

PUGET SOUND VITAL SIGNS

VITAL Sign TOXICS IN AQUATIC LIFE

Organisms living in Puget Sound are exposed to thousands of toxic chemical pollutants that can impact their health and survival. Many of these chemicals also pose a threat to humans who consume contaminated Puget Sound seafood. This Vital Sign tracks four important pollutant groups in Puget Sound that are considered indicators of organism health related to exposure to these pollutants. These groups include chemicals that persist in the ecosystem and can increase in predators as the chemicals move up the food chain, as well as chemicals that are quickly broken down in the environment. Measuring these chemicals in organisms' tissues tells us whether current levels are harmful to the organisms or the predators that consume them, whether they are safe for humans to eat, and whether conditions are improving or getting worse.

The continued presence of these chemicals in the ecosystem also hinders progress towards achieving Puget Sound recovery goals tracked in other Vital Signs. Toxic contaminants reduce [healthy water quality](#), undermine efforts to [protect and restore habitats](#), and threaten [thriving species and food web](#). Moreover, these chemicals impact all indicators recognized by the [vibrant human quality of life](#) and [healthy human population](#) Vital Signs, and raise concerns regarding inequitable health impacts on communities who rely on local Puget Sound seafood.

Related Strategies

- [Awareness of Effects of Climate Change](#)
- [Climate Adaptation & Resilience](#)
- [Education Partnerships](#)
- [Funding](#)
- [Human Health](#)
- [Oil Spills](#)
- [Research & Monitoring](#)
- [Stewardship & Motivating Action](#)
- [Stormwater Runoff & Legacy Contamination](#)
- [Strategic Leadership & Collaboration](#)
- [Toxic Chemical Pollution](#)
- [Wastewater Systems](#)

VITAL SIGN > INDICATOR	PROGRESS	STATUS
Toxics in Aquatic Life		
Contaminants in adult salmon	LIMITED DATA	BELOW TARGET
Contaminants in English sole	MIXED RESULTS	BELOW TARGET
Contaminants in juvenile salmon	LIMITED DATA	BELOW TARGET
Contaminants in Pacific herring	MIXED RESULTS	BELOW TARGET
Contaminants in caged mussels	INDICATOR TO BE DEVELOPED	NO TARGET

Vital Sign Reporter

WA Department of Fish and Wildlife, Toxics Biological Observation System. Key messages were reviewed by the PSEMP Toxics Work Group. Sandra.ONeill@dfw.wa.gov

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KEY VITAL SIGN MESSAGES

Aquatic organisms in Puget Sound are exposed to complex mixtures of thousands of chemicals that may have cumulative or synergistic impacts on their health and survival and limit the amount of seafood we can safely eat. Most of these chemicals are not regulated or managed, and the full extent of their impacts in the ecosystem is unknown.

Technical experts in the [Puget Sound Ecosystem Monitoring Program Toxics Work Group](#) have put together a series of Key Messages for 2021, based on the most current monitoring and research results in the region. These messages highlight the toxics-related fish and human health issues that are most worrying, and which we feel need urgent attention (RED FLAGS), issues where progress has been made, but problems remain (YELLOW FLAGS), and those

areas where we have reached our recovery goals (GREEN FLAGS).



PCBs remain a problem because they are harming the health of aquatic life and people throughout Puget Sound, despite past and ongoing work to reduce PCB pollution throughout the region. [more details](#)



Puget Sound fish are exposed to chemicals that may impair their ability to reproduce. This includes changes in reproductive timing in adult females and widespread presence of female-specific characteristics in male and immature fish. [more details](#)



The concentrations of PBDEs (a type of flame retardant) are going down in most areas or have reached levels unlikely to cause harm. They remain a high concern, however, for juvenile Chinook salmon and steelhead trout from specific river estuaries. [more details](#)



Widespread declines in PAH-induced liver disease in English sole indicate Puget Sound-wide reductions of certain cancer-causing PAHs in bottomfish habitats, however PAHs remain common in many nearshore habitats. [more details](#)



Coho salmon die when exposed to tire-related contaminants in runoff from roads, particularly in streams in and around cities, a condition referred to as urban runoff mortality syndrome. [more details](#)



Puget Sound aquatic species are exposed to thousands of “Contaminants of Emerging Concern” (CECs), a term used to refer to man-made chemicals that are unregulated, generally not well managed, and present in the environments at levels that may be harmful to fish, wildlife, or people. [more details](#)

BACKGROUND DOCUMENTS

Implementation Strategy

The Partnership and its affiliated network of researchers works with the three Strategic Initiative Lead Teams on Implementation Strategy development and operationalization. Please read more about these teams and our shared work at <https://pugetsoundestuary.wa.gov/recovering-puget-sound/>

- [Stormwater Strategic Initiative](#)
 - [Toxics in Fish Implementation Strategy](#)

Indicator Targets

- [Toxics in Aquatic Life 2050 Recovery Target Fact Sheet](#)
- [2020 Ecosystem Recovery Targets](#)
 - [Leadership Council Resolution 2011-11: Adopting a 2020 ecosystem recovery target for toxics in fish](#)
 - [Toxics in Fish 2020 Target Briefsheet](#)

OTHER RESOURCES

- [2022 PSEMP Salish Sea Toxics Monitoring Synthesis](#)

CONTRIBUTING PARTNERS



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TO LEARN MORE ABOUT THE VITAL SIGNS VISIT: vitalsigns.pugetsoundinfo.wa.gov OR CONTACT: vitalsigns@psp.wa.gov