page and click on "HWTR Program Plan, Overview and More..."

The net result of the current website's design is that facilities that may be interested in voluntary P2 planning (e.g., in implementing a cost accounting program) may not be able to learn what kinds of P2 planning resources are available at Ecology. If, instead, the website included a "Pollution Prevention" button, possibly located on the same page as the "Beyond Waste" button (<http://www.ecy.wa.gov/programs.html>), manufacturers, suppliers, customers, and shareholders alike would be able to locate the agency's P2 information and avail themselves to it. The website could be further enhanced by including direct links to the agency's cost accounting tools (including whatever new materials accounting or other resources are developed), EMS alternative information, and toxicity weighting methodologies (if adopted).

Facilities that may be interested in voluntary P2 planning may not be able to quickly learn what kinds of P2 planning resources are available at Ecology.

**Political Feasibility:** Consolidating/targeting citizens' access to Ecology's electronic pollution prevention resources is unlikely to encounter any political opposition (either from within the agency or outside of it). Therefore, this potential enhancement is judged to be highly feasible.

**Technical Feasibility:** Ecology has in place the technology to implement this potential enhancement. Again, the feasibility of this option is quite high.

**Cost Considerations:** Because Ecology's web infrastructure is well-established, there are no 'new' costs associated with this option. It is anticipated that implementation of this option will require a modest staff effort to assemble electronic versions of the materials and to revise the website sufficiently to create the "P2 button." And, too, it is anticipated that these costs will be quickly recovered as a result of interested parties having better success in finding the desired information without Ecology staff assistance.

**Expected Outcomes:** Providing more direct access to Ecology's P2 planning (and implementation) information is likely to bring about greater use of that information. And, too, improving citizens' access to the electronic P2 resources is likely to reduce the number of times Ecology staff will have to respond to phone requests for the same materials.

**Challenges/Key Success Factors:** The apparent challenges to implementing this option (other than carving out staff time to prioritize it) are modest.

## 9. Action Plan for Recommended Enhancements to the P2 Planning Program

This section outlines an Action Plan for Ecology to implement recommended potential enhancements selected from those discussed above. The Action Plan is designed to make progress against specific 5- and 10-year P2 planning program Beyond Waste goals and includes a series of steps Ecology can take alone, and in partnership with others, in pursuit of the goals. The Action Plan focuses on those potential enhancements deemed feasible and practical by the Beyond Waste project team, and that are expected to establish maximum momentum toward a Beyond Waste society. The specific activities and directions were selected based on their perceived value in helping Ecology support Washington state businesses undertake the following.

1. **Plan (for pollution prevention) earlier**—e.g., by including a P2 question as part of the SEPA application process and partnering with the WMS to provide P2 support to facilities that may not have tripped the P2 planning requirement yet;
2. **Plan (for pollution prevention) better**—e.g., by developing Materials Accounting, Activity-Based Accounting, and toxicity weighting tools that help refine P2 planners' understanding of the costs and inherent hazards posed by specific material flows;
3. **Implement more pollution prevention activities**—e.g., by providing greater incentives for more complete P2 planning; and
4. **Access useful Pollution Prevention planning program tools**—e.g., by creating a P2 button on the Ecology website.

The recommended enhancements are also those that are judged to align best with other program enhancements, initiatives, or directions being recommended elsewhere by the project consultant team and captured in other reports being prepared by that team, including in the following reports: [Improving Waste and Materials Tracking in Washington](#), [Moving Toward Beyond Waste in the Industrial Sector](#), and [Establishing the Organics Cycle in Washington](#). This decision was made intentionally to maximize the potential synergies among the different Beyond Waste activities being considered by Ecology.

### P2 PLANNING PROGRAM BEYOND WASTE GOALS<sup>69</sup>

If Ecology is to realize its Beyond Waste vision, it will need to establish aggressive, yet realistic milestones for itself, its partners, and the state. The following 5- and 10-year P2 program goals are designed to achieve significant progress toward the Beyond Waste vision. As such, they function, essentially, as short and mid-term planning horizons. For

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<sup>69</sup> The ultimate Beyond Waste P2 program goal is to have no facilities trigger the P2 planning requirement (i.e., no facility generates enough wastes to necessitate P2 planning). It is expected to take more than ten years to achieve this ultimate goal.

purposes of P2 program planning, the goals also provide a further means of assessing and sequencing the possible P2 planning program directions.

### **FIVE-YEAR GOALS (2008)**

**Goal #1:** By 2008, all Ecology P2 planning staff have either (a) undertaken joint trainings/outreach with Washington Manufacturing Services or (b) contacted at least five SEPA applicants to explore possible proactive design stage P2 opportunities.

**Goal #2:** By 2008, 50% of Ecology's P2 planning universe will take one or several of the following steps to refine and enhance their P2 plans.

- Employ materials and/or activity-based cost accounting practices to better understand material flows and/or environmental costs.
- Use a toxicity weighting methodology to help target significant hazardous material flows for P2 attention.
- Participate in the EMS alternative (or advanced EMS track) for P2 planning.

**Goal #3:** Ecology has worked with at least five industry sectors to require P2 implementation in the permitting process.

**Goal #4:** Ecology has established clear regulatory responsiveness pathways for interested industries and has piloted a step-wise/tiered program approach with at least one industry sector.

**Goal #5:** Ecology has updated its website to include easy access to all P2 planning program resources, including materials accounting, activity-based accounting, and toxicity weighting tools.

### **TEN-YEAR GOAL (2013)**

**Goal #6:** The universe of P2 planners in Washington State has declined by 50% and more than 75% of those P2 planners who dropped out report having done so as a result of implementing sufficient P2 measures to drop below the reporting threshold.

## **ACTION STEPS TO IMPLEMENT RECOMMENDED ENHANCEMENTS**

The action steps described, below, reflect actions the consultant team believes Ecology should take to establish solid progress against the Beyond Waste P2 program goals, described above. As such, the action steps help lay a foundation upon which further P2 program enhancements can be built in support of Beyond Waste and the P2 program, more generally. It is important to note that the recommended path is not the only means by which Ecology can strengthen its Pollution Prevention planning program to help lead Washington state toward Beyond Waste. It is also the case that the best action plan will be well-integrated with other efforts that support and advance Beyond Waste (including those recommended elsewhere by the project team), highly adaptive, and responsive to economic, political, regulatory, and social shifts.

**A. INCLUDE A POLLUTION PREVENTION QUESTION WITH THE SEPA CHECKLIST TO ELICIT DESIRED INFORMATION AND/OR DESIGN BEHAVIOR FROM APPLICANTS. (ENHANCEMENT #1)**

***Action Steps for Ecology:***

1. Convene a team of SEPA experts (from Ecology and, possibly, including partner agencies and/or SEPA applicants) to develop a P2 question for consideration during SEPA review. As part of this effort, team members should consider what types of P2 behaviors the question should highlight (and therefore encourage) and how they would validate the adequacy of the permittee responses. Update guidance, as necessary. Concurrently, legal staff should explore whether the WAC would allow the P2 question to be appended to the SEPA checklist or whether it must be kept entirely separate.
2. Pilot test the P2 question with a subset of SEPA applicants representing a cross-section of applicants, including those that seek approval directly from Ecology and others that are reviewed by local agencies. The pilot should examine the quality and value of applicants' responses to the question and track whether the question poses workload concerns for either the applicant or the reviewing agency. Participating applicants should be also asked whether the question helped them identify new P2 opportunities.
3. Based on applicants' responses and the workload analysis, determine whether Ecology wants to encourage even greater applicant participation. If the answer is yes, consider taking one of two courses of action:
  - a. If agency counsel advises that the P2 question can be incorporated into the SEPA checklist, determine what steps are necessary to make this happen. This may include convincing other review agencies that the question should be added to the statewide SEPA checklist and drafting supporting legislation. The new P2 question then becomes mandatory.
  - b. If agency counsel determines that the question cannot be added to the SEPA checklist, collaborate with partners to determine what incentives or acknowledgment agencies can offer to applicants who voluntarily submit P2 information. Establish an "enhanced SEPA track" program, as appropriate. (NOTE: This option may align with steps proposed under Beyond Waste consultant team's report, [Moving Toward Beyond Waste in the Industrial Sector](#), to incrementally establish a regulatory responsiveness program.)

**B. COORDINATE CLOSELY WITH THE LOCAL MANUFACTURING EXTENSION PARTNERSHIP (MEP) AFFILIATE TO DRIVE BETTER P2 PLANNING AT SMALL AND MEDIUM-SIZED MANUFACTURERS. (ENHANCEMENT #2)**

***Action Steps for Ecology:***

1. Survey current technical assistance clients and interview Washington Manufacturing Services (WMS) staff to understand how manufacturers currently employ WMS or another MEP affiliate in any fashion.

2. Establish a dialogue with WMS and the national NIST-MEP network regarding skill sets, expectations, initial programs, and available resources/areas of expertise. Research past and current NIST-MEP/agency collaborations to daylight issues/problems.
3. Import "Clean 101" training from CONNSTEP (Connecticut State Technology Extension) and collaborate with WMS to tailor training to Washington state manufacturing community. Key features of the training should include: (a) extending the principles of "lean manufacturing" to pollution prevention and (b) creating a continual improvement process to increase productivity while focusing on the impact on the environment and bottom line. The program should include training to help Ecology develop an *institutional* understanding of "lean" principles and what the principles mean from the *business* perspective. With a firm understanding of the drivers associated with this continual improvement paradigm, Ecology staff will be better prepared to move beyond lean, into clean. At the same time, the training will teach WMS how to look for P2 opportunities in the course of their regular interactions with clients.
4. Pilot joint MEP-P2 staff outreach and site visits (possibly with CTED participation) to small and medium-sized manufacturers, targeting past and current clients from both organizations. Ecology may opt to use its HWIMSy database to target potential clients or may recommend targeting industrial sectors of special interest for early attention.
5. Develop with WMS a shared "Virtual P2 Toolbox" targeting small and medium-sized manufacturers. Potential tools/topics to include are: Clean 101 and other continual process improvement methodologies, Materials Accounting, Activity-Based Cost Accounting/Total Cost Assessment, Toxicity Weighting, and Environmental Management Systems. Materials provided by Ecology should include existing resources plus additional materials recommended elsewhere in this section.

**C. ENCOURAGE P2 PLANNERS TO ADOPT MATERIALS ACCOUNTING TO IDENTIFY P2 OPPORTUNITIES AND USE TOTAL COST ASSESSMENT FOR MORE ROBUST AND PRECISE P2 OPPORTUNITY ASSESSMENTS AS FACILITIES COMPLETE THEIR P2 PLANS. (ENHANCEMENT #3)**

***Action Steps for Ecology:***

1. Take steps to cross-reference and/or make widely available Ecology's resources related to Materials Accounting and Total Cost Accounting (TCA). For example, Publication # 95-400, "Cost Analysis for Pollution Prevention" mentions "substantial errors" businesses make during P2 assessments, yet fails to link to all the information available regarding how to avoid those pitfalls. A detailed search of the Ecology website uncovers Publication # 00-04-008, "Seminar Notes for Total Cost Assessment" which offers helpful information on TCA. These two documents should be cross-referenced. Inventory, post on the website and/or hyperlink these materials to the P2 planning guidance "Cost Accounting" section.
2. Research the adoption of Materials Accounting and/or Total Cost Assessment among Washington state P2 planners. As a starting place, ask current and previous TREE clients how/if these practices are currently used and/or the

barriers preventing their use during P2 planning. Other candidates for research include recipients of the Governor's Award on Sustainability, EMS reporters and/or facilities that participate in the Cleaner Production Challenge. (NOTE: It may also be valuable to add one or several questions about Materials and Total Cost Assessment/Activity-Based Cost Accounting to the Beyond Waste generator survey.)

3. Provide links from the Ecology P2 website to relevant materials and references prepared by others, including resources on both Materials Accounting and Activity-Based Cost Accounting/TCA prepared by the Tellus Institute ([www.tellus.org](http://www.tellus.org)), the Wuppertal Institute (<http://www.wupperinst.org/Sites/home1.html>), INFORM ([www.informinc.org](http://www.informinc.org)), and others.
4. Develop Materials Accounting and TCA/Activity-Based Cost Accounting training modules for Ecology staff to deepen their understanding of, and ability to teach others about, these tools. As part of these trainings, collect case study examples showing how these accounting tools can be used to help drive deeper, more accessible P2 assessments at facilities. These trainings should enable Ecology staff to discuss with P2 planners the intersection of both practices with capital productivity and continual improvement paradigms.
5. Develop Materials Accounting and TCA/Activity-Based Cost Accounting training modules, workshops, or guidance documents for P2 planners interested in applying the tools in their P2 plan updates. Cross-reference these materials with the P2 planning guidance "Cost Accounting" section.
6. Consider making Materials Accounting and TCA practices prerequisites for participation either in the advanced EMS track (discussed below) or the Beyond Waste challenge program (discussed in Beyond Waste Consultant Team report, [Moving Toward Beyond Waste in the Industrial Sector](#)).

#### **D. INCORPORATE A TOXICITY WEIGHTING METHODOLOGY/TOOL INTO THE PLANNING PROCESS TO HELP P2 PLANNERS ASSESS THE FULL IMPACT (VOLUME PLUS INHERENT HAZARD) OF SUBSTANCES THEY USE OR WASTES THEY GENERATE. (ENHANCEMENT #4)**

##### ***Action Steps for Ecology:***

1. Examine the various toxicity weighting methodologies/tools that are currently available. P2 planners and other HWTR staff may want to undertake this review concurrently, given that adoption of a toxicity weighting methodology was also recommended by the Beyond Waste Project Team to address data gaps related to the inherent hazard of specific hazardous waste streams. (See the 2003 Beyond Waste consultant team report, [Improving Materials and Waste Tracking in Washington](#)).
2. Determine how the electronic P2 planning form would need to be modified to allow a selected model to function "invisibly." One challenge will be to determine how to generate the weighted results without incorporating that information into the form itself. Ecology would also need to assess how it could provide the toxicity weighting methodology/tool to P2 planners who choose not to report electronically.

3. Update Ecology's P2 planning guidance related to the 95% rule to introduce the concept of toxicity weighting and explain how it can be used to help set priorities for source reduction. Instructions for applying the tool should be laid out in the guidance document, as well.

## **E. ESTABLISH AN ADVANCED EMS REPORTING TRACK. INCORPORATE NEW INCENTIVES AND/OR ACKNOWLEDGMENTS INTO PROGRAM. (ENHANCEMENT #5)**

### ***Action Steps for Ecology:***

1. Query current (and previous) EMS Alternative planners to assess their interest in establishing the advanced track EMS. Explore with those P2 planners what types of advanced features are most appealing (e.g., Materials Accounting) and what types of incentives would be of greatest interest (e.g., streamlined reporting or protection under the existing fee cap—if the fee cap were to be lifted, as is discussed in Beyond Waste consultant team report, Moving Toward Beyond Waste in the Industrial Sector). Conduct outreach/education with environmental interest and community groups.
2. Research other states' experiences to determine what EMS features (materials accounting, supply chain management) help surface the greatest P2 opportunities. Collect examples for inclusion in guidance and training materials.
3. Design the advanced EMS program. Establish program requirements, drawing on information gathered through the first two steps. Consider how many additional tiers/enhancements may make sense. [It is critical to design the program in such a way that EMS planning enhancements can be linked to specific incentives or "responsiveness" features.]
4. Prepare guidance, trainings, or other tools to help EMS planners (and other interested P2 planners) focus on design-stage questions. Advanced manufacturing concepts may be useful additions to the prepared materials.
5. Update Ecology EMS guidance documents (e.g., Ecology Publication #97-401) to incorporate the advanced EMS track.
6. Pilot-test the new option with willing EMS planners. Revise, as needed, to include options and features that maximize participation and surface P2 opportunities.

## **F. EXPLORE TARGETED MEANS OF REQUIRING IMPLEMENTATION OF P2 PLAN COMPONENTS (ENHANCEMENT #6)**

### ***Action Steps for Ecology:***

1. Expand effort to implement P2 opportunities through Clean Water Act programs. To do this, undertake the following:
  - a. Explore whether regulations governing implementation of NPDES general permit requirements can incorporate consideration of pollution prevention opportunities.
  - b. Work with Water Quality program staff to determine how P2 plans can be used to establish "other pollution control requirements" and/or be

incorporated into TMDL implementation strategies for the purpose of restoring water quality in impaired streams and lakes. Special attention may be given for waterbodies impaired by toxic substances.<sup>70</sup>

2. Discuss with various local air agencies' their interest in incorporating P2 elements into Clean Air Act permits. To encourage local air agencies' support for such a project, Ecology P2 staff can volunteer to help facilities identify and evaluate specific P2 opportunities and can help draft P2 language for the permit.
3. Inform Ecology media program staff of which P2 planners are located in their region(s). Time allowing, familiarize media staff with key elements of the various P2 plans.

### **G. OFFER SPECIFIC INCENTIVES OR RECOGNITION TO FACILITIES THAT VOLUNTARILY ENACT P2 ACTIVITIES. (ENHANCEMENT #7)**

#### ***Action Steps for Ecology:***

1. Research various regulatory responsiveness programs and incentives that may work for Ecology. (See Beyond Waste consultant team report, Moving Toward Beyond Waste in the Industrial Sector, for a review of several regulatory responsiveness programs.)
2. Identify desired program features. Should the program be tiered to respond to different levels of P2 implementation? Should facilities interested in participating in a (voluntary) regulatory responsiveness program be required to demonstrate P2 implementation (or a commitment to P2 implementation)? At what level? Determine what regulatory changes are needed to implement desired program features. Draft modified regulatory language, as needed.
3. Establish an industry focus group of top performers (e.g., EMS reporters, TREE and Cleaner Production Challenge participants) as well as other interested industries to assess industry interest in using a regulatory responsiveness initiative or program to encourage pollution prevention activity implementation. Consider community or environmental concerns to implementing proposed regulatory responsiveness initiatives.
4. Pilot test the program with interested facilities. If Step 3, above, is explored, consider enlisting the participation of a few industries that experience high process and product turnover rates such as the computer chip or electronics industry (and that therefore are likely to be most sensitive to permitting delays and the like).

### **H. IMPROVE THE ACCESSIBILITY OF THE P2 PLANNING INFORMATION AND P2 PROGRAM TOOLS ON ECOLOGY'S WEBSITE. (ENHANCEMENT #9)**

#### ***Action Steps for Ecology:***

1. Determine what information would be included in an enhanced P2 website. Possibilities drawn from suggestions, above, include:

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<sup>70</sup> In 1998, 78 bodies were identified on Washington's Clean Water Section 303(d) list as being impaired by toxic substances. This represents roughly 12% of the waterbodies listed.

- a. Materials accounting and Activity-Based Accounting tools;
  - b. Information on using toxicity weighting methodologies during P2 planning;
  - c. Case studies demonstrating the connections between lean manufacturing/other advanced manufacturing paradigms and environmental benefits (possibly, associated with Cleaner Production Challenge or TREE information);
  - d. Information links to the WMS website and/or NIST-MEPs;
  - e. Description of minimum requirements and incentives associated with the advanced EMS track;
  - f. Information on regulatory responsiveness programs or other incentives associated with voluntary P2 implementation.
2. Create a new P2 page that is easily accessible from either the Home page or opening HWTR program page.

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