WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

Moving Beyond Toxics: Planning for the Future of Hazardous Waste

A Report to the Legislature

September 2002
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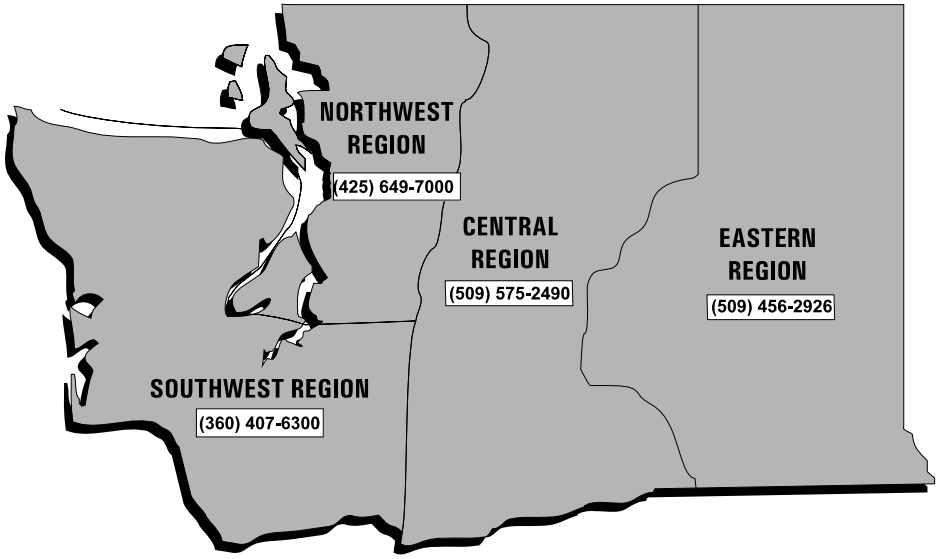

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A Report to the Legislature

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Hazardous Waste and Toxics Reduction Program

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Executive Summary

The Department of Ecology (Ecology) asked the 2001 Legislature for funding to examine the future of waste. The Legislature agreed and directed Ecology to report back with an assessment of pollution-prevention and dangerous-waste policies and programs.

This status report is intended to give a midpoint update in response to the Legislature. This report:

- discusses the history of state hazardous-waste management,
- explores current trends in hazardous-waste generation,
- proposes a vision for a preferred future,
- explains the current state of Ecology's hazardous-waste activities and
- informs the Legislature about Ecology's next steps.

Ecology's Hazardous Waste and Toxics Reduction (HWTR) Program (or office) is rewriting the state plan for hazardous waste. Since the Solid Waste and Financial Assistance (SWFA) Program is also rewriting the state plan for non-hazardous waste, the two programs are collaborating on overlapping issues in order to conserve resources. The combined project is referred to as the "Beyond Waste" project. For more information about this combined effort, see *http://www.ecy.wa.gov/beyondwaste*.

After initial study and stakeholder work, the combined vision for a preferred future for the waste plans looks forward to a Washington that has moved Beyond Waste:

> ***"We can transition to a society that views wastes as inefficient uses of resources and believes that most wastes can be eliminated. Eliminating wastes will contribute to environmental, economic and social vitality."***

What would the future look like under this vision?

In the "Beyond Waste" future:

- all toxic sites are cleaned up,
- no new sites are created,
- all pollution-prevention (P2) plans are implemented, and P2 is considered at the very beginning of business start-up,

- the public handles all waste properly and understands the risks of toxics,
- any waste that is created is recycled for use as similarly valued materials,
- reuse occurs regularly and consistently,
- many alternatives to toxics are available for the public and businesses,
- Ecology staff numbers are fewer than today, because very little compliance and technical assistance is needed,
- Washington's environment is clean, our economy is prosperous, and our communities are healthy and strong, and,
- as the vision clearly states, most wastes are eliminated.

The hazardous-waste draft plan will be released in fall 2003. After public input, the plan will be finalized and implemented. Any legislative actions to be recommended would be forwarded to the 2004 or 2005 Legislature.

Introduction and Purpose

This Report to the Legislature is designed to inform about the status of the state hazardous-waste planning process at its midpoint and to offer a preliminary assessment of Ecology's hazardous-waste program.

Ecology is required to develop and update strategic plans for waste handling. Currently, Ecology is developing two plans. One is for solid, non-hazardous wastes, and the other is for hazardous and toxic wastes.

Two different "programs," or offices, within Ecology are responsible for these two plans. The Hazardous Waste and Toxics Reduction (HWTR) Program is developing the hazardous-waste state plan. The solid-waste state-plan process is being led by the Solid Waste and Financial Assistance (SWFA) Program. Although these two Ecology programs normally engage in separate activities, they are consolidating some resources for efficient and consistent planning. The joint planning process has been named the "Beyond Waste" project.

Ecology's SWFA and HWTR programs are working together to align the plans, both in preparation and in execution. The two programs are collaborating in development of the long-term vision, in research, on moderate-risk-waste issues, performance measures, environmental education and potential options to reduce wastes.

This report focuses on hazardous waste, as mandated by the Legislature. It offers:

- a discussion on the history of state hazardous-waste management,
- a proposal of a vision for a preferred future,
- an exploration of current trends,
- a discussion of the current state of Ecology's hazardous-waste activities and
- an overview of the next steps in the planning process.

Background

The past 30 years have been significant ones for hazardous-waste management. Prior to 1970, there were more than 1000 landfills and/or open dumps in Washington state. Many of these were poorly planned and inappropriately located. Waste was tossed into ravines, mining pits and streams.

Household hazardous wastes (paints, chemicals, etc.) were discarded into trash containers and hauled off to the city dump. Garbage was regularly burned. Many industrial facilities stored their toxic waste on site.

In 1969 the **Solid Waste Management Act** Chapter 70.95.060 Revised Code of Washington (RCW), was established to develop a state-wide program for recycling and handling wastes. There was still no separate designation for hazardous waste. In 1972, the open burning of waste was declared illegal.

In 1976, the United States Congress passed the **Resource Conservation and Recovery Act (RCRA)**. The state's first hazardous-waste law, Chapter 70.105 RCW, the **Hazardous Waste Management Act**, was enacted that same year. These laws were intended to protect the environment and public health from the effects of unsafe management practices.

Before Washington citizens supported the passage of Initiative 97 there was no dedicated state fund for toxics cleanup. The passage of the **Model Toxics Control Act (MTCA)** Chapter 70.105D RCW in 1988 authorized Ecology to identify, investigate and clean up facilities where hazardous substances are located. MTCA also defines the role of Ecology in encouraging public involvement in decision-making at these facilities.

There has been tremendous progress in cleaning up and preventing contamination over the last 30 years. Two-hundred and eight old dumps and landfills were cleaned up under MTCA in Washington.[1] An additional 15 landfills used federal Superfund assistance.[2]

Hazardous-waste-handling priorities:
RCW 70.105.150 states that Ecology is required to encourage waste-handling activities in this order of preference:

1. waste reduction,
2. waste recycling,
3. physical, chemical, or biological treatment,
4. incineration,
5. solidification and
6. landfilling.

The Legislature updated the Hazardous Waste Management Act in 1983 to include the **waste-handling priorities**. These priorities emphasize waste-reduction and recycling over treatment or landfilling to prevent toxics in the environment. See the chart to the left for details.

Ecology has been responsible for hazardous-waste planning since 1985 under **70.105.200 RCW**. The first hazardous-waste state plan was written in 1992 and was updated in 1994.

Since the last plan, the program has changed, waste streams have changed and new opportunities for preventing toxic pollution have emerged.

Hazardous wastes are being managed better than ever before. Today, it is rare to find open-burning dumps or piles of leaking barrels. Currently, Ecology's challenges include methamphetamine lab cleanup and finding resources to meet the demands of technical assistance and compliance for businesses.

The HWTR Program is studying current activities for their effectiveness to meet the challenges of the next 20 to 30 years. Updating the state hazardous-waste plan provides us this opportunity.

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[1] Discussion with Barb Huether, Department of Ecology's Toxics Cleanup Program.
[2] "National Priorities List Sites in Washington," United States Environmental Protection Agency., Washington, DC, 2002.

The Planning Process

> *"If one advances in the direction of his dreams, one will meet with success unexpected in common hours."*
> - Henry David Thoreau

Ecology asked the 2001 Legislature to fund a comprehensive examination of pollution-prevention and dangerous-waste policies and activities. The Legislature approved and directed Ecology to assess current activities and to propose ways to reduce toxic wastes.

After an initial assessment, Ecology determined that it was time to rewrite the state hazardous-waste plan. Inspired by visionary business leaders and by pioneering government entities, Ecology concluded that it is possible and desirable to plan to eliminate most wastes. The last hazardous-waste plan provided state-of–the-art guidance on hazardous-waste management. The next plan will provide a roadmap to a Washington with little or no waste to provide a high-quality future for Washington's children.

Waste generation is unmanageable because:

- humans are currently using resources faster than they can be replenished[3];
- despite a major push toward recycling, wastes are increasing[4]; and
- new information shows many chemicals to be more toxic to human and environmental health than earlier believed.

The planet cannot support current waste-production levels for long. Businesses and residents of Washington state will run short of resources. Without a plan to reverse the current direction, the situation will become worse. The new state plan will emphasize a sustainable approach to dealing with waste.

In April of 2002, Ecology signed a contract with Cascadia Consulting and Ross and Associates. Legislative funds were used for this contract. The consultants were asked to:

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[3] Wackernagel, Mattias, et.al, "Tracking the ecological overshoot of the human economy," *Proceedings of the National Academy of Science*, Vol. 99, Issue 14, 9266-9271, July 9, 2002

[4] "Per-capita disposal in 1991 was 4.67 pounds/person/day and has grown steadily to 5.96 pounds/person/day in 2000. If this trend continues, per-capita disposal in 2030 would be over nine pounds/person/day," from preliminary research by Cascadia Consulting and Ross and Associates for the Department of Ecology.

- identify ways of reducing toxics,
- develop performance measures to help to track progress toward vision,
- analyze improvements to pollution-prevention planning and
- research hazardous-waste-management facilities.

HWTR staff members are writing a series of issue papers related to the following topics:

- history of hazardous-waste management,
- hazardous-waste and hazardous-substances data (collection and trends),
- risk management,
- pollution-prevention planning,
- compliance with hazardous-waste rules,
- corrective action (cleaning up problem sites),
- hazardous-waste fees,
- sustainability and
- education and technical assistance.

The findings from these issue papers and consultant studies are identifying trends and problems and are developing ideas for short- and long-term solutions.

After consultant work and all issue papers are completed during the fall of 2002, input from the public will be solicited on waste-related policy options.

Scope of the Hazardous-waste Plan

The plan will include:

- assessment of the effectiveness of current programs and policies,
- the vision and goals for waste-management and waste-minimization and alleviation of risks to Washington's environment,
- results from research about current conditions and future trends in the production of waste and hazardous substances and
- suggestions for long- and short-term solutions to problems.

These plans will propose solutions to be carried out by Ecology and will suggest measures which might be taken by other segments of state government, by local governments, businesses and private citizens.

Public Outreach

In the planning process, Ecology began identifying stakeholders: businesses, all levels of government, non-profit organizations, educational and health institutions, the waste industry and the general public. HWTR is working to solicit feedback from different avenues.

In April of 2002, a Beyond Waste team designed a Web site, available at *www.ecy.wa.gov/beyondwaste*. This site allows interested parties to read about the project and to receive updates on the state plans, grants access to documents and allows the public to contact Ecology staff with questions and comments.

HWTR and SWFA collaboratively developed a Focus sheet entitled *Beyond Waste: Strategic Plans for Solid and Hazardous Wastes* for distribution to interested stakeholders. The Focus sheet is available on the Web site.

HWTR staff members are attending meetings of stakeholder groups to engage the public in discussions of waste. Discussions between staff members and stakeholders broached the following topics:

- the most significant changes in waste management in the past 10 years,
- the key issues, concerns, problems and/or challenges facing Washington waste management in the next five years or 20 years and
- a preferred future for waste management in Washington state.

Ecology will ask for public review and input on potential policy options. In addition, comments will be solicited on the draft plans. The next rounds of meetings will be on the Web calendar.

A Preferred Future for Washington State

"Strategic planning is worthless — unless there is first a strategic vision."
- John Naisbitt

Ecology asked people from across Washington state to envision what kind of future they would want. As part of the planning process, Ecology's waste programs worked with others to develop a vision statement. This roadmap leads towards a preferred future.

Until now, Ecology's major focus has been on managing wastes. These plans are not only for the management of wastes, but also for their eventual elimination.

The planning teams received hundreds of responses. From these, they developed lists of issues for study and drafted a vision statement:

> ***"We can transition to a society that views wastes as inefficient uses of resources and believes that most wastes can be eliminated. Eliminating wastes will contribute to environmental, economic and social vitality."***

For Washington to stay competitive in today's markets, efficient use of resources will be necessary. It is inefficient to spend time and money protecting citizens from unnecessary environmental hazards and throwing away so much that could be useful. Eliminating most wastes and toxics will help to maintain the quality of life which draws people and businesses to this region.

Ecology and consultants are studying current issues and trends that will warn of future problems and drive future opportunities.

Current Issues and Trends

Hazardous-waste issues have changed since the last state plans. New ideas and new technologies lead to new opportunities.

Population in Washington state is projected to increase by 2.34 million people by the year 2030.[5] Waste-generation is predicted to increase at an even greater rate than population. *(Note: see footnote 4 on page 5.)*

[5] Washington State Office of Financial Management, "Forecast of the State Population by Age and Sex: 1990 to 2030 November 2001 Forecast," Olympia, WA, 2001.

Ecology is only able to track certain wastes. No one knows how much waste or how many toxic substances are really being generated in the state.

Even experts don't know the risks posed by many compounds, especially as they become combined in new ways. Indeed, only new chemicals are tested by EPA under the Toxic Substances Control Act (TSCA). According to a 1995 study, 99.9 percent of all chemicals currently in production were in commerce before TSCA became effective in 1979 and were exempted from review. Very few of the 72,000 chemicals in commerce in the United States have been fully characterized for their ability to cause environmental or health effects[6].

Many of these toxics are commodities that have not been traditionally monitored, despite improvements to data and tracking systems. Technology can now allow for forecasting trends and for evaluations of waste-reduction activities. It is better to anticipate problem wastes instead of just trying to minimize damage after these substances have been released into the environment and threaten health or safety.

Unforeseen waste streams have emerged over the last few years. Some of these are lead in cathode ray tubes from computer monitors and televisions, dioxins and heavy metals in fertilizers and mercury and other persistent biotoxins in products. Many of these materials are highly toxic and are disposed of in a solid-waste system that was not designed to handle such materials. Many toxic chemicals find their way into the environment through regular use.

Electronic waste is an example of a new waste stream. Current projections reveal that 315 million computers are likely to become obsolete in the United States by 2004.[7] Computer components include toxic metals, such as lead, mercury, chromium and cadmium and plastics containing dioxins and polyvinyl chloride. The amount of waste generated to make a laptop computer is close to 4,000 times its weight.[8] By 2005, one computer will be discarded for every new one put on the market.[9]

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[6] INFORM, Inc., *Toxics Watch 1995; Toxic Chemicals in the Environment, a far-Ranging Problem,* NewYork, 1995.

[7] "Electronic Product Recovery and Recycling Baseline Report: Recycling of Selected Electronic Products in the United States," National Safety Council, Washington, DC, 1999.

[8] Anderson, Ray C., *Mid-course Correction*, Chelsea Green Publishing, White River Junction, Vermont, 1998.

[9] National Safety Council, op. cit.

Recycling cannot solve the problem. Computers are a good example here, as well. There is only one recycling facility in the United States, in California, which can safely break computers down into usable components. Many "recycling" facilities for computers actually ship them over to third-world countries, mostly in Asia, where they are scavenged for metals with little regard for environmental standards.[10]

Waste-generation in Washington will most likely continue to increase unless Washingtonians embrace a shared responsibility for preventing it. Ecology is examining ideas, such as technological improvements, economic incentives, regulations and educational innovations to assist in reducing the costs of pollution to maintain and improve Washington's quality of life.

Current HWTR Program

As requested by the Legislature, this report describes and assesses Ecology's current toxic-pollution-prevention and dangerous-waste programs.

The following section describes the current HWTR Program within the Department of Ecology. A discussion of performance measurement, priorities and key program activities is included. Subsections define and assess each activity. For each activity, discussion includes the successes and challenges for each activity area, in terms of reaching the Beyond Waste vision, and what might change while looking to the future.

Measuring Performance

The HWTR Program has established a number of "performance measures" to evaluate success in meeting program goals and objectives. These are measurable targets which can be tracked to gauge the success of the HWTR Program.

The following outcomes are currently being tracked as part of one or more of the state's performance-measurement efforts. Our progress, as of the year 2000 follows. HWTR goals currently are to:

[10] "Exporting Harm: the high-tech trashing of Asia," The Basel Action Network, Seattle, WA, 2002.

- reduce the percentage of hazardous waste generated by regulated facilities,

  There has been a 59% reduction since 1992. When adjusted for economic conditions, the amount of waste generated was 130 million pounds in 2000. 1992's adjusted value was 317 million pounds. The year 1992 is used as a base year because it was the year of highest waste generation and the first year that facilities were required to submit pollution-prevention plans. Note that this only includes regulated facilities, not all facilities that produce hazardous waste.

- reduce pounds per person per year of hazardous waste generated,

  Although per capita waste amounts are going up, hazardous-waste amounts show decreases. The 2000 per capita amount of 35 pounds is a decrease of 44% since 1992.

- reduce pounds of toxic substances released per year (as reported under the Toxics Release Inventory),

  Although the pounds of toxic substances reported have decreased, the reporting categories have changed often enough to make this a difficult measure to track.

- decrease in the percentage of incidents of environmental threats per inspection, and increase the focus on those facilities that are higher risk for non-compliance,

  This goal was refined to targeting the resolution of 220 environmental threats (using a Regulatory Compliance Indicator) for the biennium. So far, during the first fiscal year of this biennium, 118 environmental threats have been resolved.

- increase the number of facilities that drop below pollution-prevention-planning thresholds due to technical assistance from staff,

  One hundred and sixty-five facilities have become small quantity generators since 1995 by conscientiously implementing pollution-prevention-planning opportunities and are no longer required to submit plans.

- increase the number of pollution-prevention projects implemented at facilities,

  This information has only been tracked since 1996. In that year, there were 1,539 projects tracked. In the year 2000, there were 2275 projects tracked.

- assess statewide trends in waste generation by business sectors, and

  For this measure, HWTR only has data from 1995. Of seven business sectors tracked, four have decreased the pounds of waste generated. Most significantly, the pulp-and-paper sector dropped from 5.9 million pounds to 600,000 pounds generated.

  Three sectors have increased the pounds of waste generated. The most significant of these sector increases was "organic and inorganic chemicals" which increased from 32 million pounds of waste generated to 35.5 million pounds. Only a few business sectors are currently tracked.

- increase overall progress in completing cleanup of high-priority corrective-action sites.

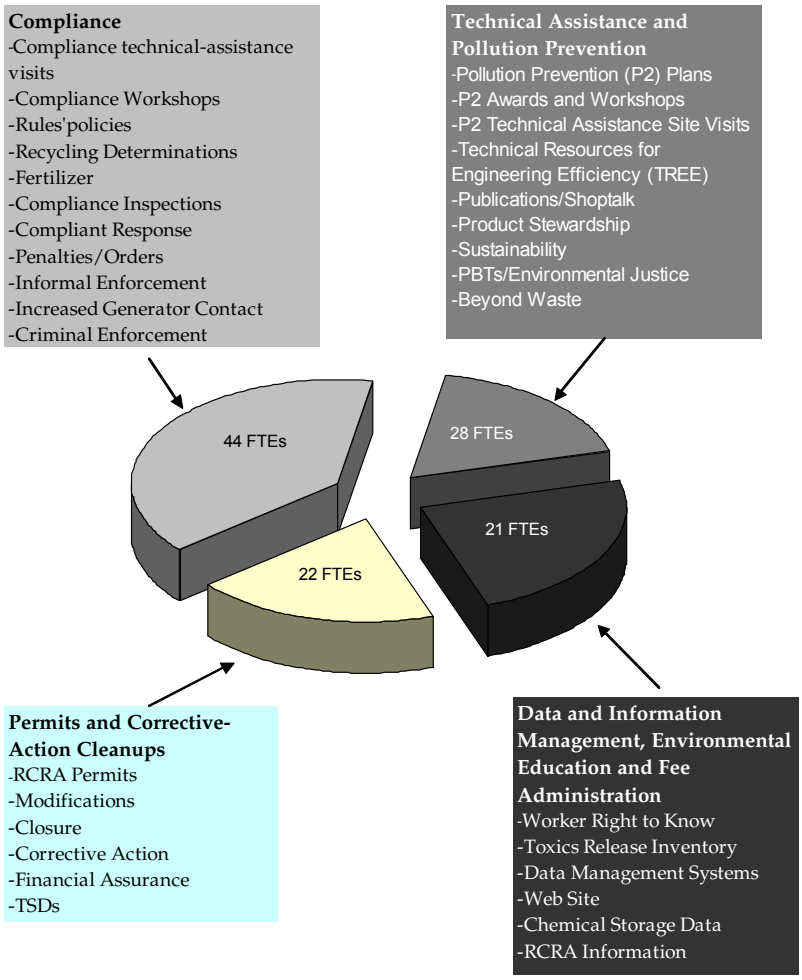
  Twenty-seven high-priority sites were chosen by EPA in 1997. For the fiscal year 2002, the average completion for facilities under corrective action was approximately 55%. This compares to a FY2001 value of 47%.

Although these measures are useful in tracking some successes, they are being reevaluated in light of the Beyond Waste project.

Priorities

There are currently 115 full-time equivalents (FTE's) assigned to the Hazardous Waste and Toxics Reduction Program. Sixty percent of these are in regional offices. Due to revenue shortfalls, HWTR focuses on high-priority activities. The chart on the next page shows what staff members are currently doing.

Staffing By Activity



Current Activities

This section discusses several major hazardous-waste activities. It examines technical assistance, compliance, permitting and corrective action, pollution-prevention planning, data and information management, fee administration and environmental education.

For each of these areas, there is a description of the activities and the legal mandate behind them, the successes of each, the challenges each faces and some possible future directions that each could take.

Technical Assistance

What It Is

Information provided to businesses about pollution prevention and regulatory compliance is usually termed *technical assistance.*

The goal of HWTR technical-assistance activities is to promote sound environmental practices. Technical-assistance staff members provide information to businesses and other entities, such as public agencies, to help them apply new technologies, comply with the dangerous-waste regulations, develop pollution-prevention plans and conduct their activities in a manner that protects human health and the environment.

Technical assistance is provided by various methods, including site visits, meetings, training events, industry-specific assistance and publications. Technical-assistance staff members work to find effective ways to make contact with people to facilitate the exchange of information to promote regulatory compliance and the prevention of pollution.

Field staff members respond to ongoing requests for assistance through on-site consultations. Many of these include state-of-the-art assistance on process changes that can help businesses reduce or eliminate the use of toxic chemicals.

Although formal compliance enforcement work is essential to maintaining regulatory compliance with hazardous-waste regulations, compliance-related technical-assistance visits can also bring facilities into regulatory compliance using substantially fewer resources for a high level of environmental benefit.

HWTR is engaged in many technical-assistance efforts. Some of these are described below.

The **Cleaner Production Challenge** is a project designed to reduce hazardous waste and wastewaters, while conserving water and energy use in facilities using rinse tanks in their manufacturing processes. Industries affected in this project include electroplating, printed circuit-board manufacturers and aircraft facilities. Ecology is providing technical assistance and is coordinating training to help companies to meet the challenge.

The **Technical Resources for Engineering Efficiency (TREE)** team uses engineering analysis to reduce adverse environmental effects, facility costs and regulatory requirements. Technical assistance is provided to the facility at no cost. The team is headed by HWTR with engineers from several programs participating.

Short technical-assistance visits to encourage compliance, called **Increased Generator Contact visits,** have been made in specific geographic areas such as industrial parks, a sole-source aquifer and small communities to increase awareness of Ecology's presence.

During January and February of each year HWTR staff members provide outreach to nearly 1,000 attendees through the **Dangerous Waste Generator Workshops**. Eight to 10 workshops are held each year in various locations throughout the state. At the workshops, generators learn how to manage their wastes properly, achieve benefits of a lower generator status, avoid common compliance violations and fill out required paperwork properly. Various teaching methods keep the presentations lively and useful.

Shoptalk is a quarterly publication produced in an easy-to-read format which provides the latest information on ways to reduce and manage hazardous waste. It is mailed to approximately 25,000 businesses, and several hundred now get it electronically.

HWTR has developed an extensive set of **guidance documents** to assist businesses in properly managing their dangerous wastes and encouraging pollution-prevention practices. These publications cover many aspects of waste management and pollution prevention and are available in paper copy or electronically, via the Internet.

Successes

Many technical-assistance projects in HWTR have demonstrated well-documented successes:

- TREE:
  Several recent projects have resulted in the reduction of hundreds of thousands of gallons per day in water use and several thousands of dollars in savings for participating companies.

- Single-industry campaigns:
  "**Shop Sweeps**" was a targeted campaign in which technical-assistance staff visited 1,700 auto-repair shops. Random re-visits found that 81% of shops followed at least one recommendation and 61% of all recommendations were followed.[11]

  "**Snap Shots**" was a similar campaign for printers and photographic processors. After these 1,400 visits, surveys found that 90% of the shops complied, or attempted to comply, with at least one recommendation and that 76% of all recommendations were followed or attempted.[12]

- Workshops:

  Nearly 1,000 dangerous-waste generators attended workshops in 2001.

Challenges

- Evaluations that measure behavior change are expensive, so they are rarely done, and
- Even though the effectiveness of the single-industry campaigns has been established, HWTR is no longer able to carry them out due to program cutbacks since 1997.

Possible Future Directions

- Develop technical-assistance models, including evaluation mechanisms, which could be used by Ecology and by local governments,
- repeat targeting successes, such as with business sectors or geographical areas, to efficiently assist clients,
- partner with other agencies and organizations,
- explore creative ways to deliver messages inexpensively, such as additional use of Internet resources, and
- refine technical-assistance efforts further to be more useful to specific industries.

[11] Ecology, "*Summary Report; Automotive Shop Sweep Campaign*," Olympia, WA, 1994.
[12] Ecology, "*Snap Shots Campaign Summary Report*," Olympia, WA, 1996.

Compliance

What It Is

Ecology has a Performance Partnership Agreement with the federal Environmental Protection Agency (EPA). HWTR conducts formal compliance enforcement inspections at large- and medium-quantity generators and at specific hazardous-waste-management facilities to ensure compliance with both state and federal regulations.

While HWTR staff undertake formal enforcement infrequently, informal enforcement, such as compliance letters and notices of correction for violations, is common. Repeated refusal or inability of a facility to correct violations and come back into compliance with the regulations escalates to formal enforcement actions.

Over the last five years, HWTR has issued 34 penalties, averaging approximately $25,000 each, and 27 regulatory orders. HWTR has two criminal investigators who pursue environmental crimes, such as deliberate illegal dumping of hazardous materials or intentional pollution.

Since most environmental violations are not deliberate, however, compliance technical assistance is an important and effective tool. Inspectors have observed that rates of compliance with environmental rules can be increased by having more field contact with those subject to regulations.

Successes

Inspection paperwork was streamlined and a system of triage called "Hitting the High Points" was implemented that allowed inspectors to spend less time with businesses that they recognized were properly managing hazardous waste. This allows for inspectors to spend more time in the field.

Two "single-industry campaigns" have been carried out by HWTR in past years providing compliance-related technical assistance to specific industry sectors. These campaigns, "Shop Sweeps" and "Snap Shots," were evaluated and proved to be very successful. These targeted campaigns increased compliance, based on surveys of randomly revisited shops.[13]

[13] See note in "Technical Assistance," above.

HWTR Program recently completed a two-year project designed to: 1) establish a state-wide "baseline" quantitative measure of environmental compliance and 2) determine if a relationship can be shown between Compliance Enforcement Inspections and regulatory compliance by regulated facilities.

The project reached the following conclusion about the effect of regulatory inspections: hazardous-waste inspections of facilities positively affect compliance with hazardous-waste regulations and, thus, contribute to protecting the environment[14].

Challenges

Problems arise in this area largely due to staffing issues. EPA prefers that Ecology inspect each large-quantity generator at least once a year. Especially in the more industrialized regions of the state, this is impossible.

Dangerous-waste regulations don't have any jurisdiction over how products are stored, and, while the law makes a distinction between solvent in the drum and solvent in the parts washer, the soil, air and water do not.

Possible Future Directions

The following are things which Ecology might consider doing:

- continue inspection targeting,
- determine optimal inspection frequency,
- inspect across environmental media (water, air, and land),
- streamline administrative-order process to allow more field time,
- promote the development of less wasteful technologies,
- allow inspectors to issue field tickets for minor violations to lessen administrative work load and
- work with industry sectors to tailor more effective technical assistance.

Potential regulatory changes might address the following:

- integration with other programs/agencies -- breaking down programmatic barriers,
- elimination of conflicting or duplicate regulations,
- coordination with fire and building codes and
- use of financial drivers to encourage better waste management.

[14] Ecology, *Analysis of Change in Generator Compliance Indicators*, Olympia, WA, 2002.

Permitting and Corrective Action

What It Is

Facilities that treat, store and dispose of dangerous wastes (TSDs) are required to obtain a permit to do so. This permit is intended to ensure that operations are protecting the environment.

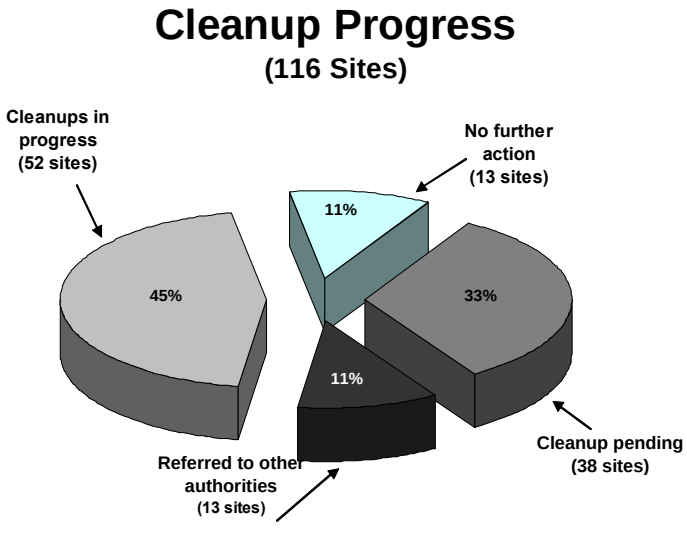
When the permitting laws went into effect, many existing facilities were temporarily granted "interim status" in lieu of a permit. There are 15 active facilities which are either in "interim status" or which have a permit. Permits are required to be renewed every 10 years.

Corrective action is an environmental-contamination cleanup program for former and current dangerous-waste TSD facilities that are regulated by the Federal Resource Conservation and Recovery Act (RCRA).

Work under "corrective action" is similar to the environmental cleanup work conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as the Federal "Superfund" law and under Washington state's MTCA.

Corrective action is a federal program, and the EPA delegated implementation of the program to Ecology in 1994. Ecology uses MTCA cleanup procedures and requirements to implement corrective action. Sites that have the greatest hazard to human health and the environment are addressed first.

HWTR has 60 sites in some stage of corrective action. Twenty-seven of these are "high priority sites," tracked by EPA because of their environmental significance. These sites take years to clean up as they go through several stages of investigation and review.



Facilities are required to have closure plans to effectively deal with the end of their waste management. Many TSDs have closed or are in the process of closing their facilities. Contamination found during closure may trigger corrective action at these sites.

Over the past 10 years, 10 commercial TSD facilities in Washington state have ceased business or are no longer operating. In 2002, only five commercial TSD facilities are still operating, one of which is closing within the year. One hundred and sixteen sites have become corrective-action projects.

Successes

Using MTCA cleanup regulations as an alternative authority for corrective action has been a boon to the program. HWTR issues MTCA cleanup orders in lieu of federal hazardous-waste permits or as the cleanup part of the permit because it is a quicker process with higher standards, and activities are cost-recoverable.

The reorganization of permitting priorities with the "Safe TSD Toolbox" allows staff to spend more time in permitting tasks, as opposed to the decision process. Prioritization decisions are made by a group of management staff and are implemented by field staff.

The program has met performance measures and the Government Performance and Results Act's environmental-indicator goals for 2005.

Challenges

The permitting area works with fewer staff members on a large workload of complicated technical and regulatory issues. Staff members assigned solely to permitting have been reduced from a maximum of eight FTEs to the current two FTEs. Many compliance inspectors work double-duty in permitting.

The number of privately-owned commercial TSD facilities continues to shrink, and the cost to the state taxpayers and generators of cleaning up and regulating unsuccessful business enterprises continues to increase. Outdated financial-assurance regulations and inaccurate cost estimates cause financial problems for taxpayers and for facilities which use TSD services.

Current dangerous-waste regulations have numerous exclusions for recycling facilities including typical oil and petroleum-product recycling processes. With such activities unregulated, no funds exist to clean up the sites after closure.

Possible Future Directions

- Ecology (or EPA) could comprehensively revise the financial assurance regulations protect the public health and the environment when waste-management facilities close, and
- examine financial responsibility laws for facilities that recycle dangerous waste and those that manage non-hazardous industrial waste.

Pollution-Prevention Planning

What It Is

The Department of Ecology has been administering the Pollution-prevention (P2) -planning program, provided for in state Hazardous Waste Reduction Act (Chapter 70.95C.200 RCW), since that act's passage by the Legislature in 1990.

P2 is defined to mean: "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.[15]" Larger-volume hazardous-waste generators are required to prepare plans for voluntarily reducing hazardous-substance use and hazardous-waste generation. These are called "P2 plans." Progress is reported annually, and plans are renewed every five years.

A primary focus of toxics-reduction field staff is assisting approximately 650 businesses and governmental facilities to prepare and implement their P2 plans. HWTR staff members assist businesses in the submission of their plans and promote increased use of P2 techniques in an effort to reduce generation.

On-site consultations to evaluate waste streams are often provided. Over the past few years, HWTR has concentrated efforts on providing assistance to businesses through personal visits, telephone and e-mail exchanges.

Ecology adopted standards to allow an environmental management system to function in lieu of a P2 plan. This environmental-planning tool, based on the international standard for environmental improvement, allows for a more comprehensive approach to environmental management.

[15] Pollution Prevention Act of 1990, Title 42, Chapter 133, United States Code, 1990.

This move allows qualified businesses more flexibility and less redundancy in their planning. Over 35 facilities have moved onto the environmental management system since Ecology began offering it in 1997.

Successes
P2 has gained recognition nationally as a better way to address hazardous-waste management, superior to end-of-pipe pollution control.

Using data adjusted for economic activity, Ecology has calculated that, between 1992 and 2000, facilities involved with P2 planning collectively reduced the state's hazardous waste by 59%.

The facilities required to do P2 planning represent over 90% of all the hazardous waste reported in the state.

Challenges
There is a lack of drivers or incentives for hazardous-substance-use reduction and, more generally, for P2-plan implementation at many facilities.

While Ecology has the legal ability to determine the "adequacy" of P2 Plans, the quality or thoroughness of the plans is not defined or regulated. About 80% of initially submitted P2-planning documents require some kind of follow-up from agency staff.

P2 plans have a limited scope. The HWTR Program lacks authority over air and water pollutants and larger societal issues like safety and health.

Because of the way in which facilities qualify for the P2-planning process, many facilities may not be asked to submit a plan until they are well-established, and many process-design opportunities for P2 planning are missed.

Possible Future Directions
- Encourage plan implementation with targeted technical assistance or financial incentives,
- explore ways to provide incentives for facilities to broaden and to address "upstream" solutions, hazardous-substance-use reduction and cross-media issues (land, air and water),
- improve plans with a more comprehensive approach,

- consider modifying technical-assistance efforts to target hazardous-substance reduction and toxicity/risk reduction,
- explore leveraging P2-planning through agency industrial permitting, and/or
- consider ways to require or encourage P2 plans earlier in a business' life cycle.

Data and Information Management

What It Is

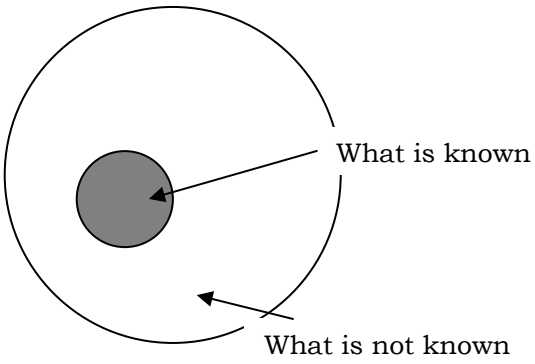
HWTR is responsible for collecting, compiling, analyzing and reporting hazardous-waste generation, transportation, treatment, storage and disposal. Information is also collected on toxic chemicals released and chemicals stored by Washington businesses.

Automated data systems are designed to help organize program information for planning, compliance and technical-assistance visits, for measuring pollution-prevention and compliance progress and for tracking information on hundreds of facilities that prepare pollution-prevention plans or report under the Community Right-to-know Act.

These data systems constitute Ecology's primary HWTR information sources:

- **Annual Dangerous Waste Reports:**
  About 7,000 businesses report the amounts and types of hazardous waste that are generated and managed.
- **Toxics Release Inventory Reports:**
  As a part of Emergency Planning and Community Right-to-know Act (EPCRA), approximately 300 businesses report permitted releases of toxic chemicals by transfer to the air, land or water.
- **Tier Two Hazardous Chemical Inventory Reports:**
  This annual EPCRA report is submitted by around 3,000 businesses with inventories of hazardous chemicals at reportable levels.
- **Pollution Prevention Planning Reports:**
  This information is collected from the approximately 650 businesses which prepare pollution-prevention plans.

For more information, see HWTR's Web site at *www.ecy.wa.gov/programs/hwtr/index.html*.



Successes
The existing data systems provide high-quality information about hazardous waste and hazardous substances.

Challenges
If a gauge is to be developed to test progress toward a preferred future, useful data must be collected to forecast trends and to verify outcomes.

Hazardous waste is counted but cannot be connected in a big picture of toxics in Washington state. There is a need to combine hazardous-waste data with other information, such as economic reports, population projections, etc., to get a more complete picture.

An analysis identified a number of common problems found in many of the various reporting systems:

- not every facility reports their hazardous-substance use and their hazardous-waste generation,
- inconsistent or incomplete data can be collected, and
- data is insufficient for trend analysis of hazardous substance use.

Possible future directions

- Examine material flows, not just wastes, to better predict future waste streams,
- incorporate future economic trends to better target efforts,
- look toward filling in data gaps with other sources of information, such as Office of Financial Management economic reports, Census data, industry-specific waste-generation data from the Internet, etc., and
- revise performance measures to be more reflective of the big picture.

Fee Administration

What It Is
Ecology receives revenue from two fees and one tax. These are:

- **The Hazardous Substance Tax,**
  The Model Toxics Control Act (MTCA) created the Hazardous Substance Tax in 1988 to provide funds for pollution cleanup.
- **the Hazardous Waste Education Fee**
  This fee is used to help small businesses find ways to prevent environmental pollution.
- **the Hazardous Waste Planning Fee**
  Those businesses required to submit P2 plans are required to pay an annual fee to support implementation of the planning requirements.

Successes
Fees generate funds that are used for technical-assistance efforts, compliance, information management and toxics-reduction activities.

Challenges
Legislation mandates fee caps for the Hazardous Waste Planning Fee. Caps create inequities between individual facilities and restrict total revenues available for program use. The caps on individual facility fees create, for instance, a disparity in per-pound rates.

The current revenue cap restricts expenditures to current support levels. Since the funds are used for providing planning and technical assistance, future revenue shortfalls will probably occur as demand for staff assistance increases.

Since much of the Hazardous Substance Tax funding comes from surcharges on petroleum, HWTR is vulnerable to the considerable volatility of the world petroleum markets.

Although these current fees are useful to support the current toxics-reduction activities of HWTR, they are not adequately structured to provide incentive for businesses to reduce toxics.

Possible Future Directions
Preliminary findings show much potential in offering economic incentives as a means of motivating waste-elimination efforts.

Environmental Education

What It Is

Environmental education is learning that increases people's knowledge and awareness about the environment and develops in people the necessary skills and expertise to address challenges and to take responsible action[16].

Before 1995, Ecology's Waste Reduction, Recycling and Litter Control Program received funding from a .1% tax on tipping fees. This money was used to support education and outreach activities. Ecology's staff developed education materials, produced and conducted trainings for the *A-Way with Waste* curriculum and spoke at public events. Local governments used Ecology as a clearinghouse and funding source for local education and outreach programs.

Ecology's waste programs have moved away from direct education. Primarily, Ecology provides grants to local governments and non-profit organizations to conduct these activities. Most of these grants are provided by Solid Waste and Financial Assistance Program to run educational efforts.

For the grant cycle of 2002-2003, the SWFA Program's Coordinated Prevention Grants, which fund local-government efforts, totaled $17.5 million. The Public Participation Grants, which fund non-profit organizations' efforts, totaled $700,000. These funds come from the Local Model Toxics Account.

Currently, the HWTR's program public-outreach and education activities consist mostly of the activities that are conducted through the Hazardous Substance Information Office and the HWTR Web site. HWTR speakers are also requested to speak at public gatherings several times per year.

As stated in Chapter 70.102.020 RCW, the primary duties of the Hazardous Substance Information Office are to:

- facilitate access to existing information on hazardous substances within a community,
- at the request of citizens or public health/safety organizations, compile existing information about hazardous substances used at specific locations, and
- provide education to the public on the proper production, use, storage, and disposal of hazardous substances.

[16] United Nations Environment Program, *Tbilisi Declaration*. New York, 1978.

The HWTR Web site enables two-way communication between the program and the public. The Web site offers an array of useful information on topics including dangerous-waste regulations, hazardous-waste services, requirements for reporting demolition debris, pollution prevention and workshops. This information is available on a 24-hour basis through interactive databases, online publications and downloadable software applications.

Educational efforts become more important when striving to meet waste-elimination goals. HWTR may need to work with varied populations, such as schoolchildren, households, small-quantity waste generators, colleges, consumers, state and local government agencies and businesses.

Successes

- **HWTR Web site**:
  The HWTR Web site was visited over 143,000 times in January 2002, with a daily average of 4,600 hits. The Web site is an increasingly powerful communication tool that can be used to provide information to the public to help enable them to make good decisions to foster sustainability, prevent pollution and ensure safe waste management.

- **Hazardous Substance Information Line:**
  Ecology answers approximately 1,500 calls per month from the public and from businesses requesting assistance with hazardous-substance questions.

Challenges

Thorough evaluation of environmental-education activities is difficult and expensive. Without solid data, it is difficult to demonstrate the effectiveness of these activities to gain funding and support. The results of a properly-conducted evaluation, especially at the pilot stage, can save money in the long run.

Those projects that have been properly evaluated, such as the educational components of the single-industry campaigns, have often not been renewed, due to funding issues.

Although environmental education at the elementary- and secondary-school level is a key to an informed populace, it is difficult to reach teachers, who are already busy. Environmental information for the general public must compete for audiences' time and attention with conflicting messages in media and advertising.

Possible Future Directions

- Develop educational models, including evaluation mechanisms, that can be used by Ecology and by local governments,
- if additional resources become available, reconsider options for elementary and secondary education and
- forge partnerships with other programs (such as SWFA) and other agencies to provide information and assistance.

Sustainability

What It Is

Ecology's working definition of sustainability is "meeting the needs of the present without compromising the ability of future generations to meet their own needs." Several HWTR projects address the quest to move closer to this ideal:

- **Governor's Award for Pollution Prevention and Sustainable Practices**
  This annual award program recognizes business that have demonstrated success in pollution prevention and/or achieving sustainable business practices. These provide a highly visible incentive for those facilities pushing the edge, and the knowledge is shared within the business community.
- **Green Purchasing**
  State government is the single largest purchaser of goods and services in Washington. Ecology is working with the Department of General Administration (GA) to develop criteria for contracts that encourage environmentally preferable purchasing of products. To date, Ecology staff members have assisted GA with contracts for cleaning products and carpets.
- **Product Stewardship**
  Product stewardship is a term used to describe a product-centered approach to environmental protection. It calls on all those involved in a product's life cycle to share responsibility for reducing negative environmental effects of products.

  Ecology is an active participant in the National Electronics Product Stewardship Initiative to negotiate an agreement with computer manufactures to create a system to collect, transport, and recycle computers. Ecology also partners with the Northwest Product Stewardship Council on other product-stewardship work, and is a member of the National Product Stewardship Institute.

- **Environmental Justice (EJ)**
  The agency's environmental justice liaison resides in the HWTR program with the goal of implementing Ecology's commitment to fair treatment for people of all races, cultures and incomes regarding environmental laws, regulations and policies.

  EJ efforts include building appropriate policies into action throughout Ecology, advising programs and management on EJ issues and building stronger links with key external stakeholders, such as the Department of Health.

- **Agency-wide Sustainability Efforts**
  HWTR staff members lead the agency sustainability team in their effort to provide expertise and resources in meeting sustainability objectives.

Successes and ***challenges*** are difficult to gauge, due to the short amount of time that these programs have been in place. ***Possible future directions*** in this area will be determined after the work with the consultants is finished.

Conclusion

Currently, Ecology works toward hazardous-waste reduction, pollution prevention and waste management through several program activities. An evaluation of those activities identified broad categories of ideas that Ecology could implement as steps that will move toward the elimination of wastes:

- Evaluate current policies and approaches for maximum effectiveness,
- revise regulations and suggest legislation to provide more incentives for waste minimization and to ensure polluter responsibility,
- provide pollution-prevention and compliance technical assistance to businesses as early as possible,
- educate businesses and the public about proper waste management and hazardous-substance use, as well as about risks,
- lead by example by developing models for waste and toxics reduction that others may use.

Unless plans establish a goal of eliminating most wastes, the focus will always be on managing them. The descendants of today's citizenry will still have to manage the toxicity of today's wastes and the problems that they will leave.

If this is not desirable, Ecology, other government agencies, members of the public and businesses should work together to create a different, more-preferred future. The development of state solid- and hazardous-waste plans is an early step towards creating this preferred future.

The hazardous-waste plan is a year into the planning process. During the next year, results will be published from the research. Input will be solicited from citizens around the state on possible policy options. Once input has been gathered, a draft plan will be released in 2003.

Ecology will welcome comments on the draft plan and will use them to develop a final plan. To become involved with this planning, or if you have questions or comments, please visit the Web site at *www.ecy.wa.gov/beyondwaste*. There, you can find more information, leave comments or join the mailing list.