Reducing Toxics in the Columbia River Basin

10th National Forum on Contaminants in Fish
November 2, 2009

Mary Lou Soscia
U.S. EPA – Region 10

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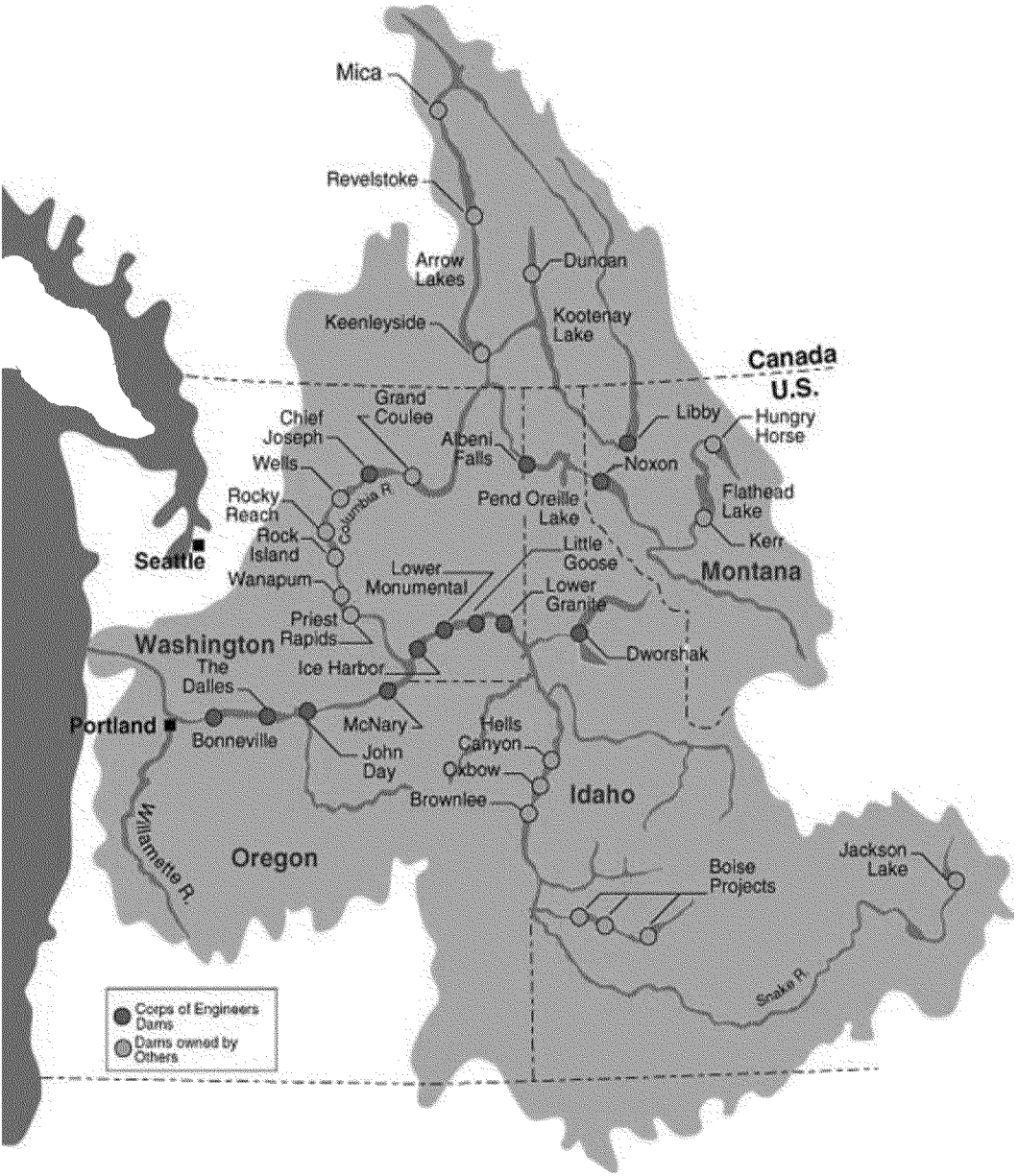
Today's Conversation

- History of Columbia River Efforts
- Rising Concern over Toxics – Fish Consumption and Contamination
- Columbia River as a National EPA Priority
- Columbia River State of River Report for Toxics
- Action Plan and Next Steps

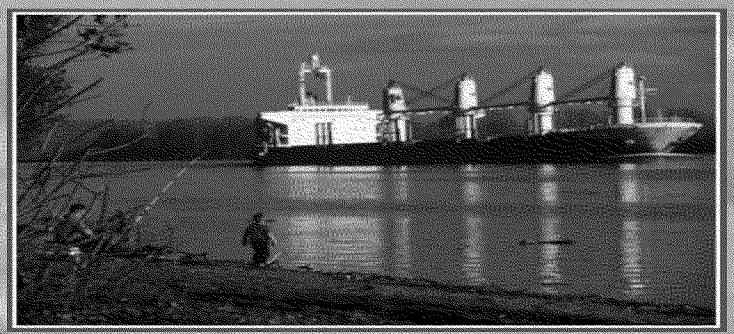
Columbia River Basin



- ~ 260,000 sq miles
- 2 countries, 7 seven states, 22 Tribes
- Largest flow to Pacific in N. & S. America
- 8 million people – 1/3 in I-5 corridor
- > 370 major dams
- 13 endangered fish species

Columbia River-Complex Issues

- Political Complexity
  - 4 states
  - 13 tribes
  - 9 federal agencies
  - Congress



- Economics
  - People
  - Agriculture/Forestry
  - Irrigation
  - Industry
  - Low cost power
  - Navigation/ Transportation
  - Irrigation
  - Fishing industry/ Recreation

10,000 Years of Tribal History

- 14 US Tribal Nations
- Salmon fishing – 10,000 years of history
- Tribal governments have been leaders in efforts to reduce toxics – for 20 years – only recently are we seeing progress

History - EPA Columbia R. Efforts

- 1989 - Lower Columbia R Bi-State 1991 –
- EPA completes Dioxin TMDL
- CWA 303(d) Listings/TMDLS
- 1992 – Nat'l Study of Chemical Residues in Fish – high fish contamination in Columbia River
- 1994 - A Fish Consumption Survey of the Umatilla, Nez Perce, Yakama, and Warm Springs Tribes of the Columbia R Basin

History – continued

- 1996 - Designation of Lower Columbia into EPA's National Estuary Program
- Superfund
  - Hanford - 1989
  - Portland Harbor - 2000
  - Lake Roosevelt - 2006 Tech Cominco Agreement
- 2000 - Bradford Is. Clean-Up - OR DEQ/Corps
- 2001 - EPA, ID, OR & WA sign agreement to begin work on Columbia/Snake River Temp/TDG TMDLs

History - continued

- 2002 - EPA Columbia R Basin Fish Contaminant Survey
- 2006 – EPA approves Snake River TMDL – temperature, DO, other parameters
- 2006 – EPA Large Aquatic Ecosystem
- 2006 – EPA, OR DEQ and CTUIR agree on FCR process for OR Water Quality Standards
- Many other work efforts underway
  - Hells Canyon Relicensing – 401 Certification

CWA 303d Listings

Columbia River

- Aldrin - WA
- Alpha BHC - WA
- Arsenic - OR
- Bacteria - WA
- Chlordane - WA
- DDT/DDE - OR/WA
- Dieldrin - WA
- Dissolved Oxygen - WA
- Mercury - WA
- PAHs - OR
- PCBs - OR/WA
- Temperature - OR/WA

Snake River

- Bacteria - ID
- Ammonia - ID
- Chlordane - WA
- DDT/DDE - WA
- Dieldrin - WA
- Dissolved Oxygen - ID/WA
- Mercury - ID/OR
- Nutrients/Phosphorus - ID/WA
- PCBs - WA
- Pesticides - ID
- pH - WA
- Sediment - ID
- TDG - ID
- Temperature - ID/WA
- Unknown Pollutants - ID

Toxics Are A Contemporary Issue

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Mother Goose and Grimm – Feb. 14, 2006

PARTLY SUNNY after morning clouds. High 73, low 55. > LOCAL B6

The Seattle Tim

50¢ King, Pierce, Snohomish, Island, Kitsap and Thurston counties | 75¢ elsewhere

INDEPENDENT AND

Columbia River toxins moving up food chain

Mounting evidence has put river on shortlist of troubled U.S. waterways

Columbia River Press

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NEWS FROM THE PORTLAND AREA AND THE NORTHWEST

The Northwest | The Columbia River

Study shows sturgeon in trouble

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By MICHAEL MILSTEIN
THE OREGONIAN

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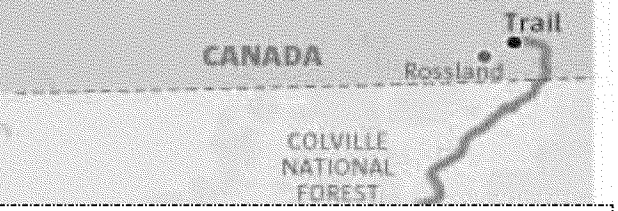
A wealth of new research reveals a toxic Columbia River



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MICHELE LEE MCMULLEN / THE SEATTLE TIMES

CRITFC Fish Consumption Study

- 1992 agreement - EPA/Yakama, Nez Perce, Umatilla and Warm Springs Tribes to better understand relationship of tribal fishing and exposure to contaminants
- First phase was a Fish Consumption Survey - CDC input in design
- 1994 Survey showed Tribal people consume higher amounts of fish than average US
- EPA used results of survey to revise water quality criteria methodology

2002 Fish Contaminant Survey

- 92 pollutants detected in fish consumed by tribes and other Columbia R consumers
- Fish taken from 24 Tribal fishing sites in Columbia River Basin - 1996 - 1997
- Anadromous: Fall/spring chinook, steelhead trout, smelt and Pacific lamprey;

  Resident: rainbow trout, mountain whitefish, white sturgeon, walleye, large scale sucker, bridgelip sucker
- PCBs, dioxins, furans, arsenic, mercury, and DDE, a breakdown product of DDT

Oregon WQS - Fish Cons Rate

- OR EQC submitted to 17.5 FCR to EPA 7/2004
- Umatilla Tribe raised concerns to EPA
- 2006 EPA, OR, Umatilla Tribe Agreement
- 10/2008 - OR EQC directed DEQ to enter rulemaking for 175 g/d (24 m/m) and develop a Toxics Reduction Strategy – Oct 2010

- OR DEQ said to EPA "Toxics Reduction is a Regional Issue"…….

Columbia River Toxics Reduction Strategy

- EPA committed to leadership
  - Lead collaborative effort in large river basin
  - Coordinate ongoing efforts
  - Increase monitoring and toxics reduction efforts

- In 2006 EPA designated the Columbia River a national priority – Large Aquatic Ecosystem – w/Chesapeake, Great Lakes, Long Island Sound, Gulf of Mexico, Everglades/S.Florida, and Puget Sound

Columbia River Strategic Plan Targets 2011 & 2014

- Protect, enhance or restore 19,000 acres of wetland & upland habitat in Lower Columbia River watershed.

- Clean up 85 acres of known highly contaminated sediments in Lower Columbia River Basin including Portland Harbor

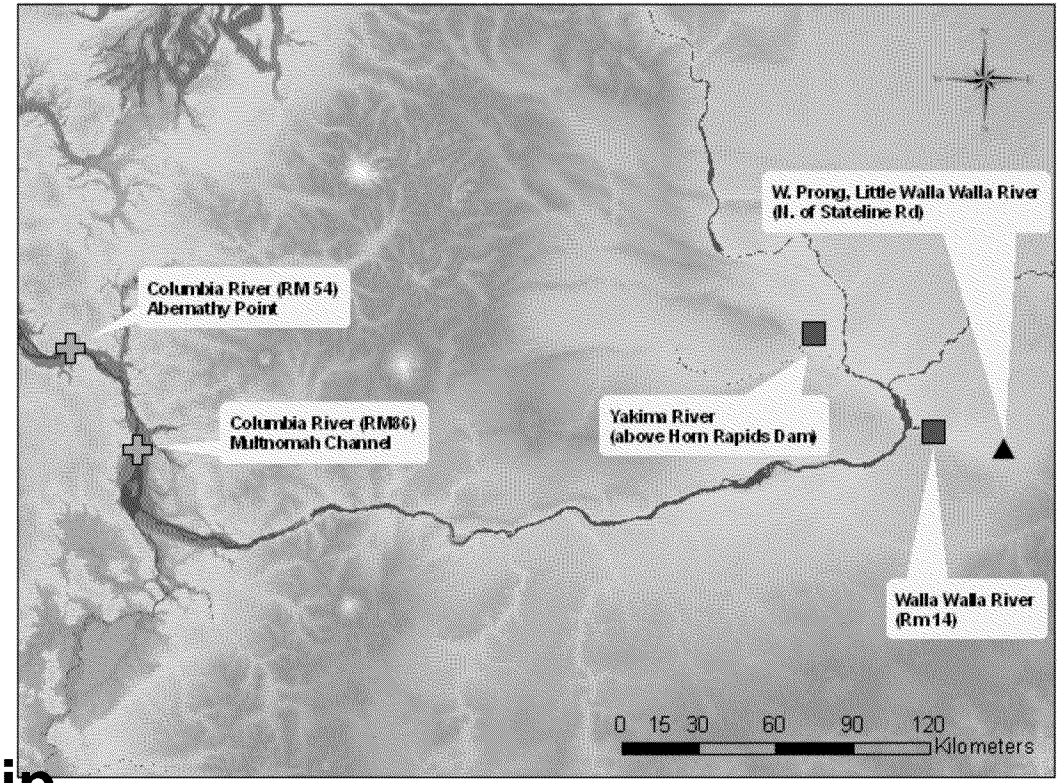
- Demonstrate a 10 % reduction in mean concentration of certain contaminants of concern found in water & fish tissue in Columbia River Basin.

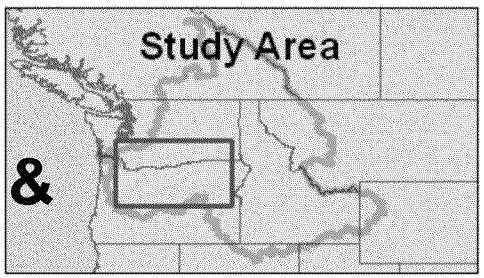
Columbia River

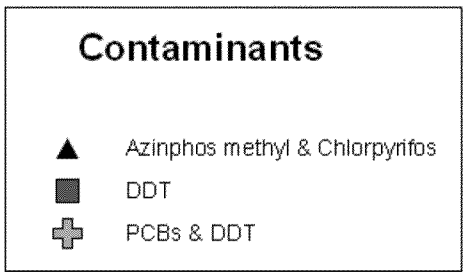
10% Reduction Monitoring Sites

5 Sites - OR & WA

- OR Walla Walla – Chlorpyrophos & Azinphos methyl - Pesticide Stewardship Partnerships
- Yakima & Walla Walla – DDT – WA TMDLs
- Mainstem Columbia – PCBs and DDT – EPA & others







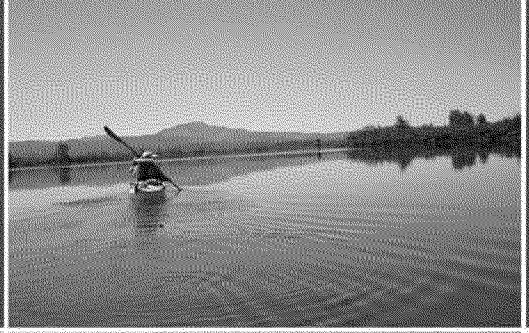
Columbia River Toxics Reduction Working Group Successful Collaboration

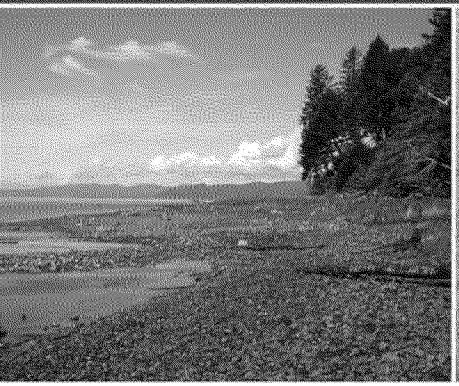
- Goal - prevent & reduce Columbia River toxics
- Coordinate future monitoring work
  - EPA/Oregon Mid-Columbia River Monitoring
  - USGS Monitoring – Lower Columbia
  - EPA Corvallis – Technical assistance on monitoring design
- Increase toxic reduction actions
- Led development of State of River Report

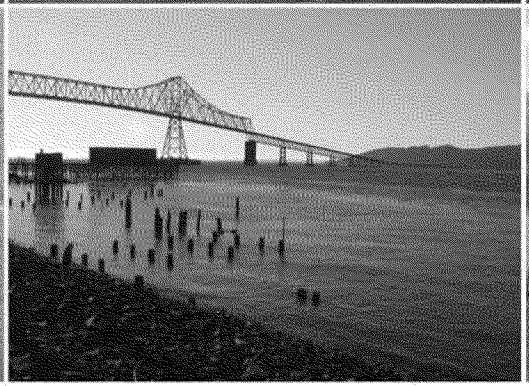
United States
Environmental Protection
Agency

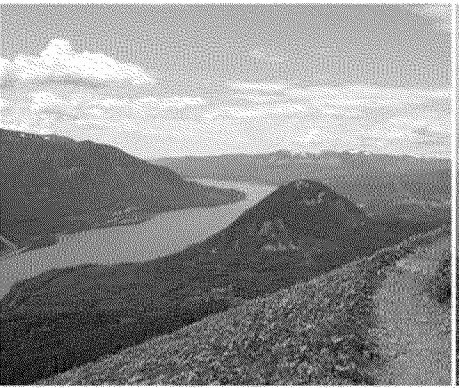
Region 10

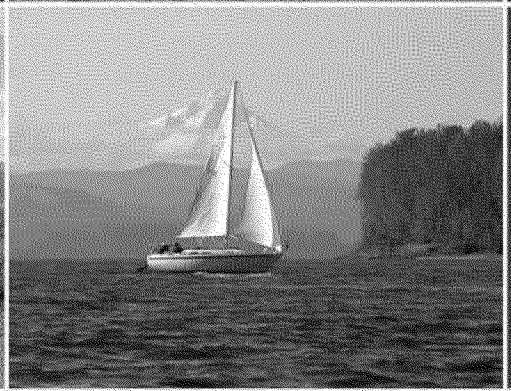
EPA 910-R-08-004 | January 2009



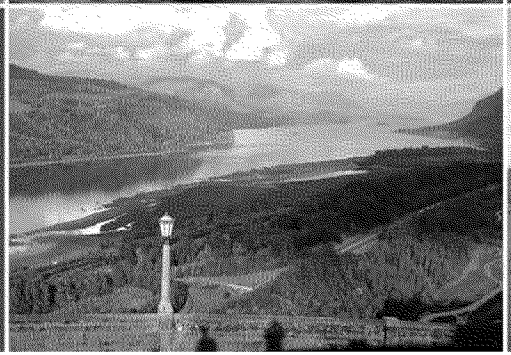


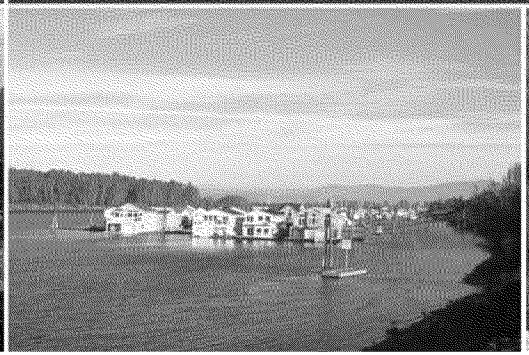


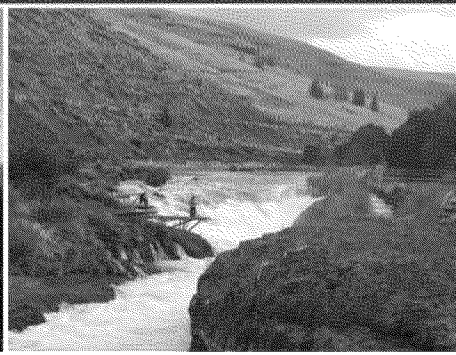




Columbia River Basin:
State of the River Report for Toxics
January 2009

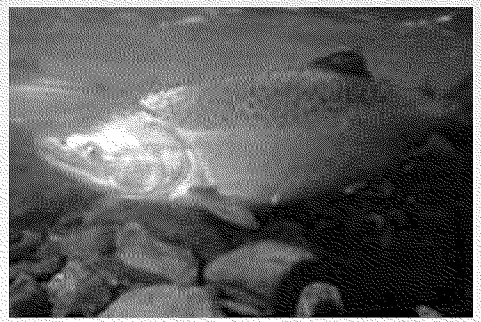






www.epa.gov/region10/columbia

Contaminants & Indicators



- Focused on 4 contaminants, but recognize other contaminants of concern
  - **Mercury, PCBs, DDTs, and PBDEs**

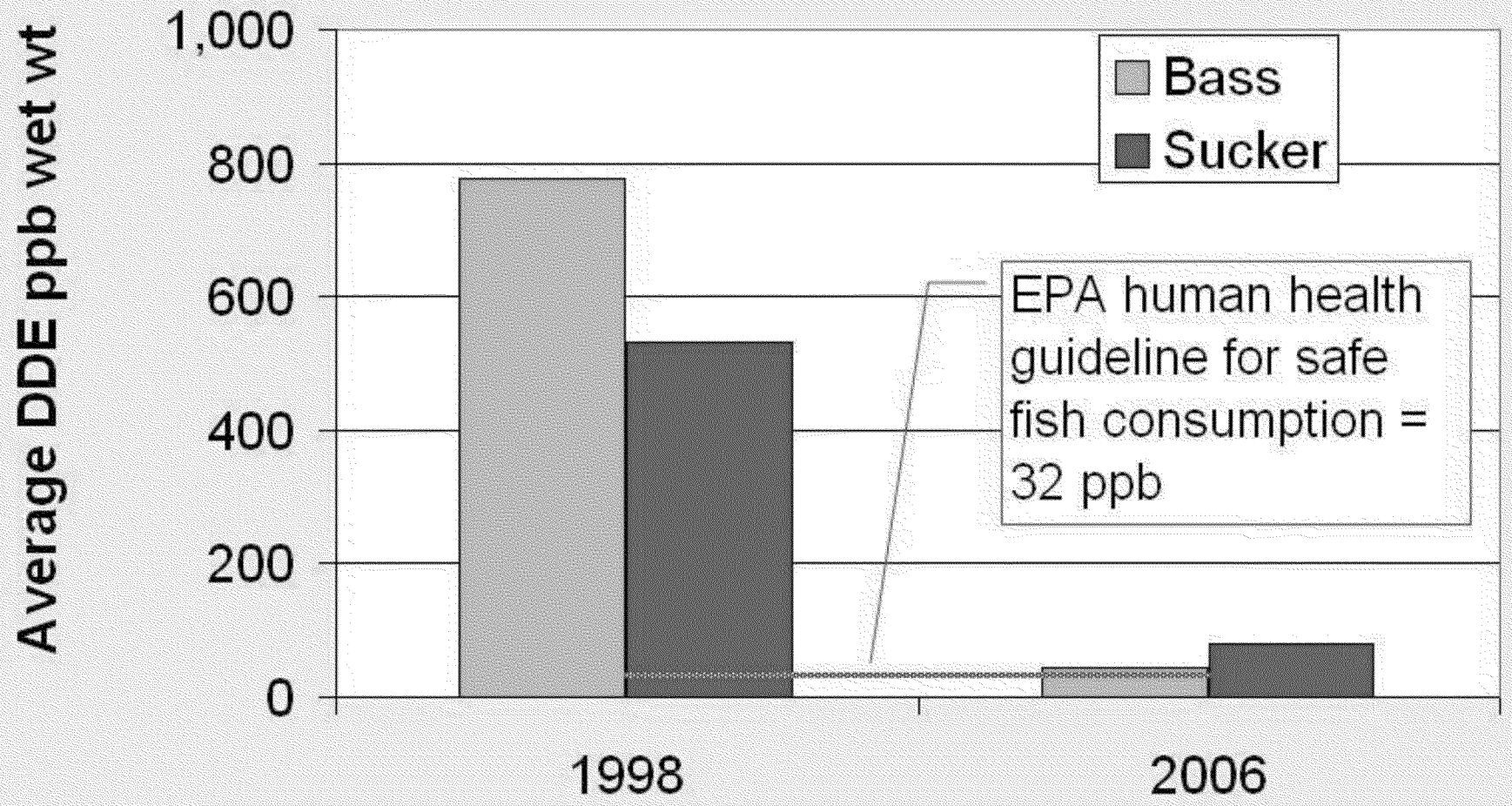
- Identified indicator species to track over time

- **Juvenile salmon**
- **Resident fish**
- **Sturgeon**
- **Predatory birds – osprey and bald eagle**
- **Aquatic mammals – mink and river otter**
- **Sediment-dwelling shellfish – Asian clam**

DDTs: Banned in 1972, still persists in the environment

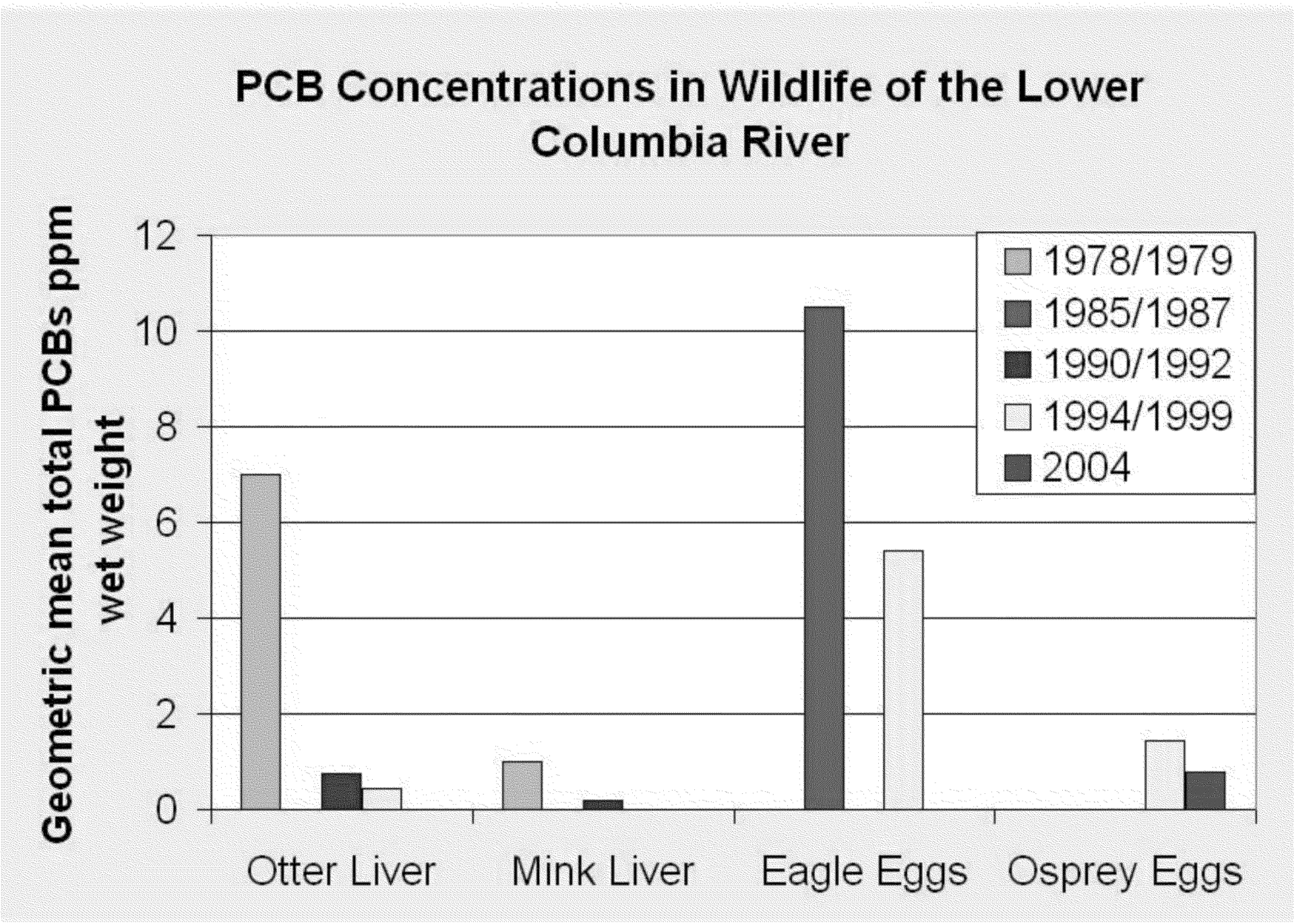
- Primary source is agricultural soils in which DDT accumulated over 3 decades of regular use
- DDT levels have declined - still above levels of concern in some areas
- DDT fish consumption advisories continue
- Since 1970's - rebound in populations of fish eating birds - osprey & eagles

Decreasing DDE in Fish Fillets from the Lower Yakima River



PCBs

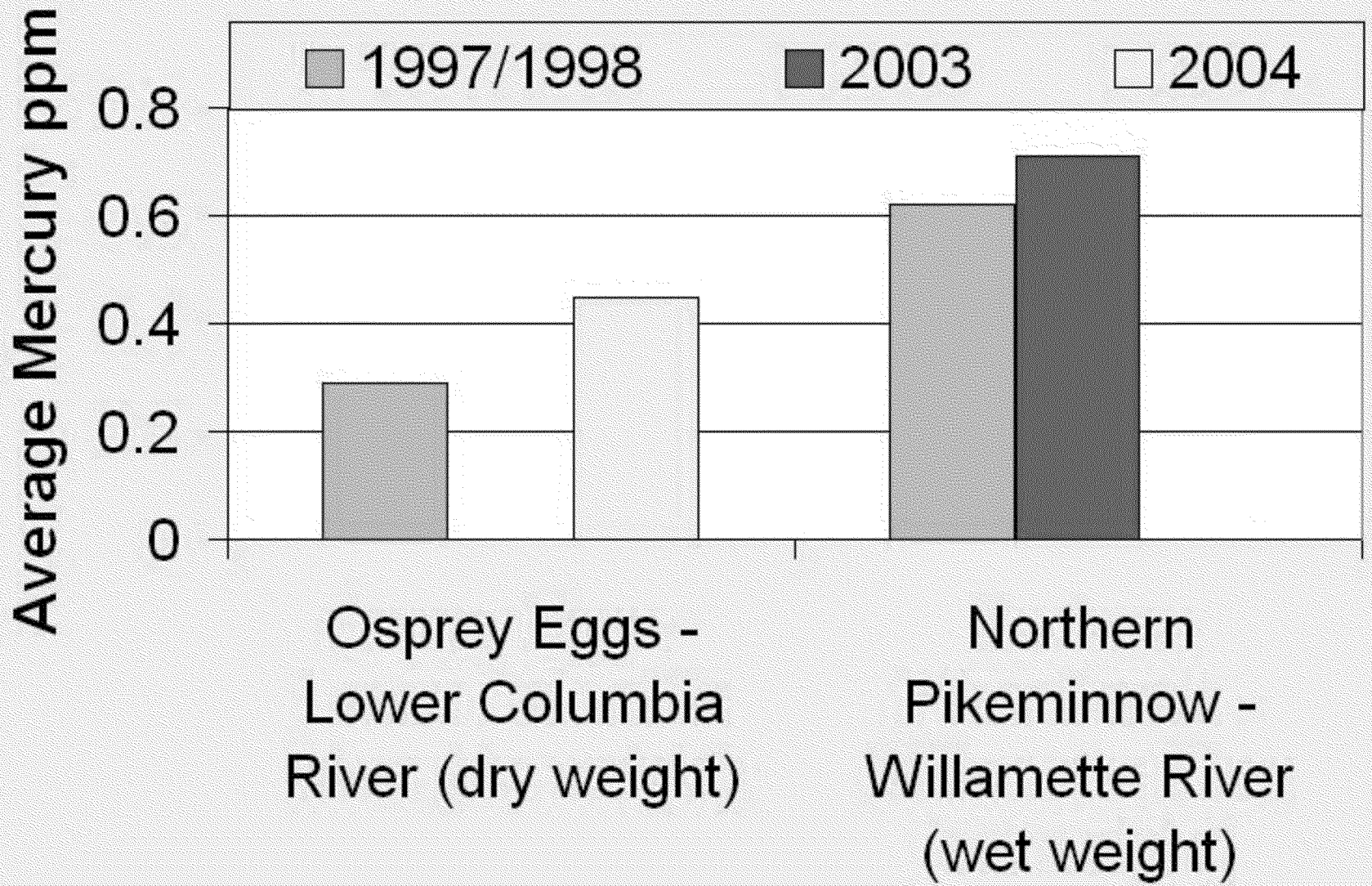
- Levels have generally declined, but persist at levels of concern in many locations
  - **Spokane River: Decrease in concentrations in resident fish between 1992-2005**
  - **Lower Columbia: Decreasing concentrations in otter/ mink livers and osprey/bald eagle eggs between 1978 and 2004**
  - **Lower Columbia: Increasing as juvenile salmon travel down the estuary**


PCB Concentrations in Wildlife of the Lower Columbia River
Geometric mean total PCBs ppm wet weight
12
10
8
6
4
2
0
1978/1979
1985/1987
1990/1992
1994/1999
2004
Otter Liver
Mink Liver
Eagle Eggs
Osprey Eggs

Mercury

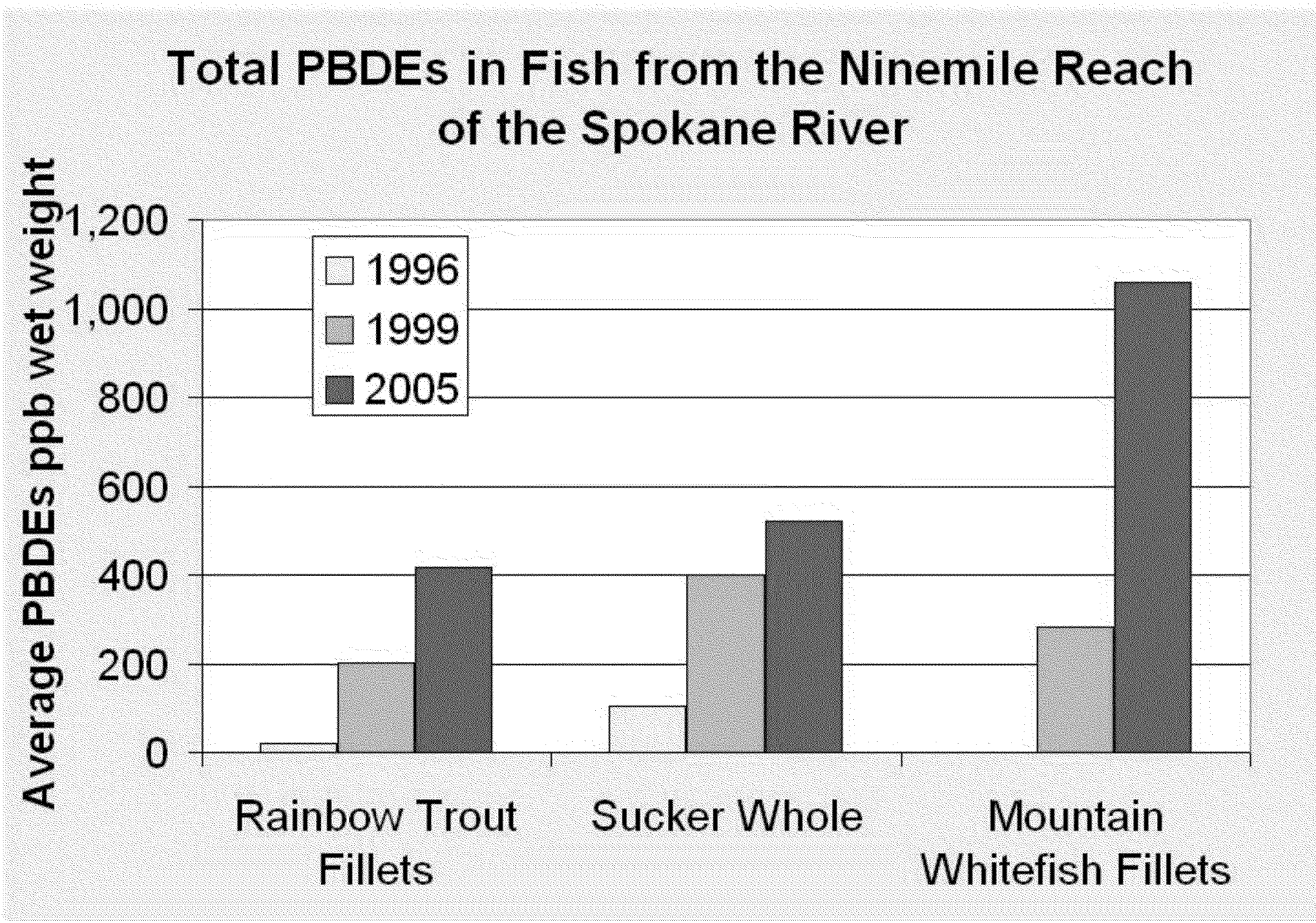
- Mercury levels increasing in several species and most fish consumption advisories due to mercury
  - **Sources: Air deposition from outside Basin appears to be greatest source**
  - **Lower Columbia: Increasing levels in osprey eggs and resident fish between 1997 and 2004**
  - **Snake River: High concentrations in fish downstream of Owyhee River inflow from historic mining**

Increasing Mercury at Columbia Basin Sites



PBDEs

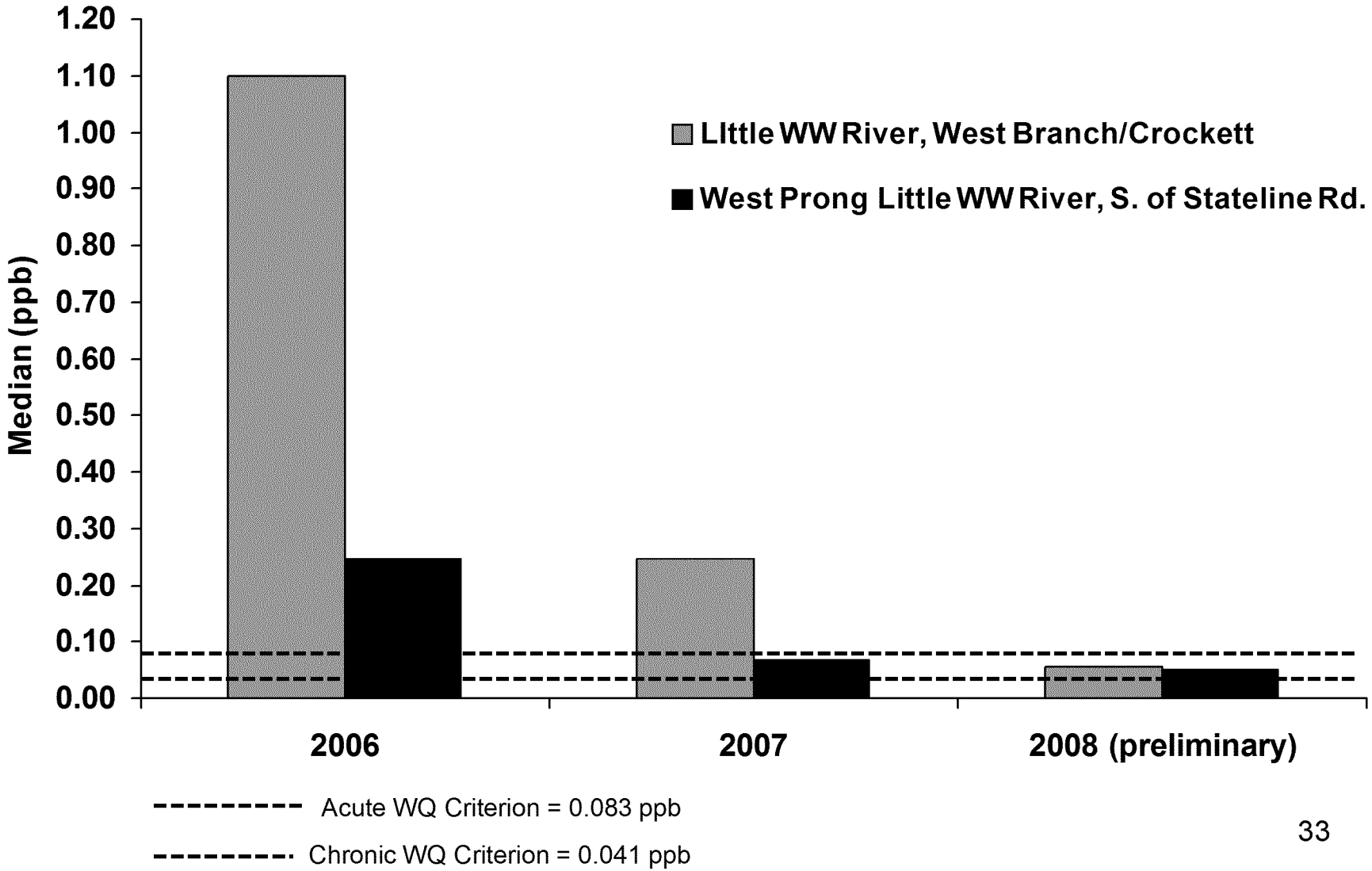
- Growing concern over flame retardants.
  - **Sources: limited information, but evidence that municipal wastewater may be significant pathway**
  - **Spokane River: Significant increase in fish tissue between 1996 - 2005**
  - **Lower Columbia: Increase in concentrations in osprey eggs between 2004 - 2007**

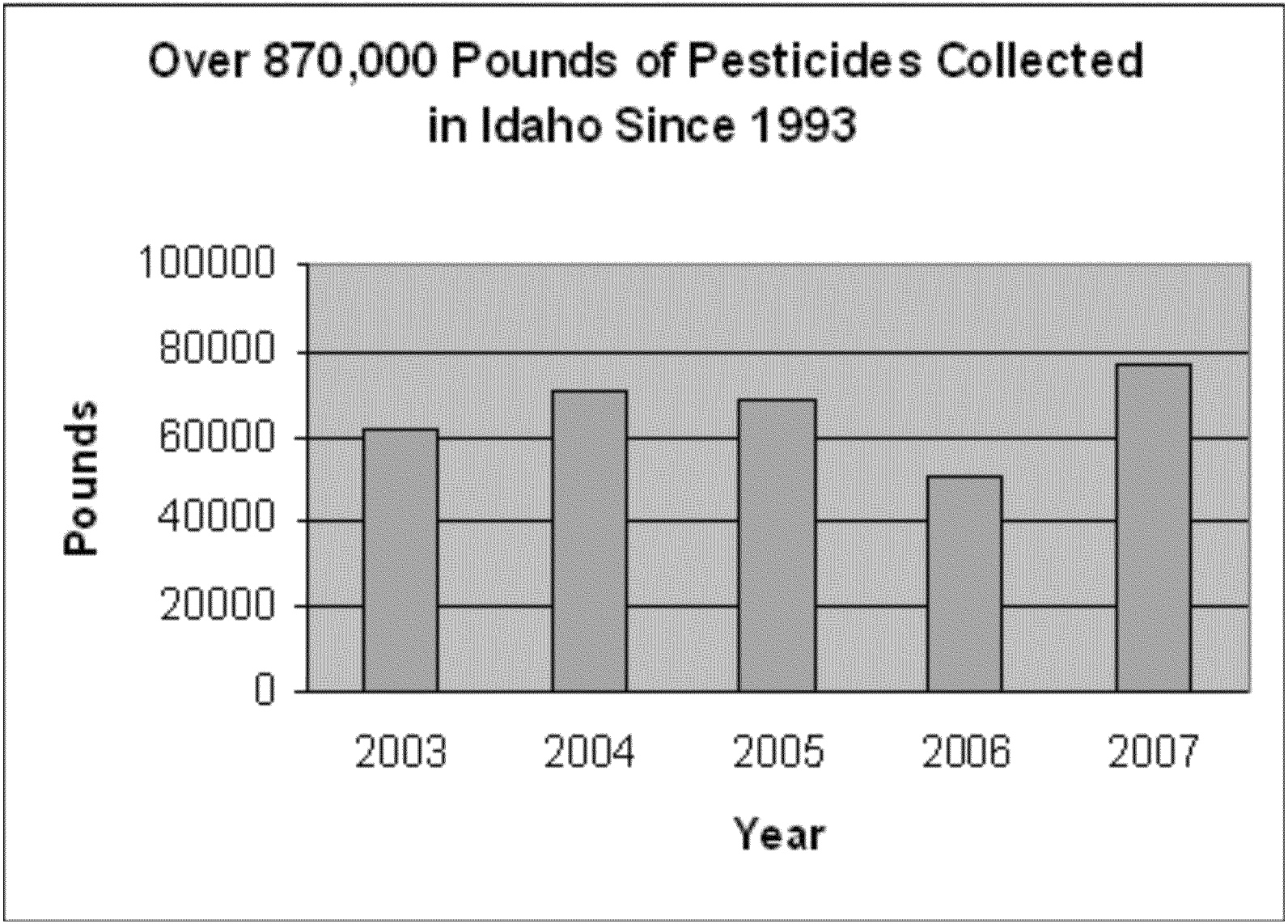

Total PBDEs in Fish from the Ninemile Reach of the Spokane River
Average PBDEs ppb wet weight
1,200
1,000
800
600
400
200
0
1996
1999
2005
Rainbow Trout Fillets
Sucker Whole
Mountain Whitefish Fillets

Toxics Reduction Activities

- States Regulatory Tools (e.g, TMDLs, WQSs, and NPDES)
- Federal & State Cleanups (e.g., Portland Harbor, Hanford, Lake Roosevelt, and Bradford Island)
- Improved farming practices (e.g, BMPs; Pesticide Stewardship Partnerships)
- State and local governments removing toxics from communities (WA banned PBDEs in 2007; Hg reduction strategies, medication take-back programs)
- Oregon and Nevada are reducing industrial mercury emissions (e.g, Boardman plant and Nevada gold mines)

2006-2008 Walla Walla Basin Monitoring
Median of Chlorpyrifos Detections




Over 870,000 Pounds of Pesticides Collected in Idaho Since 1993
Pounds
100000
80000
60000
40000
20000
0
2003
2004
2005
2006
2007
Year

Report Recommendations

- **Expand Toxics Reduction Initiatives**
  - Increase voluntary efforts – agriculture is key
- **Develop a Regional, Multi-Agency Monitoring and Research Plan**
  - Long term; evaluate indicators; data sharing site; loadings estimate
  - Major Data Needs in Snake River
- **Increase Outreach & Public Education**

Activities since SORR

- **Workshops - dialogue on reducing toxics**
  - Pendleton, OR, w/Umatilla Tribe – agriculture
  - Portland, OR – PCBS – “not a legacy – still in use”
  - Wenatchee, WA - agriculture
- **Working Group continues to grow & thrive**
  - Hood River, OR /June & Longview, WA/September
- **Developing monitoring prioritization process w/ 10 agencies**
- **Draft Acton Plan**
- **R10 Leadership – Large Aquatic Ecosystem Council**
  - Columbia River leadership in advancing watershed approach to toxics reduction

Columbia River Toxics Reduction Action Plan

5 Initiatives- Columbia River State of River Report
Critical ongoing actions & new actions for future $

- **Expand toxics reduction actions**
- **Develop monitoring process**
- **Develop a regional, multi-agency research program**
- **Develop a data management system**
- **Increase public education about the toxics problems and resource needs**

Columbia Toxics Reduction Timelines

- OR DEQ Nov 17 Toxics Reduction Workshop
- Dec ’09 – Draft Action Plan
- Jan ’09 – Working Group Meeting
- Feb ‘10 PBDE Workshop – Portland
- Feb/Mar ‘10 – Data & Research Mtg – Portland
- April ‘10– Working Group Meeting
- June ‘10 – Workshop – Idaho/Snake River Basin

Next Critical Work Efforts

- Finalize & Implement Columbia River Toxics Reduction Action Plan
- Continue successful collaboration with partners – OR Toxics Reduction Strategy is leader
- Encourage R10 RA Leadership
- Work on increasing resources – innovative opportunities – pilot projects/demos

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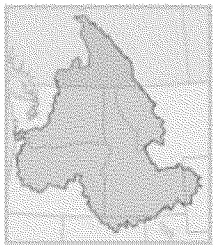
Region 10: the Pacific Northwest

Serving the people of Alaska, Idaho, Oregon, Washington and Native Tribes

Columbia River Basin

www.epa.gov/region10/columbia



The magnificent Columbia River Basin covers a major portion of the landscape of North America, including parts of seven states and British Columbia. The basin provides drainage for hundreds of tributaries over an area of more than 260,000 square miles into a river near 1,200 miles in length. The Columbia River Basin continues to provide an important North American backdrop for urban settlement and development, agriculture, transportation, recreation, fisheries and hydropower. Read more...

Canadian Northwest to the ocean so blue
Roll on Columbia, roll on - **Woody Guthrie**

Columbia River Basin State of the River Report for Toxics

The State of the River Report for Toxics is a summary of what we know about four widespread contaminants in the Columbia River Basin: mercury, DDT and its breakdown products, PCBs, and PBDE flame retardants. The report also highlights many important efforts to reduce toxics already underway in the Basin. Read more...

Columbia River: A National Priority

The Columbia River Basin was designated a member of the EPA's Large Aquatic Ecosystem Council (LAE) in 2008. The Columbia River Basin joins nine other geographic-based efforts that focus on protecting and restoring the health of critical aquatic ecosystems. The LAE Council seeks to merge geographically-based efforts with national water programs to advance the health of the Nation's large aquatic ecosystems and strengthen national water programs. Read the fact sheet (PDF) (2pp, 2MB)

In EPA's 2006-2011 Strategic Plan, the Columbia River Basin was elevated to one of our Nation's great water bodies, joining the Chesapeake Bay, Great Lakes, Gulf of Mexico, South Florida

Regional Information

- By Sub-basin:
  - Upper Basin: Above Grand Coulee Dam
  - Middle Basin: Grand Coulee to Bonneville
  - Lower Basin: Bonneville to Pacific Ocean
- Fish Advisories
- Water Quality
- Toxics Reduction Workgroup
- Maps
- Learn More

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EPAcolumbia

EPA will host national scientific forum on contaminants in fish (Hg,PCBs,PFCs) in Portland OR, Nov 2,3,4 http://tinyurl.com/ygjakbr

less than 10 seconds ago from web

EPA planning workshop FEB '10 - Portland OR - PBDEs - ubiquitous endrocine disrupting chemicals that are EVERYWHERE! More details to come.

3:44 PM Oct 8th from web

Columbia Riv estuary communities, schools, etc., can apply for $$ - citizen based habitat restoration projects http://tinyurl.com/ydu2mdv

3:32 PM Oct 7th from web

OR DEQ invites public to toxics reduction workshop on Nov 17 in Portland http://tinyurl.com/y9j7va3

10:53 AM Oct 7th from web

Name Mary Lou Soscia
Location U.S. EPA, Region 10, Seattle
Web http://yosemite.e...
Bio Learn about EPA workshops, meetings, projects & other news from the Columbia River Coordinator

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Internet 100%

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