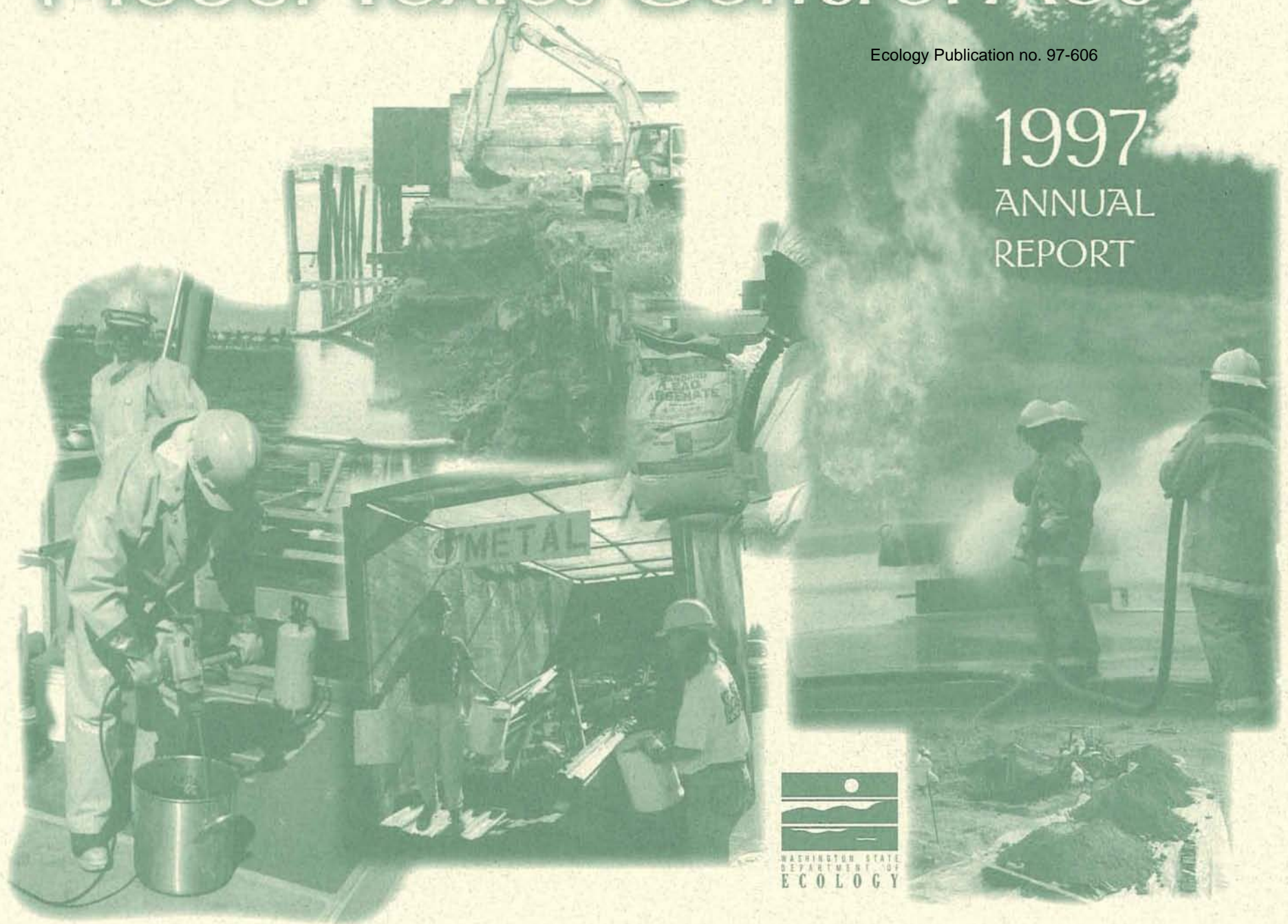


Model Toxics Control Act

Ecology Publication no. 97-606

1997
ANNUAL
REPORT



Washington State Department of Ecology's Mission

The mission of the Department of Ecology is to protect, preserve and enhance Washington's environment and promote the wise management of our air, land and water for the benefit of current and future generations.

Purpose of this Report

The purpose of this report is to update you on how the money from the Toxics Control Account has helped the Department of Ecology, as well as other state agencies and local governments, achieve the mandates of the Model Toxics Control Act. In this report, we will show you:

- How much money the Hazardous Substance Tax and other sources generated July 1, 1996 through June 30, 1997 (Fiscal Year 1997). Other sources include cost recovery, fines and penalties, Independent Remedial Action Program fees, mixed waste fees and miscellaneous items. These funds make up the Toxics Control Account;
- Which governmental entities received Toxics Control Account money in Fiscal Year 1997;
- How much of this money was spent in Fiscal Year 1997;
- What accomplishments were achieved as a result of receiving the money.

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Executive Summary

The environment is the center of our life quality. It must be guarded with great passion. Quality of life is about clean air, land, and water, as well as economic vitality in our communities. Funds from the Toxics Control Account allow us, along with the Departments of Health, Agriculture, Marine Safety, Revenue, State Patrol, local governments, and local communities, to work towards improving our environment and life quality. Getting contaminated sites cleaned up is one of the major environmental challenges we all face together. It is also one of the major success stories in our state's efforts to protect the environment.

To date, 80 percent of all known sites have been cleaned up or are in the process of being cleaned up. Along with our progress in cleaning up sites, other exciting highlights include:

- *Fewer and fewer sites are being reported each year;*
- *Billions of cubic feet of water have already been cleaned up and even more has been spared contamination;*
- *There is increased awareness and implementation of pollution prevention strategies within industry. For example, underground storage tank owners have installed leak detection systems and are now upgrading their tanks;*
- *As a result of work completed this past year by the Model Toxics Control Act Policy Advisory Committee, changes have been made by the*

Legislature to the Model Toxics Control Act which will allow for faster and less costly cleanups.

Preventing contamination is the key to a healthy environment. Ecology has been successful in helping businesses reduce the amount of hazardous waste generated and safely manage the waste they do generate. We are not alone in this endeavor. With State Toxics Control Account funds:

- *The Department of Health conducts a number of programs and activities with the goal of preventing adverse human health effects from toxic substances;*
- *The Department of Agriculture works with farmers to reduce and eventually eliminate the use and storage of prohibited pesticides;*
- *The Washington State Patrol provides hands-on training to fire fighters necessary to mitigate a hazardous materials incident;*
- *The Office of Marine Safety, which is now combined with Ecology's Spill Prevention, Preparedness and Response Program, works with the shipping industry to prevent oil spills in Washington waters.*

In addition, local governments and communities are awarded grants from the Local Toxics Control Account for use in pollution prevention, cleaning up hazardous waste sites, and educating and involving the public in these projects.

There is still much work ahead. Government, businesses, citizens — all of us — must work together to improve the environment as we move into the next century.



Let us together commit to the goal that early in the next century we will have cleaned up all of the contaminated sites we now know about, while at the same time continuing pollution prevention efforts such as the Underground Storage Tank Program.

It is a realistic goal. We are nearly there — of the more than 7,000 sites that we now know about, nearly 40 percent have been cleaned up and need no further action. Another 40 percent are in the process of being cleaned up, while only 20 percent are waiting for cleanup to start. It's a record to be proud of, and a solid base for success in the future.

A handwritten signature in black ink that reads "Tom Fifer". The signature is stylized and written in a cursive-like font.



History of the Toxics Control Account

The Model Toxics Control Act became law in 1988 as the result of a citizen initiative, I-97. The purpose of the Act was to:

- Clean up contaminated waste sites;
- Improve management of hazardous wastes;
- Prevent future contamination through pollution prevention.

The Toxics Control Account was created under the Model Toxics Control Act. Two accounts make up the Toxics Control Account; the State Toxics Control Account and the Local Toxics Control Account. The primary source of money to the State and Local Toxics Control Accounts is through a tax on petroleum products, pesticides and certain chemicals. This tax is known as the "Hazardous Substance Tax." There are currently 8,000 different hazardous substances subject to the tax. However, over 85 percent of the money is collected from petroleum products. Other sources of money to the State Toxics Control Account include cost recovery, Independent Remedial Action Program fees, fines and penalties, mixed waste fees and miscellaneous items.

The Hazardous Substance Tax is calculated by taking 0.7 percent (\$7 per \$1,000) of the wholesale value of the hazardous substance. The tax is imposed on the first in-state possessor of the hazardous substance. Of the total tax collected, 47 percent goes into the State Toxics Control Account and 53 percent goes into the Local Toxics Control Account.

How Agencies Get Money From The Toxics Control Account

Money is continuously collected by the Department of Revenue and deposited into the Toxics Control Account.

Every August of every even year, Ecology and all of the other agencies present their budget requests in the Biennial Appropriations Request Report submitted to the Office of Financial Management (OFM). Agencies make their requests based on previous years experience and anticipated needs.

In December of every even year, the Governor releases his/her budget based on agency input and the Governor's own preference.

In January of every odd year, the Governor's budget is presented to the Legislature.

The House and Senate review the Governor's budget. After review, the House and Senate both write and pass their own budgets. These budgets then go to a joint conference committee to resolve any differences between the two budgets. Once the committee's budget resolution version is passed by both the House and Senate, it is presented to the Governor for approval and signature. If the Governor approves and signs the budget, it becomes law.

The budget is signed by the Governor and becomes law.

July 1 of every odd year is the beginning of the new biennium. On this date, the agencies can start spending the money they were appropriated by the Legislature.

In August of every even year, the budget process starts all over again.

Local governments and local citizen groups apply to Ecology's Solid Waste & Financial Assistance program for grant money from the Local Toxics Control Account. There are specific application periods for each of the grant programs.



Fiscal Year 1997

Toxics Control Account Revenue & Expenditures

Toxics Control Account Revenue	Local Toxics	State Toxics
Hazardous Substance Tax	\$26,267,000	\$24,303,000
Mixed Waste Fees		\$7,576,560
Fines & Penalties		\$280,496
Cost Recovery		\$5,157,491
Independent Remedial Action Report Fees		\$649,535
Miscellaneous		\$337,186
Total Revenue	\$26,267,000	\$38,304,268
Ecology Expenditures		
Agency Administration, Facility & Related Costs	\$222,524	\$1,572,245
Central Programs	\$90,200	\$2,024,967
Environmental Investigations & Lab Services Program		\$854,770
Water Quality Program		\$839,380
Nuclear Waste Program		\$3,403,159
Hazardous Waste and Toxics Reduction Program		\$5,911,204
Toxics Cleanup Program	\$95,307	\$8,187,739
Solid Waste and Financial Assistance Program	\$15,231,631	\$2,035,582
Total Ecology Expenditures	\$15,639,662	\$24,829,046
Other Agency Expenditures		
Agriculture		\$506,242
Health		\$1,542,281
Marine Safety		\$146,609
Revenue		\$32,104
State Patrol		\$287,853
Total All Agency Expenditures	\$15,639,662	\$27,344,135

Expenditures reflect funds actually disbursed in Fiscal Year 1997. These disbursements must stay within approved levels as appropriated by the Legislature. The difference between revenue collected and funds disbursed can be positive or negative in either direction – depending upon the actual time of revenue collection or fund disbursement.



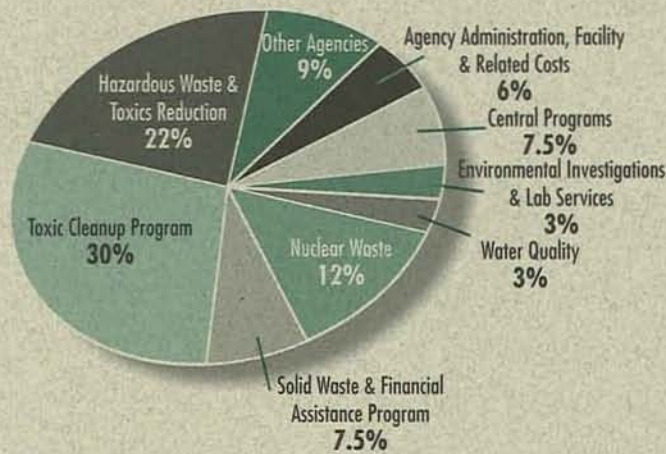
State Toxics Control Account

The State Toxics Control Account funds the activities of state agencies. The agencies receiving money include the Departments of Ecology, Agriculture, Health, Revenue, State Patrol and the Office of Marine Safety. In addition to Hazardous Substance Tax collections, the State Toxics Control Account receives money via Ecology by recovering costs from potentially liable persons for remedial actions taken at hazardous waste sites (known as cost recovery), by issuing fines and penalties to liable persons for not complying with the requirements of the Model Toxics Control Act, by reviewing Independent Cleanup Reports through the Independent Remedial Action Program, mixed waste fees and miscellaneous items.

State Toxics Control Account Revenue

Taxes	\$24,303,000
Cost Recovery	\$5,157,491
Fine & Penalties	\$280,496
Independent Remedial	
Action Report Fees	\$649,535
Mixed Waste Fees	\$7,576,560
Miscellaneous	\$337,186
TOTAL	\$38,304,268

State Toxics Control Account Expenditures



The next portion of this report contains a brief narrative by each agency or program that received State Toxics funds in Fiscal Year 1997.








Department of Ecology: Toxics Cleanup Program

\$8,187,739 Spent

This is the ninth year the Toxics Cleanup Program has produced the Model Toxics Control Act Annual Report. When planning this year's report, we took a different approach focusing primarily on how state agencies spent State Toxics and Local Toxics Account funds in Fiscal Year 1997. As a result, many of the activities listed and described in past reports will not be included in this year's report. For additional information on the Toxics Cleanup Program, you may refer to our Internet homepage at www.wa.gov/ECOLOGY/tcp/cleanup.html or call 1-800-826-7716.

The Toxics Cleanup Program was appropriated 30 percent of the available funds that made up the State Toxics Control Account in Fiscal Year 1997. The money was used primarily on:

-  Cleaning up high-priority hazardous waste sites;
-  Cleaning up lower-priority hazardous waste sites;
-  Providing technical assistance to those cleaning up sites;
-  Investigating, and if necessary, ranking new sites;
-  Providing program support to staff working on the above-mentioned activities.

Known & Suspected Contaminated Sites (7/1/88-8/14/97) 7,134 Sites



Cleaning Up High-Priority Hazardous Waste Sites

Superfund Sites and State Sites Ranked 1 or 2 on the Hazardous Sites List

There are currently 7,134 hazardous waste sites that have been reported to the Toxics Cleanup Program. Of the 7,134 sites, approximately 5,000 are leaking underground storage tank sites. The pie chart above shows progress made to date on cleaning up the universe of contaminated sites statewide.

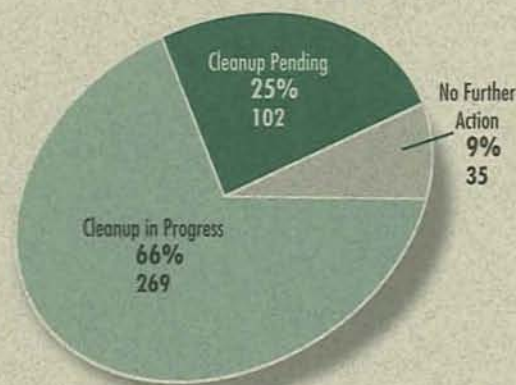
The Toxics Cleanup Program ranks sites on a scale of one to five. One represents the highest level of concern relative to other sites—usually receiving top priority for cleanup, while a score of five represents the lowest level of concern relative to other sites. It is the program's goal to elimi-

nate public health risk and minimize environmental risk at high priority sites by the year 2001. Superfund sites and state ranked sites with a score of 1 or 2 make up 406 high priority sites.

Through cost recovery, the Toxics Cleanup Program seeks to recover from potentially liable persons the money it spends on these sites.

The cleanup of Superfund sites is funded primarily by the Environmental Protection Agency (EPA) and the Department of Defense. In most years, the Toxics Cleanup Program uses State Toxics Control Account funds to match 10 percent of the total costs EPA spends on the cleanup of these sites. Although State Toxics funds were not spent on the cleanup of Superfund sites in Fiscal Year 1997, we are including Superfund sites in this year's status report.

Status of Superfund and State Ranked 1 or 2 Sites - 7/1/88 through 8/14/97



Natural Resource Damage Assessments (NRDA) Sites

Managing and overseeing damage assessment and restoration of natural resources (such as fish and shellfish) that have been damaged as a result of hazardous waste releases is the role of the Natural Resource Trustees. Ecology, as the state representative, works with federal and tribal representatives to make up the Trustee Council. Ecology staff time is funded with State Toxics funds. So far, sites with natural resource damage assessment activities have been in marine areas and are often Superfund sites.

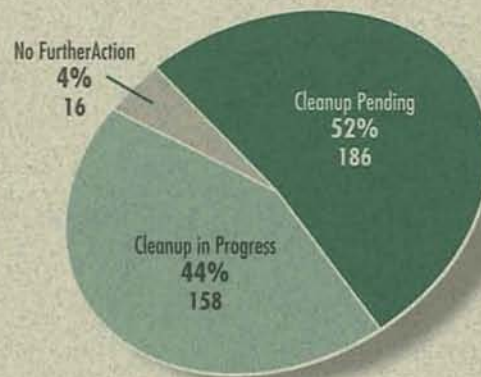
During Fiscal Year 1997, the Trustees negotiated a \$10 million settlement with the City of Tacoma and the Department of Natural Resources (the potentially liable persons). Under the settlement, the City will provide restoration at five locations in the Commencement Bay area and the Department of Natural Resources will provide three habitat areas. The restoration activities include developing marsh and riparian habitats, restoring mudflats, expanding upland wetland property to create habitat for fish and wildlife, and ensuring eelgrass beds and surrounding aquatic areas are protected. Eelgrass creates an especially rare and important habitat in Commencement Bay that can satisfy the needs of a wide variety of marine animals.

Cleaning Up Lower-Priority Hazardous Waste Sites

Sites Ranked 3, 4 or 5 on the Hazardous Sites List

The Toxics Cleanup Program oversees the cleanup of 360 sites with a ranking of 3, 4 or 5. These activities are funded with State Toxics funds. As with ranked 1 or 2 sites, Ecology seeks to cost recover the money it spends on these sites. Money collected through cost recovery goes back into the State Toxics Control Account fund. Ecology uses State Toxics funds to pay the entire cost of cleaning up "orphan" sites (sites where the owner is bankrupt or otherwise unable to pay).

Status of State Ranked 3, 4 or 5 Sites - 7/1/88 through 8/14/97



Providing Technical Assistance to Those Cleaning Up Sites

Through its Voluntary Cleanup Program, the Toxics Cleanup Program offers technical assistance to those conducting cleanup activities at hazardous waste sites. A range of opportunity for assistance is offered through this program, including prepayment agreements, prospective purchaser consent decrees and Ecology consultations.

Prepayment Agreements

Due to limited resources, the Toxics Cleanup Program can't work on every contaminated site. However, a potentially liable person may wish to begin remedial action at a facility before the Toxics Cleanup Program is ready to proceed. In these situations, the potentially liable person can request the program's oversight of their remedial action. If requested, the program may enter into an agreement with the potentially liable person to oversee their remedial actions, provided the potentially liable person agrees to pay for the program's costs. These are called prepayment agreements.

Prospective Purchaser Consent Decrees

A person who is not liable for cleanup and wishes to purchase a cleanup site for redevelopment or reuse may negotiate a prospective purchaser consent decree with the Toxics Cleanup Program. In these situations, the purchaser is also required to contribute money towards the cleanup of the

site—money that would not otherwise be available. Key examples of sites with prospective purchaser consent decrees include the Newcastle Demolition Landfill site — where part of an old landfill was cleaned up and turned into a golf course, and the Union Station site — where an old railroad station will be restored and a combination of commercial/retail buildings will be developed. These types of sites are often referred to as “Brownfields.” (*Brownfields are properties that are abandoned or underused because of environmental contamination from past industrial or commercial practices. See page 24 for more information.*)

Independent Remedial Action Program

Consultants or property owners may clean up their site independently without the Toxics Cleanup Program’s oversight. Once they’ve completed the cleanup of their site, they may submit an independent cleanup report to the program for review. For a fee, the Toxics Cleanup Program will review the report. Based on the information contained in the report, the program may determine that no further action is required at the site and issue a letter to that effect to the owner. Money generated through the Independent Remedial Action Program goes back into the State Toxics Control Account. In Fiscal Year 1997, 55 out of 60 sites received a determination of “No Further Action.” In early Fiscal Year 1998, the Independent Remedial Action Program was

incorporated into the Voluntary Cleanup Program. These reviews are now conducted as Ecology consultations.

Ecology Consultations

During Fiscal Year 1997, legislation recommended by the Model Toxics Control Act Policy Advisory Committee gave the Toxics Cleanup Program the statutory authority to provide informal advice to persons conducting independent cleanups, including the authority to provide site-specific advice. Although technical assistance was available to consultants/property owners in the past, this statutory change allows the program to advise people before, during and after their cleanup. It became effective at the beginning of Fiscal Year 1998.

Site Investigations and Ranking

Initial Investigations

The first step in the cleanup process is to investigate the site. Once the Toxics Cleanup Program receives a complaint about a piece of property or the practices of an owner or operator, an inspector from the program will go to the site and conduct an initial investigation. An initial investigation involves looking at the present condition of the site for signs of possible spills or discharges and the use and storage of hazardous waste. Some sampling may be involved. During Fiscal Year 1997, about 400 initial investigations were

completed by the Toxics Cleanup Program. If it is determined that the site poses a threat to human health and/or the environment, the site may go through the site hazard assessment process or enter the Voluntary Cleanup Program.

Site Hazard Assessments

If it is determined that further work is required at a site after an initial investigation, a site hazard assessment may be conducted on the site. A site hazard assessment provides the Toxics Cleanup Program with basic information about a site. The program then uses the Washington Ranking Method to estimate the potential threat the site poses, if not cleaned up, to human health and the environment. The estimate is based on the amount of contaminants, how toxic they are and how easily they can come in contact with people and the environment. As mentioned earlier, a score of one represents the highest level of concern relative to other sites, and a score of five the lowest. Hazard ranking helps the Toxics Cleanup Program target where to spend State Toxics funds. Public concern, a need for an immediate response and availability of cleanup staff also affect which sites get first priority for cleanup. During Fiscal Year 1997, 97 sites went through the ranking process. A total of 834 sites have gone through the process since its inception in 1990. Of those, 202 have received a determination of “No Further Action.”



Program Support

Many people think that cleaning up a hazardous waste site involves the time of one person, the site manager. The site manager does spend a good amount of time reviewing plans and making sure the cleanup makes sense and is in compliance with the law, but there are many others involved in the cleanup process. Just who are they?

Public Involvement Staff: The Model Toxics Control Act requires extensive citizen involvement. Public involvement staff prepare the communication plans, write the site fact sheets, set up the public meetings and make sure the public is aware of ongoing activities at a site.

Computer Staff: They develop and maintain the databases in which site information is kept and retrieved. From these databases, our public lists are generated; such as the Confirmed & Suspected Contaminated Sites List and the Leaking Underground Storage Tank List. These lists are available to the public and have been found to be very useful to those conducting site assessments or purchasing property.

Budget and Planning Staff: They make sure staff are charging their work time to the correct funds, cost recover money from potentially liable persons and prepare reports (such as this) for managers, the Legislature and the public.

Policy Staff: They write rules, guidance documents and other publications for staff as well as the public to use when cleaning up a site.

Attorney General Staff: They assist the site managers in preparing consent decrees, enforcement orders and other legal documents pertaining to the process of cleaning up a site.

Administrative Staff: They manage all incoming and outgoing correspondence, maintain and organize files, set up meetings, answer telephone calls, etc. Basically, they support all of the others mentioned above.

All of the above positions are funded in whole or in part by money from the State Toxics Control Account. Some support costs are calculated into charge-out rates as directed by rule, and to that extent, are cost recovered from potentially liable persons.

The 1995 Legislature directed Ecology to establish a Policy Advisory Committee to provide advice to the Legislature and Ecology regarding improvements to the existing Model Toxics Control Act rules. During Fiscal Year 1997, funds from the State and Local Toxics Control Accounts were spent in support of Policy Advisory Committee activities.

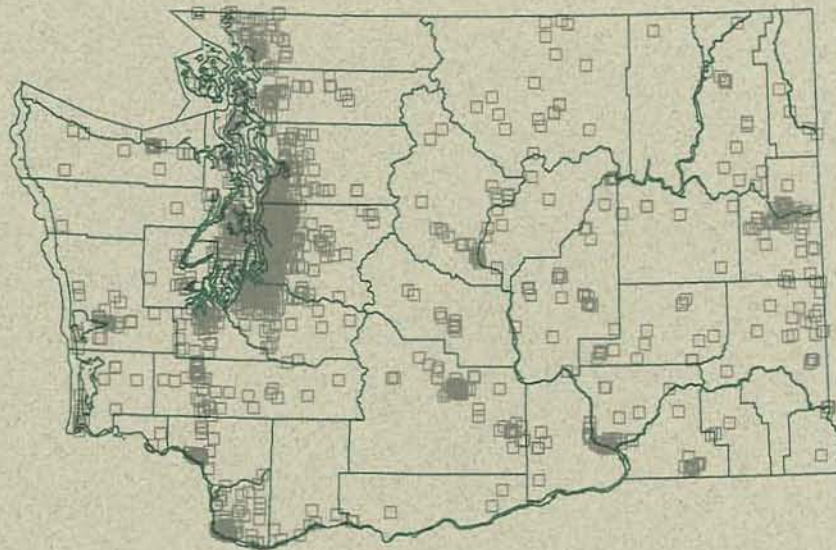
Underground Storage Tanks

Fifteen percent of Toxics Cleanup Program staff work on regulating underground storage tanks. Although not funded with State Toxics Control Account funds, their function is a significant part of the program. They see to it that owners and operators of regulated underground storage tanks are complying with state and federal standards, and thereby preventing pollution. One of their biggest tasks is working with owners and operators to meet the December 22, 1998 tank upgrading requirements.



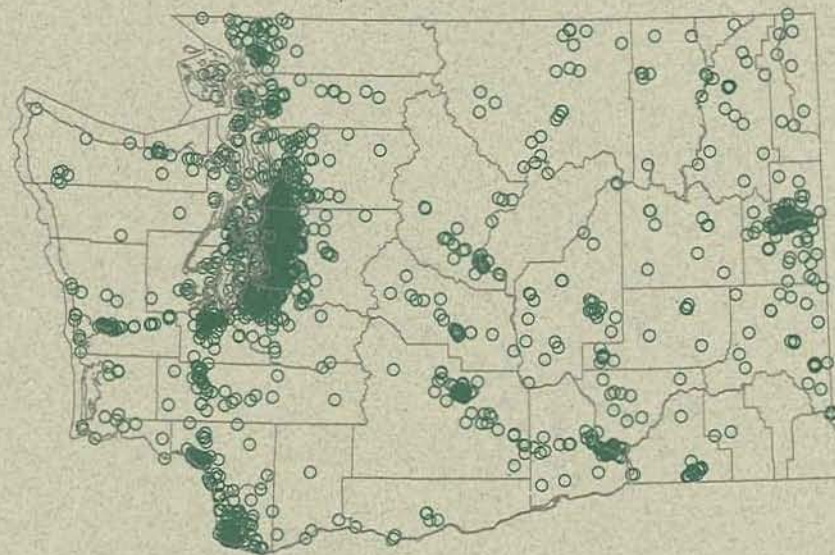
Cleanup in Progress – 3,023 sites

**Cleanup in Progress includes: sites being cleaned up independent of Ecology oversight (includes leaking underground storage tanks), sites that are in the cleanup process with Ecology oversight, sites that have had construction completed and are in the operation and maintenance phase.*



No Further Action – 2,679 sites

**No Further Action includes: leaking underground storage tank sites where final cleanup reports have been submitted to Ecology, sites Ecology has determined require no further action, sites that have been delisted from the Hazardous Sites List.*



Department of Ecology: Hazardous Waste & Toxics Reduction Program

\$5,911,204 Spent

The Hazardous Waste and Toxics Reduction Program's goal is to prevent hazards due to improper disposal of hazardous wastes into the state's air, land and waters. Their two primary objectives are:

- 🌲 Reduce the amount of hazardous waste generated;
- 🌲 Safely manage hazardous waste.

Major activities designed to accomplish these objectives include visiting businesses that generate hazardous waste, promoting pollution prevention, making common sense hazardous waste management decisions, conducting enforcement when necessary and keeping the public informed. These activities are funded with State Toxics Control Account funds.

Visiting Businesses that Generate Hazardous Waste

The Hazardous Waste & Toxics Reduction Program is concentrating on providing information to businesses through personal face-to-face

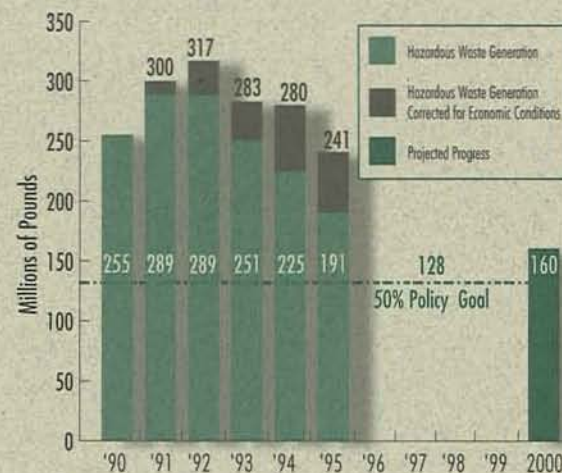
visits. Staff are using a variety of site visit approaches to increase the number of visits conducted. The emphasis is on providing technical assistance to help businesses both reduce and safely manage hazardous waste. Often staff suggestions help businesses save money as well as reduce the amount of waste they generate. One example is the Toxics Reduction Engineer Exchange project. A Hazardous Waste & Toxics Reduction engineering team worked with a metal finishing firm over a two-week period. The suggested capital investment for the first year cost about \$40,000 but is projected to save at least \$244,000 annually and reduce hazardous waste generated by 52 million pounds annually. Last year, program staff conducted 531 visits.

Promoting Pollution Prevention

Businesses that produce more than 2,640 pounds of hazardous waste annually must complete pollution prevention plans. Some 650 facilities in Washington currently participate in this program. Pollution prevention planning is a system to assist facilities examine operations to see if they can reduce waste and chemical use. The Hazardous Waste & Toxics Reduction Program provides technical assistance to facilities preparing plans. During Fiscal Year 1997, the Hazardous Waste & Toxics Reduction Program reviewed this program and made changes to keep it relevant and useful to businesses. The most innovative change involved offering an alternative to preparing a pollution prevention plan. For the first time ever,

the Hazardous Waste & Toxics Reduction Program will allow an "environmental management system" to substitute for the prescriptive requirement. This type of system routinely assesses environmental impacts of a business's operations and identifies improvements. Better environmental results are expected by using this approach. Reporting requirements for all facilities were also simplified.

Progress towards waste reduction is displayed in the following chart. The amounts shown are from all generating facilities except commercial treatment, storage and disposal facilities, which manage wastes generated by others. The graph also shows the data adjusted for the changing economy. The adjustments show estimated levels of waste generation assuming the economy remained constant. This process, called "normalizing" data, makes waste totals more comparable from year to year.



Making Common Sense Hazardous Waste Management Decisions

The Hazardous Waste & Toxics Reduction Program is using creative ways to make the Dangerous Waste Regulations workable while still protecting human health and the environment. For example, the program has been applying this common-sense approach to spent aluminum potliner, hazardous waste permitting and hazardous waste site closures. The program has identified regulatory mechanisms to allow recycling of spent aluminum potliner - the largest single waste stream in the state at 30,000 tons per year. The program has also improved the hazardous waste permitting process with the goal of expediting permit decisions. Changes to the process were developed to address business concerns without compromising environmental protection. One key change is staff working more closely with permit applicants to achieve more complete applications so that permit decisions can be made more quickly. The program has also been working to close and clean up facilities that were once managing hazardous waste. Staff have worked with businesses to complete 53 site closures.

Conducting Enforcement If Necessary

Maintaining a credible enforcement capability is essential to keeping the Hazardous Waste & Toxics Reduction Program's Technical Assistance Program effective. In most cases, unless there is an immediate threat to human health and/or the environment, assistance is offered to help a business correct the problem before resorting to an enforcement action. During Fiscal Year 1997, the program issued 19 hazardous waste enforcement actions totaling \$256,000. This money went back into the State Toxics Control Account.

Keeping the Public Informed

The Hazardous Waste & Toxics Reduction Program has several efforts underway to provide information to the public and to measure their results. During Fiscal Year 1997, staff responded to more than 15,000 calls on hazardous waste issues. Staff conducted 73 workshops on safe waste management and pollution prevention attended by 4,700 people. The program collects and distributes information on dangerous waste generation from businesses in the state. Staff prepare a quarterly newsletter "Shoptalk" to provide current tips to help businesses reduce and safely manage hazardous waste.

Department of Ecology: Agency Administration, Facility & Related Costs

\$1,572,245 Spent

During the 1995-97 Biennium, 23 percent of Ecology's administration, facility and related costs were funded with Toxics Control Account funds. Administration costs include: Executive management, who oversee the Department's mission, goals and policies, and personnel matters; Regional directors, who represent the director in local communities and provide coordination on complex local issues; Legislative and Intergovernmental Relations staff, who coordinate legislative activities and represent agency policy to other governments; Education and Public Information staff, who provide primary leadership in environmental education, community outreach, public involvement, media relations, publications production and distribution, and library services. Additional costs include those for computer support, budgetary and central planning, accounting and fiscal services, archiving, forms management, mail handling, warehousing, building maintenance, facility planning, telecommunications and motor pool services.



Department of Ecology: Nuclear Waste Program

\$ 3,403,159 Spent

Ecology's Nuclear waste Program regulates the storage, treatment and disposal of dangerous and mixed waste at Hanford and certain non-Hanford facilities. Mixed waste contains both a hazardous and radioactive component. In Fiscal Year 1997, Toxics Control Account monies paid for compliance inspections, regulatory oversight and technical assistance, as well as program review, approval of mixed waste Part B permit applications and program oversight of the Tank Waste Remediation System (TWRS). The TWRS project addresses environmental risks at the Hanford Tank Farm.

The Nuclear Waste Program generates money by collecting fees from facilities that manage mixed waste in the state. This money goes into the State Toxics Control Account where it is appropriated to the Nuclear Waste Program.

The following pie chart shows how the Nuclear Waste Program's appropriation was spent in Fiscal Year 1997.

*Nuclear Waste Program's Fiscal Year 1997
Expenditures*



Department of Ecology: Central Programs

\$ 2,024,967 Spent

Ecology's Central Programs works in a variety of ways to meet the goals of the Model Toxics Control Act. One responsibility of Central Programs is to respond to oil or hazardous substance spills. This involves ensuring cleanup by responsible parties, cleaning up "orphan" spills, acting as on-scene coordinator, investigating and issuing penalties when appropriate, participating in drills and reviewing plans to support spill preparedness and prevention, and working closely with federal spill programs. On July 1, 1997, these responsibilities were combined with the Office of Marine Safety into a new Spill Prevention, Preparedness and Response Program housed in the Department of Ecology.

A second responsibility of Central Programs is the establishment and maintenance of a list of locations with contaminated sediments. Sediment specialists provide technical assistance and oversight to the cleanup of sites with contaminated sediments. Staff from Central Programs also work on the cleanup of industrial sites. These cleanups include pulp mills, aluminum smelters and bulk plants.



In coordination with the Hazardous Waste and Toxics Reduction Program, Central Programs staff work on the permitting of facilities wanting to treat, store, recycle and/or dispose of dangerous wastes. To facilitate the permitting process, staff operate a Permit Assistance Center. The center is designed to help citizens comply with environmental permitting requirements, such as for solid waste and hazardous waste permits. Staff answer permit-related questions from phone or in-person inquiries, provide project-specific assistance to coordinate activities among multiple permitting agencies, prepare written guidance materials and prepare required rules and reports.

In addition, the State of Washington (with Ecology as the lead agency) and the U.S. Army Corps of Engineers are sharing the costs of a three-year, \$3.5 million study concerning the feasibility of siting a multi-user facility in Puget Sound for confined disposal of contaminated sediments. The project will produce programmatic and site-specific Environmental Impact Statements, as well as a final feasibility report. During Fiscal Year 1997, \$90,200 was spent (transferred from the Local Toxics Control Account) on start-up costs for preparing the programmatic Environmental Impact Statement.

Department of Ecology: Solid Waste & Financial Assistance Program

\$ 2,035,582 Spent

Ecology's Solid Waste and Financial Assistance Program supports and supplements the work of local governments to properly manage and dispose of solid waste. There are more than 300 permitted solid waste facilities in the state—from landfills to recycling businesses. The authority and responsibility to plan for and permit solid waste activities in Washington rests with the local jurisdictional health departments. The Solid Waste and Financial Assistance Program establishes statewide regulations, addresses statewide issues, approves local plans, reviews local permits and provides technical assistance to these local jurisdictions. This partnership helps to protect the environment and human health, while making the best possible uses of resources. In 1997, the program provided the following services:

- ▲ Provided professional engineering and hydrogeologic support to local jurisdictional health departments;
- ▲ Provided technical assistance for solid waste inspections at the request of the local health department;

▲ Reviewed, updated and interpreted solid waste regulations to accommodate changes. At the direction of the Legislature, staff have begun a comprehensive review of the solid waste permitting system to determine how the use and reuse of materials can be improved;

▲ Assisted counties in developing solid and moderate risk waste plans, and in putting these plans to practice. ("Moderate risk waste" is hazardous waste from households or from businesses that generate only small quantities.)



Department of Ecology: Environmental Investigations and Laboratory Services Program

\$ 854,770 Spent

Ecology's Environmental Investigations and Laboratory Services Program is responsible for monitoring land and water to measure environmental status, trends and results. Major activities include directed environmental studies to address known or suspected problems at individual sites, pollutant loading assessments and ambient monitoring. Examples include:

- Determining the nature and extent of contamination from leaking underground petroleum storage tanks;
- Monitoring the long-term effectiveness of ground water cleanup;
- Sediment trap monitoring in Puget Sound urban bays measuring changes in contaminant loading;
- Watershed pollutant loading studies;
- Trace metals analyses in surface water;
- Assessment of environmental degradation from oil spills and long-term practices;

- Screening studies addressing pesticides in surface water, ground water and fish tissues;
- Fate and transport studies of aquatic herbicides;
- Biotoxicity criteria development;
- Technical assistance for waste in fertilizer issues;
- Technical assistance for natural resource damage assessments.

Department of Ecology: Water Quality Program

\$ 839,380 Spent

The Water Quality Program receives State Toxics Control Account funds to pay for activities that help protect Washington's water from contaminants.

The Aquatic Pesticide Program Finds Long-Term Solutions

This program is aimed at reducing the risk to public health and aquatic life from pesticides that are used to manage aquatic weeds, invasive plants and pests. Staff provide assistance and how-to information to pesticide applicators, lake associations and others to ensure the wise use of aquatic pesticides. Staff also assist chemical manufacturers and pesticide applicators and their clients with information regarding permit conditions, and provide educational materials on specific pesticides and aquatic pest control methods.

The Lower Columbia River Estuary Program

The National Estuary Program was established by Congress in 1987 to identify nationally significant estuaries that are threatened by overuse, development, pollution, and to aid in the development of



local management plans designed to protect and preserve these estuaries. The governors of Washington and Oregon nominated the lower Columbia River for inclusion in the program in January 1995. The nomination resulted from data derived from the Lower Columbia River Bi-State Water Quality Program, a five-year study of the lower Columbia River that identified several problems, including:

- Toxics in sediment and fish tissue that can affect the health of humans, fish and wildlife;
- Habitat loss and modification that can affect fish and wildlife resources;
- Water quality problems that affect beneficial uses in portions of the estuary;
- Overall decline in anadromous fish runs that has resulted in threatened and endangered species listings.

The study was partially funded with State Toxics Control Account monies. In the summer of 1995, the lower Columbia River was accepted into the National Estuary Program. During 1997, a management team (consisting of staff from the Department of Ecology, the Oregon State Department of Environmental Quality, the Environmental Protection Agency and local citizens) identified seven priority issues for the lower 145 miles of the river, developed a statement for each and identified a series of goals and

objectives for solving the problems associated with each issue. The management committee also hosted a series of public meetings designed to refine the seven priority issues. Over the next two years, the management committee will continue to refine their goals and objectives and develop a final list of implementation actions.

Nooksack River Watershed Initiative

In 1994, the Department of Ecology established a field office in Bellingham to house the Nooksack Watershed Initiative staff. The Initiative is a geographically targeted, community driven process for addressing environmental priorities in the Nooksack River Watershed. The goal of the Initiative is to assist citizens, business, and local government and tribal interests establish a geographically focused effort to promote the long term sustainability of water-related resources in the Nooksack Watershed. Much of these efforts are funded with State Toxics monies.

Department of Health

\$1,542,281 Spent

During Fiscal Year 1997, the Department of Health received \$1,542,281 from the State Toxics Control Account to carry out public health based activities and programs providing identification, public information and education, technical assistance and policy development related to actual or potential releases of toxics substances into the homes and communities of Washington. These services are provided to a wide range of stakeholders and constituents, including: state, federal and local agencies and organizations, businesses and the general public.

Prevention

The Department of Health's environmental health activities are founded within the premise of prevention. The department conducts a number of programs and activities related to toxic substances with the goal of preventing adverse human health effects. Significant activity involves evaluating hazards to public health of area-wide contamination. Many of the area-wide sediment, surface water and ground water problems addressed by the Department of Health are related to past industrial and military waste streams and to the widespread use of fertilizers and pesticides.



Program areas include such issues as:

- Ambient and indoor air;
- Fish and shellfish contaminants;
- Development of human health sediment criteria;
- Drinking water;
- Hazardous waste;
- Drug lab contractor and worker certification;
- Drug lab cleanup standards.

Throughout Fiscal Year 1997, as part of the Department of Health's proactive approach to prevention, evaluations were made for all community public water systems to determine continued eligibility for waiver to organic chemical monitoring under the Federal Safe Drinking Water Act. Information collected from this effort has been valuable in the evaluation of locations which are used for drinking water supplies and in reducing unnecessary costs to public water system consumers.

Cleanup

The Department of Health is working in close cooperation with the Department of Ecology in an effort to address community concerns regarding hazardous waste sites. Over the past year, the agency has been involved in the assessment of a number of sites currently being managed under the Model Toxics Control Act. The purpose of the

assessment is to evaluate the potential health hazards faced by communities in proximity to hazardous waste sites. Below are examples of sites the Department of Health assessed during Fiscal Year 1997.

Cenex/Quincy in Grant County

Pesticide contamination to soil and ground water was identified by Ecology at the Cenex facility. Ecology and the Department of Health met with the community to explain the history of the site, field investigations and cleanup plans for the site, and to give the community an opportunity to share their health concerns. The department is preparing a health consultation to evaluate the health risk posed by site contamination and address community health concerns.

Spur Industries in Spokane County

The Department of Health conducted an exposure investigation upon request of a Spokane County resident. Concern was expressed that a family's health problems may be attributable to exposure to airborne contaminants originating from Spur Industries, a neighboring chrome plating/metal refinishing facility. The Department of Health, in cooperation with Spokane County Health District, the EPA and Ecology, collected soil and air samples and analyzed them for chromium.

The department has conducted two exposure investigations this year in areas where citizens have expressed concerns about hazardous waste releases into the environment.

Quincy Residents Concerns

Under existing regulations, some types of industrial wastes or by-products can be added to fertilizers as sources of liming agents and micronutrients. These industrial by-products may sometimes contain unwanted metals such as cadmium, arsenic and lead. Based on concerns raised by citizens in Quincy, the Departments of Health, Ecology, Agriculture and Washington State University are evaluating the potential environmental and health impacts of fertilizer products.

Challenges the Department of Health Faces

Some of the Department of Health's challenges for the future include continued progress in the areas of information resource management, environmental equity, environmental health education, development of environmental indicators, risk assessment vs. health assessment and assessment related to emerging conditions. Another important challenge is the need for the public health community to conduct efficient and effective health education efforts, particularly directed to cultural and ethnic diverse populations.



Department of Agriculture

\$ 506,242 Spent

State Toxics funds support the Washington State Department of Agriculture's (WSDA) Waste Pesticide Identification and Disposal Program.

The program has two goals:

- Significantly reduce and eventually eliminate the backlog of prohibited and otherwise unusable pesticides stored by users, especially those stored on farms and other similar rural locations;
- Prevent future accumulations of unusable pesticides through education focused in the areas of product storage and handling as well as improved planning prior to purchase.

Unusable pesticides are collected at two types of events: regional and special site. The majority of pesticides are collected at regional events. These events are held on a rotating basis around the state and are similar to household hazardous waste collections in that the participants transport their unusable pesticides to the collection site. The Department of Agriculture will assist the participants in packaging their materials to enhance safe transportation. The department will also assist with chemical analysis of unlabeled containers. The remainder of pesticides are

collected at special site events. These events are usually held at the participant's pesticide storage location due to the dangers of numerous containers of unknown chemicals, hazards associated with transportation and the risk to other participants if brought to a regional event.

648,677 pounds (324 tons) of unusable pesticides have been collected and properly disposed of from 2,208 participants in the program's nine year history. During Fiscal Year 1997, nine regional and twelve special collections were held. 111,132 pounds of unusable pesticides from 384 participants were collected. The total cost was \$275,807.

The table on page 19 summarizes the pesticide collection events held during Fiscal Year 1997.



Waste Pesticide Disposal Projects Performed by WSDA Fiscal Year 1997 (7/1/96 - 6/30/97)

Collection Event	When	Participants	Pounds	Disposal Cost	Per Pound
Kelso-Longview Regional	8/22/96	35	13,039	\$25,474.00	\$1.95
Puyallup Regional	8/28/96	12	9,608	\$25,008.75	\$2.60
Coupeville Regional	9/24/96	5	929	\$2,090.75	\$2.25
Lynden Regional	9/26/96	32	9,397	\$23,116.50	\$2.46
Spokane Regional	10/16/96	31	9,867	\$24,375.00	\$2.47
Raymond Regional	3/12/97	33	4,792	\$14,910.00	\$3.11
Moses Lake Regional	4/2/97	45	25,352	\$51,211.23	\$2.02
Okanogan Regional	5/1/97	41	5,052	\$16,964.00	\$3.36
Wenatchee Regional	5/21-22/97	112	20,048	\$46,427.22	\$2.32
Regional Total FY 1997	9 Events	346	98,084	\$229,577.45	\$2.34
Chelan 1 Special Site	7/1/96	1	298	\$1,672.25	\$5.61
Yakima 92 Special Site	7/2/96	7	669	\$2,346.75	\$3.51
Burlington 3 Special Site	7/25/96	1	4,176	\$12,181.50	\$2.92
Wards Cove Special Site	8/8/96	1	1,180	\$1,032.00	\$0.87
Walla Walla Foundry Special Site	10/2/96	1	300	\$733.50	\$2.45
Chelan County Special Site	10/17/96	1	413	\$1,546.00	\$3.74
Yakima 92 Special Site	11/4/96	5	2,131	\$5,400.75	\$2.53
Olympia 3 Special Site	12/3/96	1	31	\$8,718.25	*\$281.23
Colchester 1 Special Site	3/5/97	1	120	\$679.75	\$5.66
Gig Harbor 1 Special Site	3/5/97	1	25	\$117.50	\$4.70
Quincy 1 Special Site	4/3/97	2	390	\$1,646.75	\$4.22
Yakima 92 Special Site	6/10/97	16	3,315	\$10,154.25	\$3.06
Special Site Total FY 1997	12 Events	38	13,048	\$46,229.25	\$3.54
Total FY 97	21 Events	384	111,132	\$275,807	\$2.48

* This includes 23 one-pound cylinders of Methylbromide. Methylbromide has special disposal requirements.



Washington State Patrol

\$ 287,853 Spent

State Toxics Control Account funds appropriated to the Washington State Patrol are used by the Fire Protection Bureau/Fire Training Academy for training purposes. The primary focus of the fire training academy is to work in partnership with Washington state's communities, industrial complexes, private industry and military forces to provide live fire training that cannot otherwise be delivered. The training helps reduce the risk to both firefighters and the property they protect.

State Toxics Control Account funds are dedicated to instructors, equipment, fuel and support personnel required to deliver classroom instruction and live fire training. This training is designed to include academic and hands-on training for first responders and also enhances emergency preparedness planning, response skills and incident command training necessary to mitigate a hazardous materials incident. Courses start at the basic awareness level and follow through successively higher levels of required expertise. Other supportive training – such as incident command, breathing apparatus and search and rescue are also provided. This training is vital to ensure minimal loss of life and property to all citizens throughout the state of Washington.

160,397 hours of practical and classroom instruction were given to students on-site during the period of July 1, 1995 through June 30, 1997.

Department of Revenue

\$ 32,104 Spent

The Department of Revenue oversees the collection of the Hazardous Substance Tax on petroleum products, pesticides and certain chemicals. Over 85 percent of the money collected comes from petroleum products.



Office of Marine Safety

\$ 146,609 Spent

Washington's Office of Marine Safety was established as an independent agency by the 1991 Legislature in the wake of the Exxon Valdez oil spill in Prince William Sound, Alaska. On July 1, 1997 (Fiscal Year 1998), the Office of Marine Safety merged with Ecology's Spills Management Program (which was part of Central Programs) to create Ecology's new Spill Prevention, Preparedness and Response Program.

Since its inception, the Office of Marine Safety has received funds from the State Toxics Control Account to implement the vessel contingency planning function as required in 88.46.060 RCW.

In Fiscal Year 1997, State Toxics Control Account funds were used to perform the following:

- Evaluate seven vessel oil spill contingency plans for completeness and approval;
- Maintain twenty-three currently approved oil spill contingency plans;
- Inform industry of the necessary requirements and negotiate safety provisions as appropriate;
- Approve four primary spill response contractors and maintain updated contractor information;
- Evaluate and participate in required oil spill response exercises;
- Require plan holders to perform four "No notice" two-hour response drills and eight "No notice" vessel notification drills;
- Participate in contingency planning related workgroups of the State/British Columbia Task Force and the Northwest Area Committee;
- Coordinate with the Department of Ecology, Oregon Department of Environmental Quality and the U.S. Coast Guard regarding contingency planning issues.



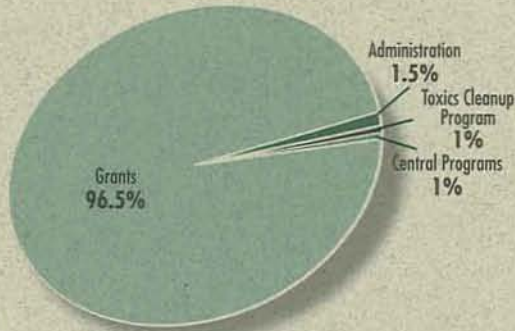
Local Toxics Control Account

The Local Toxics Control Account is used to fund grants to local governments. The Department of Ecology, specifically the Solid Waste and Financial Assistance Program, administers the grants program. Local governments may use grants for cleanup of contaminated sites or for programs to manage solid and hazardous waste. Funds from this account can also be used to provide drinking water to local jurisdictions whose wells have been contaminated as the result of a hazardous waste site.

Local Toxics Control Account Revenue

TOTAL \$26,267,000

Local Toxics Control Account Expenditures



Coordinated Prevention Grants

Coordinated Prevention Grants are awarded to local governments to help prevent pollution from improper management and disposal of solid waste and moderate risk waste. The grant program runs on a two-year cycle. Most of the awards for current projects (\$15.1 million) were made in 1996, with the grant-funded work continuing through 1997. The program funded the following types of projects:

- 🌲 Inspecting facilities and pursuing illegal dumpers;
- 🌲 Permitting facilities and activities;
- 🌲 Collecting and disposing of household hazardous waste;
- 🌲 Working with businesses to find ways to reduce and recycle their moderate risk waste;
- 🌲 Teaching people how to prevent waste and to recycle;
- 🌲 Providing curbside and drop box collection for recyclables;
- 🌲 Providing yard waste composting;
- 🌲 Drilling ground water monitoring wells at landfills;
- 🌲 Training staff;
- 🌲 Accomplishing special projects, such as technology demonstration projects.



Fiscal Year 1997 Recipients	Grant #	Date Signed	Total Project Cost	LTCA Dollars
Des Moines, City of	G9700026	2/6/97	\$26,116	\$15,670
Enumclaw, City of	G9600131	7/30/96	\$23,166	\$13,900
Federal Way, City of	G9600339	7/18/96	\$317,317	\$95,230
Jefferson County	G9600357	7/22/96	\$214,109	\$126,821
Jefferson County Health Department	G9600354	7/30/96	\$32,550	\$21,157
San Juan County	G9600358	9/6/96	\$332,300	\$85,995
SeaTac, City of	G9600258	6/25/96	\$50,098	\$30,059
SW Washington Health District	G9700181	4/23/97	\$39,053	\$29,290
Whitman County	G9700049	9/3/96	\$217,000	\$141,050
Woodinville, City of	G9700138	3/10/97	\$17,877	\$10,726
Total			\$1,269,586	\$569,898

An additional \$145,903 was spent on amendments to existing grants.

Breakdown of Coordinated Prevention Grants by Task:

Hazardous Waste Planning	\$1,300
Household Hazardous Waste Implementation	\$34,646
Household Hazardous Waste Collection and Disposal	\$180,339
Small Quantity Generator Implementation	\$14,424
Moderate Risk Waste - Capital	\$9,750
Solid Waste Enforcement	\$79,141
Waste Reduction and Recycling - Activities	\$214,373
Waste Reduction and Recycling - Capital	\$35,925
Total	\$569,898



Remedial Action Grants

The Remedial Action Grants Program provides funding for local governments facing hazardous site cleanups. In 1997, the program helped local governments:

- Design or carry out cleanups at 13 sites, including remedial investigations, feasibility studies and interim remedial measures;
- Investigate possible hazardous waste sites in six counties.

Remedial Action Grants can also be used to provide clean drinking water to communities where a hazardous waste site has contaminated the drinking water supply. Ecology currently has two pending applications for drinking water grants.

Brownfields

Brownfield Grants are a subset of Remedial Action Grants. Brownfields are abandoned urban properties that are contaminated from past industrial or commercial practices. Business owners and developers find it cheaper to buy property in rural areas and develop that property rather than buy a piece of urban, contaminated property. What the Brownfields Grant does is award local governments money to clean up the urban property and put that property back to use.

Fiscal Year 1997 Recipients	Grant #	Date Signed	Total Project Cost	LTCA Dollars
Aberdeen, City of	G9700199	5/20/97	\$18,208	\$13,656
Grays Harbor, Port of	G9700065	10/2/96	\$358,425	\$268,818
Island County Health Department	G9700112	2/5/97	\$60,000	\$60,000
Kitsap County	G9700097	1/15/97	\$2,272,074	\$1,136,037
Mason County Fire District #5	G9700064	9/27/96	\$90,880	\$68,160
Okanogan, City of	G9700113	12/30/96	\$314,347	\$235,761
Olympia, Port of	G9700144	3/3/97	\$1,448,890	\$724,445
Peninsula School District	G9700203	6/13/97	\$28,684	\$14,342
Port Angeles, City of	G9700159	3/11/97	\$10,987	\$8,239
Ridgefield, Port of	G9700124	1/15/97	\$302,566	\$151,283
Snohomish County Health District	G9700133	2/6/97	\$90,000	\$90,000
SW Washington Health District	G9700129	1/27/97	\$80,000	\$80,000
Tacoma, City of	G9700198	5/29/97	\$800,000	\$400,000
Toledo School District #237	G9700085	1/24/97	\$100,000	\$75,000
Vancouver, Port of	G9700140	4/25/97	\$998,500	\$499,250
Yakima, City of	G9700059	10/16/96	\$120,847	\$90,635
Yakima County Health District	G9700213	6/2/97	\$80,000	\$80,000
Total			\$7,174,408	\$3,995,626

An additional \$1,136,652 was spent on amendments to existing grants.

Fiscal Year 1997 Brownfield Grants

Completed Projects:

Site	Original Use	New Use	Grant Amount
King County Lake Hills	Sewage Treatment	Public	\$1,334,826

Pending Projects:

Site	Original Use	New Use	Grant Amount
City of Yakima Goodwill Industries	Service Depot and Retail	Police Station	\$90,635
Port of Ridgefield	Wood Treatment	Sewage Treatment	\$151,283
Port of Vancouver	Plywood Manufacturing	Metal Recycling	\$499,250
City of Tacoma Thea Foss Uplands	Industrial	Commercial & Public	\$400,000



Public Participation Grants

The Public Participation Grants Program provides citizen groups and not-for-profit organizations with funding for projects that educate and involve the public in waste issues. These grant monies are provided by one percent of the revenue to the State and Local Toxics Control Accounts. For Fiscal Year 1997, all Public Participation Grants were funded with Local Toxics Control Account funds. In 1997, the program provided grants for 18 projects, which helped people:

-  Understand and comment on cleanup proposals at six cleanup sites;
-  Prevent pollution and encourage good environmental stewardship;
-  Shop for products that reduce waste;
-  Use less hazardous substances in their homes and businesses;
-  Recognize businesses that prevent and reduce hazardous waste;
-  Establish an electronic clearinghouse for reusable building materials.

Fiscal Year 1997 Recipients	Grant #	Date Signed	Total Project Cost	LTCA Dollars
Association of Bainbridge Communities	G9700158	3/10/97	\$25,000	\$25,000
Columbia River United	G9700166	4/2/97	\$32,500	\$32,500
Curlew Lake Association	G9700197	5/29/97	\$13,160	\$13,160
Economic Development Assoc. of Skagit County	G9700142	2/11/97	\$30,500	\$30,500
Energy Outreach Center	G9700123	1/8/97	\$22,982	\$22,982
Envirostars Partnership	G9700194	5/13/97	\$25,500	\$25,500
Green Zone Committee, The	G9700157	3/11/97	\$21,000	\$21,000
Inland Empire Public Lands Council	G9700183	5/13/97	\$33,500	\$33,500
Keypoint/Liberty Bay RAB	G9700132	2/5/97	\$28,000	\$28,000
Lighthouse Environmental Programs	G9700189	5/29/97	\$15,050	\$15,050
NE Everett Community Org.	G9700114	1/10/97	\$26,558	\$26,558
Northwest Marine Trade Association	G9700130	4/23/97	\$36,586	\$36,586
Re Sources	G9700173	4/17/97	\$13,151	\$13,151
Sound Decisions	G9700106	12/23/96	\$24,750	\$24,750
WA Dental Service Association	G9700066	10/23/96	\$10,000	\$10,000
Total			\$358,237	\$358,237



Environmental Indicators: The Results of Our Work

How healthy is Washington's environment? Is the health of our environment getting better, staying the same or getting worse? To help answer these questions, Ecology developed environmental indicators.

Environmental indicators are measures of environmental quality. Just as a thermometer tells us something about the condition of our personal health, environmental indicators tell us something about the health of the environment.

Below are environmental indicator figures for the Toxics Cleanup Program calendar year 1996. All of the numbers presented reflect values reported by staff and are considered conservative. There are cleanups that are not captured by our present system for reporting environmental indicators.

Number of People at Reduced Risk as a Result of Site Cleanup

This is the most powerful and complex of the environmental indicators. Last year, an estimated 1,100 directly affected people and 51,000 indirectly affected people were subject to less risk due to the cleanup of hazardous waste sites. What is the difference between directly affected and indirectly affected? Here is an example to explain the difference.

A site with surface contamination and a quarter-mile long, ground water plume may have directly impacted 20 people – 10 on-site workers and 10 private well owners. The plume, if not abated, may reach a city well which serves 20,000 people. The latter would be the indirect number.

Amount of Contaminants Treated, Removed, Recycled or Contained

Base/Neutral Organics (<i>examples are Acenaphthene, Hexachloro-benzene, Fluoranthene, 2,4-dinitro-toluene, Isophorone</i>)	3,600 lbs.
Halogenated Organics (<i>examples are Carbon Tetrachloride, Chloroform, Vinyl Acetate, Freons</i>)	306,000 lbs.
Metals – Priority Pollutants (<i>examples are Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Cyanide, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc</i>)	1,016,000 lbs.
Metals – Other (<i>examples are Aluminum, Barium, Cobalt, Iron, Manganese and Tin</i>)	511,000 lbs.
Polychlorinated biPhenyls (PCBs) (<i>common types are AROCLOR-1016, AROCLOR-1221, AROCLOR-1260</i>)	600 lbs.
Pesticides (<i>examples are Aldrin, Chlordane, Endrin, Diazinon, Folex, Malathion</i>)	17,000 lbs.
Petroleum Products (<i>examples are Gasoline, Diesel fuel, Mineral Oil</i>)	1,482,000 lbs.
Phenolic Compounds (<i>examples are 2,4,6-trichloro-phenol, Phenol, Cresols, Pentachlorophenol, Benzoic Acid</i>)	236,000 lbs.
Reactive Wastes (<i>examples are Peroxides, Metallic Sodium</i>)	14,000 lbs.
Corrosive Wastes (<i>examples are Nitric Acid, Sodium Hydroxide</i>)	5,000 lbs.
Radioactive Wastes (<i>examples are High and Low Level Nuclear Wastes, Mixed Nuclear Wastes, Uranium Mine Tailings</i>)	16,000 lbs.
Asbestos	19,000 lbs.
Other/Mixed Contaminants (<i>a combination of contaminants in the above categories</i>)	47,000 lbs.
Total	3,673,200 lbs.

1.3 million more pounds of contaminants were treated, removed, recycled or contained in 1996 than in 1995. This includes: pesticides up 17,000 pounds, petroleum products up 95,000 pounds, phenolic compounds up 23,000 pounds, reactive wastes up 14,000 pounds and radioactive wastes up 15,000 pounds.

The amount of polynuclear aromatic hydrocarbons treated, removed, recycled or contained was down 579,000 pounds in 1996. Other mixed wastes were down 2.33 billion pounds from the 1995 figure — which reflects the cleanup of a couple of large landfills.



Land and Water Returned to Productive Use

These are acres of land that were previously unusable due to contamination. After cleanup, these acres are now usable — though some restrictions (such as a restrictive covenant) may exist on the property.

Unrestricted Soil	43 acres
Restricted Soil	68 acres
Unrestricted Ground Water	4 acres
Restricted Ground Water	23 acres

Volume of Contaminated Media Remediated

The following numbers show the volume of contaminated media (such as soil, surface water, sediment, ground water, drinking water) that was cleaned up through the cleanup process.

Soil	4,622,000 cubic feet
Ground water	2,144,282,000 gallons
Drinking water	847,328,000 gallons

Volume of Contaminated Media Contained

The following numbers show the volume of contaminated media that was contained (such as through capping or institutional controls) through the cleanup process.

Soil	1,569,000 cubic feet
Surface water	25,000 gallons
Ground water	841,958,000 gallons

Environmental indicators were developed to track the results of site cleanups. In these early stages of information collection and scrutiny, we have not seen clear trends in all of the information. We will continue to monitor the contaminants that have been treated, removed, recycled or contained at a site. Eventually, we should be able to measure environmental status and trends at cleanup sites.

For perspective, an average 65-passenger school bus has a volume of approximately 1,600 cubic feet. It would take nearly 3,000 school buses, filled to the roof, to hold the soil that was cleaned up just last year alone! And picture this! A swimming pool used for last year's Olympic Games in Atlanta holds 1 million gallons of water. The amount of ground water remediated last year could fill up nearly 2,200 Olympic-size swimming pools.



Notes



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Cover Photos (from left to right)

-  Workers conduct sediment sampling.
Provided by Lucy Pebles, Department of Ecology
-  Excavation at Dock Street site in Tacoma, Washington.
Provided by Charles Hinds, Department of Ecology
-  Person holding bag of prohibited pesticide, lead arsenate. This bag is over 45 years old.
Provided by Joe Hoffman, Department of Agriculture
-  Students participate in drill at Fire Training Academy in North Bend, Washington.
Provided by Jacqueline R. Nagle
-  Contaminated soil excavated from the Wondrack site in Ellensburg, Washington.
Provided by Department of Ecology
-  Ecology Youth Corps workers remove contamination from metals recycling container.
Provided by James Wavada, Department of Ecology

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