



# **Reducing Toxics in the Columbia River through Partnerships & Collaboration**

**June 4, 2008**

**Reducing Toxics in Our Environment**

**Workshop #5**

**Oregon Fish Consumption Rate Project**

**Mary Lou Soscia**

**U.S. Environmental Protection Agency – Region 10**

# Today's Conversation

- **History of EPA Columbia River Efforts**
- **Rising Concern over Toxics**
- **Columbia River as a National EPA Priority**
- **Columbia River Toxics Reduction Strategy**
  - **State of River Report for Toxics**

# Columbia River Basin



**Bull Trout**



**Steelhead**



**Chinook Salmon**



**Sockeye Salmon**

# A short historical review...

- **Native tribes hunted & fished since “time immemorial”**
  - Rights reserved in 1855 treaties
- **Mid-late 1800s: settlement - mining, timber harvest, agriculture, and commercial fishing**



# History of Key Columbia R. Efforts

- **1989 - Lower Columbia R Bi-State Program**
- **1991 - EPA completes Dioxin TMDL**
- **Clean Water Act 303(d) Listings/TMDLS**
- **1992 – Nat’l Study of Chemical Residues in Fish – high fish contamination in Columbia River**

# History – continued

- **1994 - A Fish Consumption Survey of the Umatilla, Nez Perce, Yakama, and Warm Springs Tribes of the Columbia R Basin**
- **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**

# History - continued

- **2001 - EPA, ID, OR and WA sign agreement to begin work on Columbia/Snake River Temp and TDG TMDLs**
- **2002 - EPA Columbia R Basin Fish Contaminant Survey**
- **2006 – EPA approves Snake River TMDL – mercury, temperature, other parameters**
- **2006 – Columbia River designated EPA Critical 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**

# CWA 303d Listings

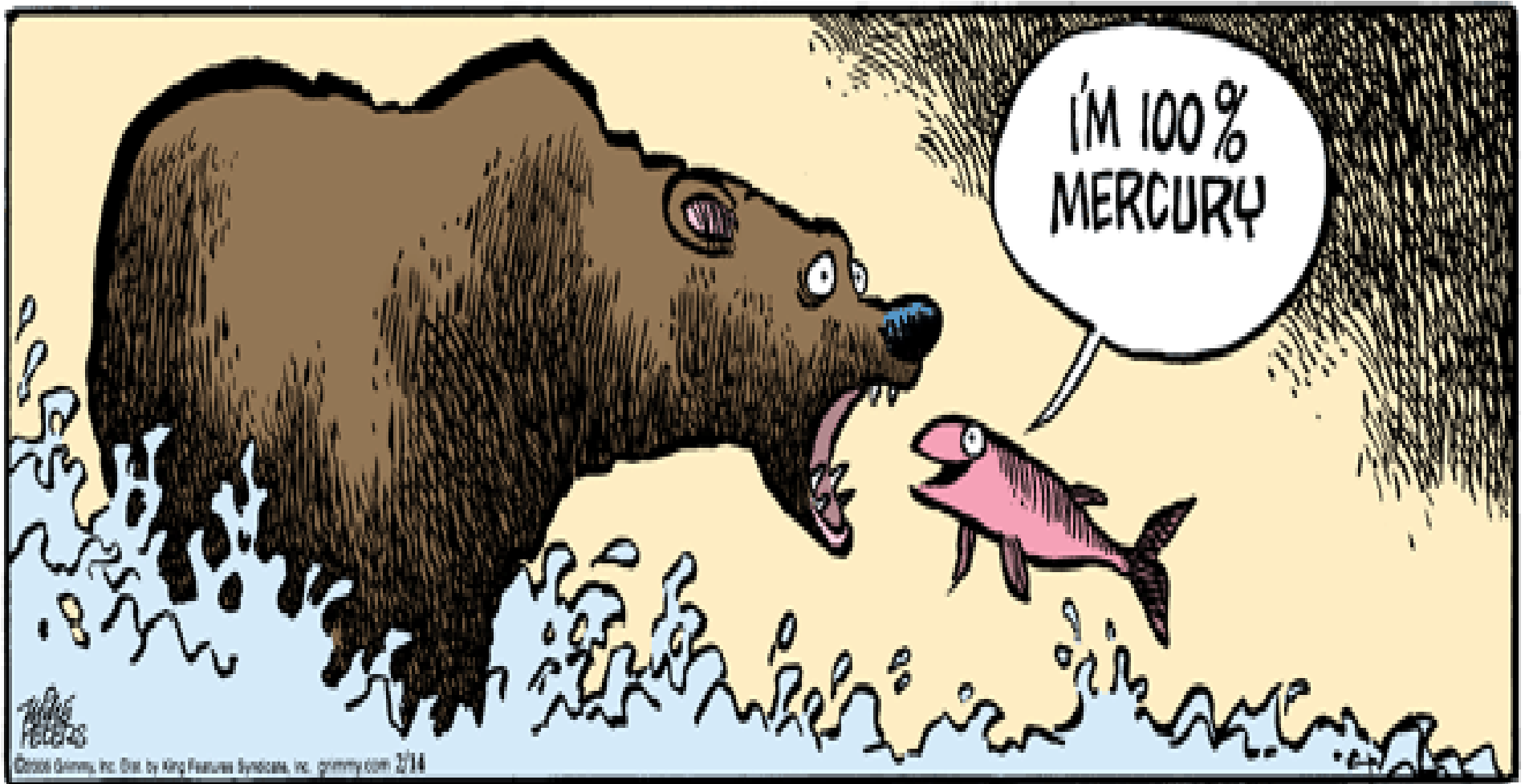
## Columbia River

- 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



Mother Goose and Grimm – Feb. 14, 2006

  
PARTLY SUNNY  
after morning  
clouds. High 73,  
low 55. LOCAL 84

# The Seattle Times



50¢

Five Pages: Business, Local, Sports  
and Thursday evening 1 page elsewhere

INDEPENDENT AND

## Columbia River toxins moving up food chain

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



Visitors to Crown Point on the Oregon side of the Columbia River look eastward up the Columbia Gorge. Despite the area's natural beauty, evidence of toxic contamination in the river has been quietly growing in recent years.

BY CRAIG WELCH / Seattle Times Staff Writer

**Recent Press on  
Columbia River**

NEWS FROM THE PORTLAND AREA AND THE NORTHWEST

**The Northwest** | The Columbia River

## Study shows sturgeon in trouble

The large freshwater fish, trapped in polluted waters behind dams, may be losing their ability to spawn

By **MICHAEL MILSTEIN**  
THE OREGONIAN

Pesticides and other pollution have turned Columbia River reservoirs into chemical stew, playing havoc with the

bodies of hulking white sturgeon, the largest freshwater fish on the continent.

A team of researchers that examined 174 sturgeon caught by commercial and tribal fishermen found male and immature females tricked by chemicals into thinking they are full of estrogen, a female hormone with feminizing effects. Male fish tainted with a cocktail of compounds including mercury and a byproduct of the banned pesticide DDT showed depressed testosterone levels,

### Inside

More Northwest news on [Page B4](#)

which could keep them from maturing enough to spawn.

A few sturgeon even had bizarre combinations of male and female sexual organs.

It suggests the reservoirs behind John Day, The Dalles and Bonneville dams

have become catch basins of pollution flushed for decades into the once free-flowing Columbia. Sturgeon do not use fish ladders as do salmon, so they are trapped in the noxious soup reservoirs.

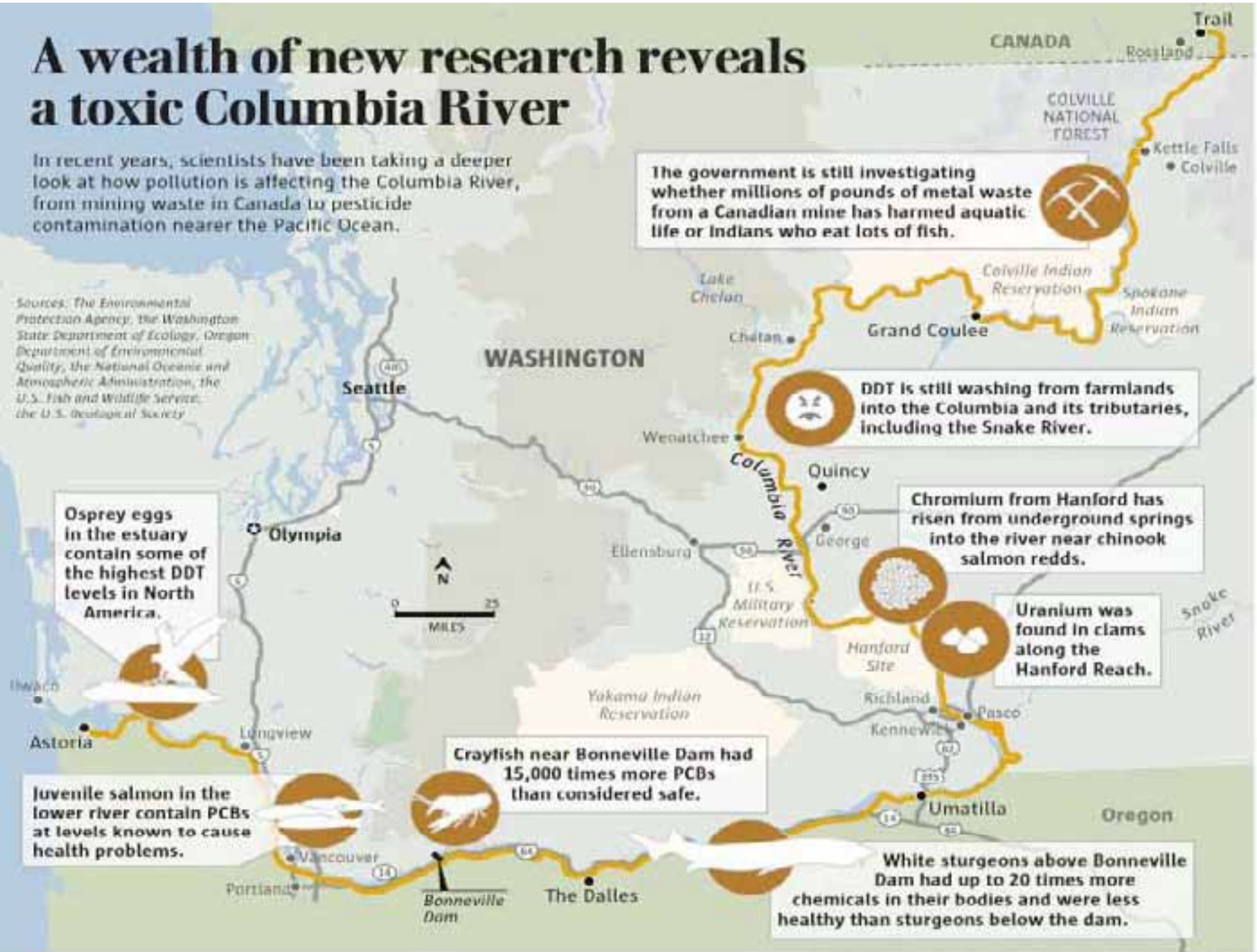
The chemical compounds can confuse their bodies, throwing the natural rhythms that govern reproduction and other functions out of whack, scientists say.

Please see **STURGEON**, Page B10

# A wealth of new research reveals a toxic Columbia River

In recent years, scientists have been taking a deeper look at how pollution is affecting the Columbia River, from mining waste in Canada to pesticide contamination nearer the Pacific Ocean.

Sources: The Environmental Protection Agency, the Washington State Department of Ecology, Oregon Department of Environmental Quality, the National Oceanic and Atmospheric Administration, the U.S. Fish and Wildlife Service, the U.S. Geological Society



The government is still investigating whether millions of pounds of metal waste from a Canadian mine has harmed aquatic life or Indians who eat lots of fish.

DDT is still washing from farmlands into the Columbia and its tributaries, including the Snake River.

Chromium from Hanford has risen from underground springs into the river near chinook salmon redds.

Uranium was found in clams along the Hanford Reach.

Crayfish near Bonneville Dam had 15,000 times more PCBs than considered safe.

White sturgeons above Bonneville Dam had up to 20 times more chemicals in their bodies and were less healthy than sturgeons below the dam.

Osprey eggs in the estuary contain some of the highest DDT levels in North America.

Juvenile salmon in the lower river contain PCBs at levels known to cause health problems.

# **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 R 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**

# Columbia River: Toxics Reduction Strategy

## ***Toxics - EPA NICHE - other Columbia R efforts***

- In 2005, EPA committed to lead the Columbia River Toxics Reduction Strategy
- Collaborative effort - reduce toxics in the Columbia River Basin
- Shared responsibilities:
  - L. Columbia – Lower Columbia River Estuary Partnership
  - Mid-Columbia and Snake River – EPA lead w/OR, WA, ID, Tribes, others
  - Superfund - Portland Harbor, Hanford & Lake Roosevelt
- Focus
  - Monitoring,
  - Public information - State of River Report
  - Toxic reduction actions

# **Columbia River: 2006-2011 Strategic Plan**

**Goal: By 2011, prevent water pollution, and improve and protect water quality and ecosystems in the Columbia River Basin to reduce risks to human health and the environment.**

## **2011 Strategic Plan Targets:**

- Protect, enhance or restore 13,000 acres of wetland habitat and 3,000 acres of upland habitat in the Lower Columbia.**
- Clean up 150 acres of known highly contaminated sediments.**
- Demonstrate a 10% reduction in mean concentration of contaminants of concern found in water and fish tissue.**
- Developing the Strategic Plan Goals, Targets and Baseline – OR, WA, ID, and LCREP**

# Columbia River Toxics Reduction Working Group

- **Prevent and reduce toxic levels in the Columbia Basin**
  - reducing toxics in the aquatic species that people eat
  - ensuring the survival, reproduction, and growth of fish and wildlife
- **Lead on State of River Report**
- **Coordinate future Monitoring Work**
  - EPA/Oregon Mid-Columbia River Monitoring
  - USGS Monitoring – Lower Columbia
  - EPA Corvallis – Tech assistance on monitoring design
- **Next Meeting – June 10<sup>th</sup> – Hood River**

# Toxic Reduction Actions

- **TMDL implementation - 5 WA toxics TMDLS - Okanogan, Yakima, Walla Walla, Wenatchee and Similkameen – Spokane underway**
- **Pesticide Stewardship Partnerships – OR**
  - **Walla Walla, Clackamas, and Pudding River Basin PSPs underway**
- **Walla Walla Legacy Agriculture Pesticide Collection July 07-collected 7630 pounds of waste - based on 2007 successful events in OR's Pudding River – 800 pounds of DDT**

# **Columbia River State of River Report**

- **Tell the story of the Columbia River Ecosystem with a focus on toxics-**
  - **Inform, educate on toxic problems & potential solutions for the Columbia R. Basin**
  - **Serve as a catalyst for increased stakeholder involvement & future action**
  - **Garner resources for future toxics reduction efforts & assessment efforts**
- **Collaborative effort – working draft- June '08; final-late '08**

# **Columbia River State of River Report for Toxics**

- **Introduction**
- **Toxic Contaminants**
- **Indicators**
- **Status and Trends for Mercury, DDT, PCBs,  
and PBDEs**
- **Ecosystem Health**
- **Current and Planned Toxics Reduction  
Efforts**
- **Conclusions and Action Agenda**

# State of River Report :

## Toxic Contaminants of Concern

- DDT
- PCBs
- Mercury
- PBDEs
- ✓ Widely distributed and at level of concern throughout the Basin
- ✓ May have adverse effects on wildlife, fish, and humans
- ✓ Opportunity to build on current reduction efforts

# DDTs: Banned in 1972, still persists in the environment

- Primary source is agricultural soils in which DDT accumulated over three decades of regular use
- DDT levels have declined but are still above levels of concern in some areas
- Rebound in populations of fish eating birds such as osprey and eagles since the 1970's

# PCBs

- Main sources: industrial sites and old disposal sites
- Though levels have in general declined in the basin PCBs persist at levels of concern in many locations
- As data is collected on PCBs new contaminated sites continue to be discovered
- Large data gaps in the basin

# Mercury

- Air deposition is greatest source to the Basin, primarily from global sources
- There are local and regional sources such as historic mine tailings, current mines air emissions and point sources
- Most Fish Consumption Advisories due to mercury
- Levels of mercury have increased in osprey in the Lower Columbia between 1997 and 2004

# **PBDEs: Growing concern over flame retardants**

- Flame retardants used in furniture, clothing and electronics
- PBDE bans – Washington State, Maine, California, Hawaii, and European Union
- Lab tests have shown that PBDEs are neurotoxins and endocrine disruptors that interfere with the thyroid gland



# Indicator Species



- Species living in the river or dependent on food from the river which, when studied over time, help scientists track changes in ecosystem health
- 1) salmon (juvenile and adult);
- 2) resident fish, both native and introduced (e.g., sucker, bass, and mountain whitefish);
- 3) sturgeon
- 4) predatory birds (osprey and bald eagles):
- 5) aquatic mammals (mink and otter)
- 6) sediment dwellers (Asian clams).





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## Columbia River Basin

### A National Priority

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 Ecosystem, Long Island Sound and Puget Sound. The Columbia River Basin joins the six other Great Water Bodies in *Goal 4: Healthy Communities and Ecosystems*, focused on protecting, sustaining and restoring the health of critical natural habitats and ecosystems. This plan is the Agency's road map for future work efforts and provides a mechanism to measure progress in protecting human health and the natural environment.



Map of Columbia River Basin

#### Columbia River Information

##### [Columbia River Basin](#)

- [Upper Basin](#)
- [Middle Basin](#)
- [Lower Basin](#)

- [An EPA Priority Fish Advisories](#)
- [Water Quality](#)
- [Maps of Area](#)
- [In the News](#)
- [Other Resources](#)

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 through hundreds of tributaries of an area of more than 260,000 square miles into a river near 1,200 miles in length. The Columbia River Basin has been and will continue to provide an important North American backdrop for urban settlement and development, agriculture, transportation, recreation, fisheries and hydropower.

The Columbia River Basin also serves as a unique and special ecosystem, home to many important plants and animals. Columbia River salmon and