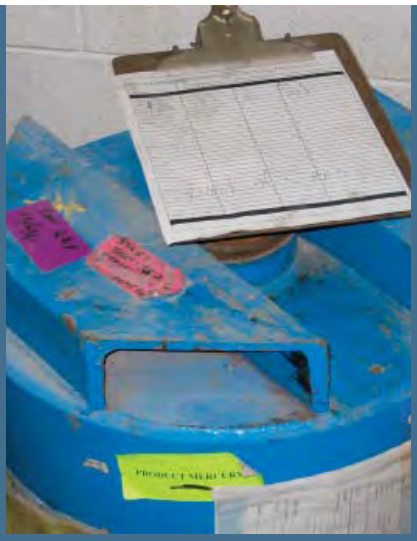

Performance Measurement

10

10. Performance Measurement and Evaluation

10.1. Definition of Performance Measurement and Evaluation

Performance measurement and evaluation is a strategy used by the Program to evaluate whether project staff are completing tasks effectively, efficiently and on time. It can also help to ensure that the Program is having the desired result in the community to improve public health and environmental conditions impacted by hazardous products, chemicals, materials and wastes. Performance measurement starts with four key questions:

- What change is needed in the community to improve people's health and environmental conditions?
- Where should Program efforts be concentrated?
- What strategies and activities are needed?
- What indicators would be useful in showing progress (and what data will reflect these indicators)?

Projects are developed in response to key issues, and progress indicators are identified. Data related to these indicators are tracked to show the Project's progress. This is known as measurement and evaluation (M&E).

10.2. Performance Measurement and Evaluation in the Program

Because early Program plans focused on setting targets for service delivery and outputs, they didn't explicitly identify and evaluate community-level changes resulting from Program services. The Program's 2006 strategic planning effort took a different approach by identifying specific goals and measurable outcomes, and emphasizing collaborations among partners to enact changes in policy and legislation.

These changes created the need for an M&E system that would measure outcomes and evaluate whether they led to the desired goals. The new M&E system needed to include a reporting system that could provide information about Program results to a variety of audiences. Results could be reported by issue or chemical (e.g., stormwater or mercury), by customer category (e.g., residential or business/institution), by expenditures, or a combination of these.

For many years the Program's quarterly reports tracked the actual work completed by the Program, or Program 'outputs.' These outputs might include the number of classes held, consultations performed or businesses certified as EnviroStars. Outputs were originally tracked on a Gantt chart and later in an Access database. The database allowed the Program to summarize information at the task level and compare expenditures against budget for project areas. The Access report included color-coded bars to show where activities were ahead, behind or on target for the quarter, based on yearly target numbers.

Actual outcomes, as opposed to tasks or activities, were measured for a small number of Program goals, like the amount of household hazardous waste (HHW) collected or the percentage of waste stream managed to Washington State Department of Ecology (Ecology) recommendations. This tracking system accustomed Program staff to regularly reporting on their work, and it was praised in the hazardous waste management arena.

10.3. Tracking and the 2006 Mission

The Program's current mission is to "protect and enhance public health and environmental quality in King County by reducing the threat posed by the production, use, storage and disposal of hazardous materials." This means that in order to determine if the threat has been reduced, the Program must not only track its activities and services, but it must monitor and track the community-wide changes produced in people's lives and health, and in the environment. To accomplish this, the Program adopted a performance measurement approach based on monitoring and evaluation.

Project monitoring helps answer the question "Are we doing things right?" The monitoring process tracks Project activities and outputs, to determine if the Project is meeting its timeline. For those Projects that set targets for how many or how much service they can deliver, the monitoring process determines whether the targets are met.

If targets aren't met, managers review quarterly reports to determine the underlying causes and whether these are internal or external. If internal, the problem is addressed by shifting resources or by other means; if the problem is external, decisions are made about changing the approach or revising the work plan to address the outside constraints.

Evaluation is the process used to determine whether the Project, and the Program, are making the desired difference in the community. Evaluation measures effectiveness and also helps answer the question "Are we doing the right things?" For Projects that can predict or set targets for effectiveness, program evaluation determines if the target has been met. Projects that are new to the program, and have no history or other work to compare against, set effectiveness directions (better, worse, more, less) and report on those.

10.4. Performance Measurement Framework: A Systems Approach

To evaluate twenty-four Projects working in a variety of arenas, the Program needs a system that will report all Project outputs, provide Project and Program evaluation, and be understandable and relevant to a variety of audiences. The evaluation framework developed by the Program has adapted elements from the Balanced Scorecard[1] and the Spectrum of Prevention, a public health

1 Robert S. Kaplan and David P. Norton, *The Balanced Scorecard* (Boston: Harvard Business School Press, 1996).

planning model incorporating a systems perspective.[2] The Balanced Scorecard suggests that the organization is viewed from four perspectives, and could develop metrics, collect data and analyze it relative to each of these perspectives: a) Learning and Growth, b) Business Process, c) Customers, and d) Financial.[3] The Spectrum of Prevention moves beyond the perception that prevention is merely education by identifying multiple levels where intervention can occur. Its six levels for strategy development are complementary and, when used together, produce a synergy that results in greater effectiveness than would be possible by implementing any single activity or linear initiative. This systems approach to measuring and evaluating the Program's service delivery supports the new directions that were developed in the 2006 strategic planning process. By combining these two approaches, and adding a category for environmental change, the Program created a new Performance Measurement Framework with ten categories, as shown in Figure 10-1.

Figure 10 -1 Performance Measurement Framework Categories

Category	Definition
Influencing Laws and Regulations	Develop strategies to change laws and regulations in order to influence outcomes.
Changing Organizational Practices and Policies	Adopt policies and practices to improve health and safety (nongovernmental groups, governments, schools).
Fostering Coalitions and Networks	Bring together groups and individuals to develop broader goals with greater impact.
Working with Business	Inform and influence business (manufacturers or retail) to improve practices or transmit skills and knowledge to others.
Promoting Community Awareness & Education	Reach groups of people with information and resources to promote health and safety.
Strengthening Individual Knowledge, Skills, Actions	Enhance an individual's capability to prevent injury or illness and promote safety.
Effecting Environmental Change	Reduce risk to populations and the environment, and improve environmental conditions in quantifiable ways (e.g., tons of hazardous waste properly disposed, percent decrease in number of people exposed).
Developing Capacity	Increase staff knowledge and skills, especially for new initiatives.

2 Larry Cohen and Susan Swift, "The Spectrum of Prevention: Developing a Comprehensive Approach to Injury Prevention," *Injury Prevention* 5: 203-207, 1999. The *Spectrum of Prevention* was originally developed by Larry Cohen while he was director of the Contra Costa County (CA) Health Services Prevention Program. The *Spectrum* is based on the work of Dr. Marshall Swift in treating developmental disabilities. It has been used nationally in prevention initiatives targeting traffic safety, violence prevention, injury prevention, nutrition, and fitness. From *preventioninstitute.org/tool_spectrum.html*, website accessed January 6, 2009.

3 What is the Balanced Scorecard? *BalancedScorecard.org: The Balanced Scorecard Institute.* 2009. Website accessed November 4, 2009, <*www.balancedscorecard.org/BSCResources/AbouttheBalancedScorecard/tabid/55/Default.aspx*>.

Category	Definition
Improving Internal Business Process	Create internal standards for service delivery, and create quality control and improvement measures. Create Core Customer Measures, including market share, customer acquisition and customer satisfaction. Create customer relationship measures, and measures of Program image and reputation.
Maintaining Financial Controls	Track revenue and expenditure, make financial projections, track productivity and monitor cost effectiveness.

10.5. Key Performance Indicators

The Program's Key Performance Indicators (KPIs) are the high level outputs and indicators associated with each performance measurement category. They are used to track the Program's progress towards its broad goals and outcomes. They do not measure the performance of a specific project or individual. KPIs are metrics used to quantify objectives that reflect the strategic performance of an organization. They help assess the present state of the Program and prescribe a course of action. The process of monitoring KPIs in real time is known as business activity monitoring. KPIs help measure progress towards organizational goals and are often used to assess difficult-to- measure activities such as the benefits of leadership development, engagement, service and satisfaction. KPIs are typically tied to an organization's strategy, as exemplified through techniques such as the Balanced Scorecard. A KPI is a measurable objective, which may include direction, benchmark, target and time frame. In the objective "Increase Average Revenue per Customer from $10 to $15 by end of year 2008," the KPI is 'Average Revenue per Customer'.[4]

KPIs were developed for the Program in 2007 by generating a list of potential activities, outputs, outcomes and indicators. Specific criteria, which are listed in Appendix F, were used to narrow the initial list to a final list of KPIs. These indicators were approved in August 2007 and are also listed in Appendix F. As an example of our performance evaluation efforts, the Nail Salon Project's Logic Model in Figure 10-2 illustrates how indicators and performance categories are assigned and tracked. The "Activities" column describes the discrete activities that Project staff will do. Each row contains a separate activity. The "Output" column lists the amount and type of activity that will be tracked. The "Outcome" column states the change in the community, person or organization that results from the activity. The "Indicators" column gives the Performance Category as well as the applicable Key Performance Indicators.

4 Performance Indicator. *Wikipedia.org: Wikipedia, the Free Encyclopedia. 2009*. Website accessed November 4, 2009, *en.wikipedia.org/wiki/Key_performance_indicators*.

Figure 10.2 Nail Salon Project Logic Model

Logic Model for the Nail Salon Project			
Activities	Output	Outcome	Indicators
A. Nail Salons – Site Visits. Train nail salon technicians how to reduce solvent exposure by conducting visits to their businesses with a Public Health consultant and Vietnamese community member. Conduct a follow up visit 6-12 months later to observe operational changes in the nail salon.	Number of nail salons in central, south, and south unincorporated Seattle visited. Number of technicians trained.	Increase in awareness and skills in preventing solvent exposure in nail salon technicians. Decrease in solvent vapor exposure to workers and customers in King County nail salons. *By the end of 2009, 20% of nail salons in King County have implemented best management practices (BMPs) to minimize solvent vapor exposure.*	**Working with Business** Percentage of potential sites contacted, and/or worked with {number of sites (potential)}: • elimination of waste solvent being produced; • use of less toxic alternatives; • improved indoor air quality by use of ventilation equipment and personal protective equipment; • safer use of volatile chemicals; • proper storage and labeling of hazardous materials; • MSDS sheets readily available.
B. Workshops. Train nail salon technicians how to reduce solvent exposure by teaching a workshop.	Number and dates of trainings. Number of attendees.	Increased knowledge about how to reduce solvent exposure and use.	**Strengthening Individual Knowledge, Skills, Actions** • percentage of targeted people that attend training; • percentage of attendees that report increased knowledge; • percentage of attendees that report they will use knowledge; • percentage and range of satisfaction with the training.

Activities	Output	Outcome	Indicators
C. Beauty Schools. Work with beauty schools to decrease solvent exposure and incorporate BMP in their curriculum	Number of schools contacted. Number of schools visited and discussed BMP.	Beauty schools incorporate BMPs into curriculum.	**Changing Organizational Practices:** Number of Beauty School operators that agree to incorporate BMP: • observed changes in school practices, instructional guides; • curriculum contains BMP.
D. General Public. Inform the public about safer nail salon products and procedures at community events like Tet Vietnamese New Year Celebration, International District fair, etc.	Number of fairs, days and contacts made. Number of follow up appointments made as a result of contact at fair. Number of educational materials distributed.	Increased awareness of issue among general public (community that most workers live in, as well as salon customers).	**Promoting Community Awareness & Education** • Number of fairs, days and contacts made. • Number of follow up appointments made as a result of contact at fair. • Number of educational materials distributed.
E. Washington State Department of Licensing (DOL). Encourage DOL to add one of the nail salon BMPs for chemical handling & disposal in their rules.	BMP added to DOL materials.	Increase awareness of solvent exposure hazard among nail salon technicians (trainees), from DOL incorporating information in their curriculum.	**Changing Organizational Practices:** DOL includes HW management, etc. in training manuals.

10.6. Data Collection and Reporting

The data needed for measurement and evaluation are included as part of Project work plans. The work plans are comprised of strategies, activities, tasks, outputs, dates and responsible persons, and are designed so that Project coordinators can report quarterly on the status of the Project. In addition, selected outputs are associated with KPIs during work plan review by the Evaluation Coordinator (EC) and the Data System Team.

During the period 2007 to 2009, the Program did not use a computer-based reporting system. Instead, Project teams submitted quarterly reports according to a prescribed format. These were reviewed by the Core Team and year end reports were summarized for the Management Coordinating Committee

(MCC). The Program is currently designing and building a "consolidated data management system" that will have data reside online. That new system is called an "Extranet." Its design is responsive to both Project and Program level data needs. The computer-based quarterly reports generated by the Extranet will offer two improvements to the previous reporting system. First, the system will provide Web-based performance reports that can be tailored to a variety of audiences, including the Board of Health, the MCC, the Core Team, Project coordinators, stakeholders, other agencies and the general public. Second, the reports will include "real time" performance reporting, such as "scorecards", for goals, outcomes, KPIs, objectives, activities/outputs, customer categories, city reports and financial information. The format of the Web-based reports will be similar to a format used by Spokane County on their Spokane Community Initiatives page at www.communityindicators.ewu.edu. Examples of these reports are in Appendix F.

10.7. Future Improvements in Evaluation

Performance evaluation functions best as an essential part of an overall quality improvement strategy. Future evaluation should increase the capacity to learn from, and apply, evaluation data. That learning could result in refinements to the Program's activities and possibly its structure. The process should strive for continuous improvement through:

- Leadership commitment and visibility;
- Quality planning including setting annual goals, measures and activities;
- Measurement and reporting to track progress and demonstrate improvements; and
- Structure and resources to build capacity for continuous improvement across the Program.

In essence, these components should reflect a deliberate and defined process for improvement, such as "Plan-Do-Check-Act".[5] This would be focused on activities that are responsive to community needs, and improving the local health and environmental conditions that are the foundation of the Program's mission.

In an effort to further improve performance measurement, reporting and evaluation, additional elements may be added to the system. These may include:

- Theory-based strategies for projects;
- An evaluation of the performance measurement approach, including an external audit or review;
- Including the allocation and expenditures of evaluation resources to the performance measurement;
- Increasing the Program's demand for, ability to conduct and use of evaluations;
- Sharing lessons learned and examples of program evaluation; and
- Including stakeholder input in developing the goals, outcomes and indicators.

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5 Lenaway, Dennis PhD, MPH; Corso, Liza C. MPA; Buchanan, Sharunda PhD; Thomas, Craig PhD; Astles, Rex PhD, DABCC, FACB. *Quality Improvement and Performance*: *CDC's Strategies to Strengthen Public Health*. Journal of Public Health Management and Practice: January/February 2010. p 11–13.

The new performance measurement system does not incorporate the theory that the Project is based on. While many of the strategies used in Projects are based on theories of behavioral change, such as the Transtheoretical Model for behavior change[6] and social marketing[7], these aren't currently referenced in Project work plans. Project evaluations are based on the Spectrum of Prevention and the outcomes from the strategic planning process, not theories. This is changing. Many Project coordinators received training on Theory of Change[8] in 2009, and the 2010 work plans will contain a brief description of each Project's theory of change. In the future, performance measurement may include evaluation points that show how well the Projects performed in terms of the underlying theory. By using the Spectrum of Prevention and the Balanced Scorecard as the bases for the planning and evaluation of Projects, the Program is taking a systems approach to service delivery.

After implementing this new approach, the Program will evaluate its effectiveness using the framework described above as the structure for the review.

The Program does not currently measure the resources allocated to evaluation efforts outside of the Evaluation Coordinator position. While some Projects record survey costs and other measurement expenses, these are currently not captured in Project and Program summaries. In the current system, the Evaluation Coordinator reviews work plans and reinforces both the 'why' and the 'how' of evaluation. The Evaluation Coordinator increases the capacity of Program staff to evaluate their work by demonstrating the usefulness of evaluation, providing instruction on evaluation methods, and ensuring that the data and reporting systems are easy to use and provide helpful information.

From 2002 to 2005, many Project teams were trained in evaluation, and a Program-wide training was held in June 2005. In 2008, the King County Office of Human Resource Management Training and Organizational Development added "Evaluation 101" to its curriculum and offered an "Evaluation 201" course for supervisors and managers. Program staff have attended these courses. Most recently, in 2009, an outside consultant conducted training on Theory of Change for most Project coordinators and some staff.

It is important to share Project and Program findings with others, such as the American Evaluation Association conference, the Washington State Environmental Health Association, and the North American Hazardous Material Managers Association, as the Program will benefit from their comments and suggestions. The Association of Government Accountants Service Efforts and Accomplishment Report (www.agacgfm.org/performance/sea/) review process provides critiques based on standardized criteria. Sharing the information about the development and use of the

6 J.O. Prochaska, *Systems of Psychotherapy: a Transtheoretical Analysis*, (Pacific, CA: Brooks-Cole, 1979).

7 Doug McKenzie-Mohr and William Smith, *Fostering Sustainable Behavior*, (Gabriola Island, British Columbia: New Society Publishers, 1999).

8 Karen Glanz and Barbara K. Rimer, *Theory at a Glance: A Guide for Health Promotion Practice*, (Washington, D. C.: National Cancer Institute, National Institutes of Health, U.S. Department of Health and Human Services, NIH Publication number 97-3896, Revised September 1997).

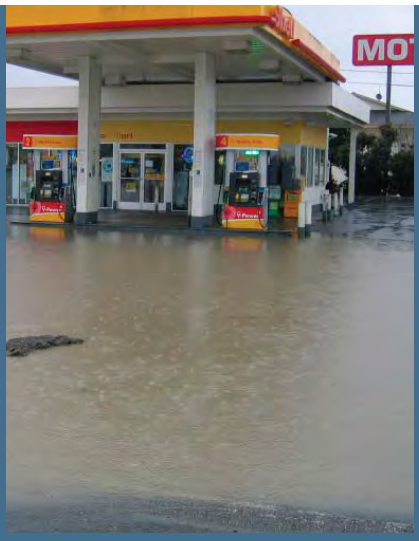
new performance measurement framework is important as it can provide an example for others to follow. The Program is considered a leader among local hazardous waste management programs in the United States[9] and its performance measurement and evaluation system is an example that other programs can use. Also, others' experience and critique of the Program's system can lead to improvements in it.

While the 2006 strategic planning process had limited stakeholder involvement and was considered an internal exercise, future Program planning processes will strive for more direct input. As one example, the process for developing this Plan Update included a workshop advertised to over 600 agency, business and community contacts. It has also included focus groups with businesses, and numerous meetings with representatives and community based organizations from historically underserved populations. We intend to use the contacts in the future in our planning processes.

10.8. Conclusion

The 2006 strategic planning effort laid the groundwork for improved performance measuring and reporting. By emphasizing goals and outcomes, that effort guided the Program into the next phase of performance measurement, beyond "What did we do?" to "Are we seeing the results in the community that we expected?" Development and use of the on-line data system and reports will provide the information Program managers need to direct the Program, conduct Projects efficiently, and create effective community change.

9 "LHWMP has garnered more awards from NAHMMA in general and for specific projects than any other program in the country." Ray Carveth, North American Hazardous Materials Management Association awards committee chair, personal communication, November 2009. See Appendix H for a partial list of Program awards.



Emergency Planning and Hazard Mitigation

11

11. Emergency Planning and Hazard Mitigation

Hazardous materials are widely used by businesses and residents throughout King County. They are routinely transported into and through King County by land, sea, and rail. They are stored in bulk and in smaller amounts at facilities and businesses throughout King County, as well as in the garages, closets and basements in most homes. According to King County's Hazards Identification and Vulnerability Analysis, "The geographic and economic characteristics of King County make it likely that hazardous materials releases will occur. Our diverse industrial facilities and transportation routes share space with numerous bodies of waters, wetlands, environmentally sensitive areas, and a multitude of densely populated centers, creating areas of great potential risk for a hazardous materials release."[1] The Vulnerability Analysis concludes that there is a high probability of a release with moderate impact.

This chapter summarizes emergency planning requirements, responsibilities and plans as they relate to hazardous materials. It also describes the Local Hazardous Waste Management Program's role in hazard mitigation and our role and recommendations regarding the management of disaster-generated moderate risk wastes (MRW), commonly known as hazardous waste from households (HHW) and in small quantities from businesses/institutions (SQGs).

11.1. Emergency Planning Requirements, Roles and Responsibilities

Several federal laws and regulations establish requirements for emergency planning and preparedness with respect to hazardous materials. These form the basis for state and local requirements, plans, and programs that govern hazardous materials assessment, planning, mitigation and response.

11.1.1. Federal Hazardous Materials Emergency Response Planning Requirements

Hazardous materials emergency planning is most directly driven by the Federal Emergency Planning and Community Right-to-Know Act (EPCRA) which was passed as part of the Superfund Amendments and Reauthorization Act (SARA) of 1986. EPCRA, also known as SARA Title III, establishes requirements for federal, tribal, state and local governments and industry regarding emergency planning and "community right-to-know" reporting on hazardous and toxic chemicals. EPCRA requires state and tribal governments to set up emergency response commissions (SERCs/TERCs) to coordinate certain

1 King County, *King County Hazards Identification and Vulnerability Analysis (HIVA)*, (Seattle: King County Department of Emergency Services, 2005), p. 5-50, available on line at: *www.kingcounty.gov/safety/prepare/EmergencyManagementProfessionals/PlansandPrograms/HazardIdentificationVulnerabilityAnalysis.aspx*

emergency response activities and to appoint local emergency planning committees (LEPCs). EPCRA also establishes requirements related to emergency planning notification, emergency release notification, and reporting of chemical inventories and releases (40 CFR Parts 350-372). SARA Title III provides funding for training in emergency planning, preparedness, mitigation, response, and recovery capabilities associated with hazardous chemicals.[2]

The Federal government also has refined and further developed its overall emergency planning and response programs and requirements. In February of 2003, Homeland Security Presidential Directive Five directed the Department of Homeland Security to develop the National Incident Management System (NIMS) and the National Response Plan (NRP) to provide a consistent national approach for federal, state, and local governments to work effectively and efficiently during a domestic incident response. In March 2008, the NRP was revised and reissued as the National Response Framework (NRF). The NRF improves on the NRP by systematically incorporating all levels of government, the private sector, and non-governmental organizations (NGOs) into a coordinated response effort. The NRF also emphasizes the importance of personal preparedness by individuals and households. Hazardous materials emergency planning and response, and disaster debris management are incorporated in these comprehensive plans.[3] Other relevant statutes and regulations include: 40 CFR Part 300; 355; 370; 44 CFR Part 302.2(p); 29 CFR Part 1910.120; and US Code and Title 42, Chapter 116 Section 11003 a-g.[4]

The Federal Emergency Management Agency (FEMA) provides guidelines, requirements and funding to help states, tribes and local jurisdictions to assess vulnerabilities and to develop emergency response plans and systems.[5]

11.1.2. Washington State and Local Emergency Response Planning

The Washington State Emergency Response Commission (SERC) was established in response to the federal requirements. Washington's SERC is comprised of a broad array of members, some of whom represent fire chiefs, the state patrol, private industry, local emergency managers, the military, state agencies (Ecology, Transportation, Labor and Industries, and Health), local emergency planning committee representatives, tribal representatives, and the transportation industry.[6] The SERC oversees implementation of the Community Right-to-Know reporting requirements and other provisions of

2 EPCRA, or SARA Title III, was enacted as Public Law 99-499. For additional information see *www.epa.gov/oem/content/lawsregs/epcraover.htm*.

3 Visit *www.fema.gov/emergency/nrf/* for additional information on the National Response Framework.

4 King County, "Emergency Support Function (ESF) 10, Oil & Hazardous Materials," *King County Revised Comprehensive Emergency Management Plan*, (Seattle: King County, December, 2008), p. 2/19. Cited hereafter as *King County ESF 10*.

5 FEMA guidelines, requirements and agreements are available on-line at: *www.fema.gov/government/grant/sara.shtm*.

6 The Department of Ecology, Washington State Patrol and Emergency Management Division of the Military Department have specific responsibilities under *WAC 118-40*.

EPCRA. It designates and oversees Local Emergency Planning Committees (LEPCs), and facilitates preparation and implementation of emergency planning and preparedness. The Department of Ecology (Ecology) serves as the repository for most of the reports required under EPCRA. Ecology provides technical and regulatory assistance, maintains information on storage and releases of hazardous substances at facilities statewide, and tracks business compliance on behalf of the Washington State Emergency Response Commission.[7]

King County has three LEPCs: one in the City of Kent, one in the City of Seattle, and one for the rest of King County. According to EPCRA, the role of the LEPC is to develop an emergency response plan, review it at least annually, and provide information about chemicals in the community to citizens. LEPCs are required to develop plans with stakeholder participation. LEPC membership must include, at a minimum, state and local officials, law enforcement, fire, public health professionals, environment, transportation and hospital officials, facility representatives, and representatives from community groups and the media.[8] The LEPC is responsible for collecting the information submitted by industry and making it available to the public.[9]

During the past several years Washington's SERC and LEPCs have worked with their respective local emergency management offices to identify hazards, analyze vulnerabilities and risks, set priorities, take steps to reduce hazards, and prepare plans for public education, contingency planning, effective response and recovery. Publicly available reports include the Washington State Hazard Identification and Vulnerability Assessment (2001), Washington State's Comprehensive Emergency Management Plan (2003), Washington State's Hazard Mitigation Plan (Revised 2008), King County's Hazard Identification and Vulnerability Analysis (updated 2005), King County's Regional Hazard Mitigation Plan (2005), King County's Regional Disaster Plan (2006), King County's Revised Comprehensive Emergency Management Plan (2008), the City of Kent's Hazard Identification and Vulnerability Analysis and Comprehensive Emergency Response Plan (second edition, 2004), the City of Seattle's Disaster Readiness and Response Plan (Volumes 1 and 2, revised 2007), and the City of Seattle's All Hazards Mitigation Plan (2009). A summary report on chemicals in Washington State (2007) is also available from the Washington State Emergency Response Commission.[10]

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7 A list of Washington SERC members and additional information may be obtained on-line at: *www.ecy.wa.gov/epcra/serc.html*.

8 For more information on LEPC and local emergency planning requirements, see EPCRA sections 301-303 (42 USC 116) or 40 CFR part 355.

9 See the Washington State Emergency Response Commission's list of LEPCs and their contact information online at: *www.ecy.wa.gov/lepclist.html*.

10 Washington State Emergency Response Commission, *2007 Chemicals in Washington State Summary* (Olympia: Washington Department of Ecology, 2009). Cited hereafter as *2007 Chemical Summary Report*. Available on line from the Washington State Emergency Response Commission, *www.ecy.wa.gov/epcra*. Most of the other documents cited are also available on-line.

King County's Comprehensive Emergency Management Plan applies to all county departments and agencies and to the unincorporated areas of King County. King County government is responsible for providing emergency management services to its executive, legislative and judicial branches and to unincorporated King County. City and tribal jurisdictions are responsible for emergency management services within their jurisdictional and tribal land boundaries, as required by RCW 38.52.070.[11] At the same time, King County is working to promote a coordinated regional response if it is needed during a region-wide emergency.

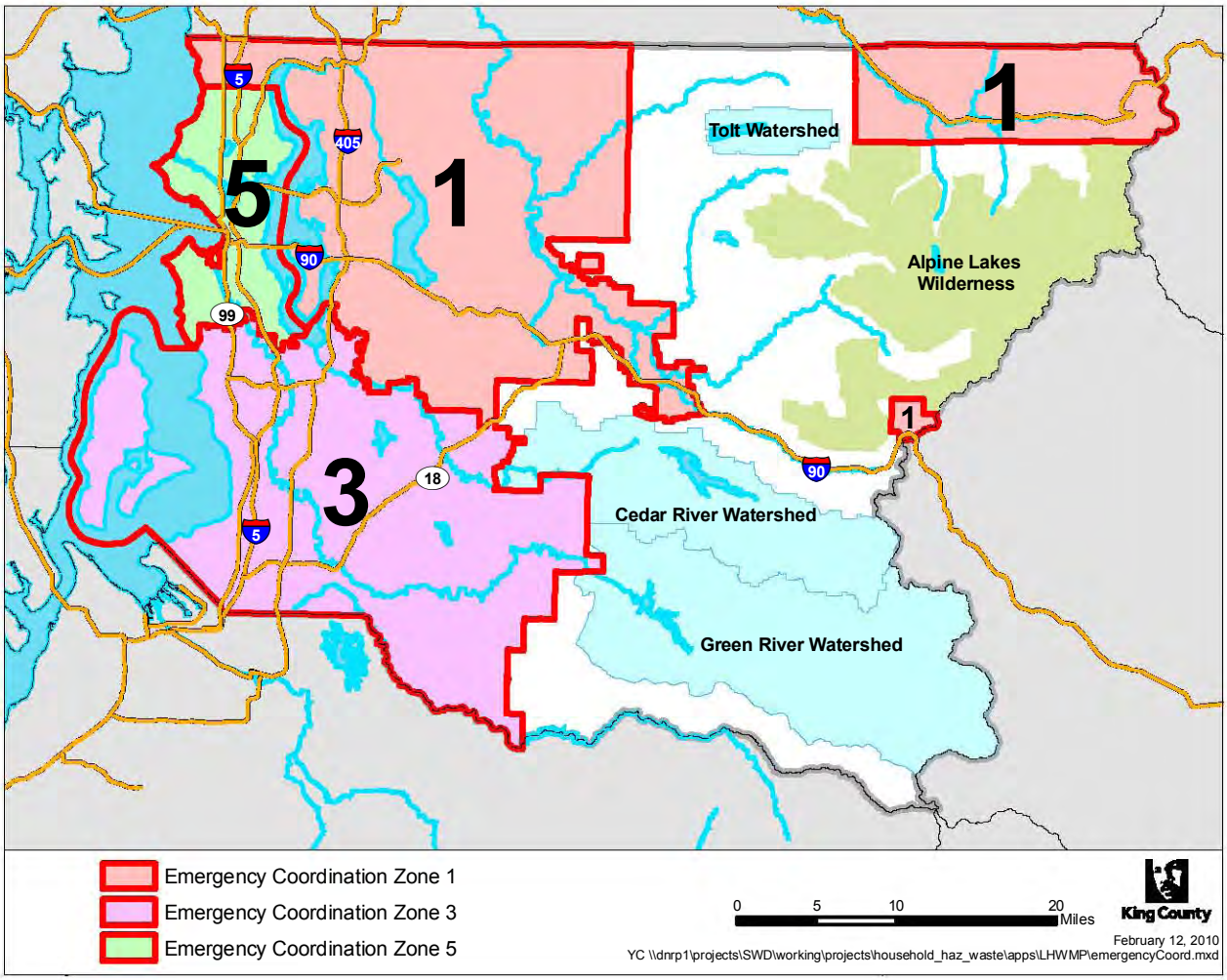
King County's Regional Disaster Plan (RDP) was developed to provide a framework for a systematic, coordinated and effective response to multi-agency, multi-jurisdictional emergencies and disasters that occur within the geographic boundaries of King County. The RDP addresses response activities in those events where normal emergency response processes and capabilities become overtaxed or where there is need for regional coordination of response operations due to the complexity or duration of events. The RDP divides King County into three fire/emergency coordination zones which are responsible for resource coordination functions.[12]

As Figure 11-1 shows, Emergency Coordination Zone 1 covers incorporated and unincorporated jurisdictions in north and east King County. It includes the following jurisdictions: Beaux Arts Village, Bellevue, Bothell, Carnation, Clyde Hill, Duvall, Hunts Point, Issaquah, Kenmore, Kirkland, Lake Forest Park, Medina, Mercer Island, Newcastle, North Bend, Redmond, Sammamish, Shoreline, Skykomish, Snoqualmie, Woodinville and Yarrow Point. It also includes the Snoqualmie Tribal Nation. Emergency Coordination Zone 3 covers unincorporated and incorporated jurisdictions in south King County. It includes Vashon Island and the cities of Auburn, Black Diamond, Burien, Covington, Des Moines, Enumclaw, Federal Way, Kent, Maple Valley, Milton, Pacific, Renton, SeaTac, and Tukwila. Emergency Coordination Zone 5 covers the City of Seattle.

11 King County, *King County Revised Comprehensive Emergency Management Plan*, (Seattle: King County, December 2008), page 2. Cited hereafter as *King County CEMP*. Available on-line at: *www.kingcounty.gov/safety/prepare/EmergencyManagementProfessionals/PlansandPrograms/EmergencyManagementPlan.aspx* .

12 King County, *Regional Disaster Plan for Public and Private Organizations in King County*, (Seattle: Regional Disaster Planning Task Force, 2006), p. 1. Cited hereafter as *King County RDP*. The zone descriptions list those jurisdictions that have officially signed the RDP. The basic plan and its appendices can be accessed at: *www.kingcounty.gov/safety/prepare/EmergencyManagementProfessionals/PlansandPrograms/RegionalDisasterPlan.aspx* .

Figure 11-1: King County Emergency Coordination Zones



King County's RDP defines common assumptions and policies, establishes a shared concept of operations, and pre-assigns functional responsibilities to appropriate disciplines, private and non-profit organizations. The plan describes the responsibilities of the three fire/emergency coordination zones both within their zone and with King County's Emergency Coordination Center.[13] The RDP is a voluntary, cooperative agreement among public and private organizations and, as such, no single agency or organization has control or authority over other participants, except where stated elsewhere in federal, state or local laws.[14] As of March 2008, 145 cities, fire districts, tribal nations, school districts, sewer and water districts, hospitals, non-profit agencies, businesses and others had signed on to the regional plan.[15]

13 See *King County RDP*, Appendix 1, Direction and Coordination, August, 2007.

14 See *King County RDP*, Basic Plan, page 4.

15 The most current listing of signatories can be accessed on-line at *www.kingcounty.gov/safety/prepare/EmergencyManagementProfessionals/PlansandPrograms/RegionalDisasterPlan.aspx* .

11.1.3. Disaster Debris Planning Requirements

Natural and human-caused disasters have the potential to create large volumes of debris that can complicate disaster response and recovery following such disasters. During the past several years it has become evident that hazardous materials are released during floods, earthquakes, hurricanes, and other disasters. Residents and first responders can face risks from hazardous household materials that are improperly stored, have spilled, or have become unstable. Hazardous materials may be directly released into the community through spills, fires, explosions and flooding, or they can mix with and contaminate other debris generated during a disaster. This section examines federal, state, and local requirements and plans that address disaster debris management.

The Federal Emergency Management Agency (FEMA) is encouraging state, local and tribal governments and private non-profit organizations to take a proactive approach to address debris removal as part of their overall emergency management plans. FEMA provides technical support and grants to help local jurisdictions to develop a comprehensive debris management plan that incorporates best management practices and provides a blueprint for assembling an effective response for the entire debris management cycle. Local plans must also address how they will satisfy FEMA's criteria to be eligible for financial assistance from their Public Assistance Program. FEMA encourages local officials to review their community's vulnerability to a disaster and to consider how to manage large-scale debris clearance, removal, and disposal operations should the need arise.[16] FEMA encourages broader regional coordination in disaster debris management and other emergency planning and preparedness throughout the federal Urban-Area Security Initiative Regions. The Seattle-Urban Area Security Initiative Region (Seattle UASI Region) includes King, Pierce and Snohomish Counties and the core cities of Seattle and Bellevue.[17]

King County, Snohomish County, Pierce County, and the City of Seattle have been working to establish a coordinated approach to disaster debris management in the Seattle UASI Region. This regional planning effort has resulted in The Seattle UASI Disaster Debris Management Plan, first published in May, 2008. This regional guidance document provides a framework for King County and other jurisdictions throughout the UASI region to follow in developing their own plans. It describes how Disaster Debris Planning aligns with and fits in with the state and national emergency frameworks, and defines the roles and responsibilities of the disaster management agencies and external agencies. It also defines operational steps and addresses contract management, public notification and communications, and funding considerations. The Plan was developed with broad stakeholder input. Its implementation and future plan updates are the responsibilities of the solid waste agencies in the Seattle UASI region that maintain comprehensive solid waste plans. Those agencies include King

16 For additional information and an electronic version of FEMA's Disaster Debris Guidance documents, see: *www.fema.gov/government/grant/pa/demagde.shtm#1* .

17 Critigen, *Seattle Urban Area Security Initiative Region Disaster Debris Management Plan* (May 2008), p. 1.1. Cited hereafter as *Seattle UASI Plan*.

County Solid Waste Division, Snohomish County Solid Waste Division, Pierce County Public Works and Utilities, and Seattle Public Utilities.[18]

The City of Seattle published its Disaster Debris Management Plan (DDMP) in 2007 "…because Seattle Public Utilities recognizes the importance of maintaining public health and safety by planning for efficient removal of debris caused by unanticipated disaster events."[19] The purpose of the DDMP is to ensure that Seattle Public Utilities and the City of Seattle have the ability to address debris generated from residential or public properties in a timely manner; ensuring that recyclable debris and prohibited materials, such as hazardous wastes, are diverted from the solid waste stream following a debris-generating event; instituting a plan to address debris generated on commercial and private property following a significant debris-generating event; and maintaining clear and concise documentation of activities eligible for FEMA reimbursement. The DDMP describes the volume and mix of debris that might be generated under various disaster scenarios, and defines roles and responsibilities for responding to two types of disaster debris-generating scenarios. Scenario 1 is low probability with high consequences. Scenario 2 is high probability with low to medium consequences.[20]

King County Solid Waste Division is in the process of updating its 2002-2003 disaster debris management plan. The update is expected to be finalized at the end of 2009 or in early 2010. This Plan will apply to unincorporated areas of King County. Cities and Tribal Governments are responsible for developing their own plans, using the framework developed through the UASI process. King County is providing a template to assist in this process. Municipal governments will be eligible for funding to assist them in this process.

11.1.4. Business Contingency and Emergency Planning and Preparedness

Businesses play a crucial role in hazardous materials related emergency planning. Federal and state laws require businesses and institutions to properly use, store, and dispose of toxic and hazardous materials, and to report annually on chemical storage, chemical releases, and waste disposal. Despite the widespread distribution of chemicals in businesses and institutions, emergency planning and preparedness are not required of all businesses. Requirements are triggered by the quantity of hazardous materials and/or hazardous wastes on site, as seen in Table 11-1. While businesses with large quantities of hazardous materials must have more fully developed emergency response plans, all businesses must meet basic safety requirements and respond to and promptly report spills of oil and hazardous materials. Every business owner is liable for contamination stemming from the business and for ensuring that hazardous substances do not migrate off site.

18 Responsibilities for administering, maintaining and updating the *Seattle UASI Plan* are described in Chapter 2. The plan has been updated twice since May 2008. According to Joe Brentin, Critigen, the plan was last updated in March of 2009 (Personal communication, November 30, 2009).

19 Seattle Public Utilities, *Disaster Debris Management Plan*, (Seattle: City of Seattle, December 2007), page 1. Cited hereafter as *Seattle Disaster Debris Plan*.

20 Disaster debris-generating incidents and their potential are described in Chapter 2 of the *Seattle Disaster Debris Plan*.

Table 11-1: Hazardous Materials Emergency Planning and Reporting Requirements

Requirements	LAW/Code	Section	Threshold[a]
Emergency Release Planning – Notification of Extremely Hazardous Substances (EHS)	EPCRA	302	Applies to facilities with listed extremely hazardous substance(s) above threshold (1 to 10,000 lbs depending on substance).
Emergency Release Planning - Businesses with EHS	EPCRA	303	Owner or operator of facility with EHS shall designate a facility representative who will participate in the local planning process as a facility emergency response coordinator.
Hazardous Chemical Reporting	EPCRA	311	Submit MSDS or MSDS list to SERC and LEPC for EHS in excess of threshold planning quantity or 500 lbs, whichever is less, and hazardous substances at or in excess of 10,000 lbs.
Tier 2 - Emergency and Hazardous Chemical Inventory Reporting	EPCRA	312	Provide specific information about chemicals stored on site if have threshold planning quantity or 500 lbs at any one time of EHS, and 10,000 lbs at any one time of hazardous substances.
Develop written emergency (contingency) plan that describes arrangements with local responders, designates on-scene coordinators, lists equipment, evacuation plans, etc. Can be part of other spill prevention or emergency response plan.	WAC 173-303	200(1,3) 340 350 360	Applies to large quantity generators (generate 2,200 or more pounds of hazardous waste per month).

a The U.S. Environmental Protection Agency maintains a list of the Threshold Planning Quantities (TPQs) and Reportable Quantities (RQs) of approximately 700 hazardous substances. The Washington SERC is available to help businesses determine their TPC and RQ. For further information visit the SERC Web site *www.ecy.wa.gov/epcra/serc.html* or contact by e-mail: *epcra@ecy.wa.gov*

Table 11-1: Hazardous Materials Emergency Planning and Reporting Requirements (continued)

Requirements	LAW/Code	Section	Threshold
Have on-scene emergency coordinator, plans; familiarize emergency responders with facilities and wastes handled.	WAC 173-303	340	Applies to medium quantity generators.
Have spill response plan and spill response kit.	WAC 173-303		Recommended best management practice but not required of conditionally exempt small quantity generators (generate less than 220 pounds of hazardous waste per month).
Other federal and state laws require development of spill prevention plans.	40 CFR 112, RCW 90.56		Specified transportation and non-transportation related facilities.
Emergency Release Reporting	EPCRA	304	A release of a substance in excess of its reportable quantity outside the facility site must be reported immediately to the appropriate SERC, TERC, and LEPC that may be potentially affected by the release. A written follow-up must be submitted to these entities within 14 days.
Emergency Release Reporting	CERCLA	103	Release of a hazardous substance in an amount equal to or greater than the reportable quantity is required to report the release immediately to the National Response Center.

Ecology also requires that business' emergency plans address underground fuel tanks that may be on the property. Ecology has prepared guidance on steps that businesses near the Green River should take to reduce damage and the likelihood of spills from fuel storage tanks during a flood.[21]

21 Washington State Department of Ecology, *Flood Prevention for Underground Storage Fuel Tanks in the Green River Valley*, (Olympia, WA: Washington Department of Ecology, August 2009), publication number 09-09-190. Available on Ecology's web site: *www.ecy.wa.gov/pubs/0909190.pdf* .

11.1.5. Household Emergency Planning and Preparedness

Residents play an important role in preventing hazardous household products and hazardous wastes from being released during a flood, earthquake or other disaster. Most homes have chemicals or materials that might be released during a disaster, contaminating the environment and posing a hazard to families and property. Both residents, and businesses, are ultimately responsible for cleaning up disaster-generated debris on their property, so they should inventory their hazardous products and store them safely (so that they won't be released during an earthquake or flood). If excess or unneeded hazardous products exist, residents should reduce their stockpiles by taking them to the Program's HHW collection facilities for proper disposal. Residents should also reduce the risks posed by their home heating oil.[22] Taking preventative measures and planning ahead are particularly important because public emergency plans assume that families may have to be self sufficient for up to three days following a major emergency.

11.2. Assessment of Emergency Planning with respect to Hazardous Materials

In spite of the many plans that have been published it is difficult to tell how well prepared jurisdictions in King County are to respond to major hazardous materials emergencies. The larger hazardous materials handlers appear to be submitting Tier II Chemical Storage data annually to the State Emergency Response Commission (SERC), their Local Emergency Planning Committee (LEPC) and to their local fire department. Table 11-2 summarizes the number of facilities that submitted Tier II reports to King County LEPCs in 2007.[23] The extent to which these facilities are monitored is unclear, as is the extent to which this data is used in refining hazards assessments.

Table 11-2: 2007 King County Chemical Storage Reports by LEPC

LEPC	Number of Reporting Facilities	Number of Chemicals Reported	Number of Facilities with Extremely Hazardous Substances	Number of Extremely Hazardous Chemicals Reported
King County	534	1,412	210	317
City Of Kent	102	818	51	134
City of Seattle	147	695	98	130
KC Total	**783**	**2,925**	**359**	**581**

22 See Washington State Department of Ecology, *Residential Heating Oil Tanks*, (Olympia: Ecology, 2008), publication no. R-TC-92-117 (Rev. 12-08). Available on-line at: *www.ecy.wa.gov/pubs/rtc92117.pdf* .

23 *2007 Chemical Summary Report.*

The cities of Seattle and Kent have Comprehensive Emergency Response Plans that describe agency roles in responding to hazardous materials emergencies that may occur in their jurisdictions.[24] In addition King County's Comprehensive Emergency Plan (CEMP) defines agency roles in responding to hazardous materials emergencies that affect unincorporated King County and County facilities. King County's CEMP also includes a framework for coordinated response to oil and hazardous materials emergencies by King County, federal, state, and local agencies, local hospitals, utility districts, and non-governmental organizations, King County's LEPC and private sector facilities.[25] The coordinated response assumes that the local fire agency in conjunction with the local Hazardous Materials (HazMat) Team will be the lead on-scene agency.[26] Local jurisdictions are responsible for developing their own hazardous materials emergency response plans and procedures. The extent to which municipalities have prepared for hazardous materials emergencies is unclear.

The recently completed Seattle UASI Regional Disaster Debris Plan provides the general framework for disaster debris planning in Pierce, Snohomish and King Counties. King County Solid Waste Division and many municipal governments in King County are engaged in--or intend to start-- disaster debris planning. These planning efforts offer an opportunity to ensure that hazardous materials and hazardous wastes are adequately addressed and to engage Program services to prevent future problems.

Hazardous materials may be accidently released into the environment as the result of a hazardous materials transportation accident, an accident at a fixed facility, or as the result of some other type of emergency. Urban areas with large concentrations of businesses that produce, store, or transport hazardous materials are particularly at risk. However, hazardous materials transportation accidents can occur anywhere that hazardous materials are transported, stored and used. In addition, hazardous materials may be released as the result of other types of emergencies. Reports from Seattle, Kent and King County indicate that the following incidents would be likely to result in the release of hazardous materials: aircraft accidents, earthquakes, fires, floods, HazMat incidents, landslides, pipeline incidents, terrorism, tornados, transportation accidents, tsunamis/seiches and volcanic eruptions. The magnitude and impact of the release may range from minor to major, depending on the location, materials involved, and the scope of the event. However, as the City of Kent's Hazards and Vulnerability analysis notes, "Any incident in which hazardous materials are involved has the potential for escalation from a minor incident to a full scale disaster."[27]

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24 City of Seattle, *Seattle Disaster Readiness and Response Plan, Volumes 1 & 2*, (Seattle: Office of Emergency Management, 2007); cited hereafter as *Seattle 2007 DRRP*. City of Kent, *Kent Comprehensive Emergency Management Plan*, Second Edition (Kent: Kent Office of Emergency Management, 2004); cited hereafter as *Kent CEMP*. In both plans see Emergency Support Function (ESF) 10 -- Oil and Hazardous Materials Response, cited hereafter as ESF-10.

25 *King County CEMP*. Overall roles are described in the Basic Plan. Details are provided in the Emergency Support Annexes, especially in *King County CEMP ESF-10*, pages 171-189.

26 *King County CEMP ESF-10*, p. 3/19.

27 City of Kent, "Hazard Identification and Vulnerability Analysis," in *Kent CEMP*.

Several years ago the Portland-Metro (Oregon) Household Hazardous Waste Program developed standard operating procedures for anticipating the volumes and types of HHW potentially generated by various disasters.[28] Their analysis recommends collection service options under various scenarios as well as recommendations about the types of service potentially needed. Table 11-3 lists Portland-Metro's recommendations.

Portland's analysis suggests that some natural disasters, such as severe windstorms, ice storms, and snow storms, are unlikely to result in hazardous materials releases or to generate moderate risk wastes. Other events, like floods and earthquakes, may have a significant impact.

Table 11-3: Disaster Types, Expected Generation Rates and Recommended Service Options from Portland Metro HHW Program.[a]

Type of disaster	Expected hazardous waste generation per affected home	Portland-Metro Recommended service options
Ice storm	minimal	• Promote existing facilities
Windstorm	minimal	• Promote existing facilities

Flood
• moderate (most affected homes reparable)
• severe (many destroyed homes)
	Moderate - 50 pounds
	Severe 50-100 pounds
		• Collection sites near affected areas
		• Collection sites near affected areas
		• If resources available:
		  • Door-to-door/curbside collection
		  • House-to-house sweeps

Earthquake	Minimal to 100 pounds depending on severity
	If minor
	If moderate
	If severe
		• Promote existing facilities
		• Collection sites near affected areas
		• Collection sites near affected areas
		• If resources available:
		  • Door-to-door/curbside collection
		  • House-to-house sweeps

Wildfire	100 pounds	• House-to-house sweeps

a *Metro SOP #34*, page 7.

28 Metro Hazardous Waste Program, *SOP #34 – Disaster HHW Collection Services*, (Portland, OR: Metro Hazardous Waste Program, 1999). Cited hereafter as *Metro SOP #34*.

11.3. Our Program's Role in Hazard Mitigation and Emergency Planning

Our Program mitigates regional hazards by working to reduce the production and use of hazardous materials, by promoting their proper use and storage, and by offering disposal services at our collection facilities. In addition to providing on-going programs that support these goals, our Program addresses hazards reduction in areas that are faced with potential emergencies, such as floods. For example, in 2009, staff from our Program collaborated with Public Health and other King County agencies to develop coordinated messages regarding preparing for potentially serious flooding of the Green River Valley due to structural problems with the Howard Hanson Dam. Our Program is encouraging residents and businesses to reduce their hazardous materials inventories, to properly store remaining hazardous materials, and to properly dispose of hazardous wastes at the Auburn SuperMall collection site or at one of the other HHW/SQG collection facilities or Wastemobile sites. In addition, the Program staff are providing technical assistance to businesses in the Auburn/Kent/Renton/Tukwila area, attending public meetings, and otherwise marketing the Program's services.

Our Program also plays a support role, through our Partner agencies, during the recovery phase when disaster-generated debris must be managed. In many cases we promote the use of the HHW/SQG collection facilities and services by residents and eligible businesses/institutions. During the past several years our Program has also assisted in post-flood cleanups in the cities of Snoqualmie, Pacific and in south King County. We are working with our suburban city and Program partners to establish ways to coordinate collection and to establish a reasonable way to address hazardous materials in the wake of a flood or other disaster. Our Program has been, and will continue, providing input into the regional and local disaster debris management plans.

11.4. Future Direction

Our Program's HHW/SQG collection facilities and services are operated by two of our agency partners, Seattle Public Utilities and King County Solid Waste Division. Those agencies also have a primary role in disaster debris planning. It will be important for our Program to work closely with those responsible operating agencies to address HHW and SQG wastes in disaster-debris planning, and to ensure that procedures are in place for an appropriate response. For example, if temporary collection sites are established, they should be staffed by employees with expertise in screening for and managing HHW and SQG wastes.

Our Program will continue to focus on getting our issues represented in those implementing agencies' plans at the outset. Those issues include separate handling and collection of hazardous waste and ensuring that systems are in place to have trained personnel involved with handling HHW and SQG

waste at any temporary collection sites. We will focus on mitigating hazards through the pursuit of our regular mission, which is working to reduce purchase and inventories, promote proper storage, and promote disposal at one of our collection sites before the flood season or other likely emergency events. We will not focus on responding during an event; our Program Partner agencies have that role.

Our Program will continue to provide regular disposal services during clean-up after an event, unless additional services are required and reimbursed through the disaster debris implementing agencies. We will also encourage implementing agencies to ensure that the broader hazardous materials and hazardous waste issues are adequately addressed in their plans.

Future Plan Updates

12

12. Future Plan Updates

This section addresses updates to the Program's 'Master' Plan and our annual 'Implementation' Plans. Our Program's original 'Master' Plan was the 1990 Final Plan that launched the Program. That Plan was updated once in 1997. That 1997 document was a Plan Update to the 1990 Final Plan. This current document is another Plan Update to the 1990 Final Plan, and it builds on the 1997 Plan Update. It will be the 2010 Plan Update, after it is adopted and approved.

In addition to Plan Updates like the one in 1997, and the one we are undertaking with this document, Ecology is urging local programs to develop 'Implementation' Plans. An annual Implementation Plan would include an annual review and adjustment, if needed, of our Program's goals and objectives. It would contain a compilation of our Program's annual work plans and timelines, at an aggregated level. And it would contain, again at an aggregated level, the budgets and staffing levels for our Program. Ecology is requesting that a one-year Implementation Plan, for the first year covered by the Plan Update, be included with the Plan Update when it is submitted to Ecology for approval. This is intended to give Ecology a clearer picture of what actions, at a specific level, will be taken to begin implementing a Program's newest Plan Update.

12.1. Timing and Process for Updating the Master Plan

Ecology is encouraging MRW programs throughout the State to update their Master Plans every five years. Our Program intends to review our plan at five year intervals to determine the need for a formal plan update. It makes sense to do this; many things change in a five-year period. Those changes can include demographic shifts in the populations we serve; changes to our goals; changes in the nature of the hazardous wastes, materials and products we are attempting to address; and changes in the methods we use to address those wastes, materials and products.

Following a five-year cycle would entail revisiting the status of this Plan Update with Ecology in 2014 to see if another formal Plan Update is needed. If both the Program and Ecology thought it would be advantageous, we would begin our scoping process in 2014 for a targeted Plan Update completion in 2015. Our Program would also intend to use the same approval process as we are using for this Plan Update. That process would include public input through a variety of mechanisms in the scoping phase, and an extensive public comment period for review of the draft document prior to it being submitted to the MCC. After those public comments were reviewed, and incorporated as appropriate, the Plan Update would be submitted to the MCC for their review and approval. After MCC approval, the document would be submitted to the King County Board of Health (BOH) for review and approval. After addressing any concerns from the BOH, the document would be submitted to Ecology for final review and approval.

12.2. Timing and Process for Implementation Plans

An annual Implementation Plan is merely a compilation of work that our Program does each year to review it goals and objectives, develop its budgets and create its project work plans. Under the structure that Ecology is advocating, we would take that same information, aggregate it and submit it with the five-year spanning Plan Update. This would show a detailed level of planning by our Program for the first year of the five-year period covered by the Plan Update. While we essentially do this work every year to implement our Program's work, this one year Implementation Plan would be submitted with our Plan Update for Ecology's review.

This type of planning is conducted every year, as a routine way to implement our Program's work and provide information for evaluating that work. It will continue whether we are undertaking a formal Plan Update process or just conducting our regular business, to be efficient, effective and transparent in our work.