

Chemical from parking lots threatens stream ecology

“I think it’s a big part of the puzzle. As soon as you recognize the problem and start looking around, it’s right in front of your face.” — Barbara Mahler, lead author of the USGS report

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John Strickler/The Mercury

Parking lots that are treated with a chemical sealant based on coal tar flush 65 times more polycyclic aromatic hydrocarbons into streams than untreated parking lots.



POTTSTOWN — When David Hart and his team of scientists sampled the silt that had built up for years behind the dam on Manatawny Creek, they found evidence of a health threat that is only now becoming understood.

They had feared they would find heavy metal contamination attached to fine silt and were worried about its release when the dam was removed in 2001.

While they were surprised to find little sediment with heavy metal contamination — most of the sediment was too coarse for metals to adhere — they were not terribly surprised by what they did find.

What Hart and his team found were polycyclic aromatic hydrocarbons, known among those who study such things as PAHs.

But just because it's expected doesn't mean it's not dangerous.

We found it above and below the dam, and much of the contamination was higher in the impoundment behind the dam, particularly the PAHs, but you would expect to find that in an urban setting," Hart said.

What you might not expect is the source of this family of contaminants, which the United States Geological Survey identifies as being "suspected human carcinogens."

PAHs come from cars and the things cars require. But mostly, it seems, a huge amount may be coming from parking lots, particularly parking lots sealed with a kind of sealant that uses coal tar as a base.

PAHs are a group of organic contaminants that form from the incomplete combustion of hydrocarbons like coal, according to the National Water Quality Assessment Program run by the USGS.

Meant to keep water out of parking lots and causing them to crack when that water freezes, sealants eventually wear off after several years from friction with car tires. Then, like everything else on a paved surface, it is flushed into the nearest stream when it rains.

You can add it to the other things that automobiles contribute to stream pollution when the rains come — things like anti-freeze, transmission fluid, motor oil, gasoline, wiper fluid, and road salt.

A joint study by USGS and the City of Austin, Texas found that coal tar sealants dump 65 times more PAHs into run-off than unsealed parking lots.

Asphalt-based sealants cause 10 percent more PAHs in runoff than unsealed parking lots, according to the same study.

Over the past 30 to 35 years, PAH concentrations have been increasing in urban and suburban lakes. The study suggests that the total amount of PAHs coming from parking lots would be reduced by one-tenth if parking lots were left unsealed.

That is one more reason, said John Hoekstra, director of watershed advocacy for Green Valleys Association in Chester County, to promote porous pavement.

Rather than rebuff water, these pavements, used primarily in parking lots, actually encourage water to infiltrate them. Conceived largely as a way to improve groundwater recharge from rain, they would also help the ground absorb and break down these chemicals.

"And you don't need sealant to keep water out of pavement that you're allowing water to penetrate," Hoekstra said.

PAHs found in seal coat and other combustion-based materials like exhaust are toxic to mammals like you and me, as well as birds, fish, amphibians, plants and insects.

And while the USGS currently believes the risk to human health is small from PAH contamination in drinking water, because the pollutant tends to attach to sediment and not dissolve, it is not very benign for the life that calls those streams home.

PAHs can impede reproduction in aquatic insects, the foundation of the river food chain, as well as cause cataracts and liver abnormalities in fish.

“This is a potential contamination issue that affects all of us, Barbara Mahler, lead author of the USGS report published in August, told the Austin American-Statesman in June.

The newspaper also quoted representatives of a Florida firm that manufactures sealants as saying sealants are unlikely to be the only cause of the pollution.

Mahler told the Austin newspaper the study is not meant to be the final word on the subject, just another step in understanding the unintended effect we often have on our surroundings.

“I think it’s a big part of the puzzle. As soon as you recognize the problem and start looking around, it’s right in front of your face,” Mahler said.