

Control of Toxic Chemicals in Puget Sound

Phase 1: Initial Estimate of Loadings

Mercury, PCBs, flame retardants, and other persistent chemicals are found in Puget Sound where they concentrate and enter the food chain. These toxic substances threaten both the health of people who eat the fish and shellfish harvested from Puget Sound and the health of the fish and marine birds and mammals that live in the Sound.

Governor Gregoire is moving to restore the entire Puget Sound ecosystem to health by the year 2020. The Puget Sound Partnership and state leaders have demonstrated a serious commitment to saving the Sound.

In an early step, the state Department of Ecology (Ecology) in collaboration with other partners has conducted an initial investigation of toxic chemical loading into Puget Sound. The report of this work is titled, *Control of Toxic Chemicals in Puget Sound, Phase 1: Initial Estimate of Loadings*. The project steering committee included representatives from several Ecology programs, the U.S. Environmental Protection Agency, King County, and the Puget Sound Partnership. The environmental consulting firm Hart Crowser conducted the analysis and prepared the report for Ecology.

This Phase 1 report marks the beginning of a program to control the sources of toxic substances entering Puget Sound. It helps the Puget Sound Partnership take a first step to protect and restore the Sound. It provides initial estimates of contaminant loadings from several of the main pathways to the Sound, such as surface runoff, air deposition, oil spills, combined-sewer overflows, and wastewater dischargers. Estimates for other pathways will require additional work.

The report identifies the major gaps in information that we must fill if we are going to restore Puget Sound. It is an initial investigation and provides only ballpark estimates of loading because of the large uncertainties. It sets an initial framework upon which the Puget Sound Partnership, Ecology, the

WHY IT MATTERS

The more we learn about toxic chemicals, the more we realize they are everywhere.

Thousands of chemicals go into the making of products we use every day to improve the quality of our lives. They are in the products we buy and use at home and work. We know that some of these chemicals can harm our environment and our health.

Toxic chemicals are found in many fish and aquatic species that live in Puget Sound. They are in our air, water, soil and food chain.



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U.S. EPA, and other partners can base policy actions that will reduce and control releases of toxic chemicals.

Ecology and other agencies have already started several of the eight planned Phase 2 Toxics Loadings projects. Ecology is sketching out the scopes of work for several Phase 3 projects.

Report conclusions

1. We have significant data gaps in our knowledge about how toxic chemicals are getting into Puget Sound. The types of data various agencies have collected often cannot be matched up and integrated.
2. Surface runoff is generally the largest contributor of toxic chemicals to Puget Sound. The report defines surface runoff as stormwater, groundwater that discharges into rivers and streams, and runoff with no obvious point of discharge, also known as “non-point” source pollution.
 - The concentrations of many contaminants in the water discharged from developed lands are generally greater than those from undeveloped lands.
 - Since 89 percent of the Puget Sound watershed is undeveloped or agricultural, surface runoff from these areas also contributes certain other contaminants.
3. Polluted air has deposited toxic chemicals directly to the waters of Puget Sound, at rates similar to those from surface runoff for polyaromatic hydrocarbons (PAHs) and polybrominated diphenyl ethers (PBDEs).
4. Sufficient data are not available to support an accurate estimate of the contribution of toxic chemicals from wastewater.
5. Although combined sewer overflows and spills of oil directly to Puget Sound contribute relatively little to the total loading compared with surface runoff, they may still produce harmful local effects.

Recommendations

- The report recommends that the state conduct further analyses to:
- Quantify the contributions from industrial and municipal wastewater.
- Estimate contributions from contaminated sediment, biota, and ocean inputs.
- Evaluate the contributions of specific chemicals through specific pathways. The toxic chemical classes that require the most study are phthalates, PBDEs, hormone disrupters, PAHs, and PCBs.
- Upgrade Puget Sound models to determine the movements of toxic chemicals and predict the impacts of proposed control actions.
- Evaluate the contaminant loads in runoff from roads, parking lots, and other land uses.
- Develop and test regional air pollutant transport models.
- Evaluate possible seasonal and geographic effects on loading rates.

Why toxic chemicals are a problem

The more we learn about toxic chemicals, the more we realize they are everywhere. Tens of thousands of chemicals go into making up the products we use every day to improve the quality of our lives. However, we do not know the effects on our health from most of these chemicals. They are in the products we buy and use at home and at work. They are in our air, water, and soil.

Infants, children, and the elderly have special concerns regarding exposure to toxic chemicals. Children tend to have greater exposures because, pound for pound, they breathe more air, drink more water, and eat more food than adults. Also just being kids – putting their hands and toys in their mouths, playing on the carpet or the ground – exposes children to toxics in a way adults are not. The elderly often have greater susceptibility to toxic chemicals due to heart, lung, or immune system problems.

Read the full copy of the report at www.ecy.wa.gov/programs/wq/pstoxics/index.html