

DEQ Integrated Toxics Reduction Strategy

2018 Update

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DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.



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Table of Contents

Contents

Executive Summary	1
1. Toxics Reduction Strategy Overview	3
1.1 Background.....	3
1.2 Guiding principles.....	4
1.3 Engaging communities with environmental justice concerns	5
1.4 Building on success	6
1.5 Integrated approach	6
1.6 Communicating Effectively with Oregon’s Communities about Toxics.....	7
1.7 Implementation Partnerships.....	7
2. Strategy Actions	8
2.1 Summary of Actions	8
2.1.1 Implementation-ready Actions	8
2.1.2 Program Evaluation and Research Actions	10
2.2 Implementation-Ready Actions	11
Action 1: Update Toxics Focus List.....	11
Action 2: Monitor for Focus List Chemicals in All Appropriate Environmental Media.....	13
Action 3: Reduce Environmental and Human Exposure to Toxics from the Built Environment.....	15
Action 4: Build Demand Clean Diesel Vehicles and Equipment in Public Works Projects.....	16
Action 5: Partner with Product Manufacturers, Vendors, and Users to more fully Evaluate, Disclose, Label and/or Reduce Toxic Ingredients.....	18
Action 6: Expand Government Procurement of Low Toxicity Products and Materials	20
Action 7: Accelerate Safer Chemicals Alternatives Assessments.....	22
Action 8: Develop and Implement a Metals Manufacturing, Coating and Finishing Pollution Prevention Outreach Program	23

2.3 Program Evaluation and Research Actions.....	26
Action 9: Assess Fate and Transport of Focus List Toxics from Consumer Products	26
Action 10: Assess and Characterize Impacts of Diesel Emissions	28
Action 11: Evaluate Effectiveness of Existing Mercury Reduction Programs in Oregon.....	31
Action 12: Evaluate DEQ’s Toxic Use Regulation and Program.....	33
Action 13: Enhance Pesticide Stewardship Partnership (PSP) Program to Focus on Environmental Justice Communities.....	34
Action 14: Provide Toxics Reduction Technical Assistance to All DEQ programs..	36
APPENDIX A: 2012 DEQ Toxics Focus List	38
APPENDIX B: 2012 DEQ Toxics Reduction Strategy Recommended Actions: Accomplishments and Current Status	39
APPENDIX C: Inventory of DEQ Toxics Reduction Programs and Activities.....	44
Air Quality Program Inventory	44
Hazardous Waste Program Inventory	48
Materials Management Program Inventory	49
Cleanup Program Inventory	52
Laboratory and Environmental Assessment Programs Inventory...	53
Water Quality Program Inventory	54

Executive Summary

The Oregon Department of Environmental Quality's 2018 Integrated Toxics Reduction Strategy describes 14 actions to reduce toxic chemicals in Oregon's environment over the next five years. The strategy complements and supports ongoing efforts in DEQ's air, water and land quality programs by improving integration, sharing best practices and filling any identified gaps.

DEQ released its first Toxics Reduction Strategy in 2012. The 2018 strategy builds on and updates the 2012 actions. This document captures the accomplishments and status of the 2012 strategy actions and includes a snapshot of DEQ's agency-wide toxics reduction and assessment activities.

The Strategy describes 14 toxics reduction and assessment actions that are organized into two major categories: (a) implementation-ready and (b) program evaluation and research actions. Resources have been secured and necessary conditions are in place to begin the first phases of work on the implementation-ready actions. Program evaluation actions require the collection and analysis of more information to determine how to most effectively address the identified toxics concern. Resources would also need to be obtained to fully implement possible recommended solutions developed in response to the evaluation's conclusions.

DEQ developed guiding principles to support implementation of the strategy's actions. These principles include an enhanced focus on environmental justice and recommendations for engaging communities that may experience disproportionate impacts from toxics in the environment. Other principles are improving collaboration between DEQ programs and external partners, developing and using metrics to measure and report on progress, creating effective communication pathways with Oregon's communities, and building on advances made through the 2012 strategy actions.

This document describes work identified for the next five years. DEQ will develop implementation plans for each action and reach out to implementing partners as part of that effort.

Figure 1 illustrates how the Integrated Toxics Reduction Strategy relates to DEQ's core air, water and land quality programs that address toxics pollutants.

Figure 1: Integrated Toxics Reduction Strategy and connection to core programs



1. Toxics Reduction Strategy Overview

1.1 Background

In 2009, DEQ determined that an integrated, strategic approach was needed to most effectively reduce toxics in the environment. One of the Oregon Department of Environmental Quality's strategic directions is to "protect Oregonians from toxic pollutants." Individual DEQ programs have responsibility for assessing and regulating certain toxic pollutants generated and released in the state, and DEQ's involvement in managing toxics has increased over the past decade through implementation of federal and state requirements designed to protect specific environmental media (i.e., air, water, land). Along with these increasing responsibilities is the recognition that toxic chemicals and pollutants readily move from one environmental media to another. With support from the Environmental Quality Commission, DEQ embarked on an effort to develop a Toxics Reduction Strategy that prioritized the agency's future toxics reduction work and improved internal and external coordination to reduce toxics in Oregon's environment. This initial strategy was completed in 2012.

Prior to developing the 2012 Toxics Reduction Strategy, DEQ established an initial "Focus List" of priority toxic chemicals to center the agency's strategic actions. DEQ decided to focus on toxic chemicals that most DEQ programs already considered a priority, rather than developing a list from scratch. The Focus List (see Appendix A) was developed by compiling toxic chemical and pollutant priority lists used by existing state or regional programs for regulatory, pollution prevention or monitoring activities. Those chemicals on three or more priority lists for programs in at least two DEQ division (i.e. air, water and land quality) were designated as the initial Focus List chemicals. The chemicals were grouped into the seven categories shown in Appendix A and include 51 chemicals or groups of chemicals (such as PCBs). DEQ's intention was to update the Focus List periodically, based on changes in toxic chemical or pollutant priorities for individual programs.

After DEQ established the Focus List, the agency obtained internal and external input on toxics reduction and assessment needs and priorities. DEQ proposed 25 toxics reduction and assessment actions in the 2012 strategy. The strategy actions were largely collaborative initiatives, focused on reducing multiple Focus List chemicals or chemical classes. The actions were divided into four categories: (1) improving integration and prioritization of toxics reduction activities, (2) enhancing effectiveness of existing toxics reduction efforts, (3) addressing identified toxics reduction needs, and (4) assessing and characterizing toxics in Oregon.

The agency recognized that not all of these actions could be fully implemented in a five-year period, but also understood that external partners could advance some of these actions or assist in securing resources to implement them. To prioritize DEQ's limited resources, five of the 25 actions were designated as short-term implementation priorities. Although the most significant implementation progress was made on

those five actions, several other actions were advanced by DEQ or external partners. A table summarizing the implementation achievements and status of the 2012 strategy actions is in Appendix B.

The scope of the 2018 strategy update was refined to focus on actions with linkages across environmental media programs, thereby improving integration of toxics reduction work within DEQ. This includes actions that emphasize reducing toxic chemicals at the source, which no single program within the agency has sole responsibility for implementing. DEQ maintains its emphasis on reducing toxics at the source whenever possible, and this has become a fundamental element of many programs, even if not specifically described in the recommended actions.

This focus underscores the goal of supporting and complementing DEQ’s “core” toxics reduction and assessment work in air, water and land quality programs. These priorities are:

- Developing, implementing and enforcing permits and rules that limit the release of toxic pollutants
- Providing technical assistance to businesses on toxics source reduction and rule compliance
- Cleaning up contaminated soils and groundwater
- Collecting and safely managing toxic waste materials
- Reducing harmful levels of regulated air toxics
- Monitoring and assessing toxic chemicals in, and their impact on, the environment and human health

A compilation of DEQ’s toxics reduction programs and work activities can be found in Appendix C. To more accurately characterize the intent to focus on program collaboration, the 2018 updated strategy is now titled the DEQ Integrated Toxics Reduction Strategy.

1.2 Guiding principles

DEQ developed guiding principles for all of the recommended actions:

1. Build on the DEQ’s 2012 Toxics Reduction Strategy in all 2018 strategy implementation and decision-making.
2. Prioritize actions with potential to address environmental justice concerns and use best practices to engage communities thought to have disproportionate impacts from toxics.
3. Integrate toxics reduction and assessment activities across all environmental media programs.
4. Effectively communicate with Oregonians about toxics data, impacts and reduction opportunities.
5. Enhance collaboration between DEQ programs and external partners.
6. Develop and use tracking mechanisms to measure and report on progress.
7. Keep the Focus List a “living, breathing document,” including updating it in 2019 and, as needed, in years to come.

Similar to the 2012 strategy, most of the actions in the 2018 update depend on collaboration with other agencies and external entities. In addition, all actions include a description of proposed metrics for ensuring that implementation outcomes can be measured and reported. The new, more enhanced focus on environmental justice in the strategy requires further description. Below is a summary of the ways in which DEQ can engage with communities on environmental justice concerns in the implementation of the Integrated Toxics Reduction Strategy.

1.3 Engaging communities with environmental justice concerns

DEQ is building capacity and expertise to address environmental justice concerns in communities statewide. Recent experience developing air toxics permitting regulations led to the establishment of four steps and practices designed to address environmental justice concerns. These steps will be used or modified as needed when implementing priority actions in the 2018 Integrated Toxics Reduction Strategy.

Step 1. Consider available data on routes, locations, or mechanisms of exposure to Focus List toxins, along with relevant demographic information that could indicate exposures to vulnerable or overburdened communities. Data sources may include EPA’s [EJScreen](#), Environmental Public Health Tracking information, and any monitoring, modeling, regulatory, or other environmental data. Staff can consult with environmental justice resources at DEQ and Oregon Health Authority to help decide what data to use and how.

Step 2. Plan to engage with the exposed overburdened communities in a manner tailored to community needs. Planning should include communicating proposed DEQ toxics reduction and assessment actions, listening to residents’ concerns, and soliciting input on proposed actions. Consider contacting local health agencies, neighborhood associations, and advocacy and environmental justice organizations to help with planning. DEQ can also work with the Oregon Health Authority on engagement best practices and messaging about the potential health and environmental effects of Focus List toxins.

Step 3. Implement the engagement plan, including informing communities about technical, health, and regulatory issues and enabling full discussion and exchange of information and concerns. Determine how to incorporate relevant environmental justice concerns into actions to be taken, or design actions that can track community concerns.

Step 4. Implement actions, incorporating any agreed-upon engagement with and feedback from interested community members.

1.4 Building on success

Multiple actions are intended to build on or modify actions included in the 2012 strategy. For example, there are recommendations to expand government procurement efforts to encompass new product categories and fuel sources, as well as to enhance the Pesticide Stewardship Partnership Program to incorporate a focus on environmental justice communities. The implementation of both of these programs since 2012 resulted in measurable toxics reduction achievements. The related actions in the 2018 strategy update are intended to provide additional strategic focus to the future implementation activities of these programs.

Other 2012 strategy actions are not referenced in the proposed 2018 actions, although some continue to be included in staff work plans and individual DEQ programs. DEQ is not dismissing the importance of these other 2012 strategy actions, but simply not recommending specific modifications to the current direction or focus of those toxics reduction activities. Full implementation of certain 2012 actions did not occur for a variety of reasons, including lack of resources, changes in agency priorities, and insufficient commitment from potential implementing partners. A summary of the status and direction of the 2012 strategy actions can be found in Appendix B.

1.5 Integrated approach

Effective implementation of these 2018 actions will require an integrated approach guided by the DEQ cross-program team. DEQ proposed some actions because of concern about the impacts certain toxic pollutants have on the environment and public health through specific media (air, water, or land). However, implementation of an action can benefit more than one environmental medium. DEQ has chartered a cross-program team to integrate DEQ's toxics reduction work and implement the Integrated Toxics Reduction Strategy. This entails dedicating time in team members' work plans for toxics integration work, which will be supported at all levels of management. DEQ will also explore how to use all appropriate tools (e.g., permitting, monitoring, technical assistance) across DEQ programs to address the impacts of Focus List toxic chemicals in a more integrated way.

Effectively addressing the problem entails working across environmental media to reduce releases of toxic chemicals. For example, reducing diesel emissions is an air-quality priority, but deposition of certain diesel pollutants (such as Polycyclic Aromatic Hydrocarbons) are also priorities for land and water quality. Similarly, reducing toxics in stormwater through source reduction requires moving "upstream" to reduce toxic pollutants from air and land sources that run off into stormwater management systems.

1.6 Communicating Effectively with Oregon's Communities about Toxics

DEQ commits to share more toxics related information with the public and create new tools to make it easier for community members to access this information. This information sharing includes close coordination with the Oregon Health Authority on joint messaging and outreach related to human health effects from exposure to Focus List chemicals. While the agencies currently coordinate on some toxics-related issues, the agencies should continue those efforts while focusing more on chemicals of mutual interest, especially when there are ways to reduce human exposure to those chemicals. There are opportunities in this action to focus on communicating with sensitive populations and disproportionately impacted communities and potentially help individuals take actions to reduce their exposures or to effectively participate in decision making processes related to toxics. To this end, the agencies should reconvene the joint OHA-DEQ information sharing meetings that previously occurred twice a year.

In addition, DEQ will continue to develop tools that increase public access to toxics data and information. There is an opportunity to target priority toxic chemicals in localized and highly impacted areas across air, land and water programs. Data tools, such as the Environmental Data Management System (EDMS), have the capability of providing easily accessible environmental information to the general public. The DEQ lab is currently providing some on-line toxics information in specific areas of the state and for specific toxics. These Internet-based tools will continue to be enhanced and expanded over the next several years.

1.7 Implementation Partnerships

The 2018 DEQ Integrated Toxics Reduction Strategy is analogous to strategic plans developed by individual DEQ programs. New proposed actions in the 2018 strategy update may include initiatives that will involve separate public processes. External organizations or individuals interested in providing input on these proposals will have multiple opportunities to help develop these actions.

Similarly, proposed collaborative actions will require DEQ to engage external partner organizations in securing resource and implementation support before the actions are launched. Although external groups can provide DEQ with informal input on the strategy update prior to or after DEQ presents it to the Environmental Quality Commission, subsequent implementation steps will provide these groups with additional opportunities to help determine how the actions move forward.

DEQ will develop implementation plans for each of the proposed strategy actions that outline the tasks necessary during the five-year strategy update. In some instances, the first two years will involve securing resources or conducting necessary research and analysis prior to full implementation of the action. The implementation plans will be maintained by DEQ project coordinators and will be adjusted based on evolving circumstances and information.

2. Strategy Actions

Each of the 14 2018 Integrated Toxics Reduction Strategy actions are described below and organized by whether they are ready for implementation, or are an evaluation or research action. The summary of each action also provides its rationale and addresses implementation considerations, such as new authorities needed, funding or other resource needs, likely implementation partners, and measures to evaluate effectiveness. These actions are not in priority order. The numbering is for reference.

Section 2.1 summarizes the actions. Sections 2.2 and 2.4 describe the actions in detail, including timing, funding and resourcing.

2.1 Summary of Actions

This section summarizes the actions described in detail in sections 2.2 and 2.3.

2.1.1 Implementation-ready Actions

Actions that are categorized as “implementation-ready” are those for which some staff or other resources have been secured for implementation and the necessary conditions are in place to begin the first phases of work in 2019. Full implementation may occur in multiple phases over the five-year period of this strategy.

Title	Summary Description
<p>1. Update Toxics Focus List</p>	<p>The current cross-program DEQ Focus List of toxic chemicals and pollutants was established through the 2012 Toxics Reduction Strategy. The list needs to be updated to reflect changes in environmental and public health priorities.</p> <p>We will identify chemicals that have been added to specific DEQ program priority lists. We will evaluate and revise, if necessary, the criteria for designating Toxics Focus List chemicals. This evaluation will be based on available environmental monitoring data, as well as existing research and literature about risks to environmental and human health from toxic chemicals. The deliverable will be a revised cross-program Focus List.</p>
<p>2. Monitor for Focus List Chemicals in All Appropriate Environmental Media</p>	<p>Enable DEQ to develop and maintain the necessary analytical methods at the DEQ laboratory to evaluate all focus list chemicals in all applicable environmental media. These media include air, water, sediment, and tissue. This action is continuing from the 2012 Strategy.</p>
<p>3. Reduce Environmental and Human Exposure to Toxics from the Built Environment</p>	<p>In partnership with interested stakeholders, identify opportunities for reducing both human and environmental exposure to focus list chemicals in the built environment. This includes, the design, construction, renovation, use, and demolition of buildings. The choice of construction materials at the design phase is a critical determinant of healthy structures.</p>

Title	Summary Description
4. Build Demand for Clean Diesel Vehicles and Equipment in Public Works Projects	DEQ partners are building a marketplace demand for clean diesel equipment and engines. DEQ will share and build technical expertise related to emissions reduction technologies. This is an enhancement to the 2012 Strategy.
5. Partner with Product Manufacturers, Vendors, and Users to More Fully Evaluate, Disclose, Label and/or Reduce Toxic Ingredients	Work with a wide variety of potential partners to support or require ingredient disclosure and labeling of products, in preparation for toxics reduction work implemented by DEQ or others. Some products, such as packaged food, are already required to disclose their ingredients through labels. This action would extend that concept to other product categories that do not currently require labelling, such as building materials, electronics, clothing, or other products. This action would then use DEQ’s Focus List to identify which ingredients are classified as toxic.
6. Expand Government Procurement of Low Toxicity Products and Materials	This action would expand current initiatives intended to reduce the toxicity of products and materials purchased by Oregon’s state agencies. The expanded purchasing efforts would build on the progress made through the Governor’s Executive Order 12-05 advancing Green Chemistry in Oregon. Primary attention will be on product categories containing Focus List toxic chemicals that are deemed high priority by the Materials Management Program. This action is a continuation of a 2012 Strategy action.
7. Accelerate Safer Chemicals Alternatives Assessments	The 2012 Strategy included an action focused on collaborating with other states in developing guidance on chemical alternatives assessments, and identifying assessment priorities for Focus List toxics. This action builds on the work completed since 2012. A challenge in reducing the toxicity of chemicals used in industries and consumer products is determining which alternatives to priority toxic chemicals are demonstrably less hazardous as well as practically implementable. The field of chemical alternatives assessment is a growing professional discipline that examines the hazard characteristics, exposure potential, economic feasibility and technical performance of various alternatives. DEQ and other state agencies have limited capacity and expertise to conduct these highly technical evaluations. However, DEQ has opportunities to expand collaborations with other states and research entities to accelerate this work. A new federal pollution prevention grant will allow DEQ to build capacity in agencies and businesses in conducting assessments, and perform pilot assessments for priority Focus list chemicals in collaboration with other partners.
8. Develop and Implement a Metals Manufacturing, Coating and Finishing Pollution Prevention Outreach Program	This project builds upon the 2012 Strategy by launching a technical assistance outreach program promoting pollution prevention (P2) for a sector facing new air quality toxics regulations. The goal of the program is to help metal finishing businesses reduce their use, disposal and emissions of toxic chemicals regulated under TSCA, identified on DEQ’s Toxics Strategy Focus List and Cleaner Air Oregon rules. The project will concentrate on businesses located in urban air sheds, where high concentrations of toxic air contaminants present a public health risk. The work will be implemented in two phases. Phase I (Oct 2018 – Dec 31, 2020) focuses on planning and evaluation of P2 outreach methods, developing partnerships, convening an advisory panel of

Title	Summary Description
	industry representatives, and developing a project plan for a P2 outreach strategy to be implemented during Phase II of the project. The second phase will be informed by the relationships and partnerships developed, resources and tools garnered, and data analyzed. This action is an enhancement to the 2012 Toxics Reduction Strategy.

2.1.2 Program Evaluation and Research Actions

The actions in the program evaluation and research category require the collection and analysis of more information or data to determine how to most effectively address the identified toxics concern or problem. In addition, resources also need to be identified and secured to fully implement possible recommended solutions resulting from the evaluation. The evaluation and research phase is expected take one to two years for most actions in this category. Recommendations for possible new or modified program actions may be proposed after the evaluation is complete. These longer term implementation actions are most likely to begin during the third or fourth year of the five-year period of this strategy update, although some may begin at the outset of the next strategy update.

Title	Summary Description
9. Assess Fate and Transport of Focus List Toxics from Consumer Products	This project addresses the question of whether focus list chemicals in common consumer and business products are being released into the environment through wastewater and solid waste systems and how they accumulate in bio-solids, air, surface water, solid waste and groundwater. The first phase will compile and review literature and data to evaluate the current level of knowledge about the fate and transport of Focus List chemicals entering wastewater and solid waste systems. This includes studies within and outside of Oregon. Based on this research, the next phases of this project could entail pursuing partnerships for pilot monitoring of wastewater and solid waste pollutant streams in Oregon, followed by potential pollution prevention outreach (longer term implementation).
10. Assess and Characterize Impacts of Diesel Emissions	Evaluate the results of two funded, short-term assessment projects: (1) Emissions inventory of non-road diesel emissions and (2) community-scale monitoring for diesel particulate. The purpose of this evaluation is to determine the most effective long-term approach(es) for comprehensively assessing diesel pollutants in Oregon’s environment, as well as the public health and ecological impacts of those pollutants. DEQ’s cross-program toxics team will collaborate with the agency’s Air Quality Program to conduct this evaluation and recommend long-term assessment actions that could inform the design and implementation multiple DEQ and Oregon Health Authority toxics reduction programs.
11. Evaluate Effectiveness of Existing Mercury Reduction Programs in Oregon	Evaluate existing DEQ mercury reduction programs for their current effectiveness, and identify any gaps or additional program needs. DEQ and partners have implemented numerous mercury reduction efforts over the past 25 years, including some statutory mandates. The results of this evaluation

	may result in proposals to enhance existing programs or develop new initiatives to address identified gaps.
12. Evaluate DEQ’s Toxic Use Regulation and Program	Evaluate Oregon’s Toxic Use and Hazardous Waste Reduction Act and program to identify opportunities to further reduce toxics use and modernize the program. The Materials Management in Oregon: 2050 Vision and Framework serves as the guiding framework for future recommendations.
13. Pesticide Stewardship Partnership (PSP) Program to Focus on Environmental Justice Communities	The 2012 Strategy proposed expanding and enhancing the Oregon Pesticide Stewardship Program. This objective was achieved in 2013 when the program received state funding from the Legislature for the first time. The Oregon Inter-Agency Water Quality Pesticide Management Team identifies the current and future needs for monitoring and stewardship activities. Environmental justice (EJ) considerations have been one element of the Team’s process for selecting new watersheds for the PSP Program. This action will involve DEQ developing a proposal to the Pesticide Management Team to enhance and update the EJ criteria and the weight that the Team places on those criteria. This proposal will also consider how local partners in existing PSP watersheds could tailor stewardship outreach and technical assistance activities to support EJ communities and populations. This enhancement builds on the existing PSP program.
14. Provide Toxics Reduction Technical Assistance to All DEQ Programs	Identify and formalize a cross-program, technical assistance team to provide toxics information, support, tools, training and other resources to DEQ programs and partners. DEQ’s Team Toxics will facilitate the development of this technical assistance team and coordinate its work. Areas of opportunity include, but are not limited to, toxics pollution prevention training; chemical hazard and alternatives assessment support and training; permitting and regulatory program support; and coordinating program responses to emerging chemicals of concern. Other partnership opportunities will be identified by the formalized team.

2.2 Implementation-Ready Actions

Section 2.2 describes Implementation-ready actions in detail.

Action 1. Update Toxics Focus List	
<i>Focus List Chemicals Addressed</i>	All Focus List chemicals
<i>Description of Proposed Action</i>	The Focus List is the primary set of toxic chemicals and pollutants that are addressed by DEQ Toxics Reduction Strategy actions. The 2012 Focus List was developed using existing priority toxics lists that DEQ

Action 1. Update Toxics Focus List	
	<p>programs developed or used for regulatory, monitoring or pollution prevention purposes. All chemicals included on any of these program lists were included on the toxics “Base List.” The current (2012) Focus List is comprised of toxic chemicals on the Base List that were designated as a priority by at least three programs or sub-programs within at least two environmental media (air, water, land) divisions. The list needs to be updated to reflect changes in environmental and public health priorities. This action is to update the Focus List in 2019 after the Cleaner Air Oregon rulemaking is completed, as a number of additional priority air toxics could be identified that will inform the Focus List. The action entails these two primary tasks:</p> <ul style="list-style-type: none"> • Identify chemicals that have been added to specific DEQ program priority lists. • Evaluate, and revise if necessary, the criteria for designating Toxics Focus List chemicals. This evaluation would be based on available environmental monitoring data, as well as existing research and literature about risks to environmental and human health from toxic chemicals. <p>If DEQ determines that the 2012 Focus List criteria are inadequate to address toxic chemicals that pose potentially high risks to Oregon’s environment and public health, new criteria will be proposed. This could occur if DEQ’s underlying program priority lists have not been updated to reflect current toxic chemical risks. Further, some chemicals may be removed from the Focus List because of reduced risks (e.g., non-persistent pesticides that have been phased out by EPA or industry action).</p>
<i>Rationale</i>	<p>An updated Focus List is essential to ensuring that DEQ’s Toxics Reduction Strategy addresses the chemicals and pollutants that pose the greatest risks to Oregon’s air, water, land and people. Using an outdated list as the basis for tailoring Strategy actions could result in missed opportunities to reduce emerging toxic chemical impacts before they become “legacy” problems for the state. Alternatively, calling attention to chemicals no longer posing risks would result in the ineffective allocation of agency resources.</p> <p>The Focus List is also used by other stakeholders to inform their toxics reduction efforts. For instance, large retail businesses on the Interstate Chemicals Clearinghouse (IC2) council have indicated that state chemical priority lists are useful for their supply chain regulatory and outreach programs. Thus, an updated list has relevance beyond Oregon’s border, elevating the importance of having a list that accurately reflects the highest toxic chemical priorities in Oregon.</p>
<i>Lead Implementing Agency(s)</i>	DEQ
<i>Implementation Considerations</i>	

Action 1. Update Toxics Focus List	
<i>Authorities</i>	No new authorities needed.
<i>Funding/Resources/Timing</i>	This action will be implemented with existing resources, and facilitated by DEQ’s internal Team Toxics and the agency’s toxics coordinator. This action will begin in early 2019 and be completed by January 2020.
<i>Partner Participation</i>	If DEQ determines new Focus List criteria are necessary, it will gather information and data from other organizations, such as U.S. Geological Survey, Environmental Protection Agency, and other federal agencies, Oregon state agencies (e.g., Oregon Health Authority), and university research institutions, and interstate and regional chemicals assessment organizations.
<i>Effectiveness Measures</i>	<p>The outcomes of this action are:</p> <ol style="list-style-type: none"> 1. A revised Focus List that represents the chemicals of that pose the greatest potential current risks to Oregon’s environment and people <u>Metric:</u> Environmental or programmatic impact reductions for all chemicals on the Focus List can be measured through decreasing trends in concentrations, loading and occurrence in various environmental media 2. Chemicals on the Focus List are detected in Oregon’s environment, or national or international research confirms that the chemicals are consistently detected in pollution sources (e.g., municipal wastewater or solid waste) comparable to those in Oregon. <u>Metric:</u> Monitoring data and documented research findings.

Action 2: Monitor for Focus List Chemicals in All Appropriate Environmental Media	
<i>Focus List Chemicals Addressed</i>	All Focus-List Toxics
<i>Description of Proposed Action</i>	This action would enable DEQ to develop and maintain the necessary analytical methods at the DEQ laboratory to evaluate all focus list chemicals in all applicable environmental media. These media include air, water, sediment, and tissue. Focus list chemicals will be evaluated based on information concerning chemical class, sources and expected partitioning and then monitored in appropriate media. This action is continuing from the 2012 strategy and will continue to occur as the focus list evolves.

Action 2: Monitor for Focus List Chemicals in All Appropriate Environmental Media	
<i>Rationale</i>	<p>This project will enable DEQ to evaluate the occurrence and extent of the focus list chemicals in Oregon’s environment. Currently data do not exist for all chemicals or all associated environmental media so the extent of the problem is not defined. However, based on the ubiquitous use of many of the focus list chemicals, the varied modes of transport into the environment and Oregon’s ever growing population centers, the problem is likely a statewide issue.</p> <p>A risk of not completing this project relates to other priority actions that involve environmental data collection on focus list chemicals. Without the methods to evaluate all focus list chemicals, the efforts under these other actions will be limited to our existing capabilities.</p>
<i>Lead Implementing Agency(s)</i>	DEQ
<i>Implementation Considerations</i>	
<i>Authorities</i>	<ul style="list-style-type: none"> • DEQ currently operates an environmental laboratory with capability to analyze water, air and land samples. The laboratory has equipment and personnel currently to monitor many of the focus list chemicals and also has the expertise to bring new methods on-line for other chemicals. • This project aligns with DEQ’s mission to be a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water. Evaluation of the focus list chemicals requires emerging technology and methods. • DEQ has the existing authority to implement this project. This work could fall into the existing Toxics Monitoring Program
<i>Funding/Resources/Timing</i>	<p>To complete this work, additional resources are required. The laboratory currently has the expertise to develop the methods, however, all staff are currently dedicated to existing work. In addition, since some of the focus list chemicals are unique and analytically difficult, new instrumentation may be required. In the most recent legislature cycle, the air program received additional monitoring funding, but the remainder of the existing toxics monitoring effort was potentially reduced. If these cuts come to fruition, this will farther reduce the availability of staff to pursue this project. The work under this action is on-going, however, completion of this action and expansion of laboratory capabilities is directly related to funding of toxics monitoring efforts at DEQ. Therefore, timing will be affected by budgetary considerations.</p> <p>One toxic monitoring method has funding; a diesel monitoring grant provides resources working in partnership with Reed College and Portland State University to monitor/characterize a previously un-monitorable pollutant – diesel exhaust. This would use new analytical methods such as positive matrix factorization and particle sizing to understand the complex mixture of diesel components. This project is described in Action 10.</p>

Action 2: Monitor for Focus List Chemicals in All Appropriate Environmental Media	
<i>Partner Participation</i>	External stakeholders include the public as more information about toxics in their communities becomes available. In addition, the capabilities developed will provide data to external parties such as OHA to use for environmental health evaluations such as fish consumption advisories.
<i>Effectiveness Measures</i>	The outcomes of this action are: <ol style="list-style-type: none"> 1. Success in funding the efforts necessary to expand the analytical capacity of the lab 2. Use of the new analytical methods on focus list toxins previously not monitored in various media.

Action 3: Reduce Environmental and Human Exposure to Toxics from the Built Environment	
<i>Focus List Chemicals Addressed</i>	Metals (with a focus on lead), VOCs, PCBs, PAHs, phthalates and triclosan. Asbestos is also a concern though not currently on the focus list.
<i>Description of Proposed Action</i>	In partnership with interested stakeholders, identify opportunities for reducing both human and environmental exposure to focus list chemicals in the built environment. This includes the design, construction, renovation, use, and demolition of buildings. The choice of construction materials at the design phase is a critical determinant of healthy structures. The construction process uses diesel-based heavy machinery, sealants, and finishes that all may pose adverse environmental and human health effects during the construction process. The use of the building and choice of materials may expose the building occupants to VOCs, flame retardants, and other toxic substances. Finally, the demolition of buildings poses risks to the surrounding areas primarily related to the dispersion of lead and asbestos. Buildings are long lasting and the choices we make during construction and use have implications for many decades. Additionally, the choices we made many decades ago have consequences during the demolition of buildings today. Considering that people spend 90% of their time inside buildings, this is a broad action meant to capture the wide range of impacts buildings can have on both on the environment and occupants.
<i>Rationale</i>	The initial focus of this action will be to control lead (Pb) dispersion from residential demolitions and evaluate options to limit the reuse of lead painted buildings materials. Current regulations require extensive training, certification, and controls when disturbing more than 1 square foot of lead based paint. However,

Action 3: Reduce Environmental and Human Exposure to Toxics from the Built Environment	
	<p>whole building demolitions are entirely exempt from lead containment practices. Lead is known to travel up to 400 ft from demolition sites in concentrations potentially harmful to children.</p> <p>The broader context of this action is focused on the environmental and human health impacts of building construction, use and demolition. Most Americans spend up to 90% of their time in buildings and building materials constitute between 20-30% of Oregon’s waste stream annually. Overall, the production, use, and disposal of building materials constitutes a substantial portion of the material flows in Oregon and thus provides an opportunity to reduce the environmental and human health toxic exposures caused by buildings.</p>
<i>Lead Implementing Agency(s)</i>	OHA, DEQ, Construction Contractors Board, Building Codes Division
<i>Implementation Considerations</i>	
<i>Authorities</i>	SB 871 (2017 session) provided the authority to local governments to require best practices to control lead dispersion during demolition activities. It will also require contractors performing demolitions on homes constructed prior to 1978 to become certified under EPA’s Renovation Repair and Painting rule, which is implemented by OHA. SB 871 also directs OHA with help from DEQ and CCB to develop a list of best practices for the demolition.
<i>Funding/Resources/Timing</i>	<p>DEQ’s Materials Management program has both staff time and funding to help develop demolition best practices directed by SB 871. DEQ also has the staff time to evaluate strategies to limit the reuse of lead painted building materials. Both of these activities will happen within the first 24 months after the strategy is updated.</p> <p>Any regulatory approach would require additional new funding and staff.</p>
<i>Partner Participation</i>	OHA, CCB, Occupational Safety and Health Administration, local county health departments, Oregon Home Builders Association
<i>Effectiveness Measures</i>	<p>Success can be tracked by how many municipalities adopt lead dust containment requirements in their demolition permits.</p> <p>Measuring the effectiveness of other measures under this action will depend on the focus of the measure.</p>

Action 4: Build Demand Clean Diesel Vehicles and Equipment in Public Works Projects	
<i>Focus List Chemicals Addressed</i>	Benzene; anthracene, chrysene, benz(a)anthracene, benzo(a)pyrene, fluoranthene, pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)anthracene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene,

Action 4: Build Demand Clean Diesel Vehicles and Equipment in Public Works Projects	
	phenanthrene, acenaphthene, acenaphthylene, benzo(j)fluoranthene, fluorine, and other PAHs; chromium; copper; lead; and manganese.
<i>Description of Proposed Action</i>	<p>DEQ partners are building a marketplace demand for clean diesel equipment and engines. A workgroup, including staff from the city of Portland, the Port of Portland, Metro, Multnomah County and Clackamas County, is drafting a proposal to incorporate clean diesel as a specification in public works projects. A significant barrier the workgroup has encountered is answering the simple question of whether a truck or a piece of equipment meets a “clean diesel” performance standard. This does not require tailpipe testing, but rather looking carefully at the vehicle or equipment to determine the emission standard the engine is certified to. For project managers on local public works projects, this process can become a barrier to implementing clean diesel construction specifications.</p> <p>This action would be support for partners who are building a marketplace demand for low-emissions equipment and engines by developing tools and systems to identify and characterize diesel engine fleets. DEQ’s role in this action item is to share and build technical expertise relating to evaluating the emissions profile of various tiers and types of equipment and emissions reduction technologies. This is an enhancement to the 2012 Toxics Reduction Strategy.</p>
<i>Rationale</i>	<p>Diesel pollution impacts to air, land and water from legacy engines currently are not being adequately addressed. These engines emit a complex mixture of gases and particles and have been, until recent years, relatively uncontrolled for emissions as compared to gasoline vehicles. Diesel particulate matter in diesel exhaust causes a myriad of health effects including lung cancer, asthma, bronchitis, neurological disorders and other effects occur.</p> <p>Decreasing diesel emissions will also decrease or prevent cross-media impacts such as the deposition of diesel particulate matter and its toxic components into other media, including soil in gardens and agricultural crops, where human and ecological receptors come into contact with the toxins through incidental ingestion or dermal absorption. A number of the PAHs in diesel exhaust are known to be carcinogenic and also mutagenic, which means exposure to these PAHs during early life (in any medium) results in more-potent cancer and health impacts to the people being exposed. Diesel components, including PAHs, can migrate to water bodies as run-off from land surface, or from the air itself, and can then be taken up into the tissues of fish – which are then caught and eaten by humans.</p> <p>Recent rapid die-offs of Coho salmon are related to road runoff from vehicle emissions, which includes diesel particulates, PAHs and other associated chemicals (Oregonian, Oct. 22, 2017). Ecological impacts from these types of toxins are widespread and significant, including pH changes in water when diesel is introduced, making some metals more</p>

Action 4: Build Demand Clean Diesel Vehicles and Equipment in Public Works Projects	
	<p>available to aquatic biota as well as directly impacting the health of aquatic organisms. Over 90 stream miles in the Lower Columbia and Lower Willamette Basins in Oregon are listed as impaired for PAHs. Black carbon, a major constituent of diesel particulate, is implicated as the second largest human influence on climate change. One expression of that impact is deposition on glaciers, accelerating snow melt and changing surface albedo, which alters the timing of spring freshets and longer term water availability, an effect already documented in the Oregon Cascades. This results in an adverse impact on water quality standards.</p> <p>The 2007 Legislature directed DEQ to reduce the cancer risk from diesel emissions to one in a million by 2017. DEQ and partner efforts to-date have reduced less than 2% of the emission reduction needed for the state’s risk reduction target. Progress is insufficient, although efforts to date have been effective, delivering health and welfare benefits exceeding costs. The dollar value of the downstream health and environmental costs from exposure to diesel exhaust from older engines is estimated at \$4.80 per gallon of fuel consumed.</p> <p>The state will be receiving \$73 million from the Volkswagen settlement fund to replace on-road engines, but very little of that is likely to be available for non-road engines like those found in construction equipment under the terms of the decree.</p>
<i>Lead Implementing Agency(s)</i>	DEQ, City of Portland, Port of Portland, Metro, Multnomah County and Clackamas County
<i>Implementation Considerations</i>	
<i>Authorities</i>	No new rules or authorities needed.
<i>Funding/Resources/Timing</i>	This action will be implemented using existing resources, and project planning will begin in the spring or summer 2019.
<i>Partner Participation</i>	City of Portland, Port of Portland, Metro, Multnomah County and Clackamas County
<i>Effectiveness Measures</i>	Tracking activity reports by contractors; Number and volume of public works projects subject to clean diesel specifications

Action 5: Partner with Product Manufacturers, Vendors, and Users to more fully Evaluate, Disclose, Label and/or Reduce Toxic Ingredients	
<i>Focus List Chemicals Addressed</i>	Potentially all chemical categories.

Action 5: Partner with Product Manufacturers, Vendors, and Users to more fully Evaluate, Disclose, Label and/or Reduce Toxic Ingredients	
<i>Description of Proposed Action</i>	<p>Work with a wide variety of potential partners to support or require ingredient disclosure and labeling of products, in preparation for toxics work implemented by DEQ or others. Some products, such as packaged food, are already required to disclose their ingredients through labels. This action would extend that concept to other product categories that do not currently require labelling, such as building materials, electronics, clothing, or other products. This action would then use DEQ’s Focus List to identify which ingredients are classified as toxic. Tools such as alternative assessments can be used to reduce or eliminate the toxic component of the product.</p> <p>Early initiatives could include but are not limited to:</p> <ul style="list-style-type: none"> • Engaging directly with Oregon manufacturers to provide financial and technical support for ingredient disclosure. • Using state procurement leverage, request or require certain products to disclose, label and reduce toxic ingredients. Building products are a likely choice given the movement in the industry driven by building rating systems like LEEDv4 and ingredient disclosure programs like the Health Product Declaration (HPD) and Declare. • Conduct or commission an alternatives assessment for a specific industry and/or product. Work to get alternatives adopted by businesses. <p>This action is not a continuation of on-going 2012 strategy work, but does overlap with elements of two proposed 2012 strategy actions (N-1 and N-7) that weren’t implemented.</p>
<i>Rationale</i>	<p>Products and materials can be significant sources of certain Focus List chemicals. The lack of basic ingredient labelling for all products creates large gaps of knowledge on the risks of certain products or materials. Without this information being disclosed, the ability to develop effective and comprehensive pollution prevention responses is severely limited. Oregon cannot change national manufacturing trends independently, but can play a contributing role in influencing supply-side changes, especially in concert with other states and EPA.</p> <p>A recent example of a similar action is the Toxics Free Kids Act of 2015, which requires all manufacturers of children’s products to measure, disclose, and phase out 66 chemicals of concern for children’s health. The manufacturer reporting for this Act begins in 2018, which provides for a good opportunity to learn and adapt from the successes and challenges of an existing program.</p>
<i>Lead Implementing Agency(s)</i>	DEQ and/or OHA
<i>Implementation Considerations</i>	

Action 5: Partner with Product Manufacturers, Vendors, and Users to more fully Evaluate, Disclose, Label and/or Reduce Toxic Ingredients	
<i>Authorities</i>	No new additional authorities needed for voluntary, collaborative work with EPA, other states, and suppliers and manufacturers. State procurement related activities would also not require new authority. New statutory authority would be required for any mandated chemical information disclosure recommendation.
<i>Funding/Resources/Timing</i>	A focused voluntary effort with industries or retailers will not need additional resources and can be completed with the existing Materials Management staff. However, the implementation of some recommended options for increasing information disclosure would likely require additional staff resources, most notably any option involving mandates. Early initiative projects have some staff resources and will begin within the first 24 months of updating the strategy.
<i>Partner Participation</i>	OHA, local governments, product manufacturers, EPA.
<i>Effectiveness Measures</i>	Disclosure is an interim step needed to refine and improve monitoring and pollution prevention actions. Ultimately, environmental, product level, or human bio-monitoring of Focus List chemicals that are addressed by these initiatives will provide a general indication of whether the actions are effective over time. A more immediate program measure would be the level of information disclosure achieved (e.g., number of products) relative to the priorities originally identified.

Action 6: Expand Government Procurement of Low Toxicity Products and Materials	
<i>Focus List Chemicals Addressed</i>	All Focus List chemicals
<i>Description of Proposed Action</i>	This action would expand current initiatives intended to reduce the toxicity of products and materials purchased by Oregon’s state agencies. The expanded purchasing efforts would build on the progress made through the Governor’s Executive Order 12-05 advancing Green Chemistry in Oregon. Primarily attention will be on product categories containing Focus List chemicals that are deemed high priority by the Materials Management Program. In addition, DEQ will coordinate with DAS and the Governor’s Office in exploring opportunities for expanding the state procurement of less polluting alternative fuels. This action is a continuation of a 2012 Toxics Reduction Strategy action.
<i>Rationale</i>	Several Focus List toxic chemicals detected in the environment are contained within ubiquitous products and materials purchased by individual consumers, businesses and institutions. State and local

Action 6: Expand Government Procurement of Low Toxicity Products and Materials	
	governments are institutions that possess significant purchasing power, which can be used to create more market demand for lower toxicity products and materials. This increased demand can lead to increased market supply of, and lower prices for, those products. The procurement actions initiated under the 2012 Executive Order have demonstrated that low toxicity specifications can be met by suppliers and represent millions of dollars in purchasing power.
<i>Lead Implementing Agency(s)</i>	Department of Administrative Services, with support from DEQ.
<i>Implementation Considerations</i>	
<i>Authorities</i>	Executive Order 12-05, which directs DAS and DEQ to develop low toxicity purchasing guidelines. Additional authorities may be pursued to initiate clean diesel and electric vehicle procurement programs.
<i>Funding/Resources/Timing</i>	The Materials Management Program hired a staff person to work with DAS and other agencies to advance sustainable institutional procurement, including low toxicity products and materials. In addition, DAS recently hired a Sustainability Coordinator who can provide additional coordination and support for the agency’s environmental procurement programs. Work related to this action is ongoing and a core component of the recently hired DEQ staff member.
<i>Partner Participation</i>	DAS has demonstrated commitment to developing and implementing low toxicity procurement specifications and guidelines since the issuance of Executive Order 12-05. Also, local governments and school districts can purchase products and materials through DAS price agreements. Many local governments have been strong supporters of environmental preferable purchasing efforts, and helped to increase the percentage of third party certified janitorial supplies purchased as part of a contract implemented under the executive order.
<i>Effectiveness Measures</i>	<p>The outcomes of this action are:</p> <ol style="list-style-type: none"> 1. Increased number of product or materials categories with low toxicity state purchasing specifications. <u>Metric:</u> Total number of state price agreements with low toxicity specifications 2. Increased state and local government purchases of low toxicity products and materials that meet specifications under individual state price agreements. <u>Metric:</u> Increase in total value of low toxicity products and materials purchased under individual state price agreements (and decreased total value of higher toxicity products and materials

Action 7: Accelerate Safer Chemicals Alternatives Assessments	
<i>Focus List Chemicals Addressed</i>	All Focus List Chemicals
<i>Description of Proposed Action</i>	<p>The 2012 Strategy included an action related to working with other states to develop guidance on chemical alternatives assessments, and to identify assessment priorities for Focus List toxics. In 2014, the Interstate Chemicals Clearinghouse (of which DEQ is a founding member), published an alternatives assessment guide to assessed to help governments and businesses conduct comprehensive assessments. This proposed action builds on the work completed over the past four years, with the assistance of an EPA Pollution Prevention grant. These grant funds will allow DEQ to help build the knowledge base on chemical alternatives assessment in two ways:</p> <ol style="list-style-type: none"> (1) Conduct alternatives assessment trainings for government agency staff and Oregon businesses. These trainings will address the needs related to new regulatory requirements (see below under <i>Rationale</i>), as well as helping to build general knowledge on assessment principles and methodologies. (2) Work with technical contractor to perform assessment research and analysis for priority Focus list chemicals in collaboration with other partners. The outputs of this work will help to advance informed substitutions in products and industrial processes. <p>In addition to coordinating with other states through the Interstate Chemicals Clearinghouse (IC2), DEQ’s director recently signed a revised Memorandum of Understanding (MOU) with other West Coast state environmental agencies to work together on safer chemicals and products. Under this MOU, there are opportunities to leverage resources to align the priority alternatives assessment work of all three states, and make further advancements in identifying safer chemicals.</p>
<i>Rationale</i>	<p>One of the primary challenges associated with reducing the toxicity of chemicals used in industries and consumer products is determining which alternatives to priority toxic chemicals are demonstrably less hazardous as well as practically implementable. Regulatory or market drivers can result in regrettable chemical substitutions of priority toxics when replacement chemicals are later determined to pose health or environmental hazards that are equally as problematic. Thorough chemical hazard and alternatives assessments are needed to make informed substitutions that ensure products and processes are truly safer.</p> <p>The field of chemical alternatives assessment is a growing professional discipline, but DEQ and other state agencies have limited capacity and expertise to conduct these highly technical evaluations that examine the hazard characteristics, exposure potential, economic feasibility and technical performance of various alternatives. However, DEQ has new opportunities to expand collaborations with other states and research</p>

Action 7: Accelerate Safer Chemicals Alternatives Assessments	
	<p>entities to accelerate this work. In addition, Oregon has relatively new regulatory drivers for increasing alternatives assessment capacity. The 2015 Toxics-Free Kids Act requires manufacturers of children’s products to submit an alternative assessment to the Oregon Health Authority if they want a waiver from chemical phase-out requirements in the law. Similarly, new Cleaner Air Oregon industrial toxics emissions rules include a pollution prevention analysis requirement for sources meeting specified criteria. Chemical alternatives assessment is a component of a broader pollution prevention analysis. Replacing a highly toxic chemical in an industrial process may also reduce the regulatory burden of facilities under the CAO program.</p>
<i>Lead Implementing Agency(s)</i>	DEQ
<i>Implementation Considerations</i>	
<i>Authorities</i>	No new authorities needed.
<i>Funding/Resources/Timing</i>	EPA Pollution Prevention Grant Funds will support implementation of action. Also included as task in agency toxics coordinator’s work plan. Possible contributions from Hazardous Waste and Materials Management staff will be dependent on future revisions to staff work plans. This work will begin in early 2019 and continue through at least December 2020 when the EPA grant ends.
<i>Partner Participation</i>	OHA, other states and state associations, municipal wastewater and stormwater utilities, industry representatives.
<i>Effectiveness Measures</i>	<p>Programmatic metrics include:</p> <ul style="list-style-type: none"> • Completed trainings and survey results from trainings • Completed alternatives assessment research and analysis results for priority chemicals <p>Environmental outcome metrics include:</p> <ul style="list-style-type: none"> • Implementation of alternatives assessment results by entities participating in trainings (i.e., adoption of alternatives) • Adoption of alternatives by entities using the findings of the alternatives assessment research and analysis reports completed by contractor(s).

Action 8: Develop and Implement a Metals Manufacturing, Coating and Finishing Pollution Prevention Outreach Program

Action 8: Develop and Implement a Metals Manufacturing, Coating and Finishing Pollution Prevention Outreach Program	
<i>Focus List Chemicals Addressed</i>	Focus List Metals and Volatile Organic Compounds
<i>Description of Proposed Action</i>	<p>This project builds upon the 2012 Strategy by launching a technical assistance outreach program promoting pollution prevention (P2) for a sector facing new air quality toxics regulations.</p> <p>The goal of the program is to help metal finishing reduce their use, disposal and emissions of toxic chemicals regulated under TSCA, identified on DEQ’s Toxics Strategy Focus List and Cleaner Air Oregon rules. The project will concentrate on businesses located in urban air sheds, where high concentrations of toxic air contaminants present a public health risk. The project work will be implemented in two phases. DEQ recently obtained EPA P2 grant funds to begin Phase I of this project, a planning and evaluation project to be implemented October 2018 through December 2020, during which DEQ will evaluate P2 outreach methods, developing partnerships, convening an advisory panel of industry representatives, and developing a project plan for a P2 outreach strategy to be implemented during Phase II of the project. The second phase will be informed by the relationships and partnerships developed, resources and tools garnered, and data analyzed. This action is an enhancement to the 2012 Toxics Reduction Strategy.</p>
<i>Rationale</i>	Data shows that manufacturers who use toxic metals and surface coaters who use toxic organic compounds create emissions that can directly impact the environment and human health. Small to mid-size businesses often do not have emission thresholds that require permitting, yet emit toxic pollutants to the air. Some businesses in compliance with air permits and applicable regulations, emit air toxics that could be further reduced through pollution prevention and additional control technologies. This action would provide incentives for businesses to participate in toxics reduction activities to reduce use and emissions of Toxic Focus List chemicals.
<i>Lead Implementing Agency(s)</i>	DEQ, including hazardous waste, air quality and materials management programs, with potential partnering agencies/organizations to include PPRC, TURI, OMEP, EPA, and local government.
<i>Implementation Considerations</i>	
<i>Authorities</i>	DEQ has the authority to coordinate between local, regional and state agencies and organizations as well as to share environmental information with the public.
<i>Funding/Resources/Timing</i>	Phase 1 of this project is funded through an EPA P2 grant and goes from July 2018 through December 2020. Completion of Phase 2 implementation work requires additional resources.
<i>Partner Participation</i>	Potential partners include: Pollution Prevention Resource Center (PPRC), Toxics Use Reduction Institute (TURI), Oregon Manufacturing

Action 8: Develop and Implement a Metals Manufacturing, Coating and Finishing Pollution Prevention Outreach Program	
	Extension Program (OMEP), industry associations and local government.
<i>Effectiveness Measures</i>	<p>Implementation will occur in Phase 2 of this project. The Phase 1 project plan will identify environmental metrics for evaluation of reduction activities implemented during Phase 2. The Phase 1 research project will include the following deliverables:</p> <ol style="list-style-type: none"> 1. Assessment of current levels of chemical use, emissions and risk factors (e.g., environmental justice, air quality) within the identified sector(s). 2. Identification of high priority sector(s) within the metal finishing/manufacturing industry, core processes and chemicals to target for source reduction, and research summary of opportunities and tools to inform the scope and strategy for implementation of the Phase 2 Metals Sector P2 Outreach initiative. 3. Evaluation and input on industry readiness and willingness to support a certification-based or other incentives-based P2 outreach initiative. 4. Project plan identifying partners, resources, roles, and tools, within a defined scope of service and selected sectors/ processes for Phase 2 Metals Sector P2 Outreach implementation.

2.3 Program Evaluation and Research Actions

Section 2.3 describes program evaluation and research actions in detail.

Action 9: Assess Fate and Transport of Focus List Toxics from Consumer Products	
<i>Focus List Chemicals Addressed</i>	All Focus-List Toxics
<i>Description of Proposed Action</i>	<p>This project addresses the question of whether focus list chemicals in common consumer and business products are being released into the environment through wastewater and solid waste systems and how they accumulate in in bio-solids, air, surface water, solid waste and groundwater.</p> <p>This project would proceed in a stepwise manner, with information data and information assessed at each step to determine if subsequent tasks are necessary to answer the study questions. These steps are the following:</p> <ol style="list-style-type: none"> (1) Compile and review literature and data to evaluate the current level of knowledge about the fate and transport of Focus List chemicals entering wastewater and solid waste systems. This includes studies within and outside of Oregon. (2) If data gaps exist, collaborate with local governments and other partners (including public and private partners) to design pilot study(s) that monitors for relevant Focus List chemicals in the following pollutant streams: <ol style="list-style-type: none"> (a) Wastewater – assess influent, biosolids, air¹, and effluent as needed² (b) Solid waste – assess landfill leachate, compost, anaerobic digestion waste, recycling and by-products from energy recovery burners (3) Based on results of Task 1 and (if necessary) Task 2, use the data findings to develop “upstream” pollution prevention programs, including focused education and technical assistance and future chemicals policies. These pollution prevention actions could

¹ Volatilization of chemicals to the air may be determined through mass balance calculations (influent losses not in effluent or biosolids) rather than direct measurements.

² The data compilation in Step 1 may provide sufficient data for one pathway, but not others. A pilot monitoring study would be designed to fill only the identified data gaps.

Action 9: Assess Fate and Transport of Focus List Toxics from Consumer Products	
	encompass multiple chemicals or classes of chemicals, or be directed at individual chemicals and products with those chemicals. This action is not a continuation of on-going 2012 strategy activity, but does overlap with a proposed 2012 action related to assessing DEQ data needs for environmental media and treatment by-products.
<i>Rationale</i>	<p>Assessing the impacts of Focus List chemicals on Oregon’s environment and public health requires knowledge about the fate and transport of those chemicals. Through permitting and other regulatory control programs, DEQ and other agencies have relatively complete data on the types of industrial chemicals used and released. By contrast, there is much less complete information regarding the fate and transport of chemicals contained in common consumer and business products that are initially released into municipal sewer systems and solid waste systems. Some Focus List chemicals are regulated at the discharge point within these systems, but many others do not have regulatory standards and the partitioning of chemicals to different environmental media after discard is only partly understood. For instance, the SB 737 Program in 2010-11 evaluated municipal wastewater effluent for many persistent toxic chemicals, but didn’t address whether some of these chemicals in wastewater make their way into bio-solids or volatilize to air.</p> <p>Without a more complete understanding of the fate and transport of Focus List chemicals in consumer products, DEQ will be unable to focus pollution prevention actions and messages on the toxic chemicals and pollutants that have the greatest potential to adversely impact human and ecological health. Gathering this data and information will allow DEQ and other agencies to use their limited pollution prevention resources most effectively.</p>
<i>Lead Implementing Agency(s)</i>	DEQ, Municipalities, and other public and private partners
<i>Implementation Considerations</i>	
<i>Authorities</i>	DEQ has the existing authority to implement this project. Currently DEQ is responsible for regulating wastewater and landfill pollutants, however, this program has typically been limited to a narrow suite of contaminants.
<i>Funding/Resources/ Timing</i>	In order to complete this work, cooperation between DEQ and partners such as municipalities and public or private waste managers is required. This project would benefit from collaborative research efforts for implementation, and could include other research entities such as USGS and universities. Additional DEQ resources would likely be necessary for planning and implementation, including possible laboratory resources (DEQ) for on-going analysis of environmental samples and data. Work

Action 9: Assess Fate and Transport of Focus List Toxics from Consumer Products	
	planning for step 1 of this action will occur in 2019 with work completed by the end of 2020. Evaluation of the findings from Step 1 will occur subsequently and decisions on next steps determined in 2021.
<i>Partner Participation</i>	Local Jurisdictions
<i>Effectiveness Measures</i>	<p>The outcomes of this action are:</p> <ol style="list-style-type: none"> 1. The data compilation effort and possible monitoring pilot project would provide some baseline data on focus list chemicals entering wastewater and landfill systems. These data would be useful in future evaluations of source reduction activities for focus list chemicals. 2. In addition, by evaluating the fate of chemicals entering wastewater and landfill systems, this project could close a data gap related to where these chemicals are ending up. These data would be useful in determining potential environmental and health impacts of discarded chemicals, and focusing the most effective pollution prevention and chemical management strategies.

Action 10: Assess and Characterize Impacts of Diesel Emissions	
<i>Focus List Chemicals Addressed</i>	Benzene; anthracene, chrysene, benz(a)anthracene, benzo(a)pyrene, fluoranthene, pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)anthracene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene, phenanthrene, acenaphthene, acenaphthylene, benzo(j)fluoranthene, fluorine, and other PAHs; chromium; copper; lead; and manganese.
<i>Description of Proposed Action</i>	<p>Ongoing support and advocacy related to diesel emissions monitoring and impact assessments through the Toxics Reduction Strategy is critical. DEQ received funding for two small, short-term projects discussed below, which are starting points for a much larger effort that is needed agency-wide in order to adequately address the problems with diesel emissions across the state:</p> <ul style="list-style-type: none"> • <u>Emission Inventory</u> - Oregon’s inventory of non-road diesel emissions is based on 20-year-old survey data provided by EPA. There is strong interest in updating underlying data to better characterize emissions from this sector. The Natural Resources Ways and Means Subcommittee approved a \$500,000 one-time General Fund appropriation to complete an inventory of non-road diesel engines. DEQ has contracted with a third-party contractor to conduct

Action 10: Assess and Characterize Impacts of Diesel Emissions	
	<p>a state-wide and multi-sector inventory of non-road diesel engines currently in use by private and public fleets for the purposes of informing and refining air quality models. Air quality models can in turn lead to better information about deposition and contamination of land and water with diesel particulate and its constituent pollutants. This inventory is expected to be completed in October 2019.</p> <ul style="list-style-type: none"> • <u>Diesel Monitoring Grant</u> - To date, there is no accurate way to monitor for diesel particulate emissions. In October 2017, EPA awarded Oregon \$466,000 to perform a 25-month-long Community-Scale Monitoring Project for diesel particulate. This project is a partnership effort between DEQ, PSU and Reed College, with consultation from Multnomah County and the Oregon Health Authority. <p>The proposed action for the DEQ Toxics Reduction Strategy is to evaluate the results of these assessment projects as soon as they become available in order to determine the most effective long-term approach(es) for comprehensively assessing diesel pollutants in Oregon’s environment, as well as the public health and ecological impacts of those pollutants. DEQ’s cross-program toxics team will collaborate with the agency’s Air Quality Program to conduct this evaluation and recommend long-term assessment actions. In addition, the team will use the results of the project evaluations and other available information to review, prioritize and recommend diesel pollutant reduction strategies for Oregon.</p> <p>This is a new action that was not addressed by the 2012 strategy.</p>
<i>Rationale</i>	<p>As stated previously, diesel emissions impacts to human health and the environment are not being adequately addressed by the DEQ or through Toxics Reduction Strategy planning.</p> <p>The 2007 legislature directed DEQ to reduce the cancer risk to one in a million from diesel emissions by 2017. This would have required a 1,400-ton emission reduction on top of reductions from baseline turnover to cleaner engines. In 2017, DEQ had only accomplished about 1% of the emission reduction needed to meet the state’s risk reduction target. Efforts using federal and state funds to retrofit and replace older engines have been effective for the small number of vehicles and equipment covered, but overall, progress is insufficient.</p> <p>Diesel engines emit a complex mixture of gases and particles and have been, until recent years, relatively uncontrolled for emissions as compared to gasoline vehicles. Diesel particulate matter in diesel exhaust causes a myriad of health effects including lung cancer, asthma, bronchitis, neurological disorders and other effects occur. The state of California determined diesel particulate to be among the five most hazardous pollutants for children based on the increased risk for asthma, genotoxicity, developmental effects and lung cancer. A number of the PAHs in diesel exhaust are known to be carcinogenic and also mutagenic,</p>

Action 10: Assess and Characterize Impacts of Diesel Emissions	
	<p>which means exposure to these PAHs during early life (in any medium) results in more-potent cancer and health impacts to people being exposed.</p> <p>Currently, residents of 23 Oregon counties, representing 92 percent of the state’s population, are exposed to diesel particulate at levels that increase cancer risk above the public health threshold of one-in-a-million increased lifetime risk. Exposure evaluation performed by DEQ and Multnomah County concludes that minority and low-income populations are disproportionately impacted by diesel exhaust. DEQ’s environmental justice analysis for air toxics in the Portland area showed that minority and low-income populations are disproportionately impacted by diesel engine exhaust from both on-road and construction equipment.</p> <p>The exhaust from diesel engines causes cross-media impacts to land, water, and climate. Decreasing diesel emissions in air will decrease or prevent the migration of diesel particulate matter and its toxic components to other media, including soil in gardens and agricultural crops, where human and ecological receptors come into contact with the toxins through incidental ingestion or dermal absorption. Diesel components, including PAHs, can migrate to water bodies as run-off from land surface, or from the air itself, and can then be taken up into the tissues of fish – which are then caught and eaten by humans. Black carbon, a major constituent of diesel particulate, is implicated as the second largest human influence on climate change. Black carbon has effects regionally when deposited on Northwest glaciers it accelerates snow melt and changes surface albedo, which alters the timing of spring freshets and longer-term water availability, an effect already documented in the Oregon Cascades. Impacts from diesel on land and water are likely to be of concern to DEQ Water, Cleanup and Materials Management Programs. PAH is a pollutant present at many contaminated sites, and is a primary risk driver at Portland Harbor. The climate change effects of black carbon emitted while transporting goods and materials are a consideration in lifecycle analysis.</p>
<i>Lead Implementing Agency(s)</i>	DEQ
<i>Implementation Considerations</i>	
<i>Authorities</i>	DEQ has sufficient authority to undertake both the emission inventory and monitoring projects.
<i>Funding/Resources/Timing</i>	<p>Both the emission inventory and monitoring projects are funded. The diesel inventory will be completed in October of 2019. The diesel monitoring project is scheduled for completion in March of 2020, although the date may be extended upon EPA approval.</p> <p>Any follow-up assessment or regulatory actions would need additional funding.</p>

Action 10: Assess and Characterize Impacts of Diesel Emissions	
<i>Partner Participation</i>	PSU, Reed College, Multnomah County, Oregon Health Authority, Community and neighborhood organizations.
<i>Effectiveness Measures</i>	<p>Effectiveness measures are still under development but in general the outcomes of this action are:</p> <ul style="list-style-type: none"> • A revised more accurate non-road emission inventory that is vetted with key partners and is available for further analysis, communications, and voluntary or regulatory steps to reduce harmful emissions. • Additional knowledge of currently uncharacterized diesel emission including specific focus on the categories of marine, rail, freight and construction diesel emissions with new knowledge about health, environmental and cross media impacts.

Action 11: Evaluate Effectiveness of Existing Mercury Reduction Programs in Oregon	
<i>Focus List Chemicals Addressed</i>	Mercury
<i>Description of Proposed Action</i>	<p>Evaluate existing DEQ mercury reduction programs for their current effectiveness, and identify any gaps or additional program needs. Current mercury regulatory initiatives in Oregon include:</p> <ul style="list-style-type: none"> • Prohibition on the sale of mercury containing novelty devices • Prohibition on installation of mercury thermostats by commercial contractors. • Permit emissions limits in DEQ Air Quality permits for the two largest mercury point source emitters. • Permit requirements for suction dredge mining activities that could discharge mercury • Required installation of mercury amalgam separators by Oregon dental offices <p>In addition, DEQ and multiple partners have developed and implemented numerous non-regulatory mercury collection, education and technical assistance activities.</p> <p>A comprehensive evaluation will determine how effective and efficient existing regulatory and non-regulatory programs have been in reducing mercury in Oregon’s environment. It will also identify and propose</p>

Action 11: Evaluate Effectiveness of Existing Mercury Reduction Programs in Oregon	
	<p>needed modifications to programs, or proposed new mercury reduction actions. The environmental benefits of modified or new actions will be weighed against the cost of implementing such measures.</p> <p>This is a new action that was not addressed in the 2012 strategy.</p>
<i>Rationale</i>	<p>DEQ has implemented multiple regulatory and non-regulatory mercury reduction programs over the past 20 years. An assessment of the effectiveness of those programs must be conducted to determine if modifications to those programs are warranted, or if new reduction actions are needed to minimize the release of mercury into Oregon’s environment. Releases of mercury to the environment continue to occur, including recent spills of elemental mercury that have resulted in costly cleanups that pose risks to human health. The proposed mercury program assessment will address how these incidents, as well as known environmental impacts of mercury.</p> <p>DEQ is working on new Willamette Basin Mercury Total Maximum Daily Load (TMDL) that will propose required actions by point source dischargers to the Basin. Examining the effectiveness of all current DEQ mercury reduction programs to identify needed improvements will complement and support the goals of the new Mercury TMDL.</p>
<i>Lead Implementing Agency(s)</i>	DEQ and OHA
<i>Implementation Considerations</i>	
<i>Authorities</i>	DEQ has the authority to evaluate programs. The authority for any recommended actions resulting from the evaluation is to be determined.
<i>Funding/Resources/Timing</i>	This evaluation will begin in the spring of 2019 and a summary report, with recommendations, will be completed by June 2020. The timeline could be accelerated if additional staff resources are dedicated the project. Initially, a small percentage of the agency toxics coordinator’s time will be allocated to initiating this action, and members of DEQ’s cross-program toxics team will review findings and draft report sections.
<i>Partner Participation</i>	OHA, municipal wastewater and stormwater utilities, other natural resource agencies
<i>Effectiveness Measures</i>	Success of possible new mercury programs or modifications of existing programs can be tracked through environmental monitoring results. Success can also be measured by the reduced number of mercury spills and cleanup actions.

Action 12: Evaluate DEQ’s Toxic Use Regulation and Program	
<i>Focus List Chemicals Addressed</i>	All
<i>Description of Proposed Action</i>	Evaluate Oregon’s Toxic Use and Hazardous Waste Reduction Act and program to identify opportunities to further reduce toxics use and modernize the program. The Materials Management in Oregon: 2050 Vision and Framework serves as the guiding framework for future recommendations. The following elements could be considered: scope of facilities included in the program, funding mechanisms, current data collected, reduction assessment methodologies, implementation expectations, and reporting. This is a new action that was not addressed by the 2012 strategy actions.
<i>Rationale</i>	There is extensive evidence of the harm caused by toxic chemicals; reducing the use of toxic chemicals will derive an environmental and public health benefit. The scale, if implemented would be far-reaching to all ecosystems across the State. Data is available to support the benefits and risks and will need to be compiled during the research phase. DEQ cannot effectively propose policy or regulatory changes without first fully understanding the current state of toxic use reduction progress and ability to identify any deficiencies. An evaluation and gap analysis of current work would lay the groundwork to identify next steps. Reducing and eliminating toxic use at the source is a foundational tenet that will guide the evaluation.
<i>Lead Implementing Agency(s)</i>	DEQ, in collaboration with the Oregon State Fire Marshal
<i>Implementation Considerations</i>	
<i>Authorities</i>	No additional authority needed to evaluate Toxics Use and Hazardous Waste Reduction Act.
<i>Funding/Resources/Timing</i>	The resources needed for the initial evaluation and analysis would consist of staff time. Implementation of recommended options, that may include updated regulations, would require understanding of the resources needed to conduct that work. Staff have started analysis of the program.
<i>Partner Participation</i>	Oregon State Fire Marshal
<i>Effectiveness Measures</i>	The measure guiding recommendations from the evaluation would be the amount of Focus List Chemicals removed from materials and processes. An immediate measure would be completing an evaluation of the Act.

Action 13: Enhance Pesticide Stewardship Partnership (PSP) Program to Focus on Environmental Justice Communities	
<i>Focus List Chemicals Addressed</i>	Current Use Pesticides
<i>Description of Proposed Action</i>	<p>DEQ has worked consistently with local organizations and other state agencies since 2005 on implementing multiple watershed-based Pesticide Stewardship Partnerships (PSPs) designed to use surface water monitoring data to focus pesticide best management practices and technical assistance in areas where elevated stream concentrations of pesticides have been found. Program enhancements were made in 2013 after the Oregon Legislature provided stable funding to the Oregon Department of Agriculture and DEQ. More urban and forestry areas within watersheds were incorporated into the monitoring and stewardship activities. This proposed action would further enhance the PSP program by increasing water monitoring, commercial pesticide waste collection, and stewardship outreach and assistance activities in areas within watersheds with environmental justice needs.</p> <p>The Oregon Inter-Agency Water Quality Pesticide Management Team identifies the current and future needs for monitoring and stewardship activities. The environmental justice (EJ) considerations have already been a part of the Team’s process for selecting new watersheds for the PSP Program. DEQ will propose refining and updating the EJ criteria and the weight that the Team places on EJ. In addition, partners in existing PSP watersheds will consider making modifications in the current monitoring locations to represent EJ areas. Stewardship outreach and technical assistance activities can be tailored to address EJ communities and populations. For instance, DEQ and agency partners on the Water Quality Pesticide Management Team are funding and participating in the development of a new OSU Extension initiative (http://blogs.oregonstate.edu/solvepestproblems/) that will provide urban pesticide users with an on-line resource for managing pest problems in safe and environmentally sound ways. The outreach associated with this on-line tool will include a strong emphasis on serving EJ communities.</p> <p>Water monitoring results can be a reflection of off-target movement of pesticides that can affect these populations in different ways. Focusing technical assistance on all pesticide users in EJ areas can produce multiple benefits, including improved water quality, worker safety and reduced drift of pesticides in highly impacted communities. In addition, commercial pesticide waste collections, now funded by the PSP program, can be held in EJ areas to reduce the risks to watersheds, residents and pesticide users in those areas.</p> <p>This action builds upon the 2012 Toxics Reduction Strategy.</p>

Action 13: Enhance Pesticide Stewardship Partnership (PSP) Program to Focus on Environmental Justice Communities	
<i>Rationale</i>	<p>The PSP program has demonstrated effectiveness in reducing concentrations of Focus List pesticides in multiple watersheds in Oregon, including reductions in average concentrations of over 90% of chlorpyrifos, malathion and diuron in watersheds in the Mid-Columbia Basin. In more complex agricultural and urban areas where there are a broad range of pesticide users applying many of the same pesticides, the program has focused on smaller sub-watersheds to obtain more data and increase the intensity and focus of outreach actions.</p> <p>The large number of partnering local and state organizations contributing to the PSP program keeps the resource burden low for any one group, and on-going monitoring ensures that environmental outcomes can be demonstrated over time. Many of the best management practices implemented as part of the PSP program apply to all types of current use pesticides. These practices include drift reduction and spray efficiency technologies, integrated pest management activities, use of less toxic pesticides and increased vegetated buffers along streams. In EJ areas, the best practices emphasized in outreach will be customized to the needs of pesticide users and the communities within the watersheds. Training materials will be tailored to non-English speaking audiences when appropriate. Partners at Oregon State University Extension, as well as local watershed and community groups, have the expertise and capabilities to deliver substantive information on pesticide risk reduction to pesticide users in EJ areas.</p>
<i>Lead Implementing Agency(s)</i>	DEQ and Department of Agriculture
<i>Implementation Considerations</i>	
<i>Authorities</i>	No new authorities needed.
<i>Funding/Resources/Timing</i>	The 2017 Oregon Legislature maintained the PSP Program’s funding level at approximately \$1.6 million for the current biennium, and a similar allocation is anticipated for the 2019-21 Biennium. In-kind contributions from OSU and local partners continue to play an important role in enhancing the effectiveness of the program. This action will be proposed to the Oregon Water Quality Pesticide Management Team in early 2019. If the team adopts the recommended proposal, work will begin in July 2019 (after start of new biennium) on planning for specific modifications and additions to existing and new watershed-based PSP projects. Implementation of these EJ related project activities will then begin in early 2020.
<i>Partner Participation</i>	Partner participation is the basis of the program, and partners include: OSU Extension and Integrated Plant Protection Center, ODA, ODF, OHA, OWEB, Tribal Governments, ag chemical suppliers, watershed

Action 13: Enhance Pesticide Stewardship Partnership (PSP) Program to Focus on Environmental Justice Communities	
	councils, soil and water conservation districts, municipal governments and the Natural Resource Conservation Service. With a new EJ emphasis, new partners could include neighborhood and community groups, as well as farm worker advocacy organizations.
<i>Effectiveness Measures</i>	<p>The outcomes of this action are:</p> <ol style="list-style-type: none"> 1. Reductions in pesticide occurrence and concentrations in surface waters and sediments as demonstrated by monitoring data. <u>Metric:</u> Changes in detection frequency, average concentration and maximum concentration of pesticides of interest over time 2. Quantities of pesticide wastes collected and participation levels associated with commercial pesticide waste collection events in EJ areas. <u>Metric:</u> Total pounds of waste collected (relative to average quantities collected from other events in the state) and numbers of participants delivering waste pesticides and empty containers to events.

Action 14: Provide Toxics Reduction Technical Assistance to All DEQ programs	
<i>Focus List Chemicals Addressed</i>	All
<i>Description of Proposed Action</i>	Identify and formalize a cross-program, technical assistance team to provide toxics information, support, tools, training and other resources to DEQ programs and partners. DEQ’s Team Toxics will facilitate the development of this technical assistance team and coordinate its work. Areas of opportunity to provide assistance include, but not limited to: toxics pollution prevention training, chemical hazard and alternatives assessment support and training, permitting and regulatory program support and coordinating program responses to emerging chemicals of concern coordination. Other partnership opportunities will be identified by the formalized team.
<i>Rationale</i>	Individual DEQ programs developing and implementing toxics-related initiatives currently do not routinely engage with other media program staff with toxics expertise, who could offer technical assistance and tools that could improve the program work products. The goal would be to optimize toxics reductions through those program initiatives in a practically implementable way. Team toxics provides an integrating

DEQ Integrated Toxics Reduction Strategy – 2018 Update

	mechanism for this type of technical assistance to DEQ programs, thereby increasing the effectiveness and efficiency of toxics-related program activities.
<i>Lead Implementing Agency(s)</i>	DEQ
Implementation Considerations	
<i>Authorities</i>	No additional authority is needed.
<i>Funding/Resources/Timing</i>	The timing of this action is dependent on when programs need assistance with toxics.
<i>Partner Participation</i>	DEQ only
<i>Effectiveness Measures</i>	Providing toxics assistance to programs as needed

APPENDIX A: 2012 DEQ Toxics Focus List

CHEMICAL CATEGORY	CHEMICAL S				
Combustion & Petroleum By-Products:	Polycyclic Aromatic Hydrocarbons (PAHs)	Dioxins and Furans	Naphthalenes		
Consumer Product Constituents:	Phthalates	Triclosan	4-Nonyphenol (and Nonyphenol Ethoxylates)	Bisphenol A	DEET
Current Use Pesticides:	Diazinon	Chlorpyrifos	Atrazine	Trifluralin	Chlorothalonil
	Malathion	Permethrin	Carbaryl	Pentachlorophenol	Diuron
	Glyphosate	Hexachlorocyclohexane (HCH), gamma- (Lindane)	2,4-D	Propoxur (Baygon)	Pendamethalin
Flame Retardants and Industrial Intermediates:	Polybrominated Diphenyl Ethers (PBDEs)	Polychlorinated Biphenyls (PCBs)	Ammonia		
Legacy Pesticides:	Dieldrin	DDT (and metabolites)	Chlordane (and metabolites)	Aldrin	Methoxychlor
	Heptachlor (& Heptachlor epoxide)	Hexachlorocyclohexane, beta- (beta-BHC)	Hexachlorobenzene	Hexachlorocyclohexane, alpha- (alpha-BHC)	
Metals:	Mercury (and methylmercury)	Copper	Cadmium	Chromium	Arsenic
	Lead	Nickel	Manganese	Silver	
Volatile Organic Compounds (VOCs):	Tetrachloroethylene	Benzene	Ethylbenzene	Trichloroethylene	Dichlorobenzene, 1,4- (Dichlorobenzene-p)
	Toluene	Formaldehyde			

APPENDIX B:

2012 DEQ Toxics Reduction Strategy Recommended Actions: Summary of Accomplishments and Current Status

Note: Actions indicated by green shade were identified as priorities for short-term implementation in 2012

Toxics Strategy Action	Status/Accomplishments
IMPROVING INTEGRATION AND PRIORITIZATION OF TOXICS REDUCTION PROGRAMS	
<p>I-1 DEQ programs will work together to address cross-media impacts of Focus List toxics, and to coordinate and integrate program requirements that address common objectives for Focus List chemicals</p>	<p>Integrating Focus List and green chemistry principles into DEQ Hazardous Waste Technical Assistance program. Internal Toxics Collaboration team works together to coordinate programs that address toxics reduction.</p>
<p>I-2 Integrating technical assistance across programs to advance green chemistry in two industry sectors and identify priority geographic areas for integrated toxics reduction technical assistance</p>	<p>This activity also included in Green Chemistry Executive Order and HW Program Integration Plan. Research and coordination with Business Oregon and other partners on evaluation of possible industrial sectors or chemical categories for possible focus occurred. Drycleaner program implementation involved cross-media coordination and assistance to facilities transitioning away from PCE. Metals sector identified for integrated technical assistance as part of updated toxics reduction strategy.</p>
<p>I-3 Use existing rural planning and resource management programs to reduce loadings of Focus List toxics into Oregon waterbodies through natural resource agency collaboration</p>	<p>Not Implemented</p>
<p>I-4 Prioritize and direct efforts to meet both greenhouse gas reduction and Focus List toxics reduction goals</p>	<p>AQ has been working on developing and implementing clean diesel initiatives for several years, which would address both greenhouse gases and Focus List toxics.</p>

DEQ Integrated Toxics Reduction Strategy – 2018 Update

ENHANCING EXISTING EFFECTIVE TOXICS REDUCTION EFFORTS	
E-1 Develop and implement pesticide waste collection strategy	<p>DEQ collaborated with local partners to obtain funding for pesticide collection. In 2013, the Legislature allocated \$200,000 per biennium allocated for pesticide collection as part of a Pesticide Stewardship Partnership funding package.</p> <p>The notable environmental outcome from this funding is that over 390,000 pounds of pesticide waste collected from over 600 growers and other commercial pesticide applicators since 2014.</p>
E-2 Expand and enhance Pesticide Stewardship Partnerships (PSP) and related technical assistance programs to encompass more watersheds, land uses, water media (e.g., groundwater), and additional assistance and outreach tools	<p>The 2013 Legislature allocated nearly \$1.5 million to ODA and DEQ to implement and expand the PSP to new watersheds, encompass monitoring of other water media, fund pesticide collections (see above) and establish a technical assistance grant program to support local efforts to follow up on priorities indicated by the monitoring data. The program expanded to the Middle Rogue Watershed in 2015.</p> <p>Environmental outcomes include significant decreases in average concentrations of malathion in Wasco watersheds (over 90% reduction since 2011), and similar reductions in water concentrations in the Walla Walla (Diuron reduced by over 95%) and Hood watersheds (multiple organophosphates below benchmarks). Two rounds of technical assistance grants have been distributed to Extension and local partners to further reduce pesticides in water.</p>
E-3 Provide assistance to local communities in implementing toxics reduction activities that prevent toxic pollutants from reaching their wastewater and stormwater systems	Not implemented
E-4 Provide incentives for toxics reduction at Oregon facilities and residences through innovative use of existing DEQ program tools where appropriate	<p>DEQ has been working on developing and implementing possible wood stove curtailment and change-out proposals and incentive projects for several years</p> <p>DEQ obtained a pollution prevention grant that offers direct assistance (through interns and multi-agency collaboration) and training to Oregon facilities to reduce toxics use (and other pollutants). Program implementation has begun in 2017.</p>
E-5 Increase the use of, and demand for, less toxic alternative products through third party certification and recognition programs and tools	<p>Third party certifications have been used to guide state purchases of janitorial supplies and office supplies under price agreements developed as part of the Green Chemistry Executive Order (see N-2). Also, DEQ has participated in the EcoBiz certification program for auto repair and landscaping businesses. These businesses receive recognition for going beyond environmental compliance.</p>
E-6 Develop and implement a funding plan for customized or enhanced household and small	<p>The 2015 Legislature allocated funding for DEQ to conduct household and small business hazardous waste collection events in parts of the state without local permanent collection facilities.</p>

DEQ Integrated Toxics Reduction Strategy – 2018 Update

<p>business waste collections for Focus List chemicals or categories of chemicals</p>	<p>During 2015-17 DEQ conducted numerous household hazardous waste collection events, and small business events were held in conjunction with most of those events.</p>
<p>E-7 Assess opportunities to improve management of Focus List chemicals through use of existing state product or chemical reporting, notification, registration, and licensing mechanisms</p>	<p>Not implemented</p>
<p>ADDRESSING IDENTIFIED TOXICS REDUCTION NEEDS</p>	
<p>N-1 In partnership with other states, work with retailers and others in the supply chain to reduce Focus List chemicals in common consumer products</p>	<p>Given the market share of national retailers relative to Oregon-based retailers, this action was modified to focus on Oregon’s active participation in interstate organizations that engage with national retailers on increasing safer chemistry in consume products. These groups include the Interstate Chemicals Clearinghouse (with Wal-Mart and Office Depot, and Costco now engaged), and Northwest Green Chemistry (with Staples and others engaged). In addition, from 2012-2016 DEQ participated in numerous forums hosted by the Green Chemistry and Commerce Council (GC3), which links business, government and non-profit groups in advancing safer alternatives.</p>
<p>N-2 Develop and implement low toxicity state agency purchasing and procurement guidelines</p>	<p>In 2013, Oregon and Washington completed a pilot janitorial supplies price agreement, which requires vendors to supply third-party certified products and reduce or eliminate Focus List chemicals from products. The participation of “other political subdivisions” (local governments, school districts, etc.) in the janitorial price agreement increased by 35%, with a corresponding increase in “green spend” recorded by DAS vendors. The estimated value of products purchased under this price agreement is \$20 million. In 2014, a set of general purchasing guidelines for all product categories was developed and signed by the state’s COO as a state policy. That same year, multiple Western states developed a green office supplies price agreement with low toxicity criteria. Most recently, DEQ worked with DAS to reduce toxics as part of a Maintenance, Repair and Operations price agreement. Coordination with DAS and Corrections Enterprises has also occurred on evaluating criteria to minimize or eliminate five classes of chemicals in office furniture.</p>
<p>N-3 Collaborate with other states to develop and disseminate guidance on toxic chemical alternatives assessments, and identify and pursue alternatives assessment priorities for common uses of Focus List chemicals</p>	<p>DEQ participated in the Interstate Chemicals Clearinghouse (IC2) workgroup that developed a comprehensive chemical alternatives assessment guide in 2014. The purpose of the guide is to ensure the selection of less toxic alternatives that are effective and economically viable. The guide was pilot tested by Washington for copper boat paint alternatives. DEQ continues to work with the IC2, Northwest Green Chemistry and the West Coast states to identify training needs and opportunities for agencies and businesses in the area of chemical hazard and chemical alternatives assessment, as well</p>

DEQ Integrated Toxics Reduction Strategy – 2018 Update

	as the development of other tools to facilitate the “informed substitution” of Focus List chemicals. The Washington Department of Ecology coordinated with DEQ in 2015 to offer chemical hazard assessment training for businesses and agencies in SW Washington and NW Oregon. In addition, the directors of the three West Coast state environmental agencies signed an MOU in 2015 (and revised in 2018) to collaborate on advancing green chemistry and safer products.
N-4 Develop and implement risk reduction and outreach plans in areas determined to have high potential for human health exposure to Focus List chemicals through domestic drinking water wells	DEQ Drinking Water Source Protection Program is developing surface and groundwater protection risk assessment and reduction plans
N-5 Increase understanding of the benefits of green chemistry among key Oregon decision-makers and gain commitment to adopt policies that foster green chemistry innovation	An external advisory group met in 2013 as part of the Green Chemistry Executive Order to discuss recommendations for increasing Green Chemistry awareness and innovation. Coordinated DEQ Toxics Strategy with the Oregon Chemical Policy Roundtable Strategic Plan
N-6 Create and support a green chemistry innovation “Hub” that catalyzes the use of green chemistry by Oregon businesses, fosters collaboration between public and private stakeholders, and enhances green chemistry education in schools	DEQ is participating on the advisory group for Northwest Green Chemistry, a new regional organization established by the Washington Department of Ecology to support and accelerate green chemistry business innovation and education. DEQ is also funding (through an EPA grant) NW Green Chemistry alternatives assessment work.
N-7 Increase information disclosure for products with Focus List constituents to allow for improved assessment and pollution prevention actions	The 2015 Oregon Legislature passed the Toxics-Free Kids Act (SB 478), which requires manufacturers of children’s products to report the presence of 66 chemicals of high concern to the Oregon Health Authority. The Act also requires phasing out the use of those chemicals over time if there are viable safer alternatives. DEQ is participating in multiple phases of the rulemaking committee for implementation of SB 478.
N-8 Use the Focus List to help identify new opportunities for product stewardship initiatives	No additional Focus List chemicals have been included in new product stewardship initiatives
ASSESSING AND CHARACTERIZING TOXICS IN OREGON	
A-1 Incorporate all Focus List chemicals into existing state environmental toxics monitoring or modeling initiatives, considering appropriate pathways	Some additional methods for Focus List Toxics have been developed (e.g., pesticides), but more remain to be developed (e.g., Bisphenol-A, Nonyphenol).

DEQ Integrated Toxics Reduction Strategy – 2018 Update

<p>A-2 Assess DEQ program data needs related to Focus List chemicals in environmental media or environmental treatment by-products</p>	<p>Not implemented</p>
<p>A-3 Identify localized impact areas (“hot spots”) that could pose higher risks to people and ecological life due to exposure to multiple chemicals from multiple sources</p>	<p>Activities included:</p> <ul style="list-style-type: none"> - The 2013 Legislature allocated funds to DEQ to conduct air toxics monitoring at a potential “hot spot” area in North Portland. - DEQ used the USFS study of contaminants in moss within the City of Portland to identify areas of elevated levels of metals - The Columbia River Toxics Reduction Working Group is working to develop a map of hot spots of toxics contamination in the Columbia River <p>DEQ’s Cleanup program has statutory authority and rules for identification and remediation of “hot spots of contamination” at cleanup sites. Hot spots are defined for toxic substances, according to the magnitude of risks they present to human health or the environment. On an ongoing basis, the program works with responsible parties to treat and/or remove hot spots from contaminated sites – usually involving soil but sometimes also including water.</p>
<p>A-4 Use all available and credible internal and external sources of data to identify potential sources of Focus List toxics for all DEQ programs, and integrate toxics databases and source modeling information when feasible</p>	<p>TRI and other sources of toxics source data have been used by various DEQ programs since 2012.</p>
<p>A-5 Establish ecological and human health indices or conduct impact assessments to evaluate Focus List chemicals without regulatory standards and to provide context for communication of monitoring data</p>	<p>DEQ, ODA and the Water Quality Pesticide Management Team expanded the use of EPA and USGS aquatic life and human health benchmarks for pesticides to interpret and communicate pesticide water quality monitoring data. No new benchmarks were established by DEQ or other state agencies.</p>
<p>A-6 Coordinate and support Oregon Health Authority in developing, and implementing human biomonitoring program to track levels of Focus List chemicals in people over time</p>	<p>Not implemented</p>

APPENDIX C:

Inventory of DEQ Toxics Reduction Programs and Activities

Team Toxics conducted an inventory of all toxic-related DEQ work. This is a snapshot of toxics work in 2017.

Air Quality Program Inventory

Name of Air Quality Program/Project	Program Description	Toxic Chemical Class						
		Combustion & Petroleum ByProducts:	Consumer Product Constituents	Current Use Pesticides	Flame Retardants and Industrial Intermediates	Legacy Pesticides	Metals	Volatile Organic Compounds
Woodstove Rules and Public Education	Promote use of cleaner burning woodstoves. Work with local governments to develop and implement burning advisory programs. Locate additional funding for woodstove changeout to cleaner appliances and other heating sources.	X						
Anti-Idling and “Don’t Top-off” Education and Outreach	Support anti-idling programs statewide, provide don't top off stickers, materials and technical assistance to gasoline distribution facilities statewide.	X						X
Asbestos Program	Regulate asbestos abatement projects statewide to ensure safe handling and disposal of asbestos containing materials.		X		X			
Clean Diesel Program	Promote the use of cleaner fuels, cleaner engines and reduced idling. Work with legislative task force to consider options to accelerate turn over to cleaner engines. Administer Volkswagen settlement funds for purchase of clean diesel engines. Participate in development of clean diesel construction contracting specifications and standard for local government.	X						
Cement Plant Mercury Controls	Air permit for large cement manufacturer amended to require 70% control of mercury emissions.						X	
Electric Arc Furnace Rule (in development)	Adopting federal rules regulating emissions from facilities with electric arc furnaces.						X	X

DEQ Integrated Toxics Reduction Strategy – 2018 Update

Name of Air Quality Program/Project	Program Description	Toxic Chemical Class						
		Combustion & Petroleum ByProducts:	Consumer Product Constituents	Current Use Pesticides	Flame Retardants and Industrial Intermediates	Legacy Pesticides	Metals	Volatile Organic Compounds
Open Burning Rules and Public Education	Restrict open burning of solid waste in specified areas and promote alternatives to burning.	x						
Portland Air Toxics Solutions	Follow up on recommendations to reduce emissions from priority categories of air toxics in Portland Area: wood burning, diesel engines, gasoline vehicle engines; and heavy metals.							
State and Federal Air Quality Permits	Implement Title V and ACDP permitting program, including delegated federal standards for air toxics control and incorporation of new health risk based industrial permitting program (Cleaner Air Oregon.)	x					x	x
Zero Emission Vehicle (ZEV) Program	Continue to implement California’s ZEV program under section 177 of the CAA. The program requires auto manufacturers to provide increasing percentages of new Battery Electric Vehicles (BEVs) and Plug-in Hybrid Electric Vehicles (PHEVs) in Oregon. Current rules increase ZEV requirements until 2025 but California intends to implement more stringent requirements for the following years. California has a goal of having nearly all light duty vehicle sales be ZEVs by 2050. Gov. Kate Brown endorses that target.	x						x
Electric Vehicle Rebate Program	HB 2017 passed in summer 2017 directed DEQ to implement two new EV rebate programs: Electric Vehicle Rebates up to \$2,500 for purchase or lease of new EVs \$50,000 or less, and Charge Ahead rebates of \$2,500 for purchase or lease of new or used EVs for low or moderate income households. The EQC adopted implementing rules in May 2017, and DEQ expects rebates to begin issuing in early 2019.	x						x
Non-Road Diesel Emission Inventory	DEQ has hired a contractor to perform a Non-Road Diesel Emission Inventory for Oregon using funds approved by the legislature in summer 2017. Currently we rely on the EPA non road model which is a national projection and not based on any Oregon specific data of equipment type, usage, location or age. The emission inventory is scheduled for completion in Fall 2019.	x						x

DEQ Integrated Toxics Reduction Strategy – 2018 Update

Name of Air Quality Program/Project	Program Description	Toxic Chemical Class						
		Combustion & Petroleum ByProducts:	Consumer Product Constituents	Current Use Pesticides	Flame Retardants and Industrial Intermediates	Legacy Pesticides	Metals	Volatile Organic Compounds
Improving diesel Particulate Matter Exposure Assessment for Vulnerable Populations in the Portland Metropolitan Area	DEQ received a Community Air Toxics Monitoring Grant from EPA in October 2017 to perform a diesel emission monitoring study in partnership with PSU, Reed College and others. The project will use complex analysis of diesel exhaust monitored at freight, rail, construction and marine sources for emission profiling and in a second round of monitoring in impact communities analyze source contributions and potential health impacts of diesel exhaust. The project began in July 2018 and is expected to run through 2020.	x						x
Cleaner Air Oregon	Cleaner Air Oregon is a state health risk based air toxics regulatory program that adds requirements to DEQ’s existing air permitting framework. DEQ designed the program to close the regulatory gaps left after the implementation of federal air toxics regulations. The program would require companies to report use of more than 600 toxic air contaminants to DEQ. Facilities would calculate potential health risks to people nearby. Risk calculations would consider health problems (e.g., cancer, birth defects and asthma) from short- and long-term exposures. The rules tie air quality permits and enforcement to the levels of potentially harmful air toxics a facility puts into the air and the impact they could have on neighbors’ health. Companies would have to act to reduce risk from their air toxics emissions if the levels exceed health risk limits called Risk Action Levels. The EQC adopted Cleaner Air Oregon regulations in November 2018. Between 2016 and 2018, DEQ developed an initial statewide air toxics emission inventory based on facility reports. This emission inventory will inform work to update the toxics focus list. In early 2019, DEQ will begin the process of requiring new and existing facilities, on a priority basis, to comply with the additional reporting, risk assessment and potential emission reduction steps of the program. There are significant opportunities within industrial sectors for pollution prevention and technical	x	x		x		x	x

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	assistance. The Metals Manufacturing, Coating and Finishing Pollution Prevention Outreach Program is one such opportunity that is currently in progress.							

Hazardous Waste Program Inventory

Name of Hazardous Waste Program/Project	Program Description	Toxic Chemical Class						
		Combustion & Petroleum Byproducts	Consumer Product Constituents	Current Use Pesticides	Flame Retardants and Industrial Intermediates	Legacy Pesticides	Metals	Volatile Organic Compounds
Toxics Use and Hazardous Waste Reduction Program	Requires certain facilities to develop a toxics reduction plan and report on implementation. Provide compliance assistance to businesses on reducing and managing hazardous waste. Provides beyond compliance assistance to businesses to reduce or eliminate toxins.	X	X		X	X	X	X
Eco-Logical Business Program	Certifies and recognize auto repair and landscape contracting businesses for going beyond compliance in reducing waste, toxics, and water and air emissions. Administered by PPRC, funded by local governments/grants		X	X		X		X
Hazardous Waste Compliance Program	Inspect generators (business and institutional facilities) to ensure compliance with requirements for managing, transporting and disposing of hazardous wastes (RCRA)	X	X	X	X	X	X	X
Toxics Use and Hazardous Waste Reduction Program	Green engineering and chemistry:	X	X		X		X	X
Toxics Use and Hazardous Waste Reduction Program	RCRA Basics and Beyond Compliance Training	X	X	X	X	X	X	X
Hazardous Waste Permitting Program	Control toxics thru regulating proper disposal on a site-specific basis (see Chemical Waste Management Arlington-one permitted Landfill, a few clean-up sites in this program, Safety Klean storage/transfer facility). Small subset includes RCRA Corrective Actions which HW still oversees under permit. Active site: Permapost.	x	x	x	x	x	x	x

Materials Management Program Inventory

Name of Materials Management Program/Project	Program Description	Toxic Chemical Class						
		Combustion & Petroleum ByProducts:	Consumer Product Constituents	Current Use Pesticides	Flame Retardants and	Legacy Pesticides	Metals	Volatile Organic Compounds
Household Hazardous Waste Program	School Lab Cleanouts		X				X	X
Household Hazardous Waste Program	Mercury collection						X	
Household Hazardous Waste Program	statewide household hazardous waste and CEQ collection events	X	X	X	X	X	X	X
Household Hazardous Waste Program	digital thermometer exchange for mercury thermostats						X	
Household Hazardous Waste Program	Permitting of household hazardous waste facilities including support for facility planning, design and operation.	X	X	X	X	X	X	X
Household Hazardous Waste Program	Updating statewide HHW Plan to develop a clear action plan to move towards more sustainable HHW management.	X	X	X	X	X	X	X
Business Initiatives - Materials Management	Currently developing strategic plan that includes project options like working with Oregon Manufacturing Extension Partnership (OMEP) and creating educational workshops for new product development startups.	X	X	X	X	X	X	X
Preventing the wasting of Food - Materials Management -	Numerous projects to prevent the wasting of food, which conserves the resources and chemicals it takes to make new food.	X	X	X		X		
Food product footprinting -Materials Management -	Research project about the lifecycle environmental impacts (including select toxics) of certain foods. The assessments may lead to actions to reduce those impacts.	X	X	X		X	X	
Concrete environmental product declarations - Materials Management	Assisting concrete producers to measure and disclose a selection of environmental impacts of their concrete mixes through product labels called environmental product declarations (EPDs). Toxicity is an optional reporting category	X						

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Electronic Waste Recycling	Statewide extended producer responsibility program that recycles electronic waste. Funded by manufacturers and administered by DEQ.		x		x		x	
Reuse, Repair, Product life Extension - Materials Management	Existing strategic plan for this new program that identifies a number of actions including: lead dispersion study from home demolitions and research into reducing the impacts of textiles		x					
LCA of Product Attributes - Materials management	Current research project focusing on the environmental impacts of product attributes such as "compostability" and "recycleability".	x	x	x	x	x	x	x
Outcome Based Recovery Goals - Materials Management	Planned project for 2017 that identifies the environmental outcomes of material recovery pathways	x	x	x	x	x	x	x
Opportunity to Recycle Act - Materials Management	Statewide requirements to provide the opportunity to recycle to every resident. Broadly, recycling reduces the environmental impacts associated with material extraction/production.	x	x				x	
Consumption Based GHG Emissions Inventory (CBEI) - Materials Management	Statewide greenhouse gas inventory that measures emissions based on economic final demand. Calculates lifecycle impacts of how money is spent via residents, governments, and business investments. We are considering adding non-climate impacts to this inventory. Toxicant releases could be a likely addition.	x	x					
Materials Management facility permitting including landfills, MRFs, transfer stations, treatment facilities, incinerators, and energy recovery.	Permits that consider the design, construction, operation, and monitoring requirements for landfills.		x				x	x
Complaint response - materials management	Frequent complaint response to "illegal" dump sites that often involve the containment/cleanup of potentially toxic releases to air/water/soil.	x	x	x	x	x	x	x

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2050 Vision - Materials Management	Strategic plan for the entire Materials Management program at DEQ. Overall, this plan contains many program activates that could eventually involve a toxics reduction component.	x	x	x	x	x	x	x
Environmental specifications for state purchasing agreements - materials management	By January 2017, a new staff member will be hired to focus on accelerating environmental standards in state purchasing. This DEQ staff member will work closely with DAS and others.	x	x	x	x	x	x	x
Paint Product Stewardship Program	DEQ oversight for a statewide architectural paint collection program for reduction, recycling and reuse funded from upfront fees on paint purchases.	x	x	x			x	x
Clean Compost Project	Evaluate presence of toxics chemicals in compost caused by compostable service ware and other contaminants.		x					
Solid Waste Orphan Program	Assist in investigations and/ or cleanups of potential hazardous releases from disposal sites that are owned or operated by a local government or orphaned.	x	x		x	x	x	x

Cleanup Program Inventory

Name of Cleanup Program/Project	Program Description	Toxic Chemical Class						
		Combustion & Petroleum ByProducts	Consumer Product Constituents	Current Use Pesticides	Flame Retardants and Industrial Intermediates	Legacy Pesticides	Metals	Volatile Organic Compounds
Dry Cleaner Program	Dry cleaners must develop waste minimization plans and implement specified management practices							X
Dry Cleaner Program	Program uses its consultants to investigate and remediate the highest priority sites, using fees paid into the program from eligible dry cleaners.							X
Voluntary and Independent Cleanup Program	Oversee assessments and cleanups of soil, groundwater , surface water and sediment from sites contaminated with toxic substances	X	X	X	X	X	X	X
Orphan Site Cleanup Program	Conduct assessments and cleanups of high-priority contaminated sites for which no responsible party exists (or is able or unwilling to fund time-critical cleanups).	X	X	X	X	X	X	X
Portland Harbor Project	* Assess and cleanup in-water and upland sites adjacent to the Willamette River in Portland that are contaminated with toxics substances * Prevent the recontamination of the Portland Harbor through stormwater source control	X				X	X	X

Laboratory and Environmental Assessment Programs Inventory

Name of Laboratory and Environmental Assessment Program/Project	Program Description	Toxic Chemical Class						
		Combustion & Petroleum ByProducts	Consumer Product Constituents	Current Use Pesticides	Flame Retardants and Industrial Intermediates	Legacy Pesticides	Metals	Volatile Organic Compounds
Statewide water quality toxics monitoring	Statewide water quality toxics monitoring includes collecting water, tissue and sediment samples across the state	X	X	X	X	X	X	
Statewide groundwater monitoring	Statewide groundwater monitoring conducted on a rotating basis around the state. Samples collected from volunteer private wells.		X	X		X	X	
SB 737 – Priority Persistent Pollutants in Water	Survey of major municipal WWTPs for the P3 list of chemicals conducted in 2010.	X	X	X	X	X	X	
Pesticide Stewardship Partnerships	Voluntary, collaborative program including monitoring & technical support			X				
Air Toxics Monitoring	Collection and analysis of ambient air samples from stations statewide. Use of moss as screening tool to locate monitors. Data analysis, interpretation and communication. Currently monitor for about 150 chemicals, capable of more. Six new air toxics trends monitors and 4 new rotating air toxics sites funded by 2017 legislature to be deployed in 2018 - 2019. This monitoring also includes 2 long term NATTS sites.	X					X	X
Groundwater Management Areas (GWMAs)	Monitoring within designated Groundwater Management Areas				X	X		

Water Quality Program Inventory

Name of Water Quality Program/ Project	Program Description	Toxic Chemical Class						
		Combustion & Petroleum By-Products	Consumer Product Constituents	Current Use Pesticides	Flame Retardants and Industrial Intermediates	Legacy Pesticides	Metals	Volatile Organic Compounds
Drinking Water Source Protection	Evaluate contamination risks for public drinking water sources and recommend strategies for protection. Monitor “raw” source water near 6 surface water & 6 groundwater public drinking water systems.	X	X	X	X	X	X	X
Drinking Water Source Protection	Evaluate contamination risks for public drinking water sources and recommend strategies for protection. Monitor “raw” source water near 6 surface water & 6 groundwater public drinking water systems.	X	X	X	X	X	X	X
Total Maximum Daily Loads for Toxics	Establish pollutant load limits in water basins with impaired waters; require development of implementation plans by designated management agencies					X	X	
Water Quality Assessment -Integrated Reporting for Clean Water Act 305(b)/303(d)	Biannual assessment of water quality in Oregon to report on the overall condition of state waters, and identify waters that do not meet water quality standards and need pollutant load control and restoration plans (TMDLs) developed.							
Municipal and Industrial Wastewater Discharge Permits (NPDES and WPCF)	Requires specific municipal and industrial facilities to meet wastewater effluent concentration limits or technology standards, as well as criteria for biosolids. Requires development of plans and programs (e.g., pre-treatment) to assist in meeting limits.							
Municipal and Industrial Stormwater Permits (NPDES)	Requires municipal and industrial facilities to develop and implement stormwater management plans to reduce pollution impacts of stormwater discharged to surface water.			X		X	X	

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Underground Injection Control (UIC) Program	Requires municipalities, as well as industrial and commercial land owners with UICs (e.g., drywells) to monitor for pollutant, meet discharge standards, and/or develop plans as appropriate to reduce discharges.			X		X	X	X
Groundwater Management Areas (GWMAs)	Designation of specific aquifers as GWMAs based on existing contamination levels relative to GW standards. On-going monitoring of contaminants to assess trends, and promotion of management strategies that will reduce further impacts from current practices: Current GWMAs: Malheur, Umatilla, South Willamette			X		X		
Columbia River Toxics Reduction Strategy	The main objectives of the working group are to: identify additional monitoring needs; identify sources of toxics; and initiate toxic reduction actions. To share information, coordinate activities, and develop strategies to identify and then reduce toxics. Provides a forum for scientists from different organizations to share their work, coordinate efforts and increase collaboration.		X	X	X	X	X	X