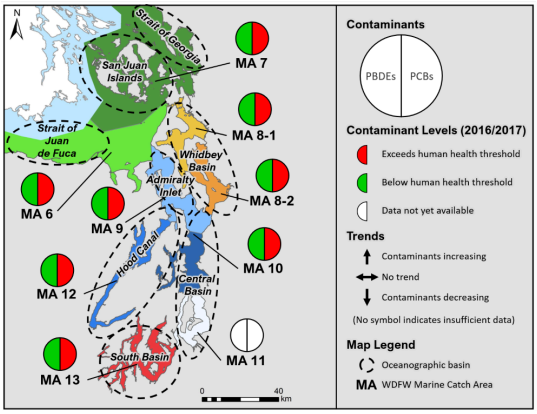
PUGET SOUND
VITAL SIGNS

INDICATOR
CONTAMINANTS IN ADULT SALMON

The contaminants in adult Chinook salmon indicator measures levels of two toxic contaminants, PCBs and PBDEs, in edible muscle tissue (fillet) of maturing Chinook salmon that reside in Puget Sound. Levels of PCBs and PBDEs in resident Chinook salmon indicate the amount of these contaminants to which humans and other predators like Southern Resident killer whales may be exposed to when eating these salmon, as well as potential impairments to salmon health that may limit their recovery.



Contaminant levels of PCBs and PBDEs in edible muscle tissue (fillet) of resident Chinook salmon from 8 marine areas (MAs), each noted by a unique color, roughly representative of major oceanic basins. Red indicates high contamination, with some salmon (5th percentile or greater) exceeding the human health threshold for that contaminant. Green indicates low contamination, with most salmon (95th percentile or more) below the threshold for that contaminant.

Indicator Progress

LIMITED DATA

Target Status

BELOW TARGET

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Washington Department of Fish and Wildlife, Toxics Biological Observation System (unpublished data)

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Last Updated

07/01/2022

Key Vital Sign Indicator Results

- Contaminants measured in resident Chinook salmon in 2016 failed to meet the recovery target for the contaminants in adult Chinook salmon indicator because PCBs were elevated in most of the samples (see target description). For detailed results, see the Interpretation of Results section.
- PCBs in virtually all resident Chinook salmon from all marine areas exceeded the human health threshold (i.e., the WA Department of Health (DOH) screening value concentration). In contrast, PBDE concentrations in resident Chinook salmon were below the human health thresholds.
- Although PCB concentrations in resident Chinook salmon were always higher than PBDE concentrations, both PCB and PBDE concentrations were lowest in MA 6 and 7 and tended to increase with distance from cleaner oceanic waters. These data suggest higher contaminant inputs to inner Puget Sound (MAs 10, 8-2, 8-1 and 13), and limited movement of resident salmon between inner and outer Puget Sound, consistent with the results from other studies.
- Elevated PCB concentrations in resident Chinook salmon (and Pacific herring) above adverse health thresholds, shows us that the Puget Sound pelagic food web is a hot spot for PCBs, and may pose health risk for people and other predators like Southern Resident killer whales who eat these fish.
- Based on PCB concentrations, DOH advises people to limit their consumption of resident Chinook salmon to no more than two servings per month.
- In addition to potentially affecting the health of people and predators like Southern Resident killer whales, elevated PCB concentrations in resident Chinook salmon are also high enough to affect the health of salmon themselves, especially those residing in inner Puget Sound (MAs 10, 8-2, 8-1 and 13), potentially reducing the abundance of 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.

CONTRIBUTING PARTNERS

Washington Department of FISH & WILDLIFE