

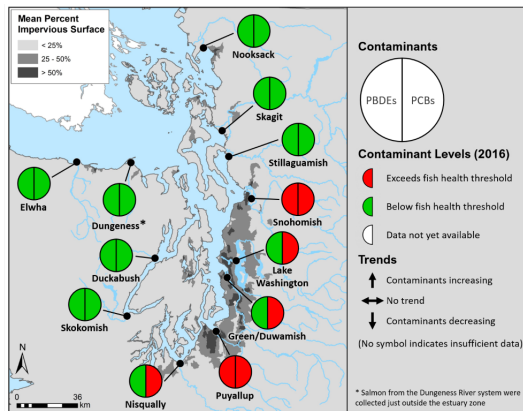
# PUGET SOUND VITAL SIGNS

## INDICATOR CONTAMINANTS IN JUVENILE SALMON

The contaminants in juvenile salmon indicator reports the levels of two toxic contaminants, PCBs and PBDEs, in the whole bodies of juvenile Chinook salmon migrating seaward to Puget Sound and the Pacific Ocean. Levels of PCBs and PBDEs in juvenile Chinook salmon are a measure of inputs of known contaminants of concern to freshwater, estuarine and nearshore marine habitats (river systems), potentially harmful to salmon and other species in these habitats, likely reducing their survival.

Indicator  
Progress

Target  
Status



Contaminant levels in juvenile Chinook salmon from 11 river estuaries and Lake Washington in 2016. Red indicates high contamination, with some salmon (5th percentile or greater) exceeding the fish health threshold. Green indicates low contamination, with most salmon (95th percentile or more) below the threshold. Trends data is pending for a selected number of sites. Mean percent impervious surface is used here as a proxy for degree of land development.

### Target

By 2030, 95% of the samples gathered across Puget Sound habitats exhibit a declining trend of contaminant levels, or are below thresholds of concern for species or human health.

By 2050, 95% of the samples gathered across Puget Sound habitats exhibit contaminant levels below thresholds of concern for species or human health and show no increasing trends.

[Target fact sheet](#)

### Data Source

Washington State Department of Fish and Wildlife, Toxics Biological Observation System (unpublished data)

### Indicator Lead

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### Last Updated

05/23/2022

## Key Vital Sign Indicator Results

- The contaminants in juvenile Chinook salmon indicator failed to meet the recovery target (see target description) because both PCB and PBDE levels in juvenile Chinook salmon exceeded the fish health thresholds from at least one location. For detailed results, see the [Interpretation of Results](#) section.
- PCB levels exceeded the fish health threshold in juvenile Chinook salmon from four of the 11 river estuaries (Snohomish, Duwamish/Green, Puyallup and Nisqually), and Lake Washington, all sites surrounded by moderately or highly developed land (with more than 25% impervious surface). Juvenile Chinook salmon from all remaining river estuaries had PCBs below the fish health threshold.
- PBDE levels exceeded the fish health threshold in juvenile Chinook salmon from the Snohomish and Puyallup Rivers, two rivers where PCBs were also elevated. In the remaining nine river estuaries and Lake Washington, PBDE levels were below the fish health threshold.
- Both hatchery- and natural-origin Chinook salmon were exposed to contaminants. In some instances, natural-origin salmon had higher contaminant levels (O'Neill et al. 2020), likely due to their extended use of estuarine habitats compared to hatchery-origin salmon.
- Contaminant-related health risks for ESA-threatened Chinook salmon were widespread in developed watersheds in central and south Puget Sound where contaminant levels were high enough to potentially adversely affect salmon health and reduce their survival.
- Contaminants in juvenile Chinook salmon above fish health thresholds may reduce the abundance of returning adult [Chinook salmon](#), thus impacting the food supply available to [Southern Resident killer whales](#), as well as decreasing recreational, commercial, tribal ceremonial and subsistence fishing opportunities.
- Evaluation of the progress towards the recovery target relies on a comparison of current and previous contaminant levels to identify trends over time for this indicator. Currently, trend data is pending for a select number of sites and will be updated in the near future.

## CONTRIBUTING PARTNERS



Washington  
Department of  
**FISH &  
WILDLIFE**

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