

2007 Fish Tissue Sampling

Calvin Jordan, Virginia Department of Environmental Quality

In the spring of 2007, VADEQ with cooperation from VADGIF collected fish from 18 stations in the North River, South River, South Fork Shenandoah River and mainstem Shenandoah River as part of the 100 year Mercury Monitoring Plan. Control sites were located on North River and upstream of Rith-Loth Dam on the South River. Species collected included smallmouth bass, redbreast sunfish, suckers and trout and catfish where available.

Trout were well below the .5 ppm health advisory limit. This can be attributed to the fact that they are stocked fish. Control sites were also below .5 ppm for all species. The highest record level was a smallmouth bass collected from the Augusta Forestry Station (RRM 12.3) at 4.65 ppm. Generally speaking, mercury levels increase from RRM 0 to RRM 12, then decrease slightly to RRM 23 (mouth of South River) then decrease at RRM 28, but remain above .5 ppm for the entire length of the South Fork Shenandoah. Mainstem Shenandoah River levels were at or just below .5 ppm. Normalizing the data for a 218 g smallmouth bass for the sampling years of 1999, 2002, 2005 and 2007 do not show a pattern of increasing or decreasing mercury concentrations.

2007 Sediment Sampling

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In the summer of 2007, VADEQ collected sediments from the South River and South Fork Shenandoah Rivers as part of the 100 year Mercury Monitoring Plan. Samples were collected at approximately 1 mile intervals on the South River and approximately 5 mile intervals on the South Fork. Control sites were established at Wayne Avenue upstream of the DuPont dam and on North River. Samples were collected using the "guzzling" method. This method employs the use of a hand bilge pump to suck sediments from the river where there are not abundant fine grained sediments. 5 gallon buckets are filled with river water and sediment. The bucket then is stirred and left to sit for 30 seconds which is long enough for the coarse grained sediments to settle to the bottom. The remaining slurry is then poured into a second bucket. This bucket is then allowed to sit for 30 minutes. This allows the fine grained sediments to settle to the bottom. The water is then poured off and the remaining sediment is poured into a sample jar.

Control sites were at or below the detection limit of .1 ppm. Levels increase from RRM 0 to RRM 2 to about 5 ppm. There is then a big leap to about 25 ppm at Hopeman Parkway (RRM 3). Levels then fluctuate, but generally decrease from Hopeman Parkway to Port Republic. Higher concentrations were observed in pools and lower concentrations in riffles. Levels range from 42.8 ppm at RRM 13 to 9.89 ppm at RRM 19. From Port Republic to Front Royal levels remain below 1 ppm.