Evaluation of Polychlorinated Biphenyls in Fish from Virginia Watersheds in 2024

Multiple Watersheds Statewide

VIRGINIA

November 17, 2025

Virginia Department of Health
Office of Environmental Health Services
109 Governor Street
Richmond, VA 23219

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COMMONWEALTH of VIRGINIA
Department of Health
Karen Shelton, MD
State Health Commissioner
P.O. BOX 2448
RICHMOND, VA 23218
TTY 7-1-1 OR
1-800-828-1120

November 17, 2025

Gabriel Darkwah
Lab Data Coordinator
Virginia Department of Environmental Quality
1111 East Main Street Suite 1400
Richmond, VA 23219

Dear Gabriel Darkwah,

Thank you for providing the polychlorinated biphenyls (PCBs) fish tissue concentrations results for fish collected in 2024 from multiple waterways in Virginia. The Virginia Department of Health (VDH) has finished reviewing the results for public health implications as requested.

BACKGROUND AND DISCUSSION

The 2024 dataset reviewed includes 410 edible fish tissue fillet samples, which were tested for PCBs as part of the Virginia Department of Environmental Quality's (DEQ's) statewide sampling and analyses of residual chemical contaminants in fish tissue. The 2024 annual routine statewide fish tissue monitoring primarily targeted the following watersheds: James River, Shenandoah River, and the Roanoke River.

In October 2000, pursuant to § 32.1-248.01 of the *Code of Virginia*, VDH published guidelines for issuance of a fish consumption advisory when PCBs are detected in edible fillets. The most up-to-date guidelines are available at Virginia Regulatory Town Hall.[1,2] The 2024 fish tissue data that exceeded VDH's lower screening value (100 parts per billion (ppb)) are presented in Table 1 and were evaluated further. The number of fish, size, species, and frequency of exceedance of the screening value were considered in determining the need for a PCBs fish consumption advisory. Some fish species tested already have a fish consumption advisory in effect for the sampling location.

A summary of findings evaluated further

- In 2024, a composite sample of four largemouth bass from Burton Lake was analyzed and found to have 132 ppb of PCBs. A composite sample of three largemouth bass was previously sampled from Burton Lake in 2020 and PCBs were not detected.

[1] https://law.lis.virginia.gov/vacode/title32.1/chapter6/section32.1-248.01/
[2] https://townhall.virginia.gov/L/ViewGDoc.cfm?gdid=3059

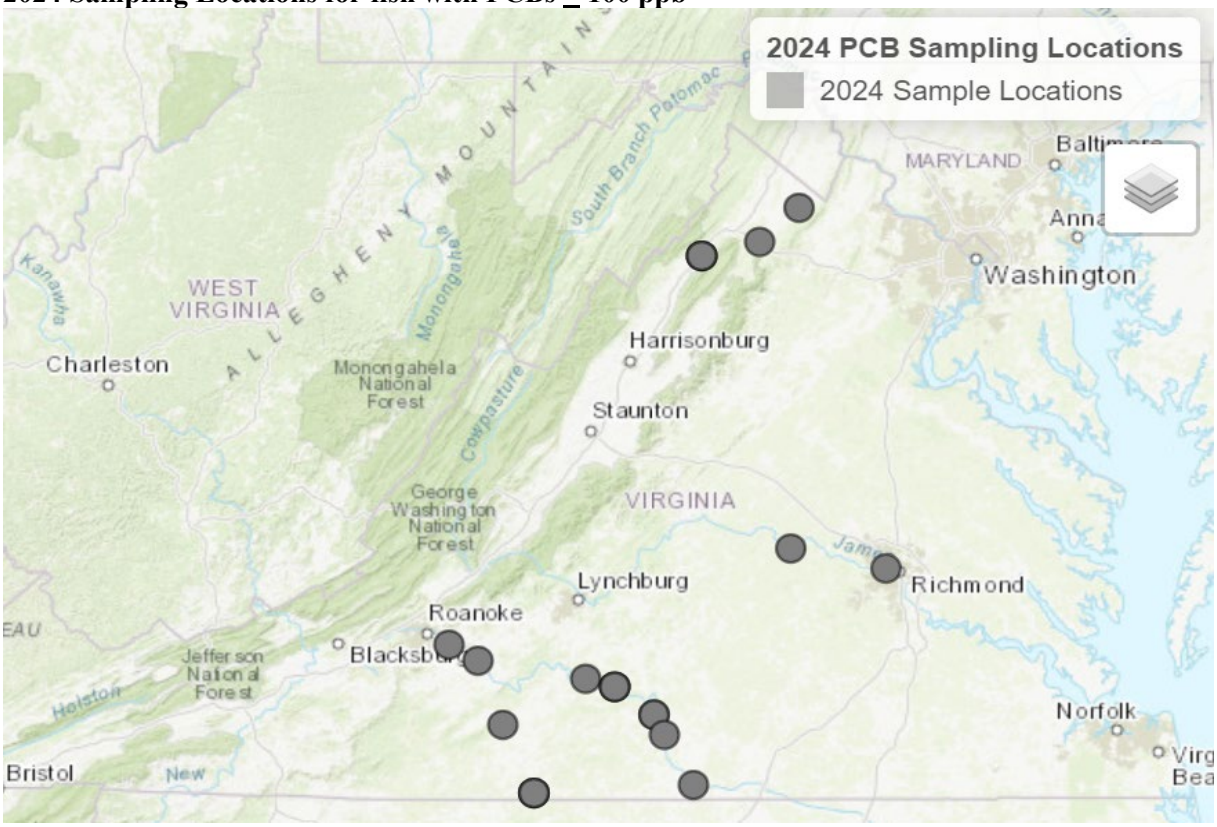
- Three fish samples were collected from the North Fork Shenandoah River near Route 663 bridge. This sampling location is upstream of the current North Fork Shenandoah River advisory zone, which ends near Cedar Creek around Strasburg. The three composite samples with concentrations above VDH's lower screening value were six redbreast sunfish, five white suckers, and five smallmouth bass.

Table 1. 2024 Fish tissue results with PCBs ≥ 100 ppb*

Station Location	Species Name	Length (cm)	No. of Fish	PCBs (ppb)	Advisory in Place
Burton Lake near Dam (Pittsylvania County)	Largemouth Bass	39 - 45	4	132	No
Dan River near Anglers Park	Flathead Catfish	102	1	255	Yes
Dan River near Anglers Park	Flathead Catfish	89	1	133	Yes
Dan River near Anglers Park	Flathead Catfish	89	1	109	Yes
James River near Pony Pasture	Blue Catfish	89	1	512	Yes
James River near West View near Rt. 643	Flathead Catfish	69- 79	3	199	Yes
Kerr Reservoir near Clarksville - Sta #B-18 Buoy 18	Channel Catfish	40 - 50	5	262	Yes
North Fork Shenandoah River near Rt. 663 bridge	Redbreast Sunfish	16 - 19	6	522	No
North Fork Shenandoah River near Rt. 663 bridge	White Sucker	36 - 44	5	444	No
North Fork Shenandoah River near Rt. 663 bridge	Smallmouth Bass	30 - 34	5	108	No
Roanoke River near Rt. 360 bridge, East of Clover	Carp	57 - 63	3	142	Yes
Roanoke River near Rt. 501, Brookneal	Striped Bass	51 - 58	4	199	Yes
Roanoke River near Rt. 501, Brookneal	Striped Bass	42 - 50	5	127	Yes
Roanoke River near Rt. 501, Brookneal	Quillback Carpsucker	35 - 40	5	101	Yes
Roanoke River near Rt. 634 at Hardy	Flathead Catfish	82	1	256	Yes
Roanoke River near Rt. 746 bridge (Watkins Bridge) near Randolph	Carp	61 - 63	3	197	Yes
Roanoke River near Rt. 746 bridge (Watkins Bridge) near Randolph	Channel Catfish	51 - 53	3	129	Yes
Roanoke River near Rt. 761 bridge, Long Island	Carp	68 - 70	3	188	Yes
Shenandoah River downstream of I-66	Channel Catfish	62 - 66	4	148	Yes
Shenandoah River near Lockes Landing Boat Launch	Shorthead Redhorse Sucker	42 - 45	5	257	Yes
Smith Mountain Lake near Rt. 122, Hales Ford Bridge	Flathead Catfish	74 - 78	3	236	Yes

*The fish length and PCB levels have been truncated for readability. **ppb** = parts per billion, **cm** = centimeters.

2024 Sampling Locations for fish with PCBs ≥ 100 ppb



Source: DEQ data presented using the R mapping program.

CONCLUSION

VDH concludes that redbreast sunfish, white suckers, and smallmouth bass sampled at North Fork Shenandoah River near Rt. 663 bridge are not covered under a current advisory and may impact public health due to their concentration of polychlorinated biphenyls.

RECOMMENDATION

VDH recommends additional sampling of fish, particularly redbreast sunfish, white suckers, and smallmouth bass at North Fork Shenandoah River near Rt. 663 to determine if extending the current polychlorinated biphenyl advisory upstream of the North Fork Shenandoah River is warranted.

Should you have any questions, please contact us at toxicology@vdh.virginia.gov or at 804 864-8182.

Authors

Ella Higgins, M.S. Candidate
Toxicology Support Staff
Virginia Department of Health
Richmond, VA 23219

Dwight Flammia, Ph.D.
State Public Health Toxicologist
Virginia Department of Health
Richmond, VA 23219