Apr 4th, 3:45 PM - 4:00 PM

Persistent bioaccumulatives in freshwater fish of the Lake Washington watershed

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PBTs in Freshwater Fish of the Lake Washington Watershed

By Jenée Colton, Rory O’Rourke, and Richard Jack

2018 Salish Sea Environmental Conference
April 4-8
Seattle, WA
King County Tissue Monitoring Program

OBJECTIVES
1) Track changes over time
2) Inform ecological and human health risk
3) Detect change from wastewater or stormwater management actions
4) Fill data gaps as needed

FRESHWATER    MARINE
Freshwater Program Cycle

- Metals and mercury,
- PCBs,
- PBDEs,
- DDTs and chlorinated pesticides.

L. Washington  L. Sammamish  L. Union  Green River  Cedar River

2014  2015  2016  2017  2018

Repeat
Lake WA Watershed
Species Collected

Photo: Chris Gregersen

Photo: USGS
Lake Washington Watershed Contaminants

Statewide mercury fish advisory

- Do Not Eat – N. pikeminnow
- 2 meals/month – Largemouth & smallmouth bass
Lake Washington Watershed Contaminants

L. Washington PCBs Fish Advisory

Added 1 meal/week - Large yellow perch (>270mm)
Lake Washington Watershed
Contaminants

CWA Impairments for Tissue

L. Washington
- PCBs,
- chlordane, DDE, DDD, dieldrin,
- TCDD,
- mercury.

L. Sammamish - PCBs

Policy revision underway for State 303(d) Listings (Policy 1-11)
Large Yellow Perch Fillet - Hg

Hg > General SL

DOH Screening Level (general pop’n)
DOH Screening Level (high consumer)
Large Yellow Perch Fillet - PCBs

PCBs < General SL

n=2
n=5
n=4

DOH Screening Level (general pop’n)
DOH Screening Level (high consumer)
Smallmouth Bass Fillet - PCBs

DOH Screening Level (general pop’n)

DOH Screening Level (high consumer)

PCBs > DOH General

n=2

n=6

n=4

Total PCB Aroclors (μg/kg ww)

Union

Washington

Sammamish
Smallmouth Bass Fillet - PBDEs

PBDEs < DOH SLs

- DOH Screening Level (general pop’n)
- DOH Screening Level (high consumer)
Smallmouth Bass Fillet - DDTs

303(d) Tissue Level Cancer Endpoint DDT
PCBs L. Washington 2010 to 2014

<table>
<thead>
<tr>
<th>Year</th>
<th>SMB</th>
<th>YPL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>n=5</td>
<td>n=5</td>
</tr>
<tr>
<td>2014</td>
<td>n=6</td>
<td>n=5</td>
</tr>
</tbody>
</table>

Total PCB Aroclors (µg/kg ww)
PCB Method Changes

Total PCB Aroclors in µg/Kg, ww

- 2010 individual
- 2014 composite (2010 quant)
- 2014 composite (2016 quant)

smallmouth bass, whole body

1504 1755
Conclusion

- PBTs lowest in L. Sammamish fish
- Smallmouth bass and yellow perch reliable
- Mercury advisory justified
- Possible fish consumption risk – Lake Union for PCBs
- Advisory not needed for PBDEs
- Possible 303(d) listing – DDTs in L. Union
Acknowledgements

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