

Evaluation of Polychlorinated Biphenyls Concentrations in Fish from Virginia Watersheds in 2016

Rappahannock, James, and Potomac Rivers

VIRGINIA

Letter Health Consultation

January 25, 2018

Virginia Department of Health
Division of Environmental Epidemiology
109 Governor Street
Richmond, Virginia 23219



COMMONWEALTH of VIRGINIA

Department of Health – Office of Epidemiology

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January 25, 2018

Gabriel Darkwah
Lab Data Coordinator
Virginia Department of Environmental Quality
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Richmond, VA 23219

Dear Gabriel Darkwah,

Thank you for providing the polychlorinated biphenyls (PCBs) fish tissue concentrations results for fish collected from the Rappahannock, James, and Potomac Rivers in 2016. The Virginia Department of Health (VDH) has finished reviewing the results for public health implications as requested.

BACKGROUND AND DISCUSSION

In 2016, the VA Department of Environmental Quality (DEQ) collected fish from watersheds of the lower portions of the Rappahannock River, James River, and embayments along the Potomac River. Sample results are in Appendix A. Fifteen samples were collected from four sites within the tidal fresh Rappahannock River watershed. None of the sample results exceeded VDH's upper level of concern, 500 parts per billion (ppb). Five samples were collected from the non-tidal James River watershed. None of these sample results exceeded VDH's upper level of concern (500 ppb). Forty-two samples were collected from six sites within the fresh tidal segment of the lower James River watershed. Nine of these sample results exceeded VDH's upper level of concern (500 ppb) and included blue catfish, carp, and flathead catfish. Twenty fish were collected from six sites from the tidal (non-fresh) lower James River and its tributaries. None of those results exceeded VDH's upper level of concern (500 ppb). Thirty fish samples from nine sites within the tidal portion of the Elizabeth River watershed fish samples were analyzed. One gizzard shad exceeded VDH's upper level of concern (500 ppb). Northern snakehead species were collected from the Potomac River embayment watershed. None of these sample results exceeded VDH's lower level of concern (100 ppb). All samples were collected at locations that have been monitored previously (**Table 1**). For your convenience, VDH's current

advisories for those rivers are included in Appendix B. Fish collection and laboratory analysis are not discussed.

In October 2000, pursuant to § 32.1-248.01 of the *Code of Virginia*, VDH published guidelines for issuance of fish consumption advisories due to contamination of fish, including PCBs. In 2012, VDH updated the guidelines for establishing a fish consumption advisory. These guidelines are available at Virginia Regulatory Town Hall.¹

The current fish consumption guidelines for PCBs are as follows:

- When PCBs levels in fish range from 100 to below 500 ppb, VDH recommends limiting consumption of contaminated fish species to two 8-ounce meals per month.
- When levels equal or exceed 500 ppb in fish, VDH recommends avoiding consumption of contaminated fish species.

¹ <http://www.townhall.virginia.gov/>

CONCLUSIONS

VDH concludes that the concentrations of PCBs in several fish species tissue collected from the Rappahannock River and James River in 2016 are a public health hazard.

VDH concludes that the concentrations of PCBs in northern snakehead tissue collected from Potomac River embayments in 2016 are not a health hazard.

RECOMMENDATION

VDH recommends that the current fish consumption advisories in place for segments of the Rappahannock River and James River sampled in 2016 remain in effect.

I trust that the above information will be of help to you. Should you have any additional questions please contact Dwight Flammia, Ph.D., at dwight.flammia@vdh.virginia.gov or at (804)-864-8127.

Sincerely

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Appendix A: Data Table

Table 1. 2016 fish sampling results for segments of the Rappahannock River, James River, and Potomac River embayments.

DEQ Site #	Station name/location/description	DEQ River mile	Sampling Date & Time	Fish species name	No. of fish analyzed	Length (cm)	Total PCB*
Tidal Fresh Rappahannock River Watershed							
1	Claiborne Run near Rt. 3 bridge	3-CLB000.50	6/22/16 10:30	American Eel	2	49.3 - 56.8	63.22
1	Claiborne Run near Rt. 3 bridge	3-CLB000.50	6/22/16 10:30	American Eel	6	29.9 - 40.8	69.97
2	Hazel Run near Rt. 17 bridge	3-HAL000.57	6/22/16 12:30	American Eel	2	52.2 - 56.6	110.15
2	Hazel Run near Rt. 17 bridge	3-HAL000.57	6/22/16 12:30	American Eel	3	37.2 - 51.1	21.12
3	Rappahannock River below Fredericksburg	3-RPP107.33	6/8/16 11:00	Bluegill Sunfish	5	15.3 - 19.3	0.94
3	Rappahannock River below Fredericksburg	3-RPP107.33	6/8/16 11:00	Bluegill Sunfish	5	15.3 - 19.3	0.94
3	Rappahannock River below Fredericksburg	3-RPP107.33	6/8/16 11:00	Blue Catfish	2	61.5 - 72.4	199.50
3	Rappahannock River below Fredericksburg	3-RPP107.33	6/8/16 11:00	Blue Catfish	5	44.2 - 51.8	54.40
3	Rappahannock River below Fredericksburg	3-RPP107.33	6/8/16 11:00	Carp	2	76.4 - 78.5	48.82
3	Rappahannock River below Fredericksburg	3-RPP107.33	6/8/16 11:00	Gizzard Shad	10	34.4 - 38.7	30.00
4	Rappahannock River near Rt. 301 bridge	3-RPP080.19	6/27/16 11:00	Bluegill Sunfish	5	15.6 - 19.0	1.28
4	Rappahannock River near Rt. 301 bridge	3-RPP080.19	6/27/16 11:00	Blue Catfish	5	49.7 - 60.7	20.41
4	Rappahannock River near Rt. 301 bridge	3-RPP080.19	6/27/16 11:00	Blue Catfish	5	48.1 - 49.1	16.53
4	Rappahannock River near Rt. 301 bridge	3-RPP080.19	6/27/16 11:00	Carp	2	60.5 - 63.1	40.06
4	Rappahannock River near Rt. 301 bridge	3-RPP080.19	6/27/16 11:00	Gizzard Shad	10	35.1 - 43.0	57.47
Non Tidal James River Watershed							
4	James River below Boshier Dam	2-JMS118.99	4/28/16 15:00	Blue Catfish	1	96.2	278.37
4	James River below Boshier Dam	2-JMS118.99	4/28/16 15:00	Blue Catfish	1	88.8	125.59
4	James River below Boshier Dam	2-JMS118.99	4/28/16 15:00	Blue Catfish	4	68.7 - 75.2	30.21
4	James River below Boshier Dam	2-JMS118.99	4/28/16 15:00	Blue Catfish	4	59.0 - 67.2	13.53
4	James River below Boshier Dam	2-JMS118.99	4/28/16 15:00	Channel Catfish	3	46.3 - 47.2	47.29

*Total PCB denotes sum of polychlorinated biphenyl congeners in parts per billion (ppb). **Bold face** values exceed one of VDH's screening values.

Table 1. 2016 fish sampling results for segments of the Rappahannock River, James River, and Potomac River embayments, cont.

DEQ Site #	Station name/location/description	DEQ River mile	Sampling Date & Time	Fish species name	No. of fish analyzed	Length (cm)	Total PCB*
Tidal Fresh James River Watershed							
5	James River near I-95	2-JMS110.00	4/28/16 10:30	Blueback Herring	15	22.6 - 27.4	63.99
5	James River near I-95	2-JMS110.00	4/28/16 10:30	Blue Catfish	1	104.3	1389.63
5	James River near I-95	2-JMS110.00	4/28/16 10:30	Blue Catfish	1	102.5	628.15
5	James River near I-95	2-JMS110.00	4/28/16 10:30	Blue Catfish	2	72.5 - 83.1	622.10
5	James River near I-95	2-JMS110.00	4/28/16 10:30	Carp	3	63.5 - 70.0	935.61
5	James River near I-95	2-JMS110.00	4/28/16 10:30	Flathead Catfish	1	98.5	1081.17
5	James River near I-95	2-JMS110.00	4/28/16 10:30	Flathead Catfish	2	93.7 - 93.8	615.63
5	James River near I-95	2-JMS110.00	4/28/16 10:30	Flathead Catfish	3	79.5 - 90.5	1072.87
5	James River near I-95	2-JMS110.00	4/28/16 10:30	Gizzard Shad	10	36.5 - 38.6	185.10
5	James River near I-95	2-JMS110.00	4/28/16 10:30	Hickory Shad	10	33.2 - 42.8	339.36
5	James River near I-95	2-JMS110.00	4/28/16 10:30	Striped Bass	2	86.2 - 89.5	104.62
5	James River near I-95	2-JMS110.00	4/28/16 10:30	Striped Bass	6	56.2 - 62.4	318.47
5	James River near I-95	2-JMS110.00	4/28/16 10:30	Striped Bass	6	52.0 - 59.7	317.83
5	James River near I-95	2-JMS110.00	4/28/16 10:30	Striped Bass	5	62.7 - 72.4	176.31
5	James River near I-95	2-JMS110.00	4/28/16 10:30	White Perch	10	20.0 - 25.0	8.00
6	James River near Osborne Landing	2-JMS097.77	6/13/16 10:45	Blue Catfish	6	43.5 - 55.8	159.80
6	James River near Osborne Landing	2-JMS097.77	6/13/16 10:45	Carp	4	52.4 - 73.8	229.53
6	James River near Osborne Landing	2-JMS097.77	6/13/16 10:45	Channel Catfish	4	38.5 - 43.3	51.39
6	James River near Osborne Landing	2-JMS097.77	6/13/16 10:45	Gizzard Shad	10	33.0 - 40.8	42.52
6	James River near Osborne Landing	2-JMS097.77	6/13/16 10:45	Largemouth Bass	10	36.5 - 45.1	15.12
6	James River near Osborne Landing	2-JMS097.77	6/13/16 10:45	Largemouth Bass	10	36.5 - 45.1	14.27
8	Appomattox River near Rt. 10	2-APP001.53	6/3/16 11:00	Blue Catfish	2	58.7 - 67.0	135.66

*Total PCB denotes sum of polychlorinated biphenyl congeners in parts per billion (ppb). **Bold face** values exceed one of VDH's screening values.

Table 1. 2016 fish sampling results for segments of the Rappahannock River, James River, and Potomac River embayments, cont.

DEQ Site #	Station name/location/description	DEQ River mile	Sampling Date & Time	Fish species name	No. of fish analyzed	Length (cm)	Total PCB*
Tidal Fresh James River Watershed, cont.							
8	Appomattox River near Rt. 10	2-APP001.53	6/3/16 11:00	Carp	2	60.2 - 64.3	70.46
8	Appomattox River near Rt. 10	2-APP001.53	6/3/16 11:00	Gizzard Shad	10	35.6 - 40.9	82.58
8	Appomattox River near Rt. 10	2-APP001.53	6/3/16 11:00	Largemouth Bass	6	36.0 - 40.7	31.25
8	Appomattox River near Rt. 10	2-APP001.53	6/3/16 11:00	Largemouth Bass	6	36.0 - 40.7	24.95
8	Appomattox River near Rt. 10	2-APP001.53	6/3/16 11:00	Striped Bass	5	46.3 - 47.2	245.01
9	James River near Jordan Point at Rt. 156	2-JMS074.44	6/2/16 12:00	Blue Catfish	10	43.0 - 49.2	305.67
9	James River near Jordan Point at Rt. 156	2-JMS074.44	6/2/16 12:00	Carp	5	58.0 - 68.0	612.11
9	James River near Jordan Point at Rt. 156	2-JMS074.44	6/2/16 12:00	Channel Catfish	3	40.5 - 46.2	37.05
9	James River near Jordan Point at Rt. 156	2-JMS074.44	6/2/16 12:00	Gizzard Shad	10	38.3 - 43.8	171.17
9	James River near Jordan Point at Rt. 156	2-JMS074.44	6/2/16 12:00	White Perch	10	17.2 - 23.3	12.88
10	James River near Windmill Point powerline	2-JMS066.88	6/9/16 11:00	Blue Catfish	10	40.6 - 51.5	24.45
10	James River near Windmill Point powerline	2-JMS066.88	6/9/16 11:00	Gizzard Shad	10	33.2 - 37.7	144.92
10	James River near Windmill Point powerline	2-JMS066.88	6/9/16 11:00	Largemouth Bass	10	38.2 - 45.1	31.08
10	James River near Windmill Point powerline	2-JMS066.88	6/9/16 11:00	White Perch	10	18.5 - 22.5	10.38
10	James River near Windmill Point powerline	2-JMS066.88	6/9/16 11:00	White Perch	10	18.5 - 22.5	13.00
11	Chickahominy River near Rt. 5	2-CHK002.17	6/6/16 11:30	Blue Catfish	1	99.9	691.23
11	Chickahominy River near Rt. 5	2-CHK002.17	6/6/16 11:30	Blue Catfish	10	47.3 - 62.3	50.88
11	Chickahominy River near Rt. 5	2-CHK002.17	6/6/16 11:30	Carp	6	58.7 - 62.3	133.57
11	Chickahominy River near Rt. 5	2-CHK002.17	6/6/16 11:30	Largemouth Bass	6	36.5 - 46.6	16.40
11	Chickahominy River near Rt. 5	2-CHK002.17	6/6/16 11:30	White Perch	10	19.5 - 26.7	16.67

*Total PCB denotes sum of polychlorinated biphenyl congeners in parts per billion (ppb). **Bold face** values exceed one of VDH's screening values.

Table 1. 2016 fish sampling results for segments of the Rappahannock River, James River, and Potomac River embayments, cont.

DEQ Site #	Station name/location/description	DEQ River mile	Sampling Date & Time	Fish species name	No. of fish analyzed	Length (cm)	Total PCB*
Tidal (Non-Fresh) Lower James River Watershed							
12	James River near mouth of Chickahominy River	2-JMS049.00	3/10/16 12:00	Striped Bass	5	50.5 – 55.7	162.00
12	James River near mouth of Chickahominy River	2-JMS049.00	3/10/16 12:00	Striped Bass	5	47.6 – 57.7	145.21
12	James River near mouth of Chickahominy River	2-JMS049.00	3/14/16 12:00	Striped Bass	5	51.9 – 55.2	207.16
13	James River near Hog Island Buoy 42	2-JMS034.27	3/10/16 10:00	Striped Bass	5	46.0 – 61.5	90.25
13	James River near Hog Island Buoy 42	2-JMS034.27	3/10/16 10:00	Striped Bass	5	46.1 – 53.5	95.67
14	James River near Rt. 17 bridge	2-JMS013.10	6/30/16 12:30	Croaker	13	16.5 - 22.0	2.00
14	James River near Rt. 17 bridge	2-JMS013.10	6/30/16 12:30	Gizzard Shad	10	34.4 - 42.1	130.35
15	Pagan (Cypress Creek) River near Rt. 10	2-PGN006.03 (CYP000.02)	6/28/16 12:00	Blue Catfish	2	45.7 - 54.5	8.42
15	Pagan (Cypress Creek) River near Rt. 10	2-PGN006.03 (CYP000.02)	6/28/16 12:00	Croaker	4	24.3 - 27.8	14.65
15	Pagan (Cypress Creek) River near Rt. 10	2-PGN006.03 (CYP000.02)	6/28/16 12:00	Gizzard Shad	10	34.0 - 37.6	69.67
15	Pagan (Cypress Creek) River near Rt. 10	2-PGN006.03 (CYP000.02)	6/28/16 12:00	Mummichog	76	0	9.11
15	Pagan River near Rt. 10	2-PGN006.03	6/28/16 13:30	White Perch	7	14.0 - 19.6	5.59
16	Hampton River near Rt. 60/143 bridge	2-HAI000.95	6/14/16 12:00	Blue Crab	6	11.0 - 16.0	6.57
16	Hampton River near Rt. 60/143 bridge	2-HAI000.95	6/14/16 12:00	Bluefish	7	20.5 - 27.6	20.74
16	Hampton River near Rt. 60/143 bridge	2-HAI000.95	6/14/16 12:00	Croaker	9	20.7 - 25.9	21.19
16	Hampton River near Rt. 60/143 bridge	2-HAI000.95	6/14/16 12:00	Gizzard Shad	10	32.0 - 42.9	192.66
17	Mill Creek - middle	2-MIG001.49	6/15/16 12:30	Blue Crab	9	12.0 - 16.5	2.32
17	Mill Creek - middle	2-MIG001.49	6/15/16 12:30	Croaker	9	17.9 - 22.8	12.95
17	Mill Creek - middle	2-MIG001.49	6/15/16 12:30	Gizzard Shad	10	33.3 - 36.8	376.78
17	Mill Creek - middle	2-MIG001.49	6/15/16 12:30	Mummichog	66	0	13.73

*Total PCB denotes sum of polychlorinated biphenyl congeners in parts per billion (ppb). **Bold face** values exceed one of VDH's screening values.

Table 1. 2016 fish sampling results for segments of the Rappahannock River, James River, and Potomac River embayments, cont.

DEQ Site #	Station name/location/description	DEQ River mile	Sampling Date & Time	Fish species name	No. of fish analyzed	Length (cm)	Total PCB*
Tidal Elizabeth River Watershed							
18	Elizabeth River near Craney Island	2-ELI000.69	10/17/16 13:00	Blue Crab	3	12.5 - 15.6	4.95
18	Elizabeth River near Craney Island	2-ELI000.69	10/17/16 13:00	Spot	12	15.0 - 20.3	19.56
18	Elizabeth River near Craney Island	2-ELI000.69	10/17/16 13:00	Spot	12	16.0 - 19.5	20.93
19	Lafayette River near Granby Street bridge	2-LAF003.83	10/3/16 15:00	Blue Crab	13	12.5 - 15.6	27.08
19	Lafayette River near Granby Street bridge	2-LAF003.83	10/3/16 15:00	Spot	14	15.9 - 19.2	140.45
19	Lafayette River near Granby Street bridge	2-LAF003.83	10/3/16 15:00	Spot	13	15.2 - 18.0	83.60
20	Western Branch Elizabeth River near Rt. 17 bridge	2-WBE002.11	7/1/16 13:00	Croaker	6	21.5 - 29.3	35.16
20	Western Branch Elizabeth River near Rt. 17 bridge	2-WBE002.11	7/1/16 13:00	Gizzard Shad	10	31.9 - 36.6	230.21
20	Western Branch Elizabeth River near Rt. 17 bridge	2-WBE002.11	7/1/16 13:00	Mummichog	93	0	30.35
21	Broad Creek near Rt. 58	2-BRO001.35	10/6/16 12:30	Blue Crab	13	10.9 - 16.4	8.95
21	Broad Creek near Rt. 58	2-BRO001.35	10/6/16 12:30	Mummichog	110	0	50.13
21	Broad Creek near Rt. 58	2-BRO001.35	10/6/16 12:30	Spot	14	16.2 - 19.4	54.35
21	Broad Creek near Rt. 58	2-BRO001.35	10/6/16 12:30	Spot	13	16.0 - 18.0	64.26
21	Broad Creek near Rt. 58	2-BRO001.35	10/6/16 12:30	Spot	13	15.8 - 17.7	62.24
21	Broad Creek near Rt. 58	2-BRO001.35	10/6/16 12:30	Striped Bass	1	89.3	174.63
21	Broad Creek near Rt. 58	2-BRO001.35	10/6/16 12:30	Striped Bass	1	57	83.01
22	Eastern Branch Elizabeth River near Norfolk & Western RR bridge	2-EBE002.98	10/6/16 11:00	Blue Crab	10	10.6 - 15.8	10.24
22	Eastern Branch Elizabeth River near Norfolk & Western RR bridge	2-EBE002.98	10/6/16 11:00	Gizzard Shad	10	31.4 - 40.6	791.61

*Total PCB denotes sum of polychlorinated biphenyl congeners in parts per billion (ppb). **Bold face** values exceed one of VDH's screening values.

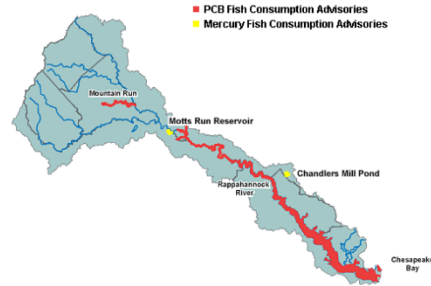
Table 1. 2016 fish sampling results for segments of the Rappahannock River, James River, and Potomac River embayments, cont.











DEQ Site #	Station name/location/description	DEQ River mile	Sampling Date & Time	Fish species name	No. of fish analyzed	Length (cm)	Total PCB*
Tidal Elizabeth River Watershed, cont.							
22	Eastern Branch Elizabeth River near Norfolk & Western RR bridge	2-EBE002.98	10/6/16 11:00	Striped Bass	1	47.6	39.35
23	Paradise Creek near Victory Boulevard Rt. 239	2-PAR000.77	10/5/16 13:45	Blue Crab	3	12.5 - 14.0	12.96
23	Paradise Creek near Victory Boulevard Rt. 239	2-PAR000.77	10/5/16 13:45	Mummichog	72	0	91.29
23	Paradise Creek near Victory Boulevard Rt. 239	2-PAR000.77	10/5/16 13:45	Red Drum	3	33.3 - 37.5	4.93
24	St. Julian Creek	2-STJ000.81	10/5/16 11:30	Blue Crab	6	12.5 - 14.4	9.85
24	St. Julian Creek	2-STJ000.81	10/5/16 11:30	White Perch	5	15.8 - 20.2	17.55
25	Southern Branch Elizabeth River off Virginia Power	2-SBE006.00	10/4/16 11:30	Blue Crab	6	12.0 - 15.9	5.69
25	Southern Branch Elizabeth River off Virginia Power	2-SBE006.00	10/4/16 11:30	White Perch	16	13.5 - 19.1	28.06
26	Deep Creek near I-64	2-DEC000.54	10/4/16 13:30	Gizzard Shad	10	31.1 - 40.8	423.72
26	Deep Creek near I-64	2-DEC000.54	10/4/16 13:30	White Catfish	2	23.9 - 32.9	10.14
26	Deep Creek near I-64	2-DEC000.54	10/4/16 13:30	White Perch	15	16.5 - 22.0	26.08
26	Deep Creek near I-64	2-DEC000.54	10/4/16 13:30	White Perch	15	16.5 - 22.0	25.64
Potomac River Embayment Watershed							
30	Dogue Creek Bay	1ADOU000.00	5/10/16 12:00	Northern Snakehead	3	62.0 - 79.3	43.37
31	Occoquan River Bay	1AOCC000.00	4/21/16 10:00	Northern Snakehead	3	65.0 - 72.2	29.34
32	Aquia Creek Bay	1AAUA000.00	4/22/16 10:00	Northern Snakehead	2	74.8 - 76.5	52.38
32	Aquia Creek Bay	1AAUA000.00	4/22/16 10:00	Northern Snakehead	2	65.8 - 71.1	5.98

*Total PCB denotes sum of polychlorinated biphenyl congeners in parts per billion (ppb). **Bold face** values exceed one of VDH's screening values.

Appendix B: Current Fish Consumption Advisories

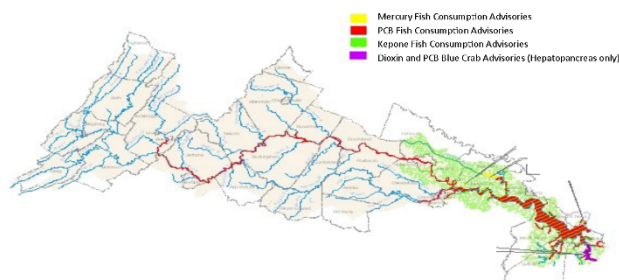
RAPPAHANNOCK RIVER BASIN

































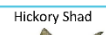
WATERBODY AND AFFECTED BOUNDARIES	AFFECTED LOCALITIES	CONTAMINANT	SPECIES	ADVISORIES/RESTRICTIONS
Rappahannock River (from the I-95 bridge above Fredericksburg downstream to the mouth of river near Stingray Point including its tributaries Hazel Run up to I-95 bridge crossing and Claiborne Run up to Rt. 1 bridge crossing. These river segments comprise ~123 miles).	Stafford Co., Spotsylvania Co., Fredericksburg City, Caroline Co., King George Co., Essex Co., Westmoreland Co., Richmond Co., Middlesex Co., Lancaster Co.	PCBs	American Eel 	No more than two meals/month
		PCBs	Blue Catfish 	
		PCBs	Carp 	
		PCBs	Channel Catfish 	
		PCBs	Croaker 	
		PCBs	Gizzard Shad 	
		PCBs	Anadromous (Coastal) Striped Bass 	
Mountain Run (from Rt. 15/29 bridge crossing near Culpeper City ~19 miles to the confluence with Rappahannock River)	Culpeper Co.	PCBs	American Eel 	No more than two meals/month
Motts Run Reservoir (entire reservoir, ~ 160 acres)	Spotsylvania Co.	Mercury	Largemouth Bass 	No more than two meals/month
Chandler's Mill Pond (entire pond, ~ 75 acres)	Westmoreland Co.	Mercury	Largemouth Bass 	No more than two meals/month











*A meal is considered to be an eight-ounce (half-pound) serving of fish.

JAMES RIVER BASIN



WATERBODY AND AFFECTED BOUNDARIES	AFFECTED LOCALITIES	CONTAMINANT	SPECIES	ADVISORIES/RESTRICTIONS
Maury River (from Buena Vista at Rt. 60 ~15 miles to the confluence of the James River)	Rockbridge Co., Buena Vista City	PCBs	Redbreast Sunfish 	No more than two meals/month
		PCBs	Rock Bass 	
		PCBs	Yellow Bullhead Catfish 	
		PCBs	Carp 	
James River (from Big Island Dam (below Blue Ridge Parkway) downstream to the I-95 James River Bridge in Richmond including its tributaries Hardware River up to Rt. 6 bridge and Slate River up to Rt. 676 bridge. These river segments comprise ~234 miles).	Amherst Co., Bedford Co., Lynchburg City, Campbell Co., Appomattox Co., Nelson Co., Buckingham Co., Albemarle Co., Fluvanna Co., Cumberland Co., Goochland Co., Powhatan Co., Henrico Co., Chesterfield Co., Richmond City	PCBs	Gizzard Shad 	No more than two meals/month
		PCBs	Carp 	
		PCBs	American Eel 	
		PCBs	Flathead Catfish 	
		PCBs	Quillback Carpsucker 	

<p>James River (from the I-95 James River bridge in Richmond downstream to the Hampton Roads Bridge Tunnel and the tidal portion of the following tributaries: Appomattox River up to Lake Chesdin Dam, Bailey Creek up to Rt. 630, Poythress Run, Bailey Bay, Chickahominy River up to Walkers Dam, Skiffes Creek up to Skiffes Creek Dam, Pagan River and its tributary Jones Creek, Chuckatuck Creek, Nansemond River and its tributaries Bennett Creek and Star Creek, Hampton River, Willoughby Bay and the Elizabeth River system (Western Br., Eastern Br., Southern Br., and Lafayette River) and tidal tributaries St. Julian Creek, Deep Creek, and Broad Creek. These river segments comprise ~325 miles).</p>	<p>Richmond City, Henrico Co., Chesterfield Co., Charles City Co., Hopewell City, Colonial Heights City, Petersburg City, Dinwiddie Co., Prince George Co., Surry Co., James City., New Kent Co., Isle of Wight Co., Newport News City, Suffolk City, Portsmouth City, Hampton City, Norfolk City, Chesapeake City, Virginia Beach City</p>	PCBs	Gizzard Shad 	DO NOT EAT
		PCBs	Carp 	DO NOT EAT
		PCBs	Blue Catfish ≥ 32 inches 	DO NOT EAT
		PCBs	Flathead Catfish ≥ 32 inches 	DO NOT EAT
		PCBs	Blue Catfish < 32 inches 	No more than two meals/month
		PCBs	Flathead Catfish < 32 inches 	
		PCBs	Channel Catfish 	
		PCBs	White Catfish 	
		PCBs	Largemouth Bass 	
		PCBs	Bluegill Sunfish 	
		PCBs	American Eel 	
		PCBs	Quillback Carpsucker 	
		PCBs	Smallmouth Bass 	
		PCBs	Creek Chub 	
		PCBs	Yellow Bullhead Catfish 	
		PCBs	White Perch 	
		PCBs	Striped Bass 	
		PCBs	Bluefish 	
		PCBs	Croaker 	
		PCBs	Spot 	
		PCBs	Blueback Herring 	
		PCBs	Hickory Shad 	
		Kepone	All Species	PCBs advisory is more restrictive. Follow the PCBs advisory for the species listed. Any fish for species not listed, limit consumption to one meal per day.

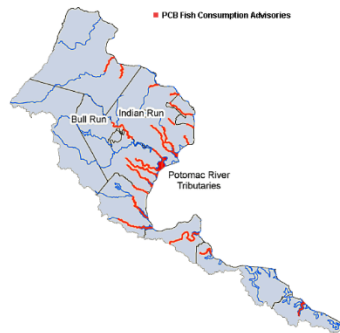
Southern Branch of the Elizabeth River and its tidal tributaries (~ 23miles)	Portsmouth City, Chesapeake City, Norfolk City	PCBs, Dioxins	Blue Crab (Hepatopancreas only) 	DO NOT EAT crab's hepatopancreas ("mustard," green gland, tomalley). This advisory applies only to avoiding eating the crab's hepatopancreas or "mustard"(image below). Crab meat is not subject to this advisory. 
Harrison Lake (entire lake, ~ 82 acres)	Charles City Co.	Mercury	Redear Sunfish 	No more than two meals/month
		Mercury	Largemouth Bass 	
		Mercury	Chain Pickerel 	
		Mercury	Bowfin 	
Chickahominy Lake (entire lake, ~1230 acres)	Charles City Co. New Kent Co.	Mercury	Largemouth Bass 	No more than two meals/month
		Mercury	Chain Pickerel 	
		Mercury	Bowfin 	
Mill Creek (entire creek) near Fort Monroe	City of Hampton	PCBs	Gizzard Shad 	No more than two meals/month















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This fish consumption advisory provides meal recommendations on eating certain fish species caught from specified waterbodies. It is recommended to follow the guidance presented on this advisory to reduce your total exposure to fish contaminants. For further information regarding waterbodies sampled or the fish tissue sampling process, contact the [Virginia Department of Environmental Quality](#). For questions about human health risks from exposure to fish contaminants, contact the [Virginia Department of Health's Division of Environmental Epidemiology](#) at 804-864-8182.

This fish consumption advisory is reviewed annually. No changes or updates are required to this advisory based on review of existing data.

POTOMAC RIVER BASIN



WATERBODY AND AFFECTED BOUNDARIES	AFFECTED LOCALITIES	CONTAMINANT	SPECIES	ADVISORIES/RESTRICTIONS
Potomac River Basin (the following tributaries between the VA/MD state line near Rt. 340 bridge (Loudoun County) to the I-395 bridge in Arlington County (above the Woodrow Wilson Bridge): Goose Creek up to the Dulles Greenway Road Bridge, Broad Run up to Rt. 625 bridge, Difficult Run up to Rt. 7 bridge, and Pimmit Run up to Rt. 309 bridge. These tributaries comprise ~24 miles)	Loudoun Co., Fairfax Co., Arlington Co.	PCBs	American Eel 	No more than two meals/month
Potomac River Basin (the tidal portion of the following tributaries and embayments from I-395 bridge (above the Woodrow Wilson Bridge) to the Potomac River Bridge at Rt. 301: Four Mile Run, Hunting Creek, Little Hunting Creek, Pohick Creek, Accotink Creek, Occoquan River, Neabsco Creek, Powell Creek, Quantico Creek, Chopawamsic Creek, Aquia Creek, and Potomac Creek. These tributaries comprise ~126 miles)	Arlington Co, Alexandria City, Fairfax Co., Prince William Co., Stafford Co., King George Co.	PCBs	Carp 	DO NOT EAT
		PCBs	American Eel 	DO NOT EAT
		PCBs	Channel Catfish ≥ 18 inches 	DO NOT EAT
		PCBs	Channel Catfish < 18 inches 	No more than two meals/month
		PCBs	Bullhead Catfish 	
		PCBs	Largemouth Bass 	
		PCBs	Anadromous (coastal) Striped Bass 	
		PCBs	Sunfish Species 	
		PCBs	Smallmouth Bass 	
		PCBs	White Catfish 	
		PCBs	White Perch 	
		PCBs	Gizzard Shad 	
		PCBs	Yellow Perch 	

Potomac River Basin (the tidal portion of the following tributaries from the Potomac River Bridge at Rt. 301 to mouth of river near Smith Point: Upper Machodoc Creek, Monroe Creek, and Coan River. These tributaries comprise ~31 miles)	King George Co., Westmoreland Co., Northumberland Co.	PCBs	Gizzard Shad 	No more than two meals/month
		PCBs	White Perch 	
		PCBs	Channel Catfish 	
Indian Run (entire Run) (near Annandale (State Route 236) downstream ~ 3 miles to the confluence with Back Lick Run)	Fairfax Co.	PCBs	Creek Chub 	No more than two meals/month
Bull Run (near Manassas Park (Prince William County) from the I-66 Bridge downstream ~14 miles to the Rt. 612 (Yates Ford Road) bridge)	Fairfax Co., Manassas Park City, Prince William Co.	PCBs	Channel Catfish 	No more than two meals/month
		PCBs	Carp 	

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