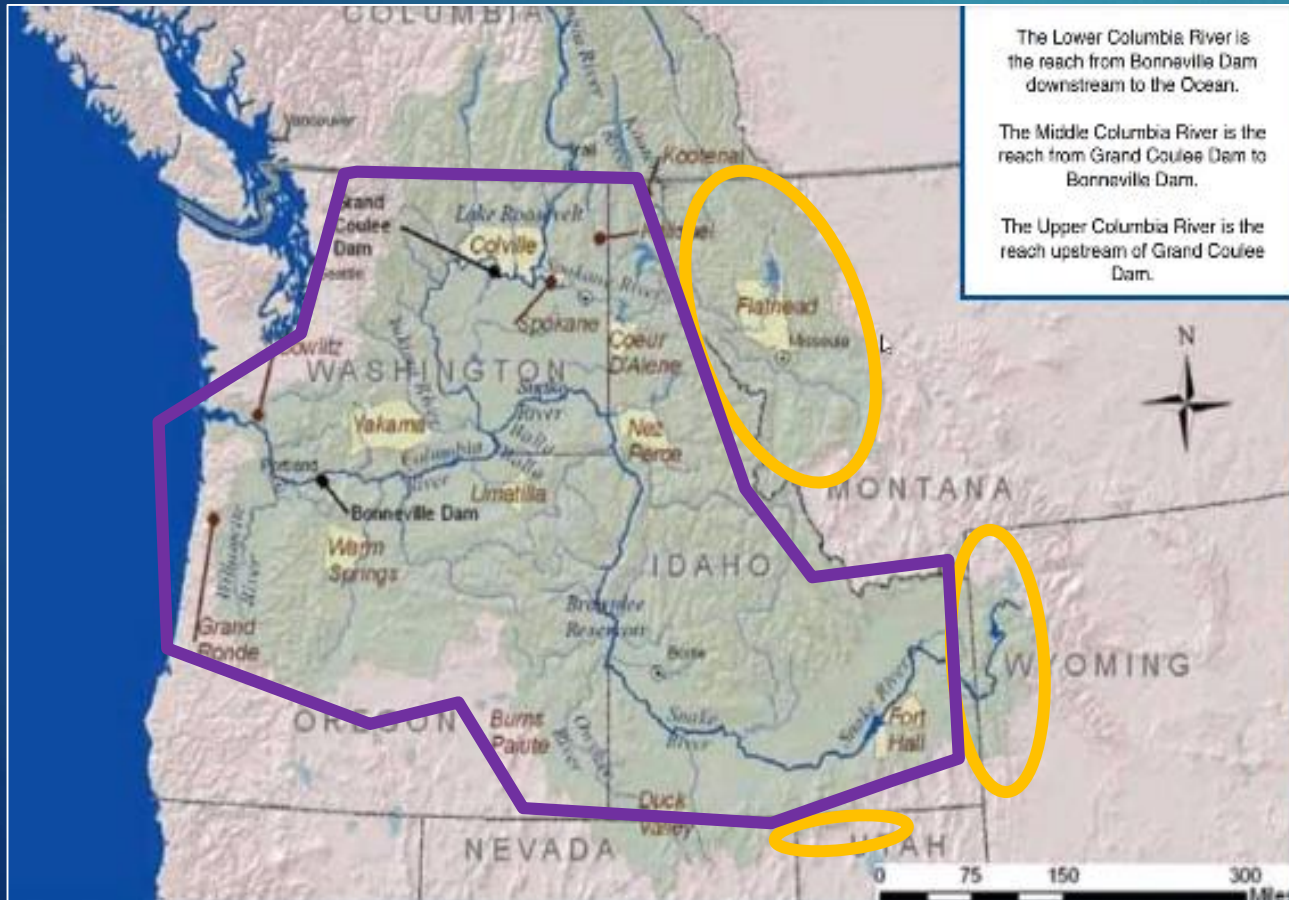


Potential Presence and Pollution Prevention of PCBs in the Basin



REGION 10

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REGION 8

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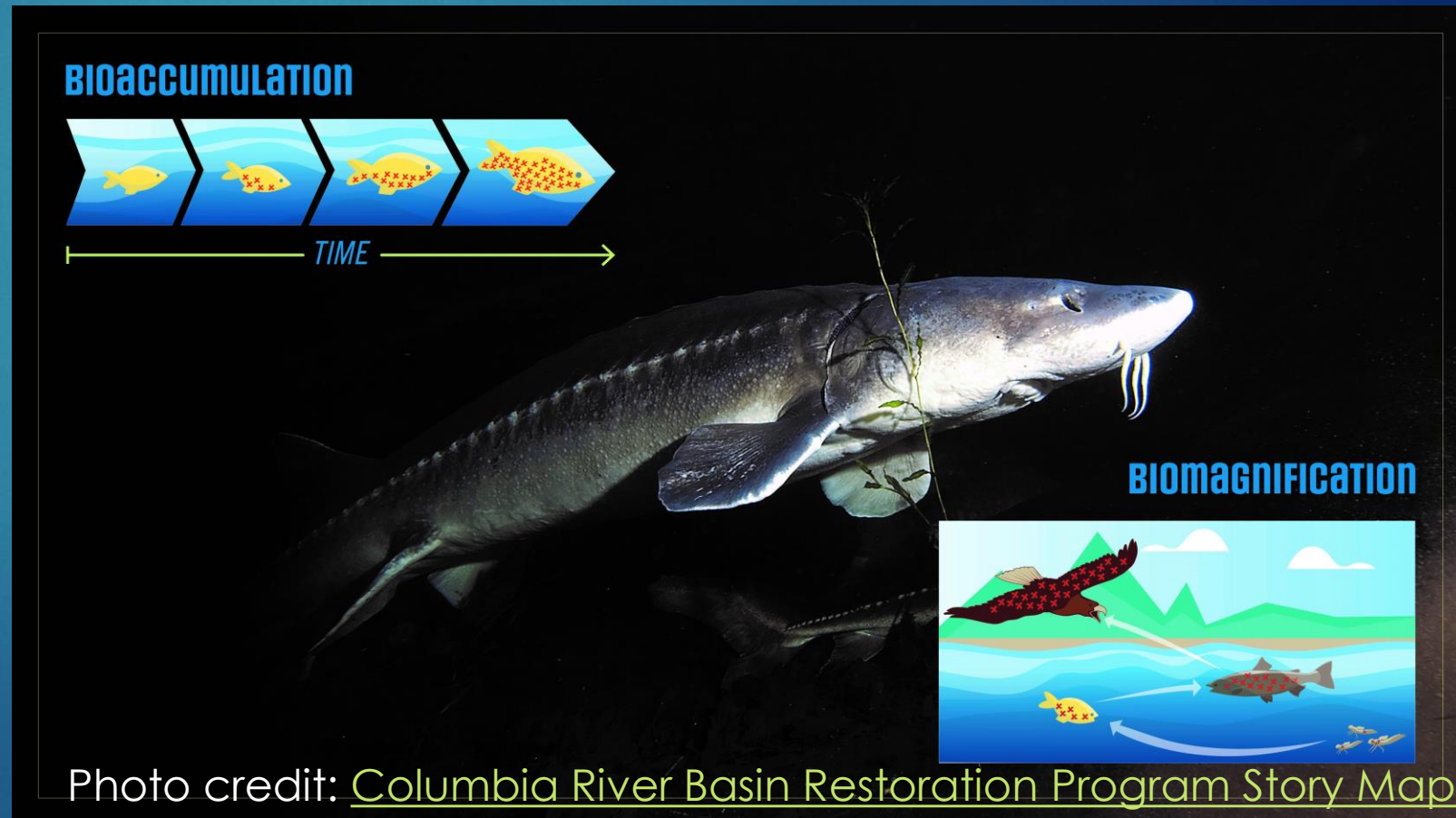
Physical/Chemical Properties of PCBs

► In the environment:

- Persistent in the environment, PCBs do not biodegrade
- Bioaccumulation in the food chain
- Biomagnification in predators

► In sources:

- Low solubility
- Heat Resistant
- Non-Conductive
- Increased Plasticity
- Durable

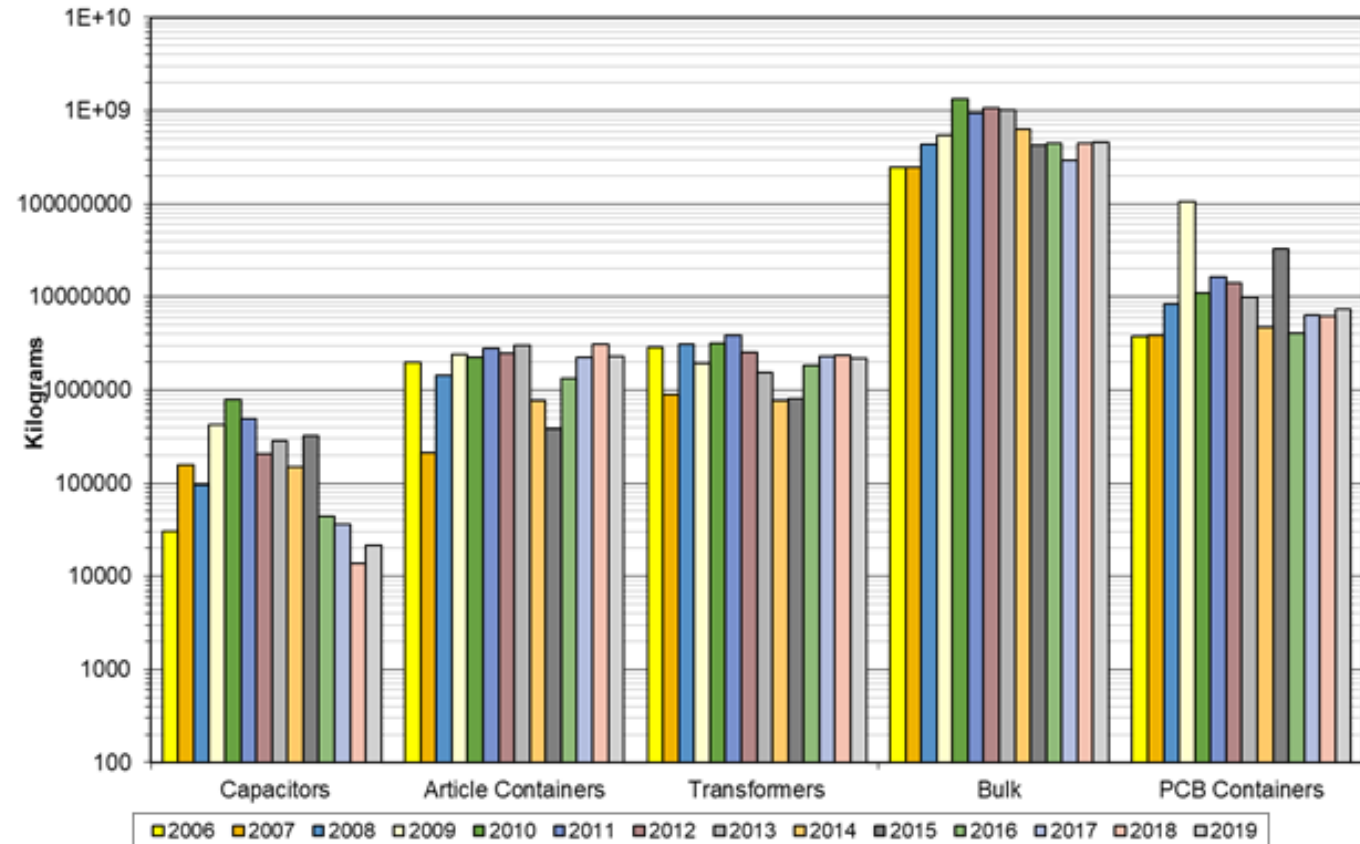


Legacy Sources

- ▶ Electrical Equipment –
 - ▶ Voltage regulators, switches, bushings, etc.
 - ▶ Transformers
 - ▶ Capacitors
 - ▶ Fluorescent Light Ballasts
- ▶ Hydraulic oil
- ▶ Cable Insulation
- ▶ Building materials – *New* [fact sheet](#) from WA Ecology
 - ▶ Thermal insulation materials – fiberglass, felt, foam, cork
 - ▶ Adhesives and tapes
 - ▶ Paint
 - ▶ Caulking
 - ▶ Floor Finish
- ▶ Plastics
- ▶ Carbonless copy paper

Please note scale values

**TOTAL PCB WASTE (IN KILOGRAMS)
DISPOSED DURING YEAR BY TYPE, 2006-2019**



Modern Sources

► Inadvertent PCBs

- *NEW* website
<https://www.epa.gov/pcbs/inadvertent-pcbs>

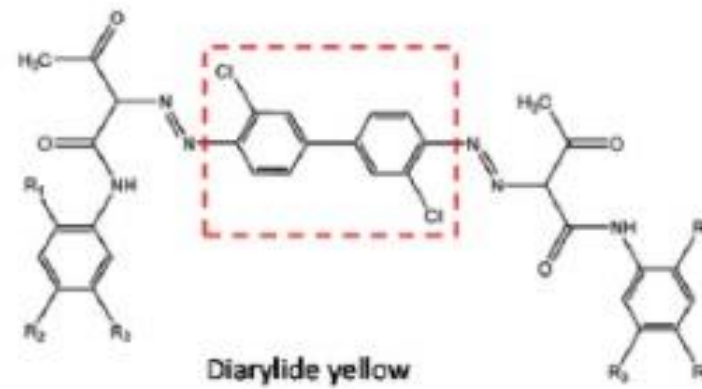
► Fish food

- FDA set tolerances of 0.2-3 ppm PCBs for all foods, with a tolerance level in fish and fishmeal of 2 ppm. FDA also limits PCBs in paper food-packaging materials to 10 ppm [[FDA 1996c](#)].

► Dioxins like PCB congeners formed as a result of combustion processes such as ... Forest fires and burning fuels like wood, coal or oil

► Re-distribution from legacy sources

- Wind
- Runoff
- Animals (goose poop)



Chemical or process	Number of reports
Pigments and dyes	53
GE silicones	8
Vinyl chloride production	3
Unique	6
Unknown	7
Total	77

Figure 4. Average Annual Burned Acreage by State, 1984-2018

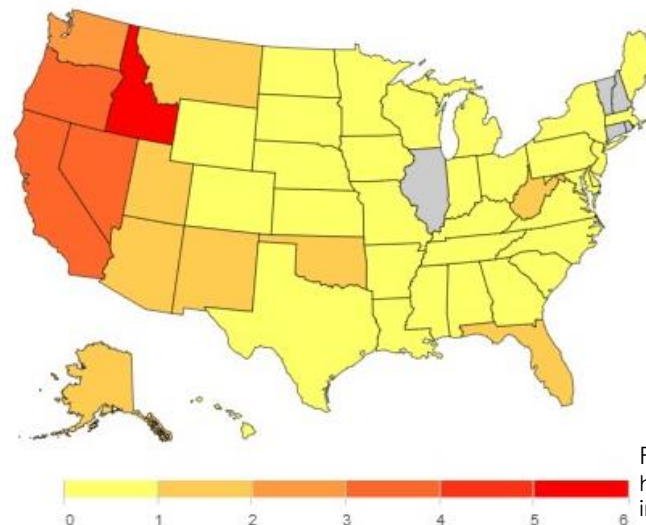
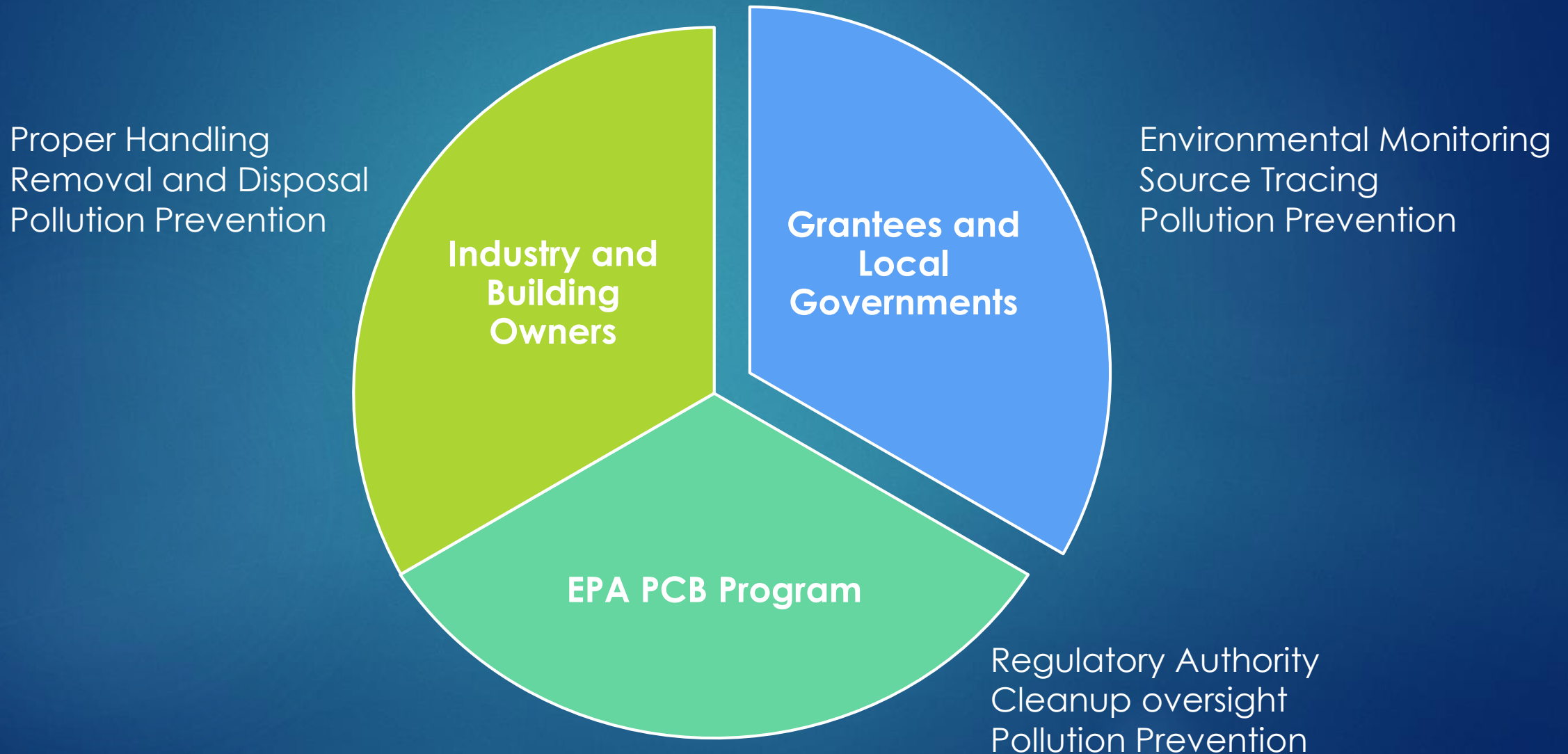


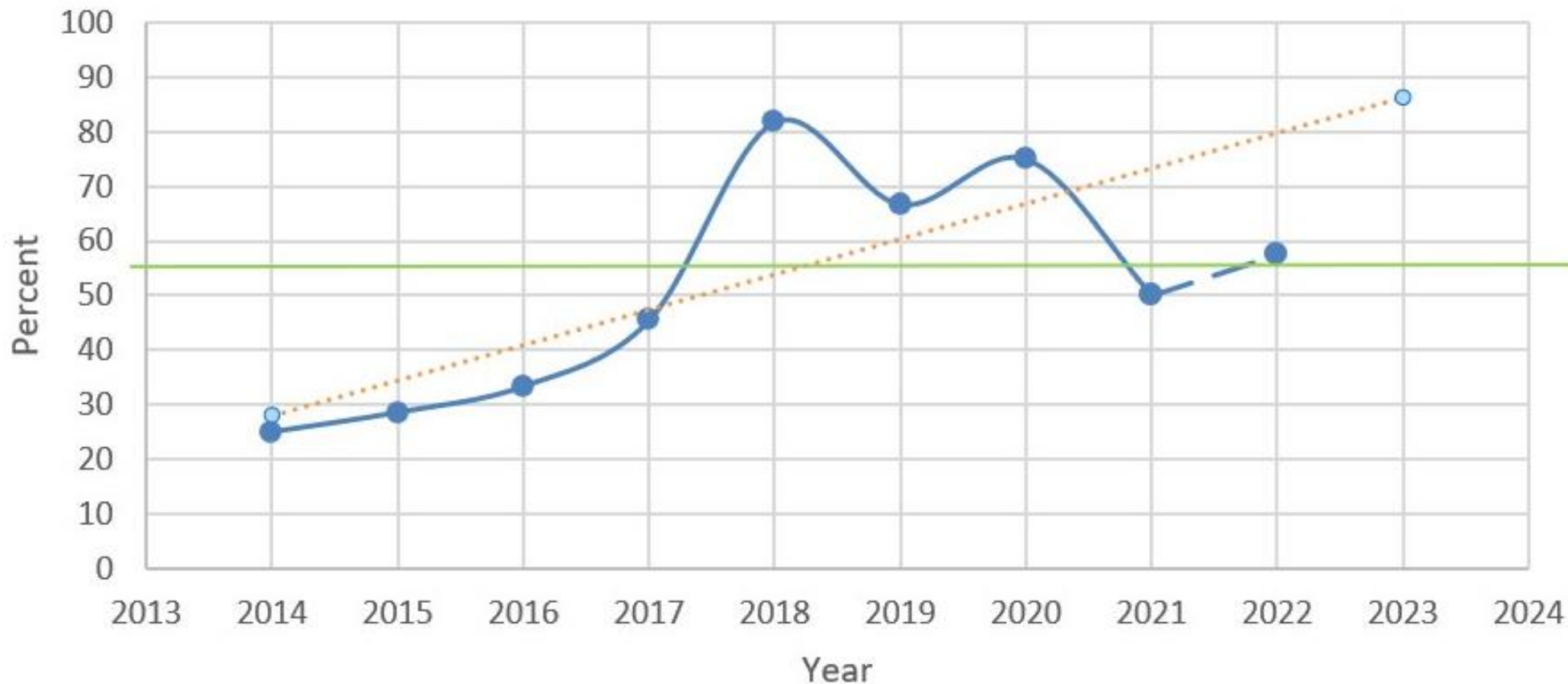
Photo credit- EPA Climate Change Indicators: Wildfires
<https://www.epa.gov/climate-indicators/climate-change-indicators-wildfires>

Towards a PCB-Free Columbia River



Region 10

Percent of PCB Cleanups where Building Products are the Source

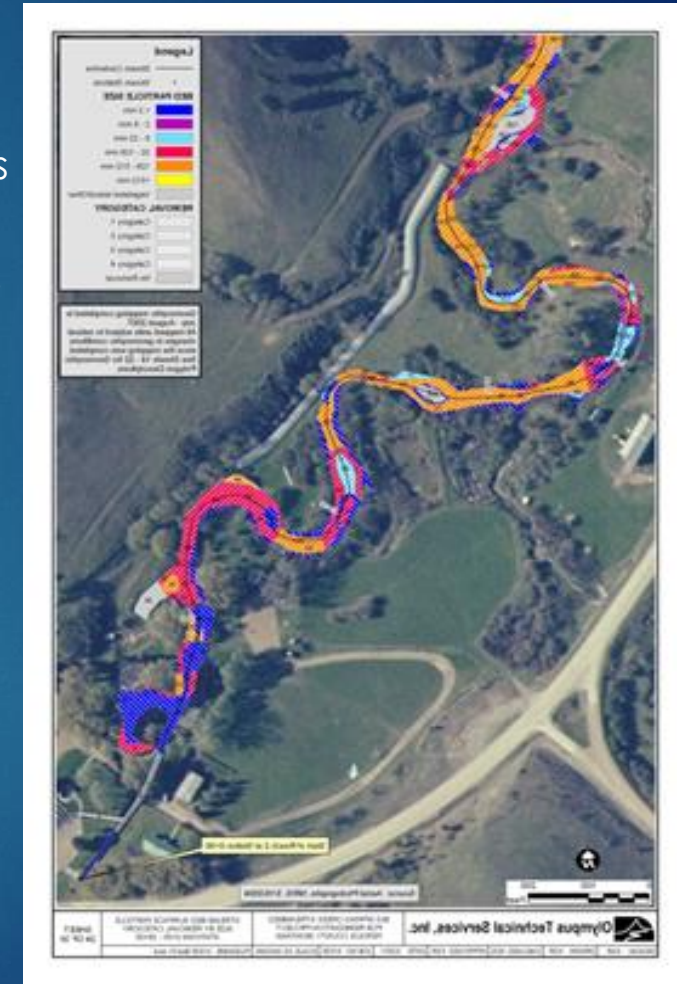


Blue dashed line represents the 2022 forecast

Orange dashed line is the trendline

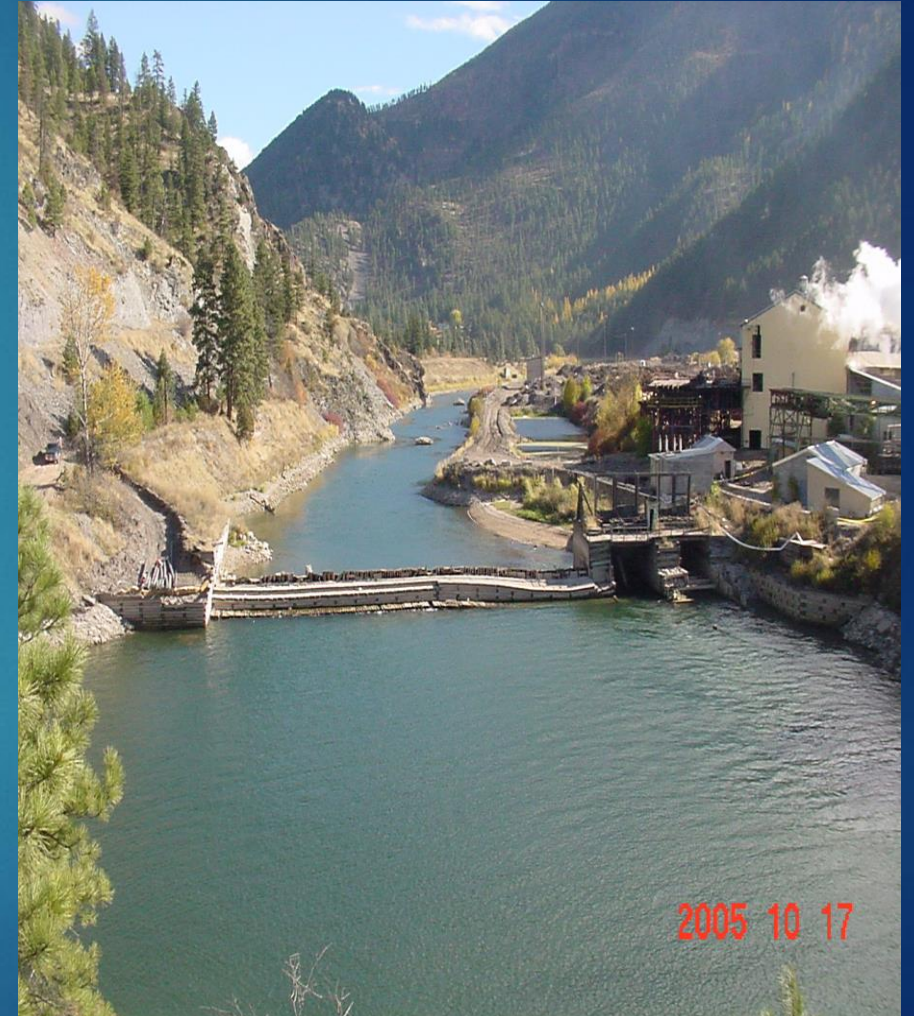
Region 8 PCB Remediation Sites - Examples

- ▶ Big Springs Creek, Lewiston, Montana
 - ▶ Mid 90s - During routine PCB testing, Montana Department of Fish Wildlife and Parks (MFWP) found PCBs in brown trout several miles downstream of Big Springs Trout Hatchery
 - ▶ 2004 - PCBs found in brown trout at 21.9 ppm just below the hatchery raceways
 - ▶ Fish advisory developed (i.e., guidance for anglers catch and release)
 - ▶ Subsequently - Paint on concrete raceways found up to 86,500 ppm PCBs
 - ▶ Paint chips discharged to the creek
 - ▶ Took about 10 years to identify the source of contamination
 - ▶ Remediation actions included removal of raceways and sediment (streambed dredge of 2.7 miles)
 - ▶ Community meeting upon closure of the project and “catch and release” advisory lifted ☺
 - ▶ 2017 - Project completion including public meeting and official letter to FWP
 - ▶ Took over 12 year for remediation with total costs of over 8 million dollars



Examples (Continued)

- ▶ Stimson Lumber Site, Bonner, Montana
 - ▶ Former paper and lumber mills operations
 - ▶ 2005 - PCBs contaminated sediment > 50 ppm at the detention pond along the bank of Black Foot River
 - ▶ PCBs were remediated under an Administrative Order issued by Department of Justice and Montana Department of Environmental Quality
 - ▶ PCBs found in buildings on the walls and in the soil even at 20 feet level below ground surface and groundwater
 - ▶ No indication that PCBs were discharged to Black Foot River
 - ▶ Over hundred thousand cubic yards of PCB contaminated soil were excavated, some backfilled and mostly removed for disposal
 - ▶ Took over 10 years for PCB assessment and cleanup with total cost about 6 million dollars



Lessons from Two PCB Remediation Sites

- ▶ PCBs were found in fish and streambed of Big Springs Creek but not of Black Foot River
- ▶ PCB concentrations in fish near the point of discharge were higher than at further downstream
- ▶ PCB concentrations in sediments and fish were high at the point of discharge and depositional areas
- ▶ Concentration levels were lower at further downstream
- ▶ PCBs may be in the fish food and could be resulting to be in the fish wastes
- ▶ To prevent contamination to the creek, MFWP installed a detention pond to settle fish waste prior to discharging to the stream

PCB Pollution Prevention

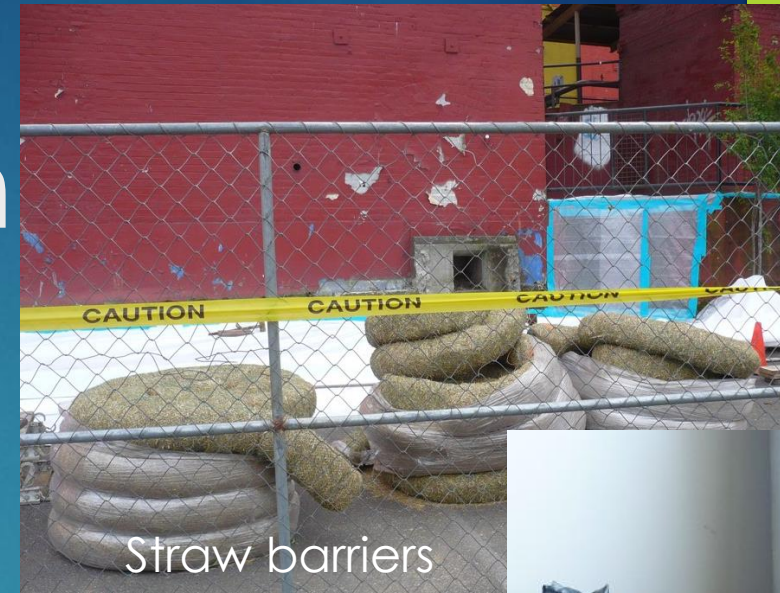
- Work with local authorities and industries to identify and prevent discharge of PCBs to the Basin by incorporating BMPs for PCB management
 - ie- environmental source tracing, NPDES permits
- Remove sources of PCBs – owners can do this, EPA can help
- Prevent releases to stormwater
 - Follow the EPA Construction General Permit controls for PCBs – see part 3.2 of the Fact Sheet starting on page 57 for the controls
 - Visually inspect the property – ie PCB building materials, and leaking transformers, etc.



HEPA vacuum used to pick up loose paint chips outside

PCB Pollution Prevention

- Stormwater Management BMPs-
 - Build detention ponds
 - Place physical barriers to trap soil/debris
 - Install filter socks in catch basins
 - Clean impervious surfaces
 - Clean out catch basin sediments



Straw barriers



Plastic barrier over storm drain



2 layers of Filter Fabric under storm grate



Filter Fabric

Regulated and Recommended Concentrations of PCBs in Water

- ▶ National Recommended Water Quality Criteria - Human Health Criteria for PCBs level 0.000064 ppb <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-human-health-criteria-table>
- ▶ 761.30(u)(3) – PCB Regulations for Use is 0.5 ppb and unrestricted use
- ▶ 761.79(b)(1)(ii) – Decontamination levels for PCBs are 0.5 ppb for unrestricted use
- ▶ 761.50(a) – Discharge to treatment works or navigable waters < 3 ppb
- ▶ Other standards: <https://www.atsdr.cdc.gov/csem/polychlorinated-biphenyls/standards.html>
- ▶ Clean Water Act (CWA) – Issue Total Maximum Daily Load (TMDL) permits
- ▶ Safe Drinking Water Act (SDWA) - Maximum Contaminant Level 0.005 ppm; Maximum Contaminant Level Goal = ZERO.

Public Works & Utilities



Wastewater



PCBs

The City of Spokane is working to improve the health of the Spokane River and reduce the amount of pollution that enters it. One important pollutant of concern for the City is PCBs.

What are PCBs?

Polychlorinated biphenyls (PCBs) are a toxic manmade chemical found nearly everywhere in the environment. Historically, PCBs were primarily used in coolants and lubricants in electrical equipment, such as transformers and capacitors. In the United States, PCBs were largely sold under the trade name Aroclor. Direct production of PCBs was halted in the US in the 1970's due to evidence of human toxicity and persistence in the environment. Since that time, however, PCBs have been incidentally produced in a multitude of manufacturing processes as an unintended byproduct of processes that use heat, chlorine, and carbon.

Documents

- [PCBs in Municipal Products Testing Report 2015](#) (PDF 1.5 MB)
- [2014 PCBs Adaptive Management Plan](#) (PDF 4.4 MB)
- [2013 PCBs Adaptive Management Plan](#) (PDF 004.0 MB)

<https://my.spokanecity.org/publicworks/wastewater/pcbs/>