

# Area-wide Soil Contamination Strategy: Implementation of Task Force Recommendations

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STATE OF WASHINGTON  
DEPARTMENT OF COMMUNITY,  
TRADE AND ECONOMIC DEVELOPMENT

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# Introduction

In January 2002, the Departments of Agriculture, Community Trade and Economic Development (CTED), Ecology and Health asked the Area-wide Soil Contamination Task Force to provide recommendations on how the agencies might improve the ways we respond to elevated levels of arsenic and lead in soils in Washington State. After eighteen months of deliberation, the Task Force delivered their recommendations to the four agencies on June 30, 2003.

The agencies committed to updating the Task Force on our progress implementing the recommendations and plans for the future. This document fulfills that commitment. It is organized into four main sections:

Section 1 – Background provides a brief overview of the issues surrounding efforts to address elevated levels of arsenic and lead in soils.

Section 2 - Implementation Strategy describes the agencies' overall strategy for implementing Task Force recommendations and summarizes the major activities that the agencies will undertake over the next two years. It is organized around five broad objectives:

- Improve public awareness and understanding of area-wide soil contamination concerns and solutions;
- Collect and evaluate information to support decisions about reducing the potential for exposure to arsenic and lead in soils;
- Reduce the potential for exposure to arsenic and lead in soils at developed properties;
- Reduce the potential for exposure to arsenic and lead in soils at properties under development; and
- Improve institutional capabilities for responding to area-wide soil contamination.

Section 3 – Summary of Actions Being Taken to Implement Task Force Recommendations is a summary table that identifies the actions that the agencies plan to take in response to each Task Force recommendation. The table is organized around the chapters/sections in the Task Force report.

Section 4 – Issues Associated with Addressing Area-wide Soil Contamination summarizes the range of issues and challenges that were considered by the agencies when evaluating how to implement the various Task Force recommendations.

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## Background

Soil in large parts of Washington State contains elevated levels of arsenic and/or lead resulting from several historical activities including past releases from industrial operations and historical application of certain kinds of agricultural pesticides. As Washington's population has grown, many areas potentially contaminated by these historical activities have been developed into residential neighborhoods, schools and parks. These development activities have raised a variety of health, environmental, and marketplace concerns and created pressures for cleanup.

Addressing area-wide contamination is not a simple issue of protecting public health and the environment, because environmental and public health goals must be weighed against several practical considerations. The contamination is spread over hundreds of thousands of acres and its distribution is often highly variable even within a single parcel of land. The sheer size of the contaminated areas and the large number of people likely to be exposed to the contaminants challenges the ability of the agencies respond in a timely and effective manner given the limited availability of resources. Further, it is difficult for agencies to prioritize activities to address the "worst first" because of limited information about the distribution of the contamination. Another concern is the possibility of lowered property values for parcels known to be contaminated. Issues and challenges associated with addressing Area-wide soil contamination are summarized in Section 4.

To get input from a broad range of stakeholders on possible ways to balance some of these issues, the agencies chartered the Area-Wide Soil Contamination Task Force. The goals were to evaluate the range of actions that could be used to reduce the risks and to develop a comprehensive, consistent approach for addressing properties affected by area-wide contamination.

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# Implementation Strategy

## Objective #1: Improve public awareness and understanding of area-wide soil contamination concerns and solutions

### Task Force Recommendations

- **Develop an “information toolbox” that includes balanced information on area-wide soil contamination and steps that people can take to reduce potential exposures. The toolbox should include information for general use and materials for specific audiences (e.g. individuals who care for children, individuals that frequently come into contact with soil).**
- **Work with and through interested local agencies in a step-wise approach to increase awareness and understanding of area-wide soil contamination and protective measures.**
- **Monitor and evaluate whether education programs are effective in encouraging behavior changes and reducing exposures.**

During the next two years, the agencies will take the following steps to implement the various Task Force recommendations related to improving public awareness and understanding:

- Information Toolbox: Ecology and Health will work with other interested organizations to develop and distribute an information toolbox<sup>1</sup> by March 2004.
- Materials/Outreach Tailored to Specific Audiences: The agencies will work with other organizations to develop materials and outreach strategies that are tailored to the information needs and concerns of school officials, child care providers, real estate professionals, construction and agricultural workers, financial institutions and land developers/land use agencies.
- Local Outreach and Education Programs in the Tacoma Smelter Plume: Ecology and Health will continue to work with the Tacoma Pierce County Health Department and Public Health Seattle King County to implement ongoing outreach and education programs. Ecology will continue to provide funds from the Local Toxics Control Account (LTCA) to support these efforts.
- Local Outreach and Education Support in Other Priority Areas: Ecology and Health will work with and support efforts by interested local health agencies/school districts to implement outreach and education activities that are needed to support evaluations and responses (if any) at schools in Chelan, Douglas and Yakima counties (See Child Use Areas in Other Priority Areas, p. 4).
- Evaluating the Effectiveness of Education Programs: Ecology and Health will continue to provide technical and financial assistance to the Tacoma Pierce County Health Department and Public Health Seattle King County as they evaluate the effectiveness of ongoing education programs. The agencies are also working with local officials in Wenatchee to explore the possibility of conducting an evaluation of education efforts and administrative controls being implemented at local schools.

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<sup>1</sup> The toolbox will include the following types of materials: Dirt Alert; Tier I and Tier II Maps and property evaluation checklist; Sampling guidance; Health risk information; information on protective measures, etc. The materials will be posted on the Ecology website and provided in paper format.

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**Objective #2: Collect and evaluate information to support decisions on measures for reducing the potential exposure to arsenic and lead in soils**

**Task Force Recommendations**

- **Communicate information on area-wide soil contamination with a combination of maps and narrative, emphasizing the need for individual property evaluations.**
- **Support efforts by local agencies that choose to develop smaller-scale maps.**
- **Coordinate with interested local agencies to maintain and update smaller scale maps and use statewide GIS capability to maintain/update maps.**
- **Gather additional scientifically valid information on the health and exposure of residents, particularly children, who may be exposed to arsenic and lead.**
- **Conduct further research to characterize the location and extent of elevated levels of lead in soil from past use of leaded gasoline in Washington.**

During the next two years, the agencies will take the following steps to implement the various Task Force recommendations relating to developing information to support decision-making:

- Footprint Studies in the Tacoma Smelter Plume Area: Ecology and Health will continue to provide financial (i.e. LTCA funds provided by Ecology) and technical support to local health departments to complete ongoing footprint studies in the Tacoma Smelter Plume area.
- Tier II Maps: Ecology and Agriculture will provide financial (i.e. LTCA funds provided by Ecology) and technical support for interested local health departments who elect to prepare smaller scale maps for areas within Okanogan, Chelan/Douglas and/or Yakima counties.
- Review Preliminary Estimates for Spokane County: Ecology and Agriculture will provide financial (i.e. LTCA funds provided by Ecology) and technical support to the Spokane Regional Health District to evaluate the preliminary estimates on the nature and extent of soil contamination for Spokane County.
- Geographic Information System (GIS) Support: Ecology and the local health departments in Pierce and King Counties are currently using GIS systems to manage information on contamination levels in the areas surrounding the former smelters in Tacoma and Everett. Ecology intends to continue to support those efforts and will work with local agencies in other priority areas to manage information and produce/update maps.
- Monitoring of Arsenic and Lead Exposure: Health and Ecology plan to continue/initiate several efforts that will improve our understanding of the relationships between elevated levels of arsenic and lead in soils and the health and exposure of Washington residents. This includes (1) work to maintain and (where possible) expand efforts to monitor blood lead levels in Washington children, (2) continue to work together on a federally-funded project evaluating the feasibility of linking environmental data with information on community health and (3) explore partnerships with academic institutions on research projects.
- Research on Roadside Lead Contamination: The Agencies do not plan to work on this issue during the next 2 years because other activities are considered to be higher priorities.

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**Objective #3: Reduce the potential for exposure to arsenic and lead in soils at developed properties.**

**Task Force Recommendations**

- **Efforts to reduce exposure should focus on young children.**
- **Encourage and support local agencies to implement a step-wise approach for evaluating and where necessary reducing the potential for exposure at existing schools, parks and child care facilities.**
- **Work with local agencies to encourage/support efforts by residents to evaluate and where necessary reduce the potential for exposure to elevated levels of arsenic and lead.**
- **Do not require additional measures at commercial properties that are covered with surfaces such as buildings, parking lots and other effective soil cover.**

During the next two years, the agencies will take the following steps to implement the Task Force recommendations related to reducing exposure at child use areas, residences and commercial properties:

- Child Use Areas – Tacoma Smelter Plume: Ecology and Health will continue to provide financial (i.e. LTCA funds provided by Ecology) and technical support to the Tacoma Pierce County Health Department and Public Health Seattle King County and others (e.g. school districts, etc) to conduct qualitative assessments, perform soil sampling and implement protective measures at child use areas in the Tacoma Smelter Plume area. Soil sampling and implementation of protective measures have been completed/are underway at the grade schools in the area and many child care facilities and parks.
- Child Use Areas in Other Priority Areas: Ecology and Health will provide financial (i.e. LTCA funds provided by Ecology) and technical support to interested local health departments and school districts to conduct qualitative assessments, soil sampling and implement protective measures at schools in Chelan, Douglas, Okanogan, Spokane and Yakima counties. This work will build upon soil sampling and protective measures conducted at schools in Okanogan County and Wenatchee during the last two years.
- Residential Properties: Ecology and Health will provide financial (i.e. LTCA funds provided by Ecology) and technical support to the Tacoma Pierce County Health Department and Public Health - Seattle King County to provide sampling assistance for residents interested in determining arsenic and lead levels at individual properties. Planned work includes: (1) provide sampling guidance; (2) supporting soil sampling and/or analysis; and (3) help residents interpret results. Ecology will also work with local health agencies in the other priority areas to determine the level of community interest in sampling and (based on the level of interest) provide support for soil sampling activities.
- Commercial Properties: The Task Force recommendations are generally consistent with current practice. Ecology will consider whether any additional measures are needed to implement this recommendation as we work with others to (1) prepare amendments to the MTCA regulation and (2) explore ways to integrate protective measures with land use planning and permitting processes.

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**Objective #4: Reduce the potential for exposure to arsenic and lead in soils at properties under development.**

**Task Force Recommendations**

- **Work with land use planning/permitting agencies to increase awareness & encourage developers to test soils and integrate cleanup measures into construction plans.**
- **Create mechanisms that facilitate greater awareness of area-wide soil contamination issues early in the design and construction process. This includes (1) Amend the SEPA checklist to include a question about soil contamination; (2) Encourage local agencies to record contamination information on plat notices; and (3) Support efforts to enact new legislation requiring a real property transfer disclosure statement for open land.**
- **Require school and park districts to test the soils at proposed schools and parks and integrate protective measures into design/construction.**

During the next two years, the agencies will take the following steps to implement the Task Force recommendations relating to reducing exposure at properties under development:

- Coordination with Land Use Planning/Permitting Processes within the Tacoma Smelter Plume Area: Ecology will work with several local land use planning/permitting agencies in the Puget Sound area to identify and implement procedures for addressing soil contamination issues as part of the land use planning and permitting processes. Specific changes recommended by the Task Force (e.g. amending the SEPA checklist/supplementary materials, including information on plat notices, etc.) will be considered in this process.
- Eastern Washington Regional Planner Forum: CTED and Ecology will work with local agencies to identify and discuss possible approaches for systematically addressing soil contamination issues as part of the land use planning and permitting processes. Specific changes recommended by the Task Force (e.g. amending the SEPA checklist/ supplementary materials, including information on plat notices, etc.) will be considered during these discussions. As part of this process, CTED and Ecology hope to identify one or more local agencies interested in implementing procedures for addressing soil contamination issues as part of the land use planning and permitting processes in their community. This work (together with the results from the Puget Sound communities) would provide examples for other communities interested in modifying their local processes.
- New School Construction: Health and Ecology will work with the Office of the Superintendent of Public Instruction to develop guidance materials that provide information on soil testing and ways to integrate soil cleanup measures with school construction and maintenance activities.
- Real Estate Disclosure: The Agencies will work with the Washington Association of Realtors to (1) encourage the Legislature to enact new legislation requiring a real property disclosure statement for open land, (2) encourage the voluntary use of the existing seller's property condition report as a mechanism for providing information on area-wide soil contamination, (3) encourage real estate professionals to use the lead-based paint disclosure form or similar disclosure documentation for residential transactions where area-wide soil contamination is likely and (4) increase awareness among real estate professionals about area-wide soil contamination issues.

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## Objective #5: Improve institutional capabilities for responding to area-wide soil contamination

### Task Force Recommendations

- **Revise the MTCA regulation to provide greater predictability on how the Department will apply MTCA where low-to-moderate levels of arsenic and lead are found in soil.**
- **Work with the Department of Social and Health Services (DSHS) to increase awareness about area-wide soil contamination among child care providers and establish a voluntary certification program for child care centers and family home daycares.**
- **Ensure implementation of existing requirements for worker health and safety, minimizing wind-blown dust and preventing soil erosion during construction.**
- **Provide financial assistance for local government efforts to address area-wide soil contamination.**

During the next two years, the agencies will take the following steps to implement the Task Force recommendations related to improving institutional capabilities:

- **MTCA Regulation/Guidance:** Ecology will initiate the process to amend the Model Toxics Control Act regulation and prepare guidance materials to facilitate implementation of the Task Force's recommendations. Ecology will work closely with Task Force members who were instrumental in preparing the recommendations on the MTCA process. Timing for completing the rulemaking process will be coordinated with the MTCA Science Advisory Board's review of the scientific basis for identifying low-to-moderate levels of arsenic and lead in soil. As part of this review, Ecology will work with the SAB to address two other Task Force recommendations: (1) the agencies should consider whether there are situations where low-to-moderate levels of arsenic and lead would threaten ground water supplies; and (2) the agencies should evaluate the impacts of low-to-moderate levels of arsenic and lead on ecological receptors.
- **DSHS Coordination:** Ecology and Health will work with the Department of Social and Health Services (DSHS) to integrate consideration of soil contamination into training programs for child care facilities and other parts of the DSHS licensing/inspection process. This will involve (1) working with DSHS to increase awareness and provide training opportunities for child care providers during Year 1 of the biennium and (2) working with DSHS to identify additional measures that might be used to increase awareness and encourage implementation of appropriate protective measures. Such measures include the voluntary environmental certification program for child care facilities recommended by the Task Force.
- **Intra and Inter-Agency Coordination:** Ecology will organize regular meetings for state agencies involved in the implementation of the Task Force recommendations to discuss key issues and monitor implementation status. The Agencies will also use this as a forum to coordinate implementation of existing requirements for worker health and safety, minimizing wind-blown dust and preventing soil erosion during construction activities.
- **Local Agency Partnerships and Financial Support:** Ecology and Health will work with local health departments to establish and strengthen working relationships on common health issues. Overall, Ecology has budgeted \$2.8 million in LTCA funds to support work by local health departments and other local agencies on area-wide issues during the FY 2003-2005 biennium.

# Summary of Actions Being Taken to Implement Task Force Recommendations

Activity	Recommendations	Agency Responses
<b>Section 5: Nature and Extent of Area-Wide Soil Contamination</b>		
<b>Communicating information on the Nature and Extent of Area-Wide Soil Contamination</b>	<ul style="list-style-type: none"> <li>Information on the nature and extent of area-wide soil contamination should be communicated using a combination of maps and accompanying narrative information that emphasize the need for individual property evaluations to determine with certainty where area-wide soil contamination is present.</li> </ul>	<ul style="list-style-type: none"> <li>The Chartering Agencies agree. As discussed below, the agencies intend to (1) include Tier I and II maps and information on property specific evaluations (e.g. flowchart/checklist; sampling guidance) in the information toolbox and (2) support efforts by local agencies to develop and maintain Tier II maps and assist people and organizations to evaluate individual properties.</li> </ul>
<b>Individual Property Evaluations</b>	<ul style="list-style-type: none"> <li>The Task Force believes that individual property evaluations are an important step for people to understand the potential for area-wide soil contamination where they live or work.</li> </ul>	<ul style="list-style-type: none"> <li>The Chartering Agencies will include the flowchart developing by the Task Force in the "information toolbox" and work with local agencies to encourage people to use the flowchart to gain a better understanding of the potential for elevated levels of arsenic and lead where they live or work.</li> </ul>
<b>Maps of Potential Area-Wide Soil Contamination</b>	<ul style="list-style-type: none"> <li>The Task Force recommends two tiers of maps and accompanying information for smelter emissions and historical uses of lead arsenate pesticides.</li> </ul>	<ul style="list-style-type: none"> <li>The Chartering Agencies will use two tiers of maps to convey information on where area-wide soil contamination is likely. The Tier I maps and Tier II smelter maps will be included in the initial information toolbox. New and/or updated maps will be added to the toolbox as they become available (see developing and updating maps)</li> </ul>
<b>Developing and Updating Maps</b>	<ul style="list-style-type: none"> <li>Chartering Agencies and other organizations and individuals should use the maps developed by the Task Force as a starting point for further mapping efforts.</li> <li>Chartering Agencies should provide funding &amp; assistance to local governments to identify historical orchard locations and develop smaller scale maps of areas potentially affected by lead arsenate.</li> <li>Chartering Agencies should maintain and update State maps and coordinate with local governments to regularly update local maps (especially for smelter areas) based on new information.</li> <li>Chartering Agencies should define "area-wide zones" starting with TF maps (see MTCA recommendations below)</li> </ul>	<ul style="list-style-type: none"> <li>The Chartering Agencies will use the maps in the Task Force report as a starting for further mapping efforts.</li> <li>The Chartering Agencies will work with and support efforts by interested local governments to prepare smaller scale maps.               <ul style="list-style-type: none"> <li>Ecology and Health will work with local health departments in Pierce, King, Kitsap and Thurston counties to complete footprint studies in the Tacoma Smelter Plume area by September 2004. Ecology will provide LTCA grants to the local health departments to support these efforts.</li> </ul> </li> <li>Ecology and Agriculture will work with interested local health departments who elect to (1) explore options for preparing</li> </ul>

		<p>Tier II maps in Okanogan, Chelan/Douglas and/or Yakima counties and (2) prepare Tier II maps in one or more areas as part of a local effort to integrate measures to address area-wide soil contamination with land use planning and permitting. Ecology plans to provide LTCA grants to local agencies to support these activities.</p> <ul style="list-style-type: none"> <li>• Ecology and Agriculture will work with the Spokane Regional Health District to evaluate the estimates on the nature and extent of soil contamination in the Task Force report and, as appropriate, explore options for preparing Tier II maps. Ecology plans to provide LTCA funds to the health district to support this effort.</li> <li>• The Chartering Agencies will update state maps and work with local agencies to update local maps as new information becomes available.</li> </ul>
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**Section 7: Broad-Based Education and Awareness-Building**

<p><b>Information “Toolbox”</b></p>	<ul style="list-style-type: none"> <li>• Chartering agencies should develop a “toolbox” of educational materials for general audiences. Toolbox includes: (1) maps; (2) Checklist/guidance on conducting qualitative evaluations of the potential for exposure and/or contamination at a property; (3) Sampling guidance for different land-use scenarios; (4) Information on health risks; (5) Information on individual protection measures for targeted audiences (schools, parents, gardeners, adults who work in soil); (6) Information on actions that can be taken that go beyond individual protection measures (e.g., maintaining good cover in play areas); (7) Information about organizations available to answer questions, provide additional help</li> <li>• Chartering agencies should provide materials in several language and tailor the materials to meet the information needs for several audiences of concern, including schools/educators, health care practitioners, local health and planning departments, parents, community groups, PTAs, real estate professionals, people who work in the dirt, (including gardeners, construction/utility workers).</li> </ul>	<ul style="list-style-type: none"> <li>• Health and Ecology will develop information toolbox that includes: <ul style="list-style-type: none"> <li>• Dirt Alert information brochure prepared for the Tacoma Smelter Plume (with updates to reflect statewide perspective)</li> <li>• Tier I and Tier II Maps</li> <li>• Checklist + Task Force flowchart</li> <li>• Sampling guidance</li> <li>• Health risks</li> <li>• Individual protection measures</li> <li>• Additional protection measures</li> <li>• Links to other information sources</li> </ul> </li> <li>• Health and Ecology will translate materials into Spanish and other languages that are appropriate for the range of potentially affected communities.</li> <li>• Ecology and Health will work with other organizations to develop information materials that are tailored to specific audiences including: <ul style="list-style-type: none"> <li>• Schools (administrators, teachers, parents, students);</li> <li>• Child care providers;</li> <li>• Real estate professionals;</li> <li>• Financial community;</li> <li>• Construction workers</li> <li>• Developers and land use officials;</li> <li>• Health care practitioners.</li> </ul> </li> <li>• The Department of Agriculture plans to</li> </ul>
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		develop information materials for agricultural workers.
<b>Stepwise Approach for Providing Information (Step 1)</b>	<ul style="list-style-type: none"> <li>The Chartering Agencies should make basic, overview educational materials about area-wide soil contamination available to all WA residents. At a minimum, materials should be made available using the following means: <ul style="list-style-type: none"> <li>Develop and maintain website that includes materials in the information toolbox.</li> <li>Distribute to libraries and other public information repositories.</li> <li>Distribute Ecology regional/field offices, local health departments and other locations where residents might go to seek information.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Ecology will modify the current area-wide webpage to incorporate information materials and will update the webpage on a regular basis.</li> <li>Ecology will distribute copies of information materials to regional and field offices.</li> <li>The Chartering Agencies will work with local health departments in areas with higher likelihood for elevated levels of arsenic and lead to (1) identify locations where residents might seek information and (2) establish and periodically update local information repositories.</li> </ul>
<b>Stepwise Approach for Providing Information (Step 2)</b>	<ul style="list-style-type: none"> <li>Chartering Agencies should supplement education materials with outreach in areas where area-wide soil contamination is likely. The agencies should provide training for and distribute information to local health and land-use planning/permitting departments, school districts, and parks districts</li> <li>Local health and planning/permitting departments, school districts, and parks districts should distribute information to residents, community groups and other end users.</li> </ul>	<ul style="list-style-type: none"> <li>Ecology and Health will continue to work with the Tacoma Pierce County Health Department and Public Health Seattle King County to implement ongoing outreach and education programs. These efforts are being funded with monies from the Local Toxics Control Account.</li> <li>Ecology and Health will work with and support efforts by local health agencies, local planning agencies and local school districts to design and implement approaches for distributing information on area-wide soil contamination as part of other local programs.</li> <li>Ecology and Health are working with DSHS and local health departments to integrate education materials into STARs training, training for DSHS license and inspection staff and child care owners/operators. This builds upon work by Public Health Seattle King County.</li> </ul>
<b>Stepwise Approach for Providing Information (Step 3)</b>	<ul style="list-style-type: none"> <li>The Chartering Agencies should provide additional outreach and education resources and support where area-wide soil contamination is known to exist because of soil testing.</li> </ul>	<ul style="list-style-type: none"> <li>Ecology and Health will work with interested local health departments and school districts to help implement outreach and education activities associated with evaluating and addressing area-wide soil contamination problems at child use areas (see below). Ecology plans to provide funds from the Local Toxics Control Account to support these activities.</li> </ul>
<b>Monitoring and Evaluating Effectiveness</b>	<ul style="list-style-type: none"> <li>Chartering agencies should monitor and evaluate effectiveness of education and individual protection measures</li> </ul>	<ul style="list-style-type: none"> <li>Ecology and Health will work with the Tacoma Pierce County Health Department and Public Health Seattle King County to complete evaluations designed to measure the</li> </ul>

		<p>effectiveness of education programs. This work is being funded through a LTCA grant. The agencies will review the results and determine the need to (1) modify education programs to improve effectiveness or (2) conduct additional evaluations.</p> <ul style="list-style-type: none"> <li>The agencies are also working with local officials in Wenatchee to explore the possibility of conducting an evaluation of education efforts and administrative controls being implemented at local schools.</li> </ul>
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**Section 8: Recommendations for Specific Land-Use Scenarios**

<p><b>Child Use Areas – Individual Protection Measures and Good Soil Cover</b></p>	<ul style="list-style-type: none"> <li>The Task Force recommends that owners/operators of schools, parks and child care facilities implement individual protection measures and maintain good soil cover unless (1) qualitative property evaluations indicate that elevated soil levels of arsenic and lead are not likely or it is unlikely that children could be exposed to soil or (2) quantitative soil testing shows that elevated levels of arsenic and lead in soil are not present.</li> <li>The Task Force recommends that the Chartering Agencies work with local health jurisdictions to support, encourage and assist with implementation of individual protection measures and activities that maintain good soil cover.</li> </ul>	<ul style="list-style-type: none"> <li>Ecology and Health will continue to provide financial (i.e. LTCA funds provided by Ecology) and technical support to the Tacoma Pierce County Health Department and Public Health Seattle King County and others (e.g. school districts, etc) to conduct qualitative assessments, perform soil sampling and implement protective measures at child use areas in the Tacoma Smelter Plume area. Soil sampling and implementation of protective measures have been completed/are underway at the grade schools in the area and many child care facilities and parks. During the next two years, local health departments will focus on the remaining child care facilities and parks.</li> <li>Ecology and Health will provide financial (i.e. LTCA funds provided by Ecology) and technical support to interested local health departments and school districts to conduct qualitative assessments, soil sampling and implement protective measures at schools, parks and child care facilities in Chelan, Douglas, Okanogan, Spokane and Yakima counties. This work will build upon soil sampling and protective measures conducted at schools in Okanogan County and Wenatchee during the last two years.</li> </ul>
<p><b>Child Use Areas - Qualitative Evaluations of Potential Exposure</b></p>	<ul style="list-style-type: none"> <li>The Task Force recommends that owners/managers of child use areas carry out qualitative evaluations for the potential for exposure to arsenic and lead in soil in places routinely used by children.</li> </ul>	<ul style="list-style-type: none"> <li>As discussed above, Ecology and Health will work with local health departments and school and park districts to encourage and assist owners/managers of child use areas to conduct qualitative evaluations.</li> </ul>
<p><b>Child Use Areas - Soil Testing and Implementation of Additional</b></p>	<ul style="list-style-type: none"> <li>Where qualitative evaluations indicate that children may be routinely exposed to contaminated soil, the Task Force recommends that property owners/managers of child use areas (1) conduct soil sampling</li> </ul>	<ul style="list-style-type: none"> <li>As discussed above, Ecology and Health will work with local health departments and school and park districts to encourage and support owners/managers of child use areas to (1) conduct soil sampling if qualitative</li> </ul>

<p><b>Protection Measures</b></p>	<p>to determine if elevated levels of arsenic and lead are actually present and (2) implement additional protection measures if soil sampling indicate that elevated levels are present.</p> <ul style="list-style-type: none"> <li>• The Chartering Agencies should assist local jurisdictions, other organizations and individuals to conduct soil testing and select and implement additional appropriate protection measures.</li> </ul>	<p>evaluations indicate that children may be routinely exposed to contaminated soil and (2) implement additional protection measures if sampling indicates that elevated levels are present.</p> <ul style="list-style-type: none"> <li>• Ecology and Health will work with interested health department and school districts to evaluate the long-term effectiveness of protective measures at schools and ways to institutionalize those measures. Ecology has held initial discussions with Wenatchee school district officials to explore ways of doing this.</li> </ul>
<p><b>Child Use Areas - Special Considerations for Playgrounds and Playfields</b></p>	<ul style="list-style-type: none"> <li>• The Task Force recommends that the CPSC surface material guidelines be fully implemented at existing playgrounds at parks, schools, private camps and childcare facilities (+ geotextile fabric barrier to further limit potential for contact) in areas where area-wide soil contamination is likely.</li> <li>• For other areas (e.g. playfields), the Task Force recommends that efforts be made to minimize the potential for contact with contaminated soils by maintaining year-around grass and clean soils in areas of bare dirt (e.g. baselines).</li> </ul>	<ul style="list-style-type: none"> <li>• Ecology agrees that compliance with existing CPSC safety guidelines will reduce the potential for contact with soils that have elevated levels of arsenic and lead. Ecology is working with local health departments and school districts to evaluate (1) the extent to which such measures are already being implemented at child use areas, (2) ways to encourage owners/operators to implement such measures and (3) the long-term effectiveness of such measures; and (4) ways to institutionalize such measures so that they are maintained over time.</li> </ul>
<p><b>Child Use Areas – Soil Testing and Additional Protection Measures at New Child Use Areas</b></p>	<ul style="list-style-type: none"> <li>• The Task Force recommends that officials (school district superintendents, park managers) be required to test soils at proposed child use areas during the site selection and design process.</li> <li>• Officials should incorporate protection measures into construction plans and budget where soil sampling shows that elevated levels of arsenic and lead are present.</li> <li>• At school sites, the Chartering Agencies should work with local health departments and OSPI to help interpret soil sampling results and select protection measures.</li> <li>• Local health inspectors (with assistance from the chartering agencies) should confirm (as part of regular site visits) that appropriate responses have been taken.</li> </ul>	<ul style="list-style-type: none"> <li>• Health and Ecology will work with the Office of the Superintendent of Public Instruction to develop guidance materials that provide information on soil testing and ways to integrate soil cleanup measures with school construction and maintenance activities.</li> <li>• Health and Ecology will work with local health departments and OSPI to develop information materials that health officers can use with certifying the safety of new schools.</li> <li>• Health and Ecology will work with local health departments to encourage school and park districts to test soils and implement appropriate protective measures as part of school and park construction and/or major renovation activities. This includes providing assistance in interpreting test results and selecting protection measures.</li> <li>• Ecology will provide information on the Local Toxics Control Account (LCTA) and work with public school and park districts to evaluate whether protective measures to address contaminated soils are eligible for</li> </ul>

		grant funding.
<b>Child Use Areas – Targeted Outreach and Voluntary Environmental Certification Program for Child Care Providers</b>	<ul style="list-style-type: none"> <li>The Chartering Agencies should work with DSHS to provide information to child care professionals and encourage them to take actions to reduce potential exposures.</li> <li>The Department of Social and Health Services (in conjunction with the Department of Health) should establish and administer a voluntary daycare certification program.</li> </ul>	<ul style="list-style-type: none"> <li>Ecology and Health are working with DSHS to integrate consideration of soil contamination into training programs for child care facilities and other parts of the DSHS licensing/inspection process. This will involve (1) working with DSHS staff to increase awareness and provide training opportunities for child care owners and operators during Year 1 of the biennium and (2) engaging DSHS staff and managers on ways to identify additional measures that might be used to increase awareness and encourage implementation of appropriate protective measures (including the potential for developing and implementing a voluntary environmental certification program for child care facilities).</li> </ul>
<b>Residential Properties - Measures to Increase Awareness of Property owners, Residents</b>	<ul style="list-style-type: none"> <li>Chartering agencies should work with and through local governments, particularly local health departments, to increase knowledge of area-wide soil contamination through a targeted education and awareness building campaign for parents, home gardeners and adults who work in soil.</li> </ul>	<ul style="list-style-type: none"> <li>Ecology and Health will be working with local health departments to develop an information toolbox that includes targeted information for parents and/or homeowners. This will build upon information materials included in the Task Force report and materials prepared for use in the Tacoma Smelter Plume area. Ecology and Health are continuing to work with local health departments to distribute this information through an education and awareness-building campaign in Pierce and King counties. Over time, the agencies will work with interested local health departments in other priority areas to design and implement targeted programs tailored to those communities.</li> </ul>
<b>Residential Properties – Individual Protection Measures and Good Soil Cover</b>	<ul style="list-style-type: none"> <li>The Task Force recommends that residents should implement individual protection measures and maintain good soil cover unless (1) qualitative property evaluations indicate that elevated soil levels of arsenic and lead are not likely or exposure to soil is unlikely or (2) quantitative soil testing shows that elevated levels of arsenic and lead in soil are not present.</li> <li>The Chartering Agencies should offer technical and financial assistance to support and encourage residents to implement individual protection measures and maintain good soil cover.</li> <li>Property owners should implement additional protective measures, if contamination found (e.g., bringing in clean soil for gardens)</li> </ul>	<ul style="list-style-type: none"> <li>Ecology and Health will provide financial (LTCA funds) and technical support to the Tacoma Pierce County Health Department and Public Health - Seattle King County to provide sampling assistance for residents interested in determining arsenic and lead levels at individual properties. Planned work includes: (1) provide sampling guidance; (2) conducting soil sampling and/or analysis; and (3) help residents interpret results. Ecology will also work with local health agencies in the other priority areas to determine the level of community interest in sampling and (based on the level of interest) provide support for soil sampling activities.</li> </ul>

<b>Residential Properties – Qualitative Evaluations</b>	<ul style="list-style-type: none"> <li>• The Task Force recommends that residents conduct qualitative evaluations to determine the potential for elevated levels of arsenic and lead in soils and/or the potential for elevated exposures.</li> <li>• The Chartering Agencies should provide technical assistance to support and encourage residents to conduct qualitative evaluations.</li> </ul>	<ul style="list-style-type: none"> <li>• As discussed above, Ecology and Health will work with local health departments to encourage and assist residents to conduct qualitative evaluations.</li> </ul>
<b>Residential Properties – Soil Testing and Additional Protection Measures</b>	<ul style="list-style-type: none"> <li>• Property owners should consider conducting soil screening/testing if qualitative evaluations indicate that elevated levels and/or exposures are likely.</li> <li>• The Chartering Agencies should work with local health jurisdictions to provide incentives and opportunities for individuals who choose to sample. This includes: <ul style="list-style-type: none"> <li>• Provide do-it-yourself sampling kits</li> <li>• Establish a mechanism to subsidize the costs of sampling at residential properties.</li> <li>• Assist property owners to interpret results and select appropriate protection measures (if any)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Ecology and Health will provide financial (i.e. LTCA funds provided by Ecology) and technical support to the Tacoma Pierce County Health Department and Public Health - Seattle King County to provide sampling assistance for residents interested in determining arsenic and lead levels at individual properties. Planned work includes: (1) provide sampling guidance; (2) supporting soil sampling and/or analysis; and (3) help residents interpret results. Ecology will also work with local health agencies in the other priority areas to determine the level of community interest in sampling and (based on the level of interest) provide support for soil sampling activities.</li> </ul>
<b>Residential Properties – Confidentiality and Reporting of Sampling Results</b>	<ul style="list-style-type: none"> <li>• The Task Force recommends that data from soil testing conducted by individuals for their own use should be kept confidential and should not be associated with specific property locations in agency records except where (1) individuals volunteer to have their data used to update maps (2) individuals request a No Further Action letter or (3) the sampling results reveal soil concentrations that are not associated with area-wide soil concentrations.</li> </ul>	<ul style="list-style-type: none"> <li>• As discussed above, the health departments in King and Pierce counties are currently designing programs to assist residents to perform soil sampling and analyses. At this point, those programs involve health department staff collecting and analyzing the soil samples. Ecology intends to work with the Office of the Attorney General to evaluate ways to implement this recommendation in light of the requirements in the Public Disclosure Act and local efforts to provide sampling assistance.</li> </ul>
<b>Residential Properties – Support for Additional Protection Measures Individuals Choose to Implement</b>	<ul style="list-style-type: none"> <li>• The Chartering Agencies should provide guidance on affordable, effective and practical solutions for covering contaminated soils, removing and replacing small quantities of soil and other appropriate activities.</li> <li>• The Chartering Agencies should help residents locate sources of soil that meet cleanup standards and provide information on where and how to dispose of contaminated soil.</li> </ul>	<ul style="list-style-type: none"> <li>• Ecology and Health have developed initial information materials on measures to reduce exposure. These materials will be reviewed and updated as the agencies develop the information toolbox (including information on sources of soil and where and how to dispose of soils)</li> </ul>
<b>Commercial Areas</b>	<ul style="list-style-type: none"> <li>• The Task Force recommended that no further response actions are necessary to address area-wide soil contamination at commercial</li> </ul>	<ul style="list-style-type: none"> <li>• Ecology believes that the Task Force recommendations are generally consistent with current practice. Ecology will consider</li> </ul>

	<p>properties covered with surfaces such as buildings, parking lots or other effective soil cover.</p> <ul style="list-style-type: none"> <li>• In mixed use areas, the Task Force recommended that the Chartering Agencies follow the recommendations for non-commercial uses (e.g. child use areas) if such uses/areas/facilities are located within an area that is primarily commercial.</li> </ul>	<p>whether any additional measures are needed to implement this recommendation as we work with others to (1) prepare amendments to the MTCA regulation and (2) explore ways to integrate protective measures with land use planning and permitting processes.</p>
<p><b>Open Land – Recommended for Developers, Construction Workers and Property Owners</b></p>	<ul style="list-style-type: none"> <li>• The Task Force recommends that developers conduct qualitative evaluations and, where warranted, conduct soil testing prior to construction. Based on the results of those evaluations/testing, developers should incorporate additional protection measures into site development and construction plans.</li> <li>• The Chartering Agencies should set an example by adopting these practices for their construction projects.</li> <li>• The Task Force recommends that construction workers implement individual protection measures to reduce the potential for exposure to contaminated soils (consistent with WISHA/OSHA requirements.)</li> <li>• The Chartering Agencies should work with State and local air and other authorities to ensure that regulations to control dust, erosion and runoff during construction are implemented and enforced.</li> </ul>	<ul style="list-style-type: none"> <li>• Ecology will organize regular meetings for state agencies involved in the implementation of the Task Force recommendations to discuss key issues and monitor implementation status. The Agencies will also use this as a forum to coordinate implementation of existing requirements for worker health and safety, minimizing wind-blown dust and preventing soil erosion during construction activities.</li> </ul>
<p><b>Open Land – Encouraging Implementation of the Task Force Recommendations for New Development</b></p>	<ul style="list-style-type: none"> <li>• The Task Force recommends that the Chartering Agencies educate people who work on SEPA issues in local government (as well as local planning and permitting officials) about area-wide soil contamination and how to appropriately respond to it.</li> <li>• The Task Force recommended that the Chartering Agencies support and encourage efforts to amend the State Environmental Policy Act (SEPA) checklist to include a question designed to prompt consideration of the potential for area-wide soil contamination during new development. For construction activities that are exempt from SEPA, the agencies should work with local governments to leverage appropriate land use or building process to reach these development activities.</li> <li>• The Task Force recommends that Ecology work with local building and planning</li> </ul>	<ul style="list-style-type: none"> <li>• Ecology and CTED will work with several local land use planning/permitting agencies in the Puget Sound area to identify and implement procedures for addressing soil contamination issues as part of the land use planning and permitting processes.</li> <li>• CTED and Ecology will work with staff and managers from local agencies in eastern Washington (through the Eastern Regional Planners Forum) to identify and discuss possible approaches for systematically addressing soil contamination issues as part of the land use planning and permitting processes.</li> <li>• CTED and Ecology will work with interested local agencies to identify and implement procedures for addressing soil contamination issues as part of the land use planning and permitting processes.</li> </ul>

	<p>departments to continue to explore the concept of standard protocols with a view to providing greater predictability and certainty.</p> <ul style="list-style-type: none"> <li>• The Task Force encourages local jurisdictions to use plat or other notices to record information on property status (whether sampled, protection measures in place) as part of the local land use approval and development process.</li> </ul>	
<b>Open Land Not Proposed for Development</b>	<ul style="list-style-type: none"> <li>• The Task Force recommends that the Chartering Agencies encourage property owners to take practical steps to limit trespassing if land is in or near residential areas.</li> </ul>	<ul style="list-style-type: none"> <li>• The Agencies will include information on practical steps to limit trespassing on open lands in the information toolbox.</li> </ul>
<b>Root Vegetables</b>	<ul style="list-style-type: none"> <li>• The Task Force recommends that the Washington Department of Agriculture request from the Northwest Food Processors Association an analysis of the NWFPA voluntary program regarding it's effectiveness in preventing human exposure to heavy metals in food crops.</li> <li>• The Task Force recommends that information about protective measures should be developed and distributed to home gardeners and local farmer's market growers to help prevent consumption of root crops with elevated concentrations of arsenic and lead.</li> </ul>	<ul style="list-style-type: none"> <li>• Since the NWFPA program is voluntary, they do not collect or summarize participation results. The Washington State Department of Agriculture, Food Safety Division, will request analytical results from the Food and Drug Administration on any recent findings of heavy metals in Washington food crops.</li> <li>• The Chartering Agencies plan to develop and distribute information materials tailored to specific audiences that supplements broadly applicable information materials (See responses in Section 5 above). In the case of home gardeners and local farmer's market growers, the agencies plan to use the Washington State University Agricultural Extension Bulletin 1884 that provides information and recommendations for reducing exposure to lead and arsenic via consumption of root crops</li> </ul>
<b>Section 9: Real Estate Disclosure Recommendations</b>		
<b>Real Property Transfer Disclosure</b>	<ul style="list-style-type: none"> <li>• The Washington Association of Realtors (WAR) is encouraged to work with legislators to enact legislation requiring a real property transfer disclosure statement for open land (in addition to the existing requirements for residential properties).</li> <li>• The Chartering Agencies should work with WAR to encourage the use (on a voluntary basis) of the existing seller's property condition report for open land until such legislation is adopted.</li> </ul>	<ul style="list-style-type: none"> <li>• The Chartering Agencies will encourage efforts by the Washington Association of Realtors to work with the Washington Legislature to establish real property disclosure requirements for open land. In the interim, the agencies will work with the Washington Association of Realtors to encourage voluntary use of the existing seller's property condition report.</li> </ul>
<b>Use of Lead-Based Paint Disclosure Form</b>	<ul style="list-style-type: none"> <li>• The Chartering Agencies should work with and through the WAR to strongly encourage real estate agents to use the lead-based paint</li> </ul>	<ul style="list-style-type: none"> <li>• The Chartering Agencies will work with the Washington Association of Realtors and other organizations to encourage voluntary use of</li> </ul>

<p><b>and EPA Pamphlet</b></p>	<p>disclosure form and EPA pamphlet for all transactions or use similar disclosure documentation where area-wide soil contamination is likely.</p>	<p>the lead-based paint disclosure form or other disclosure documentation where area-wide soil contamination is likely.</p>
<p><b>Information and Training for Real Estate Professionals</b></p>	<ul style="list-style-type: none"> <li>• The Chartering Agencies should encourage and support efforts by WAR to create an education course about area-wide contamination or to incorporate relevant Task Force findings and recommendations into realtor's existing course materials.</li> <li>• The Chartering Agencies should encourage the WAR to draft an article highlighting the Task Force's findings and recommendations for the <i>Washington Realtor</i>.</li> </ul>	<ul style="list-style-type: none"> <li>• The agencies will work with the Washington Association of Realtors to develop materials that can be used in courses and seminars.</li> </ul>
<p><b>Section 10: Application of the Model Toxics Control Act</b></p>		
<p><b>Establish Alternative to Traditional MTCA Site Listing Process</b></p>	<ul style="list-style-type: none"> <li>• Ecology should modify MTCA regulations and policies to establish an alternative to traditional site listing process that involves identifying and describing area-wide zones and not listing individual properties affected by area-wide soil contamination.</li> <li>• Ecology should describe conditions under which an individual property within an area-wide zone would be addressed using the traditional MTCA process.</li> </ul>	<ul style="list-style-type: none"> <li>• Ecology will initiate the process to amend the Model Toxics Control Act regulation to facilitate implementation of the Task Force's recommendations. This includes recommendations on site listing, and enforcement forbearance. Ecology will work closely with Task Force members who were instrumental in preparing the recommendations on the MTCA process. Timing for completing the rulemaking process will be coordinated with the MTCA Science Advisory Board's review of the scientific basis for identifying low-to-moderate levels of arsenic and lead in soil.</li> </ul>
<p><b>Enforcement Forbearance</b></p>	<ul style="list-style-type: none"> <li>• Ecology should establish in regulation a new enforcement forbearance policy that would be made available where property owners choose to implement the Task Force recommendations. Ecology should also maintain the current residential enforcement policy.</li> <li>• To complement the policy, Ecology should establish a standard checklist that can be used to document property status.</li> <li>• Ecology should announce the new policy and checklist when area-wide zones are identified.</li> </ul>	<ul style="list-style-type: none"> <li>• Ecology intends to develop a new enforcement forbearance policy as part of the MTCA rulemaking process described above. As part of this effort, Ecology will also work with others involved in the rulemaking process to develop a checklist or other form that will enable individuals to document property status. This checklist and/or form will be included in the information toolbox. The agencies will also work with others to increase awareness of the policies and checklist as part of broader efforts to increase awareness on this issue.</li> </ul>
<p><b>Streamlined Mechanism to Provide Recognition that a Site is Clean</b></p>	<ul style="list-style-type: none"> <li>• Ecology should provide a streamlined process to acknowledge situations where properties are sampled and concentrations of arsenic and lead are found to be below cleanup levels. This should be made available electronically and by other means.</li> </ul>	<ul style="list-style-type: none"> <li>• Ecology is currently working to finalize sampling guidance for various land use scenarios. As part of that effort, Ecology is also evaluating different ways of providing a mechanism to acknowledge situations where properties are sampled and concentrations of</li> </ul>

		arsenic and lead are below cleanup levels. However, Ecology plans to (1) gain a better understanding of the types and amount of data collected actually being collected by property owners and (2) complete the rulemaking process before proceeding further on this recommendation.
<b>Continue to Apply Traditional MTCA Approach in Certain, Site-Specific Cases</b>	<ul style="list-style-type: none"> <li>Ecology should continue to apply the traditional MTCA approach when a property owner requests agency involvement (e.g. voluntary cleanup program) or site-specific conditions (e.g., ground water contamination, other contaminants, high As/Pb levels) warrant it</li> </ul>	<ul style="list-style-type: none"> <li>Ecology intends to continue to apply the traditional MTCA approach in the situations recommended by the Task Force.</li> </ul>
<b>Section 11: Recommendations for Additional Information Needed</b>		
<b>Monitoring of Arsenic and Lead Exposure</b>	<ul style="list-style-type: none"> <li>Chartering agencies should gather information on the health of Washington residents, particularly children, who may be exposed to elevated levels of arsenic and lead in soil (through blood-lead testing, fluoroscopy, or other appropriate techniques)</li> </ul>	<ul style="list-style-type: none"> <li>Health and Ecology plan to continue/initiate several efforts the might improve our understanding of the relationships between elevated levels of arsenic and lead in soils and the health and exposure of Washington residents. This includes (1) work to maintain and (where possible) expand efforts to monitor blood lead levels in Washington children (2) continue to work together on a federally-funded project evaluating the feasibility of linking environmental data with information on community health status, and (3) explore partnerships with academic institutions on research projects.</li> </ul>
<b>Research on Leaded Gasoline</b>	<ul style="list-style-type: none"> <li>Chartering agencies should conduct research to characterize the location and extent of elevated soil lead levels from past use of leaded gasoline in Washington. Agencies should focus research on public child-use areas in areas where concentrations are likely to be the greatest (i.e., near older, more heavily used roads)</li> </ul>	<ul style="list-style-type: none"> <li>The Agencies do not plan to work on this issue during the next 2 years because other activities are considered to be higher priorities.</li> </ul>
<b>Research on Ecological Risks</b>	<ul style="list-style-type: none"> <li>Ecology should conduct study to evaluate potential ecological impacts of low-to-moderate level arsenic and lead soil contamination and identify where measures beyond the Task Force's recommendations are needed to protect plants and animals</li> </ul>	<ul style="list-style-type: none"> <li>Ecology will work with the Science Advisory Board to review the scientific basis for defining low-to-moderate levels of arsenic and lead. The ecological impacts associated with arsenic and lead will be considered as part of that review.</li> </ul>
<b>Section 12: Cost and Funding Recommendations</b>		
<b>Financial Assistance</b>	<ul style="list-style-type: none"> <li>The Chartering Agencies should provide financial assistance for local government efforts to address area-wide soil contamination (particularly local health agencies).</li> </ul>	<ul style="list-style-type: none"> <li>Ecology has budgeted \$2.8 million to support local agency efforts to address area-wide soil contamination problems during the FY 2003-2005 biennium. These funds will be focused on mapping, public education and child use area assessments and responses in high priority areas identified by the Task Force. These areas include the Tacoma Smelter Plume (Pierce and King counties),</li> </ul>

		<p>Chelan/Douglas, Okanogan, Spokane and Yakima counties.</p> <ul style="list-style-type: none"> <li>• Ecology will also make remedial action funds available to public school and park districts that elect to undertake cleanup measures to address elevated levels of arsenic and lead.</li> </ul>
<p><b>Funding Sources</b></p>	<ul style="list-style-type: none"> <li>• The Chartering Agencies should seek funding from a broad array of Federal, State and private sources including the State and Local Toxics Control Accounts, private foundations, Federal grant programs, the Federal government, the State Legislature and any identified potentially liable parties.</li> </ul>	<ul style="list-style-type: none"> <li>• Ecology will work with the Office of the Attorney General to continue to seek funding from any identified potentially liable parties.</li> <li>• The agencies will continue to seek funding from federal programs to support actions to address area-wide soil contamination.</li> </ul>

# Issues and Challenges Associated with Addressing Areawide Soil Contamination

<b>Potential for Exposure</b>	Over the past 50 years, Washington's population growth has resulted in the conversion of many agricultural and forested areas and other open space into homes, schools or commercial uses. The population has also increased in areas affected by emissions from metal smelters. Population growth and changes in land use have combined to increase the potential that people will be exposed to area-wide soil contamination.
<b>Geographic Scale</b>	Available information indicates that several hundred thousand acres might contain elevated levels of arsenic and lead as a result of historic activities. Consequently, the geographic scale of areawide soil contamination is significantly greater than areas typically addressed by state and federal cleanup programs and includes many individual parcels of land.
<b>Public Health</b>	Numerous studies indicate that exposure to arsenic and lead in the environment can cause many different health problems in people. However, it is difficult to predict how arsenic or lead will affect a given person. Amounts that cause serious health problems for some people may have no effects on others. Small children are of particular concern because they are more likely than others to come into contact with contaminated soil and dust, in addition to being highly vulnerable to the effects of environmental lead.
<b>Ecological Impacts</b>	Numerous laboratory and field studies have found that arsenic and lead can adversely affect certain plant species at soil levels that are similar to levels commonly associated with areawide soil contamination. However, other field studies have documented healthy and thriving plant communities in areas with similar levels of arsenic and lead.
<b>Financial Impacts</b>	There are a number of potential direct and indirect costs associated with the presence of elevated levels of arsenic and lead in soils and/or implementing measures to reduce the potential for exposure. For example, homeowners and land developers who have purchased or built homes in areas with contaminated soils may face increased costs associated with paying for protective measures, reduction in property values, and difficulties in financing or selling homes. Local governments (e.g. school districts, health departments, etc.) may also face increased costs associated with responding to or assisting others to respond to elevated levels of arsenic and lead. Funding these activities is made more difficult by the fact that persons responsible for the contamination are often hard to identify and/or lack sufficient financial resources.
<b>Public Awareness</b>	People are often unaware that soil at their homes, future homes, children's schools, local parks, etc. may contain elevated levels of arsenic or lead. In these situations, they are unable to determine whether to take steps to reduce health or financial impacts.
<b>Fairness</b>	Any combination of measures to address elevated levels of arsenic and lead has the potential to appear unfair to one or more involved parties (e.g. current landowners, future landowners, parties responsible for the contamination, etc.).
<b>Wide Variations in Soil Concentrations</b>	Area-wide contamination does not appear to be distributed in an easily predictable manner. Consequently, site-specific evaluations/soil sampling is the only way to determine conclusively which properties are contaminated and which are not. However, soil testing raises a number of disclosure and liability issues.
<b>Wide Variations in Risk Perception</b>	Washington residents hold a wide range of opinions on the relative significance of the health and environmental risks posed by arsenic and lead. Some people perceive such risks as high while others consider them to be inconsequential. Studies show that people's perceptions on whether a risk is big or small are influenced by several factors including how familiar they are with a risk, how much control they can exercise over the risk, whether children are exposed to the risk, etc.
<b>Scientific Uncertainty</b>	The scientific methods used to investigate health and environmental risks (e.g. toxicology, epidemiology, etc.) are inherently imprecise and, consequently, open to varying interpretations. Some people note that scientists have not provided absolute scientific proof that people in Washington have been or are being harmed by area-wide soil contamination. The lack of such studies is not unique to Washington. However, the vast

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	majority of health and environmental agencies in the United States (including Health and Ecology) now believe that the preponderance of scientific evidence supports the need to take reasonable steps to reduce exposure to arsenic and lead.
<b>Agency Mandates and Responsibilities</b>	The Washington Legislature has passed a number of laws that establish agency mandates and responsibilities that are relevant to addressing areawide soil contamination. For example, several laws direct Ecology and DOH to take steps to protect human health and the environment. (e.g. the Model Toxics Control Act). Federal, state and local laws and ordinances also establish mandates and responsibilities with respect to encouraging economic development, promoting agricultural productivity, providing high-quality public education, etc. Measures to reduce exposure to arsenic and lead must be integrated and coordinated with other local, state and federal government activities.

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