



# Lower Columbia Estuary Partnership Toxics Reduction: Success & Challenges

## 2015 Science to Policy Summit Report

On November 19, 2015, the Lower Columbia Estuary Partnership (Estuary Partnership) hosted two peer-to-peer workshops to examine pesticide use and stormwater management. The workshops were held in downtown Vancouver, Washington and formed our 9<sup>th</sup> Annual Science to Policy Summit, building on last year's successful summit on toxics. The first workshop brought farmers and growers together to share how they are reducing or eliminating toxics from their practices, and creating a market niche for their products. The second workshop brought businesses and developers together to share how they are reducing stormwater runoff. Each workshop had nearly 90 people in attendance.

We hosted peer-to-peer discussions because they are symbolic of what we need to do: We cannot sit back and listen. We need to take action individually and then, collectively, we will make an impact. More importantly, we learn best from our peers who understand what we do. Many people and businesses are already voluntarily using fewer or no toxics in their practices. We must encourage more action.



The Science to Policy Summits expand dialog among scientists, practitioners, and community leaders. Each year, we tackle an emerging issue that needs regional attention. Topics covered include habitat restoration, climate change, the Columbia River Treaty, accountability, and toxics. Toxics reduction is a heightened priority of the Estuary Partnership. Toxics are ubiquitous in the environment. The more we learn, the worse the news. They impact human health, fish and wildlife, the ecosystem as a whole, and our economic viability.

### Introduction from Congressman Blumenauer

**The Honorable Earl Blumenauer (OR-3)** sent a video message from Washington, D.C. He is a champion for the Columbia River and toxics reduction and is a sponsor of the Columbia River Basin Restoration Act. If passed, the Act will authorize Congress to fund voluntary toxics reduction actions. He encouraged summit participants to continue collaborations and partnerships; it will require all sectors working together. The threat of toxics to the lower river and humans is too big for government alone. He applauded the peer-to-peer discussions; they will help build more critical momentum.



## Toxics Impact Our Health, Environment, and Economy

**Toxics are everywhere.** Pesticides, including DDT and currently used pesticides and fertilizers, and other contaminants (PCBs, PAHs, copper, pharmaceuticals, and flame retardants (PBDEs)), are in water samples taken from multiple locations in the lower Columbia River. Toxic contaminants are found not just in the water but in sediments, fish, wildlife, and humans too. Stormwater runoff contains some of the most common toxics, such as PCBs, PBDEs, pesticides, fertilizers, ingredients in personal care products and pharmaceuticals, pet waste, and PAHs – the waste emitted from the incomplete combustion of petroleum-based engines.

**Human and Species Impacts.** In humans, toxics exposure impacts health, including cancer, reproduction difficulties, allergies, and neurological functioning (memory loss and loss of coordination). Long-term exposure to PAHs decreases immune function and can lead to kidney and liver damage. Animal species experience similar impacts. Exposure to current-use pesticides affects salmon behavior, interfering with predator avoidance, altering homing and migration, and reducing egg fertilization.

**Economic Impacts.** Toxic contaminants have economic impacts as well. Land contaminated with toxics cannot be used until it undergoes costly cleanup. Port and marina operations are hindered by contaminated dredge materials, and contaminated species affect the economic viability of fishing and other industries.

## Success through Voluntary Actions

Voluntary actions of local farmers, business owners, ports, governments, developers, and many others are making significant progress reducing toxics.

**Reducing Pesticides.** The State of Oregon Pesticide Stewardship Partnerships have facilitated significant reductions in pesticide application, with some growers reducing the pesticide drift from spraying by 99 percent. In just two seasons, growers in the Wasco County watershed reduced their use of one toxic pesticide (malathion) from eight times the water quality criterion to less than half. In the Yakima River, irrigation districts, the Washington Department of Ecology, and the Yakama Indian Nation collaborated to reach a 20-year goal of reducing DDT in just five years, and fish consumption advisories were lifted as a result. The commitment by agricultural producers to third-party labeling, such as Salmon-Safe, has created an international market for agricultural products that use few or no pesticides.

**Reducing Stormwater.** Stormwater runoff is a toxic soup. Concentrations vary by location and are higher near urban areas where there are large areas of impervious surfaces. The more impervious surfaces present, the more toxics that run off those surfaces. The 2012 Washington State Stormwater Management Manual outlines new ways to control stormwater runoff. The City of Portland has extensive tools in its stormwater program and uses vegetated surfaces to treat and infiltrate stormwater on-site. The Port of Vancouver USA constructed one of the largest stormwater bio-retention facilities in the world, treating stormwater runoff from 50 acres at one of its five marine terminals. Builders and developers – as well as homeowners – are using green infrastructure to reduce impervious surfaces and protect water quality. Permeable pavers, rain gardens, roof gardens, bioswales, and other techniques capture stormwater and infiltrate it rather than letting it enter into waterways untreated.





## Bridging the Workshops: Estuary Partnership 2015 State of the Estuary



**The Honorable Dennis McLerran, U.S. EPA Region 10 Administrator**, joined us at the Summit to release the Estuary Partnership's 2015 State of the Estuary Report and offer a keynote address. The report is our third and tracks six indicators over the last fifteen years; it presents successes and lays out the challenges ahead to protect and restore the lower Columbia River and estuary.

The Columbia Basin and reducing toxics in the Basin are priorities for U.S. EPA Region 10. Regional Administrator McLerran stressed that partnerships are key because no single group can tackle this issue alone. He noted that partnerships get better results, generate new technology, and partners are more committed if they can participate. He encouraged more and expanded peer-to-peer dialogues to build trust and increase collaboration.

Regional Administrator McLerran noted successful programs like the Salmon-Safe certification, the green chemistry movement, and the joint Oregon – Washington procurement practices that are moving markets forward and helping consumers gain access to green products. He also discussed successful EPA programs, such as the Safer Choice program and labels that help consumers find products that are safer for our health and the environment. He noted that farmers want to be good farmers, when one farmer adapts new practices that work and others will follow. The tribes have been instrumental in highlighting that tribal fish consumption numbers are higher than the legal fish consumption rates used for water quality standards. These standards are being reset for human safety. However, Regional Administrator McLerran emphasized that we will not be able to regulate our way to environmental stewardship; we will need voluntary work and partnerships. More important than regulations is embracing common challenges. We need to track our work, chart the accomplishments, and hold ourselves collectively responsible.

**The State of the Estuary.** The Estuary Partnership develops and manages habitat restoration projects. Since 2000, we have, along with region partners, restored over 21,399 acres of habitat. We have developed a scientific framework to assure our investments in restoration are strategic and have assembled and developed extensive GIS data for the lower Columbia River and estuary. We monitored toxics in the lower river, published the only report on toxics for this region, and hosted collection events to keep toxics from entering the river. We have provided 62,961 students with 310,134 hours of instruction in outdoor education programs, helping 2,643 teachers meet science benchmark requirements. 11,454 volunteers and students have planted 80,514 native trees and shrubs to help protect riparian corridors and restore habitat.

Since we began in 1995, progress is notable and the result of many public and private partners. Looking ahead, there are challenges. We still do not know the net gain of habitat; we need targets for restoration based on ecologic uplift. Thirteen species of salmonids remain listed as threatened or endangered, all of which use the lower river twice in their life cycle. Toxics exist in sediment, fish and wildlife, and water. We are not tracking increases or decreases in impervious surfaces, which is a good indicator of water quality. We need to broaden programs to include diverse communities. Climate change and the projected impacts need to be built into land use and environmental protection decisions. Many of us are engaged in these efforts and our successes and collaborations position us well to do so.



*Estuary Partnership Study Area:  
The lower 146 miles of the Columbia River from  
Bonneville Dam to the Pacific Ocean.*

## Workshop: Reducing Pesticides – Growers Peer-to-Peer

The first workshop brought together local farmers and growers who talked about their successes and challenges to reducing the use of pesticides and chemical fertilizers in their growing practices. Farmers on the panel represented a diversity of perspectives and crops; ranging from conventional large scale fruit tree operations to strictly organic farmers who sell products directly to consumers.

**Jessika Tantisook** and her partner Jared Oakes run **Starvation Alley Social Purpose Corporation**, a farm and cranberry company in Long Beach, Washington – the state’s first organic cranberry farm. Jessika spends much of her time building their new business that supports regional cranberry farmers through the organic certification process.

**Key points:**

- Limited research makes it hard to reduce toxics or farm organically.
- Marketing is a new and often difficult skill for most farmers to acquire.
- Value-added products are useful for organic and small farms to tap into a niche market.

**Cathy Fantz** and her husband Roger own **Trillium Forest Farm**, an organic Christmas tree farm that uses toxic-free, environmentally friendly, sustainable practices. After many seasons of trial and error in growing practices and innovative marketing, Trillium’s organically-grown Christmas trees found a niche market in California.

**Key Points:**

- Trillium Forest Farm’s non-conventional growing methods (e.g., manure fertilizer and mowing grass between rows) are difficult to scale up to larger farms.

**Brian Nakamura** is a third generation Oregon orchardist. He and his wife grow pears and sweet cherries on the 58-acre **Nakamura Orchards** in the Hood River Valley. Brian chairs the East Fork Irrigation and Hood River Soil & Water Conservation District boards and represents orchardists on several water quality and natural resource committees.

**Key Points:**

- USDA rates fresh produce and gives higher grading for blemish free fruit.
- When data generated from Hood River water quality sampling looked bad for local farmers, the Columbia Gorge Fruit Growers formed what became the Hood River Pesticide Stewardship Partnership in 1999, Oregon DEQ’s first such partnership.

**Clair Klock** and his wife Beverly have operated the 27-acre **Klock Farm** for the last 35 years, specializing in blueberry and caneberry production, though they retired from farming after the 2015 season. Clair practiced a strict form of Integrated Pest Management.

**Key Points:**

- Science gave him knowledge about chemicals and their impact on humans and the ecosystem. After taking a soil sample, Clair realized he was over-applying fertilizer. He reduced chemical use by 50 percent, cutting costs and increasing production within four years.



Each grower talked about their farming, how they got started, and their major focus. One notable issue was the lack of information available and the resistance they received when they began to consider reducing chemical use or farming organically. With perseverance and experimentation they figured out how to successfully farm using less or no toxics, making them leaders in their industry. Most had a background in science. One noted that if he had received a degree in agriculture, rather than science, he would not be trying to reduce toxics; science gave him a broader understanding of earth systems.

**Other key participants of the workshop included** Salmon-Safe; soil & water conservation districts; state departments of agriculture; environmental protection agencies; fish and wildlife departments; natural resource agencies, Estuary Partnership Board members (one a turkey farmer and another a sheep farmer), and other local growers and farmers.

## What We Discussed

**Research and information.** Lack of funding for research and experimentation was identified as a barrier to implementing techniques to reduce the use of pesticides and fertilizers. The majority of agricultural research is funded by chemical companies. When data and information on organic practices are scarce, farmers sacrifice yields to experiment with reducing toxics. Some farmers are not reducing toxics because they believe they cause less environmental impact than the CO<sub>2</sub> released from the increase in tractor time needed to mechanically control weeds. There needs to be more research dollars available to help growers fully understand their impacts, develop better management practices, and mitigate for crop loss during transitional and experimental phases. However, the internet has made accessing available information on organic growing much easier.

**Consumer awareness and education is key.** Consumers need to know what is in their food products, where they come from, and what it takes to produce food. Consumers equate appearance with quality, which is not necessarily accurate. This has resulted in compromises to the nutritional value and even the taste of many products. A poultry farmer in the audience noted that a farm-fed, organically produced turkey looks quite different than a “Butterball” turkey. This can be off-putting to many consumers who expect a certain look to a product. Growers agreed that consumers expect a shiny apple and unblemished pear, yet likely don’t know what those take to produce. The public can drive the market by being more informed about where food comes from and by demanding a higher quality food product, while accepting a few blemishes.



**Marketing and markets.** Marketing can be a difficult skill for a small farmer to master and therefore can present challenges to selling products to the mainstream. Markets are driven by appearance and cost rather than quality of food. Blemish-free produce or the iconic Christmas tree shape is perceived as better without consideration of pesticides needed to achieve it. In addition to consumer choice, wholesale buyers generally want large quantities of product with a sustained shelf life that require the use of chemicals to achieve. Organic farmers can join together to collectively sell their products under a common “organic” label. Other farmers can be brought into this collective and learn how to change their practices. Niche markets and value-added products can be helpful for small and organic farmers, but can be difficult to create or tap into.

**Farmers work together to create change.** Early farm adopters have the power to facilitate change and inspire others, as well as be the catalyst for establishing trust between landowners and regulators. Columbia Gorge fruit farmers and Oregon State University developed an Integrated Pest Management and Chemical Application manual with a 95 percent adoption rate. Other farmers who had already achieved organic status brought on conventional growers to build relationships and trust and encourage them to adopt organic practices. Many farmers are reducing pesticide use significantly, but will not become 100 percent organic. They expressed frustration that for some consumers this isn’t enough; there is no recognition of the challenges in large-scale farming, meeting market demand, financing, and consumer expectations of product.



**Building trust between regulatory agencies and farmers.** Toxics reduction requires partnerships between regulatory agencies and farmers, especially when it comes to monitoring water quality. However, there is concern that if monitoring results show toxics, the regulatory agency may take enforcement action. Providing funding for toxics monitoring was also very important, as margins are often too tight for farmers to pay for monitoring. The Pesticide Stewardship Program is a good example with proven results.

**Role of government to support farmers.** Farmers asked legislators for policies that support small, organic farms. They encouraged public purchasing programs that target products with less toxics (e.g., school lunch programs), incentive programs, and funding for research, innovative collaborations, and new technologies. There also needs to be a focus on trade agreements, labor issues, and emissions regulations.

**Preventing off-site impacts.** Growers are concerned about drift and runoff. Effective methods to limit these impacts include windbreaks and buffer strips around fields, the use of cover crops, or mowing later in the season, and using manure instead of manufactured fertilizers.

**Spreading the word.** Connecting early adopters to conservation districts or extension services builds outreach, solves problems, and helps expand use of Best Management Practices (BMP). This works best when there are similar crops grown in a local watershed. In the Hood River Valley, there was 90 percent adoption of the BMPs for orchard spraying.



## What is Ahead: Markets have the Greatest Influence on Change

**Jessika:** Ocean Spray owns more than 50 percent of cranberries in the US. Unless they see organics as viable they are not going to make any changes.

**Cathy:** It is not an equal playing field right now; the already established large companies have a large impact on decision making and marketing. There should be a return to truth in advertising. We each need to act individually and consciously and create a movement around what we consume.

**Brian:** Today there are only four or five produce buyers, which really impacts the market. These buyers grade produce based on appearance rather than nutritional value. Changing this is important.

**Clair:** When we can import blueberries from Chile for less than it costs to grow them here, we have equality biases. Foreign labor costs are cheaper and companies that operate outside of the United States are able to pollute with no regard for the consequences on the environment and human health. Science and technology are always changing and improving. Current farmers are aging and we need to see a shift to a younger generation of farmers that will do great things.



## Workshop: Reducing Stormwater – Builders & Developers Peer-to-Peer

The second workshop included representatives of public agencies and private businesses that have successfully reduced stormwater with specific innovative and practical techniques.

**David Humber** of **Humber Design Group** is a local civil engineer specializing in redevelopment of the built city. He has 25 years of experience designing private stormwater management facilities for dense urban redevelopment and infill projects primarily focused in Portland, Oregon.

**Key points:**

- Stormwater permitting processes and regulations can vary widely among local governments and states.
- Public-private partnerships can often move things further than regulations might require.

**Jill Sherman** leads **Gerding Edlen's** public-private partnerships and build-to-suit projects for non-profit and for-profit companies. Gerding Edlen is a real estate investment and development firm headquartered in Portland, Oregon that specializes in green and sustainable building practices and retrofits.

**Key points:**

- Focus on Platinum LEED and returning water to Willamette River better than the receiving waters.
- Reusing rainwater can meet much of a building's non-potable water needs.
- Solar arrays drive down energy use.

**Doug Warneke** is a production supervisor at **Toyota Logistics Services (TLS)** in Portland. He was on the development and build team for the TLS LEED Gold vehicle processing center, located on the Willamette River. Toyota believes in a robust health and safety program.

**Key points:**

- Toyota philosophy is continual improvement and a respect for people, including the health and wellbeing of both consumers and employees.

**Matt Graves** is the Environmental Manager at the **Port of Vancouver USA**. He manages compliance of the Port's stormwater, wastewater, and drinking water permits; this includes 600 acres under the Port's control. The Port works to create less costly and more innovative solutions.

**Key points:**

- Matt is one of the creators of Grattix – an innovative, portable 'rain garden in a box' that treats the stormwater from galvanized metal roofs and downspouts.
- Based on the Grattix system, they took an old bioswale and made a layered biofiltration pond at Terminal 2 that treats 50 acres.

**Jane Bacchieri** is the Watershed Services Group Manager for the **City of Portland's Bureau of Environmental Services**. She oversees planning, restoration, and monitoring activities in Portland's watersheds to manage stormwater, protect water quality, and enhance habitats for fish and wildlife.

**Key points:**

- BES has employed green infrastructure for over 20 years.
- Green infrastructure that mimics natural filtration has multiple benefits: economic, public infrastructure, environmental, and community.



**Other workshop participants included** local government representatives, state and federal agency representatives, ports, engineering firms, developers, and land use and building practitioners.

## What We Discussed

**Motivation to try new things.** Participants talked a lot about what motivated the speakers' entities to change practices and reduce stormwater, and how to motivate others to be innovative and go beyond the minimum requirements and standard approaches.

Participants shared that at different times and on different projects, regulations, developer motivation, customer motivation, or engineering constraints might be the primary driver of stormwater practices.

Toyota and Gerding Edlen noted that within their companies, motivation came from the top of the organization, starting with the guiding principles and approaches of company leadership. Toyota's two key practices - continually improve and respect people - have resulted in a continual focus on reducing toxics. At their north Portland site, directly on the Willamette River (a major Columbia River tributary), they gave up several acres of parking to create a bioswale to capture runoff from the parking area before it enters the river. They reduced wattage and lighting on the plant to conserve energy. They switched to SafeLube, a non-toxic water soluble hydraulic lubricant, and lead-free wheel weights for balancing tires, reducing workforce exposure. Gerding Edlen works with owners to incorporate green roofs and other onsite retention facilities to achieve zero runoff, growing the market for 'environmentally friendly' development.

For public entities, the motivation to reduce stormwater was driven by a combination of regulations, costs, environmental outcomes, and the recognition that preventing runoff is cheaper than treating it. The City of Portland Tabor to the River Program used integrated green and gray infrastructure and saved \$63 million from the estimated cost of "pipe solutions". Schoolyard rain gardens reduce neighborhood basement backups significantly while providing wildlife habitat and educational opportunities for students. Green roofs equal energy savings and longer roof lives.

At the Port of Vancouver, copper is a big issue at Terminal 4. Staff researched floating wetlands and started building their own using native plants. They already see decreases in copper levels with a goal of 45 percent reduction.

Panelists agreed that incentives such as tax breaks, extra points on permit applications, or allowances on other building components are useful tools. Showcasing successful examples with all the information (cost, challenges, etc.) is key. Often innovative pilot projects are funded in their initial application, but funding for continuation of successful work is more difficult to access. Peer-to-peer exchanges are effective to motivate and share information about best practices, costs, profits, and processes.

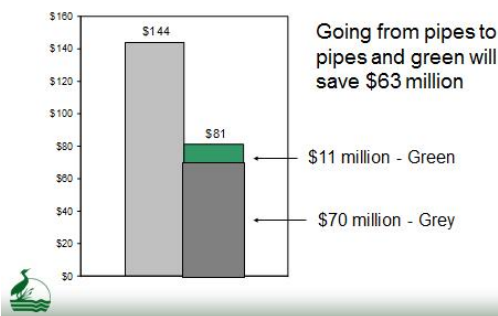
Leadership and support to try new things is critical. The City of Portland has been able to do that with the Foster Floodplain Natural Area restoration project, which took 20 years of planning and implementation. In the first flood event before construction was even complete, Foster Road flooding was controlled. Educate builders about the stormwater marketplace model and get in touch with land owners.

### THE GRATTIX



Port of Vancouver USA

### Tabor to the River





**Small and underserved communities.** Much discussion focused on how to involve small and rural communities, communities of color, and other traditionally underserved groups. While the City of Portland and some other metropolitan areas have strong green building and stormwater management regulations, there is a need to scale projects and provide incentives for smaller communities. In addition, people of color and economically challenged communities are frequently left out of the environmental movement, despite being disproportionately impacted by toxics. Locally, EPA modified an outreach strategy for one watershed improvement grant to attract applications from communities in poor neighborhoods, a method that proved successful.

**Community connections: share information and communicate.** When implementing a project, communication is important. Solicit public input as part of the design and develop partnerships. Communicate early with regulators; they will help you work through the process. Place matters, people identify with their streets and their river and people are not comfortable with what they don't know, so public education is important. For example, because the Pacific Northwest gets a lot of rain, clients often don't understand water issues and why it is beneficial to practice rain capture. It's important to convey information in meaningful terms; a "livable place index" can convert resource savings in metrics such as "number of showers" or "number of cars off of the road," etc. or a report card can communicate baseline data versus impacts over time to improve conditions.



**Plan for the future.** Participants talked about the impacts of more people moving to the region and where stormwater and other sustainable development efforts should be in 2025. Population growth in the region will further exacerbate stormwater issues unless new approaches are adopted regionally. Everyone agreed we know enough about the impacts to know we need to take more expansive approaches to reducing stormwater. We need to keep learning to track changes and measure the impact of innovative stormwater approaches in reducing toxics. We also need to look at the big picture and allow time for results. We can push for zero energy buildings and zero waste of water and focus on infill developments. We can influence purchasing at places of employment. We can add green infrastructure in redevelopment and retrofit older facilities, like using sensor lights that come on when you need them and reusing rainwater and graywater. We can protect and restore habitats in urban areas and recognize the improvement in watersheds and encourage private citizens to do their part. We also know that environmental changes take time to address.



# Next Steps

## Where We Go from Here

The workshops concluded with a summary by Estuary Partnership Board member Gabriela Goldfarb from the Office of Oregon Governor Brown. She noted that fostering peer-to-peer learning is a hallmark of the Estuary Partnership's work – bringing together leaders to help encourage their colleagues with practical information. It is a collaborative way to learn from people with actual experiences, and it allows us to explore the challenges in reducing toxics.

The growers' workshop pointed out the importance of knowing where food comes from and that accepting "less than perfect" aesthetics will pay off in reduced chemicals used and better flavor. Our personal choices are key to creating market demand for products with less toxics. Lack of academic research is a big challenge and farm research is constrained by financial risk. From the building community, we learned that incentives are helpful, especially at the early stages of technology.

Both workshops identified the following aspects to success:

- Consumer choice and developing markets.
- Organizational culture and leadership.
- Identify cost saving or market benefits and procurement as tools for toxics reduction.
- Guidance, recognition and awards, and community engagement are key, while regulations provide a vital backstop.

## Estuary Partnership Next Activity

The Estuary Partnership Board of Directors will receive a full report from the two workshops and identify areas for the Estuary Partnership to expand its role in toxics reduction and peer-to-peer conversations to support and expand regional needs. **Areas for potential Estuary Partnership work:**

**More peer-to-peer exchanges.** Develop the market, provide clear 'how-to's', show costs and savings, and provide leadership opportunities for others.

**Talk about choices.** Provide information about safe products and toxics impacts.

**Funding.** Both workshops indicated that there needs to be more investment and more resources to carry out toxic reduction actions. The Estuary Partnership will continue work with Congress to secure passage of the Columbia River Basin Restoration Act. The Act was introduced in Congress in 2010, again in 2014 and 2015. It will authorize Congress to appropriate funds to expand voluntary activities to reduce toxics in the Columbia Basin. The Columbia Basin is one of only two EPA designated Large Aquatic Ecosystems that receives no federal appropriation pursuant to that designation. The Estuary Partnership began working on this issue with Congress concertedly in 2008 as a result of our first Science to Policy Summit on toxics in the Columbia River. We have worked with them since then helping to craft the legislation and build regional support, and we have testified on it before two Congressional committees.



[www.estuarypartnership.org](http://www.estuarypartnership.org)