

Minimum Measure

Pollution Prevention/Good Housekeeping

What are the sources of polycyclic aromatic hydrocarbons in the environment?

Polycyclic Aromatic Hydrocarbons (PAHs) are persistent organic compounds. These chemicals come from both natural and man-made sources. PAHs are naturally released in the environment from wildfires, volcanic eruptions, and degradation of biological materials contained in various sediments and fossil fuels (CDC/ATSDR, 1995; White and Lee, 1980). Man-made sources of PAHs in the environment include the incomplete burning of organic materials (e.g. coal, oil, gas, wood, garbage); vehicle exhaust; asphalt; coal-tar and coal-tar based sealcoats; creosote; and cigarette and tobacco smoke (CDC/ATSDR, 1995; CDC, 2009; EPA, 2009; National Research Council, 2009).

Many PAHs are of concern because of their harmful impacts on humans and the environment. They are persistent organic compounds; several PAHs are known or probable human carcinogens and toxic to aquatic life (Integrated Risk Information System (IRIS), 2014; Scoggins, McClintock, Gosselink, and Bryer, 2007).

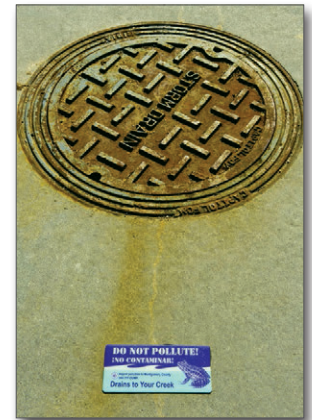
What Is Coal-Tar Sealcoat?

Coal-tar sealcoat is a type of sealant used to maintain and protect driveway and parking lot asphalt pavement. Coal-tar sealcoat typically contains 20 to 35% coal tar pitch, a byproduct of the steel manufacturing industry, which is 50% or more polycyclic aromatic hydrocarbons (PAHs) by weight (Mahler, Van Metre, Bashara, Wilson, and Johns, 2005).

Could Coal-Tar Sealcoat Be a Concern for Stormwater?

Studies found that PAHs are significantly elevated in stormwater flowing from parking lots and other areas where coal-tar sealcoats were used as compared to stormwater flowing from areas not treated with the sealant. For example, one

study found the amount of PAHs in stormwater runoff was 65 times higher from parking lots sealed with coal-tar sealant vs. stormwater from unsealed parking lots (Mahler et al., 2005). Another study found that coal-tar sealcoat is the largest source of PAHs to urban lakes (Van Metre and Mahler, 2010). PAHs from coal-tar sealcoat may accumulate in the sediment of stormwater ponds, requiring expensive disposal of the dredged PAH-contaminated sediment (Mahler et al., 2012).



State and Municipality Examples Addressing PAHs from Coal-Tar Sealcoat

Several states and cities have taken action to address PAHs from coal-tar sealcoat. The following are some notable examples:

- The city of Austin, Texas banned the sale and use of coal-tar containing pavement sealants in 2005: <http://austintexas.gov/CoalTar>
- The District of Columbia banned the sale and use of coal-tar sealcoat in 2009: <http://doee.dc.gov/coaltar>
- In 2009, Minnesota restricted state agencies from purchasing undiluted coal tar-based sealant and directed its Pollution Control Agency to study the environmental effects of coal tar-based sealants and to develop management guidelines: <https://www.pca.state.mn.us/water/restriction-coal-tar-based-sealants>
- Washington State banned the sale of coal-tar pavement sealants on January 1, 2012 and banned the use of such sealants after July 1, 2013: <https://fortress.wa.gov/ecy/publications/summarypages/1104021.html>



Stormwater Best Management Practice:

Coal-Tar Sealcoat, Polycyclic Aromatic Hydrocarbons, and Stormwater Pollution

Alternatives to Coal-Tar Sealcoat

Pavement options such as pervious concrete, permeable asphalt and paver systems do not require sealants. These types of pavements allow for stormwater to naturally infiltrate, resulting in decreased runoff.



For More Information

For more information you can watch EPA's webinar *Stormwater, Coal-Tar Sealcoat and Polycyclic Aromatic Hydrocarbons* available at: <http://www.epa.gov/national-pollutant-discharge-elimination-system-npdes/npdes-training>.

For information on assessing the toxicity of PAHs in sediment see: <http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=30006DOD.txt> from EPA's Office of Research and Development.

Additionally, you can visit the USGS webpage on PAHs and coal-tar-based pavement sealcoat: <http://tx.usgs.gov/sealcoat.html>.

References

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