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## Testimony for the Assembly Committee on Transportation

### Assembly Bill 797

Tuesday, Feb. 4, 2020

Thank you Chairman Kulp and committee members for holding a public hearing and giving me the opportunity to testify on Assembly Bill 797, legislation recommended by the Speaker's Task Force on Water Quality that prohibits the sale and use of coal tar-based sealant products and sealants that contain high levels of polycyclic aromatic hydrocarbons.

Polycyclic aromatic hydrocarbons (PAHs) are persistent organic compounds that come from both natural and man-made sources. Tar-based pavement sealants are a primary source of toxic PAH pollution in Wisconsin.

Research has shown that PAHs are especially harmful to human health and animals that live in our lakes and rivers. Over time, coal tar sealants get worn down by exposure to sunlight and vehicle traffic and, as the sealant wears away, it releases PAHs into the environment.

A large portion of this pollution – which amounts to millions of pounds of PAHs every year – comes in the form of toxic dust and sediment and is carried into homes on shoes and children's toys; settles in the soil of nearby lawns, gardens and playgrounds; or washes off during rainstorms into storm sewers and waterways. The United States Geological Survey also says coal tar sealants release more airborne PAHs every year than the entire U.S. vehicle fleet.

According to the U.S. Environmental Protection Agency, at least six of the PAHs found in coal tar pavement sealants are probable human carcinogens and one PAH – benzo[a]pyrene – is a known carcinogen. The American Medical Association, which supports a ban on these products, says people exposed to coal tar sealants on a regular basis have a 38 times higher chance of developing cancer.

The EPA has also confirmed that coal tar pavement sealants release hundreds of times more PAHs into the environment than other kinds of sealants. Furthermore, the EPA has issued fact sheets urging consumers and businesses to be aware of the risks these sealants pose and to choose safer alternatives.

In the past 10 years, coal tar has also been cited as a hazardous substance by the Occupational Safety and Health Administration, American Conference of Governmental Industrial Hygienists, U.S. Department of Transportation, National Institute for Occupational Safety and Health, National Toxicology Program, International Agency for Research on Cancer and National Fire Protection Agency.

The EPA believes that choosing to ban coal tar sealants may be the most cost-effective way for communities to deal with the pollution impacts of these products.

Under AB 797, the sale of coal tar-based sealant products and sealants that contain high levels of PAHs would be banned starting Jan. 1, 2021. The bill would also ban the use of these materials beginning July 1, 2021.

I strongly believe a ban is both feasible and needed because there are safer, cost-competitive alternatives to PAH tar-based sealants that are currently available. Modern asphalt-based pavement sealants contain up to 1,000 times lower PAH levels while also having similar life expectancies.

Jay Palaski of Menomonee Falls, president of SealMaster of Wisconsin and Minnesota, the largest manufacturer of pavement sealants in the world, was hoping to be here today to support the bill, but unfortunately he is out of the state and cannot attend. But he did provide written testimony to my office, which I have included for you, and he says his price for asphalt-based products versus high-PAH sealers is essentially the same when following the manufacturer's specifications. "We see no difference in cost per square foot in our competitors pricing as we compete with our competitors in price quality and value on a daily basis," Palaski says in his written testimony.

In the past, coal tar sealants were more durable than asphalt based sealants and did not need to be reapplied as frequently. As Jay Palaski and others clearly state, that is no longer true. While some users cling to this outdated belief, modern asphalt based sealants last as long, if not longer, than coal tar based sealants.

So, as you can see, there is no acceptable reason why we should allow the continued use of PAH sealants. We should be following the lead of Minnesota, Washington and Washington, D.C., which have all enacted bans on these sealants. A variety of municipalities in Wisconsin – Wauwatosa, West Allis, Franklin, Milwaukee and Dane County – already have a ban in place and several others – including Green Bay – are considering similar restrictions.

I want to thank you for taking the time to listen to my testimony and I hope you consider supporting AB 797. I would also like to thank my co-authors and the members of the water quality task force for all the hard work they put in to this bill. I would be happy to answer any questions if you have them.

## Testimony on 2019 Assembly Bill 797

Senator Robert Cowles

Assembly Committee on Transportation – February 4, 2020

Thank you, Chairman Kulp and Committee Members, for allowing me to testify on 2019 Assembly Bill 797. This bill would prohibit the sale of coal tar-based sealants and other high PAH level sealants on the first day of the next year, and ban the application of these products beginning on July 1, 2021.

Polycyclic Aromatic Hydrocarbons (PAH) are a group of compounds which are largely naturally occurring during the incomplete burning of coal, oil, gas, wood, garbage, or other organic substances, such as tobacco and charbroiled meat. One of the main sources of PAH pollution is coal tar-based sealants which are applied by homeowners and contractors to residential and commercial driveways and parking lots to increase the longevity of their pavement.

Coal tar-based sealants are one of the primary sources of PAH pollution with levels ranging from 70,000 to 100,000 parts-per-million (ppm). Other sources of PAH pollution include fresh asphalt (1.5 ppm), smoke from wood fires (2 to 114 ppm), engine exhaust (102 to 370 ppm), and used motor oil (440 ppm). For reference, the Environmental Protection Agency (EPA) has suggested that taking 0.3 milligrams or less per 2.2 pounds of body weight of certain PAHs into your body each day is not likely to cause harmful health effects. But, because of coal tar-based sealants and less so from other sources, the average total exposure each day among the U.S. population is over 3.0 mg per day per 2.2 pounds of body weight. That's 100-times higher than the suggested maximum exposure.

PAHs accumulate in soils, household dust, and carpets when coal tar-based sealant particles are blown or tracked into buildings. The particles come from sealants being worn down over time by weather, tire abrasion, foot traffic, and improper application. Sealant particles are also washed into waterbodies by precipitation and runoff events. A study recently completed in Milwaukee found that 77% of PAH pollution in local streambed sediment came from coal tar-based sealants.

PAH overexposure has been linked to cancer, reproductive problems, and organ damage. Multiple studies by Baylor University and the U.S. Geological Survey have shown that children living in homes near parking lots coated with coal tar-based sealants have a 14-times higher risk of cancer versus children living next to unsealed pavement. Additionally, lifetime exposure leads to a 38-times increased rate of cancer. In a study of ground-floor apartments in Austin, Texas, PAH levels in house dust in apartments near parking lots sealed with a coal tar-based product were 25-times higher than in house dust near parking lots sealed with other surface types.

PAHs also have numerous impacts to aquatic wildlife. These compounds have been shown to kill small organisms living on the bottoms of lakes, rivers, and streams, and cause tumors in fish and other large aquatic mammals in those waterbodies. With this testimony, I've included a short flier from the U.S. Geological Survey with more information on the harmful impacts of coal-tar based sealant products.

Asphalt-based pavement sealants have 1,000-times lower PAH levels than their coal tar-based counterpart and are both cost-competitive and readily available. The longevity of asphalt-based sealants is also comparable to tar-based sealants.

Coal tar-based sealant restrictions have already been enacted in two counties and at least 20 Wisconsin communities, including my hometown of Green Bay and other Northeast Wisconsin communities including Sturgeon Bay and Manitowoc. Our neighboring states have also seen the value in placing similar restrictions on coal tar-based sealants, including the State of Minnesota and several communities in Illinois and Michigan. Minnesota's ban came at least in-part after the costs to taxpayers of the cleanup of PAHs in stormwater pond sediment and other waterbodies in the Twin Cities area was estimated to be in the hundreds of millions of dollars. Major retailers including Home Depot, Lowe's, and Ace have stopped selling coal tar-based sealants, and, according to a 2013 USA Today article, at least 24 contractors in Wisconsin and many more elsewhere have pledged to switch to asphalt-based sealants.

We've already made efforts in Wisconsin to reduce PAH exposure from second-hand smoke and through drinking water and air quality standards. Creating a statewide ban on coal tar-based sealants in Wisconsin will further these efforts to help improve the health of our children and residents and protect our waterways. 2019 Assembly Bill 797 prohibits the sale of coal tar-based sealant products and high PAH level sealant products beginning on January 1st, 2021, and prohibits the application of such products beginning on July 1st, 2021. Violators would be subject to a fine of \$10 to \$5,000, similar to other environmental provisions in Wis. Stats. Ch. 299.

This legislation also stipulates that the DNR may grant an exemption upon written request from someone looking to research the effects of coal tar-based sealant products and other high PAH sealant products on the environment or if the use of these products is required for research or development of an alternative technology.

Assembly Bill 797 has been amended by Assembly Amendment 1 to address a concern by the Wisconsin Transportation Builders Association over an unintended consequence that could ban the recycling of asphalt with this sealant. After discussions with the DNR and other stakeholders, I'm comfortable that this amendment balances the needs of our business community and the protection of our natural resources.

Leading researchers from government agencies and educational institutions along with top health professionals from the American Medical Association all agree that the risk of PAH exposure from coal-tar sealants is too high of a price to pay when common-sense alternatives are available. In Wisconsin, groups including Ascension, Clean Wisconsin, the League of Wisconsin Municipalities, Milwaukee Metropolitan Sewerage District, Wisconsin Public Health Association, and Wisconsin Transportation Builders Association have all recognized this reality and are supporting AB 797.

The long-term costs to the state from overexposure to PAH in health care expenses, lost wages leading to lost productivity and tax revenue, and environmental remediation expenditures are truly incalculable. Some of these costs can be avoided by following the lead of more than 20 Wisconsin communities that have moved to restrict the use of coal tar-based sealants by passing Assembly Bill 797. In the process, we can ensure a healthier future for Wisconsin's youth and cleaner waterways for recreation and aquatic wildlife.



## Coal-Tar-Based Pavement Sealcoat—Potential Concerns for Human Health and Aquatic Life

*Sealcoat is the black, viscous liquid sprayed or painted on many asphalt parking lots, driveways, and playgrounds to protect and enhance the appearance of the underlying asphalt. Studies by the U.S. Geological Survey (USGS), academic institutions, and State and local agencies have identified coal-tar-based pavement sealcoat as a major source of polycyclic aromatic hydrocarbon (PAH) contamination in urban and suburban areas and a potential concern for human health and aquatic life.<sup>1</sup>*

### Key Findings:

**Human Health Concerns**—As coal-tar-based sealcoat ages, it wears into small particles with high levels of PAHs that can be tracked into homes and incorporated into house dust. For people who live adjacent to coal-tar-sealcoated pavement, ingestion of PAH-contaminated house dust and soil results in an elevated potential cancer risk, particularly for young children. Exposure to PAHs, especially early in childhood, has been linked by health professionals to an increased risk of lung, skin, bladder, and respiratory cancers.<sup>2</sup>

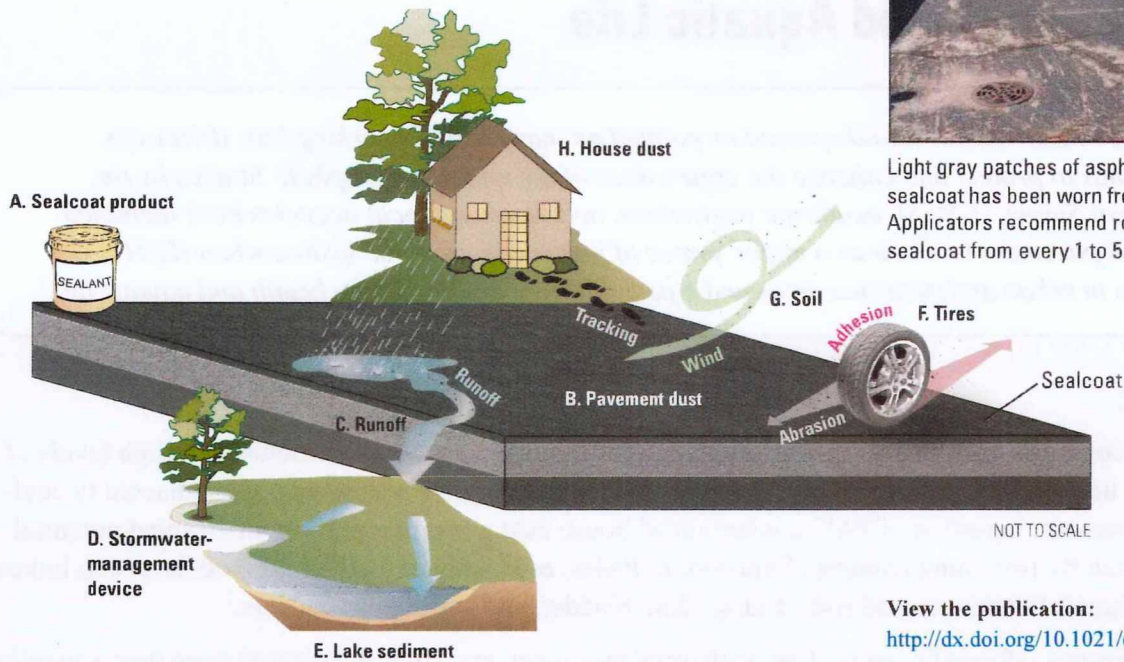
**Aquatic Life Concerns**—Runoff from coal-tar-sealcoated pavement, even runoff collected more than 3 months after sealcoat application, is acutely toxic to fathead minnows and water fleas, two species commonly used to assess toxicity to aquatic life. Exposure to even highly diluted runoff from coal-tar-sealcoated pavement can cause DNA damage and impair DNA repair. These findings demonstrate that coal-tar-sealcoat runoff can remain a risk to aquatic life for months after application.

Coal-tar-sealcoat, which contains elevated levels of PAHs, is commonly applied to parking lots, driveways, and some recreational areas across the central and eastern parts of the United States. Friction from vehicle tires abrades sealcoat into small particles that can be tracked indoors or washed down storm drains and into streams, potentially harming human and aquatic life.





## As Sealcoat Wears Off, Where Does It Go?



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Worn particles of coal-tar-based sealcoat containing high concentrations of PAHs and related chemicals are transported by rain, wind, tires, and even our feet from pavement to other environmental settings. Sealcoat product (A), after it dries, gradually abrades to a powder and becomes part of the dust on the pavement (B). Pavement dust is transported by rainfall runoff (C) to stormwater-management devices (D) or to receiving streams and lakes (E). Pavement dust also adheres to tires (F) that track it onto unsealed pavement, and wind and runoff transport the dust to nearby soils (G). Sealcoat particles tracked into residences can become incorporated into the house dust (H). Associated PAH concentrations for these settings, from studies by the USGS, other government agencies, and academic institutions, are given below.



Setting	PAH concentration* (milligrams per kilogram)	
	Coal-tar-sealcoat settings	Non-coal-tar-sealcoat settings
(A) Sealcoat products	66,000	50
(B) Pavement dust	2,200	11
(C) Runoff, particles	3,500	54
Runoff, unfiltered water	62	4
(D) Stormwater-management-device sediment	646	2
(E) Lake sediment	33	0.4
(F) Particles adhered to tires	1,380	3
(G) Soil	105	2
(H) House dust	129	5

\*Concentrations are means or medians. References and additional information are provided in Mahler and others (2012).<sup>1</sup>



## PAH Levels in Asphalt-Based and Coal-Tar-Based Sealcoat

Pavement sealcoat is a commercial product that is applied to many asphalt parking lots, driveways, and playgrounds in North America in an effort to protect and beautify the underlying asphalt. It rarely is used on public roads.

Most sealcoat products are either coal-tar or asphalt emulsion, although some alternative products now are available.<sup>3</sup> Coal tar and coal-tar pitch have extremely high concentrations of PAHs as do coal-tar-based sealcoat products, which typically are 20–35 percent coal tar or coal-tar pitch. Asphalt and asphalt-based sealcoat products have much lower concentrations of PAHs.

For historical and economic reasons, use of asphalt-based sealcoat in the United States is more common west of the Continental Divide and use of coal-tar-based sealcoat is more common east of the Continental Divide, except in States, counties, and municipalities where use of coal-tar-based sealcoat is prohibited.<sup>3</sup>



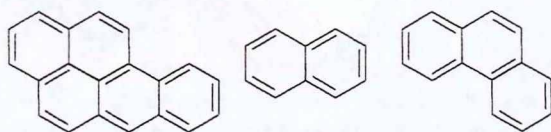
**Asphalt-based sealcoat**, primarily used west of the Continental Divide, typically contains about 50 mg/kg PAHs.<sup>4</sup>



**Coal-tar-based sealcoat**, primarily used east of the Continental Divide, typically contains 50,000 to 100,000 mg/kg PAHs.<sup>4</sup>

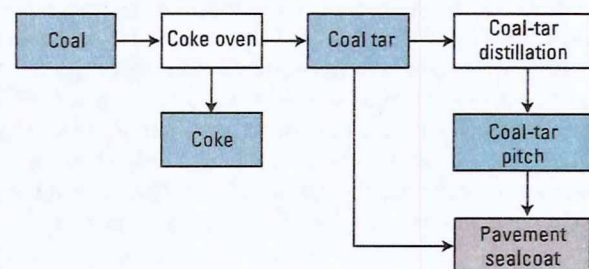
PAH levels in dust swept from sealed parking lots reflect the type of pavement sealcoat commonly used west and east of the Continental Divide.<sup>1</sup> Concentrations, in units of milligrams per kilogram (mg/kg), also referred to as “parts per million” (ppm), shown here are for the sum of the 16 PAHs listed by the U.S. Environmental Protection Agency as Priority Pollutants. Concentrations are for composite samples from multiple parking lots or a median of several individual samples.<sup>5</sup>

**Polycyclic aromatic hydrocarbons (PAHs)** are a group of chemicals created by heating or burning material that contains carbon. The many sources of PAHs to the urban environment span a wide range of PAH concentrations and include asphalt (2–9 mg/kg), tire particles (84 mg/kg), used motor oil (730 mg/kg), and coal-tar-based sealcoat (34,000–202,000 mg/kg).<sup>6</sup> PAHs are an environmental concern because many cause cancer, mutations, birth defects, or death in fish, wildlife, and invertebrates.<sup>7</sup> Exposure to sunlight greatly intensifies the adverse effects of several PAHs. The U.S. Environmental Protection Agency (EPA) has classified seven PAHs as probable human carcinogens (Class B2) and 16 PAHs as Priority Pollutants. Environmental and health effects depend on which PAHs are present and their concentrations.



PAHs are made up of various arrangements of benzene rings. PAHs commonly occur in the environment as mixtures, which typically include at least some of the PAHs that are classified as probable human carcinogens.

**Coal tar** is a byproduct of the coking, liquefaction, or gasification of coal and is a complex mixture composed primarily of aromatic hydrocarbons. Coal-tar pitch is the residue that remains after the distillation of coal tar; it is a complex mixture of high molecular weight aromatic hydrocarbons and black carbon solids. The primary use of coal-tar pitch is in electrode manufacturing for the aluminum industry.<sup>8</sup> Coal-tar emulsion pavement sealants contain either crude coal tar (Chemical Abstracts Service [CAS] Registry Number 8007–45–2) or coal-tar pitch (CAS Registry Number 65996–93–2). Coal tar and coal-tar pitch are known human carcinogens.<sup>9</sup>

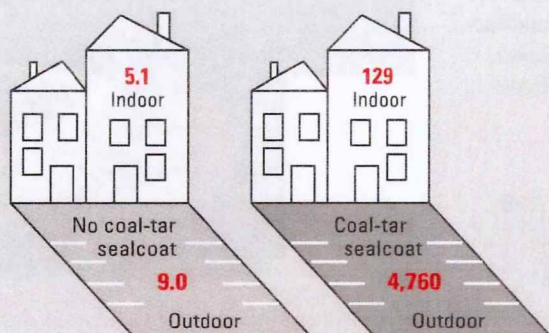




## Potential Risks to Human Health

### PAHs from coal-tar-based sealcoat contaminate house dust<sup>10</sup>

In a study of 23 ground-floor apartments in Austin, Texas, PAH levels in house dust in apartments with parking lots sealed with a coal-tar-based product were 25 times higher than in house dust in apartments with parking lots with other surface types (concrete, unsealed asphalt, and asphalt-based sealcoat). No relation was found between PAHs in house dust and other



PAH-contaminated dust on coal-tar-sealcoated pavement (right) is tracked indoors.<sup>10</sup> Concentrations shown are median values for the sum of the 16 Priority Pollutant PAHs, in units of milligrams per kilogram, in house dust and parking lot dust.

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<http://pubs.acs.org/doi/pdf/10.1021/es902533r>

### Living adjacent to coal-tar-sealed pavement increases cancer risk<sup>12</sup>

The USGS partnered with a human-health-risk analyst to estimate the excess lifetime cancer risk associated with the ingestion of house dust and soil for people living adjacent to parking lots with and without coal-tar-based sealcoat. Excess cancer risk is the extra risk of developing cancer caused by exposure to a toxic substance. The excess cancer risk for people living adjacent to coal-tar-sealcoated pavement (1.1 cancer incidences for every 10,000 individuals exposed) was 38 times higher, on average (central tendency), than for people living adjacent to unsealed pavement. The central tendency excess cancer risk estimated for people living adjacent to coal-tar-sealcoated pavement exceeds the threshold generally considered by the EPA as making remediation advisable.

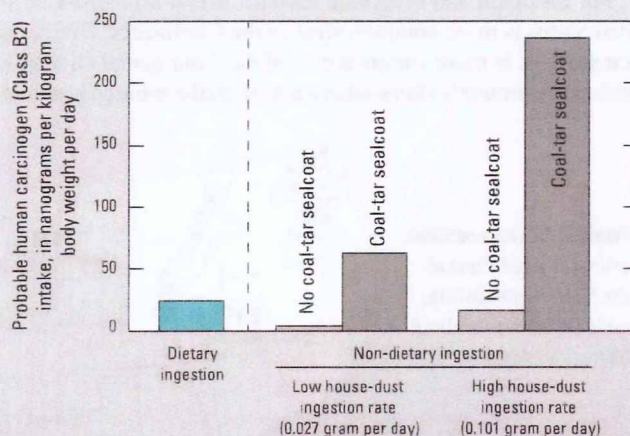
The assessment used measured concentrations of the B2 PAHs in house dust and soils adjacent to coal-tar-sealed pavement (adjusted for relative potency to the PAH benzo[*a*]pyrene), established house dust and soil ingestion rates, and the EPA-established slope factor to estimate the excess cancer risk. Much of the estimated excess risk comes from exposures to PAHs in early childhood (that is, 0–6 years of age). The study did not consider the excess cancer risk associated with exposure to the sealcoated pavement itself, which has PAH concentrations 10 or more times greater than in adjacent residence house dust or soils.<sup>5, 10</sup>

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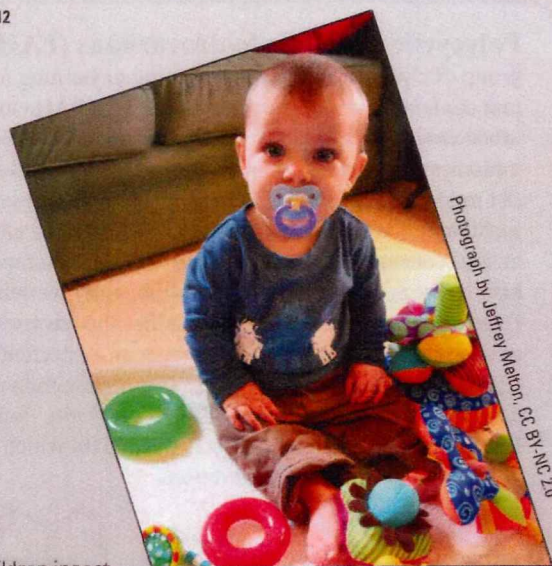
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possible indoor PAH sources such as tobacco smoking and fireplace use.

House dust is an important pathway for human exposure to many contaminants, including PAHs. This is particularly true for small children, who spend time on the floor and put their hands and objects into their mouths.



The preschooler living in a residence adjacent to coal-tar-sealed pavement who has relatively low hand-to-mouth activity consumes about 2.5 times more PAHs from house dust than from their diet.<sup>11</sup> For the more active preschooler, whose hand-to-mouth activity is higher, the PAH intake from house dust is nearly 10 times more than the PAH intake from their diet.



Children ingest house dust and soil when they put their hands or objects into their mouth. Much of the estimated excess cancer risk associated with the ingestion of PAH-contaminated soil and house dust is incurred during early childhood.



## Potential Risks to Aquatic Life

### Runoff from coal-tar-sealcoated pavement is acutely toxic to aquatic biota<sup>13</sup>

Exposure to runoff from coal-tar-sealed pavement collected as much as 42 days after sealcoat application resulted in 100 percent mortality to two commonly tested laboratory organisms: day-old fathead minnows (*Pimephales promelas*) and water fleas (*Ceriodaphnia dubia*). In contrast, minnows and water fleas exposed to runoff from unsealed pavement experienced no more than 10 percent mortality. When the minnows and water fleas were also exposed to simulated sunlight, which intensifies the toxicity of some PAHs, runoff collected 111 days (more than 3 months) after sealcoat application caused 100 percent mortality to both species, and caused 100 percent mortality to water fleas even when diluted to 10 percent of its original strength.

The USGS collected samples of runoff from 5 hours to 111 days following sealcoat application to pavement by a

professional applicator. Total PAH concentrations varied relatively little, as rapid decreases in concentrations of low molecular weight and nitrogen-substituted PAHs were offset by increases in high molecular weight PAHs.<sup>14</sup> These results demonstrate that runoff from coal-tar-sealcoated pavement continues to contain elevated concentrations of PAHs and related compounds long after a 24-hour curing time.

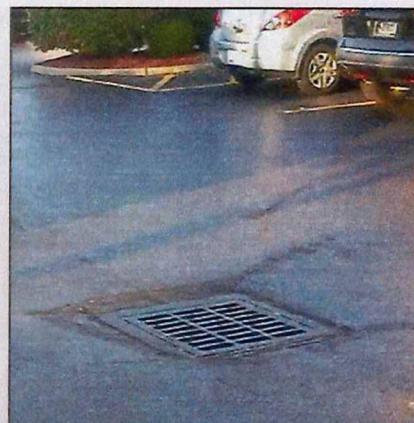
A subsequent study by researchers at the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Fish and Wildlife Service found that coal-tar-sealcoat runoff is acutely lethal to juvenile coho salmon (*Oncorhynchus kisutch*) and causes a wide spectrum of abnormalities to zebrafish (*Danio rerio*) embryos.<sup>15</sup> They also reported that filtration of the runoff through a bio-retention system substantially reduced toxicity.



Runoff from coal-tar-sealcoated pavement is acutely toxic to fathead minnows (*Pimephales promelas*; left) and water fleas (*Ceriodaphnia dubia*; right).

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Runoff from coal-tar-sealcoated pavement goes down storm drains to receiving water bodies. The runoff contains high concentrations of PAHs and related chemicals that can harm aquatic life.<sup>16</sup>

### Runoff from coal-tar-sealcoated pavement damages DNA and impairs DNA repair<sup>17</sup>

Simultaneous exposure to runoff from coal-tar-sealed pavement and simulated sunlight damaged DNA in rainbow trout liver cells, even when the runoff was diluted to 1 percent of its initial concentration. The cells were from a cell line developed to assess the effects of PAHs on DNA. The test assessed two types of DNA damage: strand breaks and alkylated bases.

Although cells can repair some DNA damage, a second experiment demonstrated that cells exposed to the coal-tar-sealcoat runoff had an impaired capacity to perform at least one type of DNA repair. The combination of DNA damage and impaired repair capacity intensifies the potential for long-term damage to cell health. DNA damage has many possible consequences, including aging, cell death, and mutations. Mutations can affect the function of genes and can potentially lead to cancer.

Types of DNA damage caused by exposure to runoff from coal-tar-sealed pavement include breaks in the DNA strands.



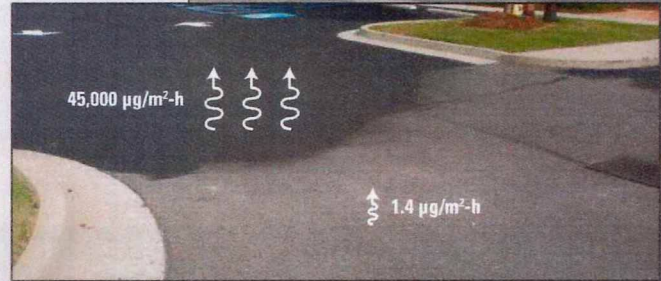
(Image from Genetic Science Learning Center.  
<http://learn.genetics.utah.edu>)



## Air-Quality Concerns<sup>18, 19</sup>

Although unseen, releases of PAHs to the atmosphere (volatilization) from freshly coal-tar-sealed pavement are tens of thousands of times higher than from unsealed pavement. Volatilization is a potential human-health concern because inhalation is an important pathway for human exposure to PAHs. Although volatilization decreases rapidly over the weeks following application, it nonetheless continues long after application—PAH releases to the atmosphere from parking lots sealed from 3 to 8 years prior to sampling were on average 60 times higher than PAH releases from unsealed pavement.

Nationwide, the combined PAH releases each year from newly applied coal-tar-based sealcoat are estimated to exceed annual vehicle emissions of PAHs.<sup>18</sup> PAH releases shown here are in units of micrograms per meter squared per hour ( $\mu\text{g}/\text{m}^2\text{-h}$ ).



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By Barbara J. Mahler,\* Michael D. Woodside, and Peter C. Van Metre

### For more information

Access publications and learn more about PAHs and coal-tar-based pavement sealcoat at <http://tx.usgs.gov/sealcoat.html>.

\*bjmahler@usgs.gov

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## Assembly Committee on Transportation

### *2019 Assembly Bill 797*

#### *Prohibiting the sale and use of coal tar-based sealants and high PAH sealant products February 4, 2020*

Good morning Chairman Kulp and members of the Committee. My name is Kate Strom Hiorns, and I am the Recycling and Solid Waste Section Chief with the Wisconsin Department of Natural Resources. Thank you for the opportunity to testify, for informational purposes, on Assembly Bill 797 (AB 797).

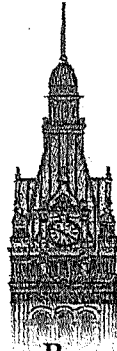
Coal tar-based sealant is a substance sprayed or painted on top of asphalt pavement—including parking lots, driveways, and some playgrounds—to protect the underlying asphalt. The primary danger associated with these sealants is that they contain polycyclic aromatic hydrocarbons (PAHs), substances that have harmful impacts to humans and the environment. PAHs move from a coal tar-based sealant into the environment by stormwater runoff, adhesion to tires, wind, and even foot traffic. A 2016 study by the U.S. Geological Survey indicated coal tar sealant as the primary source of PAHs in Milwaukee-area streambeds.

AB 797 prohibits the sale and use of coal tar-based sealant products and high PAH sealant products beginning January 1, 2021. The bill would extend statewide a ban that has been in place in Dane County for many years. In addition, the states of Minnesota and Washington ban coal tar-based sealants and so do many other local governments nationwide. There are widely used alternatives to coal tar-based sealants that are significantly lower in PAHs, including asphalt-based sealants. In addition, alternative pavement options, such as permeable asphalt, do not require sealants.

The bill also directs that, upon written request, the DNR may grant an exemption to the prohibitions to a person researching the environmental effects of a coal tar-based sealant product or high PAH sealant or to a person doing research to develop an alternative technology. The Minnesota statute prohibiting the sale and use of coal tar sealant in that state contains a similar exemption and the DNR would likely consult with our Minnesota counterparts on their experiences implementing the exemption.

In closing, AB 797 may have a positive impact on municipalities statewide and on the DNR's efforts to reduce water quality degradation and the potential need for remediation.

On behalf of the DNR's Bureau of Waste and Materials Management, I would like to thank you for your time today. I would be happy to answer any questions you may have.



**Tom Barrett**  
Mayor, City of Milwaukee

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January 29, 2020

Dear Honorable Members of the Wisconsin Legislature:

It has come to my attention that bi-partisan supported legislation has been introduced in the legislature which would ban coal based and other high polycyclic aromatic hydrocarbon (PAH) laden seal coat products on a statewide basis by 2021.

These pavement sealant products are a major source of contaminants to our rivers, lakes and storm water ponds in Milwaukee and all across Wisconsin. The pollutants derived from them are expensive to cleanup, toxic to fish and water quality, harmful to human health, and unnecessary because cost-effective alternative sealant products that are safer and cleaner already exist.

A recent study by the US Geological Survey (USGS) revealed that coal tar sealants are the primary source of toxic chemicals found in sediment along the Milwaukee River Basin. The USGS also has determined that PAH's posed a high risk to aquatic animals in streams and lake areas that receive storm water runoff discharges. Additionally, concerns over the adverse effects on human health, including a 39-fold increase in the risk of cancer for individuals with a lifelong exposure to coal-tar sealed pavements and 14-fold increase in cancer for youths with high exposure, has led the American Medical Association to call for taking legislative action against coal tar and high PAH sealants. These facts should be alarming to us all.

In early 2017, the City of Milwaukee joined Dane County as the first municipality statewide to ban coal tar and high PAH sealants. Since that time, nearly two-dozen other communities across the state have passed similar restrictive ordinances.

Given the strong scientific evidence weighing against coal tar and other high PAH sealants and the fact that safer substitute products already exist, it is imperative for the legislature to support this common-sense state-wide action. I commend the sponsors of this legislation and strongly urge your passage of AB 797 and SB 716.

Sincerely,

A handwritten signature in cursive script that reads "Tom Barrett".

Tom Barret  
Mayor



February 3, 2020



Assembly Committee on Transportation  
Wisconsin State Capitol  
2 East Main St.  
Madison, WI 53702

**Re: Testimony in Favor of AB797, relating to prohibiting sale and use of coal tar-based sealants and high PAH products**

Transportation Committee Members,

On behalf of Milwaukee Riverkeeper, we are strongly in favor of AB797 which would prohibit the sale and use of coal tar-based sealants and high PAH sealant products in the State of Wisconsin. We are submitting written comments, because we cannot attend the public hearing in person. We commend the Wisconsin Assembly for taking on this important issue to address toxic pollution from PAHs in pavement sealants. Milwaukee Riverkeeper was involved in getting coal tar-based sealants banned via local ordinance at the City of Milwaukee and several other communities in southeast Wisconsin. The risks to human health and aquatic life that come from the PAHs contained in these sealants is real and significant. This legislation would be a great step forward for protecting our waterways and the health of our children from this toxic substance that has been shown to cause cancer. We urge you to pass this bill.

Coal tar sealants are the primary cause of PAH pollution in many urban areas, and in fact, a recent study found that 77% of PAH pollution in Milwaukee streambeds came from these substances. PAHs are harmful to fish and other aquatic life in our lakes and rivers. These particles are easily transported by rain, wind, tires and even feet to other environmental settings. After it dries, it gradually abrades to a powder and can be inhaled by people, and/or transported by rainfall through storm water management devices to our lakes and streams. Once these substances enter our streams (or stormwater ponds) and become bound to sediment, it is very expensive to remove them via dredging, and they have to be specially disposed of at great cost.

Moreover, since there are cheap, effective, and widely available alternatives with minimal PAH levels, restrictions on coal tar products have proven effective in other communities to reduce PAH levels in waterways. Alternatives like modern asphalt-based pavement sealants have up to 1,000 times lower PAH levels while also having similar life expectancies and performance.

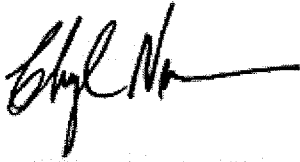
Unfortunately, some products have now begun to appear that that have nearly as high PAH levels as coal tar sealants but are designed specifically to get around coal tar sealant ordinances and legislation by using different industrial byproducts (e.g. "heavy pyrolysis oil"). For that reason, it is important to ensure that any ban on coal tar sealants also include "other high PAH content pavement sealant products" in any definitions. Many of these



alternative products market themselves as more “eco-friendly”, but still contain dangerous levels of PAHs.

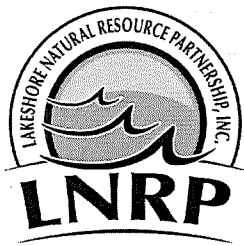
In conclusion, we strongly support and urge you to pass AB797, which prohibits the sale of coal tar-based sealant products and high-PAH sealant products beginning Jan. 1, 2021, and the use of these products beginning July 1, 2021. Thank you for your consideration of this testimony, and your action to protect human and environmental health.

Sincerely,



Cheryl Nenn  
Riverkeeper

Cc: Jennifer Bolger Breceda, Executive Director



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## *Cultivating Community and Stewardship from the Ledge to the Lakeshore*

February 3<sup>rd</sup>, 2020

Assembly Committee on Transportation  
Attn: Representative Bob Kulp, Committee Chair

Dear Representative Kulp:

In lieu of my personal testimony to the Assembly Committee on Transportation on AB 797, related to the prohibition of the sale and use of coal tar-based sealants and high PAH sealant products, please accept this as my strong statement of support.

As a proud resident of the great State of Wisconsin and the Executive Director of one of our State's passionate environmental organizations, I am grateful for the Water Quality Task Force's bipartisan recommendation to advance this important legislation.

As a former public servant who proudly served my community as Mayor for six years, I can attest to the value of this proposed legislation. My coastal community, the City of Port Washington, was an early supporter of this effort to enhance public safety and better protect our local waterways. We recognized the grave danger presented by high PAH sealant products to both our community and our environment – and we acted.

Unfortunately, while our City of Port Washington took this important action, some of our neighboring communities did not. Such inaction not only endangers our community residents and the natural environment in which we live and upon which we depend, but it leaves harmful gaps in protection that too often go unnoticed. These gaps leave local residents, waterways, and wildlife exposed.

I can offer a personal example, and one that saddens and scares me. As a proud father of three daughters – our oldest daughter attends Dominican High School (Whitefish Bay) and our other two daughters are at St. Francis Borgia (Cedarburg) – I am personally very, very concerned about the high PAH-sealed asphalt surfaces which they come into contact with on a daily basis.

Recently, St. Francis Borgia opted to have the parish AND school parking lots sealed with a (high PAH) coal tar-based sealant. Our youngest daughters play on it every recess. It makes me very angry that our faith community placed their health at risk with that decision – but I don't fault Parish leadership. Our Pastor and his team had no clue these sealants were so dangerous, as the City of Cedarburg has not enacted an ordinance banning their sale and use, and the commercial applicator made no mention of health impacts. Therein lies the problem – there can be no such thing as a "fully-informed" public on this issue, and when left to commercial applicators, some will simply choose to go with the product they have always used. In fact, the commercial applicator in question, when asked after application about the dangers of the high PAH sealant he uses, responded that he has used the product his entire professional life, and since he does not have cancer, it is clearly safe. Obviously, this is an argument riddled with holes.

For me, this is a personal example demonstrating the need for statewide action to ban the sale and use of these high PAH products, and the value of the proposed AB 797. With this legislation, you have the opportunity to protect the public – my three daughters included. With this legislation, you have the opportunity to protect our natural environment – our local waterways and Lake Michigan included – and take important strides to enhance water quality and animal habitat. With this legislation, you have the opportunity to mitigate future impact to our local economies that will be felt when communities are forced to appropriate scarce financial resources for necessary cleanup efforts. And, with this legislation, you have the opportunity to provide clarity and uniformity statewide on an issue of significance, eliminating dangerous gaps in coverage for residents of local communities who fail to act.

Once more, Representative Kulp, thank you very much for your leadership on this issue and consideration of my testimony in support of AB 797.

With gratitude for your service to our great State of Wisconsin,



Tom Mlada  
Executive Director – Lakeshore Natural Resource Partnership (LNRP)

February 3, 2020

**To:** Honorable Members of Wisconsin's Assembly Committee on Transportation

**From:** Mr. David C. Fowler, retired Former City of Franklin Planning Commissioner, and concerned citizen,

**Regarding:** Support for Assembly Bill 797, Relating to: prohibiting the sale and use of coal tar-based sealants and high PAH sealant products.

Dear Members:

My name is David C. Fowler, I have been active for most of my professional life in water resource issues in the State of Wisconsin. These issues include water quality and wastewater monitoring, flood management, stormwater runoff, stream sediments, and wastewater treatment. I have also been involved in construction and development activities as a project manager and as the afore mentioned planning commissioner for the city of Franklin. I have a bachelor's degree and master's in biology with a minor in chemistry. I spent 10 years working in the laboratory collecting and analyzing water and sediment samples from SE Wisconsin waterways.

Polycyclic aromatic hydrocarbons (PAHs) are a class of harmful chemicals classified as persistent organic pollutants and many are cancer causing. These toxic chemicals are found in a variety of sources, but the highest concentrations are found in certain pavement sealant products, particularly those derived from coal tar.

Coal tar and high PAH sealants pose a serious threat to both human and ecological health. Pavement sealant products only last a few years before reapplication is required, meanwhile the sealant material erodes away. Much of these sealants (and the PAHs they contain) are carried with stormwater runoff into area ponds, rivers, and lakes where they concentrate in the sediments.

Research analyzing sediment samples collected in lakes and rivers around Wisconsin, show two important results:

1. High-PAH pavement sealants are the primary source of the PAHs found in many of our state's water bodies.
2. And, often that principal source of this pollution causes PAH levels to be so high in our natural water bodies that aquatic life suffers.

Pavement sealant dust is also a factor in threatening public health. In addition to moving with runoff water, the dust also ends up in homes, schools, and other buildings adjacent to sealed parking lots and driveways. According to United States Geological Survey (USGS), PAH levels typically found in and around buildings adjacent to parking lots sealed with high-PAH sealants are high enough to cause a 38 times higher lifetime cancer risk for those buildings' occupants

and a 14 times higher cancer risk for children just spending their formative years growing up there.

In addition to human health concerns there is a financial issue as well. The use of high-PAH pavement sealant products poses a serious financial risk to municipalities. Routine maintenance of stormwater retention ponds involves removing accumulated sediments. High levels of PAHs in those sediments dramatically increases disposal costs. We have seen the high costs associated with clean-up of PAH contaminated soils and sediments from rivers and harbors, only to see those same areas re-contaminated again with PAH's. These clean-ups are eventually funded by taxpayers and these future costs can easily run into the millions of dollars. A simple cost-effective fix to avoid these costs would be to prohibit the use of high PAH pavement sealant products statewide. Safer pavement sealant products are readily available on the market with little or no PAHs and they are comparable in cost and performance to Coal Tar sealants.

I respectfully urge that the Legislature passes law (AB 797) banning harmful pavement sealant products containing high levels of polycyclic aromatic hydrocarbons (PAHs).

I am submitting this written testimony in support of Assembly Bill 797 as I was unable to testify in person. Thank you for your consideration of this important issue involving the public health of Wisconsin's Citizens.

Sincerely,

*David C. Fowler*

David C Fowler CFM  
7549 Riverview Road  
Franklin, WI 53132

# Coal Tar FREE AMERICA

## Testimony in SUPPORT of Assembly Bill 797

Wisconsin Committee on Transportation

Dear Delegates:

Thank you for taking up this life-saving legislation to restrict the use of coal tar pavement sealers in the State of Wisconsin.

My name is Tom Ennis and I helped Austin, TX pass, defend and implement the nation's first coal tar sealer ban. I have supported many others across the US since then and **I support this bill as well.**

**This is a bill that is ripe for passage.**

**The SCIENCE is clear.** Over 26 research institutions have found that coal tar sealers are a danger to humans and the environment.<sup>1</sup> That's why the AMA supports the elimination of this product.<sup>2</sup>

It is also why the USGS and the Milwaukee Metropolitan Sewer District (MMSD) found that Wisconsin streams are affected by the chemicals from this product and said,

78% of the sediment samples collected had PAH levels that could adversely affect aquatic organisms like aquatic insects.

**The SUPPORT is clear.** Local government restrictions on this product apply to more than 20 Wisconsin communities. It is time to make that 100%. A map showing these bans is at the footnoted link.<sup>3</sup>

**The SUPPLY is ready.** Non-toxic sealers are numerous and similar in quality and price.<sup>4</sup>

In 2007 Home Depot and Lowes stopped selling coal tar products because of their liability.<sup>5</sup> I hope that Wisconsin will heed the advice of a one elected official:

"If coal tar sealers are not good enough for the shelves of Home Depot and Lowes, then it isn't good enough for the paved surfaces of our community."

If I can answer any of your questions, please don't hesitate to reach me at [coaltarfreeamerica@gmail.com](mailto:coaltarfreeamerica@gmail.com).

Sincerely,

Thomas E. Ennis, PE, LEED AP

<sup>1</sup> <https://www.scribd.com/doc/282979737/Hyperlinked-Coal-Tar-Sealer-Research-2015>

<sup>2</sup> <https://www.ama-assn.org/press-center/press-releases/ama-urges-legislation-ban-dangerous-coal-tar-sealcoats>

<sup>3</sup> <https://www.arcgis.com/home/webmap/viewer.html?webmap=5b2684d1744b4b73b9beb0e4b899b2d2>

<sup>4</sup> <https://coaltarfreeusa.com/p/>

<sup>5</sup> <https://coaltarfreeusa.com/2017/02/top-5-business-reasons-to-stop-the-use-of-coal-tar-sealers/>

*Dedicated to researching, educating, and advocating  
for the ban and elimination of toxic coal tar sealants from our parking lots, homes, and environment.*

Feb. 4, 2020

Members of the Assembly Committee on Transportation,

SealMaster is the largest manufacturer of pavement sealants in the world. I assume in the state of Wisconsin we make and sell more pavement sealer than any other manufacturer and likely sell more than all others combined.

In regards to dangers of coal tar sealers and other high PAH sealants (steam cracked or liquid petroleum based) I have no testimony as to the actual validity of concerns outlined by many sources. I can tell you that many of my customers (mostly the largest contractors) that have moved away from steam cracked, liquid petroleum and coal tar sealants have done so based on direct concerns for employee safety and environmental effects. The safety data sheets on these products are not preferable.

In regard to asphalt based alternatives being as cost effective and durable as high PAH sealants this has been the argument from coal tar sealant manufactures since the beginning of the wave of sealer bans across the country. Our pricing for asphalt based products verses high PAH sealers on a per square foot basis is essentially the same when following the manufacturers specifications.

We see no difference in cost per square foot in our competitors pricing as we compete with our competitors in price quality and value on a daily basis. Our value and the value of our asphalt based products against not only any of our competitors' coal tar products but also against our own coal tar products. SealMaster makes coal tar sealants our coal tar sealants are considered as good or better than any competitors.

None of our coal tar sealant or any competitive sealers are outperformed by any of our asphalt based sealants. There are asphalt based sealants that will not perform as well as some coal tar sealants but SealMaster does not make them. Our asphalt based sealers are higher in solids than high PAH sealants and will perform better and have advantages over any other sealer. Our top selling products are asphalt based sealers and our asphalt based sealers have been the product of choice for more than 10 years.

We recommend to all contractors, national accounts and government entities specify or require only asphalt based sealers as they offer more benefits with no cost disadvantage. The only instances in which people have argued to me that coal tar is cheaper is when they do not follow the manufactures specified applications methods.

In other words they argue coal tar is cheaper if you apply less than the recommended amount or use an inferior mix design. States or areas where high PAH sealers have been banned have not suffered any financial hardship or lost value in their pavement. Annual cost of pavement is lower when properly maintained and when only asphalt based sealers are used.

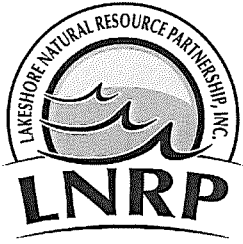
I would like to mention that we are now in a situation where I believe most of my constituents (pavement contractors, specifying engineers, property owners and managers) are accepting or even prefer a statewide policy as the town, city and county bans continue to grow.

We get calls daily asking us if a product can be used here or there and unfortunately we don't have reliable information to answer. No one seems to know when and where they can use any particular product or what the fine or penalty is or might be.



I have had competitors tell contractors they can use their high PAH products in areas where I am pretty sure they cannot. Many have expressed frustration and just wish it was the same everywhere and all product suppliers understood if their products are allowed or not.

Jay Palaski  
President SealMaster of Wisconsin  
President of SealMaster of Minnesota



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## *Cultivating Community and Stewardship from the Ledge to the Lakeshore*

February 3<sup>rd</sup>, 2020

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Unfortunately, while our City of Port Washington took this important action, some of our neighboring communities did not. Such inaction not only endangers our community residents and the natural environment in which we live and upon which we depend, but it leaves harmful gaps in protection that too often go unnoticed. These gaps leave local residents, waterways, and wildlife exposed.

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Once more, Representative Kulp, thank you very much for your leadership on this issue and consideration of my testimony in support of AB 797.

With gratitude for your service to our great State of Wisconsin,



Tom Mlada  
Executive Director – Lakeshore Natural Resource Partnership (LNRP)

February 3, 2020

**To:** Honorable Members of Wisconsin's Assembly Committee on Transportation

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and a 14 times higher cancer risk for children just spending their formative years growing up there.

In addition to human health concerns there is a financial issue as well. The use of high-PAH pavement sealant products poses a serious financial risk to municipalities. Routine maintenance of stormwater retention ponds involves removing accumulated sediments. High levels of PAHs in those sediments dramatically increases disposal costs. We have seen the high costs associated with clean-up of PAH contaminated soils and sediments from rivers and harbors, only to see those same areas re-contaminated again with PAH's. These clean-ups are eventually funded by taxpayers and these future costs can easily run into the millions of dollars. A simple cost-effective fix to avoid these costs would be to prohibit the use of high PAH pavement sealant products statewide. Safer pavement sealant products are readily available on the market with little or no PAHs and they are comparable in cost and performance to Coal Tar sealants.

I respectfully urge that the Legislature passes law (AB 797) banning harmful pavement sealant products containing high levels of polycyclic aromatic hydrocarbons (PAHs).

I am submitting this written testimony in support of Assembly Bill 797 as I was unable to testify in person. Thank you for your consideration of this important issue involving the public health of Wisconsin's Citizens.

Sincerely,

*David C. Fowler*

David C Fowler CFM  
7549 Riverview Road  
Franklin, WI 53132

February 3, 2020



Assembly Committee on Transportation  
Wisconsin State Capitol  
2 East Main St.  
Madison, WI 53702

**Re: Testimony in Favor of AB797, relating to prohibiting sale and use of coal tar-based sealants and high PAH products**

Transportation Committee Members,

On behalf of Milwaukee Riverkeeper, we are strongly in favor of AB797 which would prohibit the sale and use of coal tar-based sealants and high PAH sealant products in the State of Wisconsin. We are submitting written comments, because we cannot attend the public hearing in person. We commend the Wisconsin Assembly for taking on this important issue to address toxic pollution from PAHs in pavement sealants. Milwaukee Riverkeeper was involved in getting coal tar-based sealants banned via local ordinance at the City of Milwaukee and several other communities in southeast Wisconsin. The risks to human health and aquatic life that come from the PAHs contained in these sealants is real and significant. This legislation would be a great step forward for protecting our waterways and the health of our children from this toxic substance that has been shown to cause cancer. We urge you to pass this bill.

Coal tar sealants are the primary cause of PAH pollution in many urban areas, and in fact, a recent study found that 77% of PAH pollution in Milwaukee streambeds came from these substances. PAHs are harmful to fish and other aquatic life in our lakes and rivers. These particles are easily transported by rain, wind, tires and even feet to other environmental settings. After it dries, it gradually abrades to a powder and can be inhaled by people, and/or transported by rainfall through storm water management devices to our lakes and streams. Once these substances enter our streams (or stormwater ponds) and become bound to sediment, it is very expensive to remove them via dredging, and they have to be specially disposed of at great cost.

Moreover, since there are cheap, effective, and widely available alternatives with minimal PAH levels, restrictions on coal tar products have proven effective in other communities to reduce PAH levels in waterways. Alternatives like modern asphalt-based pavement sealants have up to 1,000 times lower PAH levels while also having similar life expectancies and performance.

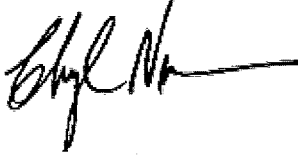
Unfortunately, some products have now begun to appear that have nearly as high PAH levels as coal tar sealants but are designed specifically to get around coal tar sealant ordinances and legislation by using different industrial byproducts (e.g. "heavy pyrolysis oil"). For that reason, it is important to ensure that any ban on coal tar sealants also include "other high PAH content pavement sealant products" in any definitions. Many of these



alternative products market themselves as more “eco-friendly”, but still contain dangerous levels of PAHs.

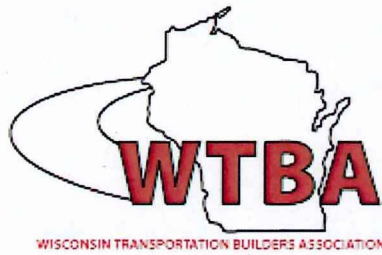
In conclusion, we strongly support and urge you to pass AB797, which prohibits the sale of coal tar-based sealant products and high-PAH sealant products beginning Jan. 1, 2021, and the use of these products beginning July 1, 2021. Thank you for your consideration of this testimony, and your action to protect human and environmental health.

Sincerely,



Cheryl Nenn  
Riverkeeper

Cc: Jennifer Bolger Breceda, Executive Director



Thank you, Chairman Kulp and members of the Assembly Committee on Transportation, for holding a public hearing on Assembly Bill 797. On behalf of WTBA and its members, I appreciate the opportunity to submit testimony in support of this legislation, and also to urge one minor change.

We applaud the efforts of Representative Kitchens and Senator Cowles as well as the co-sponsors of the bill for crafting legislation that takes steps to eliminating harmful chemicals, such as Polycyclic Aromatic hydrocarbons (PAHs), from the environment. The marketplace has adjusted and now provides safer, cost-competitive alternatives to PAHs such as asphalt. Not only are asphalt based sealants safer, readily available, and affordable, it reduces and mitigates the presence of PAHs as a carcinogenic storm water runoff pollutant.

We are asking, however, that members of the committee adopt Assembly Amendment 1 to Assembly Bill 797 offered by Representative Kitchens and eliminates the words "or otherwise use" on page 2, line 8 of the bill. In some cases, although rare, recycled material may contain coal tar – and contractors may not even be aware of its existence. While the coal tar may be minimal and likely burned off in the process of reusing it, the current form of the bill would technically ban using recycled material that contains the product. This could hinder recycling efforts all together since there is no way of knowing whether or not the recycled asphalt contains coal tar. We have run this language by Clean Wisconsin and they are okay with the amendment being adopted.

Again, thank you Chairman Kulp and members for allowing me to provide written testimony. If you have any follow up questions or concerns, please do not hesitate to contact me via email at [pgoss@wtba.org](mailto:pgoss@wtba.org) or via phone 608-256-6891



EnviroSealers LLC  
Madison, WI 53704

04 February 2020

I entered the asphalt maintenance industry in 2015. I, like many starting out purchased used equipment. One of my first purchases was a used sealer tank that had approximately 50 gallons of coal tar sealer in it. My employee at the time was the first and only person on my team that handled the product. He complained of his skin burning, eyes watering, face burning and a headache that caused him to stop working for the day. I felt guilty that my employee and friend was exposed to a toxic material. As a veteran it has been engrained in me that you never ask your subordinates to do something you aren't willing to do yourself. We quickly and proudly switched to asphalt emulsion and specifically to "Pitch Black." As a husband, father, and member of my community, my loyalty to Pitch Black has only strengthened because they have progressively evolved to setting the lowest standard of PAH's 0.0%.

I primarily service customers in an area where there is no ban of coal tar. One of the most expressed concerns from customers "on the fence" to utilize an asphalt emulsion using company versus a coal tar using company is the durability of the product on their asphalt surface. It has been my experience that the durability the quality and the overall look are comparable.

The more I have researched the dangers and concerns of coal tar, the more truly alarming the findings are. I sit here today and proudly encourage and support a coal tar ban in the State of Wisconsin.



Mathew J. Maier

Owner

EnviroSealers LLC



# Mix-Tek

Pavement Solutions

Manufacturing Pitch Black®  
Wisconsin & Minnesota

First, I would like to thank everyone here for taking the time to hear testimony on this issue. I believe this to be an easy no nonsense way to come together to improve our environment and therefore our state.

My name is John Schneider, I have been in the construction and real estate industry in Wisconsin for 18 years. I have been working in the Pavement Sealant industry for the last 5. I am here to give you a brief overview of my experience and understanding on the issue of PAH's in our environment and to support State Assembly Bill 797.

The science regarding the danger of PAH's is indisputable. I will provide some information regarding the science, although many of you have heard this at length already. In addition, I will focus on the products replacing coal tar, their performance, and how this change will likely affect the marketplace of manufacturers and applicators here in WI.

Here are just a few points on the dangers of PAH's, high-PAH sealants, and their effect on the environment and those living in it:

- Young children are the most vulnerable to health effects from PAH contamination from high-PAH sealants. *Children living from birth to age 6 near parking lots treated with tar-based sealants are estimated to have a 14-times higher lifetime cancer risk.*
- Coal Tar sealants can have thousands of times more PAH's than other common sources, such as engine exhaust or motor oil. Additionally, Coal Tar and other sealants are used to resurface millions of SF of asphalt every year. The amount of this carcinogenic material spread on our state is almost unimaginable.
  - *Fresh Asphalt - 1.5 PPM (.00015%)*
  - *Engine Exhaust - 102-370 PPM (.01-.037%)*
  - *Motor Oil - 440 PPM (.044%)*
  - *Cracked Asphalt - 15,000 - 20,000 PPM (1.5-2%)*
  - *Coal Tar - 70,000 - 100,000 PPM (7-10%)*
- The scientific communities safety recommendations for the limits of hazardous chemical exposure are set at .10%. I support the restriction of PAH's to that same level. The more recent Cracked asphalt sealants contain 15 to 20 times the scientific communities widely considered safe amount.

### **Local Changes - Milwaukee Metropolitan Sewage District & US Geological Survey Study**

- The US Geological Survey found that dust from coal-tar-sealant contributed up to 94 percent of the PAHs in the samples collected.
- The USGS study also found up to 78% of the sediment samples collected had PAH levels that could adversely affect aquatic organisms.
- The reality is sealants wear off and when they do they are brought into homes on shoes, into our waterways as runoff, and into our lungs as dust.
- In response to the dangers of PAH's 22 communities and 1 county in WI have already restricted PAH's in Asphalt Sealants to .10%

### **The Safe Alternative: Asphalt Emulsion Sealants-Where We Were, Where We Are**



212 W 3rd St, Necedah, WI 54646



# Mix-Tek

Pavement Solutions

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Wisconsin & Minnesota

In asphalt emulsions' early years, there were some inherent consistency issues. This existed both with the product and the education of those applying the product. Over the last 10 years, products and education have improved greatly. Over the last 3-5 years we have seen both applicators and manufacturers working together to understand and improve performance with environmentally friendly additives and processes.

- Mix-Tek the manufacturer of Pitch Black was told by several applicators that the sealant made in 2019 was across the board the best sealant that they had used in the last 20 years
- Some of these changes and improvements have come from understanding what Asphalt Emulsions are - They are, quite literally, liquid asphalt, liquid road - we like to say we are "nano-paving" the asphalt by sealing with an asphalt emulsion sealant.
- Asphalt Emulsions protect the asphalt by "nano-paving" the surface with actual asphalt and polymers that aid in protecting and moisturizing the surface and increase longevity.
- Coal-tar as a product is much like paint. If you add water to paint, it thins out, still sticks, but wears away quicker than it should. With Coal Tar, Margin can be created by the applicator simply by adding water.
- Asphalt emulsions are more sensitive to excess water and are more likely to fail if over watered. If you over water asphalt emulsion sealant, it loses its bonding characteristics and is likely to wash away quickly. Early on, applicators did not understand this, had failures, and blamed it on the product.
- With improvements in the product as well as educating applicators, asphalt emulsion sealants have shown to perform better long-term than the coal-tar alternative.
- It has also been shown that coal-tar based sealants, due to its chemical properties, draws moisture out of the pavement, causing micro-cracking, which can shorten the lifespan of pavement. For this reason, the Asphalt Institute of America now recommends asphalt emulsion sealants as the preferred product to seal asphalt pavements.
- Pitch Black, like some other pure asphalt emulsions, has 0.00% PAH's while performing as well or better than it's environmentally hazardous competitors.

### **The True Costs of Coal Tar Sealants is Far More than the Benefits**

- The State of Minnesota estimated the clean-up cost of coal tar contamination in the Minneapolis-St. Paul area to be over \$1 billion! The cost of clean-up far exceeded the value of the product.
- The City of Austin was encouraged by the State of Texas to clean up a small drainage swale which had been contaminated by coal tar sealers from a single apartment complex near Barton Springs Pool. The cost, complete with workers in moon suits because of the high PAH concentrations, was nearly \$500,000! This was for a single parking lot drainage basin.
- The obvious health risks of highly carcinogenic materials in the environment and their cost effects are well known and indisputable. To put a price tag on it would be insensitive and at this point is nearly immeasurable.
- There have been some arguments that asphalt emulsion based sealants cost more than coal-tar sealants, but in the current marketplace, that is not always true.
  - There are high-quality asphalt-based sealants and low-quality asphalt based sealants, the same for coal tar, or just about any other product.
    - An analogy for this: You can buy a base-model GMC SL for relatively low cost, when compared to the GMC Denali's higher cost. But one clearly has more features and higher performance.



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- This is true in coal-tar and asphalt based sealants, which have relatively the same cost.
- Due to the alternatives that are in the marketplace, a coal-tar ban would have little to no negative impact on sealcoat applicators across our region.
- Asphalt Sealcoaters who have adopted Asphalt Emulsion Sealants have seen growth in their business as anticipated by industry analysts.
- In the projected period through 2024, the industry is expected to experience “moderate growth” but “rising bans on coal tar-based sealers, the improved performance of asphalt-based sealers, and competitive pricing are expected to result in the increased consumption of bitumen and asphalt sealers...”
- Regarding Manufacturing, most pavement sealant manufacturers are already making Asphalt Emulsions Sealants. The removal of Coal Tar sealants would simply cause manufacturers to remove harmful environmentally caustic materials from their product line up and therefore our environment.
- As a whole State Highways and Roadways do not use Coal-Tar based sealants, due to better performing alternatives for their application and the environmental and health concerns.

## **Liability Risk- Affects Property Owners, Municipalities, Retailers**

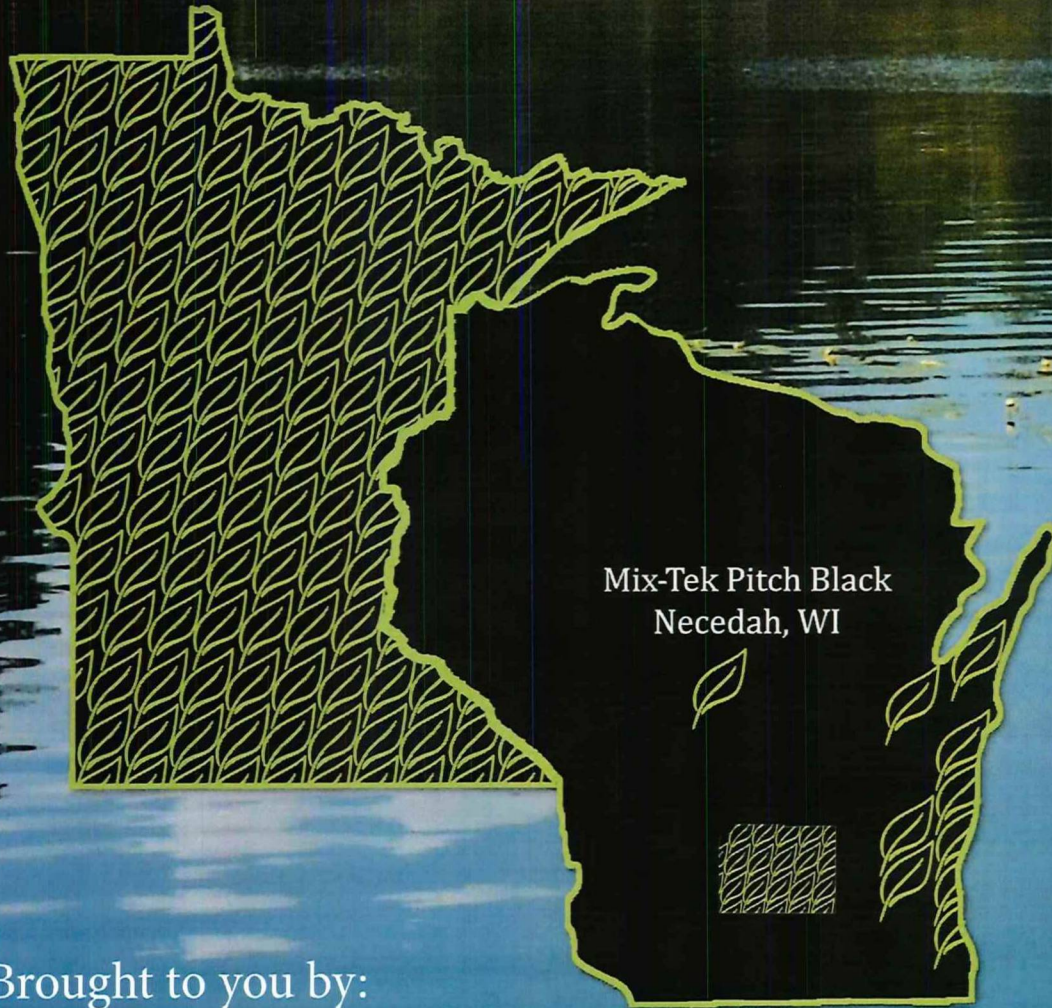
- Now that it is widely known that some asphalt sealants contain highly carcinogenic material all businesses that have sealed asphalt have a potential liability to manage.
- Lowes and Home Depot Stopped Selling Coal Tar Sealers
  - In 2007 Chief Sustainability Officer for Lowes, Michael Chennard, said that they stopped selling coal tar sealants based on their business model after learning about PAH dangers from the Austin, TX PAH Restriction. Here’s the Lowes’ equation:
    1. Identify products that have a high potential liability. He said their pockets were now deeper than many of their suppliers, so they have more to lose.
    2. Find out if there are suitable alternatives in quality and price.
    3. If both the quality and prices are similar, then remove the problematic product from the shelves
  - If it isn’t good enough for Lowes and Home Depot, why is it good enough for our community, our children, and our businesses? Who would continue to use a product that has a sound replacement and reduces liability, as well as increases the safety of our communities and families.

As a manufacturer of Asphalt Emulsion Sealant I have seen the attitude toward Asphalt Emulsions change dramatically over the past 5 years. While there are some Manufacturers and Applicators in the marketplace standing by Coal Tar or other High PAH sealants, the vast majority have come to the conclusion that Low or No PAH Sealants are the industry’s next step and that Coal Tar Based or other high PAH sealants will be eliminated. Largely, the opposition to restricting PAH’s in sealants has grown silent. Very few businesses or organizations are willing to speak up in favor of PAH’s knowing that it is a losing battle, one in which the potential liabilities far outweigh the benefits.

Thank you for your time and attention to this matter. If you have any questions for me I would be happy to answer them for you now.



# Coal-Tar and High-PAH Sealer Bans



- Sturgeon Bay
- Green Bay
- Manitowoc
- Plymouth
- Sheboygan
- Port Washington
- Bayside
- Brown Deer
- Glendale
- Whitefish Bay
- Shorewood
- Wauwatosa
- Elm Grove
- Dane County
- Milwaukee
- West Allis
- St. Francis
- Greenfield
- Greendale
- Hales Corners
- Franklin
- Oak Creek
- Racine

Brought to you by:



**Mix-Tek**  
Pavement Solutions

**PITCH BLACK<sup>®</sup>**  
ASPHALT EMULSION SEALCOAT

Pitch Black<sup>®</sup>  
contains  
0.00% PAH's





**Mix-Tek**  
Pavement Solutions

**PITCH BLACK®**  
ASPHALT EMULSION SEALCOAT

**PITCH BLACK® SPEAKS FOR ITSELF**

The benefits of using Pitch Black® asphalt emulsion sealcoat are easy to see. If you think all sealcoats look the same, think again. Pitch Black® manufacturers use quality suppliers, plant machinery specifically built to produce Pitch Black® and a scientific formula testing time and time again to create consistent results. We encourage you to test Pitch Black® against its competitors. We truly believe Pitch Black asphalt emulsion sealcoat speaks for itself.



Physical Properties	
Color .....	Deep Black
Solids Content .....	50% Minimum by Weight
Weight Per Gallon.....	9.71 lbs Minimum
Fiber .....	Non-Asbestos
Flammability (Wet) .....	Non-Flammable
Flammability (Dry).....	Burns Slowly

- Meets the following specifications:**
- ASTM D-217 Cone penetration at 77°F
  - ASTM T-45 56% Non-volatile soluble in trichloroethylene by weight
  - ASTM D 3910 Wet track abrasion test
  - Fed. Spec. TT-C-555B - Accelerated weathering (2 year exposure)
  - Fed. Spec. TT-C-551B - Resistance to wind driven rain (98 mph)

**No Toxic Chemicals**  
No Solvents. No Petroleum Distillates (i.e. Kerosene, Gasoline, Diesel). No Bull

The formula never had it and never will. Download our material Safety Data Sheets online. Pitch Black® has been used for over 25 years and is the perfect eco-friendly alternative to coal tar.





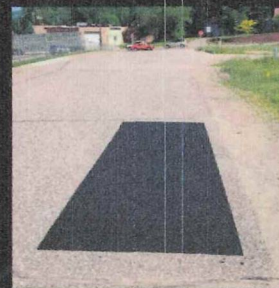
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**PITCH BLACK®**  
ASPHALT EMULSION SEALCOAT

### WHAT IS PITCH BLACK®?

Pitch Black® is a custom rubberized asphalt emulsion blended with select minerals, polymers and chemicals to produce the finest product. Each additive was selected for its characteristics that ultimately produce a sealcoat with the deepest and longest lasting color, firmest body, and greatest durability. It is extraordinarily tough, flexible and water repellent. The co-efficient of expansion and contraction of Pitch Black® asphalt pavement sealer is identical to that of asphalt pavement and has a natural affinity for bonding to asphalt pavement. Performance in the field and lab testing confirm the superiority of Pitch Black® over competitive products in the marketplace.

- ▶▶ Provides a non-slip surface for walkways, tennis courts, playgrounds, parking lots & traffic areas
- ▶▶ Seals in asphalt oils / seals out ultraviolet rays and water
- ▶▶ Fills in and smooths pavement voids
- ▶▶ Restores the surface to a rich, black color
- ▶▶ Non-toxic, non-tracking and easy to clean up
- ▶▶ Easy to apply - squeegee, broom, or spray application
- ▶▶ Protects your investment - prolongs the life of your asphalt pavement



### PITCH BLACK® VS COAL TAR

Are you a coal tar advocate? Chances are, you've tried one brand of asphalt emulsion sealcoat and had a negative experience. We've heard about the fading, cracking, limited durability, etc. of asphalt emulsion products that hit the market and crashed. But did you know that Pitch Black® Asphalt Emulsion Sealcoat has been in the industry for almost 30 years? The West Coast has been using asphalt emulsion sealcoat since the 1980's. Coal tar was abandoned by most West Coast contractors to avoid the risk of harmful health and environmental effects. With the right asphalt emulsion sealcoat formula, you can get even better performance from your sealcoat without the drawbacks of coal tar. Here are some points to consider:

#### PITCH BLACK®

- ▶▶ **Non-toxic** - no hazardous material placards needed
- ▶▶ **Easy to clean up** - can be cleaned up with water
- ▶▶ **Dries quickly** - you can stripe the same day
- ▶▶ **Compatible** with water-based or oil based striping paint
- ▶▶ **Easy to apply** - can use squeegee or spray application
- ▶▶ **Longevity** - maintains a lasting deep black color
- ▶▶ **Cost-effective** - can apply to new asphalt much sooner (complete jobs faster and more efficiently)

#### COAL TAR

- ▶▶ **Toxic?** - considered hazardous by growing number of states & can burn skin
- ▶▶ **Difficult to remove** - cleaning requires solvent and may leave yellow stains
- ▶▶ **Longer drying** and set up time
- ▶▶ **Not compatible** with oil-based striping paint (may turn stripes brown)
- ▶▶ **SAME**
- ▶▶ **Color Lightens** - usually turns to blue tint in a relatively short period of time.
- ▶▶ **More Costly** - must wait longer for new asphalt to cure (usually 30-90 days)
- ▶▶ **Restricted** - a growing number of states are drafting legislation to restrict and/or eliminate the use of coal tar

### THE PITCH BLACK® FORMULA

The Pitch Black® Asphalt Emulsion formula was engineered and developed in the early 1980's. The owners of the formula have been in the asphalt rehabilitation and repair industry for three generations. With hundreds of millions of square feet of pavement being sealed with Pitch Black® every year, it's no wonder it's one of the most sought after, respected, and well-protected formulas in the industry today. Pitch Black® can be applied on any asphalt surface including driveways, parking lots, shopping centers, malls, school playgrounds, airports, etc. It's asbestos-free, contains no carcinogens, and is non-flammable. Pitch Black® is environmentally friendly and is the perfect solution to any residential, commercial, or industrial asphalt project. Pitch Black® is licensed by U.S. Seal International, Inc..





**Carly Michiels, Government Relations Director**

**Paul Mathewson, Staff Scientist**

**Clean Wisconsin**

**Testimony – Assembly Bill 797 prohibiting the sale or use of coal tar-based and PAH sealant products  
Senate Committee on Natural Resources and Energy**

Thank you for the opportunity to testify in support of Assembly Bill (AB) 797 prohibiting the sale or use of toxic coal tar-based and high-PAH sealant products. We appreciate the authors, Senator Cowles and Representative Kitchens, prioritizing PAH pollution with this bipartisan bill.

Clean Wisconsin is a non-profit environmental advocacy organization focused on clean water, clean air, and clean energy issues. We were founded almost fifty years ago and have over 20,000 members and supporters around the state. We have been working on water pollution issues in Wisconsin since our founding, and while some of the particulars have changed Wisconsin remains a state with abundant water resources but also abundant challenges in restoring and protecting those waters. Clean Wisconsin employs scientists, policy experts, and legal staff to bring all the tools at our disposal to protect and improve both our air and water resources.

Pavement sealants are used to darken and seal asphalt driveways, parking lots, and playgrounds. Coal tarbased pavement sealants contain extremely high concentrations of toxic compounds known as polycyclic aromatic hydrocarbons (PAHs). Research in Wisconsin and across the country shows these pavement sealants are the primary source of PAH pollution in urban landscapes. The problem is they slowly but surely break down over time, and particles are either carried by wind or shoes into our buildings and yards or run off with stormwater into our waterways affecting water quality.

Dane County was the second place in the nation to prohibit the use of coal tar-based sealants back in 2007. For the last three years, Clean Wisconsin has worked with local communities along Wisconsin's Great Lakes coasts to raise awareness about the source and impacts of PAH pollution and encourage proactive action to protect residents and local waterways. In early 2017, we helped Milwaukee pass a local law that prohibited the sale and use of toxic pavement sealant products. Since then, another 21 local communities from Racine to Sturgeon Bay passed similar local protections. Thanks to these local actions roughly 1.7 million (almost 30%) of Wisconsin's residents are already protected from this source of PAH pollution. This bill will extend those protections to the rest of our residents and waterways.

This bill protects public health, the environment, and local taxpayers:

- The coal tar used in tar-based sealants is a known carcinogen due to its PAH content. Sealants break down over time, and children ingest it through contact in yards and playgrounds, or when we track particles from our driveways into our homes, where children who play on the floor can ingest them.

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Studies have shown that children who grow up near parking lots treated with pavement sealants containing high levels of PAHs have a lifetime cancer risk that is 14 times higher than those living near unsealed parking lots or lots sealed with asphalt emulsion alternatives. In addition to increasing the risk for cancer, exposure to PAHs has been found to impair cognitive development and cause birth defects.

- PAHs are a common waterbody contaminant in Wisconsin. PAHs accumulate in the sediment, creating a toxic environment for aquatic life. Here in Wisconsin, a US Geological Survey study found the majority of waterway sediments sampled in the Milwaukee area contained PAH levels in excess of a toxic threshold, and that pavement sealants were the source of over 75% of the PAHs. Clean Wisconsin has also conducted sampling in rivers in Sheboygan, Manitowoc, Algoma, Green Bay, Stevens Point, Bayfield and Ashland, with testing conducted by a UW-Oshkosh lab, which showed levels of PAHs high enough to cause adverse impacts to fish and other wildlife. Research shows that runoff from surfaces sealed with high-PAH sealants harms or kills a wide variety of aquatic life, including insects, amphibians, and fish, and impairs the overall health of the waterbody.
- PAH pollution can be a significant burden to taxpayers. Municipalities are on the hook for cleaning up stormwater sediment ponds contaminated with PAH-laden sediment. In the Minneapolis metro area, the PAH cleanup from tar-based sealants is estimated to cost taxpayers hundreds of millions of dollars. If we do not stop using these products across Wisconsin, those costs in the future will only increase.

Today, widely available alternative products have comparable performance and are cost competitive. Big national and regional retailers that no longer sell high-PAH products include Ace Hardware, Home Depot, Lowes, Menards, and United Hardware. There are many applicators working in this industry in Wisconsin who have also decided not to use high-PAH sealants. Most state Departments of Transportations (DOT) have stopped using coal-tar pavement sealants due to high levels of PAHs. Specifically, Wisconsin DOT restricts pavement sealers to asphalt emulsions only (DOT's Standard Specifications Part 4, Section 475).

Taking action clearly improves water quality and reduces the threat to public health. In Austin, Texas, PAH levels in lakes decreased by over 50% in the decade following the city's ban on coal tar-based sealants. We have many complex water quality problems in Wisconsin that have and will continue to cost significant resources to address. On the contrary, preventing coal tar-based sealants from further polluting our waterways and impacting public health is straightforward. It implements what well over 20 communities in Wisconsin have already done to protect their residents and is the direction industry has been moving.

Clean Wisconsin supports AB 797 and we thank the authors for their leadership on prohibiting PAH contamination in Wisconsin. This is a win for public health, our natural resources, and local communities and taxpayers.

Thank you.

**Wisconsin Local Governmental Units with Adopted Ordinances  
Regarding High-PAH Pavement Sealant Products:**

**Bans on the sale and use of high-PAH pavement sealant products:**

1. Dane County and all municipalities within the County (2008)  
---- 2017 ----
2. Milwaukee
3. Glendale
4. Franklin
5. Brown Deer
6. Elm Grove
7. Shorewood  
---- 2018 ----
8. Whitefish Bay
9. Port Washington
10. Greenfield
11. West Allis
12. Hales Corners
13. Wauwatosa
14. Bayside
15. Greendale  
---- 2019 ----
16. Sheboygan
17. St. Francis
18. Manitowoc
19. Racine
20. Oak Creek
21. Sturgeon Bay
22. Plymouth  
---- 2020 ----
23. Green Bay

**Policies restricting the use of high-PAH sealants on County-owned projects and properties:**

1. Milwaukee County (2019)
2. Kewaunee County (2019)

February 4, 2020

**Wisconsin Assembly  
Committee on Transportation  
Hearing on Assembly Bill 797**

**Testimony of the  
Pavement Coatings Technology Council  
Anne P. LeHuray, Executive Director**

Thank you, Mr. Chairman and members of the Committee, for this opportunity to speak in opposition to AB 797. My name is Anne LeHuray and I am the Executive Director of the Pavement Coatings Technology Council (known as PCTC), a trade association made up of manufacturers of pavement sealant products and their suppliers. PCTC is opposed to this bill, which seeks to ban a product that has been safely used for decades, because it is based on unreproducible science, seeks to disrupt an industry based on hypothetical low risks that have not occurred in the real world, and will have a devastating impact on many very small, seasonal businesses throughout the state. In short, banning refined coal tar-based pavement sealants is a solution in search of a problem.

It's almost impossible to be a small business in the era of big government. An era when conclusions based on selective inclusion and exclusion of data are called "science," and deemed credible by public officials because the so-called science was generated by government employees. An era when Non-Governmental Organizations promote bans on products that have been safely used for decades to demonstrate their successful activism to their members. An era when politicians in towns and cities and counties and yes, even states, seek to burnish their environmentalist credentials by banning products without regard to either science or the lives behind the small businesses that are devastated. An era when thoroughly documented evidence presented by business – especially small business - is disregarded as inherently corrupted by self-interest. These days, it is commonly asked why government at all levels is so distrusted. The experience of PCTC members is one illustration.

To begin, I want to point out a curious feature of the bill. The word "pavement" does not appear in the bill. Instead, the word used is "sealant." Products described as sealants are commonly used in many applications beyond pavements. Coal tar and high PAH products are, for example, a feature of the roofing industry, of enamels used to protect metal and concrete in a variety of industries. The

Committee should consider whether the language of the bill might have unintended consequences on other Wisconsin businesses.

Let's talk about the science of pavement sealants in the environment. Government employees who work for a science agency have said that refined coal tar-based pavement sealants are a, if not *the* most, significant source of a class of naturally occurring chemical compounds called Polycyclic Aromatic Hydrocarbons (PAHs) in urban stream sediments. Not in water – PAHs are highly insoluble in water – but in sediments. Independent studies and studies commissioned by PCTC have shown that pavement sealants are not a significant source, and also highlight that PAHs are not much of a problem in sediments. This is illustrated by the Clean Water Act reports every state – including Wisconsin - must submit to the US Environmental Protection Agency (EPA) every two years. These are called 303(d) reports. In them, states report “causes of impairment” to water bodies covered by the Clean Water Act. In Wisconsin, as in other states, PAHs are almost never reported as a “cause of impairment.” Yes, PAHs have been a problem in a few locations around the country where there are oil spills, but PAHs have also been identified as a “cause of impairment” in wilderness areas. That's because PAHs are produced by heating organic matter, whether by human activity or forest fires or decaying leaf litter in remote wetlands. In fact, independent studies have shown that the number

one source of PAHs in sediments throughout the country are wood-burning fireplaces and stoves.

Beyond the Clean Water Act, under the federal Safe Drinking Water Act every source – every single one - of drinking water in the United States is routinely tested for PAHs. They are almost never found.

Even though it is known that PAHs are ubiquitous on Earth and throughout the universe – NASA calls them “the building blocks of life” – PCTC has continuously re-evaluated our conclusions that pavement sealants are not a major source of PAHs in the environment, commissioning subject-area experts to evaluate publications in the environmental science literature that identify pavement sealants as a source and to make their findings public. Our conclusions have not changed – the “science” produced by the government employees is not reproducible. And as any scientist worth their salt will tell you, if the conclusions aren’t reproducible, they aren’t valid. I have submitted a document called a *Science Review* that lists the scientific papers PCTC has considered.

Well, you might ask, is exposure to coal tar a health risk so that reducing PAHs in the environment even a little bit is an improvement. Last night, I went to a drug



store across the street from the Wisconsin state capital building and bought an example of a dandruff shampoo and psoriasis skin cream in which the active ingredient is PAH-containing coal tar. Based on nearly a century of use, the US Food & Drug Administration has classified coal tar as “safe and effective for use” to control dandruff and psoriasis. For this purpose, millions of people in the US apply coal tar directly to their skin every day. Still, there have been questions about health effects related to exposure to PAHs. In the 1970s – the early days of environmental regulation – there was a lack of data and PAHs were treated as more toxic than we know them to be today. Because PAHs found in coal tar are highly insoluble, they are not very accessible biologically to either human or non-human creatures. Biologically inaccessible means PAHs are not broken down and absorbed in the body. Today, EPA estimates risks that could be related to exposure to PAHs based on biologically available concentrations. Studies of PAHs in different materials have shown that PAHs in coal tar are among the *least* biologically available of the substances tested. Using data generated by US government employees, Health Canada quantified health risks potentially associated with exposure to pavement sealant dust in homes. Health Canada found the risk to be at levels recognized as a low level of concern in European Union regulation and in World Health Organization guidance. PCTC members are not surprised – sealant manufacturers are mostly small, multi-generation family-owned

businesses. If working with refined coal tar-base sealants was a significant risk, it would have shown up in the families of PCTC members. Not only have persistent health problems not been observed in the families, but PCTC is not aware of lawsuits that have been brought by employees or others alleging such problems.

I'm often asked, "there are alternatives, so what's the problem with taking a precautionary approach to refined coal tar-based products?" PCTC members manufacture both asphalt-based and coal tar-based pavement sealants. Research & development has resulted in improved asphalt-based sealants, but there continue to be issues to overcome. Some of these are:

- Because of variability in petroleum refining, the asphalt available to sealant manufacturers has inconsistent physical-chemical properties, resulting in inconsistent end products that, unlike the refined tar-based product, must be continuously tested to ensure specifications and performance measures;
- The protective properties of asphalt-base sealants are not yet as robust as the effective protection of refined tar-based sealants vis-à-vis oil spills, road salt, environmental oxidation, and other factors that influence the longevity of asphalt pavements; and
- The season for contractors using asphalt-based sealant is considerably shorter than for tar-based products.



This last issue is of particular concern in northern states such as Wisconsin. Refined coal tar-based sealant can be successfully applied at lower temperatures than asphalt-based products. A ban on coal tar-based sealant would result in an application season 20 to 40% shorter. There are tens of thousands of very small businesses in the US that rely on sealant application for their annual revenue. A large number of very small Wisconsin businesses will be devastated by the proposed ban.

Thank you for your attention. I'd be happy to try to answer questions.

# Pavement Coating Technology Council

## REVIEW OF SCIENCE RELEVANT TO POTENTIAL ENVIRONMENTAL IMPACTS OF REFINED COAL TAR-BASED SEALCOAT (RTS)

For more than a decade the Pavement Coatings Technology Council (PCTC) has sought input from scientists with different expertise to evaluate concerns raised about health, safety, and environmental aspects of the use of RTS. These scientists have consistently found the published science to be unreproducible, lacking in transparency, and based on models that use unverified data. These conclusions are documented in papers published in scientific journals and in publicly available project and peer review reports.

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In 2005, hydrologists at the U.S. Geological Survey (USGS) and co-authors who worked with the City of Austin, Texas, published a paper in *Environmental Science & Technology* (ES&T; Mahler et al., 2005) speculating that “runoff from sealed parking lots could account for the majority of stream PAH loads.” The study had been undertaken in cooperation with the City of Austin, which had previously consulted other state and federal agencies seeking confirmation of the City’s theory that sealants were the predominant – or at least a significant - source of polycyclic aromatic hydrocarbons (PAHs) in sediments in the City.<sup>1</sup> Shortly after the paper was published, the City banned the sale and use of refined coal tar-based pavement sealant (RTS).

In response to the implication that a sealant product may be a source of PAHs in the environment, member companies of the Pavement Coatings Technology Council (PCTC), a 501(c)(6) trade association for the pavement coatings industry, tasked the association with both improving its understanding of the potential environmental impacts allegedly associated with sealcoating and evaluating the scientific studies addressing this issue. This memorandum briefly summarizes those efforts.

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<sup>1</sup> The City had consulted with the Texas Commission on Environmental Quality (TCEQ), the Texas Department of Health which brought in the U.S. Public Health Service, and the U.S. Environmental Protection Agency (EPA) Region 6.

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To carry out its mandate of improving understanding of environmental impacts, PCTC consulted with and commissioned reviews by scientists who are recognized as experts in their respective fields. Their conclusions were ultimately published and/or presented in peer reviewed papers, in comments and letters to the editors of journals which had published competing studies involving sealcoat, in technical memoranda, and at various scientific meetings and public hearings.

It has been PCTC's practice to make these evaluations public. Public access has been accomplished by commissioning preparation of manuscripts for submission to peer reviewed science journals, through public posting of post-publication peer reviews (PPPR) on the PubPeer (and/or the no-longer-supported PubMed Commons) web site, and through making PPPR documents available on [PCTC's Scribd.com site](#). Some of these publications are listed in the attached Appendix 1 titled "Science Commissioned by PCTC." The remaining appendices contain reviews and evaluations of science publications related to RTS. They are organized as follows:

- Appendix 2: Reviews of four papers relied on by EPA in 2 disseminated publications,
- Appendix 3: Reviews of papers that identify RTS as a significant source of PAHs in sediment,
- Appendix 4: Review of papers concerning RTS in stormwater runoff,
- Appendix 5: Reviews of papers that identify RTS as a significant source of air emissions,
- Appendix 6: Reviews of papers on the effectiveness of bans,
- Appendix 7: Reviews of human exposure and health risk assessment papers, and
- Appendix 8: Reviews of ecological risk assessment papers.

Taken together, these reviews and evaluations show that restrictions on the use of RTS are based on science that has been shown to be unreproducible, lacking in transparency, and based on models that use unverified data.



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## Appendix 1: Science Commissioned by PCTC

### Appendix 1.1: Field Studies

As described in the introduction to this document, the conclusion reached by Mahler et al. (2005) was speculation that “runoff from sealed parking lots could account for the majority of stream PAH loads.” This conclusion was based on comparisons between PAH signatures in solids suspended in simulated parking lot runoff and PAHs signatures in samples collected in prior years from a single location in Austin, TX, and three locations in Fort Worth, TX, which is about 200 miles from Austin. PCTC commissioned a field study of PAH signatures in sediment in various water bodies in Austin, TX, to test the validity of Mahler et al.’s speculation. Sampling was conducted in October and November, 2005, and again at many of the same locations in April, 2008.

A comprehensive report documenting the 2005 sampling event and resulting analyses was made available (Environ, 2006), and an evaluation of the full study was published in a peer reviewed journal (DeMott et al., 2010). The conclusion of the field study was that speculation that runoff from sealcoated parking lots is a, if not the, predominant source of PAHs in sediment in Austin or other urban areas was not justified by actual sediment data.

DeMott, R.P., Gauthier, T.D., Wiersema, J.M. and Crenson, G. (2010). PAHs in Austin Sediments after a Ban on Pavement Sealers. *Environmental Forensics*, 11:4, 372-382. <https://doi.org/10.1080/15275922.2010.526520>

**Abstract:** Polycyclic aromatic hydrocarbon (PAH) concentrations were measured in stream sediments collected before and after a municipal ban on the use of coal-tar-based pavement sealers in Austin, Texas. Samples were collected in October 2005, prior to the ban, and again in April, 2008, approximately 2 years after the ban. Differences in total PAH concentrations between samples collected before and after the ban show no net change in PAH levels in Austin stream sediments. Results of hydrocarbon fingerprinting reveal subtle differences in PAH profiles that appear to reflect the effects of weathering rather than a change in PAH sources.

Environ (2006). Polycyclic Aromatic Hydrocarbon (PAH) Characteristics for Sediments Collected from Creeks and Streams in Austin, Texas. Report prepared for the Pavement Coatings Technology Center. 63 p. Available at <https://www.scribd.com/document/343808345/Polycyclic-Aromatic-Hydrocarbon-PAH-Characteristics-for-Sediments-Collected-from-Creeks-and-Streams-in-Austin-Texas>

**Executive Summary:** This report presents an analysis of polycyclic aromatic hydrocarbon (PAH) concentrations measured in sediment samples collected from creeks and streams in the Austin, Texas area in October-November, 2005. The purposes of this study were to

characterize the levels of PAHs found in Austin area sediments, compare PAH inputs from various sources and assess the hypothesized dominance of coal tar-derived pavement sealer products as sources of PAHs to Austin stream sediments.

Polycyclic aromatic hydrocarbons are a large and diverse group of chemical compounds formed primarily during combustion of carbon-based materials. PAHs are widely distributed in the environment because releases via combustion processes enter the atmosphere, promoting widespread dispersion, and ultimately end up on the land surface and transported to streams. Because of their chemical properties, PAHs in waterways are predominantly found in sediments. PAHs are also found in fossil fuels, explaining their association with pavement sealer products formulated from refined coal tar or asphalt. Coal tar has higher PAH levels than asphalt and this relationship carries through to the formulation of sealers from refined coal tar.

Given their association with combustion of fuels, higher PAH levels are frequently associated with dense human populations and traffic. Given the variety of potential sources, the widely accepted scientific consensus for decades has been that urban PAHs reflect complex mixtures related to vehicles, power generation, home heating and cooling, and consumer products. A recently published study challenged this explanation, hypothesizing based on sampling residues washed off of parking lots and test plots freshly coated with sealer products that PAHs from coal tar-derived pavement sealer products dominate the inputs to streams in Austin. This survey set out to characterize both overall conditions in Austin and the strength of this hypothesis using actual stream sediment samples.

Stream sediments were collected from diverse areas across metropolitan Austin, capturing the progression of population and traffic density from the suburban fringe through increasingly urbanized areas to urban downtown. These samples are expected to reflect PAHs from vehicles, atmospheric deposition and runoff from parking lots coated with pavement sealer products. Samples were also collected from direct roadway drainage features where pavement sealer-related PAHs are not expected to be contributing since these products are not used on roads.

The stream and streambed characteristics prevalent in Austin turned out to be important to interpreting sediment conditions and PAH transport for the area. Stream sediments and deposition patterns for Austin urban streams are dissimilar from those in other studies that characterized urban sediment quality using bed sediments from less dynamic waterways like lakes. This survey demonstrates that there are substantial uncertainties and limitations associated with attempting to evaluate urban PAH conditions based on stream sediments from Austin. While stream sediments serve as a useful snapshot of conditions across Austin, the spatial and temporal transience of sediment for many of the



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stream reaches create substantial uncertainties in attempting to characterize long-term urban conditions with this type of sample.

PAH concentrations measured in stream sediments were demonstrated to be both similar to urban areas in which coal tar-derived pavement sealers are not used and highly variable in response to the flushing effects of rain events. Further, since roadway drainage PAH concentrations alone corresponded to substantially more than half of the concentrations found in the urban portions of the streams, it appears that the hypothesis that the dominant source could be coal tar-derived pavement sealers will be difficult to substantiate.

### **Appendix 1.2: Forensic Analyses, Modeling, and Literature Reviews Published in Peer Reviewed Science Journals**

Driscoll, S. K., Kulacki, K. and Marzooghi, S. (2019), A Review of the Literature on Potential Effects of Runoff from Refined Coal-Tar-Based Sealant Coating on Aquatic Organisms. *Integr Environ Assess Manag.* 16:1, 17-27 doi:[10.1002/ieam.4210](https://doi.org/10.1002/ieam.4210)

**Abstract:** Pavement sealants are frequently applied to parking lots and driveways to improve their appearance and protect the integrity of the underlying asphalt. We performed a comprehensive literature review to summarize the potential impacts of refined coal-tar-based sealant (RCTS) runoff to aquatic organisms and to evaluate the strengths and weaknesses of the lines of evidence presented in the literature. The studies reviewed included both laboratory and field exposures, with and without exposure to ultraviolet light, and measured effects on multiple endpoints associated with bacteria, benthic macroinvertebrates, and fish. Several studies demonstrated that constituents in RCTS runoff can affect survival, growth, behavior, development, and molecular responses of aquatic organisms under controlled laboratory settings. However, translating effects observed in the laboratory to field settings, where runoff is diluted and constituents interact with particulate and dissolved stream constituents (e.g., organic matter), has proven difficult. In this review, we identify the strengths and weaknesses of the existing literature and provide recommendations for study designs and methods to fill the most critical data gaps in understanding the risk of this material to aquatic organisms. Our review highlights the need for environmentally relevant study designs that demonstrate cause-effect relationships under field conditions.

O'Reilly, K., Ahn, S., Pietari, J. and Boehm, P. (2015). Use of Receptor Models to Evaluate Sources of PAHs in Sediments. *Polycyclic Aromatic Compounds.* 35:1, 41-56. <https://doi.org/10.1080/10406638.2014.907817>

**Abstract:** Receptor models are mathematical procedures for resolving one or more of these parameters in a mixed chemical system: (1) the number of sources, (2) their chemical characteristics, and (3) the relative contribution of each source in environmental samples. These models are being used increasingly to evaluate sources of polycyclic aromatic

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hydrocarbons (PAHs) in sediments. As with any mathematical model, understanding the underlying assumptions is critical in interpreting the output. Three assumptions that raise particular challenges when applying receptor models to evaluate multiple sources of pyrogenic PAHs are (1) identification of all important sources, (2) stability of source profiles, and (3) linear independence of each profile. Variability within source types, and similarities among the PAH profiles of different sources, create uncertainties that must be considered when evaluating the results of receptor models. Various procedures for evaluating uncertainties have been applied in the literature, but validation and standardization of such methods are often lacking. Using a case study, this article demonstrates how a more detailed evaluation of model output can produce conclusions that differ from those initially published. While not eliminating uncertainty, we recommend a multiple-lines-of-evidence approach that includes both mixing and unmixing receptor models, along with other environmental forensic techniques.

O'Reilly, K. T., Pietari, J. and Boehm, P. D. (2014), Parsing pyrogenic polycyclic aromatic hydrocarbons: Forensic chemistry, receptor models, and source control policy. *Integr Environ Assess Manag*, 10:279–285. <https://doi.org/10.1002/ieam.1506>

**Abstract:** A realistic understanding of contaminant sources is required to set appropriate control policy. Forensic chemical methods can be powerful tools in source characterization and identification, but they require a multiple-lines-of-evidence approach. Atmospheric receptor models, such as EPA's Chemical Mass Balance (CMB), are increasingly being used to evaluate sources of pyrogenic polycyclic aromatic hydrocarbons (PAHs) in sediments. This paper describes the assumptions underlying receptor models and discusses challenges in complying with these assumptions in practice. Given the variability within, and the similarity among pyrogenic PAH source types, model outputs are sensitive to specific inputs, and parsing among some source types may not be possible. While still useful for identifying potential sources, it is critical that the technical specialist applying these methods describe both the results and their inherent uncertainties in a way that is understandable to non-technical policy makers. We present an example case study concerning an investigation of class of parking-lot sealers as a significant source of PAHs in urban sediment. In this paper, principal component analysis is used to evaluate published CMB model inputs and outputs. Targeted analyses of two areas where bans have been implemented are included. The results do not support the claim that parking-lot sealers are a significant source of PAHs in urban sediments.

O'Reilly, K., Pietari, J. and Boehm, P. (2012). Forensic Assessment of Coal Tar Sealants as a Source of Polycyclic Aromatic Hydrocarbons in Urban Sediments. *Environmental Forensics*, 13:185-196 <https://doi.org/10.1080/15275922.2012.676598>

**Abstract:** Atmospheric deposition of particles and their subsequent transport by stormwater are a major source of polycyclic aromatic hydrocarbons (PAHs) in urban sediments. Recently, the results of forensic analysis have been used to promote a hypothesis that



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refined tar-based pavement sealers (RT-sealers) are another significant source. To evaluate this hypothesis, a suite of forensic methods was applied to a wider range of PAH data for this study. Sediments PAH profiles are no more similar to RT-sealers than they are to a number of other environmental inputs. While RT-sealers were not eliminated as a potential source in some locations, forensic methods did not differentiate their contribution from other sources of PAHs, indicating RT-sealers are not a unique or readily quantifiable source of PAHs to the urban environment.

### Appendix 1.3: Post-Publication Peer Reviews, Letters to the Editor, & Responses Published in Peer Reviewed Science Journals

- O'Reilly, K.T., and Edwards, M. (2019). Letter to the Editor: Comment on Norris & Henry (2019). *Science of the Total Environment*. 704:135248.<sup>2</sup>  
<https://doi.org/10.1016/j.scitotenv.2019.135248>
- O'Reilly, K., and Ahn, S. (2017). Letter commenting on “Primary sources and toxicity of PAHs in Milwaukee-area streambed sediment”—To the editor: *Environmental Toxicology and Chemistry*, v. 36, p. 1978-1980. <https://doi.org/10.1002/etc.3825>
- Magee, B. H., & Forsberg, N. D. (2016). Correspondence on Identification and Toxicological Evaluation of Unsubstituted PAHs and Novel PAH Derivatives in Pavement Sealcoat Products. *Environmental Science & Technology Letters*, 3(11), 404-405.  
<https://pubs.acs.org/doi/pdfplus/10.1021/acs.estlett.6b00360>
- LeHuray, A. (2015) Letter to the Editor in response to Bales. *Integr Environ Assess Manag*. 11(2):185-187. <https://doi.org/10.1002/ieam.1619>
- Gauthier, T.D. and DeMott, R.P. (2015). Comment on “Coal-tar pavement sealant use and polycyclic aromatic hydrocarbon contamination in urban stream sediments.” *Physical Geography*. 36(1) pp 84-86 <http://dx.doi.org/10.1080/02723646.2014.981779>
- O'Reilly, K. (2015). Letter to the Editor concerning “Source apportionment and distribution of polycyclic aromatic hydrocarbons, risk considerations, and management implications for urban stormwater pond sediments in Minnesota, USA.” *Archives of Environmental Contamination and Toxicology*. 68(1) pp 1-3.  
<https://doi.org/10.1007/s00244-014-0094-7>.<sup>2</sup>
- DeMott, R.P.; Gauthier, T.D. (2014) Comment on “PAH Concentrations in Lake Sediment Decline Following Ban on Coal-Tar-Based Pavement Sealants in Austin, Texas.” *Environ. Sci. Technol.* 48 (23), pp 14061–14062 <http://dx.doi.org/10.1021/es5046088>.
- O'Reilly, K., Pietari, J. and Boehm, P. (2014). Author’s Reply to Van Metre and Mahler’s Letter to the Editor on “Parsing pyrogenic polycyclic aromatic hydrocarbons: Forensic chemistry, receptor models, and source control policy.” *Integr Environ Assess Manag*. 10(4):489-491. <https://doi.org/10.1002/ieam.1556>.

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<sup>2</sup> Letter to the editor was subject to the journal’s peer review process.



- O'Reilly, K., Pietari, J. and Boehm, P. (2014). Author's Reply to Crane's Letter to the Editor on "Parsing pyrogenic polycyclic aromatic hydrocarbons: Forensic chemistry, receptor models, and source control policy." . *Integr Environ Assess Manag.* 10:325–326. <https://doi.org/10.1002/ieam.1548>
- O'Reilly, Kirk (2014). Response to authors' reply on "Coal-tar-based sealcoated pavement: A major PAH source to urban stream sediments" *Environmental Pollution* 191:264–265. <http://dx.doi.org/10.1016/j.envpol.2014.03.036>
- O'Reilly, Kirk (2014). Article Title Misstates the Role of Pavement Sealers. Letter to the Editor of *Environmental Pollution* 191:260–261  
<http://dx.doi.org/10.1016/j.envpol.2013.11.029>
- Magee, Brian and Janet Keating-Connolly (2014). Comment on "Cancer Risk from Incidental Ingestion Exposures to PAHs Associated with Coal-Tar-Sealed Pavement". *Environmental Science & Technology*, 48 (1), pp 868–869.  
<https://doi.org/10.1021/es404184g>
- O'Reilly, K., Pietari, J. and Boehm, P. (2011). Comment on "PAHs Underfoot: Contaminated Dust from Coal-Tar Sealcoated Pavement is Widespread in the U.S." *Environ. Sci. Technol.*, 2011, 45 (7), pp 3185–3186.  
<https://pubs.acs.org/doi/pdfplus/10.1021/es200240g>
- DeMott, R.P.; Gauthier, T.D. (2006) Comment on "Parking lot sealcoat: An unrecognized source of urban polycyclic aromatic hydrocarbons." *Environ. Sci. Technol.* 2006, 40(11), 3657–3658. <https://doi.org/10.1021/es060326t>

#### Appendix 1.4: Post-Publication Peer Review Reports

- O'Reilly, K. and Edwards, M. (2019). *Technical review comments on Norris and Henry, 2019*. Technical memorandum prepared for the Pavement Coatings Technology Council July 29, 2019. Available at <https://www.scribd.com/document/430786734/Technical-review-comments-on-Norris-and-Henry-2019>
- Exponent (2019). Review of Valentyne et al. (2018) "Polycyclic aromatic hydrocarbon contamination and source profiling in watersheds serving three small Wisconsin, USA cities." Report prepared for the Pavement Coatings Technology Council. Available at <https://www.scribd.com/document/412388615/Post-Publication-Peer-Review-of-Valentyne-et-al-2018>
- Exponent (2016a). *Summary of McIntyre et al. 2016. "Severe Coal Tar Sealcoat Runoff Toxicity to Fish Is Prevented by Bioretention Filtration."* Report prepared for the Pavement Coatings Technology Council. Available at <https://www.scribd.com/document/343915511/Post-publication-peer-review-of-McIntyre-et-al-2016> . Condensed version published as a comment on PubMed Commons at <https://www.ncbi.nlm.nih.gov/myncbi/kirk.o'reilly.1/comments/>



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- Magee, BH, and Forsberg, ND (2016). *Critical Review of Titaley et al. (2016)*. Technical memorandum prepared for the Pavement Coatings Technology Council. August 4, 2016. Available at <https://www.scribd.com/document/343808947/Peer-Review-of-Coal-Tar-Sealed-Pavement-Risk-Assessment> . Condensed version published as a comment in Environmental Science & Technology Letters (Magee & Forsberg, 2016).
- Exponent (2016b) *Evaluation of USGS's Assessment of PAH Sources in Sediments of the San Antonio River Watershed*. Report prepared for the Pavement Coatings Technology Council. Available at <https://www.scribd.com/document/344996085/Post-publication-peer-review-of-USGS-San-Antonio-Report-Wilson-et-al-2011> .
- Exponent (2015a). *Review of: Acute Toxicity of Runoff from Sealcoated Pavement to Ceriodaphnia dubia and Pimephales promelas (Mahler et al., 2015)*. Report prepared for the Pavement Coatings Technology Council. Available at <https://www.scribd.com/document/343911349/Post-publication-peer-review-of-Mahler-et-al-2015>
- Exponent (2015b). *Review of: Exposure to Runoff from Coal-Tar-Sealed Pavement Induces Genotoxicity and Impairment of DNA Repair Capacity in the RTL-W1 Fish Liver Cell Line (Keinzler et al., 2015)*. Prepared for the Pavement Coatings Technology Council. 5p. Available at <https://www.scribd.com/document/343911904/Post-publication-peer-review-of-Kienzler-et-al-2015>
- O'Reilly, K. (2014) *Comment on Van Metre and Mahler 2014: "PAH Concentrations in Lake Sediment Decline Following Ban on Coal-Tar-Based Pavement Sealants in Austin, Texas."* Available at <https://www.scribd.com/document/343814884/O-Reilly-K-2014-Comment-on-Van-Metre-and-Mahler-2014-PAH-Concentrations-in-Lake-Sediment-Decline-Following-Ban-on-Coal-Tar-Based-Pavement-Seala> .
- O'Reilly, K. (2014). *Technical Evaluation of Van Metre and Mahler 2010*. Report prepared for PavementCouncil.org by Exponent. Available at <https://www.scribd.com/document/343815559/Technical-Evaluation-of-Van-Metre-and-Mahler-2010>
- Gauthier, T. (2014). *Review of Pavlowsky 2013*. Report prepared for PavementCouncil.org by Environ. Available at <https://www.scribd.com/document/343890840/Post-publication-peer-review-of-Pavlowsky-2013> Condensed version published as a comment in Physical Geography (Gauthier and DeMott, 2015).
- Magee, B. (2014). *PAH Vapor Emissions from Coal Tar Pavement Sealers*. Technical memorandum prepared by ARCADIS for the Pavement Coatings Technology Council, dated July 30. 5 p. Available at <https://www.scribd.com/document/343894751/PAH-Vapor-Emissions-from-Coal-Tar-Pavement-Sealers>
- Magee, B. and Keating-Connolly, J. (2013). *Peer Review of Coal-Tar-Sealed Pavement Risk Assessment*. Report prepared for PavementCouncil.org by ARCADIS. Available at <https://www.scribd.com/document/343808947/Peer-Review-of-Coal-Tar-Sealed->
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[Pavement-Risk-Assessment](#). Condensed version published as a comment in Environmental Science & Technology (Magee and Keating-Connolly, 2013).

DeMott, Robert, Thomas Gauthier and Michael Masonjones (2013). *Volatilization of PAHs from Coal-Tar-Sealed Parking Lots*. Report prepared for PavementCouncil.org by Environ. Available at <https://www.scribd.com/document/343894120/Post-publication-peer-review-of-Van-Metre-et-al-2012a-2012b>

[Environ International \(2010\). Review of “Coal-Tar-Based Parking Lot Sealcoat: An Unrecognized Source of PAH to Settled House Dust” by Mahler et al., published in Environmental Science and Technology, January 2010.](#) Report prepared for PavementCouncil.org by Environ. Available at <https://www.scribd.com/document/343811412/Review-of-Coal-Tar-Based-Parking-Lot-Sealcoat-An-Unrecognized-Source-of-PAH-to-Settled-House-Dust-by-Mahler-et-al-published-in-Environmental-Scie>

Environ (2006). Polycyclic Aromatic Hydrocarbon (PAH) Characteristics for Sediments Collected from Creeks and Streams in Austin, Texas. Report prepared for the Pavement Coatings Technology Center. 63 p. Available at <https://www.scribd.com/document/343808345/Polycyclic-Aromatic-Hydrocarbon-PAH-Characteristics-for-Sediments-Collected-from-Creeks-and-Streams-in-Austin-Texas>



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## Appendix 2: Reviews of Four Papers Relied on by EPA in 2 Disseminated Publications

In 2012, EPA disseminated information concerning RTS in two different forms. In July 2012, EPA disseminated information titled *Pavement sealants & PAHs*<sup>3</sup> as an example of potential impacts of urbanization on water/sediment quality in the Agency's *Causal Analysis/Diagnosis Decision Information System (CADDIS)*. Citing Mahler et al. (2005), the CADDIS document includes the statement "...these sealants can be significant sources of PAHs." The document also cites Scoggins et al. (2007), a survey of benthic macroinvertebrate assemblages in selected reaches of streams near parking lots to imply that RTS has "...adversely affect[ed] stream biota." Later that year, in November 2012, EPA issued a "Fact Sheet" titled *Stormwater Best Management Practice: Polycyclic Aromatic Hydrocarbons, Coal-Tar Sealcoat, and Stormwater Pollution*<sup>4</sup>. In these two publications concerning RTS, EPA cited the following four papers:

- Mahler, B. J., Van Metre, P., Bashara, T. J., Wilson, J. T., & Johns, D. A. (2005). Parking Lot Sealcoat: An Unrecognized Source of Urban Polycyclic Aromatic Hydrocarbons. *Environmental Science & Technology*, 39(15), 5560 - 5566. <https://doi.org/10.1021/es0501565>
- Mahler, B. J., Van Metre, P., Crane, J., Watts, A. W., Scoggins, M., & Williams, E. S. (2012). Coal-tar-based pavement sealcoat and PAHs: Implications for the environment, human health, and stormwater management. *Environmental Science & Technology*, 46(6), 3039- 3045. <https://doi.org/10.1021/es203699x>
- Scoggins, M., McClintock, N. L., Gosselink, L., & Bryer, P. (2007). Occurrence of polycyclic aromatic hydrocarbons below coal-tar-sealed parking lots and effects on stream benthic macroinvertebrate communities. *Journal of the North American Benthological Society*, 26(4), 694-707. <https://doi.org/10.1899/06-109.1>
- Van Metre, P., & Mahler, B. J. (2010). Contribution of PAHs from coal-tar pavement sealcoat and other sources to 40 U.S. lakes. *Science of the Total Environment*, 409, 334 - 344. <https://doi.org/10.1016/j.scitotenv.2010.08.014>

Following dissemination of the CADDIS document and "Fact Sheet," PCTC pursued available mechanisms to urge EPA to more thoroughly evaluate the science relied on by the Agency to develop these two documents. On April 16, 2014, PCTC submitted a Request for Correction (RfC) of the two documents, pursuant to EPA's Information Quality Guidelines. EPA designated

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<sup>3</sup> As of this writing, the URL is <https://www.epa.gov/caddis-vol2/caddis-volume-2-sources-stressors-responses-urbanization-water-and-sediment-quality> . A copy of the information disseminated in July 2012 is included as an exhibit in Information Quality Request for Correction #RFC 14003 available at <https://www.epa.gov/quality/epa-information-quality-guidelines-requests-correction-and-requests-reconsideration#14003>

<sup>4</sup> The November 2012 version of the "Fact Sheet" is available at <https://www.scribd.com/document/433159716/EPA-Stormwater-BMP-Concerning-RTS-Nov-2012-Version-superseded-Jan-2018>

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the request RFC #14003. On January 20, 2016, EPA responded, substantially denying the RfC. Subsequently, PCTC submitted a Request for Reconsideration (RfR) on April 13, 2016. The RfR requested both reconsideration of the RfC and a Scientific Integrity complaint, asking that the Agency's Science Integrity Officer review the science underlying the disseminated information. The Agency responded to the RfR on February 2, 2018, by re-affirming the previous substantial denial of the RfC. As is Agency procedure, information concerning the RfC and RfR is publicly available.<sup>5</sup>

In addition to EPA's formal responses to the RfC and RfR, on January 11, 2018, the Office of the Science Advisor addressed PCTC's Scientific Integrity complaint as follows:

EPA's Scientific Integrity Program does not arbitrate scientific disputes when there are differing scientific opinions, nor does it evaluate the quality and reproducibility of the scientific literature. Accordingly, this is not a violation of EPA's Scientific Integrity Policy.<sup>6</sup>

This letter mischaracterizes PCTC's complaint as a mere disagreement reflecting "different scientific opinion." To better understand published claims of environmental impacts of sealants, PCTC has expended significant resources consulting scientists with recognized subject area expertise. PCTC has also pursued release of data underlying the studies on which EPA has relied through Freedom of Information Act (FOIA) requests to the U.S. Geological Survey (USGS) and other means.<sup>7</sup>

In response to the communication with the ACS Committee on Ethics, the USGS released information on some of the data used in one of the papers (Mahler et al., 2005). This data and an email obtained in response to the FOIA request from Dr. Mahler to her co-authors and others strongly suggest that the data used to represent urban sediment PAH chemistry were specifically chosen to implicate RTS as the source of PAHs in the study area. Multiple subsequent studies funded by industry and separately by the City of Austin, Texas, demonstrate that the urban sediment samples used in Mahler et al. (2005) are not representative of urban sediment in the study area or elsewhere, resulting in conclusions that are not reproducible.

The USGS has chosen not to release other data requested by PCTC. In an attempt to obtain the data, PCTC filed a lawsuit<sup>8</sup> that has yet to be resolved.

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<sup>5</sup> RfC #14003, the subsequent RfR, and EPA correspondence concerning the requests are available at <https://www.epa.gov/quality/epa-information-quality-guidelines-requests-correction-and-requests-reconsideration#14003>

<sup>6</sup> Letter from Vincent Cogliano to Anne LeHuray dated January 11, 2018.

<sup>7</sup> Including a letter dated July 8, 2013, to the Committee on Ethics of the American Chemistry Society (ACS), publisher of the journal *Environmental Science and Technology* (ES&T).

<sup>8</sup> PCTC v. USGS. 2014. Complaint for injunctive relief. DDC Case 1:14-cv-01200KBJ, Washington DC.



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PCTC presented the details of the lack of transparency and irreproducibility of the four papers EPA relied on to develop the “Fact Sheet” and the CADDIS document in a March 15, 2018, letter to EPA.<sup>9</sup> A copy is included here as Attachment A.

Reviews of each of the four papers have also been made publicly available on PubPeer, a website dedicated to PPPR of science publications in any discipline. Links to the PPPR are as follows:

Mahler et al. (2005) <https://pubpeer.com/publications/62730EDFFC17A5F85CA9EB7FD04C24#fb42729>  
Scoggins et al. (2007) <https://pubpeer.com/publications/747B19A6260CA08B9CA4908177268A>  
Van Metre & Mahler (2010) <https://pubpeer.com/publications/BEE4406AC9EF33CF9E3E6C238F0EDF>  
Mahler et al. (2012) <https://pubpeer.com/publications/6B3C87FE52546C043F20BAC50ECFAC>

The four papers relied on by the Agency in its dissemination of information about RTS were published in the scientific literature. It is a feature of such publications, however, that the same authors continuously publish additional papers that rely on their earlier and, in this case, unwarranted conclusions. Hence, the irreproducible results based on non-transparent data contained in the four cited papers have propagated to almost all subsequent scientific literature on the topic.

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<sup>9</sup> Letter from Anne LeHuray to Vincent Cogliano dated March 15, 2018. (Attachment A)



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### Appendix 3: Reviews of Papers that Identify RTS as a Significant Source of PAHs in Sediment

Van Metre, P., Mahler, B., & Wilson, J. (2009). PAHs underfoot: contaminated dust from sealcoated pavements is widespread in the United States. *Environ Sci Technol*, 43, 20-25. DOI: 10.1021/es802119h

**Published Comment** <https://doi.org/10.1021/es200240g>

**PPPR** <https://pubpeer.com/publications/C3ADDD65D7FDDD9D8F3E06EC0B9A2A>

Pavlowsky, R. T. (2013). Coal-tar pavement sealant use and polycyclic aromatic hydrocarbon contamination in urban stream sediments. *Physical Geography*, 34(4-05), 392-415. DOI: <http://dx.doi.org/10.1080/02723646.2013.848393>

**Published Comment** <http://dx.doi.org/10.1080/02723646.2014.981779>

**PPPR** <https://pubpeer.com/publications/F886AEF6529AA9843114E710B1AC2D>

Crane, J. L. (2014). Source Apportionment and Distribution of Polycyclic Aromatic Hydrocarbons, Risk Considerations, and Management Implications for Urban Stormwater Pond Sediments in Minnesota, USA. *Arch Environ Contam Toxicol*, 66, 176–200. DOI: 10.1007/s00244-013-9963-8

**Published Comment** O'Reilly, K. (2015). Letter to the Editor concerning "Source apportionment and distribution of polycyclic aromatic hydrocarbons, risk considerations, and management implications for urban stormwater pond sediments in Minnesota, USA." *Archives of Environmental Contamination and Toxicology*. 68(1) pp 1-3.

<https://doi.org/10.1007/s00244-014-0094-7>.<sup>10</sup>

**PPPR** <https://pubpeer.com/publications/1BC1FF805A0E9DE96ADBA73AC443AD#fb43811>

Witter, A. E., Nguyen, M. H., Baidar, S., & Sak, P. B. (2014). Coal-tar-based sealcoated pavement: A major PAH source to urban stream sediments. *Environmental Pollution*, 185(0), 59-68. DOI: <http://dx.doi.org/10.1016/j.envpol.2013.10.015>

**Published Comment** O'Reilly, Kirk (2014). Response to authors' reply on "Coal-tar-based sealcoated pavement: A major PAH source to urban stream sediments" *Environmental Pollution* 191:264-265. <http://dx.doi.org/10.1016/j.envpol.2014.03.036>

**Published Comment** O'Reilly, Kirk (2014). Article Title Misstates the Role of Pavement Sealers. Letter to the Editor of *Environmental Pollution* 191:260-261 <http://dx.doi.org/10.1016/j.envpol.2013.11.029>

**PPPR** <https://pubpeer.com/publications/C95FA81213FD9D30144C36DD6D3DF9#fb44076>

Wilson, J. T. (2011). *Assessment of selected contaminants in streambed- and suspended-sediment samples collected in Bexar County, Texas, 2007–09*. Retrieved from <http://pubs.usgs.gov/sir/2011/5097/>

**PPR Report** <https://www.scribd.com/document/344996085/Post-publication-peer-review-of-USGS-San-Antonio-Report-Wilson-et-al-2011>

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<sup>10</sup> Letter to the editor was subject to the journal's peer review process.

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Baldwin, A. K., Corsi, S. R., Lutz, M. A., Ingersoll, C. G., Dorman, R., Magruder, C., & Magruder, M. (2016). Primary sources and toxicity of PAHs in Milwaukee-area streambed sediment. *Environmental Toxicology and Chemistry*, 36, 1622-1635. DOI:10.1002/etc.3694

**Published Comment** O'Reilly, K., and Ahn, S. (2017). Letter commenting on "Primary sources and toxicity of PAHs in Milwaukee-area streambed sediment"—To the editor: *Environmental Toxicology and Chemistry*, v. 36, p. 1978-1980.  
<https://doi.org/10.1002/etc.3825>

Valentyne, A., Crawford, K., Cook, T., & Mathewson, P. D. (2018). Polycyclic aromatic hydrocarbon contamination and source profiling in watersheds serving three small Wisconsin, USA cities. *Science of The Total Environment*, 627, 1453-1463. DOI:

<https://doi.org/10.1016/j.scitotenv.2018.01.200>

**PPR Report** <https://www.scribd.com/document/412388615/Post-Publication-Peer-Review-of-Valentyne-et-al-2018>

Norris, G, Henry R. 2019. Unmix Optimum analysis of PAH sediment sources. *Sci Tot Environ*. 673:831-838. DOI : <https://doi.org/10.1016/j.scitotenv.2019.03.227>

**Published Comment** O'Reilly, K.T., and Edwards, M. (2019). Letter to the Editor: Comment on Norris & Henry (2019). *Science of the Total Environment*. 704:135248.<sup>2</sup>  
<https://doi.org/10.1016/j.scitotenv.2019.135248>

**PPR Report** <https://www.scribd.com/document/430786734/Technical-review-comments-on-Norris-and-Henry-2019>



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#### Appendix 4: Reviews of Papers Concerning RTS in Stormwater Runoff

Watts, A. W., Ballesteros, T. P., Roseen, R. M., & Houle, J. P. (2010). Polycyclic Aromatic Hydrocarbons in Stormwater Runoff from Sealcoated Pavements. *Environmental Science & Technology*, 44, 8849 - 8854. doi: 10.1021/es102059r

**PPPR** <https://pubpeer.com/publications/D11E6D8EA68C093ACB155A821E5DFB>

Mahler, B. J., Ingersoll, C. G., Van Metre, P. C., Kunz, J. L., & Little, E. E. (2015). Acute Toxicity of Runoff from Sealcoated Pavement to *Ceriodaphnia dubia* and *Pimephales promelas*. *Environmental Science & Technology*, 49(8), 5060-5069. doi:10.1021/acs.est.5b00933

**PPR Report** <https://www.scribd.com/document/343911349/Post-publication-peer-review-of-Mahler-et-al-2015>

**PPPR** <https://pubpeer.com/publications/CA5E52B5AD1819E468B800DB24D261>

Kienzler, A., Mahler, B. J., Van Metre, P. C., Schweigert, N., Devaux, A., & Bony, S. (2015). Exposure to runoff from coal-tar-sealed pavement induces genotoxicity and impairment of DNA repair capacity in the RTL-W1 fish liver cell line. *Science of The Total Environment*, 520(0), 73-80. <http://dx.doi.org/10.1016/j.scitotenv.2015.03.005>

**PPR Report** <https://www.scribd.com/document/343911904/Post-publication-peer-review-of-Kienzler-et-al-2015>

**PPPR** <https://pubpeer.com/search?q=10.1016%2Fj.scitotenv.2015.03.005>



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**Appendix 5: Reviews of Papers that Identify RTS as a Significant Source of Air Emissions**

Van Metre, P., Majewski, M. S., Mahler, B., Foreman, W. T., Braun, C. L., Wilson, J. T., & Burbank, T. L. (2012). Volatilization of polycyclic aromatic hydrocarbons from coal-tar-sealed pavement. *Chemosphere*, 88(1), 1 - 7. doi:10.1016/j.chemosphere.2011.12.072

**PPR Report** <https://www.scribd.com/document/343894120/Post-publication-peer-review-of-Van-Metre-et-al-2012a-2012b>

**Additional Evaluation of Air Emissions**

<https://www.scribd.com/document/343894751/PAH-Vapor-Emissions-from-Coal-Tar-Pavement-Sealers>

**PPPR** <https://pubpeer.com/publications/456CA525683D444D8AE75DB9E88554>

Van Metre, P. C., Majewski, M. S., Mahler, B. J., Foreman, W. T., Braun, C. L., Wilson, J. T., & Burbank, T. L. (2012). PAH volatilization following application of coal-tar-based pavement sealant. *Atmospheric Environment*, 51, 108-115. doi:10.1016/j.atmosenv.2012.01.036

**PPR Report** <https://www.scribd.com/document/343894120/Post-publication-peer-review-of-Van-Metre-et-al-2012a-2012b>

**Additional Evaluation of Air Emissions**

<https://www.scribd.com/document/343894751/PAH-Vapor-Emissions-from-Coal-Tar-Pavement-Sealers>

**PPPR** <https://pubpeer.com/publications/CA40960B6C69C2994FF752D7460484>

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**Appendix 6: Reviews of papers on the Effectiveness of Bans**

Van Metre, P. C., & Mahler, B. J. (2014b). PAH Concentrations in Lake Sediment Decline Following Ban on Coal-Tar-Based Pavement Sealants in Austin, Texas. *Environmental Science & Technology*. doi:10.1021/es405691q

**Published Comment** <http://dx.doi.org/10.1021/es5046088>

**Additional Comment** <https://www.scribd.com/document/343814884/O-Reilly-K-2014-Comment-on-Van-Metre-and-Mahler-2014-PAH-Concentrations-in-Lake-Sediment-Decline-Following-Ban-on-Coal-Tar-Based-Pavement-Seala>

**PPPR** <https://pubpeer.com/publications/DEC6835FF61E589EB95C8597944A7F>

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**Appendix 7: Reviews of Human Exposure and Health Risk Assessment Papers**

Mahler, B. J., Van Metre, P., Wilson, J. T., Musgrove, M., Burbank, T. L., Ennis, T. E., & Bashara, T. J. (2010). Coal-tar-based parking lot sealcoat: an unrecognized source of PAH to settled house dust. *Environmental Science & Technology*, 44, 894 - 900. doi:10.1021/es902533r

**PPR Report** <https://www.scribd.com/document/343811412/Review-of-Coal-Tar-Based-Parking-Lot-Sealcoat-An-Unrecognized-Source-of-PAH-to-Settled-House-Dust-by-Mahler-et-al-published-in-Environmental-Scie>

**PPPR** <https://pubpeer.com/publications/F7AA69C873AB96CA862322CF1929BF#fb42838>

Williams, E. S., Mahler, B. J., & Van Metre, P. (2013). Cancer Risk from Incidental Ingestion Exposures to PAHs Associated with Coal-Tar-Sealed Pavement. *Environmental Science & Technology*, 47, 1101 - 1109. doi: dx.doi.org/10.1021/es303371t

**Published Comment** <https://doi.org/10.1021/es404184g>

**PPR Report** <https://www.scribd.com/document/343808947/Peer-Review-of-Coal-Tar-Sealed-Pavement-Risk-Assessment>

**PPPR** <https://pubpeer.com/publications/5EBEB3ACD53C7F2FF65624EC6DDA58>



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**Appendix 8: Reviews of Ecological Risk Assessment Papers**

- Bommarito T, Sparling DW, and Halbrook RS. 2010a. Toxicity of coal-tar pavement sealants and ultraviolet radiation to *Ambystoma maculatum*. *Ecotoxicology*. 19:1147–1156.  
**Published Literature Review** <https://setac.onlinelibrary.wiley.com/doi/10.1002/ieam.4210>
- Bommarito T, Sparling DW, Halbrook RS. 2010b. Toxicity of coal-tar and asphalt sealants to eastern newts, *Notophthalmus viridescens*. *Chemosphere*. 81:187–193.  
**Published Literature Review** <https://setac.onlinelibrary.wiley.com/doi/10.1002/ieam.4210>
- Bryer PJ, Scoggins M, McClintock NL. 2010. Coal-tar based pavement sealant toxicity to freshwater macroinvertebrates. *Environmental Pollution*. 158:1932–1937.  
**Published Literature Review** <https://setac.onlinelibrary.wiley.com/doi/10.1002/ieam.4210>
- Kienzler, A., Mahler, B. J., Van Metre, P. C., Schweigert, N., Devaux, A., & Bony, S. (2015). Exposure to runoff from coal-tar-sealed pavement induces genotoxicity and impairment of DNA repair capacity in the RTL-W1 fish liver cell line. *Science of The Total Environment*, 520(0), 73-80. <http://dx.doi.org/10.1016/j.scitotenv.2015.03.005>  
**Published Literature Review** <https://setac.onlinelibrary.wiley.com/doi/10.1002/ieam.4210>  
**PPR Report** <https://www.scribd.com/document/343911904/Post-publication-peer-review-of-Kienzler-et-al-2015>  
**PPPR** <https://pubpeer.com/search?q=10.1016%2Fj.scitotenv.2015.03.005>
- Mahler, B. J., Ingersoll, C. G., Van Metre, P. C., Kunz, J. L., & Little, E. E. (2015). Acute Toxicity of Runoff from Sealcoated Pavement to *Ceriodaphnia dubia* and *Pimephales promelas*. *Environmental Science & Technology*, 49(8), 5060-5069.  
doi:10.1021/acs.est.5b00933  
**Published Literature Review** <https://setac.onlinelibrary.wiley.com/doi/10.1002/ieam.4210>  
**PPR Report** <https://www.scribd.com/document/343911349/Post-publication-peer-review-of-Mahler-et-al-2015>  
**PPPR** <https://pubpeer.com/publications/CA5E52B5AD1819E468B800DB24D261>
- McIntyre, J. K., Edmunds, R. C., Redig, M. G., Mudrock, E. M., Davis, J. W., Incardona, J. P., . . . Scholz, N. L. (2016). Confirmation of Stormwater Bioretention Treatment Effectiveness Using Molecular Indicators of Cardiovascular Toxicity in Developing Fish. *Environmental Science & Technology*, 50(3), 1561-1569. doi:10.1021/acs.est.5b04786  
**Published Literature Review** <https://setac.onlinelibrary.wiley.com/doi/10.1002/ieam.4210>  
**PPR Report** <https://www.scribd.com/document/343915511/Post-publication-peer-review-of-McIntyre-et-al-2016>  
**PPPR** <https://pubpeer.com/publications/C88B631B21F39FC5D2BC017A6473A0>
- Scoggins, M., McClintock, N. L., Gosselink, L., & Bryer, P. (2007). Occurrence of polycyclic aromatic hydrocarbons below coal-tar-sealed parking lots and effects on stream benthic macroinvertebrate communities. *Journal of the North American Benthological Society*, 26(4), 694-707. <https://doi.org/10.1899/06-109.1>  
**Published Literature Review** <https://setac.onlinelibrary.wiley.com/doi/10.1002/ieam.4210>
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**PPPR** <https://pubpeer.com/publications/747B19A6260CA08B9CA4908177268A>

Titaley, I. A., Chlebowski, A., Truong, L., Tanguay, R. L., & Massey Simonich, S. L. (2016). Identification and Toxicological Evaluation of Unsubstituted PAHs and Novel PAH Derivatives in Pavement Sealcoat Products. *Environmental Science & Technology Letters*. doi:10.1021/acs.estlett.6b00116

**Published Literature Review** <https://setac.onlinelibrary.wiley.com/doi/10.1002/ieam.4210>

**Published Comment** <https://pubs.acs.org/doi/pdfplus/10.1021/acs.estlett.6b00360>

**PPPR** <https://www.scribd.com/document/344420340/Post-publication-peer-review-of-Titaley-Et-Al-2016-Aug-4-2016>

# ATTACHMENT A

Letter to Dr. V. Cogliano (EPA Office of the Science Advisor) from Dr. A. LeHuray (Pavement Coatings Technology Council) dated Marcy 15, 2018





**TO:** Assembly Committee on Transportation  
**FROM:** Heather Paradis, MD, Medical Director, Community Services, Children's Wisconsin  
**DATE:** Tuesday, February 4, 2020  
**RE:** Support for AB 797 to prohibit the sale and use of coal tar-based sealants and high PAH sealant products

Good morning Chairman Kulp & Members of the Assembly Committee on Transportation. My name is Dr. Heather Paradis and I am a practicing pediatrician and the Medical Director of Community Services at Children's Wisconsin. Thank you for holding this hearing today and allowing me this opportunity to testify today in support of AB 797 to prohibit both the sale and use of coal tar-based sealants and high PAH sealant products. PAHs (polycyclic aromatic hydrocarbons) create a significant concern for children's health and well-being. We believe this bipartisan proposal introduced as part of the Speaker's Task Force on Water Quality represents an effective way to control PAH and tar-based sealant contamination.

As many of you know, Children's is the state's only independent health care system dedicated solely to the health and well-being of children. We serve children and families in every county across the state, and care for every part of a child's health. This is why we support legislation like that proposed in AB 797.

PAHs, formed from combustion activities associated with tar-based sealants, deposit in soil where they can be ingested, absorbed into crops, or leached into water. When coal tar sealants break down and wear off over time, PAH-contaminated particles are dispersed throughout the outdoor environment by wind and storm water runoff. Those particles are also tracked into homes on the soles of shoes. Due to the constant wearing away, pavement sealants need to be reapplied every few years. This creates a constant reintroduction of PAHs to the environment, where they accumulate in soil, waterbody sediment and house dust that can be incidentally ingested. Children, especially very young children who play on or near these driveways or parking lots, are particularly susceptible to the risk of PAH exposure from these sealants because they are more likely to ingest contaminated dust and soil.

Significant evidence from peer-reviewed studies shows that children living near parking lots which have been treated with pavement sealants containing high levels of PAHs have an excess lifetime cancer risk that is **14x higher** due to exposure to contaminated dust and soil than those living near unsealed parking lots. In addition to increasing the risk for cancer, exposure to PAHs has been linked to ADHD-like behaviors, impaired cognitive development, and damage to developing fetal brains.

At Children's, we care for the most vulnerable kids and it is our mission to keep them safe and healthy. The disturbing scientific and medical evidence tying PAHs to increased risks of birth defects, cognitive delays and cancer causes pediatric medical providers great concern.

We are pleased the Legislature is considering this policy and encourage you to follow the steps of local municipalities in adopting a statewide ban on high-PAH sealants to protect kids, regardless of where they live. This will serve as a tangible step to stop the use of a known and controllable substance that damages children's health.

Chairman Kulp and committee members, I thank you again for the opportunity to testify in support of AB 797. I am happy to answer any questions now.

If you have any questions, comments or concerns after the hearing, please feel free to contact me via email at [hparadis@chw.org](mailto:hparadis@chw.org) or via phone at 414-337-6916.

TO: Assembly Committee on Transportation  
 FROM: Heather Paradis  
 DATE: Tuesday, February 4, 2020  
 RE: Support for AB 797 to prohibit the sale and use of coal tar-based sealants and high PAH sealant products

Good morning Chairman Kulp & members of the Assembly Committee on Transportation. My name is Dr. Heather Paradis and I am a pediatric pediatrician and the Medical Director of Community Services at Children's Wisconsin. Thank you for holding this hearing today and allowing me this opportunity to testify today in support of AB 797 to prohibit both the sale and use of coal tar-based sealants and high PAH sealant products. PAHs (polycyclic aromatic hydrocarbons) create a significant concern for children's health and well-being. We believe this bipartisan proposal introduced as part of the speaker's Task Force on Water Quality represents an effective way to control PAH and tar-based sealant contamination.

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Health Effects of Coal Tar Sealant and Specific Vulnerabilities of Children  
Testimony to Assembly Committee on Transportation  
Elizabeth J. Neary, MD, MS, FAAP  
Wisconsin Environmental Health Network  
February 4, 2020

Good morning, Chairman Kulp and committee members. My name is Dr. Elizabeth J. Neary and I am a pediatrician. I am a member of the Wisconsin Environmental Health Network, a group of physicians dedicated to addressing environmental issues that directly affect human health. I am speaking in support of AB 797 to prevent the sale and use of coal tar-based sealants and high PAH sealant products.

“Coal tar and coal-tar pitch, both used in sealcoat products, have extremely high concentrations of PAHs, and both are classified as known human carcinogens. Coal-tar-based sealcoat products typically are 20 to 35 percent coal tar or coal-tar pitch. Asphalt and asphalt-based sealcoat products have much lower concentrations of PAHs.” This quote is from the official fact sheet from the United States Geological Survey (USGS), Dept of Interior (Ref 1).

Coal tar and coal-tar pitch are listed as Group 1 (carcinogenic to humans) carcinogens. Coal tar itself is a powerful mutagen. The mutagenicity index for coal tar is about 1000 times that of asphalt cements. (Ref 3)

The following illustration (Ref 1) demonstrates the various ways that the sealcoat breaks down, creating particles that can travel by air, wind, rain, friction by car tires and our own feet. These carcinogenic particles can enter the household via shoes and become embedded in carpeting and become part of the household dust. Children are at the highest risk of exposure for a variety of reasons: they spend time closer to the ground, they have different absorption and metabolism, and they have unique exploratory behaviors. Toddlers crawl on the floor and often put their fingers in their mouth. The average child puts their hand to their mouth 35 times/hour (with a range of 16 - 129 times/hour) (Ref. 2) A study of house dust of ground-floor apartments with parking lots sealed with a coal-tar-based product had levels of PAH that were 25 times higher than in house dust of apartments with parking lots sealed with other surface types. (Ref 1)

The health impact of exposure is greater in children as compared to adults because of the smaller size of child and the fact that their organs are in a rapid state of growth and development.

To ban the sale of these known carcinogens and mutagens is a prudent and reasonable approach to protect human health, but especially to protect the health of the most vulnerable - our children.



- 1) Mahler, B.J., Woodside, M.D., and VanMetre, 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>.
- 2) Ko, S et al. Video assessments of touching and mouthing behaviors. *Journal of Exposure Science and Environmental Epidemiology* (2007)17, 47–57.
- 3) Mahler BJ, Metre PC, Crane JL, Watts AW, Scoggins M, Williams ES. Coal-tar-based pavement sealcoat and PAHs: implications for the environment, human health, and stormwater management. *Environ Sci Technol*. 2012;46(6):3039–3045. doi:10.1021/es203699x

