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Health Concerns Over Common Driveway Sealant Continue to Prompt Local Bans

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The dangers of coal tar sealants are returning to the public eye, as San Antonio, Texas, recently became the largest U.S. city to enact a local ban. Coal tar sealants contain coal tar pitch, a thick, dark liquid that is a by-product of the coal gasification process. These sealants are used to seal driveways, parking lots, and playgrounds—they're not often used on roads. San Antonio's June 30 ban followed a June 21 ban by Ann Arbor, Michigan, when the city council unanimously voted to ban the sealants.

Coal tar has been shown to contain dozens of polycyclic aromatic hydrocarbons (PAHs), which mounting research shows are hazardous to human health and the environment. PAHs are organic contaminants created when motor oil, coal, or cigarettes are burned, and when tires are manufactured, among other sources.

Polycyclic aromatic hydrocarbons make up more than 50 percent of coal tar pitch. Over time, as the sealant breaks down, these harmful PAH particles are washed off and travel into water bodies, or become airborne and travel as dust. Coal tar sealants contain approximately 1,000 to 2,000 times more PAHs than asphalt-based sealants, the primary product competition—though renewable, bio-based options have also been developed. Coal tar is used more commonly in the Eastern United States, while the asphalt alternative is more common in the West.

Human Health Concerns

When sealcoats are abraded, pavement dust particles can enter households carried by the wind or tracked in on shoes and clothing. The U.S. Geological Survey (USGS) reports a PAH concentration of 129 milligrams per kilogram in house dust near driveways or parking lots using coal tar sealant, compared to just 5 milligrams per kilogram when other sealcoats are used.

Several PAHs are known carcinogens. Lifetime exposure to pavement treated with coal tar sealant raises cancer risk an estimated 38 times compared with the risk for those living near unsealed pavement. This assessment is based on the increased PAH concentrations found in house dust and soil—it does not consider how those in direct contact with the sealed pavement are affected, including those who apply sealcoat applications, for whom exposure levels are at least 10 times higher.

Children are particularly vulnerable to PAH exposure, as they are more likely to come in contact with the sealants when playing on driveways or playgrounds, as well as ingesting household dust containing PAHs. A 2013 study suggests that about half of an individual's lifetime exposure risk occurs by age six.

Environmental Risk

In a study of 40 lakes in urban areas by the U.S. Geological Survey (USGS), coal tar sealants were found to be responsible for as much as half of the PAHs found in lakes, making them the single largest contributor. In 2011, EESI held a [briefing](http://www.eesi.org/briefings/view/pahs-increasing-in-urban-us-lakes) (<http://www.eesi.org/briefings/view/pahs-increasing-in-urban-us-lakes>) discussing the effects of PAHs from coal tar sealant on aquatic life.

Many PAHs are toxic to mammals, amphibians, fish, and birds. In lakes, PAHs accumulate in sediment, making them particularly dangerous to animals living in the mud. More than one-third of urban lakes studied had sediment concentrations of PAHs above the level expected to negatively affect aquatic life, according to USGS findings.

Runoff from areas treated with coal tar sealant can have very high levels of PAHs. The sediment from their runoff can contain as much as 3,500 milligrams of PAH per kilogram of sediment, compared with only 54 milligrams per kilogram (64.8 times less) in runoff from unsealed pavement.

Mortality in small aquatic life, such as minnows and water fleas, reached 100 percent when exposed to runoff from pavement sealed with coal tar within the past 42 days. Runoff from unsealed pavement caused mortality rates of less than 10 percent.

In fish populations, PAHs from runoff have been found to cause lesions, liver abnormalities, tumors, decreased juvenile growth, and increased mortality. A study from the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Fish and Wildlife Service found that runoff from coal-tar sealed pavement led to high mortality rates in salmon, as well as genetic abnormalities in zebrafish.

Current Coal Tar Sealant Bans and Sealant Alternatives

San Antonio and Ann Arbor have joined a growing list of cities and states that have banned coal tar sealant. Since Austin, Texas, became the first city to ban coal tar sealants in 2005, restrictions and bans have been passed at the city, county, and state level throughout the nation.

Washington and Minnesota have both enacted state-wide bans, and coal tar sealant's use is restricted in Massachusetts. New York introduced a specification in 2015, encouraging state agencies to favor sealants with lower PAH concentrations. Washington, D.C., voted to ban the sealants beginning in 2009, and has since remediated 13 sites to remove the harmful sealant.

Several major retailers have also voluntarily stopped selling coal tar sealant. Companies like Home Depot, Lowes, and Ace no longer carry the product, making compliance with local bans easier for many homeowners.

For consumers looking for sealants without coal tar, an asphalt-based sealant is the most popular option, but bio-based sealants are becoming more common as well. One example, Biorestor, has been adopted in Auglaize County, Ohio. David Albers, a local government official in the county, says that in addition to being effective, Biorestor is, "...less toxic to the environment than petroleum-based sealers and it's made using the soybeans that grow right alongside the very roads it protects."

While there has been some resistance from coal tar sealant industry groups, concern over the sealant is spreading and many cities that have banned it hope to inspire others. Ann Arbor, for instance, wants to set an example and eventually see a ban at the state level. After looking at the evidence of health and environmental impacts, Council Member Julie Grand said, "This is a no-brainer."

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Sources:

- "Coal-Tar-Based Pavement Sealcoat—Potential Concerns for Human Health and Aquatic Life," U.S. Geological Survey (<http://pubs.usgs.gov/fs/2016/3017/fs20163017.pdf>)
- "Coal-Tar-Based Pavement Sealcoat, Polycyclic Aromatic Hydrocarbons (PAHs), and Environmental Health," U.S. Geological Survey (<http://pubs.usgs.gov/fs/2011/3010/pdf/fs2011-3010.pdf>)
- "PAHs Increasing in Urban U.S. Lakes," EESI Briefing (<http://www.eesi.org/briefings/view/pahs-increasing-in-urban-us-lakes>)
- "Ann Arbor bans toxic pavement sealants, sets \$10K fine for violations," MLive (http://www.mlive.com/news/ann-arbor/index.ssf/2016/06/ann_arbor_bans_toxic_pavement.html)
- "Toxic driveways? Cities ban coal tar sealants," USA Today (<http://www.usatoday.com/story/money/business/2013/06/16/toxic-driveways-cities-states-ban-coal-tar-pavement-sealants/2028661/>)
- "Bans," Coal Tar Free America (<https://coaltarfreeamerica.blogspot.com/p/bans.html>)
- "Coal Tar Ban in the District of Columbia," Department of Energy and Environment (<http://doee.dc.gov/coaltar>)
- "US Coal Tar Sealant Bans and Government Restrictions," Google Maps (<https://www.google.com/maps/d/u/0/viewer?mid=1qN4Ed1rqppVM7LOO0IOjOiSgbJg&hl=en>)
- "Biobased Asphalt Restorer," Soy Biobased Products (<http://www.soybiobased.org/news-and-updates/biobased-asphalt-restorer/>)

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