Columbia River Toxics Reduction Newsletter

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Photo by Susan Hess

In This Issue:

For More Information:

Mary Lou Soscia
Columbia River Coordinator
soscia.marylou@epa.gov
503-326-5873

Debra Sherbina
Community Involvement
sherbina.debra@epa.gov
206-553-0247

www.epa.gov/region10/columbia
https://twitter.com/EPAcolumbia

Working Together to Reduce Toxics in the Columbia River Basin

The magnificent and precious Columbia River Basin is one of the world's great river basins, covering a major portion of the North American landscape. The Basin is contaminated with many toxic pollutants that threaten the health of people, fish, and wildlife. Subsistence fishing by tribal people provides an even greater threat to tribal communities who have depended on fish for many generations. To protect people and the environment, EPA created the Columbia River Toxics Reduction Strategy to reduce toxics in Basin fish, water and sediment. A large, diverse group of partners, including state, tribal, and local governments; other federal agencies; the Lower Columbia River Estuary Partnership; citizen groups; and industry, is now collaborating on actions to reduce toxics throughout the Basin.

Reducing Flame Retardants/PBDEs in the Columbia River Basin Workshop February 25 in Portland, Oregon

By Susan Hess

How did something designed to do good end up being such a problem? My four-year-old cousin Tommy died when his pajamas caught fire as he stood too near a heater. Although it happened many years ago, his death remains seared into our families' memories. In response to many similar events, well-meaning people created a way to put flame retardants into children's sleepwear, saving many childhood deaths.

But the miracle had a dreadful side. In the late 1970s, National Cancer Institute studies determined that "tris", the flame-retardant chemical used, caused cancer. The Institute banned the use of this chemical in children's sleepwear. The research of Arlene Blum, then at the University of California, Berkeley, was one of the key factors leading to the regulation. She found that PBDE, a chemical fire retardant, was being used in many consumer products — furniture, carpets, textiles, and plastics used in electrical appliance and equipment.

In short, PBDEs are everywhere.

Recent scientific studies by the EPA and others have found that PBDEs (polybrominated diphenyl ethers) have become widespread in the environment and are persistent, bioaccumulative and toxic. Studies also show that PBDEs are increasing in the Columbia River Basin, an issue causing great concern.

On February 25 the Columbia River Toxics Reductions workshop looks at the issue of PBDEs in the Columbia River Basin—what they are, how they affect human and ecosystem health, how they enter the environment, where they are found, how to reduce their use, and how to develop green chemistry to replace them.

Dr. Arlene Blum leads off the day along with experts from Oregon State University, Washington Department of Ecology, Oregon Department of Environmental Quality, U.S. Geological Survey, EPA, and Oregon Environmental Council.

PBDE workshop:
Feb. 25, 2010
8:30 a.m. to 4:30 p.m.
Ambridge Events Center
1333 NE Martin Luther King Dr.
Portland, Oregon
For more: www.epa.gov/region10/columbia

Columbia River Toxics Reduction Action Plan

In 2005, EPA joined federal, state, tribal, local, industry and nonprofit partners to form the Columbia River Toxics Reduction Working Group to better coordinate toxics reduction efforts and share information. EPA and the Working Group issued the Columbia River Basin State of the River Report for Toxics http://yosemite.epa.gov/r10/ecocomm.nsf/columbia/SoRR , in January 2009.

This report describes the risks toxics pose to people and animals living in the Basin, and describes efforts needed to reduce toxics. It focuses on four contaminants: mercury, dichlorodiphenyltrichloroethane (DDT) and its breakdown products, polychlorinated biphenyls (PCBs), and polybrominated diphenyl ether (PBDE) flame retardants. These contaminants exist throughout the Basin at levels that could harm people, fish, and wildlife. Many other contaminants that can impact ecosystem and human health are found in the Basin including: arsenic, dioxins, radionuclides, lead, pesticides, industrial chemicals, and "emerging contaminants" such as pharmaceuticals.

In 2006, EPA designated the Columbia River Basin as a priority Large Aquatic Ecosystem (LAE) in the same class as the Chesapeake Bay, Great Lakes, and Puget Sound. But unlike our partner LAEs, all who have designated funding sources, all Columbia River Basin work is currently being done through coordination and partnerships who must add it to their current workloads.

In the State of the River Report for Toxics, the Working Group identified an action plan as a next step. The Draft Columbia River Toxics Reduction Action Plan includes five initiatives, with recommendations for citizen and government action that must be taken if we are to reduce toxics in the Basin. The plan outlines work that can be done with current resources, and actions that could be taken if given additional resources. However, the Working Group believes that toxics reduction for the Columbia River Basin will only be accomplished if there are additional resources.

Columbia River Basin Toxics Reduction Action Plan Goal and Initiatives:
Goal: Reduce human and ecosystem exposure to toxics in the Columbia River Basin

- Increase toxic reduction actions
- Conduct monitoring to identify sources and then reduce toxics
- Develop a regional, multi-agency research program
- Develop a data management system that will allow us to share information on toxics in the Basin
- Increase public understanding and political commitment to toxics reduction in the Basin

The Working Group plans to have a Final Action Plan by May 2010. Send comments to EPA Region 10 Columbia River Coordinator, Mary Lou Soscia, at soscia.marylou@epa.gov, or EPA Region 10 Oregon Operations Office, 805 SW Broadway, Suite 500, Portland, Oregon 97205.

Oregon DEQ Toxics Reduction Strategy

The Oregon Department of Environmental Quality (OR DEQ) is developing a Toxics Reduction Strategy. The goal is to employ a comprehensive, integrated, cross-media approach to reducing toxic chemicals and pollutants in Oregon's air, water, and land.

Mercury is often discharged in the air – from cement and coal plants – and then deposited on lands where it runs into lakes, rivers, and creeks. Mercury is just one of the toxic chemicals and pollutants OR DEQ aims to reduce with a "cross-media" – meaning "air and water" – approach. By ensuring cross-program coordination, OR DEQ will also find ways to use resources more efficiently. Studying the problem in a holistic way allows the agency to move beyond a chemical-by-chemical approach to addressing toxics and establish a long-term direction.

OR DEQ identified seven steps for the Toxics Reduction Strategy, each one builds on the other:

1. Determine high-priority toxic chemicals
2. Identify sources and pathways for priority toxics
3. Evaluate current strategies for reducing toxics (i.e., identify gaps)
4. Identify new toxics reduction opportunities
5. Develop implementation and communication plan
6. Conduct public outreach and present final strategy to environmental quality commission
7. Implement strategy

OR DEQ identified high-priority chemicals, gathering data on those chemicals, and information on sources and pathways. OR DEQ also started a review of existing programs to identify gaps related to priority chemicals and sources, and developed criteria to evaluate possible new or modified toxics reduction actions. The current plan is to complete a draft strategy by summer 2010.

The OR DEQ Toxics Reduction Strategy is closely tied in with other current toxics reduction initiatives. These include the Senate B 737 Persistent Pollutant Program for surface water toxics, the revision of the Human Health Toxics Water Quality Criteria, the Portland Air Toxics Solutions project, and the Columbia River Basin Toxics Reduction Action Plan. As a result, as part of strategy development, OR DEQ, EPA and other agency staff working on these initiatives are coordinating their efforts. An internal, cross-program team is guiding the work within OR DEQ, while an external stakeholder group is giving input to the agency on the each major step in the process.

Find more information on the OR DEQ Toxics Reduction Strategy on the agency's new toxics reduction webpage: http://www.deq.state.or.us/toxics/index.htm, or contact Kevin Masterson at masterson.kevin@deq.state.or.us or 503-229-5615.

Omeg Orchards: Green All Around

By Susan Hess

Mike Omeg plants "scabs." That's what orchardists call land too steep or shallow to plant trees. He plants wildflowers there to provide nectar and pollen for beneficial insects—lady bugs, bees, lacewings and dozens more. With what is, essentially, a gigantic flower garden, the scab land becomes an insectary—one component of what makes Omeg's 400-acre cherry orchard an example of how to bring green into a traditionally pesticide-heavy industry.

Five years ago Omeg, 34, took over the family farm. He's the fifth generation to farm this land which lies a few miles south of The Dalles, Oregon. He graduated from Oregon State University with a master's degree in entomology. When he took over the farm, he started putting what he learned into practice. From insectaries to weather stations, he's revamping the way an orchardist controls agricultural pests, uses water, and protects water.

Insectaries
"Many dozens of insects assist us in the orchard with pest control and pollination," Omeg says. The cherry orchard is a monoculture; the rows planted with grass and mowed. After cherry bloom, there is limited food for insects. The insectaries provide food and habitat all season. "I also notice they get a lot of bird activity," Omeg says, "in the fall when the flowers go to seed."

Owls, bats and bluebirds
To control gophers and voles, Omeg had been using rodenticides. "We spent a lot of time and labor on something I didn't want to put out, and we were barely keeping up controlling the population," Omeg says. In searching for a better way, he found that California vineyards had successfully used owls. He invited cavity-nesting bird conservation expert John Schuster http://www.wildwingco.com/id14.html to speak to growers. 94 growers showed up to hear him.

Omeg installed 50 owl boxes, 50 bluebird boxes, a few kestrel boxes, and 3 bat boxes (each capable of housing 2100 bats) in his orchards. Nearby growers have put up an additional 250 owl boxes.

"A barn owl family will eat 3000 gophers in a season," Omeg says. He was paying a man $2.50 for each gopher trapped. "Much cheaper to put in an owl box." He still is using some rodenticide—one with low toxicity to owls. He's experimenting to see if he can eliminate using any rodenticide, because all types can harm or even kill other helpful predators, like foxes and coyotes.

The kestrel boxes are new. Omeg hopes kestrels will keep out fruit-eating birds like starlings and English sparrows. And the bluebirds? The best insect eaters. Last year bluebirds used every box.

Irrigation
Saving water keeps more water in the Columbia River and reduces energy use. Most of the irrigation water the orchard uses is pumped 700 vertical feet from the river. Efficient irrigation was installed on the entire acreage: 80 percent micro-sprinklers and 20 percent drip. Both are over 85 percent efficient versus 50 percent for overhead sprinklers. Additionally, he applies straw mulch on land with the most water concerns.
Omeg and an irrigation consultant meet weekly during the season. Weekly moisture-probe readings are fed into the weather station's computer models, which tells them how much the crop has used and how much it will need.

Mike Omeg with owl, kestrel, and blue bird boxes

Weather stations
The cookie example best explains why the weather stations made such a difference in reducing pesticides use.

The weather stations look like poles. They have equipment to measure wind speed and direction, humidity, precipitation, temperature, barometric pressure and dew point, plus providing hourly forecasts into a web-based network.

"It's about degree days," Omeg says. "Insects are cold blooded; they need Mother Nature's heat to develop. If the environment is warm, they develop faster. It's like baking cookies: a certain amount of heat must accumulate to go from cookie dough (the insect egg) to a baked cookie (the hatched worm). If the oven is set at 200 degrees the cookie will bake, it will just take a lot longer than baking at 375 degrees."

For years orchardists sprayed by the calendar. Some still do, but calendars can be very far off depending on the season's weather. But the weather station computer models put all the weather conditions together and accurately predict the best time to apply sprays.

Omeg takes a chart out and shows how it works for one pest: the leafroller. "For this insect, if you always spray at bloom, we have to use a long lasting product, like an organo phosphate. But really we just want to spray at egg hatch—when it starts and when it ends. Then we can apply 'soft' (or reduced risk or low toxicity) pesticides that will only be active for two to three days. We only want to spray once, because the soft pesticides are expensive."

The original money for the first 15 weather stations in Wasco County and developing the computer models came in $1.2 million in grants from EPA, BPA, Oregon DEQ, Wasco County PUD and local growers. A second grant bought 18 more for orchardists

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in Hood River County. Growers have since purchased an additional 161.

Restoring oak woodlands
Throughout the farm, Omeg is replanting oaks and some ponderosa pines, "In the mid-Columbia oak savannas provide the most diverse wildlife habitat, both food and shelter."

Stream drift barriers
Native vegetation is left in areas along creeks to protect the stream and prevent erosion and runoff that would carry soil particles carrying pesticides into the creeks.

Education
"We put out a big effort to have growers change management practices to reduce the impact of pesticides on streams," Omeg says. A recent survey of 12 orchardists showed they had reduced their use of organo phosphates 30 percent, some up to 100 percent.

Tower sprayers
One of the problems with spraying is drift: into the air, creeks, neighboring properties. Traditionally, orchardists have used airblast sprayers. Omeg switched to tower sprayers. The air blast style directs air out a single central source creating a unidirectional flow, allowing the small lightweight drops to drift into the atmosphere above the trees. This is inefficient and puts an unnecessary amount of pesticide into the environment.

Tower sprayer nozzles spray horizontally into the tree. 'The top of the tower focuses the air slightly downward toward the center of the canopy as well as providing a boundary of clean air above the canopy. This boundary of clean air traps the spray-laden air into the target canopy, thus minimizing drift.' (OSU report: Orchard Sprayer Trials: spray drift & coverage, Mar. 2007.)

The towers are more efficient at depositing spray solution which can cut the amount of active ingredient needed up to 20 percent. Omeg uses three towers and depends on the weather stations to monitor wind conditions that guide when spraying will create the least drift.

Green, eco-friendly agricultural practices are gradually taking the place of more traditional practices nationally and worldwide. Mike's work at Omeg Orchards is helping this new tradition take root. For more information, visit www.omegorchards.com

Places of the Columbia: Kettle Falls

It is puzzling why so much is written about Celilo Falls and so little about Kettle Falls, the Columbia River's two great falls. For over nine thousand years each was a Native American salmon fishing site, a place where people came hundreds of miles to fish, trade, and socialize—comparable, in importance for Pacific Northwest Indians, to New York City and London.

With a roar heard for miles, the Columbia plunged over these falls in a series of rapids and cascades: 50 feet at Kettle Falls and 83 feet at Celilo. The Northern Interior Salish people called Kettle Falls Shonitkwu, meaning 'roaring or noisy waters.' In the lower Columbia, Sahaptin speakers name for Celilo Falls meant 'echo of falling water.' Kettle Falls, formed by ice age floods, lay the farthest up river: about 40 miles south of the Canadian border in northeastern Washington State.

Once, salmon returning from the Pacific Ocean to spawn leapt up the falls. At Kettle Falls, an Army Corps of Engineers 1999 study estimated the run at 1.1 million fish. The salmon, slowly changing from marine to freshwater fish, had traveled up the Columbia some 800 miles by the time they reached Kettle Falls.

The salmon runs, Kettle Falls, and the Indian way of life ended in 1941 with the completion of 550-foot-tall Grand Coulee Dam. Engineers provided no fish passage past the dam. Tribal peoples mourned the loss of the falls and salmon with a Ceremony of Tears. The falls now lie 80 feet beneath Lake Roosevelt, the 144-mile-long reservoir the dam created. The Dalles Dam flooded Celilo Falls in 1957.

Celilo became an icon of tribal loss, while authors mention Kettle Falls only briefly in books and articles. But Native Americans have not forgotten the rushing waters of Kettle Falls and the lost salmon runs.

Exchange Network Gives Easy Data Access

If you need information on a topic, say PBDEs for example, you are forced to search multiple databases. But if they could be linked, you could get the data you need in one simple step. You could go to a single web application and ask for information on PBDEs and the system would pull data from government agencies, tribes, and non-profit organizations.

This is the goal of EPA's Exchange Network, explained Andy Battin, EPA Deputy Director of the Office of Information Collection in Washington D.C., and David Tetta, e-Government Coordinator in Seattle at the CRTR January meeting. The system is already operating in some areas of the country. Oregon Department of Environmental Quality (OR DEQ) and Washington Department of Ecology (DOE) have access points on the network. EPA's goal is to increase participation to include tribes and other local agencies.

"What the network will do," Tetta said, "is help agencies, tribes and others share their data sets more easily with each other." For more information, visit: http://exchangenetwork.net/