

Thurston County Board of Health

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Diane Oberquell, Commissioner

Thurston County Public Health and Social Services Department

Patrick M. Libbey, Director
Diana T. Yu, MD, MSPH, Health Officer

Acknowledgments

Participating Cities

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Thurston County Solid Waste Advisory Committee

Judy Wilson, County Commissioner, Chair
Don Bache, Port of Olympia
Stan Biles and Pat Cole, City of Olympia
Delroy Cox, industry representative
Heather Highmiller, citizen
Dennis McVay, Town of Rainier
Richard Meigs, citizen
Adam Rivas, City of Yelm
Jim Rozmaryn, citizen
Graeme Sackrison, City of Lacey
Mark Shattuck, City of Tumwater
Prissilla Terry, refuse business representative
vacant, City of Tenino
vacant, Town of Bucoda
vacant, recycling industry representative

Household Hazardous Waste Scoping Group Members

Kathy Callison, City of Tumwater
Michelle Maislen, City of Tumwater
Liz Hoenig, City of Olympia
Penny Mabie, City of Olympia
Mike Faris, Service Master/Master Builder
Alan Mountjoy-Venning, Olympia Solid Waste Advisory Committee
Rochelle Rothaus, Project GREEN/Thurston Cons. Dist.
Ken Garmann, City of Yelm
Ruth Cowan, Meadows Homeowners Association
Karla Fowler, LOTT Wastewater Treatment Facility
Lois Lopez, Citizen
Jane Hedges, Thurston County Health Department
Rachel Donnette, Thurston County Health Department
Sally Toteff, Thurston County Health Department
Thuy Vu, Thurston County Health Department
Mary Jo Buza, Thurston County Health Department
Jane Mountjoy-Venning, Thurston County Health Department

Small Quantity Generator Scoping Group Members

Bernard Brady, Department of Ecology
Nicky Rushing, Department of Ecology
Celia Nightingale, Economic Development Council
Barbara Morson, Morson Environmental
Craig Weckesser, Olympic Air Pollution Control Authority
Jon Persson, ABC Printing, Inc.
Jeff Foster, Sierra Club
Doris Cellarius, Citizen
Mike Faris, Service Master/Master Builder
Jim Oberlander, Tumwater Hill Assoc.
Karla Fowler, LOTT Wastewater Treatment Facility
Michelle Maislen, City of Tumwater
Mike Brewer, City of Olympia, Operation WaterWorks
Gregg Grunenfelder, Thurston County Health Department
Rachel Donnette, Thurston County Health Department
Rich Decker, Thurston County Department of Water and Waste Management
Sally Toteff, Thurston County Health Department
Thuy Vu, Thurston County Health Department
Tracy Forsberg, Thurston County Health Department
Donna Freier, Thurston County Health Department
Frank Hamilton, Thurston County Roads and Transportation Services

Planning and Support Staff

Virginia Blosser, Thurston County Health Department

Rachel Donnette, Thurston County Health Department
Jan Golding, Thurston County Health Department
Sally Toteff, Thurston County Health Department

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Glossary

Terms

hazardous materials: those chemicals or substances that are physical hazards or health hazards as defined and classified in Article 80 of the Uniform Fire Code whether the materials are in useable or waste condition.

hazardous waste: any waste or combination of wastes that are corrosive, ignitable, toxic, reactive, or persistent in the environment and may cause irreversible illness, an increase in mortality, or pose a substantial threat to human health or the environment.

household hazardous waste: hazardous wastes generated by households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas) rather than by businesses or institutions.

moderate risk waste: hazardous wastes from two sources: households and small quantity generators.

small quantity generator: a type of business or institution that produces hazardous waste in quantities less than 220 pounds (100 Kg) per month, less than 2.2 pounds (1 Kg) of acute hazardous waste per month, and never accumulates more than 2,200 pounds of hazardous waste.

Abbreviations

DIYs: “do-it-yourself” used motor oil changers

HHW: household hazardous waste

IMEX: Industrial Materials Exchange

RCRA: Resource Conservation and Recovery Act

RCW: Revised Code of Washington

SIC: Standard Industrial Classification Code

SQG: small quantity generator

SWAC: Solid Waste Advisory Committee

WAC: Washington Administrative Code

LEPC: Local Emergency Planning Committee

Executive Summary

Hazardous Waste Plan for Thurston County

Introduction

All cities and counties in Washington are required by the Washington State Hazardous Waste Management Act, Chapter 70.105 of the Revised Code of Washington, to develop plans to manage hazardous wastes produced by households, small businesses, and institutions.

Household paints, solvents, cleaners, pesticides, used motor oil, antifreeze, adhesives, and a variety of other products used in repair and remodeling, gardening, home maintenance, and auto and equipment maintenance often contain hazardous chemicals. When thrown away, these products become household hazardous wastes (HHW).

Similarly, many industries, commercial businesses, public agencies, and institutions also use hazardous products and produce hazardous waste in the course of doing business or conducting operations. Pesticide applicators, mining operations, dry cleaners, auto repair shops, printers, wood working and furniture repair shops, painting contractors, boat yards, auto wrecking yards, and medical and dental facilities are among the many businesses likely to produce these wastes.

In the mid-1980s, Thurston County began to take steps to ensure that public and environmental health threats posed by HHW and small quantity generator (SQG) hazardous wastes were minimized. The community recognized that many of these wastes were disposed indiscriminately into the environment, or were discarded through municipal solid waste and wastewater systems, or into septic tanks or other on-site wastewater treatment systems. Improper use and disposal of even small amounts of hazardous materials can pollute ground water, which is the major source of drinking water in Thurston County.

To address HHW and SQG hazardous waste comprehensively, the *Moderate Risk Waste Plan for Thurston County* was prepared and adopted by Thurston County and the Cities of Bucoda, Lacey, Olympia, Rainier, Tenino, Tumwater, and Yelm (referred to here as the 1991 Plan). The 1991 Plan presented an ambitious program for reducing the quantities of hazardous waste

generated by households and SQGs, and for diverting these wastes from municipal waste streams and indiscriminate disposal into the environment.

Since adoption of the 1991 Plan, much has been accomplished through the Thurston County Hazardous Waste Program, which was established to carry out the Plan's recommendations. However, after several years of implementation, the County and Cities realized the benefits of re-examining goals, objectives, and direction set by the Plan, and to make appropriate adjustments or refinements. In 1996, the County began the process of updating the 1991 Plan. This *Hazardous Waste Plan for Thurston County* updates that original plan, and presents a refined strategy for improving HHW and SQG hazardous waste management.

The Hazardous Waste Management Program

The Hazardous Waste Program is implemented by the Thurston County Health Department and Thurston County Department of Water and Waste Management. These agencies provide a wide range of services to improve the management of HHW and SQG hazardous wastes in the county. These services may be grouped into the following components:

- I. Household hazardous materials education
- II. Household and small business hazardous waste collection
- III. Small business education and technical assistance
- IV. Compliance assistance and enforcement.

A summary of the many ongoing activities and accomplishments of the Thurston County Hazardous Waste Program is presented in *Chapter 5: Report on the First Six Years* in the draft *Hazardous Waste Plan*.

Guiding Principles

In response to community priorities, needs, and opportunities, general goals and guiding principles have been prepared to guide and set a refined direction for the Hazardous Waste Program. General goals for this 1998 Plan are as follows:

1. Protect water resources, the environment, and public health from use, storage, and disposal of household and small business hazardous materials through education, technical assistance, compliance, and collection programs, stressing reduction and recycling.

2. When possible, promote waste management practices that follow the Washington State hazardous waste management hierarchy which, in descending order, promotes hazardous waste reduction, reuse, recycling, treatment, incineration, stabilization, and finally disposal at a hazardous waste landfill.
3. Educate the public and local businesses about hazardous material problems and how to prevent contamination, thereby saving potential future clean-up costs or loss of drinking water supplies.
4. Increase the community's long-term capacity to protect the environment and public health and promote sustainable economic vitality.
5. Carry out ongoing data collection and community assessments to invest limited resources appropriately.
6. Minimize gaps and overlaps in responsibilities of governmental agencies addressing hazardous materials management issues.
7. Act as a liaison between agencies, community organizations, vendors of hazardous products, and trade associations on hazardous waste pollution prevention and regulation.
8. Define funding, staffing, and other resources necessary to achieve the stated goals.

Specific goals have been prepared to guide each of the program components, and are listed in *Chapter 6: Gaps, Goals, and Service Levels* in this Plan.

Alternatives and Recommendations

Chapter 6: Gaps, Goals, and Service Levels presents plan alternatives – options that the Hazardous Waste Program may pursue during the Plan implementation period (1998 - 2004) to address identified gaps, needs, and goals. The advisory committee and staff determined that these alternative service level options were reasonable actions for the Hazardous Waste Program. The alternatives included both *ongoing* activities and *new* initiatives or *expansion* of activities underway. The new initiatives were selected as actions that enhance the Hazardous Waste Program's ability to achieve all its goals. Collectively, they are intended to help improve the efficiency and effectiveness of services for Thurston County residents and businesses.

Chapter 8: Program Implementation presents the recommended future program in detail. The variety of HHW and SQG education, technical assistance, and waste management programs now being carried out by the Hazardous Waste Program are complementary and contribute to

accomplishment of the program’s missions. No immediate, significant changes in service, program emphasis, administration, or revenues are suggested or appear warranted. Consequently, the Plan recommends continuation of the wide range of HHW and SQG programs now conducted by the Hazardous Waste Program. The base programs that will be continued, as well as the recommended new programs, are listed below.

Hazardous Waste Programs
BASE PROGRAMS
Household hazardous waste collection facility
Used motor oil collection
Oil filter collection
Waste exchange/materials exchange
Education on waste reduction, recycling, & disposal
Waste Line
Business information line
Technical assistance campaigns
Business waste collection service
Complaint response and enforcement
NEW PROGRAMS
Assess collection needs
Paint swaps
Emergency planning
Multi-media campaigns
Business inspections in wellhead protection areas
Review new business permits
Regulatory coordination
Program evaluation

The recommendations presented in this plan will be revised as circumstances change, or in response to new information available from analyses or program evaluation. The continuation and/or modification of the recommendations will be reviewed by the Thurston County Solid Waste Advisory Committee (SWAC), as well as managers of the respective implementing agencies. Each year’s annual work plans will detail ongoing and proposed activities.

Budget

The Hazardous Waste Program is funded through tipping fees (garbage rates), grants from the Washington State Department of Ecology, interlocal contracts, and user fees for the SQG waste disposal service. Currently, within Thurston County's tipping fee of \$65 per ton, about \$3.21 goes to support hazardous waste programs (4.6 percent of the tipping fee). Tipping fees contribute about 75 percent of the Hazardous Waste Program revenues. The revenue source for state grants is from the Washington State Hazardous Substance Tax, which imposes a 0.7 percent tax on wholesale value of bulk volumes of hazardous materials. State grants comprise about 20 percent of the Hazardous Waste Program revenues. User fees and interlocal contracts make up about five percent of program revenues.

Implementation of the 1991 Plan uses an annual budget of \$651,000. The estimated budget for carrying out the 1998 Plan is approximately \$770,000, which is an additional \$119,000 above the current budget. The proposed revenue for the additional budget is tipping fees. The projected annual cost impact to the average homeowner is about 41 cents, or 3.5 cents per month.

Expected Impacts

The Thurston County Hazardous Waste Program is a mature program, with many accomplishments over its years of service. The Plan update continues the wide range of HHW and SQG education and technical assistance programs, compliance assistance, and waste collection programs designed to help protect public health and the environment in Thurston County.

The coming years will see increasing challenges. The Hazardous Waste Program will focus its attention on achieving new goals to divert even more of the hazardous wastes from homes and businesses to proper recycling and disposal; minimizing hazardous material contamination in wellhead protection areas; examining and improving waste collection services; shifting education programs from an information to a behavior-change model; increasing preparedness for emergencies; consulting with new businesses to ensure they design facilities to prevent hazardous materials problems; and conducting evaluations to improve the program further.

For More Information

For more information about implementation of the Hazardous Waste Plan for Thurston County, please contact the Thurston County Health Department at (360) 754-4111 during normal working hours. The TDD line for the hearing impaired is (360) 754-2933.

Chapter 1: Introduction

Overview

The Washington State Hazardous Waste Management Act (Chapter 70.105 of the Revised Code of Washington) requires all cities and counties in Washington to develop plans to manage small quantities of moderate risk waste in their jurisdictions. Moderate risk wastes are hazardous wastes produced by households, businesses, and institutions in small quantities.

Many products used in home care and repair, gardening, and auto maintenance contain hazardous materials. When these pesticides, paints, cleaners, solvents, oils and other household chemicals are used and stored, they can harm health and the environment. When thrown away, they become household hazardous wastes.

Similarly, many industries, commercial businesses, public agencies, and institutions use hazardous products and produce hazardous wastes while doing business or conducting operations. Auto repair shops, printing, mining, painting, furniture repair, dry cleaning, medical offices, grounds keeping, and building maintenance are among the businesses and activities that are likely to produce these wastes.

Hazardous wastes originating from households are *categorically exempt* from regulation under the Hazardous Waste Management Act. Businesses and institutions producing and storing hazardous wastes in quantities below certain thresholds are *conditionally exempt* from full regulation under the same law. According to the Washington State Dangerous Waste Regulations (Chapter 173-303 of the Washington Administrative Code), a *conditionally exempt* small quantity generator of hazardous waste is one who generates no more than 220 pounds (100 Kg) of hazardous waste per month or per batch, generates less than 2.2 pounds (1 Kg) of acute hazardous waste per month or per batch, and who accumulates no more than 2,200 pounds (1,000 Kg) of hazardous waste at any time.

Although the Hazardous Waste Management Act uses the term “moderate risk waste” to define the *household* and *conditionally exempt* hazardous waste streams, this term does not accurately express the degree of risk posed by these substances. These materials are considered hazardous since they contain chemicals that are toxic, corrosive, ignitable, reactive, or persistent. These materials contain the same risks as wastes that originate from large industries. The difference then, between moderate risk waste and regulated hazardous waste is one of scale, not one of

intrinsic hazard. Therefore, to avoid misleading the reader, this document will use the term “hazardous waste” in lieu of the term “moderate risk waste.”

In the mid-1980s, Thurston County recognized the need to minimize the threats to public health and the environment posed by the use, storage, and disposal of hazardous materials from homes and small businesses. The County recognized that many hazardous materials were used or disposed of indiscriminately into the environment, or were discarded through municipal solid waste, storm water, and sewage treatment systems, or into on-site septic systems.

Local officials were concerned that improper use, handling, storage, and disposal increased risks of poisoning or injury; lead to contamination of the environment through storm drains, septic system discharges, runoff, and dumping; created risks of worker injury at solid waste and wastewater facilities as well as collection, transfer, and disposal equipment damage; resulted in discharges to waterways through treatment systems; and could cause permitted facilities to exceed discharge limits. Improper use and disposal of even small amounts of hazardous materials can pollute ground water, which serves as the major source of drinking water in Thurston County.

The most effective way to prevent damage to public health and the environment from hazardous materials is to prevent the need for them in the first place. Thus, prevention is an integral aspect of the County’s hazardous waste program. In developing this plan, the County has tried to consider the total cycle of hazardous materials, from purchase, use, and storage to recycling, reuse, and disposal.

Mission and Guiding Principles

Mission

The respective missions of Thurston County, the Thurston County Health Department, and the Thurston County Department of Water and Waste Management are:

1. To provide quality, timely, and responsive service to the residents of Thurston County in the most cost-effective manner.
2. To protect and promote the health of the Thurston County community, now and in the future.
3. To work together to preserve and enhance the quality of our community’s environment.

Guiding Principles

In response to the broad missions of the agencies carrying out the plan, guiding principles have been prepared to steer the program in a more specific direction.

Guiding Principles Promoting Public Health

1. Protect water resources, the environment, and public health from use, storage, and disposal of household and small business hazardous materials through education, technical assistance, compliance, and collection programs, stressing reduction and recycling.
2. When possible, promote waste management practices that follow the Washington State hazardous waste management hierarchy which, in descending order, promotes hazardous waste reduction, reuse, recycling, treatment, incineration, stabilization, and finally disposal at a hazardous waste landfill.
3. Educate the public and local businesses about hazardous materials problems and how to prevent contamination, thereby saving potential future clean-up costs or loss of drinking water supplies.
4. Increase the community's long-term capacity to protect the environment and public health and promote sustainable economic vitality.
5. Carry out ongoing data collection and community assessments to invest limited resources appropriately.

Guiding Principles Ensuring Quality Customer Service

1. Minimize gaps and overlaps in responsibilities of governmental agencies addressing hazardous materials management issues.
2. Act as a liaison between agencies, community organizations, vendors of hazardous products, and trade associations on hazardous waste pollution prevention and regulation.
3. Define funding, staffing, and other resources necessary to achieve the stated goals.

Purpose of the Plan

The *Moderate Risk Waste Plan for Thurston County* was prepared and adopted by the County and the Cities of Bucoda, Lacey, Olympia, Rainier, Tenino, Tumwater, and Yelm in 1991 to address small quantities of hazardous waste in a comprehensive way. The 1991 plan presented an ambitious program for reducing the quantities of hazardous waste generated by homes and small businesses, and for diverting these wastes from municipal waste streams and from indiscriminate disposal into the environment.

Since the original plan was adopted, much has been accomplished through the local hazardous waste program established to carry out the recommendations of the plan. However, after five years of implementation, local agencies realized the benefits of reexamining and adjusting the goals, objectives, and direction set by the plan. In 1996, the Health Department began the process for updating the plan. This document updates the 1991 plan, and presents a refined strategy for improving management of residential and commercial hazardous materials in Thurston County.

The Planning Process

The first hazardous waste plan was written in 1989-1990. A committee composed of representatives from governmental agencies, small businesses, and interested citizens was formed to prepare the plan. After months of work, a draft plan was released for public comment. The plan was revised based on feedback from the community and submitted to all the local jurisdictions and the Department of Ecology for approval in late 1990. The plan was officially adopted in April, 1991.

Prior to 1991 and the adoption of the first plan, Thurston County spent about \$1.48 per ton of the garbage tipping fee to fund household hazardous waste collection events. In 1991, Thurston County added \$1.90 per ton, for a total of \$3.38 to the garbage rate, to support the development of this new program. The County has not raised tipping fees since 1991. Hazardous waste programs represent about five percent of Thurston County's annual solid waste program cost. In ratepayer terms, about five cents out of every dollar spent on garbage supports hazardous waste services.

The 1991 hazardous waste plan and guidelines from the Washington State Department of Ecology recommend updating plans every five or six years. Updating the plan allows participating jurisdictions, citizens, and businesses the chance to provide input to increase the quality and responsiveness of the program. The update process serves as a catalyst for adjusting services to meet changing local priorities.

In 1996, Thurston County initiated the plan update process. Staff began by consulting with the Thurston County Solid Waste Advisory Committee and then meeting with each jurisdiction to confirm their interest to continue participating as a partner in a joint hazardous waste plan. Next, the County carried out a scoping process to identify from a customer perspective what services were working well and what services seemed lacking (see Appendix A and B).

Recommendations from the scoping meetings and staff were presented to the Thurston County Solid Waste Advisory Committee. The committee sorted through the information and eventually crafted their own recommendations. Recommendations from the committee were forwarded to the Thurston County Board of Health, who adopted them for inclusion in this Plan. The Board of Health released the draft document to the public and all seven jurisdictions for review and comments. Public comments (see Appendix H) were generally supportive of the recommendations of the draft plan. The Solid Waste Advisory Committee reviewed public comments and recommended modest changes be incorporated into the final plan. The Board of Health reviewed and agreed with the Solid Waste Advisory Committee's recommendation to finalize the plan. The Board of Health issued the final plan to each city for adoption.

The plan update contains eight chapters and accompanying appendices. Chapter One is a brief introduction. Chapter Two presents geographic and demographic background information. Chapter Three summarizes the different laws and regulatory programs that apply to hazardous waste management. Chapter Four examines household hazardous waste and small business hazardous waste production in Thurston County and how these wastes are managed. Chapter Five reports on the accomplishments of the first six years of Thurston County's hazardous waste program. Chapter Six presents existing goals and objectives for adjusting service levels. Chapter Seven examines administrative issues and funding sources. Chapter Eight summarizes implementation of existing and new programs.

Chapter 2: Background on Planning Area

Introduction

This section presents the geography and demographics of Thurston County. It provides the community setting for which this plan is written, and highlights key changes that have taken place since the 1991 Plan was adopted. Geography, climate, water resources, population, growth rate, land use, and economics are important factors influencing the services provided by the local hazardous waste management program.

Geography

Thurston County is in southwest Washington at the southern end of Puget Sound. Landforms vary from coastal lowlands in the north County to Cascade foothills in the southeast. Generally, the County is a region of prairies and rolling lowlands, broken by minor hills and a few peaks in the northwest and southeast corners that rise to about 2,600 feet (see Figure 2.1.)

More than 90 miles of Puget Sound coastline extend into the County, creating four points of land between five “fingers” of water. The five inlets of Puget Sound are the Nisqually Reach, Henderson Inlet, Budd Inlet, Eld Inlet, and Totten Inlet. Three major river basins -- the Nisqually in the east, the Deschutes in the central area and the Chehalis in the south -- drain the land. The Nisqually and Deschutes River basins drain into Puget Sound and the Chehalis River drains into the Pacific Ocean.

Glacial activity left more than 100 lakes and ponds in Thurston County. The two largest lakes are Alder Lake and Skookumchuck Reservoir, impoundments of the Nisqually and Chehalis Rivers, respectively. The two largest natural lakes are Black Lake (576 acres) and Summit Lake (522 acres), both in the western part of the County.

The County contains a total of 737 square miles. As of 1997, eighty-seven percent of the total area lies in unincorporated Thurston County (down from 95 percent in 1991). The remaining 13 percent is divided among incorporated cities and towns and their Urban Growth Areas (UGAs).

The largest cities are Olympia, Lacey, and Tumwater, three contiguous towns at the base of Budd and Henderson Inlets. Neighboring counties are Mason County to the northwest, Grays Harbor County to the west, Lewis County to the south, and Pierce County to the east.

Climate

Thurston County's climate is influenced by its proximity to Puget Sound and the maritime air masses that move through the region from the Pacific Ocean. Summers are warm and generally dry, while winters are mild and wet. Some form of cloud cover is present more than 86 percent of the year, with more than a trace of rain falling on about half the days of the year.

Yearly rainfall is highest in the northwest County at about 60 inches per year, and decreases gradually toward the southeast, to about 40 inches per year around Alder Lake.

Water Resources

While drizzly days are key to defining the character of Thurston County, and surface water (the sound, lakes, and rivers) give it some of its most attractive features, the connecting link -- ground water -- is perhaps the most important natural resource in Thurston County. It is the source of water for nearly all of the County's residential, agricultural, and industrial needs. Only two communities, Summit Lake and Lake St. Clair homeowners, use lake water. Every one of the more than 1,200 public water supplies in Thurston County taps ground water sources. Businesses and industries have located here because of the quality and quantity of the water.

Water supply in Thurston County is provided by various municipalities, water districts, private systems, and individual wells. Most systems are in the urban area, while individual wells generally service rural residents. An abundant supply of ground water is available in the County, except in certain foothills and some mountainous areas. Most wells have water levels within 50 feet of the land surface.

McAllister Springs, just outside the eastern boundary of Olympia's urban growth area, provides seven to 21 million gallons of water a day to Olympia (the higher figure during the peak of summer demand), which is more than 80 percent of Olympia's drinking water supply. The Springs supply another two million gallons a day to Lacey. This voluminous water resource is in an area that, geologically, is highly vulnerable to contamination.

The abundance and relatively shallow level of ground water in the County is due to the effects of glacial retreats thousands of years ago. The glaciers left porous deposits of sand and gravel over the original bedrock that are excellent for storing rainfall. These sand and gravel aquifers are almost totally reliant on water from rainfall in the immediate area. Rain soaks into the soil and seeps downward to aquifers. The aquifers store ground water until it moves to a discharge area

such as a natural spring or is pumped to the surface by wells. Most recharge occurs during the heaviest months of precipitation, from October to March.

As rainfall seeps into the ground and recharges aquifers, it can potentially mobilize and carry with it contaminants deposited on or under the ground. Controlling contamination sources within the recharge areas is thus imperative to maintaining high quality drinking water.

The major rivers and streams contain a variety of fish, including wild salmon. Puget Sound, which forms the northern boundary of Thurston County, is well known for commercial and recreational fishing and shellfish harvesting, as well as general recreation.

Urbanization affects ground and surface water. As we pave or build on increasing areas, more surface water flows overland into nearby waterways rather than soaking into the ground and recharging aquifers. Even when urban stormwater is recharged into the ground, it can carry contaminants.

Improper handling and disposal of hazardous materials also affects ground and surface water quality. For example, hazardous materials may enter ground and surface water via on-site septic systems, agricultural chemicals, suburban yard and garden chemical use, vehicle use, illegal dumping, and industry spills.

Population

As of April 1997, Thurston County's population was 197,600, up 21 percent from the 1989 figure of 155,150 cited in the first Local Hazardous Waste Plan for Thurston County. (Figures are from the Washington State Office of Financial Management, "1997 Population Determinations.") Thurston County is the eighth largest County in Washington in total population, while it is the 32nd largest in land area. The City of Olympia is the most populated in the County, and in 1997 had a population of 38,650. The City of Lacey followed with 27,570 and the City of Tumwater had 12,130. South County towns include Yelm with 2,395, Tenino with 1,570, Rainier with 1,530, and Bucoda with 625 persons (see Table 2.1).

The primary concentration of urban areas is found in the north county, within and adjacent to the cities of Olympia, Lacey, and Tumwater. As of 1997, the unincorporated portion of Thurston County contains 113,130 people, which is 57 percent of the population. Olympia contains 20 percent, Lacey has 14 percent, and Tumwater has 6 percent of the County total. The South County cities combined have 3 percent of the County population.

The ethnic composition of the population is gradually diversifying. In 1970, more than 98 percent of the population was Caucasian, but by 1996 it was 86 percent Caucasian with increases in the number of people of color. The largest increase in the last twenty-five years has been in the Asian American population, with 5.7 percent of the total population (11,069 people) as of 1996 estimates. The Black and Native American populations each comprise roughly 2 percent of

the population (4,868 and 3,358 people, respectively). The Hispanic population has grown from 0.9 percent in 1970 to 4 percent in 1996 (more than 7,500 people of Hispanic origin).

Growth Rate

Thurston County has been one of the fastest growing counties in the state since the 1960s, consistently exceeding the State's overall growth rate. In the last three and a half decades, its population has tripled. From 1990 to 1997, it grew by 36,362. Now, this rate is slowing; the County has dropped from third fastest rate of growth in the State in 1990 to 23rd in 1995, with many of the more rural counties growing faster. The County's growth rate for the decade (1990-97) was 2.9 percent; for 1996-97 it was 2.3 percent.

Thurston County is growing faster than many counties in the state, including adjacent counties (see Table 2.2 and Figure 2.2). The western Washington county that most closely resembles Thurston County in population is Kitsap County, with a 1997 population of 229,400 and an annual rate of change of 2.1 percent between 1996 and 1997.

Most growth since 1990 -- more than 80 percent -- is from in-migration, new residents moving into Thurston County. Between 1980 and 1990, the incorporated County grew at nearly the same rate as the unincorporated County. This changed the trend of the decade of the '70s, when growth affected the rural towns and unincorporated county much more than the three major cities. In the '90s, the impact of growth switched again to the rural towns, most notably Yelm. Yelm is experiencing the fastest growth rate for the County this decade, with an increase of 8.7 percent between 1990-1997. Rainier is not far behind, with an increase of 6.4 percent.

In the north, the fastest growth is in Lacey, especially Lacey's urban growth area. Lacey's UGA had an estimated population of 29,575 in 1995, larger than that of its incorporated city (24,543). With an urban growth area much larger than Olympia's UGA, Lacey has more room to grow over the next two decades. Lacey grew almost twice as fast as Tumwater and Olympia during the 1970s, and between 1996-97 had the fastest average annual rate of change in the County (5.3 percent). Between 1980 and 1988, Tumwater had the largest percentage growth rate. In 1995, Lacey plus its UGA was larger in population by 9,000 than Olympia with its UGA.

As mandated by the 1990 Growth Management Act, jurisdictions will incorporate and provide services to their UGAs within the next twenty years.

The 1995 Population Forecast (Thurston Regional Planning Council) projects a 33.7 percent population increase from 1990 to 2000, and another 20.8 percent from 2000 to 2010. Thus from 1990 to 2000 the population is forecasted to increase from 161,238 to 215,637, and from 2000 to 2010 up to 260,607. Seventy-eight percent of this change would be due to in-migration, and 22 percent to births.

Several other important changes in the population are worth noting. Seniors continue to be one of the fastest growing segments of the population, at national and state levels as well as locally. Migration is one factor contributing to that segment of growth in Thurston County.

A related demographic trend is toward a smaller household size and a greater number of single-member households. The average household size in Thurston County is 2.6 persons per household, down from 3.2 in 1960. In 1960, 46 percent of the households had children and the median age of the population was 29; in 1990, less than 37 percent had children, and the median age was 34.

Land Use

In Thurston County, land uses range from the higher density urban developments of the Olympia/Lacey/Tumwater area in the north part of the County to commercial timberlands in the south, east, and west portions of the County. In between are the suburbs, rural towns, commercial centers, farms, and industrial parks. These various land uses form a distinct pattern.

Intense urban areas are located among the three north county cities. Surrounding this urban core is a suburban area composed of moderate density residential/commercial uses, some light industrial uses, and warehousing activities. This suburban belt gradually turns into an area characterized by low density rural land uses such as farming, low density residential developments, small towns, and commercial timberlands.

Residential subdivision activity is an indicator of future house construction. Residential subdivisions, which divide property into five or more lots smaller than five-acres each, reached a peak in 1992 with 2183 lots created (1068 in Lacey). Most of these lots were within city boundaries; 17 percent were in the unincorporated County. However, in 1995 this trend reversed, and more than 50 percent of residential subdivision activity took place in unincorporated Thurston County, which includes the urban growth areas for every jurisdiction. In 1996, 229 lots were created in unincorporated county areas and 388 in the six cities, for a total of 617 lots created, continuing the drop since 1992.

Economy

Jobs in Thurston County are growing steadily, with a 5.1 increase between 1995 and 1996 (preliminary figure) and a 2.5 percent increase between 1994 and 1995.

Service industries have provided the greatest increase in jobs, accounting for 2,216 new jobs between 1995 and 1996, for 23 percent of all jobs. Service industries include hotel, recreation, and other professional services, plus the health profession (38 percent of services) and repair services.

The County's largest employer is state government, which brings in revenues as wages to state employees, rent to landlords of office space, and payments to support services. This income provides the major stimulus for the local economy. In 1996, state government provided 39 percent of the employment in Thurston County, a slight decrease from 1995's 41 percent.

In addition to state government and services, the other employment sectors are retail trade (18%), manufacturing (5%), construction (4%), finance/insurance/real estate (3.5%), wholesale trade (3%), transportation/communications/utilities (2%), and finally agriculture/forestry/fishing (2%).

Labor force projections predict an increase in regional resident civilian labor of 93 percent between 1990 and 2020. Some part of the employment needed to accommodate this increase is expected to be in Thurston County, with a projected 90 percent increase in local jobs available during this thirty-year period. However, Thurston County currently has more people commuting out of the County to work every day than commuting into the County, and this trend is anticipated to continue.

Table 2.1 POPULATION DISTRIBUTION, THURSTON COUNTY 1990-1997				
Jurisdiction	1990	1997	Percent distribution, 1997	Average annual rate of change, 1996-97
Bucoda	536	625	0.5%	2.5%
Lacey	19,279	27,570	14%	5.3%
Olympia	33,729	38,650	19%	1.8%
Rainier	991	1,530	1%	2.7%
Tenino	1,292	1,570	1%	3.0%
Tumwater	9,976	12,130	6%	2.9%
Yelm	1,337	2,395	1.5%	3.7%
Incorporated	67,140	84,470	43%	3.2%
Unincorporated	94,098	113,130	57%	1.7%
Total County	161,238	197,600	100%	2.3%

Source: Thurston Regional Planning Council. September 1997. "The Profile."

<p>Table 2.2 FORECASTED POPULATION GROWTH SELECTED WESTERN WASHINGTON COUNTIES 1995 - 2015</p>
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Table 2.2
 FORECASTED POPULATION GROWTH
 SELECTED WESTERN WASHINGTON COUNTIES
 1995 - 2015

County	Number of People			Average Annual Rate of Growth		
	1995	2005	2015	1995-2005	2005-2015	1995-2015
King	1,613,601	1,763,634	1,929,924	0.9%	0.9%	0.9%
Snohomish	525,596	660,682	783,066	2.3%	1.7%	2.0%
Pierce	660,201	763,819	863,459	1.5%	1.2%	1.4%
Clark	290,997	352,629	401,071	1.9%	1.3%	1.6%
Kitsap	220,597	266,645	312,123	1.9%	1.6%	1.8%
Thurston	189,203	243,550	295,443	2.6%	2.0%	2.3%
Grays Harbor	67,699	73,905	81,010	0.9%	0.9%	0.9%
Lewis	65,498	76,004	86,249	1.5%	1.3%	1.4%
Mason	45,296	54,588	64,806	1.9%	1.7%	1.8%
Washington	5,429,879	6,291,772	7,142,148	1.5%	1.3%	1.4%

SOURCE: WA State Office of Financial Management, Washington State County Population Projections 1990-2010: TRPC.

Figure 2.2
Forecasted Population Growth for Washington State,
Thurston and Adjacent Counties
1995 - 2015

DATA SOURCE: WA State Office of Financial Management and Thurston Regional Planning Council, 1995 Projections.

Chapter 3: Hazardous Waste Management System

Introduction

This chapter describes the services and public facilities used in Thurston County to manage residential and commercial waste. An overview of federal, state, and local regulations that govern management of hazardous waste is also presented.

Solid Waste Management

On average, Thurston County residents produce about 3.6 pounds of garbage per day.¹ This adds up to about 350 tons of garbage per day or 127,750 tons per year. In Thurston County, solid waste collection, transport, and disposal is provided through private firms and local government agencies. The Thurston County Department of Water and Waste Management oversees the Hawks Prairie Landfill and compost facility, the Hawks Prairie recycling center, the household hazardous waste facility, two transfer stations, one drop box, and numerous recycling blue box sites. The City of Olympia operates its own waste and curbside recycling collection service. The rest of the county obtains waste and curbside recycling collection services from Pacific Disposal or LeMay Enterprises.

The Hawks Prairie Landfill serves commercial haulers as well as residential and non-residential self-haulers. The transfer stations and drop box serve residential and non-residential self-haulers. Waste from the transfer stations is disposed at the landfill.

¹Thurston County Department of Water and Waste Management, "Solid Waste and Moderate Risk Waste Management Annual Report for 1995."

There are procedures in place intended to minimize the acceptance of problem wastes at the landfill. Operation of the household hazardous waste facility and used oil collection sites provides homeowners with disposal options that help protect public health and drinking water supplies. Operation of the business waste collection service provides eligible businesses with a legal disposal option. The disposal of liquids at the site is banned, to lessen the production of leachate. Landfill operators or tollbooth workers may refuse any wastes they can readily identify as hazardous. High risk wastes, such as soils saturated with diesel, may not be disposed into the landfill unless the waste is specifically approved for the landfill.

Through interlocal agreements, the County conducts long-range solid waste planning. A solid waste advisory committee, comprised of elected officials from all the cities and other representatives, advises the County on solid waste planning and policy. As well, the County coordinates an active technical assistance and public education program aimed at waste reduction and recycling. The City of Olympia offers waste reduction and technical assistance programs within Olympia. Other cities support educational programs and special events promoting waste reduction and recycling.

Hazardous Waste Management

Household hazardous waste is managed at the household hazardous waste collection facility, located at the Hawks Prairie landfill and operated by the County. Acceptable wastes include pesticides, solvents, gasoline, acids, bases, paints, corrosive cleaners, hobby products, and aerosol products. Products that are still useable and are in their original container are put into the new materials exchange shed and made available for reuse. Wastes that are not put into the reuse program are sorted, packaged, and labeled according to their hazard classification. The County ships wastes to hazardous waste recycling and disposal companies under contract to provide final recycling or disposal. Several contractors, such as those who recycle lead-acid batteries and motor oil, collect wastes directly from the facility. Thus the County's household hazardous waste facility serves as a temporary storage site until a large enough shipment of hazardous waste can be accumulated and shipped to a more sophisticated facility.

In the late 1980s and early 1990s, special one-day events were periodically held to collect household hazardous waste. The first event was held in 1985. These events were held in urban as well as rural areas. Because of the high level of community support for "Hazo Day," the County built its first household hazardous waste facility in 1987. Participation continued to be strong, but because of the high cost to operate one-day events, the County ended "Hazo Day" in 1993.

Used motor oil from do-it-yourself oil changers is collected at one of the 25 used oil recycling sites and at the household hazardous waste facility. Nine of the sites are operated using private partnerships, three are operated by the County at transfer stations or the recycle center, and the remaining 13 are operated by independent businesses. Used oil haulers pump the tanks as they fill up. The County's contractor ships the collected used oil to a re-refinery for processing.

Other contractors take waste oil to fuel blending facilities, which process the oil and eventually blend it into bunker fuel for ocean going vessels.

Hazardous wastes from small quantity generators are collected mostly by private sector companies who service the South Puget Sound region. At present, 26 companies service Thurston County businesses. Small businesses sign up for regular recycling or disposal service with the company of their choice. All wastes must be profiled (identified and labeled correctly) before a hazardous waste company can accept the waste. Hazardous waste manifests or other documentation to collection companies certify who is taking the waste. Hazardous waste collection companies transport the wastes to facilities permitted to recycle, neutralize, treat, or burn the wastes or place them in a hazardous waste landfill.

In 1996, the County began operating a collection service for eligible small businesses. This service charges a disposal fee. Operations are similar to the way household hazardous waste is collected, sorted, labeled, and packaged. All wastes are shipped off site to licensed hazardous waste management companies for final management.

Wastewater Management

Liquid wastes (sewage and other wastewaters) from homes and businesses are collected and treated by the regional or small wastewater treatment plants, or by on-site wastewater treatment systems (septic systems), which typically involve a septic tank and drainfield. Septic systems are generally used in the rural areas of the county, while the wastewater in the urban area is generally collected and treated at a central plant. Storm water is generally discharged to the nearest surface water or into the ground via infiltration basins or dry wells.

The major wastewater treatment plant in the region is commonly referred to as LOTT (Lacey, Olympia, Tumwater, and Thurston County). The plant began operation in 1952. Before the plant was built, raw sewage was piped directly into Budd Inlet and other surface waters. In 1982, the plant began using secondary treatment. In 1994, LOTT began an industrial pretreatment program that regulates commercial wastewater discharges containing certain chemicals. While LOTT is the only major treatment plant in the area, there are three much smaller treatment systems at Tamoshan, Carlyon Beach, and Boston Harbor. Another central wastewater treatment system is under construction in the Grand Mound area. Before wastewater is discharged, it goes through primary and secondary treatment. Primary treatment involves physical removal of some solids through skimming, screening, and settling, while secondary treatment includes stages for biological breakdown of organic constituents. All effluent is treated to kill remaining pathogens before discharge to Puget Sound.

On-site Wastewater Systems

A septic tank and drainfield, or “on-site” sewage treatment system, is a disposal system for wastewater from households and small businesses used where sanitary sewers are unavailable.

The septic tank collects and holds the wastewater, allowing heavy suspended materials to sink to the bottom to be decomposed by bacteria. The wastewater then flows from the tank to the drainfield. The drainfield is a large area of soil that acts like a filter removing remaining suspended substances and some pollutants and bacteria.

In Thurston County, approximately 40,000 septic systems are in operation. The efficiency of a septic system relies heavily on soil conditions. Hazardous materials dumped into an on-site system generally are not treated and may cause the systems to fail. Contaminants pass through into the surrounding soils, and sometimes into ground water. This represents a potentially significant concern where hazardous wastes are discharged into systems located over sensitive aquifer areas, which may be used for private, municipal, industrial, and/or agricultural water supplies.

Septage is the liquid and sludge that accumulates in a septic tank. Routine maintenance should include septage removal every three to five years. In Thurston County, septage that is pumped out of septic tanks is taken to LOTT or out-of-county treatment facilities.

Storm Water Management

Storm water is the runoff from rainfall. The storm water runoff from buildings, lawns, landscaping, streets, and parking lots often discharge into the nearest stream, lake, bay, dry well, or infiltration basin. Drainage utilities (often called “surface water or storm water” management programs) manage the drainage systems such as catch basins, pipes, ditches and detention basins. Within Thurston County, all of the storm water programs prohibit the discharge of hazardous materials into storm water collection systems. Pollutants in storm water include a spectrum of contaminants such as suspended solids, nutrients, bacteria, viruses, and hazardous chemicals. These pollutants come from many sources including automobiles, roads, air pollution, over-application of pesticides and fertilizers, and animal wastes.

Drainage systems typically provide only minimal treatment of storm water. Oil/water separators are common in commercial areas, but are often poorly maintained. Detention basins can function to remove some pollutants from storm water, as can swales and artificial or natural wetlands. Local storm water programs focus on source control, that is, trying to prevent or minimize the introduction of hazardous materials into the storm water system in the first place.²

Regulatory Review

²Operation: WaterWorks - Businesses for a Clean Future is an example of a local storm water program that focused on source control and pollution prevention. This program was jointly operated by the City of Olympia, City of Lacey, and Thurston County.

This section summarizes the federal, state and local regulations that govern or affect management of household hazardous waste and hazardous waste from small businesses.

Federal Regulation

Resource Conservation and Recovery Act

The primary federal legislation addressing solid and hazardous waste management is the Resource Conservation and Recovery Act (RCRA) passed in 1976. It provides a comprehensive framework for managing solid and hazardous wastes with the intent of eliminating or minimizing public health threats and contamination caused by these wastes. RCRA was modified with the passage of the Hazardous and Solid Waste Amendment (HSWA) in 1984. An important component of HSWA was a mandate to revise the Criteria for classification of Solid Waste Disposal Facilities and Practices which established minimum technical standards for design and operation of solid waste facilities. This mandate arose, in part, as a result of concerns about the disposal of unregulated quantities of hazardous waste at municipal landfills.

RCRA Subtitle C, the hazardous waste management program, and Subtitle D, the solid waste program, provide the primary sources of federal regulation associated with household and small quantity generator (SQG) hazardous waste. Subtitle C establishes a framework for managing hazardous waste by regulating (a) generators who produce and accumulate hazardous waste in quantities above limits specified by U.S. Environmental Protection Agency (EPA) or state rules; (b) waste transporters, and (c) treatment, storage, and disposal facilities handling the waste.

Hazardous waste generated or stored above the quantity exclusion limits is tracked with a manifest system from its point of generation to its final disposal site, better known as “cradle to grave” tracking. Businesses or institutional generators producing and storing hazardous wastes below the limits are not fully regulated, provided that they comply with certain rules specified by EPA or the state regarding designation and management of wastes, and reporting. Household hazardous waste is categorically exempt from RCRA regulation and has no generation or storage limit.

EPA implements and enforces RCRA, although Subtitle C may be delegated to states that meet or exceed Subtitle C requirements. The State of Washington’s Department of Ecology has been delegated authority to implement the RCRA Subtitle C program.

Universal Waste Rule

In 1995, EPA adopted the Universal Waste Rule (40 CFR Part 273), which streamlines regulation of certain hazardous wastes, including specific types of batteries, pesticides, and mercury-bearing thermostats. The rule is intended to reduce regulatory burdens associated with the storage, collection, and transportation of these wastes, and to improve the economics of proper recycling and disposal of these materials. States can adopt any portion of the Universal Waste Rule, which gives them flexibility in regulating these waste streams. The Universal Rule was adopted in 1997 in Washington. In Washington, only batteries and mercury-bearing thermostats were included in the rule.

Mercury-Containing and Rechargeable Battery Management Legislation

In May 1996, the federal Mercury-Containing and Rechargeable Battery Management Act was passed, Public Law 104-142. This statute provides for uniform labeling of batteries; requires products operating on rechargeable batteries to allow for easy removal of batteries; streamlines regulation of used nickel-cadmium batteries; and prohibits the sale of mercuric-oxide button cell batteries and alkaline-manganese or zinc-carbon batteries with mercury added. It is expected that an industry-supported nonprofit organization will set up battery collection sites in stores and community centers, and at commercial and industrial facilities that use rechargeable batteries. Batteries will be collected and shipped to a recycling facility for recovery of nickel, cadmium, and steel.

Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)

One of the most important statutes governing hazardous waste management is the Comprehensive Environmental Response, Compensation, and Liability Act, more commonly known as the “Superfund” act. RCRA is designed to prevent hazardous waste releases to the environment by managing them from “cradle to grave.” Superfund complements RCRA by providing for the clean-up of sites contaminated by hazardous waste. In many cases, the sites addressed under Superfund are inactive or abandoned. Contamination at many of the sites occurred before RCRA was enacted, when little was known about the effects of hazardous waste disposal on human health or the environment. Superfund provides EPA with the financial resources and authority to clean-up contaminated sites. EPA, along with state regulatory agencies, may enter into agreements with responsible parties for clean-up, issue orders requiring responsible parties to clean-up contaminated sites, or directly perform clean-up themselves. Superfund and state-listed contaminated sites in Thurston County are listed in Table 3.1.

Emergency Planning and Community Right-to-Know Act

In 1986, the Superfund Amendments and Reauthorization Act (SARA) was passed. Title III of SARA is known as the Emergency Planning and Community Right-to-Know Act. Title III established requirements related to emergency planning and notification, emergency release notification, and reporting of chemical releases for community-right-to-know. Table 3.2 lists the facilities in Thurston County that fall under the Toxic Release Inventory requirement of Title III.

Table 3.1
Contaminated Sites in Thurston County

SITE NAME	CITY	RANK	STATUS
Black Lake Grocery	Olympia	2	RA in Progress
Burlington Northern Railroad	Olympia	5	Independent RA
Cascade Pole, Inc. - McFarland	Olympia	1	RA in Progress
Cedar Creek Corrections (DNR)	Littlerock	2	Independent RA
Fourth Street Mobil	Olympia	3	RA in Progress
Hytec (Tumwater)	Tumwater	4	Awaiting RA
Lacey Compound (DNR)	Lacey	4	Independent RA
Lacey Laundromat	Lacey	1	Awaiting RA
Lacey Plywood (Co-Ply)	Lacey	2	Independent RA
Lacey Valve Grinding	Lacey	3	Awaiting RA
Minitree Tire Fire	Rochester	1	Awaiting RA
Monarch Bullet	Rochester	1	Independent RA
Old Olympia Municipal Dump	Olympia	4	Awaiting RA
Palermo Well Field	Tumwater	0	RA in Progress
Pattison Lake EDB	Lacey	2	Construction Complete
Puget Power-Eld Inlet Substation	Olympia	3	Independent RA
Puget Sound Power & Light	Olympia	5	Independent RA
Rhodes Chemical Company	Rochester	3	Awaiting RA
Rhodes Chemical Company-Barn	Rochester	3	Awaiting RA
Texaco Bulk Plant	Tumwater	3	Independent RA
US West Capitol Peak	Olympia	5	Awaiting RA
Unocal (Hulco)	Olympia	4	Independent RA
Weyerhaeuser Co.-Box Plant	Olympia	4	Awaiting RA
Wolph's Second Hand Store	Olympia	2	Awaiting RA
Wood Fabricators	Yelm	4	Awaiting RA

Source: Hazardous Waste Cleanup Program, Washington State Department of Ecology

RANK: Indicates the outcome of the Washington Ranking Model (WARM). The WARM BIN Number will be a number between 1 and 5. A result of 1 indicates the greatest assessed risk to human health and to the environment. A result of 5 indicates the lowest assessed risk. A zero indicates that the site is either on the federal National Priorities List (NPL) or a sub-site or operable unit of an NPL site. NPL sites are ranked under the federal Hazard Ranking System (HRS).

AWAITING FURTHER REMEDIAL ACTION (RA): Only a Site Hazard Assessment has been done on the site.

REMEDIAL ACTION (RA) IN PROGRESS: Ecology has oversight. This can include sites undergoing: 1) Remedial Investigation/Feasibility Study; 2) Interim Action (any remedial action that partially addresses the cleanup of a site); 3) Cleanup Action (action construction).

Table 3.2
Facilities Reporting Toxic Releases under the Community Right-To-Know Law

Facility	City	Chemical(s) Reported
Amtech Corp	Yelm	Styrene
CH20	Olympia	Phosphoric Acid
Crown Beverage	Olympia	Glycol Ethers Hydrogen Fluoride Manganese Compounds N-Butyl Alcohol N-Hexane
LASCO Rathware	Yelm	Styrene
Olympia Cheese Factory	Lacey	Nitric Acid Phosphoric Acid

Source: Washington State Toxics Release Inventory Summary Report: 1995, Washington State Department of Ecology, Publication #97-405

Other Federal Legislation Influencing Hazardous Waste Management

- The Hazardous Materials Transportation Act and the Hazardous Materials Transportation Uniform Safety Act regulate the transportation of hazardous materials, including wastes.
- The Toxic Substances Control Act regulates the manufacture, distribution, use, processing, and disposal of chemical substances and mixtures posing unreasonable risks of injury to human health or the environment. This act regulates PCBs and asbestos.
- The Federal Insecticide, Fungicide, and Rodenticide Act regulates the manufacture, use, and application of pesticides.
- The Safe Drinking Water Act sets maximum contaminant levels for drinking water supplies, including surface and ground water sources.
- The Clean Air Act regulates air pollutant emissions through a permit program.
- The Clean Water Act regulates discharges to waters through a permit program and pretreatment standards.

State Regulation

Solid and hazardous wastes are regulated in Washington State through a variety of statutes and regulations. The primary statutes applying to solid and hazardous waste management are the Solid Waste Management Act (Chapter 70.95 of the Revised Code of Washington) and the Hazardous Waste Management Act (Chapter 70.105 of the Revised Code of Washington).

Solid Waste Management Act

Solid waste handling and disposal are regulated under the Solid Waste Management Act. This law provides a definition of what is a solid waste and establishes minimum functional standards for solid waste handling and disposal as well as criteria for siting facilities. The statute provides a waste management hierarchy where waste reduction and recycling are the most preferred management options, while land disposal is least preferred. There are a number of state solid waste regulations that are linked to this statute. Local governments are delegated responsibility for solid waste planning, facility siting, permitting, inspections, and enforcement activities.

Hazardous Waste Management Act

The Hazardous Waste Management Act regulates the transport, treatment, storage, and disposal of hazardous waste. The purpose of the Act is to establish a framework for the planning, regulation, control, and management of hazardous waste that will prevent land, air, and water pollution and conserve the natural, economic, and energy resources of the state. The responsibilities of local governments related to hazardous waste management are identified within the legislative declaration of the Act:

“Safe and responsible management of hazardous waste requires an effective planning process that involves local and state governments, the public and industry.”

“Wastes that are exempt or excluded from full regulation under this chapter due to their small quantity or household origin have the potential to pose significant risk to public health and the environment if not properly managed. It is the intent of the legislature that the specific risks posed by such waste be investigated and assessed and that programs be carried out as necessary to manage the waste appropriately. In addition, the legislature finds that, because local conditions vary substantially in regard to the quantities, risks, and management opportunities available for such wastes, local government is the appropriate level of government to plan for and carry out programs to manage moderate-risk waste...”

The statute requires the development of dangerous waste regulations and criteria for siting hazardous waste management facilities. The Washington State Department of Ecology has adopted regulations implementing the Hazardous Waste Management Act. The Dangerous Waste Regulations (Chapter 173-303 of the Washington Administrative Code) address the designation of dangerous wastes, requirements for waste generators and transporters, and facilities that handle or

manage these wastes. Table 3.3 notes the numbers of regulated generators in Thurston County that are subject to this state law and lists the top four medium and large quantity generators in 1996. These regulations define “small quantity generator” and “household hazardous waste.” Since household hazardous wastes and small quantity generator wastes are specifically excluded from full regulation, the control of these wastes falls primarily to local governments.

Similar to the Solid Waste Act, the Hazardous Waste Management Act establishes a waste management hierarchy. In descending order of preference, the waste management priorities are: waste reduction, recycling, physical/chemical/biological treatment, incineration, solidification/stabilization, and landfilling.

**Table 3.3
Hazardous Waste Generators in Thurston County**

Type of Waste Generator	Number of Facilities	Amount of Waste	Percentage of Total
Small Quantity Generators (produces less than 220 lbs. of waste per month, <2.2 lbs. acute hazardous waste and never stores more than 2,200 lbs. of waste)	2,610 (estimated)	949 tons	74%
Medium Quantity Generators (produces between 220 lbs. and 2,200 lbs. of waste per month)	29	84 tons	7%
Large Quantity Generators (produces more than 2,200 lbs. of waste/month)	14	243 tons	19%
TOTALS	2,653	1,276 tons	100%

Source: Hazardous Waste and Toxics Reduction Program, Washington Department of Ecology and Thurston County Health Department. Data for large and medium quantity generators are from reports submitted to Ecology in 1996.

**Top Four Medium and Large Quantity Generators
Ranked by Reported Weight in 1996**

Ranking	Facility	Amount Reported (in pounds)
Medium Quantity Generators		
1	Amtech Corp., Yelm	53,327
2	Lincoln Mercury of Olympia	24,061
3	CH2O	12,584
4	Olympia Radiological Assoc. Ltd.	11,759
Large Quantity Generators		
1	Ellehammer Packaging Inc.	166,722
2	Crown Cork and Seal Company Inc., Olympia	130,581
3	Texaco Refining and Marketing Inc., Tumwater	99,816
4	Capital Medical Center, Olympia	39,355

Oil and Hazardous Substances Spills Act and Oil Spill Prevention and Response Act

In 1990, the Washington State Hazardous Substances Spills Act was passed. In 1991, the Washington State Oil Prevention and Response Act was adopted. These laws focus on preventing spills while maintaining a high degree of response readiness as well as environmental restoration related to damage caused by spills. The Department of Ecology's Spill Management Program responds to reports of spills throughout the state, including Thurston County. A cooperative working relationship between the state and county leads to most reported spills being responded to and cleaned up in a timely manner. Table 3.4 provides data on the number of responses made in Thurston County.

Table 3.4
Department of Ecology
Emergency Responses Made in Thurston County in 1996

Type of Incident	Number of Responses
Spills Reported in 1996	201
Drug Lab Investigations	14
Contracted Clean-ups of Drug Labs	8

Source: 1996 Annual Report: Spill Management Program, Washington Department of Ecology, Publication #97-251.

The Model Toxics Control Act

The Model Toxics Control Act (Chapter 70.105D of the Revised Code of Washington) provides for the identification and clean-up of hazardous waste sites in Washington State. This Act is the state equivalent to the federal Superfund law discussed earlier. The act assigns liability to certain parties for damages to the environment and human health, provides enforcement authority for the Department of Ecology, and establishes penalties for failure to comply with Ecology orders. The program is funded by a 0.7 percent tax on the wholesale value of hazardous substances. The statute also created the state and local toxics control accounts. The state account funds state hazardous waste and solid waste planning, enforcement, technical assistance, remedial actions, public education, and emergency response training. The local account provides grants to local governments for remedial actions and local solid and hazardous waste programs. Table 3.1 lists both the federal and state listed clean-up sites in Thurston County.

Pollution Prevention Planning Act

In 1990, the Hazardous Waste Reduction Act (Chapter 70.105C of the Revised Code of Washington) was passed. This act authorized the Department of Ecology to develop pollution prevention policies and goals that encourage the reduction of hazardous substance use and hazardous waste. To achieve these goals, the law requires certain hazardous waste generators and hazardous substance users to prepare plans for voluntary reduction of hazardous substance use and hazardous waste generation. These plans must address current hazardous substance use; waste reduction, recycling and treatment activities; analysis of further reduction opportunities; and five-year performance goals. Table 3.5 lists those facilities in Thurston County that have prepared pollution prevention plans.

Table 3.5
Facilities Involved in the Department of Ecology's Pollution Prevention Planning

Amtech Corporation
CH20
Columbia Beverage Company
Crown Beverage Cork and Seal
InterCity Transit
J.R. Setina Manufacturing Company, Inc.
Lacey Bathware
Pabst Brewing Company
Washington State Department of Transportation (Second Avenue, Tumwater)
Washington State Department of Transportation (Capitol Blvd., Tumwater)
Walt's Radiator and Muffler
West Line Construction

The Used Oil Recycling Act

Another law that affects household hazardous waste management is the Used Oil Recycling Act (Chapter 70.95I of the Revised Code of Washington), passed in 1991. This act requires local governments to include a used oil recycling element in their local hazardous waste plans. Local governments are also required to submit an annual report to the Department of Ecology

describing the number of collection sites in operation and amount of used oil collected at these sites.

Local Regulation

A variety of local government agencies have regulatory authority that affects the handling and disposal of household hazardous waste and small quantity generator hazardous waste. This section identifies key local regulations.

Nonpoint Source Pollution Ordinance

In 1992, the Nonpoint Source Pollution Ordinance (Article VI of the Thurston County Sanitary Code) was adopted by the Thurston County Board of Health. This ordinance applies to controlling the discharge of small amounts of hazardous waste and animal wastes into the environment. In terms of hazardous waste rules, the ordinance sets standards for managing household hazardous waste, small quantity generator hazardous wastes, and petroleum wastes. Specifically, these wastes cannot be dumped in the trash or on the ground, put down the drain or burned. Through this local law, the Health Department has authority to investigate reports of improper storage or disposal and take appropriate actions to ensure hazardous wastes are properly managed. This law is also used in technical assistance settings to assist local businesses and help homeowners understand their responsibilities.

Solid Waste Handling Ordinance

The Thurston County Solid Waste Handling Ordinance (Article V of the Thurston County Sanitary Code) empowers the Health Department to issue operating permits, conduct inspections and carry out enforcement related to solid waste facilities such as landfills, transfer stations, and recycling facilities. Authority to investigate complaints of illegal garbage dumping is also defined in this local law. A special provision in this ordinance prohibits disposal of dangerous wastes and moderate risk wastes in a solid waste facility. The ordinance also sets standards for screening “high risk waste” before it is allowed to be disposed at the Hawks Prairie Landfill.

Industrial Pretreatment Program

The LOTT wastewater treatment plant operates an industrial pretreatment program. As a way to prevent pollutants from entering the wastewater plant, LOTT regulates the discharge of significant quantities of wastewater and materials that could adversely affect the collection system, the sewage treatment plant, its workers, or Budd Inlet.

LOTT issues pretreatment permits to significant industrial users and minor significant users of its system and issues discharge authorizations (less detailed than permits) to smaller businesses that discharge potentially problematic wastes to the sewer. LOTT also sets limits for such

contaminants as heavy metals, fats/oils/greases, and organic chemicals. Table 3.6 summarizes the types and numbers of facilities in the pretreatment program.

Table 3.6
LOTT Industrial Pretreatment Program
Number and Type of Users

Type of User	Number of Businesses
Significant Industrial Users Crown Cork & Seal Pabst Brewing Company Columbia Bottlers Thurston County Landfill Georgia Pacific Corp. Weyerhaeuser Box Plant	7
Minor Industrial Users Dart Container Corp. Louis Kemp Seafoods GA Bureau of Facility Management InterCity Transit St. Peter Hospital Evergreen State College Shirley Ryder Nu-Door MAACO	9
Users of Concern: Printing and Photo Processing	14
Users of Concern: Dry Cleaning and Laundry	8
Non-significant Impact Users	59

Source: LOTT Industrial Pretreatment Program, May 1997.

Fire Prevention and Emergency Response

City fire departments and fire districts require safe handling and use of hazardous materials in their respective jurisdictions. Fire departments and districts provide inspection, compliance, and enforcement services under national, state, and local codes and regulations. A number of articles in the Uniform Fire Code, especially articles 79 and 80, set multiple and very specific requirements regarding storage and use of hazardous materials, safety equipment and features, and procedures. Article 80 requires businesses that have certain hazardous materials to prepare and submit a hazardous materials inventory statement.

Fire departments and districts regularly inspect businesses; the inspections may include review of hazardous material storage, depending on the quantities being stored.

Air Pollution Control

The Olympic Air Pollution Control Authority (OAPCA) is a regional government agency that enforces federal, state and local air quality standards, laws, and regulations in Thurston County and neighboring counties. OAPCA is responsible for regulating new and existing air pollution sources, ranging from large industrial complexes and hospitals to dry cleaners, auto body repair shops, and gasoline stations. The agency issues operating permits and new source permits, offers a business technical assistance program, runs an ambient air monitoring network, regulates asbestos abatement projects, regulates open burning, declares burn bans when needed, and carries out special studies. OAPCA also operates a comprehensive wood smoke program. Table 3.7 provides data on the types and number of facilities regulated by OAPCA.

**Table 3.7
Air Pollution Source Categories and Number of Sources, 1997 Data**

Air Pollution Category	Number of Sources
Asphalt Plant	2
Brewery	1
Can -Manufacturing	1
Coatings -General, Aircraft, Auto Body, Fiberglass, Furniture, Large Vehicles, Metal Parts	56
Coffee Roaster	1
Compost	1
Concrete Batch Plant	3
Crematorium	2
Dry Cleaning - Perc	16
Flares - Landfill Gas Collection	1
Foam Cup Manufacturing	1
Food Processing	3
Gas Stations	88

Air Pollution Category	Number of Sources
Gasoline Bulk Plant	1
Gasoline Terminal - Large	1
Generators - Diesel Electric	1
Heating -Process Heating, Space Heating for Large Building	5
Incinerator -Hospital, Veterinary	2
Laboratory	1
Log Yard - Chipper/Log Debarker	2
Paper - Cardboard Manufacturing	2
Pipe Manufacturing	1
Pipeline - Pumping Stations	2
Remediation - Contaminated Soil	1
Rock - Crusher	8
Rock - No Crusher	1
Wood Manufacturing -Boats, Doors, Lumber, Boat Repair	4
TOTAL SOURCES	208

Source: Olympic Air Pollution Control Authority, May 1997.

Local Emergency Planning Committee

The Local Emergency Planning Committee (LEPC) is an interagency group made up of representatives from public agencies, citizen groups, and industry. The purpose of this committee is to ensure emergency response plans are updated and to implement portions of the Community Right-to-Know law. Recent revisions to the State's statute regarding LEPCs now require that counties ensure LEPCs are carrying out their duties (Chapter 118-40 of the Washington Administrative Code). One of their primary duties is to collect and utilize annual reports on the storage of large quantities of hazardous substances.

Health and Safety

State and federal regulations govern exposure to hazardous chemicals, and require employees to be provided with hazardous substance training and information under “worker-right-to-know” laws. This training is required through the Occupational Safety and Health Act (OSHA) via the Washington Industrial Safety and Health Act (WISHA). These acts require employers to properly label hazardous materials and to make information available to workers on the potential dangers associated with exposure to hazardous materials.

Conclusion

A patchwork of federal, state, and local laws applies to the manufacture, use, and disposal of hazardous substances and hazardous wastes. The County hazardous waste program fills the gap left by the federal and state programs by focusing on hazardous wastes that are excluded from federal and state law. The purpose of the local hazardous waste program is to establish a framework for the planning, control, collection, regulation, and management of small quantities of hazardous waste that will prevent land, air, and water pollution and conserve the natural, economic, and energy resources of the state.

Chapter 4: Household and Small Business Hazardous Waste

This chapter details the nature of household hazardous waste (HHW) and small quantity generator (SQG) waste. First we look at household hazardous waste; what it is, who is most at risk from exposure to HHW, what kinds of products create HHW, how much is produced, and how it is managed. Next we examine small quantity generator waste; what are SQGs, what types of waste they produce, how much, and how SQG wastes are handled.

What is Household Hazardous Waste?

Household hazardous waste is the waste generated from the use of household products containing hazardous substances. Common activities such as home repair, automotive maintenance, gardening, house cleaning, and hobbies often involve the use of hazardous household products. A hazardous product is defined as poisonous, flammable, corrosive, or reactive. An easy key for identifying a hazardous product is to look for the signal words on product labels: *Poison, Danger, Warning, and Caution*. Federal consumer protection laws require these signal words; they indicate a hierarchy of health risk.

Thurston County residents produce an estimated 6.8 pounds of household hazardous waste per person per year³. This translates into about a gallon of paint or the amount of used oil from a single oil change per year. Based on a 6.8 pound per person average, about 673 tons of HHW is produced each year in Thurston County.

³Based on average of 3.6 pounds of garbage per person per day, an average of 0.52% of garbage being household hazardous waste, and a population of 197,000 people.

The cumulative effects of improper use and disposal of hazardous materials from the nearly 200,000 individuals living in Thurston County are widely dispersed and can add up to costly problems. In most cases it is difficult, if not impossible, to trace a given environmental effect back to hazardous waste from a specific household. This is especially true when considering harmful effects in landfills and urban runoff, where hazardous wastes from many households mingle together and mix with wastes from other sources. Likewise, tracing a given health effect back to an exposure of a household chemical is often difficult. Yet, because of the estimated amounts produced by households in Thurston County, it is possible to identify HHWs as contributors to public health and environmental degradation.

Improper use and improper disposal of household chemical products down the drain or onto the ground can eventually lead to ground water, surface water, and sediment contamination. Nearly all of Thurston County's drinking water comes from ground water. Because of the County's geology, our aquifers are very vulnerable to contamination. Forty-one percent of the total land area in Thurston County is categorized as having extreme aquifer susceptibility (to contamination); twenty-five percent is highly susceptible; fifteen percent is moderately susceptible; and only nineteen percent is classified as having low susceptibility to contamination. More than 40 incidents of ground water contamination from hazardous materials have already been reported in the county.⁴ Individual wells and major water supply wells have had to be abandoned because of chemical contamination. For example:

- Approximately 200 domestic wells were confirmed as contaminated with pesticides in rural east Thurston County in 1990-1991. Cost to investigate and connect the homes to a community water supply exceeded \$450,000. The ground water in the affected area remains contaminated.
- A community well near Lacey was confirmed as contaminated with a synthetic organic chemical (tetrachloroethylene) in 1991. Customers of the community system had to connect to the City of Lacey water system to obtain safe drinking water. Ground water flowing to the abandoned community well remains contaminated.

⁴Northern Thurston County Ground Water Management Plan: Summary Report, Thurston County Health Department, 1993, p. 3.

- Three of Tumwater's wells in the Palermo Well Field were confirmed to be contaminated with a synthetic organic chemical (trichloroethylene) in 1993. Cost of sampling and identifying the initial source of contamination exceeded \$100,000. Monitoring costs continue at over \$1,500 per month. The contaminated wells were removed from Tumwater's water system, creating concern about adequate water quantity during times of peak use. In 1998, the Environmental Protection Agency is constructing a soil vapor extraction system and two circular air stripping towers to begin clean-up of ground water.⁵
- Volatile Organic Compounds (VOCs), a chemical class including pesticides, solvents, and fuels, have been detected in twelve Group A water systems in Thurston County. Group A water systems serve 15 or more connections of 25 or more people per day for 60 or more days per year.⁶

In many cases, clean-up is impossible once contamination has occurred. At the very least, when any part of our water supply is contaminated, the expense and burden on public funds, industry and the economy is overwhelming. Business and industry are not necessarily the source of contamination. A recent water quality study was done to assess the occurrence of pesticides in streams and streambeds of the Puget Sound Basin. The study reveals the most frequently detected pesticide in streams is 2,4-D, a common herbicide used on residential lawns.⁷ An estimated 200,000 pounds of 2,4-D is applied in the basin.⁸

Fish, aquatic insects, and vegetation need clean water. Families, businesses, and visitors also rely on clean water for food, their livelihoods, recreation, and aesthetics. Many homes are built along marine and fresh water shorelines; most, as is typical of homes outside the urban core, rely upon on-site septic systems. The residential activities along and near these shorelines have direct impacts on surface water quality.

Disposing of small amounts of hazardous waste into the garbage, down the drain, or onto the ground can also lead to equipment damage, worker injuries, or costly impacts on landfills, on-site sewage treatment systems, sewage treatment plants, or storm water treatment system ponds.

Thurston County is growing rapidly. Population trends predict 63,000 more people will live here by 2010, an increase of 32 percent from the 1997 population (see Chapter 2). Keeping our drinking water, water recreation areas, and commercial salmon and

⁵"Superfund Fact Sheet: Palermo Wellfield Groundwater Contamination." Environmental Protection Agency Region 10, January 1998.

⁶The Health Status of Thurston County 1997. Thurston County Health Department, p. IV-8, September 1997.

⁷Pesticides in Selected Small Streams in the Puget Sound Basin, 1987 - 1995, U.S. Department of the Interior and the Washington Department of Ecology, 1997, p. 1.

⁸Ibid., p.3.

shellfish harvesting areas clean gets harder and harder as population pressures intensify. The environmental risks increase as the population increases.

Who is Most at Risk When There is a Chemical Exposure?

Exposure to hazardous substances affects individuals differently. The dose at which an adverse health effect from chemical exposure occurs is different for every person. Age, weight, sex, and health of the individual, as well as any exposure the victim has had to other chemicals, all interact to determine that person's tolerance. In 1996, the Washington Poison Center received nearly 40,000 calls concerning household hazardous chemicals (not including medicines or drugs). Over 17,000 calls were for bleach alone.⁹

Children run the greatest risk of accidental poisoning, especially toddlers. Children are also generally more susceptible than most adults to small amounts of toxic material because their body defenses are not completely developed, their lung passages are small, their rapidly growing tissues are easily damaged by poisons and their body weight is low. In a case-control study in Denver, children whose families used yard pesticides (most commonly carbaryl, diazinon, and the herbicide 2,4-D) were four times more likely to develop soft tissue sarcomas than children whose families did not use these products.¹⁰ In Los Angeles, children of families using garden pesticides once a month had a six-fold increased risk of developing leukemia.¹¹

Exposure of pregnant women to even small amounts of certain chemical products can damage the fetus. Other high-risk groups include people with chronic heart, lung, kidney, or liver disease; people with allergies or compromised immune systems; and the elderly. Though many common chemicals appear harmless, some scientists are concerned about long-range effects of low dose exposures that result from the use of hazardous products.

Education is a significant agent in preventing improper disposal and environmental contamination, reducing health risks, protecting property values, and reducing costly disruptions of waste management systems. Education is key for achieving waste reduction, reuse, and recycling, the three highest priority waste management options for

⁹Washington Poison Center, 1997.

¹⁰Leiss, Jack K. and David A. Savitz, "Home Pesticide Use and Childhood Cancer: A Case Control Study". American Journal of Public Health, Vol. 85, No. 2, 1995, pp. 249-252.

¹¹Lowengart, Ruth A. and John M. Peters, "Childhood Leukemia and Parents Occupational and Home Exposures" Journal of the National Cancer Institute, Vol. 79, No. 1, 1987, pp.39-46.

Thurston County and Washington State. Because it can affect people's attitudes and behavior, resulting in changes in consumer buying habits and waste handling, education is considered essential.

Waste collection is the other critical service that is necessary in keeping the environment free from toxic materials. Without access to a safe disposal option, individuals would not be able to safely manage the household hazardous waste they create.

What Kind of Products Create Household Hazardous Waste?

A wide range of household products that contain hazardous substances are commonly used in homes. For example, each month, roughly 26 tons of liquid cleaners and six tons of toilet bowl cleaners are washed down Thurston County drains.¹² Table 4.1 contains a generalized list of hazardous household products. The waste from many of these types of products is considered HHW.

TABLE 4.1
HOUSEHOLD PRODUCTS CONTAINING HAZARDOUS CHEMICALS¹³

REPAIR and REMODELING

Adhesives, Glues, Cements
Roof Coatings, Sealants
Caulking and Sealants
Epoxy Resins
Solvent-Based Paints
Solvents and Thinners
Paint Removers and Strippers

Degreasers and Spot Removers
Toilet, Drain, and Septic Tank Cleaners
Polishes, Waxes, and Strippers
Deck, Patio, and Chimney Cleaners
Solvent Cleaning Fluid

CLEANING AGENTS

Oven Cleaners

PESTICIDES

Insecticides

¹²Using figures of per capita use of cleaners as in "Green Seal's Choose Green Report," 1996.

¹³Guidelines for Development of Local Hazardous Waste Plans. Washington Department of Ecology, July, 1993.

Fungicides
Rodenticides
Molluscicides
Wood Preservatives
Moss Retardants
Herbicides
Fertilizers

AUTO, BOAT, and EQUIPMENT

MAINTENANCE

HOBBY AND RECREATION

Paints, Thinners, and Solvents
Chemicals (including Photo and Pool)
Glues and Cements
Inks and Dyes
Glazes
Chemistry Sets
Bottled Gas
White Gas
Charcoal Fluid
Batteries

Batteries
Waxes and Cleaners
Paints, Solvents, and Thinners
Additives
Gasoline
Flushes
Auto Repair Materials
Motor Oil
Diesel Oil
MISCELLANEOUS

Ammunition
Asbestos
Fireworks

How Much Household Hazardous Waste is Produced?

The amount of HHW that is produced every day in Thurston County can be calculated using waste generation rates. The County's Solid Waste Division estimates that each person produces an average of 3.6 pounds of garbage every day. With a population of about 197,000, this adds up to about 350 tons of garbage every day. This generation rate is based on tracking how many tons of garbage are delivered daily to the Hawks Prairie Landfill.

The amount of HHW that is in our garbage is calculated by taking garbage samples and literally sorting out the HHW that is mixed in the garbage. Solid waste experts call this kind of research "waste stream composition studies." Scientific methods for statistically valid sampling are carefully followed. Samples are taken from disposal trucks from known routes as well as self-hauled waste deliveries.

The most recent HHW composition study of Thurston County garbage was done in 1988 by the Department of Ecology, as part of a statewide survey. Seven samples from the Hawks Prairie Landfill were sorted and it was determined that the average HHW composition was 0.52 percent. This rate was slightly higher than the statewide average, which was 0.39 percent, but was far below the state average of self-hauled waste, which was 1.22 percent. In 1998-99, the County's Solid Waste Division will conduct a waste stream composition study that will include analysis of

HHW. Until this new data is obtained, the HHW generation rate of 0.52 percent will continue to be used.

An effort to find more recent waste characterization data from around the country turned up three studies, from Palm Beach County in Florida; Sonoma County in California; and Seattle, Washington. The characteristics of these communities do not match the features of Thurston County and consequently their generation rates –although more current than Thurston County’s 1988 data-- were not considered practical for use in this plan. Several conclusions of the Seattle study may be anecdotally relevant to Thurston County because of relative geographic proximity, because citizens share a common media market, and because residents and businesses are subject to the same state hazardous waste laws. The Seattle study also supports the notion that HHW generation rates are not changing. The Seattle study found:¹⁴

- Variations in the relative amount of HHW between their 1990 study and this 1994 study were not statistically significant.
- There is a variation in HHW composition between single-family and multi-family residences. Single-family residences have a HHW rate of 0.4 percent and multi-family residence have a higher rate of 0.5 percent.
- There is a seasonal variation in the composition of HHW, with fall having the highest rate of 0.6 percent, summer at 0.5 percent, spring at 0.4 percent, and winter at 0.2 percent.
- There is a variation in HHW composition by household income. High income homes have the highest HHW rate of 0.5 percent, medium income homes have a rate of 0.3 percent, and low income homes have a rate of 0.4 percent.

The following calculation, which uses Thurston County residential HHW composition of 0.52 percent along with the solid waste generation rate of 3.6 pounds of garbage per person per day, projects an annual HHW generation rate of 673 tons per year:

$$(3.6 \text{ pounds garbage/person/day}) \times (0.52\%) \times (197,000 \text{ people}) \times (365 \text{ days}) = 673 \text{ tons HHW/year}^{15}$$

¹⁴1994/95 Residential Waste Stream Composition Study, City of Seattle Solid Waste Utility, 1996.

¹⁵Thurston County Department of Water and Waste Management, “Solid Waste and Moderate Risk Waste Management Annual Report for 1995.”

If the assumptions of this calculation are wrong, the estimated waste generation rate would also be incorrect. When new data on HHW generation rates is available, this calculation will be reviewed.

Data for 1997 from the HHW facility and the used oil collection sites establishes that 385 tons of HHW were collected from citizens. This means that if the projected 673 tons per year is accurate, 288 tons of HHW are unaccounted for. There is no data suggesting where this waste has gone, yet it seems reasonable to suggest that it is winding up in the trash, down the drain, on the ground, or in storage.

How is Household Hazardous Waste Managed?

Thurston County encourages reduction and reuse of household hazardous products, to keep waste production as low as possible. To handle disposal needs, the County runs a household hazardous waste collection facility at the Hawks Prairie Landfill. It is open to residents three days a week throughout the year. Residents who have certain unwanted but useable hazardous products can bring them to the reuse shed at the HHW facility. Used motor oil can be recycled at twenty-four different locations throughout the County (see Figure 4.1). Oil filters can be recycled at the Rainier and Rochester transfer stations, the Summit Lake drop box; or the collection facility. Once collected, these wastes are sorted, packaged, and shipped to large hazardous waste recycling or disposal facilities for ultimate management.

Since 1991, about 36,327 customers have used the HHW facility. Table 4.2 shows how participation hit its peak in 1994, and has since leveled off. A total of 1,018 tons of HHW have been collected and properly managed through the HHW facility since 1991, also shown in Table 4.2. The amount of waste per vehicle has varied over time; in 1997, it was 63.5 pounds.

**Table 4.2
Hazo House Customers, Drums, Weight, and Costs: 1991-1997**

Year	Number of Customers	Number of Drums	Number of Car batteries	Pounds of Hazardous Waste	Annual Costs	Processing Cost per Vehicle
1991	1,605	177	150	74,330	\$63,936	\$39.84
1992	5,577	659	857	280,734	\$135,305	\$24.26
1993	5,787	703	902	280,480	\$175,524	\$30.33
1994	6,461	855	1,001	344,952	\$181,628	\$28.11
1995	5,867	876	1,074	359,822	\$164,106	\$27.97

1996	5,716	828	1,207	355,870	\$205,299	\$35.92
1997	5,314	789	1,222	339,025	\$187,173	\$35.22
TOTALS	36,327	4,887	6,413	2,035,213	\$1,049,035	\$28.88

The highest volume wastes are used oil, paints, auto batteries, flammable liquids and antifreeze. During the last three years, these wastes averaged about 90 percent of the total HHW that is collected at the facility. A detailed breakdown of waste streams is provided in Table 4.3.

Table 4.3
Hazo House Waste Stream Breakdown, 1995-1997
(in percent of total weight)

WASTE TYPE	1995	1996	1997
Used Oil	37	41	41
Latex Paint	20	23	21
Oil Base Paint	15	13	9
Vehicle Batteries	9	10	11
Antifreeze	10	5	
Adhesives	4	3	2
Pesticides	2	2	2
Flammable Liquids	0 ¹⁶	0	7
Other HHW	3	3	2
	100%	100%	100%

All wastes, except latex paint, are transported to other facilities for final or “ultimate” management. In 1997, 59 percent of wastes were managed through an energy recovery process; 21 percent (latex paints) were solidified and disposed in the Hawks Prairie Landfill; 17 percent were recycled; two percent were shipped to a hazardous waste landfill; and one percent was neutralized. Table 4.4 compares how wastes have been ultimately managed between 1995 and 1997. In 1997, the average cost per delivery at the HHW facility was \$35.22 (no fees are charged to residents that use the facility).

¹⁶“Flammable liquids” were included in “oil base paint” volumes in 1995 and 1996.

Table 4.4
Hazo House Ultimate Waste Disposal Methods 1995-97
(in percent of total weight)

MANAGEMENT METHOD	1995	1996	1997
Energy Recovery	56	58	59
Recycle	20	16	17
Stabilization and Solid Waste Landfill	20	23	21
Neutralize	1	1	1
Hazardous Waste Landfill	3	2	2
	100%	100%	100%

The Health Department conducted collection events for household hazardous waste from 1985 through 1993 that attracted 1,880 customers. The largest event was held in 1992 in Lacey, where 975 people dropped off 28.3 tons of household hazardous waste. Because of the high cost to operate these events, they were discontinued in 1993. Table 4.5 provides data on participation, wastes, and costs for the one day events. Paint swaps were also tested during Hazo Days in 1992 and 1993, and diverted 930 gallons of latex paint back into use.

Since 1993, the network of used oil collection sites has collected 347,930 gallons of used oil. Table 4.6 provides annual amounts of collected oil. At first, the collected oil was processed into ship fuel and burned in ocean vessels. Starting in 1997, a significant amount of oil was managed by an oil re-refinery that prepares oil for sale to motorists. Data from the private sites was originally collected by calling sites each quarter and requesting an estimate of oil that had been collected. In 1996, the County took a more quantitative approach and began collecting and tallying used oil receipts from each site. This difference in data collection results in a dramatic drop in waste volumes recorded at private sites.

Table 4.5
Household Hazardous Waste Collection Event Data: 1985 - 1993

Year	Vehicles	Drums	Car Batteries	Pounds	Notes	Cost
1985 Landfill	37	6		1,170	No oil. No latex. No unknowns. Disposal costs donated.	No records
1986 Yelm Fire District and Yard Birds	225	22		5,070	No oil. No unknowns. Good paints donated. Disposal costs donated.	No records
1988 Yard Birds	260	32		6,210	No oil accepted. Some labor and disposal donated.	\$14,820
1989 Capitol Lake	409	83	163	14,715	No oil accepted.	\$30,507
1990 Capitol Lake	490	106	147	19,100	Oil discouraged.	
1990 Yelm	56	24	130	8,460	Oil discouraged.	\$38,504
1991 Lacey	451	118	96	17,760	Oil discouraged.	\$42,000
1992 Yelm	205	72	270	22,990	No limits.	\$92,000
1992 Lacey	975	245	360	56,668	No limits.	
1993 Rochester	67	33	40	8,220	No limits.	\$16,500
1993 Yelm	182	74	72	12,140	No limits.	\$24,300
TOTALS 1991 - 1993	1,880	542	838	117,778	This total includes only 1991- 1993 data.	174,800

**Table 4.6
Used Oil Collected at Recycling Sites:1993-1997**

Year	Oil Collected at County-Sponsored Sites¹⁷ (in gallons)	Oil Collected at Private Sites¹⁸ (in gallons)	Annual Totals (in gallons)
1993	26,335 (six months)	[26,940 est.] ¹⁹	53,275
1994	45,007	[26,236 est.]	71,243
1995	51,085	[32,196 est.]	83,281
1996	55,750	13,221	68,971
1997	58,633	12,527	71,160
TOTAL GALLONS	236,810 gallons	111,120 gallons	347,930 gallons

What is a Small Quantity Generator of Hazardous Waste?

¹⁷Nine used oil collection sites are operated jointly between the County, local business co-sponsors, and the Port of Olympia. Four additional sites are operated by the Thurston County Department of Water and Waste Management at transfer stations and a recycling center.

¹⁸In 1997, there were 12 private used oil collection sites in Thurston County.

¹⁹Amounts for years 1993 - 1995 were rough estimates.

The Dangerous Waste Regulations of Washington defines businesses that generate less than 220 pounds of hazardous waste in a month, generate less than 2.2 pounds of acute hazardous waste per month, and store less than 2,200 pounds of hazardous waste at any one time, as “small quantity generators.” The amount of hazardous chemicals used, type of product manufactured, air emissions, or number of people employed are not considered in this definition. Small quantity generators (SQGs) are conditionally exempt from the federal and state hazardous waste requirements imposed on larger hazardous waste generators. The State of Washington delegates regulation of SQGs to counties.²⁰ In 1992, Thurston County adopted a local ordinance establishing standards for storage, disposal, and spills of hazardous materials from SQGs and homeowners. The Nonpoint Source Pollution Ordinance is part of the Thurston County Sanitary Code and is enforced by the Health Department.

For planning purposes, the County estimates there are at least 2,610 business or government operations in Thurston County that qualify as SQGs. Small quantity generators include businesses involved in auto repair and maintenance, commercial printing, painting, mining, farming, pesticide applications, dry cleaning, photography, fiberglass fabrication, lab testing, equipment repair, facility and grounds maintenance, and screen printing. Small quantity generators also include government operations involved in road maintenance, facility and grounds maintenance, and equipment repair. Small quantity generators produce an estimated 949 tons of hazardous waste (not including used oil and vehicle batteries) annually.

What Types of Waste are Produced by SQGs?

Many hazardous chemicals used by SQGs are identical to those used by households. The waste types generated from the use of products such as solvents, paints, batteries, furniture strippers and wood preservatives are the same in homes as in business. Some differences are that businesses often use substances in higher concentrations, generate larger volumes of hazardous waste, and generate more types of hazardous waste.

Other SQG wastes have no counterpart to HHW because the processes by which they are generated are unique to specific business applications. Examples of this type of waste are solvent still bottoms, heavy metal dust and sludges, and lab wastes. In general, SQGs tend to generate hazardous wastes that have become contaminated in their use (such as a solvent used for cleaning engine blocks that becomes contaminated with grease, oils, dirt, and metal shards), while households throw away unwanted or unused products.

²⁰Local government responsibilities are defined in the Washington State Hazardous Waste Management Act, Chapter 70.95 of the Revised Code of Washington.

Table 4.7 lists the different types of SQG wastes, and the types of businesses that typically produce them. The 1992 Small Quantity Hazardous Waste Generator Survey shows that the auto repair category generates the largest percentage of hazardous waste in Thurston County. The next six largest categories in descending order were auto dealers, transportation, medical offices, miscellaneous manufacturing, miscellaneous wholesale trade, and miscellaneous business services.

TABLE 4.7**INDUSTRIAL CLASSIFICATION OF SMALL QUANTITY GENERATORS
IN THURSTON COUNTY²¹**

Group Name	Type of Business	Types of Hazardous Waste Generated
1) Pesticide Users	Golf Courses, Parks, Arboretums	Wash and rinse solutions, oils, solvents, waste pesticides, batteries
2) Pesticide Application Services	Pest Exterminators, Landscapers, Tree and Lawn Services	Wash and rinse solutions, oils, solvents, waste pesticides, batteries
3) Wood Preserving	Millwork, Lumber, Wood Preserving	Wood preservatives, oil, solvents, batteries
4) Laundries	Dry Cleaners, Carpet Cleaners, Industrial Cleaners	Perchloroethylene waste, caustic soaps
5) Other Services	Funeral Services, Cleaning and Maintenance Services, Painters, Garbage Collection, Misc.	Formaldehyde, ammonia, oil, solvents, paints
6) Photography	Photo Finishing Labs, Blueprint and Photocopying Services	Film developing chemicals, inks
7) Vehicle Maintenance	Service Stations, Engine and Transmission Repair, Body and Radiator Shops, Battery Sales, Trucking	Solvents, metal sludge, caustics, batteries, paint waste
8) Equipment Repair	All Repair Services Unrelated to Vehicle Maintenance	Solvents, oils
9) Metal Manufacturing	Jewelry Manufacturing, Engravers, Fabricated Metal Products	Acids, solvents, oil, other chemicals
10) Construction	Contractors, Insulation Companies, Floor Covering, Plumbing	Oil, solvents, paints, batteries
11) Motor Freight Terminals	Terminals for Maintenance	Batteries, solvents, oil

²¹A Survey of Small Quantity Generators: The Puget Sound Experience, Tacoma-Pierce County Health Department, Thurston County Health Department, Seattle-King County Health Department, City of Seattle Solid Waste Utility, 1986.

Group Name	Type of Business	Types of Hazardous Waste Generated
	Facilities	
12) Furniture/Wood Manufacturing and Refinishing	Furniture Manufacturers, Wood Preservers, Refinishers	Oil, solvents, stripping compounds, wood preservatives
13) Printing and Ceramics	Print Shops, Advertising Services, Paper Products	Photographic chemicals, inks
14) Cleaning Agents and Cosmetic Manufacturing	Soap Manufacturing and Cleaning Services	Caustic solutions, soaps
15) Other Manufacturing	Plastic Processes, Glass Manufacturing, Abrasive Products, Manufacturing Unrelated to Other Categories	Oil, solvents, inks, paints
16) Laboratories	Medical and Commercial Labs	Caustic solutions, solvents, and mixed chemical wastes
17) Educational and Vocational Shops	Vocational Schools, High Schools, Colleges	Oil, solvents, cleaning materials, paints
18) Wholesale and Retail	Businesses Involved in Wholesale Distribution, Retail Stores	Oil, solvents, batteries

How Much Small Quantity Generator Waste is Produced?

The amount and type of SQG waste that is produced in Thurston County is difficult to predict. Unlike HHW, a solid waste composition study does not reveal much data about SQG waste. Information that does help define the types and quantities of waste is from a survey done right after the 1991 plan was adopted. It is important to keep in mind that the survey was not a precise representation of the waste generation and management practices of all SQGs throughout Thurston County. The survey was not based on random samples and did not equally represent all SQG categories, but it does reflect the practices of 312 local businesses. It would be better to have more recent data for updating the plan. However, due to focusing on delivering services to local businesses, the County has not conducted follow-up surveys. Therefore, at this time, the 1992 survey is the best information available for understanding hazardous waste generation and disposal of Thurston County generators.

The 1992 survey examined 486 small businesses. Of this total, 312 businesses were SQGs. An average monthly hazardous waste generation rate of 60.6 pounds was found by the survey, which was

a much lower amount than predicted in the adopted 1991 Moderate Risk Waste Plan.²² The actual monthly rates ranged from two pounds (architects) to 123 pounds (auto dealers). For the plan update, the 60.6 pounds per month rate is being used. This average may be low because in 1996 the weight limit threshold (no more than 220 pounds of waste accumulated per month) for SQGs was increased to allow businesses that accumulate up to 2,200 pounds of hazardous waste to become SQGs.

The 1992 survey forecasts there are 2,610 SQGs in Thurston County. The forecast used data from 312 businesses, Department of Revenue SIC code lists, and the regional Yellow Pages. Although the survey may have a wide margin of error, it still offers an “educated guess” for making a planning level estimate on how many SQGs may be in Thurston County. Since 1994, field staff have visited between 500 to 600 small businesses and believe there are hundreds more SQGs yet to be reached. As noted above, estimates from 1992 may be low since the definition of SQGs was amended to allow additional businesses to qualify as an SQG. Nevertheless, this document will use the estimate of 2,610 SQGs.

Using a population total of 2,610 SQGs and a waste generation rate of 60.6 pounds of waste per month, the County estimates SQGs produce 949 tons per year of hazardous waste. Of the 949 tons of hazardous waste, the 1992 survey suggests 83 percent by weight will be accounted for as managed properly. Eighty-three percent of 949 tons represents 788 tons, leaving the unaccounted tons at 161.

How are Hazardous Wastes from SQGs Managed?

Whenever possible, businesses are encouraged to reduce their production of hazardous waste. Sometimes, a nonhazardous substitute is available. Businesses can also keep waste from being created by tracking product inventory and shelf-life. Product exchanges are another waste reduction option open to SQGs. For example, material exchanges operated in Seattle, Portland, and Spokane list unwanted chemical products in catalogs that reach thousands of businesses and organizations every month.

Small businesses manage their hazardous wastes in different ways – some of which are legal, some are not. The best option is to send wastes to companies that have permits to recycle, neutralize, incinerate, or dispose of hazardous waste. The 1991 Moderate Risk Waste Plan suggested that most SQG waste was being disposed in the garbage (85%) or dumped down the drain (15%). After the 1991 plan was adopted, the Health Department undertook a survey to interview SQGs to gain field data on how waste was disposed. The survey found that of the businesses surveyed, about 83 percent of hazardous waste by weight was being properly managed.

²²The Moderate Risk Waste Plan estimated a generation rate of 124 to 204 pounds per month.

Aggressive marketing by private hazardous waste disposal vendors along with better understandings of hazardous waste liability have motivated more small businesses to hire hazardous waste pick up and disposal services. Most large volume wastes such as used oil, solvents, antifreeze, photo wastes, and oil filters are collected by hazardous waste disposal companies who conduct “milk runs” throughout the County.

Another way of looking at waste disposal is to track how each separate waste produced by a business is disposed. For example, a business might produce three separate types of waste such as spent solvent, corrosive wastes, and contaminated shop towels. The survey found that 55 percent of each separate waste was managed properly by off-site hazardous waste companies. Other waste management practices included disposal in the garbage (15%), unknown (7%), disposal into the sanitary sewer (6%), and extended storage (4%). The remaining wastes (13%) were managed by one of eight other methods: burning, disposal on the ground, evaporation, disposal into septic system, mixing with other wastes, transferring to another site, reuse, and on-site recycling. Proper management was defined in this survey as waste that was recycled, reused, sent off site to a permitted hazardous waste facility, or for used oil only, burned. Tracking how each different waste is managed within the same company— rather than just totaling the weight that is managed properly— showed there was considerable improper disposal of small amounts.

The survey also summarized the percent of wastes managed properly by each SQG category. Food processors had the highest rate of proper waste management. The next highest rate of proper waste management was mining, followed by miscellaneous retail trade, dry cleaners, miscellaneous business services, transportation, wood products, auto repair, agriculture, miscellaneous wholesale trade, miscellaneous manufacturing, medical offices, miscellaneous repair services, printing, miscellaneous professional services, photo related, construction, and architects.

In 1994, as part of a technical assistance campaign for improving photo waste disposal, the County worked with several private companies to increase disposal options for photographic wastes. Two additional disposal sites resulted. In 1996, the County set up a waste collection service for SQGs that is fee supported. This option has been most attractive to SQGs who have small amounts of wastes to dispose of infrequently. Many private hazardous waste recycling and disposal companies provide services to Thurston County businesses. A guidebook for Thurston County businesses, What To Do With Hazardous Waste, lists 26 private hazardous waste companies that provide services in Thurston County.

Field visits and investigation of complaints by County specialists since 1992 have confirmed that many SQGs are safely disposing of at least some, but not all of their hazardous wastes and petroleum wastes. Evaluation data from seven technical assistance campaigns indicates that:

- 47 percent of SQGs implement voluntary waste reduction or recycling tips
- 98 percent of SQGs come into compliance with the Nonpoint Source Pollution Ordinance
- 72 percent of SQGs report site visits “helped me make a change”
- 83 percent of SQGs report technical assistance is a “good approach”

These data suggest that one-on-one technical assistance is provoking change and improving waste reduction, recycling, and safe disposal. Surveys also show that SQGs have a variety of concerns and preferences for future services. Results are shown in Table 4.8. This chart presents results from surveys that were done at the conclusion of five technical assistance campaigns that included over 300 businesses. A ranking of "1" is the highest concern or preference; a ranking of "6" is the lowest.

Table 4.8: Hazardous Waste Management Concerns and Respondent Preferences

Concerns	Ranking by Respondents
Disposal costs	1
Understanding regulations	2
Knowing where to get information	3
Time required for proper management	4
Worker safety and potential liability	5
Equity among competitors	6
Preferred Services	Ranking
Hazardous waste drop-off site	1
Information line	2
News bulletins or newsletter	3
Workshops and training	4
Public recognition	5
Trade shows	6
Preferred Method of Receiving Information	Ranking
Topic-specific fact sheets	1
Quarterly newsletter	2
Letters about events or information	3
Newspaper articles	4
Trade show advertisements	5

Conclusion

Precise measurements of how much HHW and SQG waste is being produced and how much waste is being improperly managed are not available. Estimates, however, may be made based on data from waste composition studies, surveys of businesses, and waste volumes delivered to the household hazardous waste facility.

Based on the best data available, an estimated 1,622 tons of hazardous waste is created by Thurston County homes and small businesses every year. About 28 percent of this volume is *not* showing up in the disposal systems designed to collect hazardous waste. Twenty-eight percent adds up to about 450 tons per year. In other words, for every 100 pounds of waste paints, inks, solvents, acids, caustics, pesticides, old gasoline, poisons, and used oil that is produced – 28 pounds of hazardous waste are unaccounted for. What is happening to this toxic waste? If past habits are an indicator, some waste is going in the trash or down the drain; some is being evaporated and some is stored in closets, shelves, or basements.

The problem is compounded as more families and businesses move to Thurston County and add their incremental amounts of toxic materials. Further, our region's dependency on ground water for drinking water is also threatened by the missing 28 percent of HHW and SQG waste. Closing this gap requires immediate steps before the problem gets worse. The next chapter presents a status report on what the existing program has accomplished. Chapter 6 analyzes gaps in the existing program and sets new goals to take the program into the next century.

Chapter 5: Report on the First Six Years

Introduction

Thurston County's first hazardous waste plan was published in 1991. This chapter serves as a report card on implementation of the plan. First, we report on the status of the sixteen recommendations in the first plan. Second, we briefly describe the programs designed to carry out these recommendations. Next, we discuss approaches to evaluation and list accomplishments of the first six years. Finally, we look at how the program has been funded.

All sixteen recommendations from the first plan have either been implemented or are continuing to be carried out. Contrary to the common belief that planning documents often sit on a shelf, the 1991 Plan has been used regularly to develop annual work plans, set budget priorities, develop grant proposals, and make staffing decisions.

What Was Recommended in the 1991 Plan?

Adopted and funded in 1991, the original hazardous waste plan recommended a mix of education, collection, technical assistance, and enforcement programs. These programs addressed two main hazardous waste sources: homeowners and small businesses. Prior to 1991, the only hazardous waste programs available to homeowners were yearly collection events and Saturday operation of a household hazardous waste collection facility. For small businesses, several private hazardous waste transportation companies serviced the area.

Table 5.1 lists the sixteen recommendations of the 1991 plan. In the table, each recommendation is categorized according to the progress made, as follows.

- **Implemented:** Recommendations that were completed as written in the 1991 plan.
- **Ongoing:** Recommendations that have been initiated and are ongoing.

- Limited: Recommendations that have been initiated, but at a lower level of funding or frequency than identified in the 1991 plan.
- Discontinued: Recommendations that were implemented but have been suspended because of funding limits.

Table 5.1
Implementation of Plan Recommendations

Recommendation ²³		Imple- mente d	On-going	Limited	Discontinued
HHW ²⁴ -1	Integrated Pest Management Education		✓		
HHW-2	School Programs		✓		
HHW-3	Public Media - General Community Education		✓		
HHW-4	Point of Purchase Product Education		✓		
HHW-5	Information Hotline		✓		
HHW-6	Establish Retail Store Recycling Sites		✓		
HHW-7	Expand the Household Hazardous Waste Collection Facility	✓	✓		
HHW-8	Conduct Hazo Days	✓			✓
SQG-9	Establish Audit and Technical Assistance Program		✓		
SQG-10	Business Outreach and Education		✓		
SQG-11	Coordinate Waste Exchange		✓		
SQG-12	Waste Collection Coordination for Small Businesses		✓		
SQG-13	Establish a Comprehensive Local Ordinance	✓	✓		
PM-14	Administration and Program Management		✓		
PM-15	Measure Changes in Household Hazardous Waste		✓	✓	
PM-16	Measure Changes in Hazardous Waste from Small		✓	✓	

²³Recommendations are found on pages 67 to 72 of the *Moderate Risk Waste Plan for Thurston County, 1991*.

²⁴HHW is an abbreviation for household hazardous waste. SQG = small quantity hazardous waste generator. PM = program management.

	Businesses				
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Brief Program Descriptions

HHW- 1. Integrated Pest Management Education

The 1991 Plan recommended creating an information and assistance program that identifies alternatives to pesticides. The Plan recognized that source reduction is a successful waste reduction strategy. An integrated pest management education program, called Common Sense Gardening, was designed in 1991 and 1992. Implementation began in 1992. The program promotes use of alternatives-to and less-toxic pesticides and synthetic fertilizers. Common Sense Gardening uses a variety of education tools and methods such as: partnerships with local nurseries, workshops, newspaper articles, pamphlets, radio and newspaper advertising, videos, radio interviews, cable television programs, telephone inquiries, and a puppet show. Integrated pest management education is also supported by county departments involved in storm water pollution prevention and composting.

HHW-2. School Education Programs

Beginning in 1991, environmental educators began developing teacher and student programs. The basic goal of the household hazardous materials school program is to equip students with the skills to be able to identify hazardous products commonly found in the home and ways they can keep themselves, their families, and the environment safe. The program developed two curriculum guides, classroom presentations, field trips, a driver’s education program promoting safe disposal of motor oil, teaching kits available to lend teachers, and a teacher workshop. Teaching kits represent the basic school program in 1998.

HHW-3. Public Media and General Community Education

Based on the 1991 plan, the goals of the general outreach program are to increase the awareness of the adult public in Thurston County of the environmental and health risks of hazardous materials; to increase proper use, storage, and disposal of household hazardous materials; and to increase the use of Hazo House as a disposal option – all while emphasizing reduction and alternatives. Over time, the program has developed or purchased a variety of materials including brochures, fact sheets, work books, public service announcements, slide shows, stickers, newspaper advertising, consumer guides, and displays. Staff have held workshops, participated in special events or fairs, written newspaper articles, answered telephone inquiries, worked with volunteers, and led ShopSmart tours. They have also integrated household hazardous materials information into other public education efforts such as ground water protection and solid waste recycling.

HHW-4. Point of Purchase Product Education

The point of purchase programs target consumers who use hazardous household products. Consequently, retailers who sell hazardous products are viewed as potential education partners. Point of purchase programs have been developed for used oil, paints, pesticides (see HHW-1, above), and household cleaners. The used oil point of purchase program relies on partnerships with auto parts stores and gas stations. The pesticide reduction program joins with nurseries. The paint program teams up with hardware and paint shops. The household cleaning products program works with grocery store managers. These programs use shelf signs, brochures, special events, consumer incentives, banners, and advertising to reach people.

HHW-5. Information Hotline

Because the public needs easy access to information about household toxics, the County expanded its recycling hotline in 1991. The information line is staffed during normal business hours and is answered by a recording during off hours. Technical questions that come in on the information line are referred to appropriate staff.

HHW-6. Establish Retail Store Recycling Sites (Used Oil Recycling Sites)

The 1991 Plan directed the County to assist retailers in developing recycling sites for wastes such as used oil, and offer financial incentives if necessary. The goal of this recycling program is to collect 80 percent of do-it-yourself generated motor oil and meet Washington's benchmarks for providing access to used oil recycling sites. Between 1993 and 1995, seven new oil recycling sites were set up at retail locations and four new sites were set up at solid waste facilities. Retail recycling sites are operated cooperatively by the private company and the County.

HHW-7. Expand the Household Hazardous Waste Collection Facility

The household hazardous waste collection facility is located at the Hawks Prairie Landfill, adjacent to the recycling center. It was expanded in 1991 as recommended in the adopted plan. Service hours doubled from one to two days per week; in 1994, service hours expanded to three days per week. In 1996, the waste collection service was expanded to accept wastes from eligible businesses. The County added a reusable product exchange program in 1997. The goal of the waste collection program is to provide safe, reliable, and cost-effective hazardous waste collection services for homeowners and small businesses.

HHW-8. Hazo Days (Household Hazardous Waste Collection Events)

The goal of collection events was to safely collect hazardous waste and to raise public awareness about household hazardous waste. Collection events were recommended in the 1991 Plan only if extra funding could be secured above the base level. For the first three years of the new program, additional funding was available from state grants. Collection events were held in both urban locations and in the smaller towns of Thurston County. Although very popular, the high cost of these one-day events prohibited elected officials from recommending them as a regular program. Hazo Days ended after the fall of 1993 because of declining state hazardous waste grants.

SQG-9. Establish Audit and Technical Assistance Program

The 1991 Plan recommended developing a technical assistance program to help small businesses properly manage hazardous wastes. The goal of the program is to increase hazardous waste reduction and recycling rates and improve waste disposal practices. The program conducted a countywide survey of businesses to determine the key problems, barriers, and needs of businesses. Survey results helped design a technical assistance service that tailors nonregulatory technical assistance to individual businesses within a defined target audience. This program offers one-on-one consultations, follow up visits, fact sheets, compliance education, recognition, and when necessary, enforcement.

SQG-10. Business Outreach and Education

The 1991 Plan recommended a blend of general education and outreach efforts to complement the technical assistance program. General outreach is broad-based; technical assistance is one-on-one and site-specific. A variety of outreach efforts have been carried out, often in coordination with other organizations. Examples of outreach include workshops, newspaper articles, paid advertising, community recognition certificates, fact sheets, direct mailing, presentations, trade fairs, promotion of “model” businesses, and operation of an information line.

SQG-11. Coordinate Waste Exchange

Another recommendation in the 1991 Plan was to promote waste exchanges or materials exchanges. The goal of this program is to transfer the materials that one business thinks is a waste to another business that has a productive use for the material.

SQG-12. Waste Collection Coordination for SQGs

The 1991 plan recommended developing a program that links small businesses and private sector companies that pick up and dispose of hazardous waste. Staff developed and annually update a guidebook that lists local hazardous waste disposal services. Surveys of small businesses indicated a local hazardous waste drop-off site was preferred more than an information line, newsletters, workshops, recognition programs, or environmental trade shows. In 1996, the County expanded the household hazardous waste collection facility to accept wastes from businesses by appointment. Eligible businesses are carefully screened and must pay disposal fees.

SQG-13. Establish a Comprehensive Local Ordinance

The Nonpoint Source Pollution Ordinance was drafted by an ad hoc citizens committee and adopted by the Board of Health. This ordinance sets standards for hazardous materials handling, storage, and disposal. The ordinance was adopted in 1992 and took effect in May, 1993. The ordinance provides enforcement tools such as Notices of Violation and Civil Infractions. Depending on the violations, fines may range from about \$100 to \$500. The ordinance is used to respond to reports of poor management of hazardous materials, spills, or dumping. Staff provide technical assistance as necessary to address compliance requirements during site visits.

PM-14. Administration and Program Management

As the lead agency for implementing the 1991 plan, the Thurston County Health Department sets policy, establishes annual budgets, carries out enforcement, and reports to the Thurston County Board of Health. The goal of the Health Department is to develop a system to coordinate regional management of the adopted plan. To accomplish this, the Health Department seeks advice from the Thurston County Solid Waste Advisory Committee – a county-wide body comprised of elected city officials, businesses, and citizens – to obtain feedback on policy, budgets, and work plans.

PM-15. Measure Changes in Household Hazardous Waste Stream

To measure the effectiveness of household hazardous waste programs, the 1991 plan called for measuring the amount of household toxics in the solid and liquid waste streams. In response, the program had a telephone survey done in 1991 and repeated in 1993 to ask residents how they disposed of their wastes. The survey also sought information on use of alternative products, and ability to identify hazardous products. Follow-up surveys have not been done because of funding

limits. Other measurements include collecting data on the wastes delivered to Hazo House, Hazo Days, and at used oil sites.

PM-16. Measure Changes in SQG Waste

To measure the effectiveness of business assistance programs, the 1991 Plan called for measuring the amount of hazardous waste in the solid and liquid waste streams. In response, a field survey was done in 1991 and 1992 asking businesses how much waste they produce and how they dispose of it. During technical assistance campaigns, specialists collect “before and after” data on waste management practices and disposal. The County has not initiated environmental monitoring of solid or liquid waste streams.

What Has Been Accomplished?

What have we gained from our efforts to implement the 1991 Plan? Evaluating the tangible benefits of a prevention program, especially for education efforts, is difficult in the short-term. For the sake of comparison, consider how a dentist might evaluate teaching a new method of tooth brushing. The obvious indicator is whether the dentist finds any cavities during future examinations. However, any improvement due to tooth brushing may not be apparent for several years. In fact, the next exams may not show any reduction in cavities, because some tooth decay might have already been underway before the new method of tooth brushing was adopted. For example, an increase in cavities may result from earlier brushing habits, genetics, diet, or lack of fluoride. To evaluate whether a dental prevention program is working, dentists might measure several short-term indicators to gauge the likelihood that the program will meet the long-term goal. For example, dentists could measure:

- a willingness to learn new information (willingness to learn the new brushing method);
- a decision to take action (a decision to try out the new method);
- a change in behavior (trial use of the new technique); and
- adoption of the new behavior (the patient regularly uses the new method).

To measure the tangible outcome –fewer cavities– the dentist would need to track the number of cavities over a five year, or longer, period. If the outcome is a reduction in cavities, the prevention program would be successful. By measuring the other short-term indicators, the dentist would be able to monitor patients and make adjustments to improve the chances for success.

Similarly, evaluations of hazardous materials prevention programs use short-term and long-term indicators to measure success. The tangible indicators for evaluating the hazardous waste program include whether: hazardous wastes are disposed of properly, drinking water has become

contaminated, people have become sick because of exposure, waste management workers have been injured because of exposure, the incidence of cancers has changed, or surface and marine waters or sediments have become contaminated.

The Health Department uses short-term indicators such as the four mentioned in the dentist example above to evaluate hazardous waste programs. Examples relevant to hazardous waste goals include the following.

- *A willingness to learn new information:* a willingness to attend a workshop or event, pick up a brochure, call a hotline, tune in a television program or watch a video, listen to a radio ad, or read an article.

- *A decision to take action:* a decision to start trying out less-toxic products, start reading product labels or Material Safety Data Sheets, start storing hazardous materials differently, start recycling or disposing of wastes differently, set up a spill clean-up kit, try out a waste exchange, or seek help from others.

- *A change in behavior:* a change in how homeowners and small businesses store and dispose of hazardous materials, a change in the number of least-toxic products used by homeowners and businesses, a change in the number of sites that are out of compliance with local regulations.

- *Adoption of the new behavior:* a per capita reduction in the amount of hazardous waste produced by homes and businesses, a reduction in the number of poisonings or illnesses associated with the use of hazardous substances, a reduction in the amount of hazardous materials found in solid waste, or a reduction in the number of hazardous materials spills.

The state's underlying assumption for mandating local hazardous waste programs is that there are environmental, public health, and economic benefits from having a management system that controls the use, storage, and disposal of hazardous materials in our community. During the first six years of the program, the County has made great strides toward understanding and addressing use, storage, and disposal. Implementation teams have been creative and developed programs that have gained state and national recognition. Collecting and communicating data that measure the less-tangible and tangible indicators noted above is not well developed. The value of program evaluation is now clearly recognized throughout the public health field and is being supported more and more by all levels of management and by citizens.

The lists below highlight accomplishments of the first six years. These accomplishments present an array of new programs that raise awareness and sometimes motivate changes in how people purchase or handle hazardous materials. Some programs have been discontinued because of limited resources or shifting priorities; these programs are flagged with the word "*discontinued.*" Program accomplishments are also detailed in "Report Card for the First Five Years," Thurston County Local Hazardous Waste Program, July 1996.

HHW-1 Integrated Pest Management Education

- ✓ Created and continue to distribute a series of nine pamphlets that promote integrated pest management, reaching thousands of gardeners per year.
- ✓ Coordinate annual garden tour that highlights gardens using integrated pest management techniques, reaching more than 500 participants per tour in 1996 and 1997.
- ✓ Developed a puppet program for youth that presents the importance of beneficial insects in the garden. Volunteers now perform the puppet program.
- ✓ Designed and continue to offer annual workshop series on lawn care and gardening with alternatives to pesticides. From 1992-1997, reached hundreds of interested gardeners.
- ✓ Produced three videos on alternatives-to or least-toxic pesticides, lawn care, and benefits of using compost. Distribute through video rental shops and local libraries. In 1997, seven rental shops carry the video.
- ✓ Produced cable television call-in program on lawn care, using compost, and alternatives to pesticides.
- ✓ Produced radio awareness campaign questioning safety of pesticide use.
- ✓ Compose and continue to send media releases and articles related to pesticide reduction.
- ✓ Produced and continue to distribute information about least-toxic flea control through pet stores and veterinary clinics, reaching hundreds of pet owners per year.

HHW-2 School Programs

- ✓ Devised and continue to lend portable “teaching kits” for teachers and other youth leaders to check out and use in their classrooms. Four-hundred students received lessons in 1996-97. Developed new activities on the health dangers of inhalants in 1997.
- ✓ Conduct annual teacher workshops on how to incorporate household hazardous waste education into existing curriculums. Roughly 200 teachers participated in trainings or events in 1996-97. In a follow-up survey of 40 attendees, teachers reported that they reached 535 students with household hazardous material activities.
- ✓ Co-produced an environmental education resource guide for Thurston teachers that is updated annually and sent to every public and private school teacher..
- ✓ Provided presentations to classrooms throughout the county. In 1996, reached 500 students. *~mostly discontinued*
- ✓ Compiled and distributed a K-6 and 7-12 curriculum to schools county-wide. *~discontinued*
- ✓ Developed driver’s education program on used oil recycling. In the 1994 and 1995 school years, reached about 4,900 drivers’ education students in public and private schools. *~discontinued*

HHW-3 Public Media - General Community Education

- ✓ Compose and send media announcements to newspapers, newsletters, and radio stations.
- ✓ Wrote and continue to write articles on household hazardous materials for the Health Officer’s newspaper column.

- ✓ Designed and continue to distribute brochures, fact sheets, and recipe cards promoting awareness of alternatives, waste reduction, recycling, and safe disposal of household toxics, reaching thousands of people each year. Evaluated usefulness of several of these tools and revised accordingly.
- ✓ Produced a poison prevention awareness campaign using newspaper advertising.
- ✓ Developed and implementing program targeting people who are moving to raise awareness about how to handle household hazardous waste you discover when you move in, or need to dispose of when you move out.
- ✓ Cooperatively developed and implementing Home Assess, a community-based program that helps homeowners assess their environmental risks and learn what to do to reduce risks. In 1997, 400 people were contacted; 93 pledged participation in the program.
- ✓ Developed and continue to provide several presentations each year as requested by various community groups. Integrated household hazardous waste messages into well-owner and septic-system owner workshops, reaching over 450 citizens in 1996-97.
- ✓ Evaluated change in awareness and behavior of workshop participants several months after attendance. For example, the well-owner workshop attendees reported taking 344 actions to protect water quality. On the septic workshop evaluation, 15 percent of the respondents reported reducing the use of hazardous products going down the drain.
- ✓ Developed four interactive displays for use at fairs, special events, and in public places.
- ✓ Participated in dozens of community fairs and events. *~discontinued*
- ✓ Produced awareness campaigns for Hazo Days. *~discontinued*

HHW-4 Point of Purchase Education

- ✓ Established and continue to maintain partnerships with nine nurseries to promote alternatives to pesticides. Shelf signs, plant signs, nine gardening guides, brochure racks, banners, employee training, and in-store workshops were developed and are used in this program.
- ✓ Established and continue to maintain public/private partnerships with about twenty auto parts and hardware stores to promote oil recycling and purchase of re-refined oil. Designed shelf signs, a brochure with a site list, and poster for use in this consumer education program. Distributed roughly 10,000 oil-recycling site lists in 1997.
- ✓ Won a 1994 Award of Excellence for the used oil awareness campaign from the National Association of Public Information Officers.
- ✓ Established and continue to maintain partnerships with eighteen paint and hardware stores to inform paint customers about paint waste reduction and disposal. Designed shelf signs, a brochure, and a poster for retailers to display. Distributed hundreds of brochures and paint-savers in 1997. *~discontinued paint savers*
- ✓ Established partnerships with eight grocery stores to promote awareness of least-toxic cleaning products. Rotated the Green Cleaning Display table through the stores for two week periods. Distributed cleaning recipe cards, offered Shop Smart Tours, and awarded green cleaning kits to tour participants. *~discontinued*
- ✓ Researched labeling laws to develop an awareness campaign that encourages shoppers to read labels and pick the least-toxic product available.

HHW-5 Information Hotline

✓ Set up and operate a local information line, responding to hundreds of callers a year. Responded to over 600 calls in 1997.

HHW-6 Retail Oil Recycling Sites

- ✓ Collected 58,633 gallons of oil in 1997 from the county-sponsored used oil recycling sites, and 12,527 gallons from private sites.
- ✓ Continue to operate nine oil recycling sites as public/private partnerships. (An additional fourteen oil sites are completely operated by private businesses.)
- ✓ Installed and continue to operate four oil recycling tanks at County-operated transfer stations and the recycling center.
- ✓ Promoted use of re-refined oil in County automobile fleet and for do-it-yourself oil changers.
- ✓ Installed used oil filter collection containers at County-operated transfer stations.

HHW-7 Collection Facility - Hazo House

- ✓ Expanded the household hazardous waste collection facility, which increased safety, tripled service hours, and increased storage and operations capacity.
- ✓ Accepted waste from 36,327 customers from 1991-1997, totaling 1,018 tons.
- ✓ Collected enough hazardous waste from 1991-1997 to fill 14,887 55-gallon drums as well as 6,413 lead acid batteries.
- ✓ Began waste exchange.

HHW-8 Hazo Days ~discontinued

- ✓ Conducted five one-day household hazardous waste collection events, two in urban areas, two in Yelm, and one in Rochester.
- ✓ Accepted wastes from 1,880 customers.
- ✓ Collected enough waste to fill 542 55-gallon drums as well as 838 lead acid batteries.
- ✓ Pilot tested two paint swaps at Hazo Days, which diverted 930 gallons of paint back into productive use.

SQG-9 Audit and Technical Assistance Program

✓ Designed and continue to operate the technical assistance program, called the Business Pollution Prevention Program. Technical assistance campaigns have been done for printers, photographers, medical offices, schools, screen printers, gravel mines, painting contractors, marinas, automotive businesses, and a Tumwater wellhead protection area. In 1997, about 200 businesses received free technical assistance visits.

- ✓ Conducted voluntary door-to-door survey of over 500 businesses in 1991-92. *~discontinued*
- ✓ Helped design and implement Operation: WaterWorks, a two-year technical assistance program about storm water quality and hazardous waste management for automotive, landscaping, construction, and building maintenance businesses. Hundreds of businesses were reached through mailings, workshops, and site visits. Fifty businesses used a self-assessment guide to write their own pollution prevention plans and received community recognition. *~discontinued*

SQG-10 Business Outreach and Education

- ✓ Established and operate an information hotline that provides quick advice on waste recycling, disposal, and compliance to businesses.
- ✓ Developed and continue to update fact sheets on materials handling, disposal, and other helpful topics. In 1997, distributed hundreds of fact sheets through site visits, letters, and at public events; 1099 were picked up at the County's business permit assistance center.
- ✓ Prepare and send news releases to promote new services or announce regulatory changes.
- ✓ Conduct presentations or participate in events as invited.
- ✓ Developed several community recognition methods to applaud businesses that are practicing good hazardous materials management. Door entrance stickers, newspaper stories and advertising, success stories and radio spots have been developed. *~discontinued*
- ✓ Developed and co-sponsored annual workshops on hazardous waste management. *~discontinued*
- ✓ Researched and published a disposal guide for government office wastes. Distributed guide to local and state offices, school districts, the port, and other government offices. *~discontinued*

SQG-11 Coordinate Waste Exchange

- ✓ Promote awareness and use of the Industrial Materials Exchange (IMEX) Catalog to local businesses when this is a viable option.
- ✓ Promote awareness and use of the Lab Chemical Exchange Consortium to local businesses when this is a viable option.
- ✓ Offer informal waste exchange links when appropriate.
- ✓ Encourage businesses to try a materials exchange for fairly "pure" wastes.

SQG-12 Waste Collection Coordination

- ✓ Developed and continue to operate a fee-supported waste collection program at the County's household hazardous waste collection facility. In October 1996, the program started and served five customers with 280 pounds of waste. In 1997, 131 customers properly managed 11,925 pounds of hazardous waste through the County's program.
- ✓ Prepared, and continue to update, a guidebook that lists private and public sector waste collection and disposal services for Thurston County. The guide also lists waste exchanges.

SQG-13 Establish a Comprehensive Local Ordinance

- ✓ Adopted a local law, the Nonpoint Source Pollution Ordinance. This law establishes best management practices for small amounts of hazardous waste.
- ✓ Developed and continue to use enforcement guidelines for investigations and taking enforcement actions.
- ✓ In 1997, investigated and resolved 61 reported violations.
- ✓ An external citizens group reviewed the ordinance in 1995, determined it was being properly implemented, and recommended external reviews every two years.

PM-14 Administration and Program Management

- ✓ Won the “Excellence in Environmental Health Award” from the National Association of County Health Officials.
- ✓ Won the “Award of Excellence of Local Government Programs” from the National Association of Hazardous Materials Managers.
- ✓ Won a place in *Preventing Pollution in our Cities and Counties: A Compendium of Case Studies*, a publication featuring nineteen successful programs in the United States.
- ✓ Hired and continue to maintain quality work force that develops and implements programs.
- ✓ Prepared balanced annual budgets. Managed grants. Participated in solid waste rate studies.
- ✓ Coordinate regional management of the program by working with the Thurston County Solid Waste Advisory Committee and reporting to the Thurston County Board of Health. The Solid Waste Advisory Committee -- a county-wide body comprised of elected city officials, businesses, and citizens – provides feedback on policy, budgets, and work plans. The Board of Health approves annual budgets, ordinance, and major policies of the hazardous waste program.
- ✓ Opened up coordination channels with other local and state agencies to reduce duplication and increase efficiency.
- ✓ Responded to and continue to monitor state legislative changes that impact local hazardous waste programs.
- ✓ Coordinated the process to amend the 1991 plan. Coordinated the process to update the 1991 plan.

PM-15 Measure Changes in Household Hazardous Waste Stream

- ✓ Conducted residential attitude surveys in 1991 and 1993. The 1993 survey showed increased awareness and knowledge of residents about alternatives and disposal compared with the 1991 baseline survey.
- ✓ Collected and continue to collect data on participation and waste volumes at household hazardous waste collection events and from the facility.
- ✓ Collected and continue to collect data on used oil volumes.

PM-16 Measure Changes in Small Quantity Hazardous Waste Stream

- ✓ Completed a door-to-door baseline survey in 1992 of small businesses. The survey collected data on waste types, waste volumes, and disposal practices. The survey drew ten conclusions about waste management and technical assistance services.
- ✓ Developed and continue to send a questionnaire to businesses that have received a technical assistance visit survey. Survey results indicate that at least three-fourths of respondents like the approach of technical assistance first, followed by compliance. More than half of the survey respondents indicate the visits are helpful and assisted them in making a waste handling or disposal change. About half of the respondents report that they have implemented a new reduction or recycling practice because of the visit.
- ✓ Tried measuring changes in the influent from the LOTT wastewater treatment plant during a seven-month technical assistance campaign trying to reduce silver disposal from small businesses.

How Are the Hazardous Waste Programs Funded?

The Thurston County hazardous waste program has used revenues from tipping fees, state grants, interlocal contracts, user fees, and donations. In 1998, revenue sources include tipping fees, grants, and user fees. The following table presents a breakdown of funding sources from 1991-1998 and a breakdown of funding by activity.

**Table 5.2
Annual Budgets**

	Tipping Fees	Grants	Interlocal \$	Donations	User Fees	Annual Budget
1991	\$345,377	\$133,941	\$20,000			\$499,318
1992	\$314,275	\$202,597	\$41,700	\$7,500		\$566,072
1993	\$340,329	352,971	\$20,000			\$713,300
1994	\$378,290	\$206,603				\$584,893
1995	\$414,210	\$184,800				\$599,010
1996	\$455,404	\$109,590				\$564,994
1997	\$447,278	\$109,590			\$12,345	\$569,213
1998 (budgeted)	\$537,881	\$109,590			\$8,000	\$655,471
Totals	\$3,233,044	\$1,409,682	\$81,700	\$7,500	\$20,345	\$4,752,271
Percent	68%	30%	1.7%	.16%	.43%	100%

Conclusion

This chapter presents the status of a program that took root seven years ago. Although a great deal of work has been accomplished, there are serious gaps that are not being addressed. One serious flaw in the current program is that a significant amount of the hazardous wastes produced in our homes and businesses is *not* showing up in the collection systems designed to divert hazardous wastes from improper disposal. Additional gaps and weaknesses are outlined in the following chapter.

Chapter 6: Gaps, Goals, and Service Levels

Introduction

This chapter identifies gaps in the existing Thurston County hazardous waste program, then provides goals and objectives for the future program to close some of the gaps. The chapter concludes with a recommended option for improving the program.

The County convened a series of scoping meetings that provided community opinion on what is working with the current program, what is missing, and what other services the community needs. This process resulted in the range of criticisms and ideas presented here. The results of the scoping process along with reactions from the County's hazardous waste staff were presented to the Thurston County Solid Waste Advisory Committee to assist them in recommending what programs to continue and what programs to add.

Gaps

“Gaps,” as used in this section, are weak areas in the County local hazardous waste program that may allow hazardous waste to damage the environment or public health. They present opportunities to strengthen the program and provide better service.

Waste Collection Gaps

1. An estimated 28% of HHW and SQG waste is not showing up in the hazardous waste collection systems designed to safely manage hazardous waste.
2. Residents who live more than ten miles from the facility do not feel they have equitable access to safe disposal of their household hazardous wastes.²⁵

²⁵ A 1993 telephone survey indicated that four out of five respondents think there should be more convenient opportunities for the disposal of hazardous waste. Surveys from household hazardous waste collection events showed that the majority of participants were within 10 miles of the collection site.

3. Residents who do not own or drive an automobile do not have equitable access to safe disposal.
4. Residents that are non-English speaking do not have equitable access to services since information is only printed in English.
5. The County is not prepared for natural disasters, such as floods, that require emergency collection of household hazardous waste.
6. Customer information that is collected should be used to better understand the customers who use the facility, and the customers who are not using the facility.
7. Methodical, targeted advertising of the household hazardous waste facility is not being done.
8. Public demand for collection of target wastes such as paint or antifreeze at transfer stations is not being met.

Household Hazardous Waste Education Gaps

1. Few resources are devoted to researching customer needs, behaviors, obstacles to change, and motivations.
2. Insufficient resources are devoted to measuring effectiveness of programs.
3. The fragmentation of the many resource protection plans blocks a natural and dynamic merging of hazardous waste education with other resource protection education.
4. Inadequate resources are available to carry out effective media campaigns.

Small Business Technical Assistance Gaps

1. Development and delivery of general education services is not based on identified needs and knowledge of the target customers.
2. Coordination with business organizations and local agencies is passively, not actively pursued.
3. More testing and refinement of geographic campaigns is necessary, particularly for campaigns targeting wellhead protection areas.
4. No ongoing system for finding new businesses that move into the county following technical assistance campaigns has been developed.
5. No mechanism has been developed to identify businesses that have changed their regulatory status.

Enforcement Gaps

1. The definitions of “hazardous materials” and “hazardous waste” in the nonpoint ordinance are not equivalent to the definitions in the state hazardous waste regulations for “hazardous substances” and “hazardous waste.”²⁶
2. An evaluation should be conducted of the need to amend the ordinance to allow use of a second penalty tool, civil penalties. This would allow the County to retain collected penalties rather than losing them to the state and courts system. (Also recommended by external review.)
3. The authority of the ordinance to require clean-up of a contaminated site is limited and should be evaluated and clarified.
4. Greater communication and coordination with other regulatory agencies would ultimately improve the efficiency and effectiveness of enforcement services.

Program Evaluation Gaps

1. Baseline information about small business target audiences is typically based on hunches, not on research.
2. Methods for determining the types and quantities of hazardous waste in Thurston County need to be established and carried out.
3. Data already being collected for water quality and air quality should be evaluated for its usefulness as an indicator of hazardous waste prevention or contamination.
4. A system for managing data and evaluating information is lacking.

Goals and Objectives

The Thurston County Local Hazardous Waste Program’s goals and objectives relate to the County’s dual missions to promote the health of the Thurston County community and provide quality, timely, and responsive service. This section presents goals and objectives for the five major program categories used throughout this chapter: A) waste collection, B) household hazardous waste education, C) small business technical assistance, D) enforcement, and E) program evaluation and monitoring.

For the purpose of this document, a goal is defined as a desire about a program’s impact on solving environmental and public health problems. An objective is a strategy for realization of the goals. The specific steps to carry out an objective are detailed in annual work plans developed by staff.

²⁶Thurston County Sanitary Code Article VI Review Committee: Report to the Board of Health. 1995

Community members confirmed the need to pursue many goals from the 1991 plan during a series of scoping meetings. Citizens also identified new goals and objectives that were needed to address program weaknesses and gaps. The goals and objectives listed below emerged from the public scoping meetings and staff ideas. For a summary of comments from scoping meetings, see Appendix A.

Waste Collection

Goals

1. Protect ground water, surface water, soils, sediments, and private property from hazardous waste contamination.
2. Increase the percentage of hazardous waste collected (that cannot be prevented through waste reduction in the first place).
3. Reduce the amount of hazardous waste that is improperly stored, improperly disposed, and accidentally spilled into the environment.
4. Reduce chemical exposures to individuals and workers involved in solid waste, sewage treatment, or fire fighting.
5. Reduce damage to solid waste handling facilities, sewage treatment plants, on-site septic systems, and storm water treatment facilities by properly disposing of hazardous waste.
6. Reduce potential for causing publicly owned waste management facilities such as the landfill and sewage treatment plants to exceed pollutant discharge limits.

Objectives

1. Continue operating the hazardous waste collection facility for homeowners and eligible small businesses. Assess how to more efficiently run the facility and reduce long term costs.
2. Continue operating the used-oil collection site network.
3. Assess barriers to customer participation in the waste collection services and carry out steps to overcome these barriers.
4. Assess unmet needs for waste collection services, then recommend and carry out options for meeting these needs. This may include assessing how far people are willing to travel to recycle used oil or safely dispose of household hazardous waste.
5. Operate a household hazardous product exchange.
6. Prepare an emergency disaster plan for assessing potential public health problems associated with disasters, collecting hazardous waste, responding to incidents of contamination, and determining how emergency response services will be funded.

Household Hazardous Waste Education

Goals

1. Protect ground water, surface water, soils, sediments, and private property from hazardous materials contamination.
2. Prevent poisoning and reduce acute (short-term) and chronic (long-term) exposures to hazardous chemicals at home and school.
3. Increase waste reduction (including source reduction), which conserves resources and reduces demand for disposal and recycling services.
4. Increase the percentage of hazardous waste collected (that cannot be prevented through waste reduction in the first place).
5. Reduce the amount of hazardous materials that are improperly stored, improperly disposed, and accidentally spilled into the environment.
6. Reduce damage to collection and transfer vehicles, disposal equipment, and disruption of treatment facilities by ensuring hazardous waste is kept out of these facilities or systems.
7. Reduce potential for causing publicly owned facilities such as the landfill or sewage treatment plants to exceed pollutant discharge limits.

Objectives

1. Continue delivery of household hazardous waste education programs, whenever possible, resulting in measurable changes in waste reduction, recycling, and proper disposal.
2. Continue and create new partnerships with retailers of hazardous products to educate consumers.
3. Assess customer needs and collect information about target audiences to design programs that will result in behavior change or increased knowledge of options and services.
4. Implement programs targeting high risk and high volume hazardous materials as a first priority, then high risk and low volume hazardous materials as a second priority. Next, target low risk and high volume hazardous materials, then materials that are low risk and low volume.
5. Increase understanding of individual responsibility of proper selection, use, storage, and disposal of hazardous products.

Small Business Technical Assistance

Goals

1. Protect ground water, surface water, soils, sediments, and private property from hazardous materials and hazardous waste contamination.

2. Increase the rate of waste reduction, which conserves resources and reduces demand for disposal and recycling services.
3. Increase the percentage of hazardous waste collected (that cannot be prevented through waste reduction in the first place).
4. Reduce the amount of hazardous materials that is improperly stored, improperly disposed, and accidentally spilled into the environment.
5. Reduce damage to collection and transfer vehicles, and disposal equipment, and reduce disruption of treatment facilities by ensuring hazardous waste is kept out of these facilities or systems.
6. Reduce potential for causing publicly owned facilities such as the landfill or sewage treatment plants to exceed pollutant discharge limits.

Objectives

1. Continue delivery of technical assistance services such as campaigns for single-industry groups or geographic areas that result in measurable changes in waste management and compliance.
2. Continue publishing fact sheets and guidebooks that explain available services, laws, and environmental impacts of improper disposal.
3. Continue promoting the use of commercial waste exchanges such as the Industrial Materials Exchange (IMEX).
4. Continue operating the business waste line.
5. Increase understanding of individual responsibility of proper selection, use, storage, and disposal of hazardous products.
6. Increase understanding of the negative impacts contamination has on property values, insurance rates, and clean-up liability.
7. Develop methods for identifying and reaching new businesses, businesses that change location, or businesses that have shifted from being subject to state to local hazardous waste regulations.
8. Develop an ongoing technical assistance inspection program for businesses in wellhead protection areas.
9. Establish links with community development agencies that issue business licenses and building permits to provide hazardous waste information early in the licensing or permit process.

Enforcement

Goals

1. Maintain a high rate of compliance with the Nonpoint Source Pollution Ordinance.
2. Reduce rate of improper storage that could result in spills to the environment.
3. Reduce rate of illegal disposal.
4. Increase the rate of clean-up of contaminated sites that are too small for state agency oversight.

Objectives

1. Continue implementing the Nonpoint Source Pollution Ordinance following enforcement guidelines and department policies.
2. Continue integrating compliance into technical assistance campaigns.
3. Improve regulatory coordination and communication among local and state agencies.
4. Participate in creating a linked enforcement tracking system with other county ordinances.

Program Evaluation

Goals

1. Continually improve the efficiency and effectiveness of the local hazardous waste program based on evaluation, monitoring, and feedback.
2. Evaluate extent to which services are protecting public health and environmental quality.
3. Evaluate if services are meeting customer service goals.
4. Identify changes in customer needs, customer behaviors, and obstacles for customers to use services.

Objectives

1. Continue measuring program performance and impacts, and develop additional quantitative measures. Establish annual goals and objectives for major programs and establish a long-term data collection plan.
2. Continue using program evaluation information to modify and update programs.
3. Conduct surveys to determine customer needs, obstacles, and changes in behavior.
4. Identify and provide information to the different stakeholders that need evaluation information about the hazardous waste program.
5. Monitor changes in hazardous materials use, storage, and disposal.
6. Monitor changes in environmental conditions.
7. Monitor changes in community health or the health of sensitive populations.

Service Level Options

Table 6.1 presents four service level options. Service level options are based on the existing conditions, goals, and objectives described earlier in this chapter. The Thurston County Solid Waste Advisory Committee and staff prioritized twenty-six programs using a ranking tool, called the “Forced Diad Prioritization Tool.” The Health Department used the results from the ranking process to develop three service level options for the Solid Waste Advisory Committee. The results of the ranking tool and the worksheets are presented in Appendix C. The committee evaluated the three options and created a fourth option of their

own, now called Option B, which continues the base program and adds several new projects. Evaluation criteria are listed right after Table 6.1. The Thurston County Board of Health also supports Option B.

In Table 6.1, Option A represents the same hazardous waste service level that was carried out in 1997 and is the lowest cost option. Option D represents the most comprehensive service level and is the highest cost option. Appendix D contains the cost estimates for each option.

Table 6.1: Program Options

The checks show which services are included in each option. A box without a check means the service on that line is not part of that option. Option B is the set of services recommended for the Plan by both the Thurston County Solid Waste Advisory Committee and the Thurston County Board of Health.

SERVICES INCLUDED IN EACH OPTION	Opt A	Opt B	Opt C	Opt D
WASTE COLLECTION				
Household hazardous waste collection	✓	✓	✓	✓
Used motor oil collection	✓	✓	✓	✓
Oil filter collection	✓	✓	✓	✓
Waste exchange/material exchange	✓	✓	✓	✓
Business waste collection service	✓	✓	✓	✓
Paint collection at transfer stations			✓	✓
Paint swaps		✓		✓
Assess collection needs		✓	✓	✓
Annual evaluation & environmental monitoring				✓
Emergency planning		✓	✓	✓
Assess non-English speaking customers' needs				✓
HOUSEHOLD HAZARDOUS WASTE EDUCATION				
Education on waste reduction, recycling, and disposal	✓	✓	✓	✓
Multi-media campaigns		✓	✓	✓
Integrate ground water protection education			✓	✓
				✓

SERVICES INCLUDED IN EACH OPTION	Opt A	Opt B	Opt C	Opt D
Integrate personal health education				
Wasteline	✓	✓	✓	✓
Customer surveys				✓
Coordinate with neighboring counties and tribes				✓
SMALL BUSINESS EDUCATION AND TECHNICAL ASSISTANCE				
Business inspections in wellhead protection areas		✓	✓	✓
Technical assistance campaigns	✓	✓	✓	✓
Review new business permits		✓	✓	✓
General education and information			✓	✓
Coordinate with business associations and trade groups				✓
Business information line	✓	✓	✓	✓
Annual evaluation and environmental monitoring				✓
Customer surveys				✓
Coordinate with neighboring counties and tribes				✓
ENFORCEMENT				
Complaint response and enforcement	✓	✓	✓	✓
Regulatory coordination		✓	✓	✓
PROGRAM EVALUATION				
Program evaluation		✓	✓	✓
Baseline and follow up surveys			✓	✓
Yearly environmental bench marking collection			✓	✓
Environmental sampling plan				✓

Criteria

The Solid Waste Advisory Committee applied the following nine criteria as they evaluated each service level option. These criteria are a mix of those used in the 1991 plan and new criteria that resulted from the missions of the County, the Thurston County Health Department, and the Department of Water and Waste Management.

1. Public health and environmental benefit

Will the program benefit air and water quality, natural ecosystems, and human health?

2. Program effectiveness

Is the program understandable, acceptable to the public and responsible parties, and likely to achieve the goals set out for it?

3. Hazardous waste management priorities

Will the program actively promote waste reduction and recycling rather than landfill or incineration?

4. Cost/benefit ratio

Will the program provide significant results in comparison to program costs?

5. Cost effectiveness

How cost-intensive is the program in comparison to other alternatives expected to achieve similar results?

6. Roles and responsibilities

Does the program foster an attitude of personal responsibility for one's own waste?

7. Ease of implementation

How quickly can the program be put into effect? How complicated is it to develop, manage, maintain, or evaluate?

8. Duplication of effort

Does the program duplicate a service already available? Does it complement or supplement existing programs?

9. Flexibility

Is the option flexible to changing needs and conditions? Does it commit resources that must be sustained over the long run?

Conclusion

Since the adoption of the 1991 Hazardous Waste Plan, a variety of conditions have changed. Thurston County now provides residents and local businesses with ongoing waste collection, education, technical assistance, and enforcement programs. During the six years of implementation, these programs have helped protect public and worker health and water quality. They have kept hazardous waste out of the landfill, ground water, and sewage treatment systems. About half of all HHW is being safely managed (385 tons out of an estimated total of

673 tons is safely managed).²⁷ About four-fifths of all SQG waste is projected to be safely managed (788 tons out of 949 tons is estimated to be safely managed).²⁸ However, this accounts for only 72 percent of the total hazardous waste generated by homes and small businesses (1,173 tons out of 1,622 tons is safely managed). This means potentially 28 percent of the hazardous waste we produce is being dumped, haphazardly stored, burned, or evaporated.

To go after this missing 28 percent of the waste stream, Thurston County proposes to build on existing services and try to determine where the waste is going, who is improperly handling the waste, and what barriers keep this waste from being safely disposed. To accomplish these objectives, the County is pursuing an increased service level which is Option B as outlined in Table 6.1. The Option B service level will allow the Health Department to understand where waste collection services are lacking, offer paint recycling events, prepare for emergency hazardous waste collection, conduct media campaigns to reduce pollution, carry out additional technical assistance services, and work with new businesses entering the County. Chapter 8 describes the services in Option B in more detail. Chapter 7 describes the administrative and financial framework to continue implementing the hazardous waste program.

²⁷In 1997, 385 tons of HHW was collected through the HHW facility and oil collection sites. An estimated 673 tons of HHW was produced in 1997. The 673 tons/year is based on a garbage rate of 3.6#/day/person and a HHW rate of 0.52%.

²⁸Based on a voluntary survey in 1992, 312 SQGs indicated they safely managed 83% by weight of their hazardous wastes.

Chapter 7: Administration and Finance

Introduction

This chapter describes administrative and financial issues, including the role of lead agencies, the role of the Solid Waste Advisory Committee, staffing, evaluation, plan revisions, long-range funding, and the solid waste rate study.

Administration

Local governments were delegated the responsibility to prepare and carry out comprehensive management plans for small quantities of hazardous waste in the 1985 amendments to the Washington State Hazardous Waste Management Act.

Because of expertise in hazardous waste management and regulations, the Thurston County Health Department facilitated the preparation of the 1991 plan. The 1991 plan recommended the Health Department lead the implementation of all programs, except the operation of the hazardous waste collection facility. The plan recommended the waste facility be operated by the Thurston County Public Works Department, now renamed as the Thurston County Department of Water and Waste Management. At the time of adoption, the eight jurisdictions and the planning committee supported the Health Department as lead agency because of the Department's existing authority to carry out programs both within the cities and within the unincorporated areas of the county. Given the small size of the program, delegating responsibility to a single agency seemed efficient and cost effective. Further, because hazardous waste handling and disposal affect public health, the advisory committee viewed the Health Department as a logical agency for carrying out community health protection, education, and enforcement programs.

The administrative responsibilities of the Health Department and Department of Water and Waste Management include annual planning, budget development, grant writing and administration, office support, financial accounting, drafting of policies and guidelines, selection of personnel, and securing and overseeing contracts. Other responsibilities of the Health Department include coordination with participating jurisdictions, staff support to the Thurston County Board of Health and the Thurston County Solid Waste Advisory Committee, enforcement of the Nonpoint Source Pollution Ordinance, coordination with stakeholder groups, program evaluation, amending the Hazardous Waste Plan as needed, and coordination with the Washington State Department of Ecology and the Washington State Department of Health.

Thurston County Solid Waste Advisory Committee

The Thurston County Solid Waste Advisory Committee is the interjurisdictional advisory body for implementation of the plan. The committee reviews annual budgets, work plans, amendments to the plan, and major policy issues. Comments and recommendations from the committee are presented to the Thurston County Board of Health.

The committee consists of fifteen members who meet monthly. Membership includes eight elected officials (one from each city and the county), three citizens, three business representatives, and one Port of Olympia representative.

Staffing

The Health Department recruits, hires, and maintains a workforce that includes hazardous waste specialists, environmental educators, a program supervisor, and part-time clerical and accounting employees. The Department of Water and Waste Management recruits, hires, and maintains hazardous waste technicians and a program supervisor. Temporary employees are hired as appropriate.

The department offers training to encourage continued growth in regulatory and technical expertise and in public health and education methods, and to maintain health and safety certification. The department also provides other basic training in computers and first aid.

Physical Requirements

The Health Department and Department of Water and Waste Management provide office space and equipment storage space for employees. The department of Water and Waste Management

maintains a hazardous waste collection facility, used oil collection tanks, and oil filter collection containers at transfer stations. This Department is responsible for design, construction, and operation of future facilities. The Health Department is responsible for selecting and maintaining used oil collection sites and temporary hazardous waste collection sites.

Evaluation

The Health Department conducts project-specific and comprehensive evaluations to identify program effectiveness. Results are used to refine, expand, or change programs. Annual evaluation summaries and biannual reports are presented to the Solid Waste Advisory Committee, the hazardous waste staff, and other stakeholders.

Evaluation methods may include surveys, interviews, focus groups, changes in behavior, changes in compliance or recycling rates, participation rates, waste volumes collected, waste characterization studies, waste screening, tracking accomplishment of project-specific objectives, numbers of inspections, numbers of sites cleaned up, etc.

Plan Revision Process

Plan revisions may be necessary within the six-year period this plan is in effect. Recommendations for changes in the plan should be submitted to the Health Department, reviewed by the Thurston County Solid Waste Advisory Committee, and forwarded for consideration to the Board of Health. If the change is a major one, public and jurisdictional review would be included. The Board of Health is responsible for adopting amendments.

If the jurisdictions do not concur on amendments to the plan, each jurisdiction retains the ability to implement a separate, Ecology-approved program and proceed independently. Any jurisdiction may add program activities within their own area. For example, one city may wish to host and fund a hazardous waste collection day not identified in the plan.

Plan updates should be initiated about every six years, in conjunction with the update of the Solid Waste Comprehensive Plan. Updating the plan allows participating jurisdictions, citizens, and businesses the chance to provide ideas to increase the quality of services. The process also serves as a catalyst for adjusting services to meet changing local priorities. The update process must, at a minimum, include preparation and public review of a draft document, a public hearing to gather testimony, resolutions of adoption by each jurisdiction, SEPA (State Environmental Policy Act) review, and approval from the Washington State Department of Ecology. The Health Department also has taken additional steps to involve the public such as issuing media releases, conducting presentations, attending community meetings, appearing on local talk shows, and paid advertising.

Long-range Funding Study

In 1995, the Thurston County Solid Waste Advisory Committee and Health Department completed a long-range funding study. The study reviewed how hazardous waste programs have been funded in Thurston County since 1985. It summarized a survey of how thirteen other local governments in Washington fund their programs. Coincidentally, a mix of thirteen different funding sources was reported. Grants and tipping fees are the most common sources of funding. Five counties also charge user fees to businesses, two counties also charge fees to garbage collection companies, and two counties also use general fund revenues. The least common sources included sewer fees, stormwater fees, solid waste facility fees, energy sales, self-hauler fees, on-site septic system fees, water fees, and aquifer protection area revenues.

The study evaluates five of the thirteen funding options: tipping fees, permit fees for businesses, grants, enforcement penalties, and user fees for businesses who use the waste collection facility. Nine evaluation criteria were developed to rate the options. The rating criteria include:

1. adequacy of revenue generation;
2. stability and reliability of the source;
3. simplicity of the billing system;
4. how quickly and easily the mechanism could be initiated;
5. whether the benefits to the jurisdictions would outweigh the impacts;
6. flexibility of the rate structure in response to changing needs;
7. whether the plan would be equitable to local jurisdictions, the business community, and all county residents;
8. perception of "cumulative hits";
9. affordability (can the payee afford the cost?).

The study concludes by recommending funding via tipping fees, grants, enforcement penalties, and user fees for businesses who use the waste collection facility. The study does not recommend developing a new business license or permit system. Evaluation of the five funding options is detailed in Appendix E.

Funding Sources and Costs for New Programs

Solid waste tipping fees are the primary source of funds for the County's existing hazardous waste programs, providing approximately \$520,000 annually. Currently, the hazardous waste program uses approximately 5.5 percent of the annual tipping fee revenues received by the County. Other sources of funds include state grants, private foundation grants, user fees, interlocal contracts, and donations. Table 5.2 in Chapter 5 identifies funding amounts and sources since 1991.

The annual cost of the new programs recommended in this plan would be an additional \$119,000. (The estimated impact on monthly garbage service is an increase of 3.5 cents.) To generate an additional \$119,000 per year in revenue for the proposed new programs, the County would need to collect approximately 92 cents more for each ton of garbage, on the current volume of 130,000 tons of garbage disposed each year. The 92 cents increase in cost is not the same as a 92 cents per ton increase to the tipping fee. Rates for tipping fees are based on complex financial models that factor in elements such as changing conditions in waste generation, population growth, and operational costs over a twenty-year timeframe. Consequently, the impact to the tipping fee rate is less than 92 cents. Again, the difference lies in the way rates are calculated and the rate model selected to fund the program over a twenty-year period.

In 1998, a Rate Study is being conducted by the Thurston County Solid Waste Advisory Committee together with the Thurston County Department of Water and Waste Management's Solid Waste Division and Thurston County Department of Financial Services. The Rate Study will identify costs, revenues, and rate models to fund all of the County's solid waste programs, including these proposed new hazardous waste programs. The Rate Study will include detailed cost projections for the period of 1999-2019 for all solid waste management activities including: waste disposal activities; waste reduction and recycling programs; hazardous waste programs; solid waste enforcement programs; landfill closure and post-closure activities; and disposal environmental control systems and testing.

The increased program cost (\$119,000 per year, plus assumed escalations for inflation) for the proposed new hazardous waste programs is being included in the 1998 Rate Study. Until the Rate Study is completed, the precise rate impact cannot be known. However, the actual per ton *rate* impact of these new programs costs will be less than 92 cents per ton. Preliminary projections, using a baseline model, project the rate impact is about 41 cents per ton. This rate may change slightly, depending on the actual model that is used in the Rate Study. Using this projection, the average Thurston County resident would be charged an additional 3.5 cents per month for garbage services. The Rate Study is expected to be completed in the fall of 1998.

Chapter 8: Program Implementation

Introduction

This chapter describes the continuing and new programs for managing hazardous materials and wastes from homes and small businesses in Thurston County, as outlined under Option B in Chapter 6. These programs will be updated as circumstances change, or in response to new information available from analyses or evaluation. The costs of each program element are listed in Appendix G. This chapter also presents additional recommendations that are supported at policy levels, but are not endorsed for new funding.

Household Hazardous Waste Collection

Program descriptions one through seven explain activities implementing household hazardous waste collection projects. Descriptions one through four detail continuing programs; descriptions five through seven describe new programs.

Household Hazardous Waste Collection Facility

1. Operate the fixed facility for collecting household hazardous waste (HazoHouse)

Agencies: Thurston County Department of Water and Waste Management

Thurston County will continue operation of the household hazardous waste collection facility at the Hawks Prairie Landfill. The facility will collect a wide range of waste types for processing, packaging, recycling, disposal, and reuse. Public service hours will continue to be Thursday through Saturday.

Used Motor Oil Collection

2. Operate sites for used motor oil collection to supplement private sector used oil collection sites.

Agencies: Thurston County Environmental Health Division, Thurston County Department of Water and Waste Management

Thurston County will continue operation of the used oil collection network, which currently maintains thirteen sites. Four sites are located at publicly operated transfer stations and the recycling center. The County operates two sites jointly with the Port of Olympia, and seven sites jointly with private businesses such as auto parts stores and gas stations. Thurston County will continue to encourage private businesses to offer used oil collection.

Oil Filter Collection

3. Collect oil filters at transfer stations.

Agencies: Thurston County Department of Water and Waste Management

Thurston County will continue to collect used oil filters at transfer stations. Oil filters will be collected in containers and then transported to the household hazardous waste facility for packing and shipment.

Waste Exchange/Materials Exchange

4. Operate a waste exchange for usable hazardous household products such as paint, cleaning products, camping fuel, and other home maintenance products.

Agencies: Thurston County Department of Water and Waste Management

Thurston County will continue to develop and will operate a household hazardous product exchange. A product exchange has the potential to save money by eliminating costs associated with recycling and disposal of still usable materials. The product exchange will not include banned or unlabeled products, poisons, or other products deemed inappropriate.

Assess collection needs - *NEW*

5. Assess collection needs of residents and recommend options for meeting unmet needs.

Agencies: Thurston County Environmental Health Division, Thurston County Department of Water and Waste Management

Thurston County will conduct a one-time study to identify gaps in household hazardous waste collection needs. The study will identify gaps and the most cost-effective options for filling gaps. Results will be presented to the Thurston County Solid Waste Advisory Committee and the Thurston County Board of Health.

Paint swaps - *NEW*

6. Operate paint swaps at spring and fall community clean-up events.

Agencies: Thurston County Environmental Health Division, Thurston County Department of Water and Waste Management

Thurston County will conduct paint "drop and swaps" at spring and fall community clean-up events. Residents will drop off usable paint. County staff will screen and make usable paint available to the public. Staff will transport spoiled or contaminated paint to the household hazardous waste collection facility for handling and disposal.

Emergency Planning - *NEW*

7. Prepare an emergency disaster plan for collecting household hazardous waste during disasters.

Agencies: Thurston County Environmental Health Division, Thurston County Department of Water and Waste Management

Thurston County will create and maintain an emergency disaster plan that sets up procedures for collecting household hazardous waste when natural disasters, such as floods or earthquakes, occur. It will also focus on preventing hazardous waste exposures during natural disasters.

Education

Program descriptions eight through ten explain activities implementing household hazardous waste education projects. Descriptions eight and nine detail continuing programs; description ten describes a new program.

Education on waste reduction, recycling, and disposal

8. Provide educational programs that lead to a reduction in use and waste, and an increase in recycling, safe handling, and disposal for hazardous products.

Agencies: Thurston County Environmental Health Division

Thurston County will shift from an information to a behavior-change education model. The goal is to protect public health by providing programs that reduce the use of hazardous products and amount of wastes produced; and increase the use of safer alternatives, rate of recycling, and safe handling of materials. Programs may target the general public or specific audiences. The County will evaluate programs for effectiveness and adjust them as needed.

WasteLine

9. Operate an information line about household hazardous waste recycling, disposal, and alternatives.

Agencies: Thurston County Department of Water and Waste Management and Thurston County Environmental Health Division

Thurston County will continue operating the WasteLine, an information service for residents about household hazardous waste, alternatives, and other related topics.

Multi-media campaigns - *NEW*

10. Conduct multi-media campaigns about hazardous substance reduction, recycling, disposal, and safety.

Agencies: Thurston County Environmental Health Division

Thurston County will create and carry out multi-media campaigns about hazardous substance reduction, recycling, disposal, and safety. Media will be chosen based on

the target audience. Media may include newspaper, radio, transit or billboard advertising, community events, cable television programs, interactive workshops, or other effective media.

Small Business Technical Assistance

Program descriptions 11 through 15 explain activities carrying out hazardous waste management programs for businesses or government operations that produce small quantities of hazardous waste. Descriptions 11 through 13 explain continuing programs; descriptions 14 and 15 describe new programs.

Business Information Line

11. Provide assistance to small businesses through the Business Hazardous Waste Information Line.

Agencies: Thurston County Environmental Health Division

Thurston County will continue to operate the Business Information Line as a service for businesses who need basic or detailed information about waste management. The information line is staffed Monday through Friday from 8:00 a.m. to 5:00 p.m. and offers an answering machine for after-hours calls.

Technical Assistance Campaigns

12. Continue technical assistance and compliance campaigns.

Agencies: Thurston County Environmental Health Division

Thurston County will continue to run proactive technical assistance and compliance campaigns. The Health Department designs these campaigns based on target audience needs. They may include voluntary nonregulatory technical assistance visits first, followed by mandatory compliance visits. Campaigns focus on offering both compliance assistance and waste reduction and recycling tips.

Business Waste Collection Service

13. Operate a hazardous waste collection service for eligible businesses.

Agencies: Thurston County Water and Waste Management Department and Thurston County Environmental Health Division

Thurston County will continue to operate the small business hazardous waste collection service. This service is fee-supported. To use the service, customers preregister their wastes, ensuring that only eligible businesses and eligible wastes are delivered to the collection site.

Business Inspections in Wellhead Protection Areas - *NEW*

14. Provide an annual inspection program for wellhead protection areas.

Agencies: Thurston County Environmental Health Division

Thurston County will build on the existing technical assistance program and create an annual inspection program for businesses that operate in wellhead protection areas and produce hazardous wastes. Thurston County will coordinate with other regulatory agencies such as cities, fire departments, and the Department of Ecology in the development and application of this program.

Review New Business Permits - *NEW*

15. Provide permit review services to all jurisdictions for the review of new building or commercial permits that include use, storage, or disposal of hazardous materials.

Agencies: Thurston County Environmental Health Division

Thurston County will provide permit review services to all jurisdictions for the review of new building or commercial permits that include use, storage, or disposal of hazardous materials. Review by hazardous waste specialists will help ensure new or expanding businesses will be advised of engineering, equipment, or facility designs that meet protective standards for storage and disposal of hazardous materials. It will also offer applicants critical information about local services and rules related to hazardous materials.

Enforcement

Program descriptions 16 and 17 explain activities implementing household hazardous waste collection projects. Description 16 explains a continuing program; description 17 describes a new program.

Complaint Response and Enforcement

16. Respond to reports of hazardous waste violations under the authority of the Nonpoint Source Pollution Ordinance.

Agencies: Thurston County Environmental Health Division

Thurston County will continue to investigate reports of illegal hazardous waste handling and disposal, including investigations of illegal drug labs. The County receives complaints from the public, other agencies, field staff, and businesses. The Health Department investigates most complaints through a site visit under the authority of the Thurston County Nonpoint Source Pollution Ordinance. They refer some reports to other agencies. Some cases are addressed through the authority of the Washington State Model Toxics Control Act, which is delegated through an interagency contract.

Regulatory Coordination - *NEW*

17. Improve regulatory coordination with other local and state agencies involved in hazardous waste or hazardous materials enforcement.

Agencies: Thurston County Environmental Health Division

Thurston County will participate regularly in the Interagency Regulatory Advisory Committee, and meet with other agencies or organizations involved in hazardous waste or hazardous materials programs. Improved communication and coordination will increase effectiveness and efficiency of services.

Evaluation

Program description 18 identifies new program evaluation efforts that will apply to all hazardous waste programs.

Program Evaluation

18. Evaluate and document effectiveness of programs.

Agencies: Thurston County Environmental Health Division

Thurston County will evaluate and document effectiveness of education, technical assistance, and enforcement programs through a variety of tracking and evaluation methods. Annual reports will explain evaluation findings and results. Staff will not conduct this as a separate task, but will incorporate evaluation into each base program.

Costs

The cost to add the eight new programs is \$118,860 per year (in 1998 dollars). The Health Department proposes a two-year phasing in of new programs that would result in a cost of about \$72,145 for new programs in the first year of implementation. In the second year of implementation, all eight new programs would be underway with a cost of about \$118,860. Inflation rates, salary increases, and cost of living increases will be factored into annual budgets in the Thurston County Solid Waste Rate Study. Chapter Seven discussed how tipping fees, the recommended funding source for these new programs, will be impacted.

The table below illustrates the implementation schedule for 1997 through 2004. The bars show the year each program will start and, in the case of program #5, when it will end.

Table 8.1: Implementation Schedule				
BASE PROGRAMS	1997	1998	1999	2000-2004
1. Household hazardous waste collection facility	█	█	█	█
2. Used motor oil collection	█	█	█	█
3. Oil filter collection	█	█	█	█
4. Waste exchange/materials exchange		█	█	█
8. Education on waste reduction, recycling, & disposal	█	█	█	█
9. Wasteline	█	█	█	█
11. Business information line	█	█	█	█
12. Technical assistance campaigns	█	█	█	█
13. Business waste collection service	█	█	█	█
16. Complaint response and enforcement	█	█	█	█
NEW PROGRAMS				
5. Assess collection needs				
6. Paint swaps				
7. Emergency planning				
10. Multi-media campaigns				
14. Business inspections in wellhead protection areas				
15. Review new business permits				
17. Regulatory coordination				
18. Program evaluation				

Additional Recommendations

Citizens, businesses, and staff offered many good ideas and suggestions during the planning process. Table 8.1 (on the preceding page) lists those new programs that the County is pursuing to supplement current hazardous waste services.

Additional programs were considered, but are not recommended in this plan because of limited resources. At a policy level, the County and Solid Waste Advisory Committee support seven additional programs. This means no new funding is approved for implementing these programs. Thus, the Health Department may pursue these programs, but only by using existing revenues or under new grants.

1. Integrate household hazardous waste and personal health education.
2. Integrate household hazardous waste and groundwater education.
3. Conduct environmental sampling to measure changes in pollution in Thurston County.
4. Expand basic information and outreach program for small business owners.
5. Establish partnerships with local business associations.
6. Assess the needs and carry out measures to reach non-English speaking customers with hazardous waste safety and disposal information.
7. Expand communication with neighboring counties and tribal governments.

Other program suggestions sprang from the scoping process; pursuing these programs is a lower priority than the above recommendations.

1. Work with interested retailers to set up more take-back programs for hazardous products.
2. Acquire supplies for collecting HHW during emergencies and natural disasters.
3. Develop or participate in recognition programs for businesses that demonstrate outstanding leadership in waste management.
4. Create an enforcement tracking system that is linked with other county ordinances.
5. Develop a comprehensive program evaluation strategy and monitoring/data tracking system.
6. Promote awareness of where to call to report hazardous waste violations.

Conclusion

A variety of hazardous waste collection, education, and technical assistance services are recommended for implementation. These services will divert more hazardous materials into safe collection systems, control costs and liability, and protect drinking water. No immediate, significant changes in service, program emphasis, or administration are suggested. Consequently, implementation of this Plan will continue the wide range of HHW and SQG programs now conducted by the Hazardous Waste Program since 1991.

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Appendices

**Appendix G
Detailed Budget for Option B**

Option B: Individual Project Costs and Staffing		
Project	Staffing in ftes	Cost
Assess collection needs	.15	\$10,910*
Paint swaps	.05	\$6,870 (year 1)**
Emergency planning	.05	\$3,570
Multi-media campaigns	.10	\$33,150
Business inspections in wellhead protection areas	.30	\$25,920
Review new business permits	.25	\$19,850
Regulatory coordination	.10	\$7,140
Program evaluation	.30	\$23,160
1998 Phase-in for July-Dec:	.875	\$72,145
1999-200? Annual Budget	1.15	\$118,860

*This is a one-time cost

**The initial cost to start up paint swaps includes \$800 of capital expenditures. Paint swap costs will decrease slightly after the first year.

Appendix D

Cost Estimates for Options A, B, C and D

**Estimated Budgets and Staffing for Service Level Options A, B, C, and D
(in 1998 dollars)**

	Option* A	Option** B	Option C	Option D
Collection Programs fte \$	2.40 302,740	2.50 312,380	2.70 324,090	3.35 395,260
Residential Education Programs fte \$	1.0 114,750	1.25 159,450	1.5 191,680	1.75 229,290
Small Business Programs fte \$	3.05 234,100	3.85 298,620	3.75 292,110	4.35 351,520
TOTAL BUDGETS fte \$	6.45 651,590	7.6 770,450	7.95 807,880	9.45 976,070
Amount Above Option A	\$0	\$118,860 (18%)	\$156,290 (24%)	\$324,480 (50%)

*Option A was the existing service level for 1997.

**Option B is the recommended service level for the new Hazardous Waste Plan.

Appendix F

Program Dollars by Funding Source and Program Dollars by Activity

Program Dollars by Funding Source

Year	Tip Fees	Grants	Interlocal \$	Donations	User Fees
1991	69%	27%	4%		
1992	56%	36%	7%	1%	
1993	48%	49%	3%		
1994	65%	35%			
1995	69%	31%			
1996	81%	19%			
1997	78%	20%			2%
1998	82%	17%			1%

Program Dollars by Activity

Year	Small Business Programs	Planning and Evaluation	HHW Collection	Homeowner Education
1993 - 1995	39%	4%	36%	21%
1996	36%	7%	37%	20%
1997	38%	6%	35%	21%
1998	34%	5%	40%	21%

Appendix A

Summary of Comments from the Household Hazardous Materials Scoping Group

Appendix B

Summary of Comments from the Small Quantity Hazardous Waste Generator Scoping Group

Appendix C

Forced Diad Prioritization Tool

Appendix E

Evaluation of Revenue Sources

Appendix G

Detailed Budget for Option B

Appendix H

Summary of Public Comments on the Draft Plan

Comments on the Draft Hazardous Waste Plan for Thurston County June 1998

■ City of Lacey Utilities Committee:

Comments were very supportive of the draft plan. The Committee was especially supportive of the regional assessment of waste collection needs and development of an ongoing hazardous materials inspection program in wellhead protection areas. The Committee and city staff recommended the draft hazardous waste plan be finalized and brought before the city council for adoption.

Staff Response: Thank you for your support.

■ City of Rainier City Council

Comments and questions were supportive of the draft hazardous waste plan and the programs being implemented by this program. Several council members expressed they would like to see more household hazardous waste collection services offered in Rainier, perhaps during their spring clean up days.

Staff Response: Thank you for your support. The draft plan recommends doing a regional assessment of waste collection needs which will consider how to best serve the population of the entire region. The assessment will also offer service levels and funding options for meeting the regions waste collection needs. The assessment will look at the feasibility and cost of setting up household hazardous waste collection sites during spring clean up events. Currently, there is only one full-service household hazardous waste collection facility within the county and 25 waste oil recycling sites.

■ City of Yelm City Council

Comments and questions were supportive of the draft hazardous waste plan and the programs being implemented by this program. Several council members expressed they would like to see household hazardous waste collection services offered again in the Yelm area. The mayor, council and staff were in agreement that the hazardous waste program is a good program. The city administrator suggested getting in contact with the Yelm Chamber of Commerce to provide information and seek their comments.

Staff Response: Thank you for your support. The draft plan recommends doing a regional assessment of waste collection needs which will consider how to best serve the population of the entire region. The assessment will also offer service levels and funding options for meeting the regions waste collection needs.. Currently, there is only one full-service household hazardous waste collection facility within the county and 25 waste oil recycling sites.

Staff sent letters and fact sheets in March to all the Chambers of Commerce within the region announcing the release and comment period for the draft hazardous waste plan. Staff has contacted the Yelm Chamber of Commerce three times regarding a presentation.

■ Town of Bucoda Town Council

Comments and questions were supportive of the draft hazardous waste plan and the programs being implemented by this program. Several council members expressed they would like to see more household hazardous waste collection services offered in Bucoda, specifically during their spring clean up days.

Staff Response: Thank you for your support. The draft plan recommends doing a regional assessment of waste collection needs which will consider how to best serve the population of the entire region. The assessment will also offer service levels and funding options for meeting the regions waste collection needs. The assessment will look at the feasibility and cost of setting up household hazardous waste collection sites during spring clean up events. Currently, there is only one full-service household hazardous waste collection facility at the north end of the county which is at least a 30 minute drive from Bucoda. The nearest oil collection site for Bucoda residents is in Tenino.

■ **City of Tenino Town Council:**

The Council expressed appreciation for the information and presentation about the draft hazardous waste plan.

Staff Response: Thank you for the opportunity to present the draft hazardous waste plan to the Council.

■ **City of Tumwater City Council**

Comments and questions were very supportive of the draft hazardous waste plan and the program in general. One council member suggested enhancing education about battery disposal and drop off sites. Another council member suggested contacting the Department of Ecology's hazardous waste and pollution prevention program to coordinate efforts. The Council and city staff agreed the draft hazardous waste plan be finalized and brought before the city council for adoption.

Staff Response: Thank you for your support. Battery recycling *is* confusing. The content of batteries determines whether the battery is a hazardous waste. Household batteries include alkaline batteries, rechargeable nickel-cadmium batteries, button batteries used in hearing aids and cameras that have silver and mercury in them, and lithium batteries that are used in cameras and computers. Until recently, all household batteries contained hazardous substances and there has been widespread education that all household batteries should be separated from the regular trash and taken to household hazardous waste programs. In the early 1990s, alkaline battery manufacturers responded to consumer demands to remove the hazardous substance (mercury) from alkaline batteries and make a "greener" product. Manufacturers found substitutes for mercury and removed it from alkaline batteries. Alkaline batteries manufactured since the early 1990s are no longer considered a household hazardous waste. Alkaline batteries are therefore safe to dispose of in regular trash that go to solid waste landfills. On the other hand, the other types of household batteries (such as rechargeable nickel-cadmium batteries, button batteries, and lithium batteries) continue to contain hazardous substance and should continue to be separated from regular trash and taken to a household hazardous waste collection program.

Radio Shack and about a dozen other retail stores in Thurston County are now collecting batteries from homeowners. These sites could be promoted so more people know of them. Staff will be writing articles about battery recycling for local newspapers this summer and developing a fact sheet for general distribution. The assessment of waste collection needs will also include assessing the need for battery drop off sites.

■ **City of Olympia**

The City of Olympia supports adoption of the draft Plan and understands the need to increase tipping fees necessary to fund the new and expanded programs included in the Plan. The City Council supports the recommendations in the draft Plan because its implementation will result in the diversion of additional quantities of hazardous waste from improper disposal. This will, in turn, reduce the risk that hazardous materials pose to the public health, to the environment, and to our vulnerable drinking water supplies.

Thank you for working together with the City of Olympia and other local jurisdictions in developing a regional partnership to address the problems associated with the management of hazardous wastes.

Staff Response: Thank you for your support and comments.

■ **Department of Ecology, Solid Waste and Financial Services Program**

Comments were very supportive of the content and thoroughness of the draft plan. Several editorial and formatting suggestions were made. A specific suggestion was made on how to assess gaps in waste collection sites. Ecology also recommends that Thurston County evaluate and compare the Thurston County household hazardous waste facility with other facilities in the Northwest to determine if additional efficiencies could be implemented or planned into future remodeling or expansion of the facility.

Staff Response: Thank you. Most of the editorial and formatting suggestions will be incorporated into the final draft. The suggestion on how to conduct the assessment will be used in the assessment work. The recommendation to evaluate the household hazardous waste facility is being pursued this summer by the Department of Water and Waste Management and Health Department.

■ **Citizen**

More drop off sites for batteries are needed. Should alkaline batteries be disposed of at Hazo House?

Staff Response: See response to City of Tumwater.

■ **Citizen**

Reduce the cost of garbage rates and more people will properly dispose of their garbage. Increase the hours for Hazo House.

Staff Response: Thank you for your comments. The Thurston County Solid Waste Advisory Committee is in the process of studying garbage rates and citizens interested in this process are welcome and encouraged to attend these committee meetings. The draft hazardous waste plan is not involved in setting garbage rates, although implementation of hazardous waste programs is funded in part by tipping fees.

The assessment of waste collection needs will definitely include looking at the operating hours of the household hazardous waste collection facility. The purpose of the assessment will be to look at regional needs for waste collection services, which will identify the unmet needs of residents throughout our county and cities.

■ **Olympic Air Pollution Control Authority**

The Olympic Air Pollution Control Authority (OAPCA) were supportive of the mission and goals of the plan. A variety of helpful questions were offered about the businesses listed in tables in Chapter Three (Existing Hazardous Waste Management System). These included questioning business locations, official names, and providing updated information about businesses regulated by OAPCA.

Staff Response: Thank you for your support. The names and locations of businesses in the different tables will be double checked and corrected as needed.

■ **Hazardous Waste Program Staff Comments**

A number of editing, grammar and typographical errors were identified. Additional clarification on several hazardous waste regulations and regulatory definitions was offered. Staff requested addition of a citation for the solid waste generation rate.

Staff Response: Thank you for the careful review of the draft document. Errors will be corrected and definitions will be revised based on comments. A citation for the waste generation rate will be included (*1995 Thurston County Solid Waste and Moderate Risk Waste Annual Report*).