

Reducing iPCBs in the environment case study: Washington's road paint procurement

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This case study highlights the success that the Spokane River Regional Toxics Task Force (SRRTTF) had with identifying a yellow road paint that did not use pigments known to contain Polychlorinated Biphenyls (PCBs).

Spokane River Regional Toxics Task Force (SRRTTF)

The SRRTTF is composed of representatives from industry, state and local governments, and nongovernmental organizations that focuses on finding and reducing toxic compounds in the Spokane River. The goal of the task force is to develop a comprehensive plan to bring the Spokane River into compliance with water quality standards for PCBs. These pollutants exceed water quality standards in several segments of the river.

Members of the Spokane River Regional Toxics Task Force (SRRTTF) advocated for legislation and policy changes to reduce or remove direct sources of inadvertent PCBs (iPCBs) from watersheds in Washington. Advocates helped pass legislation so that Washington's state procurement authority could update its procurement policies to favor products that do not contain iPCBs through incentives and specifications limiting contaminants. This was first successfully implemented with road paints. This result led other government departments to implement similar changes guided by the Washington Department of Enterprise Services (WA DES policy).

Polychlorinated Biphenyls

Polychlorinated Biphenyls (PCBs) are a group of synthetic organic chemicals consisting of carbon, hydrogen and chlorine atoms. The number of chlorine atoms and their location in a PCB molecule, known as congeners, determine many of its physical and chemical properties. There are a total of 209 different possible congeners associated with PCBs. PCBs were domestically manufactured from 1929 until manufacturing was banned in 1979 under the Toxic Substances Control Act (TSCA). They have a range of toxicity and vary in consistency from thin, light-colored liquids to yellow or black waxy solids. Due to their non-flammability, chemical stability, high boiling point and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications.

Even though manufacturing was banned, legacy sources continue to dominate contribution to the Spokane River, through spills and releases that have not been completely cleaned up, and products that were previously manufactured with them which remain in use. Some PCBs continue to be created as a consequence of specific chemical manufacturing processes, these PCBs are referred to as inadvertent PCBs or iPCBs. The manufacturing process for some pigments used as colorants can generate iPCBs. Of focus in this article are the trace amounts of

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iPCBs created during the manufacturing of diarylide based yellow pigments. iPCBs found in diarylide pigments are predominantly lower molecular weight versions and may not exhibit the same bioaccumulation tendencies and toxicity as the larger molecular weight versions. For example, PCB-11 which is a congener associated with diarylide yellow pigments is the most prevalent congener found in the Spokane River water column but does not appear to appreciably bioaccumulate in fish tissue as compared to other PCBs found in the River.

WA DES Policy on Diarylide Yellow Road Paint

WA DES created a policy¹ to reduce or eliminate iPCBs in products and packaging based on state legislation (RCW 39.26.280-290) for initial implementation at the Washington State Department of Transportation (WSDOT). WSDOT was rebidding its waterborne traffic marking paint contract in 2018 and gave a 5% contract preference for suppliers that provided testing in accordance with the master contract showing they were below the test method detection limit used in the RCW or DES contract. Based on the policy, with feedback from industry that it was possible to purchase road paints since an alternative yellow road paint was already being used and met the specification, WSDOT wrote pigment restrictions into the master contract prohibiting paints containing diarylide yellow pigments. WSDOT has not had any problems with the color-fastness or the durability of paints that contained non-detected or low iPCBs to date. In addition, WSDOT paid less for the paint. Other specification bands were widened to increase competition while relying on competition to deliver better prices.

Implementation of the WA DES policy was completed for road paint procurement at WSDOT. Since 2019 the policy applies to all state agencies. WA DES has 200+ master contracts and manages about 1700 vendor relationships. WA DES provides guidance, tools (like the [PCBs risk calculator](#) that includes a determination for testing products and packaging), and training to all Washington state agencies that bid procurement contracts. In translating legislation and

¹ *Enterprise Services Policy No. POL-DES-280-00 Purchasing Preference for Products and Product Packaging That Do Not Contain Polychlorinated Biphenyls (PCBs)*

Applies to: Any state office or activity of the executive and judicial branches of state government, including state agencies, departments, offices, divisions, boards, commissions,

institutions of higher education as defined in RCW 28B.10.016, RCW 28B.10.016 and correctional and other types of institutions.

Authorizing sources: • State Law RCW 39.26.280 • State Law RCW 39.26.290 • State Law RCW 39.26.160(3)(d) • State Law RCW 39.26.010(1) Definitions • Executive Order Executive Order 04-01 • Executive Order Executive Order 18-01

Effective date: 1/1/19 This policy establishes the purchasing preference authorized in RCW 39.26.280 for agencies purchasing products and product packaging that do not contain polychlorinated biphenyls (PCBs). The intent is to incentivize the State's contract suppliers to provide products and product packaging that do not contain PCBs.

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executive orders into policy, WA DES, engages stakeholders, including holding customer and vendor forums. WSDOT also met with vendors to find out if the policy would create problems for vendors.

The Solution: Cultivating Collaboration as the Foundation for Creating Change

The largest source of PCB contamination in the Spokane River is likely coming from the legacy chemicals that were in widespread use for commercial purposes for decades. While the specific contribution of iPCBs from diarylide pigment in road paint is not well understood and could possibly be a minor contributor, there is evidence that iPCBs from other sources could contribute to ongoing contamination, since PCB-11 (an inadvertent PCB) is the most prominent congener found in the water column.

The entities currently discharging into the waterway are committed stewards of clean, safe water. Dischargers come from a variety of industries along with government departments and agencies and include the area's largest employers. Many are working to manage both legacy PCB contamination and new pollution from iPCBs. Because the American Coatings Association (ACA) and the Color Pigment Manufacturers' Association (CPMA) were engaged members of the group, they quickly determined that an alternative yellow pigments were available and being used in the marketplace. Representatives from the department of transportation and government agencies' procurement functions helped the SRRTTF determine that the most efficient way to prevent future contamination was a simple modification of the policies specifying preferred products.

Down the Road: Measurement, Expansion, Testing

This policy implementation is an example of a subtle change that may have an impact on the quality of the Pacific Northwest's waters. The change to WSDOT's road paint procurement standards quickly cascaded to the city of Spokane other municipalities along the Spokane River and has the potential to provoke similar change in neighboring states. These changes affect thousands of miles of the region's roads. These results can encourage action to undertake similar substitution efforts across the other industries that use products containing these and other chemicals of concern.

What Worked

Some unique elements contributed to the implementation of the pigment specification and its relatively rapid adoption by neighboring jurisdictions. The collaborative SRRTTF process had the ability to bring all the right stakeholders to the table to work towards this solution. The scope of the issue was the right size. An issue with fewer or smaller stakeholders may never have marshaled the attention to make progress. Alternative products existed in the

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marketplace that had already been vetted from an environmental and performance standpoint; therefore, no extensive testing or innovation was required.

Elements of Success:

- Inclusive – All key stakeholders were represented: businesses with direct exposure to the issue as well as members of their supply chains who stood to be affected by any decisions, government, environmental and social non-governmental organizations, and technical experts.
- Trust – SRRTTF members were committed to the same objective and had enough standing within their own organizations to follow through with SRRTTF recommendations. SRRTTF members were unified by the understanding that failing to reach a resolution would damage everyone more than any resolution would harm any individual member.
- Focus – SRRTTF eliminated anyone who didn't have a vested interest in a solution. External lawyers, consultants, and similar service providers may have more incentive to prolong an issue than to resolve it.
- More carrot, less stick – SRRTTF organized its objective around the potential for a solution rather than the cost of the problem.
- Pragmatic – SRRTTF looked first at what options already existed that could achieve the group's aims.

Recommendations for Advocacy, Research, and Action

The successful pilot on road paints and state-wide rollout of this procurement policy has led the SRRTTF to consider other possible points of intervention to reduce iPCBs entering the environment. The following recommendations have been created, vetted, and received support from NGC and the SRRTTF:

- Conduct testing of iPCBs in a variety of road paints to determine if they are released over time once applied and cured on the road surface.
- Present the policy on road paint to the Interstate Chemicals Clearinghouse (IC2), a consortium of state procurement agencies, nonprofits, and other interested parties to encourage adoption and compliance across the nation.
- Create a systems map for iPCBs that shows cradle to grave movement through the environment. Include indicators of which regulations, compliance processes or certifications, and agencies are involved at each step in the life cycle. Include environmental and economic impacts. The systems map will illuminate any policy misalignment, enforcement issues, and possible intervention points that could lead to the reduction of iPCBs. The systems map will be an educational and analysis tool that can be used by all interested parties that are working to improve human and environmental health by reducing or eliminating iPCBs.

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- Continue government/regulatory working groups to consider further action to harmonize regulation.
 - Review NTP study of PCB-11, expected in the near term.
 - Depending upon the results of the NTP PCB-11 study, work to reform TSCA to lower current acceptable PCB limits.
 - Approach WA attorney general and engage politicians to raise awareness and develop legislation to further address the iPCB concern.
- Conduct further research to answer ongoing questions and address multiple challenges for implementation.
 - Discover or develop a less expensive testing method to increase the amount of testing done and counter the challenges of making incentives worthwhile on large, multi-product contracts.
 - Get updates from EPA regarding additional research on hazards of iPCBs.
- Take lessons learned from the WA state procurement policy outlined and implemented across all departments by the Department of Enterprise Services and see how they might apply to other products containing iPCBs.

Limitations and Considerations

- Originally there was a push to consolidate road paint color standards. Currently, there are more than 40+ standards across all 50 states. However, because road paint is made to order in large quantities the industry association indicated that decreasing the standards from 40+ to 8-10 would not benefit manufacturers by reducing formulations. However, a better understanding of the costs involved, and the potential positive environmental impacts require further investigation.
- Feedback at WA DES from vendors is that the EPA Method 1668 test is cost-prohibitive at \$1,600 to \$1,800 a test per product. On contracts with dozens or more products vendors are not submitting tests. Ongoing working groups are investigating other testing options, including less expensive and/or more sensitive methods.
- Incentives are greatly diluted on large contracts with lots of products. For example, an office supply contract with 6,000 items will not benefit from testing a single product and getting a 5% preference on 1/6000th of the contract.
- Road paints using non-diarylide pigments were already on the market. Available alternatives for products are dependent on specific markets.
 - Substitutions for pigments and inks may not already be on the market. It is important to understand that availability was an important aspect of success for the road paint policy implementation. However, the policy now applies to all departments and state procurement contracts. More information about how many other products have been tested and given preferences could be obtained from DES or other agencies to understand any implementation challenges.
 - Traffic coating purchase is essentially a large, bulk, made to specification product that more readily lends itself to raw material substitution in support of a specific requirement (i.e. 65 versus 83). Pre-packed mass produced products do not

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have the same "off-the shelf" component substitution flexibility. As a result, substitution for other coatings will be much more difficult.

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Appendix A

Interviews and Contributors:

Dianne Barton
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Columbia River Inter-Tribal Fish Commission

Corinna Cooper
Enterprise Procurement Manager
Washington State Department of Enterprise Services
Sundae Delgado
Training Leader, ITS, Instructional Designer, & Accessibility Advocate
Washington State Department of Enterprise Services

Doug Krapas
Environmental Manager
Inland Empire Paper Company

Doug McClanahan
State Traffic Analysis Engineer
State Delineation and Markings Engineer
Washington State Department of Transportation

Mike Petersen
Executive Director
Lands Council

Elsa Pond
Statewide Total Maximum Daily Load (TMDL) Lead
Washington State Department of Transportation

Heather Trim
Executive Director
Zero Waste Washington

Interview only:

David Darling
Vice President of Health, Safety, and Environmental Affairs
American Coatings Association (ACA)
ACA did not contribute, does not endorse, nor is a signatory to this case study

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For additional information about WA DES's PCB policy, you can contact:
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