

Response to Washington DC Department of the Environment
Coal Tar Pavement Products Brochure

1. Dust from coal-tar sealed parking lots contains about 3 times more toxic PAHs than undiluted used motor oil.

Polycyclic aromatic hydrocarbons (PAHs) are found in numerous consumer products (medicines, dyes, shampoos, plastics, pesticides, wood preservatives, mothballs); construction materials (asphalt, roofing materials, pavement sealers); cigarette smoke and smoked meats, fish and cheeses. To illustrate the range of PAH-containing materials we routinely encounter, a 12 oz. bottle of medicated dandruff shampoo contains about 5.4 grams of total PAHs and a half-pound hamburger cooked over a mesquite wood-fired grill contains about 0.001 grams of PAH.

Asphalt paving is a petroleum product and each mile of asphalt roadway contains about 2,100 grams (about 4.6 pounds) of PAHs. Used motor oil contains very high levels of PAHs (up to 11% PAHs; ATSDR, 1997), which means one quart of used motor oil can contribute 110 grams of PAHs to the environment.

Based on the study by the USGS (Mahler *et al.*, 2005), the PAH yield from a parking lot where coal tar sealer has been recently applied would be about 0.23 grams for a one-acre lot. The USGS study documents how yield from pavement sealer declines with curing time and repeated runoff events, such that after a few weeks, PAH yield is on the order of 0.02 grams for a one-acre lot. To put this in perspective, the total amount of pavement sealer PAHs from a one-acre, freshly refined coal tar-sealed parking lot is equivalent to the amount of PAH in:

- A half ounce of Denorex shampoo (about 1 shampooing event),
- One teaspoon of used motor oil,
- A half-foot length of a two-lane roadway paved with asphalt

2. PAHs are toxic to mammals (including humans), birds, fish, amphibians, and invertebrates.

Toxicity is dependent on dose, route of exposure, bioavailability, and species differences as well as many other variables. Many common materials including water, salt, and alcohol can be toxic under certain circumstances and in sufficient quantity. Toxicity is determined by dose and is not based on the type of material. Polycyclic aromatic hydrocarbons (PAHs) are a large and varied group of chemicals produced during combustion of any carbon-based material, such as coal, oil, gasoline, wood, and refuse. PAHs are present in tars derived from coal or oil, as well. Because of their association with combustion processes, PAHs are ubiquitous in urban environments and are transported via the air, in runoff across the land, and in waterbodies. Their chemical characteristics mean that PAHs have very limited ability to dissolve in water and are overwhelmingly found in association with particles, to which they adhere. This causes airborne PAHs to settle (deposit) on exposed surfaces in the landscape and causes waterborne PAHs to end up primarily in sediment where their bioavailability is limited and biodegradation takes place. Unlike metals, PAHs are organic compounds (contain carbon) and therefore can degrade in the environment. In aquatic environments, PAHs biodegrade (that is, are broken down by micro-organisms) to a greater or lesser degree depending on a wide variety of factors. PAHs can also be degraded by sunlight and atmospheric oxidation.

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3. Rainwater washes toxic, PAH containing sealant particles and dust down storm drains and into our local streams and rivers, threatening aquatic life in the Anacostia and Potomac Rivers and the Chesapeake Bay.

Polycyclic aromatic hydrocarbons (PAHs) get into streams primarily through atmospheric deposition and rainfall runoff. Atmospheric deposition of particulate matter introduces PAHs from both distant and nearby sources into streams. Atmospheric PAHs are from vehicle exhaust, forest fires, power generation and other combustion sources. Rainfall runoff introduces more locally derived materials from surfaces such as roads, parking lots and roofs, picking up PAHs from tire particles, leaking gasoline and motor oil and roofing materials as well as an additional component of atmospheric particles. The effects of PAHs in sediments on aquatic organisms have been the subject of an enormous volume of scientific research over the past three decades. Some research has found that PAHs adversely impact the health of aquatic organisms and/or ecosystems. Other research has found no impact or even beneficial impacts. One study (Paine and others, 1996) concluded that PAHs derived from coal tar-based sources have less adverse effects than PAHs from other sources. One study of sediments in Austin, Texas waterways attributed most if not all adverse impacts to an ecosystem to a single source: refined coal tar-based sealants. It remains unclear why the authors of this study did not consider other PAH sources known to contribute to PAHs in sediments in Austin. Many governments have published guidelines and reference concentrations for the amount of PAHs in sediments.

The Pavement Coatings Technology Council is not aware of any studies specifically linking refined coal tar pavement sealer to pollution in the Anacostia and Potomac Rivers and the Chesapeake Bay.

4. Dust from coal-tar-sealed parking lots contains about 80 times more PAHs than dust from unsealed lots.

The Pavement Coatings Technology Council has commissioned a critical review of the house dust study by the USGS (Mahler *et al.*, 2010) and believes there may be flaws in the study protocol as well as data interpretation. While we await a final report on the study review it is possible to make several general statements about house dust. Polycyclic aromatic hydrocarbons (PAHs) found in house dust samples are ubiquitous in the environment and come from many sources. Individual components of PAH mixtures have widely differing health effects. The reported finding of the presence of benzo(a)pyrene in driveway dust "thousands of times the level that would trigger a cleanup at a toxic-waste site" is irresponsibly alarmist and lacks evidence as to its origin or its purported relationship to sealant. The study's evaluation of other sources of PAHs in house dust is incomplete and inadequate to draw the conclusions cited.

5. The District Government issued this ban to protect human health and our environment.

The Pavement Coatings Technology Council understands the sealer ban was an eleventh hour addition to a larger storm water management initiative and that the ban was included without any discussion or fact finding.

The ban was proposed and voted on by the District Council without notice, without requests for information from refined coal tar-based sealant manufacturers or pavement contractors, or from scientists who have spent decades working on pollution in District of Columbia or other urban waterways. It appears as though neither the District Council nor

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the District Department of the Environment even asked for input from Professor Foster at George Mason University who, with funds provided by the District-supported Metropolitan Washington Council of Governments, recently conducted a study of pollutants in storm water runoff in the District of Columbia (Hwang and Foster, 2006). This study did not indicate pavement sealer was a significant contributor to PAHs in the Anacostia and Potomac Rivers.

6. Coal-tar pavement products contain PAHs. PAHs are highly toxic chemicals that have known harmful impacts on humans and animals and are suspected to cause cancer.

There are no published studies linking the use of refined coal tar-based sealers (during and after application) to harmful effects in humans or animals. The International Agency for Research on Cancer (IARC) has not classified refined coal tar-based sealers or the refined coal tar used to manufacture refined coal tar sealer as a human carcinogen. Further, no epidemiology studies have been conducted which show a cancer link to refined coal tar-based sealers. Additionally, the US Food and Drug Administration (FDA) has authorized use of coal tar soaps, ointments and shampoos for treatment of dermatitis, psoriasis and eczema based on epidemiological data submitted to FDA by Neutrogena Corporation.

7. Concentrations of toxic PAHs in coal-tar based pavement sealants are about 1,000 times higher than alternative asphalt-based products...DEMAND the use of a much less toxic asphalt-based sealer instead of coal-tar-based products. Don't allow a mixed product containing both coal tar and asphalt to be used. For new projects, consider using porous concrete.

Asphalt-based sealants also contain polycyclic aromatic hydrocarbons (PAHs) and concrete parking lots which do not require sealants collect PAHs from spills, leaks, tire abrasion and atmospheric deposition which may be washed into streams during rain events.

For more than six decades, refined coal tar sealer has been safely used to protect paved surfaces. Pavement sealed with refined coal tar emulsion makes paved surfaces last longer, helps them hold up better under heavy use and improves their appearance. Refined coal tar sealants save money because paved surfaces need to be sealed less frequently and need to be replaced less often.

For additional information about refined coal tar sealer please refer to the following websites: www.truthaboutcoaltar.com and the Pavement Coating Technology Council at: www.pavementcouncil.org