



## The Healthier Driveway

MANY HOMEOWNERS LIKE the look of a dark, black driveway, and many believe sealing their driveways increases the life of the asphalt. While there are not any objective studies supporting that conclusion, there are so many anecdotal testimonies that it has become a common belief.

Yet many of the sealants used to coat driveways and other surfaces contain toxic coal tar (coal tar is a by-product of coal produced during the coking process) and they come with a potential danger. These sealants are a potent source of *polycyclic aromatic hydrocarbons* (PAHs), as documented by the USGS, several universities, and other researchers. Coal tar and several PAHs are recognized carcinogens by the U.S. Department of Health and Human Services and many international agencies. Prolonged exposure is hazardous to humans, animals, and aquatic life.

No one wants to endanger their families, neighbors, or negatively affect their watersheds by sealing their driveways, however, so it's important to know what's in those sealants and to know your options. Homeowners should specify **asphalt emulsion sealers** from their contractors, and plan

on application during the late spring, summer, or early fall when curing conditions are best.

### PAH EXPOSURE RISKS

In humans, prolonged exposure to PAHs has been linked to lung, skin, bladder, and respiratory cancers. Coal tar sealants are linked to an increased risk of cancer, especially in children (or pets), and can also pollute storm water runoff, affecting ponds, lakes, and waterways such as Flint Creek, killing fish and other aquatic life. High PAH sealant and coal tar particles in rivers and streams can inhibit reproduction and cause DNA damage, mutations, tumors, cancer, and death in aquatic life forms.

### SEALANTS ARE ACTIVE

Sealants do not stay on your driveway. Sealant particles flake off with vehicle and foot traffic, snow removal, and in sunlight. Particles can blow away or wash into ponds and streams with storm water. This dust is tracked into homes by people and pets, where potentially carcinogenic dust and PAHs can be inhaled, ingested, and absorbed through the skin.

Lighter, molecular-weighted PAHs are also

off-gassed from freshly applied coal tar and high PAH sealants which can have adverse consequences as well. USGS studies showed that sealed pavements can off-gas for years, albeit less intensely as the years go by.

Studies have shown that dust in homes by parking lots with coal tar-based sealants have PAH concentrations 25 times higher than homes next to parking lots without coal tar sealants. Models suggest that over a lifetime the risk for cancer can be 38 times higher for people living adjacent to coal tar sealed pavements. Exposure for children under six years of age carries the greatest risk. Studies from Columbia University suggest that exposure to high levels of PAHs has been correlated to learning disabilities in young children, and PAHs can cross the placental boundary in pregnant women, affecting fetuses.

### HEALTHIER OPTIONS

Safer, asphalt-emulsion sealants have about 1/1,000th the PAHs of coal tar sealants. Asphalt-based sealants are comparable in cost and durability to coal tar sealants and are widely available in stores and from contractors. Latex sealants



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## PAHs in urban sources

All concentrations in mg/kg (means of as many as 6 studies)

- Fresh asphalt 1.5
- Weathered asphalt 3
- Fresh motor oil 4
- Brake particles 16
- Road dust 24
- Tire particles 86
- Diesel engine 102
- Gasoline engine 370
- Used motor oil 440

### Pavement Sealcoat

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~ 50

• Coal-tar-based  
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### Article References:

Mahler, B. J., Woodside, M.D., and VanMentre, P.C., 2016, Coal-tar-based pavement sealcoat-Potential concerns for human health and aquatic life; U.S. Geological Survey Fact Sheet 2016-3017, 6 p. <http://dx.doi.org/10.3133/fs20163017>, and its cited references.

USGS Website/Texas Water Science Center; USGS Research: PAHs and Coal-Tar-Based Pavement Sealcoat, <http://tx.usgs.gov/sealcoat.html>

Perera, Frederica P., et al, Mailman School of Public Health, Columbia University, NY, NY., Pediatrics, 2009, August; 124(2):e195-e202. Doi:10.1542/peds.2008-3506

are also environmentally-friendly, but come at a somewhat higher price. Alternatively, residents may choose to leave pavements unsealed or to replace asphalt with concrete, pavers, or surfaces other than asphalt.

When negotiating with a contractor to sealcoat a driveway, parking lot, playground, or common subdivision road, ask what type of product is used. Specify that you want an asphalt emulsion sealant. Request a safety data sheet for the contractor's product to confirm. Avoid a sealant with any of the following Chemical Abstract Service (CAS) numbers on its ingredient list: 65996-92-1

/ 65996-92-1 / 65996-93-2 / 65006-89-6 / 800745-2 / 64742-90-1 / or 69013-21-4.

When shopping for a sealant to apply yourself, look for asphalt emulsion or latex sealants. Most home improvement stores sell these safer sealants. Avoid products with the words: coal tar, coal tar pitch, refined tar, coal tar pitch volatiles, RT-12, tar, steam-cracked asphalt, pyrolysis fuel oil, heavy fuel oil, ethylene tar, ethylene bottoms, or related terms, or products with the CAS numbers above.

DO talk to your neighbors. Be sure they know the dangers too. If you seal your driveway, ask for asphalt emulsion sealants so our neighborhoods