Anne Arundel County_FAV_HB77.pdf
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ANNE ARUNDEL COUNTY
MARYLAND
County Executive Steuart Pittman

March 24, 2021

House Bill 077
Environment – Application of Coal Tar Pavement Products – Prohibitions
(Safer Sealant Act of 2021)
Senate Environment, Health, and Environmental Affairs Committee

Position: FAVORABLE

Anne Arundel County joined other Maryland counties in banning[1] the sale and use of coal tar pavement products in 2015 for the very same reasons that this bill is being heard today. These products are a known source of polycyclic aromatic hydrocarbons (PAHs) which pose significant health risks to human and aquatic life.

According to a 2016 report by the USGS[2], PAHs wear down into small particles that can be tracked into homes on the soles of shoes and can become part of the home's airborne dust. Exposure to PAHs has been linked to an increased risk of lung, skin, bladder and respiratory cancers in humans, with children being especially vulnerable to exposure and health risks.

PAHs are also present in stormwater runoff from pavement that has been sealed with coal tar products. This runoff enters our waterways for months following application to a surface, and has been shown to be significantly toxic to aquatic life. Once in the water, these PAHs can become incorporated into bottom sediments posing a long-term risk to fishing resources in our rivers and the Chesapeake Bay.[3]

Finally, as many counties across Maryland have already demonstrated, risks from coal tar pavement products are entirely avoidable. Anne Arundel County has published a non-exhaustive list of fifteen alternative pavement sealant products[4] that do not contain coal, and thus pose far less risk to human health and the environment.

For all these reasons, Anne Arundel County urges a favorable vote on HB 077.

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[1] Anne Arundel County. 2015. Bill No. 104-15: Stormwater Management – Coal Tar Pavement Products – Prohibition. https://www.aacounty.org/departments/county-council/legislation/bills-and-resolutions/FF583A00F99A4A41F59F476736E2375B.pdf.
[2] USGS. 2016. Coal-tar-based pavement sealcoat – Potential concerns for human health and aquatic life. https://pubs.er.usgs.gov/publication/fs20163017.
[3] Chesapeake Bay Program. 2012. Technical Report: Toxic Contaminants in the Chesapeake Bay and its Watershed. https://federalleadership.chesapeakebay.net/ChesBayToxics_finaldraft_11513b.pdf.
[4] Anne Arundel County. 2016. Coal Tar Free Alternative Products List. https://www.aacounty.org/departments/inspections-and-permits/site-inspections/coal-tar-pavement-ban/.

HB77_CoalTarFreeAmerica.pdf
Uploaded by: Ennis, Tom
Position: FAV

Coal Tar FREE AMERICA

TESTIMONY FOR HB 0077

March 22, 2021

Maryland Senate Education, Health, and Environmental Affairs Committee

Dear Senators:

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

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.[1] That's why the AMA supports the elimination of this product.[2]

It is also why Morgan State University found that Chesapeake Bay oysters are affected by the chemicals from this product and said,

> *This study's results provide evidence that PAHs entering an aquatic ecosystem from runoff from road surfaces have the potential to inhibit oyster reproduction by negatively impacting three critical processes in the early life cycle of the Eastern oyster.*[3]

The SUPPORT is clear. Local government restrictions on this product apply to more than 40% of Maryland's population. It is time to make that 100%. A map showing these bans is at the footnoted link.[4]

The SUPPLY is ready. Non-toxic sealers are numerous and similar in quality and price.[5]

In 2007 Home Depot and Lowes stopped selling coal tar products because of their liability.[6] I hope that Maryland will heed the advice of a Councilmember from Montgomery County: "*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."*

Attached are responses to claims made by industry in opposition to this legislation.

If I can answer any of your questions, please don't hesitate to reach me at coaltarfreeamerica@gmail.com.

Sincerely,

Thomas E. Ennis, PE, LEED AP

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[1] https://www.scribd.com/doc/282979737/Hyperlinked-Coal-Tar-Sealer-Research-2015
[2] https://www.ama-assn.org/press-center/press-releases/ama-urges-legislation-ban-dangerous-coal-tar-sealcoats
[3] https://rosap.ntl.bts.gov/view/dot/24488
[4] https://www.arcgis.com/home/webmap/viewer.html?webmap=5b2684d1744b4b73b9beb0e4b899b2d2
[5] https://coaltarfreeusa.com/p/
[6] https://coaltarfreeusa.com/2017/02/top-5-business-reasons-to-stop-the-use-of-coal-tar-sealers/

Answers to Recent Coal Tar Sealcoat Industry Claims Made During Assembly Committee Hearing

By Tom Ennis, PE, LEED AP

Coal Tar Free America

Industry Claims Damage Done to Sealcoat Industry

Industry says that a ban will do irreparable harm to business.

However this is not what a recent market research company found. They confirmed what one CEO of a sealer company said a few years ago***: bans really won't hurt the sealcoat business.***

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…"*
>
> *"Transparency Market Research projects that the sealers market in North America will rise from a value of US$405.7 million in 2015 to US$609.3 million by 2024…"*

http://www.transparencymarketresearch.com/north-america-sealers-market.html

Industry Claims No Health Effects for Sealcoat Workers

The sealer industry is fond of saying how safe their product is for worker safety. No evidence, no claims, no one harmed.

Even during this spring's legislative season, the statements have continued. Our position has been that it is faulty logic to claim a statement as true without any comprehensive analysis to support it. And there are plenty of cases of harm.

In 2014 a law firm from Buffalo, New York dispelled that myth in their quarterly newsletter. The firm garnered a "substantial settlement" for the heirs of a man who worked for 34 years making coal tar containing pavement products. He died a year after discovering he had lung cancer.

Here's the link to read the entire sad story: https://www.lipsitzponterio.com/newsroom-newsletter-item-27.html

I know of a case of an applicator of coal tar who died of cancer, but demanded an autopsy upon his death. The physician said his chest smelled like creosote when he opened him up.

USA Today even wrote about one area sealcoater who had to switch to a non-coal tar product after experiencing dizziness and panic attacks. His symptoms improved after switching products.

https://www.usatoday.com/story/money/business/2013/06/16/toxic-driveways-cities-states-ban-coal-tar-pavement-sealants/2028661/

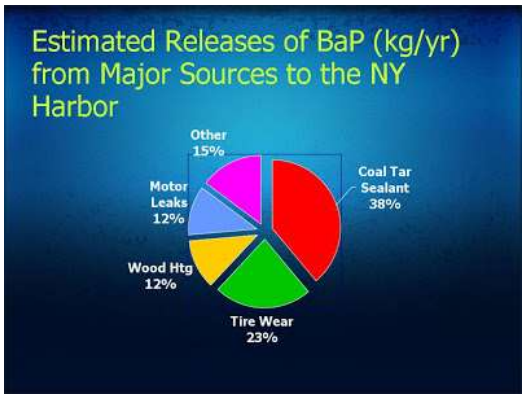
Other cases I have heard of is skin burns, PAH-related eye swelling (like pink eye), and even bleeding from the eyes. Yes these are anecdotal, but without a comprehensive study that is all we have.

We also know that PAH exposure can affect sperm count in men.

By the way, did you know that the many retired United Steelworkers are tested for cancers after being exposed to coal tar? https://m.usw.org/publications/usw-at-work/pdfs/SOAR-Spr12web.pdf

Industry Claims PAHs are not a Problem in Maryland Water Quality Reports

Industry wants to avert the attention away from the heart of the problem: the greatest exposures take place in and near a sealed surface, not at some distance away. The risk to children playing on a sealed surface is about the same as exposure to secondhand smoke. The further away from the source, the more dilute and less risk.



Also Morgan State University found that Chesapeake Bay oysters are affected by the chemicals from this product and said,

> *This study's results provide evidence that PAHs entering an aquatic ecosystem from runoff from road surfaces have the potential to inhibit oyster reproduction by negatively impacting three critical processes in the early life cycle of the Eastern oyster.*
>
> https://rosap.ntl.bts.gov/view/dot/24488

They also cited the New York Academy of Sciences Harbor Study to show that PAHs are not a problem. However they didn't mention that same study found that 38% of the most toxic PAHs come from coal tar sealers.

Industry Claims Coal Tar Sealers are Not Classified as a Carcinogen

This is completely misleading. Ruling bodies like the International Agency for Research on Cancer (IARC) typically classify chemicals as carcinogens, not products. Sealers are mixtures of chemicals and inert ingredients—a product. Coal tar is a known human carcinogen.

However a cancer researcher, Dr. Robyn Fuchs-Young stated at a public hearing on coal tar sealers:

“These coal tar sealers are essentially big buckets of carcinogen…”

"The increased cancer risk associated with coal-tar-sealed asphalt likely affects a large number of people in the US,"

says E. Spencer Williams, PhD, assistant research scientist at Baylor University's Center for Reservoir and Aquatic Systems Research (now with the CDC).

https://www.sciencedaily.com/releases/2013/03/130328125236.htm

Industry Claims Wine is Worse for You than Coal Tar Sealers

Strange that industry would cherry-pick an analysis from Environment Canada where the ultimate recommendation was to ban the product. More precisely they found after they reviewed the entirety of the literature that coal tar sealers meet the legal threshold to ban the product.

Industry was caught citing this study by the Village President of Wilmette a few years ago. When asked why they didn’t quote the conclusion and only this analysis they said because they don’t agree with it. Here’s the statement they ignored:

“The MOE [risks] associated with ingestion of house dust by children is considered potentially inadequate to protect these susceptible subpopulations.”

Here is their concluding statement:

“Overall the evidence appears to support your conclusions that coal tars and their distillates meet the criteria under paragraph 64c of CEPA and they are entering the environment in a quantity or concentration or under conditions that may constitute or may constitute a danger in Canada to human life or health.”

This MOE value will take a little more analysis in the future but these facts remain:

1. Canada found sufficient grounds to ban coal tar sealers
2. Cancer is not the only problem caused by PAHs from sources like coal tar sealers. They cause birth defects, learning disorders, behavior problems and trigger asthma. Not exactly safe.
3. **Consuming alcohol is a voluntary choice, but being exposed to coal tar sealers is not.**

Here is a link to the Canadian study: http://www.ec.gc.ca/ese-ees/default.asp?lang=En&n=E34B0A52-1

Industry Claims Studies are only Done on Individual PAHs

This is a complete fabrication. There are literally thousands of studies on the health effects PAHs as mixtures. The first one was done over 100 years ago by painting coal tar on the ears of rabbits. After putting coal tar on the ears of 101 rabbits every 3 days, they all had cancer in 5 months.

http://cancerres.aacrjournals.org/content/jcanres/3/1/1.full.pdf

CLA-WKC_JointTestimonyInFavor_HB77.pdf
Uploaded by: Johnson, Esq., Morgan
Position: FAV

Testimony in Support of House Bill 77
(Delegate Stewart)
Environment - Driveway Sealers - Prohibitions (Safer Sealant Act of 2021)

March 24, 2021

Dear Chairman Pinsky and Members of the Committee:

Thank you for this opportunity to submit testimony in support of House Bill 77 on behalf of Chesapeake Legal Alliance and Waterkeepers Chesapeake, two organizations working to protect and restore the Chesapeake Bay and the health of its communities.

We write to express our resounding support for this key bill which would prohibit a person from applying a coal tar sealant to pavement or a similar surface if it contains specified high levels of polycyclic aromatic hydrocarbons (PAH). Coal-tar-sealcoat contains elevated levels of PAHs and is commonly applied to parking lots, driveways, and some recreational areas across the central and eastern parts of the United States. Coal-tar-sealcoat is dangerous to the environment and to human health. Safer alternatives are readily available and are already sold throughout the state. Similar bans already exist in Anne Arundel, Montgomery, Prince George's, and Howard Counties, as well as Washington, D.C., Minnesota, Maine, Washington, and more than thirty local governments around the country.[1] This ban should be extended statewide in Maryland.

Coal-tar-sealcoat poses a threat to human health and the environment.
Friction from vehicle tires erodes sealcoat into small particles that can be tracked indoors or washed down storm drains, and into streams, potentially harming human and aquatic life in and around the Bay.

The U.S. Geological Survey (USGS), which has been studying the issue for years, has made the following key findings regarding the harmful effects of these products:

> **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.

[1] See https://coaltarfreeusa.com/bans-2/

Exposure to PAHs, especially early in childhood, has been linked by health professionals to an increased risk of lung, skin, bladder, and respiratory cancers.

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.[2]

Coal tar sealants are one of the largest sources of PAHs in municipal separate storm sewer (MS4) discharges. According to the USGS, coal-tar-based sealcoat contains from 50,000 to 100,000 mg/Kg PAHs, about 1,000 times higher than PAH concentrations in asphalt-based sealcoat products, and hundreds of times higher than PAH concentrations in tire particles, used motor oil, or other urban sources.[3] More than 85 million gallons of coal tar pavement sealants are sold nationwide each year.[4] In 2011, the U.S. EPA released a study confirming that coal tar pavement sealants release hundreds of times more PAHs into the environment than other kinds of sealant.[5] Recent studies by the USGS have found that coal tar sealants emit more PAHs into the air every year than the entire U.S. vehicle fleet, that these sealants are the largest source of PAH contamination in urban lakes, and that the use of coal tar sealant "likely is the primary cause of upward trends in PAHs in response to urban sprawl in much of the United States."[6]

Coal tar sealant use dramatically increases the cost to MS4s of managing, remediating, or disposing of polluted sediments and street sweeping debris. In

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[2] USGS, Coal-Tar-Based Pavement Sealcoat—Potential Concerns for Human Health and Aquatic Life, Fact Sheet 2016-3017 (April 2016) (see enclosure).

[3] USGS, "You're Standing On It! Health Risks of Coal-Tar Pavement Sealcoat" (2013), available at: http://www.usgs.gov/blogs/features/usgs_top_story/youre-standing-on-ithealth-risks-of-coal-tar-pavement-sealcoat/

[4] *See* Cheryl Hogue, "Dustup Over Pavement Coatings; Texas city tracks stream pollution to sealant, then bans coal-tar-based coating" 85 *Chem. & Eng'g News* 61 (2007), available at http://pubs.acs.org/cen/government/85/8507gov1.html.

[5] Assessment of Water Quality of Runoff From Sealed Asphalt Surfaces, EPA, September 2011, available at *www.epa.gov/ORD/NRMRL/pubs/600r10178/600r10178.pdf*

[6] See Peter C. Van Metre, Barbara J. Mahler, "Contribution of PAHs from coal–tar pavement sealcoat and other sources to 40 U.S. lakes," 409 *Science of the Total Environment* 334, 342 (2010)

Texas, the City of Austin spent over $1 million to treat soils contaminated with PAHs from just three parking lots.[7] City engineers in Springfield, Missouri calculated that the cost of removing coal tar sealant contaminated sediments from the City's detention basins could exceed $130 million.[8] And Minnesota state officials estimate that sediment disposal cost increases attributable to PAHs from coal tar sealants in the Twin Cities area may exceed $1 billion.[9] For a state the size of Maryland, it is not unreasonable to think that the total potential cost to MS4s from these sealants could reach into the hundreds of millions or billions of dollars.

Banning high-PAH sealants makes economic sense.
By banning the use of high-PAH sealants, the state legislature could drive reductions in sediment PAH concentrations that ultimately save Maryland municipalities hundreds of millions of dollars in avoided remediation and disposal costs. The evidence shows that banning coal tar sealants works. In recent years, the USGS has published data proving that a ban on coal tar sealants can have a significant impact on PAH concentrations in receiving waters. The City of Austin banned coal tar sealants in 2006. USGS compared PAH concentrations in sediment cores and bottom sediment samples collected from Austin's Lady Bird Lake, between 1998 and 2014. The USGS found that Austin's coal tar ban led to a decline of about 50% in PAH concentrations and reversed a 40 year upward trend in PAH concentrations.[10]

Safe and affordable alternatives are readily available.
There are safe and affordable alternatives to high-PAH and coal tar sealants, principally asphalt based sealants and acrylic sealants. Asphalt and coal tar sealants are basically equivalent in cost and performance and are often sold side-by-side. In jurisdictions where coal tar sealants have been banned, cities, businesses and landowners have found easy and effective replacements.

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[7] *See* Kevin Carmody, "Barton Creek cleanup costs rise; Projected price tag for tending to tainted soil jumps to $1.1 million," *Austin American-Statesman*, Wed. Dec. 31, 2003. Available at: http://www.statesman.com/specialreports/content/specialreports/bartonsprings/1231barton.html

[8] *See* Jess Rollins, "Cost of Coal Tar Concerns Springfield Councilman," *Springfield News-Leader* (Feb. 22, 2014), http://www.news-leader.com/article/20140223/NEWS06/302230064/coal-tar-Springfield-councilman-Hosmer

[9] Mahler, B.J.; Van Metre, P.C.; Crane, J.L.; Watts, A.W.; Scoggins, M.; Williams, E.S., "Coal-tar-based pavement sealcoat and PAHs: Implications for the environment, human health, and stormwater management," 46(6) *Environ. Sci. & Technol.* 3039, 3043(2012).

[10] Peter C. Van Metre and Barbara J. Mahler, "PAH Concentrations in Lake Sediment Decline Following Ban on Coal-Tar-Based Pavement Sealants in Austin, Texas."

The Chesapeake Bay is a unique and precious resource, and the use of coal tar-based sealants in Maryland pose a threat to the Bay watershed's environment, biodiversity and the health of its residents. A statewide ban on coal tar sealants would best serve the Chesapeake Bay and surrounding communities.

Our organizations are presently involved in advocating for a stronger industrial stormwater permit in Maryland. In conversations with the Maryland Department of Environment, we have learned that it does not want to include provisions to protect Marylanders from PAHs because several local bans already exist and they do not believe they should be getting ahead of the legislature on this issue. Therefore, critical protections from Marylanders await legislative action.

For all of these reasons, we urge a favorable report on House Bill 77.

Respectfully Submitted,

Elizabeth Nicholas
Executive Director
Waterkeepers Chesapeake

Morgan A. Johnson, Esq.
Staff Attorney
Waterkeepers Chesapeake

Angela Haren
Senior Attorney, Director of Legal Innovation
Chesapeake Legal Alliance

Enclosure: USGS Coal Tar Fact Sheet

USGS
science for a changing world

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.[1]

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.[2]

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.

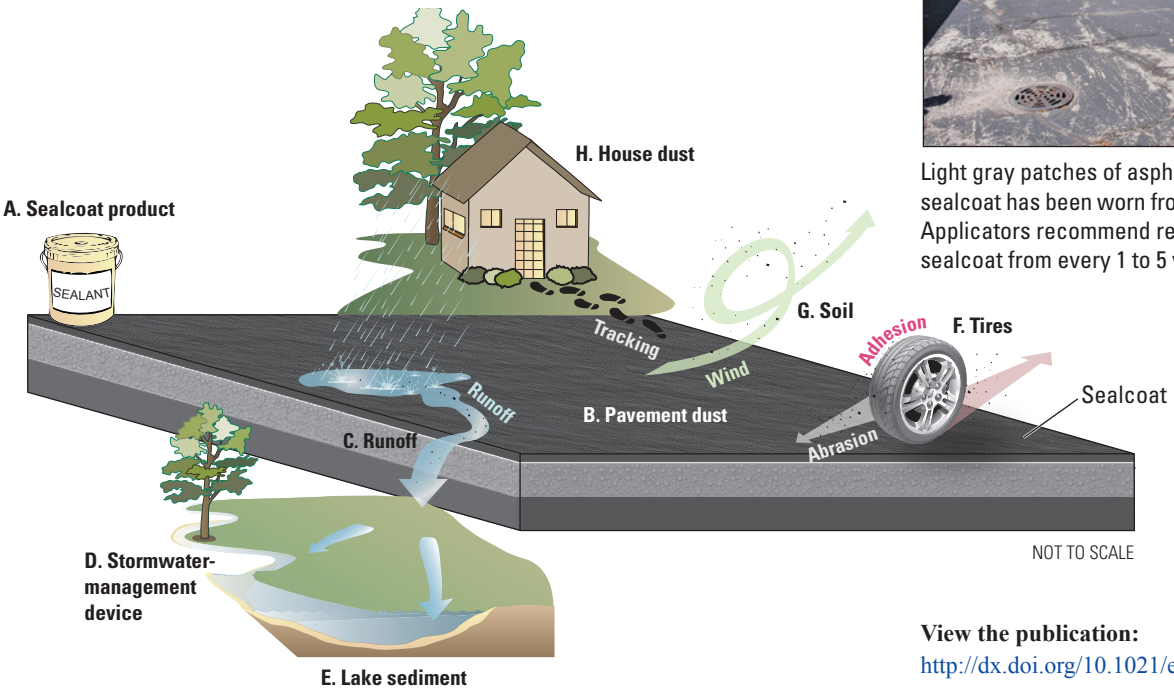
U.S. Department of the Interior
U.S. Geological Survey

Printed on recycled paper

Fact Sheet 2016–3017
April 2016

As Sealcoat Wears Off, Where Does It Go?

Light gray patches of asphalt show where sealcoat has been worn from the pavement. Applicators recommend reapplication of sealcoat from every 1 to 5 years.[1]



View the publication:
http://dx.doi.org/10.1021/es203699x

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).[1]

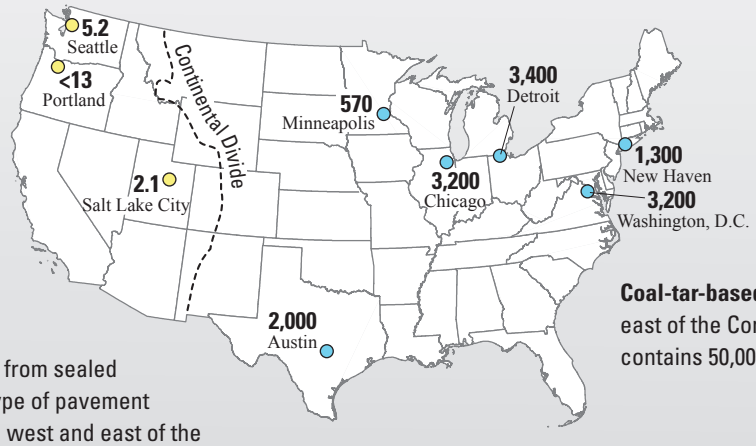
PAH Levels in Asphalt-Based and Coal-Tar-Based Sealcoat

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.[3] 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.[3]

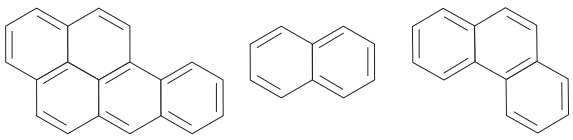
Asphalt-based sealcoat, primarily used west of the Continental Divide, typically contains about 50 mg/kg PAHs.[4]



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

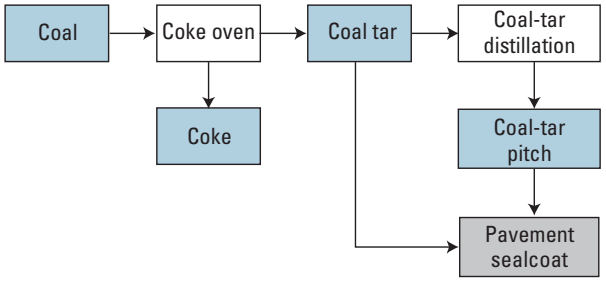
PAH levels in dust swept from sealed parking lots reflect the type of pavement sealcoat commonly used west and east of the Continental Divide.[1] Concentrations, in units of milligrams per kilogram (mg/kg), also referred to as "parts per million" (ppm), shown here are for the sum of the 16 PAHs listed 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.[5]

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).[6] PAHs are an environmental concern because many cause cancer, mutations, birth defects, or death in fish, wildlife, and invertebrates.[7] 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.[8] 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.[9]

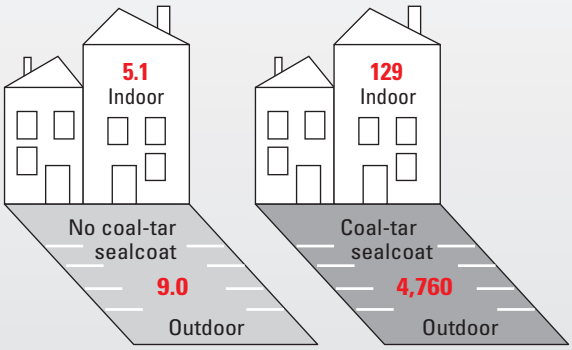


Potential Risks to Human Health

PAHs from coal-tar-based sealcoat contaminate house dust[10]

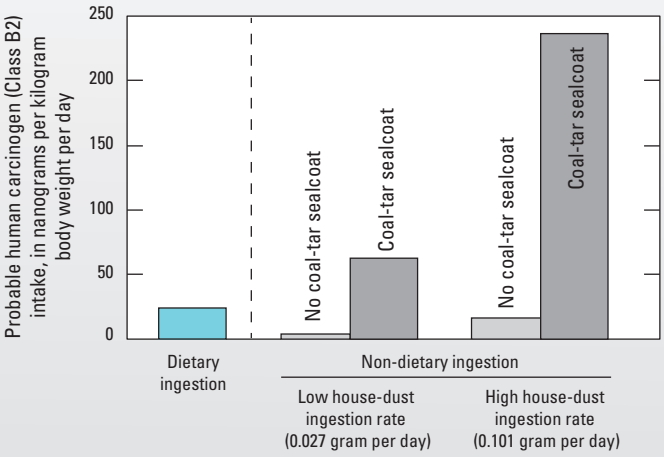
In a study of 23 ground-floor apartments in Austin, Texas, PAH levels in house dust in apartments with parking lots sealed with a coal-tar-based product were 25 times higher than in house dust in apartments with parking lots with other surface types (concrete, unsealed asphalt, and asphalt-based sealcoat).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



PAH-contaminated dust on coal-tar-sealcoated pavement (right) is tracked indoors.[10] 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.

View the publication:
http://pubs.acs.org/doi/pdf/10.1021/es902533r



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.[11] 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.

Living adjacent to coal-tar-sealed pavement increases cancer risk[12]

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.[5, 10]

View the publication:
http://pubs.acs.org/doi/pdf/10.1021/es303371t

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.

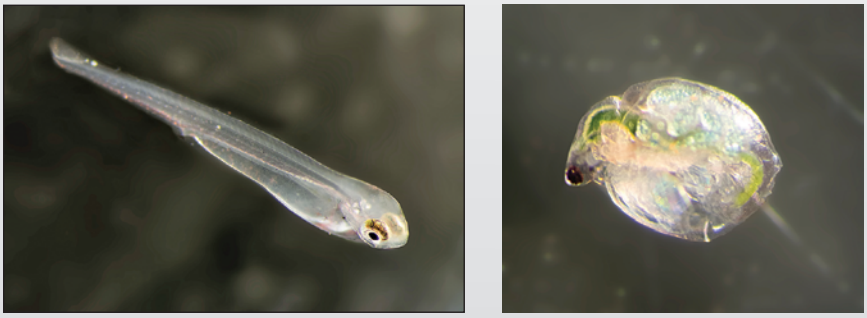
Potential Risks to Aquatic Life

Runoff from coal-tar-sealcoated pavement is acutely toxic to aquatic biota[13]

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.[14] 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.[15] They also reported that filtration of the runoff through a biorention 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).

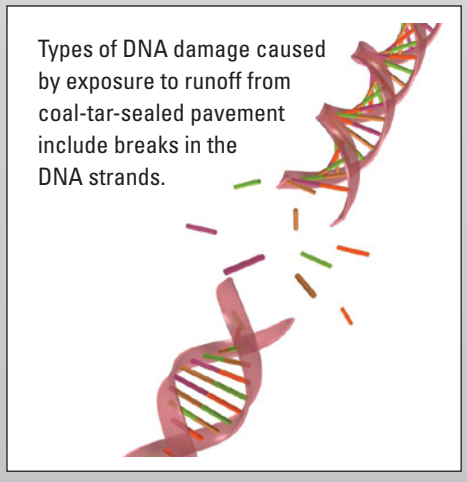
View the publication:
http://pubs.acs.org/doi/abs/10.1021/acs.est.5b00933

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.[16]

Runoff from coal-tar-sealcoated pavement damages DNA and impairs DNA repair[17]

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[18, 19]

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.[18] PAH releases shown here are in units of micrograms per meter squared per hour (µg/m²-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.

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ISSN 2327-6916 (print)
ISSN 2327-6932 (online)
http://dx.doi.org/10.3133/fs20163017

Mimmi's Written Testimony .pdf
Uploaded by: Kandadai, Mimmi
Position: FAV

Support for HB 77
Education, Health, and Environmental Affairs Committee

Dear Senator Pinsky and Senator Kagan

Hi, I'm Mimmi, and House Bill 77, sponsored by Delegate Vaughn Stewart from Montgomery County, calls for a ban on coal tar pavement products with a 0.1% PAH limit. Why is this limit necessary? Allow me to explain. This prevents people from using ECR and other products as a loophole, which prevents sealants from harming the environment. ECR is a new sealant on the market that also contains toxic PAHs. If we don't include a 0.1% PAH limit, it would exclude ECR in the ban, and potentially allow it to harm the environment. However, if we include the 0.1% limit, we can prevent other sealants from making it to the market in Maryland. Also, products are currently available with PAH concentrations well below the 0.1% limit, for example, the asphalt-based average is .005%. ECR's PAH concentration levels are not as high as coal tar, but it's significantly higher than asphalt. The European Union classifies road waste with 0.1% PAHs or higher as hazardous waste. This means that if it's above this limit, it can be really harmful to the people and the environment. Coal Tar has already been banned in many places, including various states, counties, and even major department stores, as Claire said before. These states include Washington, Minnesota, Maine, and the District of Columbia also has a ban in place. Bans in other local areas include Montgomery County (2012), Prince George's County (2015), Anne Arundel County (2015), and Howard County (2018), which we helped ban. Because of bans in 4 Maryland counties, **about 45% of all Maryland residents are now under a coal tar ban, so why not ban it in the whole state?** We hope you will support the bill in order to improve the health of Maryland residents as well as its aquatic life, and protect the Chesapeake Bay. Let's join the 22.6 million Americans who are now under a coal tar ban. Thank you for your time.

Signed,
Medha Kandadai
10319 Cromwell Court,
Ellicott City MD, 21042

DOEE Testimony 2021 HB 77 Support-3.22.21.pdf
Uploaded by: Maleri, John
Position: FAV

Testimony
Maryland House Bill 0077
Environment-Driveway Sealers-Prohibitions (Safer Sealant Act of 2021)
Position: Support

Presented before the Senate Health, Education, and Environmental Affairs Committee by:
Lillian Power
Environmental Protection Specialist
District of Columbia Department of Energy and Environment (DOEE)

The Honorable Paul G. Pinsky
Chair, House Environment and Transportation Committee
House Office Building Room 251
6 Bladen Street
Annapolis, MD 21401

Subject: District of Columbia Support for HB 0077: Environment-Sale and Application of Coal Tar and Coal Tar Pavement Products-Prohibition

Good afternoon. My name is Lillian Power and I am an Environmental Protection Specialist for the District of Columbia's Department of Energy and Environment (DOEE), working in the Watershed Protection Division. I would like to extend the District's support for Maryland House Bill 0077. A statewide prohibition of Coal Tar and other pavement sealant products is an achievable goal in the ongoing effort to protect human health and reduce toxic pollution into our waterways throughout Maryland, the District, and the larger Chesapeake Bay watershed. The District has successfully implemented a coal tar ban since 2009, and expanded the ban to additional sealant products high in toxic Polycyclic Aromatic Hydrocarbons that threaten the health of our waterways in 2019.

Polycyclic Aromatic Hydrocarbons (PAHs) are established toxic contaminants and known threats to human health. A multitude of studies has connected coal tar sealants, high in concentrations of toxic PAHs, to PAH contamination in waterways and elevated cancer risk in humans, particularly children. One PAH compound, Benzo(a)pyrene, is confirmed by the EPA as a carcinogen and is found in high-PAH and coal tar pavement sealants, entering our communities as dust created from friction by tires on properties sealed by high-PAH products.

The EPA has listed 16 PAHs, again found in pavement sealant products, as priority pollutants. The issue is very much a local one. Alongside the Anacostia River here in the District, Baltimore Harbor has one of the highest reported levels of PAH contamination in the entire Chesapeake Bay watershed. PAHs are one of the most common organic chemical contaminants that can be found across the entirety of the Chesapeake Bay watershed and in the Bay itself.

The data was clear, and in collaboration with both Montgomery County, MD and Prince George's County, MD, the District passed a ban on coal tar pavement products in 2009. The District's experience with its coal tar sealant ban demonstrates it is a practical, administratively feasible, and cost-effective way to reduce the toxic pollution in our waterbodies. DOEE has not received complaints from sealant

applicators or property owners since the law's passing about the quality of available compliant products, of which there are many. Further, DOEE inspectors have not encountered a single lot sealed with coal tar for over 6 years—a testament to the success of the ban, but also a warning as new, high-PAH content products have entered the market.

I would also like to call attention to the District's 2018 legislation that built upon the coal tar ban by prohibiting the sale and use of new high-PAH sealant products that have entered the market since our coal tar ban was passed in 2009. The 2018 legislation added a PAH threshold of 0.1%, regulating new ethylene cracker residue (ECR)-based sealant products that have been found in the District. These products contain levels of PAHs similar to those of coal tar sealants. To date, 0.1% PAH bans have been passed in 17 townships in southern Michigan along the Huron River watershed, Austin, TX, and Montgomery County, MD. The Wisconsin State Assembly is considering a coal tar and 0.1% PAH limit law that was proposed in February. Awareness of the emerging threats of these new products is growing, and Maryland is one of many jurisdictions considering joining the District in setting PAH-limit laws.

As with any new law, we have experienced some challenges in implementation. PAH concentrations are not available on sealant MSDS sheets or on product labels and are either not tested or are considered proprietary information by sealant manufacturers. DOEE, with funding from the EPA Chesapeake Bay Program and in collaboration with researchers, regulators, and experts from across the nation, including both Montgomery County's Department of Environmental Protection and the Maryland Department of the Environment, has spearheaded efforts to standardize methods for testing PAHs in pavement sealants. By the end of 2021, DOEE will make a standard protocol publicly available for use by any regulator, lawmaker, stakeholder, or resident interested in making environmentally safe decisions when sealing their properties. This protocol is the first of its kind in the nation. In addition, the project will use the protocol to test a wide range of products on the market to make a list of low-PAH products that meet 0.1% or 1% thresholds, again to be made publicly available. With this project due to be completed well in advance of the effective date of the proposed bill, implementation of PAH-limit requirements will be well-supported and attainable.

As a signatory partner to the Chesapeake and the Anacostia Watershed Agreements, we support all efforts to restore these vibrant ecosystems. We urge the State of Maryland to join the District in banning coal tar and high-PAH sealants, as doing so will help protect both states' waterways. Together, we can provide an example of cross-jurisdictional policy collaboration to protect the health of our residents and natural resources.

Thank you.

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HB77_CBF_Support_DougMyers.pdf
Uploaded by: Myers, Doug
Position: FAV

CHESAPEAKE BAY FOUNDATION

Environmental Protection and Restoration
Environmental Education

House Bill 77

Environment – Application of Coal Tar Pavement Products – Prohibitions
(Safer Sealant Act of 2021)

Date: March 24, 2021
To: Senate Education, Health, and Environmental Affairs Committee

Position: **SUPPORT**
From: Doug Myers, Maryland Senior Scientist

Chesapeake Bay Foundation (CBF) **SUPPORTS** HB77 which limits the use of coal tar sealants with more than 1000 mg/kg of polycyclic aromatic hydrocarbons (PAH), known carcinogens for aquatic and marine life.

Coal tar is linked to greenhouse gas intensive coal combustion that negatively affects the Bay
Coal tar is the byproduct of bituminous coal combustion, a process that creates greenhouse gases that contribute to climate change. Greenhouse gases also deposit nitrogen oxide into the Bay. Warmer bay temperatures contribute to excess algae growth and low dissolved oxygen levels.

A coal tar ban could accelerate reductions in polluted stormwater runoff
One of the biggest challenges to meeting the Chesapeake Bay Blueprint in Maryland is the increasing pollutant load of stormwater runoff. Permits from Maryland Department of Environment require the removal or retrofit of impervious surfaces, including pavement to replace coal tar with asphalt. A ban on additional sales of coal tar will help expedite the reduction of PAH contamination of surface waters more rapidly than any commercially driven phase-out or transition.

Safer sealant alternatives to coal tar exist
Coal tar has been used as a sealant for asphalt and roofing material for many decades. Nowadays, however, superior and less-toxic alternatives are available. Petroleum asphalt mixed with clay and other minerals creates superior composite sealants that are more durable and release far less toxic polycyclic aromatic hydrocarbon (PAH) into the environment. Recent studies comparing coal tar to asphalt sealants reveal the considerably greater risk of PAH leaching into groundwater and becoming airborne dust from surface cracking.

Coal combustion is declining and other states are considering coal tar bans
Bituminous coal combustion is declining as a source of energy production in Maryland and throughout the United States in recognition of its negative effects on the climate. For this reason, several states are considering bans on coal tar. Previous versions of this bill sought to ban the sale of coal tar in Maryland which would have sent a more potent market signal about its toxicity and the environmental impacts associated with its manufacture.

CBF urges the Committee's FAVORABLE report on HB 77. For more information, contact Robin Jessica Clark, Maryland Staff Attorney at rclark@cbf.ogr and 443.995.8753.

Maryland Office ▪ Philip Merrill Environmental Center ▪ 6 Herndon Avenue ▪ Annapolis ▪ Maryland ▪ 21403
Phone (410) 268-8816 ▪ Fax (410) 280-3513

HB 77_Support for Safer Sealants Act.pdf
Uploaded by: Page, Robyn
Position: FAV

Burleigh Manor Middle School

Safer Sealants Team


Meet Our Team!

What are COAL TAR Sealants?

Coal tar sealants are substances put on driveways, black tops, and parking lots that are used to extend the life of asphalt. We are asking for 0.1% PAH ban on coal tar pitch-based driveway sealants.

Why are they used?

- They extend the life of asphalt
- They provide a clean, finished look

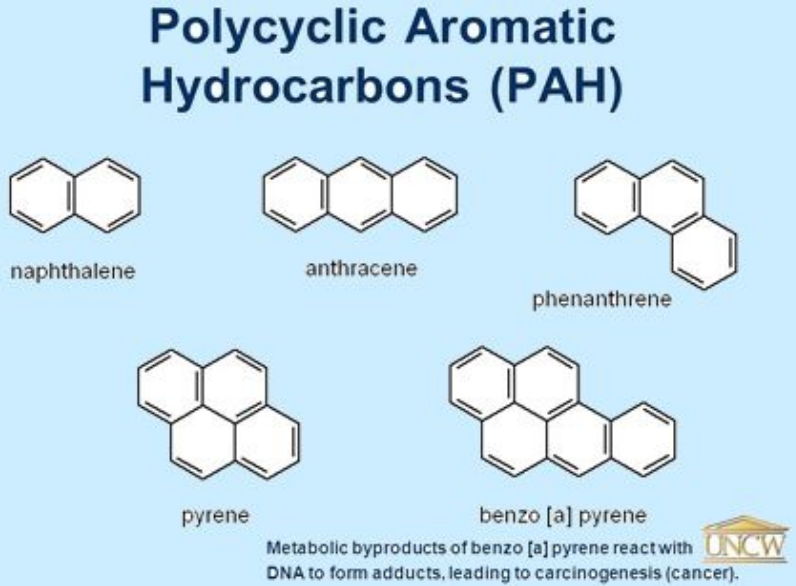
However, coal tar sealants contain dangerous chemicals called PAHs that are harmful to people and the environment.

What are PAHs?

Polycyclic aromatic hydrocarbons (PAHs) are the harmful chemicals found in coal tar sealants.

They cause rashes, skin irritations, cancers, mutations, birth defects, and death.

They are also toxic to aquatic animals, including fish and aquatic invertebrates (McIntyre 2017).

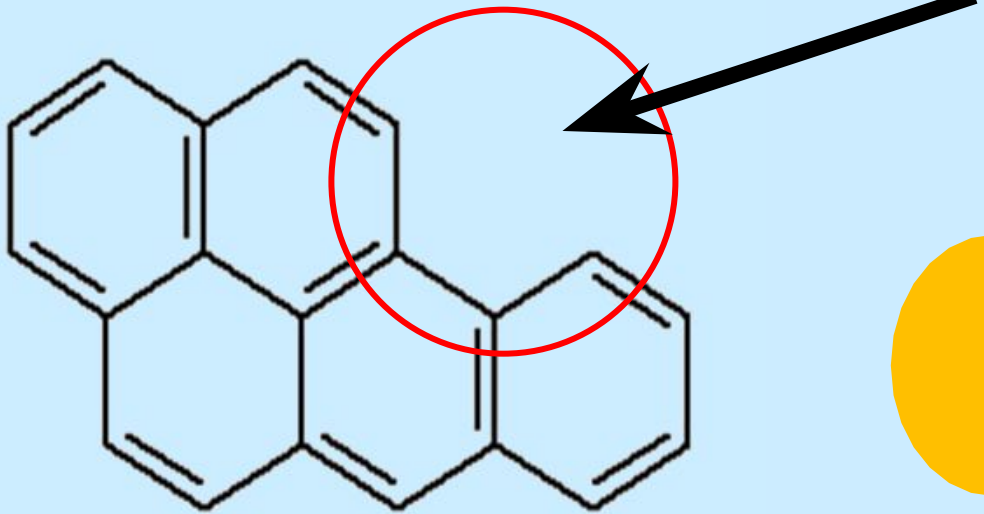


These are five PAH compounds, all are known carcinogens, and all are found in coal tar sealants.

How do PAHs Cause Cancer?

When PAHs are taken into the body, they go directly to the liver.

Carbon atoms of benzo[a]pyrene



This creates an ETHER.

Ethers bind naturally with DNA and damage it, causing cancer. (Maryland Dept. of Health 2019)

UV and PAH Dangers

PAHs and UV light are a toxic combination. When UV rays come in contact with PAHs, it makes the PAHs even more harmful (Arfsten *et al.*).

How PAHs in Coal Tar Travel

There are multiple ways that PAHs from coal tar can enter our environment.

House Dust

House dust adjacent to coal tar sealed parking lots contain concentrations of PAHs 25 times higher than house dust collected in houses near unsealed or asphalt sealed parking lots (Williams and Wilbur 2017).

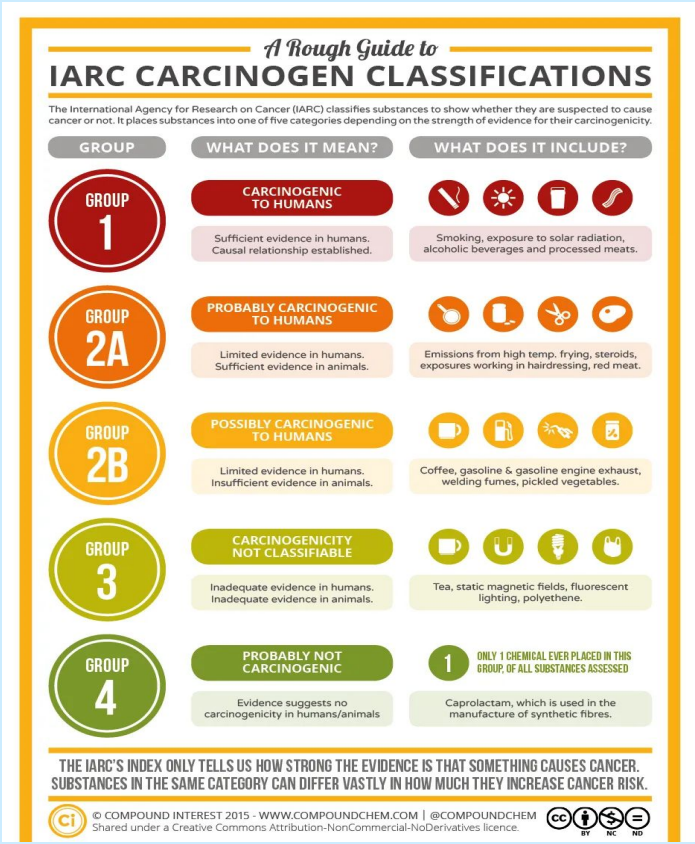
Children crawl and play on floors and put their fingers in their mouths a lot, so they have a higher chance of being affected by PAHs (Williams and Wilbur 2017).

Household dust with PAHs leads to an elevated cancer risk for children (Mahler *et al* 2016).

How Carcinogenic are PAHs?

Benzo[a]pyrene, benzene, coal tar, and coal tar pitch are all classified as known carcinogens by numerous health agencies.

- Group 1 carcinogen (carcinogenic to humans)
  International Agency for Research on Cancer
  World Health Organization
- Known to cause cancer
  National Toxicology Program
- Group A Carcinogen (carcinogenic to humans)
  Environmental Protection Agency
- Occupational Carcinogen
  Centers for Disease Control and Prevention



Types of Cancers Associated with Coal Tar Exposure

Agencies below have found that exposure to PAHs over the long term increase the risk of…

- skin
- lung
- kidney
- bladder
- stomach

…cancers in humans and animals (Williams and Wilbur *et al.* 2017).

NIH NATIONAL CANCER INSTITUTE

DEPARTMENT OF HEALTH & HUMAN SERVICES · USA

ATSDR AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

Columbia University Center for Children's Environmental Health Study

A 2012 study was conducted on 164 randomly selected, healthy pregnant women:

- They concluded that PAH exposure is associated with methylation (*changing DNA segments, genes, and white blood cells*) in the umbilical cord of the participants
- The study also showed that PAHs can cross the placenta and fetal blood-brain barrier, triggering inflammation that is toxic to the developing brain
- They also concluded that coal tar exposure causes lower IQs
  (Perera, F., Weiland, K., Neidell, M. *et al.* 2014)

COLUMBIA UNIVERSITY

Taylorville, Illinois, Neuroblastoma Cases Linked to Coal Tar

On Feb. 22, 2002, the Illinois Supreme Court upheld the jury award in the case of ZACHARY DONALDSON *et al.*, Appellees, v. CENTRAL ILLINOIS PUBLIC SERVICE COMPANY *et al.*

- 50,000 gallons of coal tar was buried
- Construction disturbed it
- A jury awarded $3.2 million to four children
- The children were stricken with neuroblastoma as a result of their exposure to the PAHs in Coal Tar

PAHs in Urban Sources

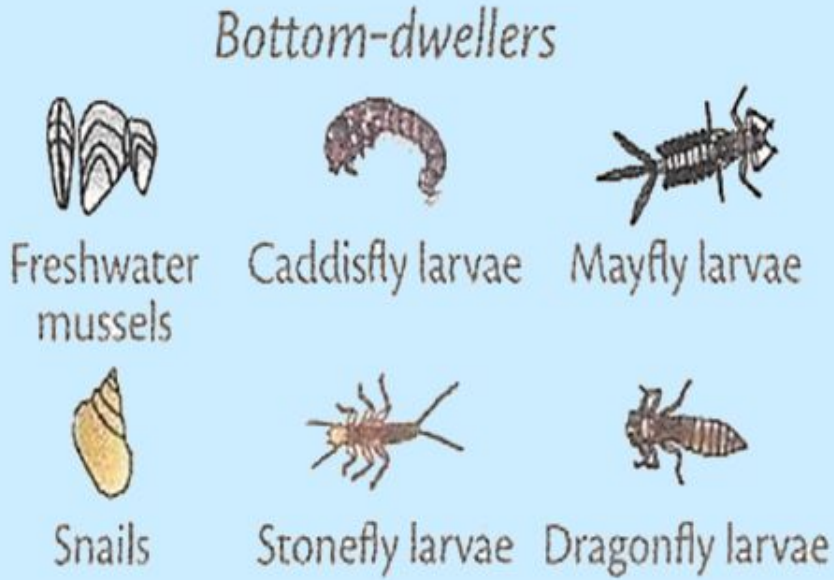
All concentrations in mg/kg (averages of up to 6 studies)

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

Pavement Sealcoat

- Asphalt Based ~ 50
- Coaltar based ~70,000

PAHs and the Environment



Coal tar contains 16 PAHs that are classified as U.S. Environmental Protection Agency Priority Pollutants, including naphthalene and pyrene (Mahler and Van Metre 2017).

When benthic organisms (bottom-dwellers) are exposed to PAHs, they experience problems such as loss of consciousness, inability to reproduce, and ***death***, which can disrupt entire food chains (McIntyre 2017).

PAHs and Environmental Health

Tumors in brown bullhead catfish from the Anacostia River, Washington, D.C., are believed to be related to elevated PAH concentrations (Pinkney and others, 2009). Photograph by A.E. Pinkney.

Varying levels of exposure to PAHs from sealants are toxic to human and aquatic health.

- "Acutely toxic" to fathead minnows and water fleas (Mahler *et al.* 2016)

- May be linked to tumors in brown bullhead catfish in the Anacostia and Potomac Rivers (Pinkney 2013)

Fish embryos that are exposed to low amounts of PAHs can develop eyes with shorter retinas and smaller lenses, misshaped hearts, and abnormal heartbeats.

PAHs in Soil

Wind, runoff, and especially snow plows, can move PAH-contaminated pavement dust into nearby soil.

- PAH concentrations in soil can range from 2.3 to 14 times higher in soils adjacent to sealcoated pavement than unsealed pavement (VanMetre *et al.* 2009).
- Elevated levels of PAHs can be found for up to three years after the sealcoat is applied (UNH Sea Grant).

Soil contaminated with PAHs excavated at a former manufactured- gas plant site (Photo by Michael Aitken)

PAHs in Stormwater

- Opponents have said that water testing has come up without dangerous levels of PAHs. However, according to the US National Library of Medicine and National Institutes of Health, “Polycyclic aromatic hydrocarbons (PAHs) are ubiquitous contaminants in the environment exhibiting moderate to low water solubility that promotes sorption to particulates and subsequent accumulation in sediments.” This means that the PAHs settle in the sediment, not the water, meaning that by testing the water you cannot make an accurate claim about PAHs.
- High concentrations of PAHs have accumulated in some stormwater pond sediments around the state.
- Research conducted by the Minnesota Pollution Control Agency, the U.S. Geological Survey, and the University of New Hampshire Stormwater Center shows that coal tar-based sealants are a significant source of PAHs to urban waterways.

Clean Up Costs

Cities must maintain stormwater ponds by dredging them, and if the PAH concentrations in the dredged material are high enough, disposal can be very costly, in the hundreds of millions of dollars statewide.

- Studies by the MPCA show that the decrease in use of coal tar products will reduce the clean up costs by a half or almost two thirds.

Minnesota Pollution Control Agency

Safety Data Sheets

We looked through many safety data sheets that sealcoating companies provide on their websites. Many of these safety data sheets say their sealants contain hazardous PAHs like benzo[a]pyrene and naphthalene (both are known carcinogens).

Safety Data Sheets

GemSeal is a company that manufactures coal tar sealants with PAH levels higher than 0.1%, and their safety data sheet states that their product is classified as a Category 1A carcinogen.
The safety data sheet also states that the refined tar may cause:

- allergic reactions
- genetic defects
- fertility damage
- organ damage
- reproductive effects

Safer Sealants

Home Depot Latex-ite Sealant Display

Latex-based sealers and asphalt-based sealers are two alternatives easy to get and priced about the same as high PAH coal tar based sealers.

Asphalt and latex-based sealers cost about $16.84-$35.99 per 4.75 gallon bucket at Home Depot, Lowe's, and ACE stores, which is comparable to coal tar sealants.

A Comparison of Driveways...

Can you identify the different sealants?

Industry Claims

Claim: Coal tar sealants have zero correlation to cancers in humans and aquatic species.

In reality: The EPA states that coal tar emulsion sealants can contain up to 35% refined coal tar, which is made up of 50% PAHs by mass. According to key health agencies, PAHs are carcinogens known to be toxic to human and aquatic life.

Industry Claims

Claim: Banning coal tar would be devastating to local businesses.

In reality: Instead of banning the manufacturing of coal-tar sealants outright, we will use a tiered recognition-award system to incentivise manufacturers to reduce the percentage of PAHs in these products. Besides, many seal coat application companies have already stopped using coal tar sealants. The major coal tar sealant manufacturers all make asphalt and latex sealers.

Industry Claims

Claim: Coal tar can help the Chesapeake Bay. PAHs are the building blocks of life, as they are hydrocarbons and are made of water and carbons.

In reality: Hydrocarbons are not made of water and carbons, but hydrogen and carbon. PAHs actually harm the environment, especially bottom-dwellers, which are the building blocks of the freshwater food chain.

Industry Claims

Claim: Coal tar coats the stormwater and sewage treatment, which would help stop sewer water from infiltrating the drinking water supply.

In reality: Our bill only covers sealcoat that is made of coal tar pitch, or refined coal tar, products that coat driveways and parking lots. We are not calling for a ban on any other products that may contain coal tar.

Industry Claims

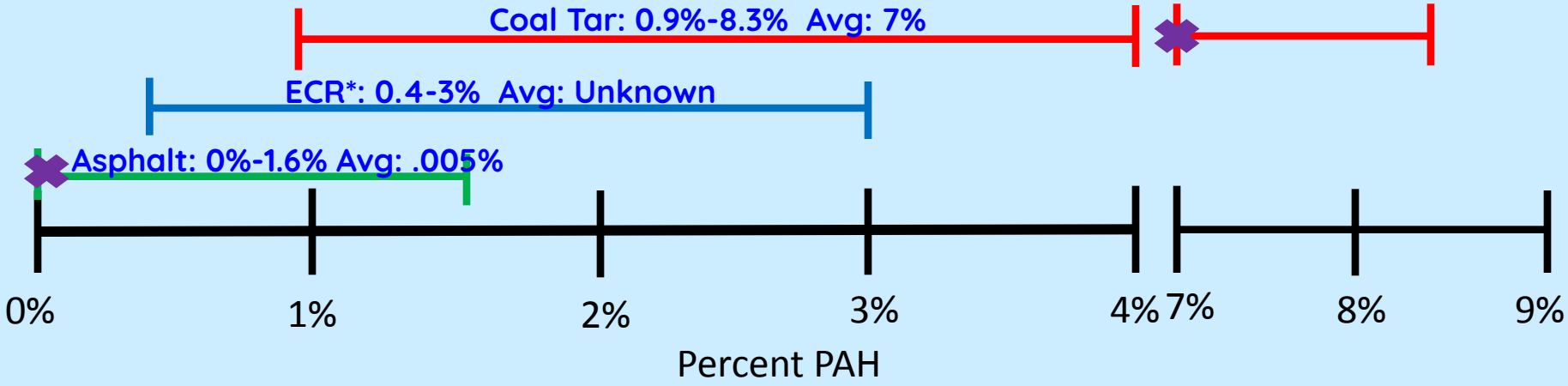
Claim: High PAH sealants are deemed safe for workers, has minimal to no health effects, and is classified as safe and effective by the Food and Drug Administration.

In reality: Throughout our research, we found that high PAH sealants are dangerous to humans and can cause skin, lung, kidney, bladder, and stomach cancers.

The Bill

We worked with Sean Campbell from Seaboard Asphalt to address his concerns regarding the bill, including the sale outside of MD, enforcement, and the 0.1% limit in the bill

PAH Concentrations by Sealant Type



*concentration range is an estimate from Minnesota Pollution Control Agency

The difference between the coal tar and asphalt averages is 6.995%

✖ Average PAH concentration

Why We Need A 0.1% PAH Limit

A 0.1% PAH limit will prevent companies from creating new sealants such as ECR, which contain dangerous levels of PAHs.

Legislative Precedent:

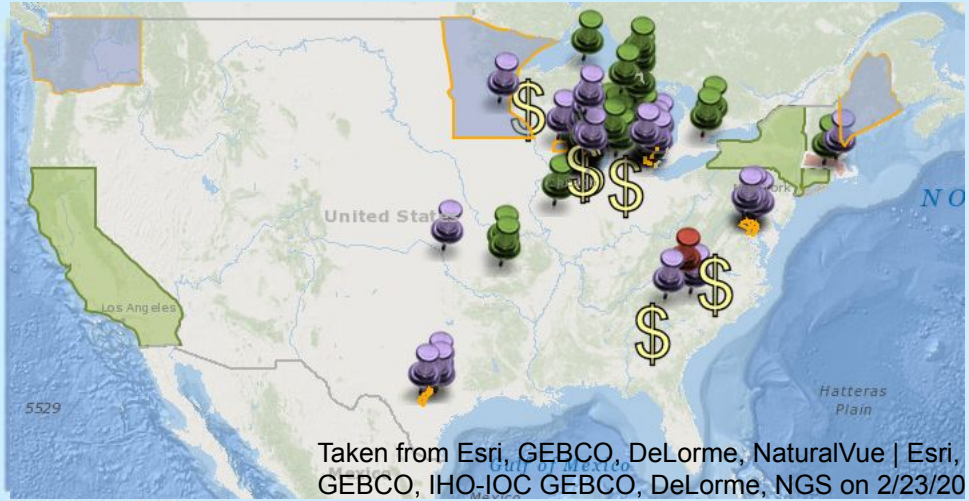
- The District of Columbia, Wisconsin (1/2024), and Maine (10/2020)
- The European Union classifies road waste with 0.1% PAHs or higher as hazardous waste (Vansteenkiste & Verhasselt 2004)

List of US State and County Bans

Albertville, MN
Almont, MI
Annapolis, MD
Ann Arbor, MI
Ann Arbor Township, MI
Anne Arundel County, MD
Austin, TX
Bee Cave, TX
Buffalo, MN
Cannon Falls, MN
Centerville, MN
Circle Pines, MN
Dane County, WI
Dexter, MI
Eden Prairie, MN
Edwards Aquifer Authority, TX
Edina, MN
Elk River, MN
Evanston, IL

coaltarfreeusa.com

Falcon Heights, MN
Glendale, WI
Golden Valley, MN
Greenville, SC
Hamburg Township, MI
Hutchinson, MNV
Howard County, MD!!
State of Indiana - pending
Inver Grove Heights, MN
Home Depot Stores Throughout U.S.
Little Canada, MN
Lowes Stores
Maplewood, MN
State of Maryland??
Medina, MN
Milwaukee, WI
Minneapolis, MN
State of Minnesota
Montgomery County, MD
New Hope, MN
Newport, MN
North Barrington, IL



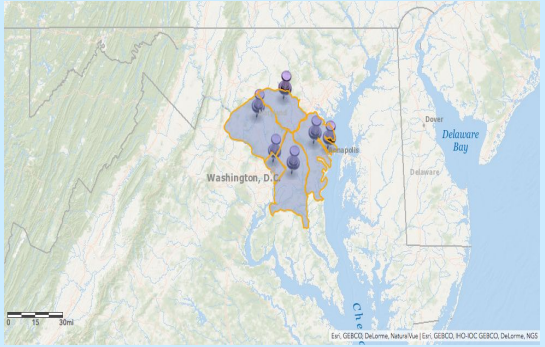
Taken from Esri, GEBCO, DeLorme, NaturalVue | Esri, GEBCO, IHO-IOC GEBCO, DeLorme, NGS on 2/23/20

Oakdale, MN
Pittsfield Township, MI
Prior Lake, MN
Prince George's County, MD
Rosemount, MN
Roseville, MN
San Antonio, TX
San Marcos, TX
Scio Township, MI
Shoreview, MN
Shorewood, MN
South Barrington, IL
Spring Lake Township, MI
State of Maine

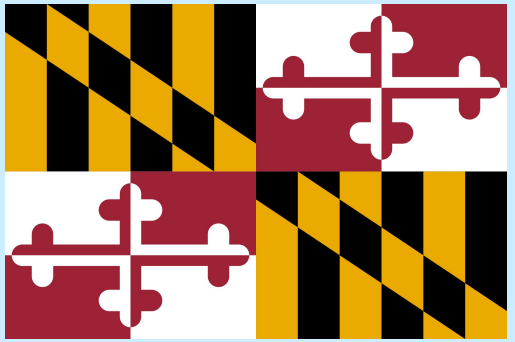
Suffolk County, NY
Vadnais Heights, MN
Van Buren Township, MI
Waconia, MN
Washington, DC
State of Washington
West Bloomfield Township, MI
White Bear Lake, MN
West St. Paul, MN
Westwood, MA
Wilmette, IL
Winnetka, IL
Winfield, KS
Woodland, MN

Protect Maryland!

Currently, there are coal tar sealant bans in 4 Maryland counties: Montgomery County (2012), Prince George's County (2015), Anne Arundel County (2015), and Howard County (2018).

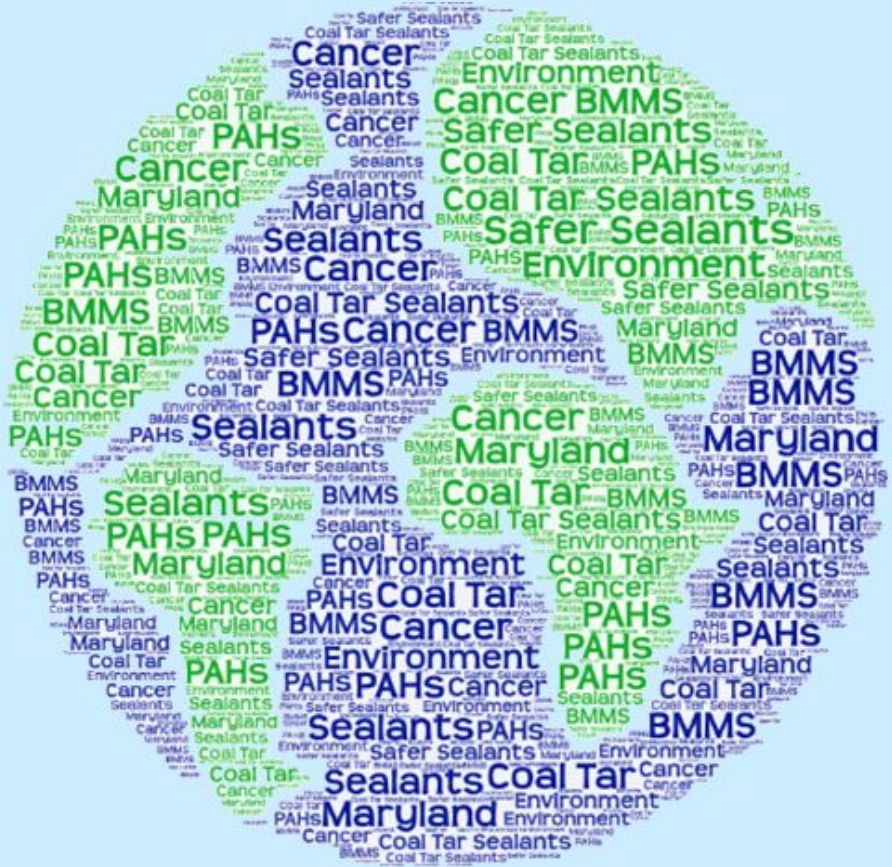


Currently, about 45% of all Maryland residents are now under a coal tar ban, so why not ban it in the whole state?



Let's join the 22.6 million Americans who are currently protected under a coal tar ban!

Help Protect Maryland and Support the Bill!



Written Testimony.pdf
Uploaded by: Shah, Riya
Position: FAV

Support for HB 0077
Education, Health, & Environmental Affairs Committee

Hello, my name is Riya, and I am advocating in support of House Bill 0077. In an article from the Minnesota Pollution Control Agency, Nick Kelso, owner of Minnesota-based Jet-Black International, said his seal-coating company stopped using coal tar sealants in 2012. He now uses asphalt-based sealers, which he said aren't as odorous after application and don't burn a worker's skin upon contact. He said that they are not seeing much of a difference in performance.

On February 20, 2019, there was a hearing held to determine whether or not to ban coal tar in Maryland. In this hearing, opponents made multiple claims against a ban on coal tar. They testified that coal tar is considered safe for workers, has minimal to no health effects, and is classified as safe and effective by the Food and Drug Administration. However, throughout our research, we found that coal tar is fatal to humans and aquatic life and can cause skin, lung, kidney, bladder, and stomach cancers.

They also testified that coal tar is utilized in numerous household products like shampoo and soap, and are used in treatments for many common skin conditions, directly on the skin. However, Health Canada says that coal tar dye, found inside many of these products, is no longer made from coal tar and is rather made synthetically, as coal tar in the dye was proven to be unsafe for the body.

One of the opponents at the hearing stated that the only alternative for coal tar was epoxy seal coaters, and they are 4 times more expensive than coal tar. However, in our research, we found that there are many other alternatives to coal tar, like asphalt-based sealants and latex-based sealants. There are now also coal tar sealants with safer PAH levels being made.

At the House hearing last year, our opponents were unsure of whether our bill covers PAHs in all products or just coal tar. We would like to clarify that our goal is to try to put a .1% PAH limit on refined coal tar driveway sealants.

Signed,
Riya Shah
8752 Wellford Dr.
Ellicott City, MD 21042

Stewart_FAV_HB77_Senate.pdf
Uploaded by: Stewart, Vaughn
Position: FAV

VAUGHN STEWART
Legislative District 19
Montgomery County

Environment and Transportation Committee

Subcommittees
Environment
Land Use and Ethics

The Maryland House of Delegates
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THE MARYLAND HOUSE OF DELEGATES
ANNAPOLIS, MARYLAND 21401

Testimony in Support of HB77
Environment – Application of Coal Tar Pavement Products – Prohibitions (Safer Sealant Act of 2021)
Testimony by Delegate Vaughn Stewart
March 24, 2021 • Education, Health, and Environmental Affairs Committee

What the Bill Does:

The Safer Sealant Act of 2021 (HB77) would prohibit the sale and use of pavement sealants that contain high levels of harmful toxins called polycyclic aromatic hydrocarbons (PAHs). Pavement sealants are black, shiny substances sprayed or painted on top of asphalt pavement to protect the underlying asphalt.

Your committee heard a different version of this bill last session, as introduced by Senator Lam. Since then, the bill has been significantly amended. We collaborated with Shawn Campbell of Seaboard Asphalt in Baltimore City to learn the manufacturers' perspectives on the issue and strengthen the bill. Here's a summary of the amendments:

- We changed the bill from banning coal tar sealants to banning high–PAH sealants. Not all high-PAH sealants are coal tar-based. And as technology improves, Mr. Campbell hopes that not all coal tar sealants will have high levels of PAHs. Washington, DC and Montgomery County have similar high-PAH bans, while other Maryland jurisdictions (Howard, Prince George's, Anne Arundel) only ban coal tar sealants.
- The amended version of the bill clarifies that the ban only applies to the use of sealants on parking lots and driveways. Some opponents of the bill expressed concerns about banning the use of high-PAH sealants on, for example, highways and airport landing strips.
- The amended version of the bill directs MDE to create a labeling regime to allow high-road manufacturers like Mr. Campbell to label their products as "low PAH." This will provide an incentive for future innovation. A variety of nonprofit groups have already created a centralized database of the PAH content of each sealant product on the market, which will make the labeling process easy to implement.

- The bill does not ban the manufacturing of high-PAH driveway sealants for sale out of the state. This amendment was added in response to concerns from both businesses and workers that a ban on out-of-state sales would cause Maryland-based businesses to relocate to Pennsylvania.

Why the Bill Is Important:

The problem with many sealants is that they contain high levels of PAHs. PAHs pose significant human health and environmental risks. There are multiple types of PAHs, but many of them are toxic and carcinogenic to aquatic life. The Environmental Protection Agency classifies seven PAHs as probable human carcinogens. In 2016, the American Medical Association advocated for a nationwide ban on the use of sealants containing PAHs.

Study after study has confirmed that PAHs cause cancer.[1] One prominent cancer researcher once described PAH-heavy sealants as "big buckets of carcinogen." PAHs get into house dust due to their high levels in pavement sealants. In fact, living adjacent to pavement with a sealant high in PAHs increases lifetime cancer risk up to 38 times--and much of this increased risk occurs during childhood.[2] People are exposed to PAH-laden house dust through either direct ingestion (hand-to-mouth contact) or indirect ingestion (mouth contact with inanimate objects like toys, a serious concern for young children). The United States Department of the Interior has identified coal tar-based sealants as an environmental justice issue because of their disproportionate health effects on communities of color.[3]

Sealants also have significant, well-documented negative effects on the environment. The use of the sealants is associated with slower rates of growth in salamanders, impaired development in frogs,

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[1] International Agency for Research on Cancer, 1980, Agency for Toxic Substances and Disease Registry. Toxicological profile for polycyclic aromatic hydrocarbons. Atlanta, GA, U.S. Department of Health and Human Services, Public Health Service, 1995.
[2] E. Spencer Williams, Barbara Mahler, & Peter Van Metre, Cancer risk from incidental ingestion exposures to PAHs associated with coal-tar-sealed pavement, 47(2) ENV. SCI. & TECH. 1101 (2012), http://pubs.acs.org/doi/abs/10.1021/es303371t.
[3] U.S. Dept. of Interior, Environmental Justice Strategic Plan, 2012-2017, http://www.doi. 19 gov/pmb/oepc/upload/Final-DOI-EJ-SP-March-27-2012.pdf.

liver damage in fish, and a decrease in the population of crabs, clams, and oysters.[4] Indeed, a recent Morgan State study found that PAHs entering an aquatic ecosystem from runoff from road surfaces inhibit oyster reproduction.

The opposition will attempt to use specious arguments to undermine the scientific consensus around the harmful effects of PAHs. For example, you might hear that coal tar is found in some cosmetics and personal care products, such as shampoos, soaps, hair dyes, and lotions. While that's true, it's important to remember that the PAH levels in these products are insignificant.

The opponents might also argue that there are no deleterious health effects for sealant workers. However, their argument is undermined by legal settlements paid by the industry to workers who later developed lung cancer. Moreover, the United Steelworkers union encourages retired workers who worked on PAH-heavy sealants to get regular cancer screenings.

Finally, the opponents are likely to posit misleading economic arguments against banning PAH-heavy sealants. First, it's important to note that the amended version of the bill does not penalize Maryland-based manufacturers, so it will not cost our state a single job. Second, major retailers have already stopped selling the product, so consumers are already encouraged to purchase asphalt-based alternatives. For example, Ace Hardware, Lowe's, and The Home Depot have already ceased nationwide distribution of coal tar-based sealants. And third, the use of these sealants hurts industries that rely on healthy populations of fish, crabs, and oysters. Numerous studies have concluded that a cleaner Bay creates jobs because more fish, crabs, and oysters provide renewed work opportunities and

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[4] Thomas Bommarito, Donald Spalding, & Richard Halbrook, Toxicity of coal-tar pavement sealants and ultraviolet radiation to Ambystoma Maculatum, 19(6) ECOTOXICOLOGY 1147 (2010), http://link.springer.com/article/10.1007%2Fs10646-010-0498-8; P. J. Breyer, J. N. Elliott, & E. J. Willingham, The effects of coal tar based pavement sealer on amphibian development and metamorphosis, 15(3) ECOTOXICOLOGY 241 (2006), http://www.ncbi.nlm.nih.gov/pubmed/16557355; Thomas Bommarito, Donald Sparling, & Richard Halbrook, Toxicity of coal–tar and asphalt sealants to eastern newts, Notophthalmus viridescens, 81(2) CHEMOSPHERE 187 (2010), http://www.sciencedirect.com/science/article/pii/S0045653510007320; Mark Myersa, Lyndal Johnson & Tracy Collier, Establishing the Causal Relationship between Polycyclic Aromatic Hydrocarbon (PAH) Exposure and Hepatic Neoplasms and Neoplasia-Related Liver Lesions in English Sole (Pleuronectes vetulus), 9(1) HUMAN & ECOLOGICAL RISK ASSESSMENT 67 (2003), http://www.tandfonline.com/ doi/abs/10.1080/713609853#.VS_X9Fy_vD0; M. S. Shailaja, C. D'Sillva, Evaluation of impact of PAH on a tropical fish, Oreochromis mossambicus using multiple biomarkers, http://www.ncbi.nlm.nih.gov/pubmed/14505704; Pamela Bryer, Mateo Scoggins, Nancy McClintock, Coal-tar based pavement sealant toxicity to freshwater macroinvertebrates, 156(5) ENV. POLLUTION 1932 (2010), http:// www.sciencedirect.com/science/article/pii/S0269749109005375; M. Scoggins, N. L. McClintock, L. Gosselink, & P. Bryer, Occurrence of polycyclic aromatic hydrocarbons below coal-tar-sealed parking lots and effects on stream benthic macroinvertebrate communities, 26(4) J. N. AMERICAN BENTHOLOGICAL SOCIETY 694 (2007), http:// www.bioone.org/doi/abs/10.1899/06-109.1.

hope for watermen, processors, packers, restaurant workers, people in tourism-dependent businesses, and many others.

Why the Committee Should Vote Favorably:

The costs of using sealants with high levels of PAHs greatly outweigh the benefits. Washington, DC, Montgomery County, Prince George's County, Anne Arundel County, and Howard County have all imposed bans of these sealants. These Maryland counties represent nearly half of all state residents, but we must act to protect the remaining half of residents.

In the name of both human health and the Chesapeake Bay, I urge a favorable report on HB77.

Stewart_HB77_Supporting Evidence.pdf
Uploaded by: Stewart, Vaughn
Position: FAV

USGS
science for a changing world

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.[1]

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.[2]

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.

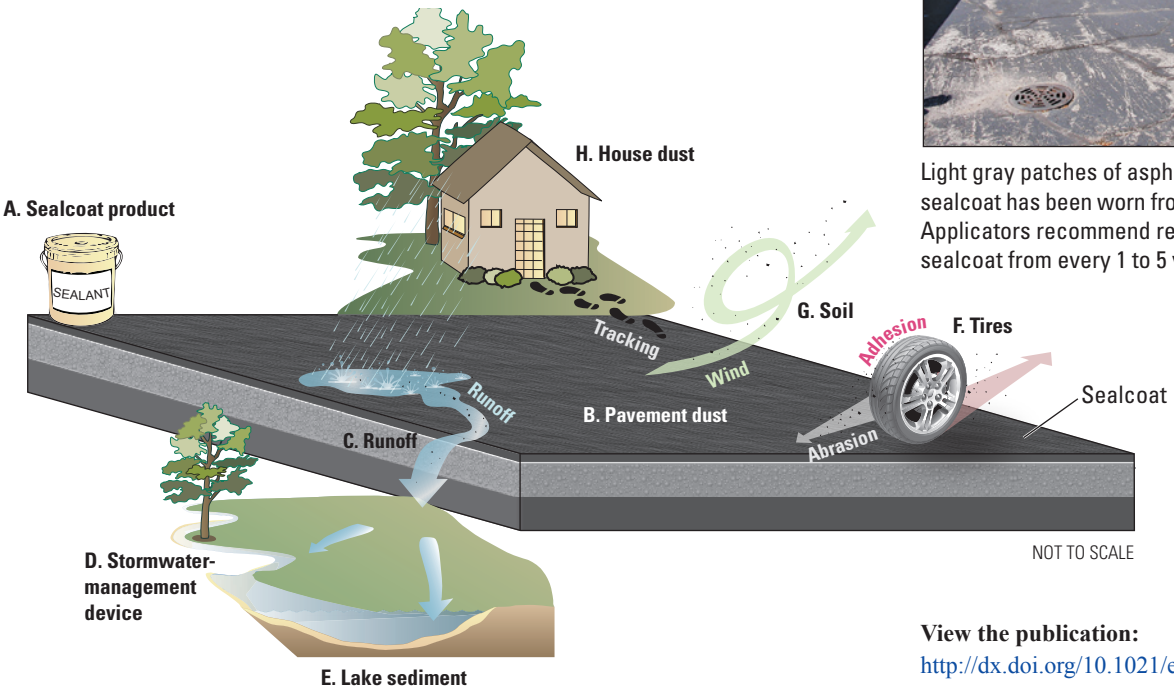
U.S. Department of the Interior
U.S. Geological Survey

Printed on recycled paper

Fact Sheet 2016–3017
April 2016

As Sealcoat Wears Off, Where Does It Go?

Light gray patches of asphalt show where sealcoat has been worn from the pavement. Applicators recommend reapplication of sealcoat from every 1 to 5 years.[1]



View the publication:
http://dx.doi.org/10.1021/es203699x

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).[1]

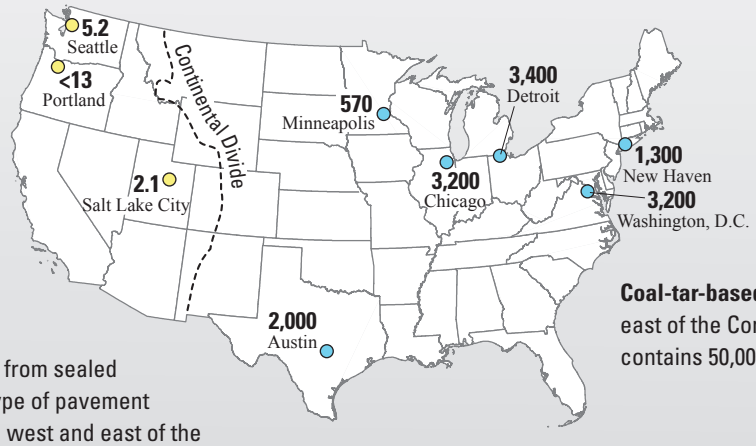
PAH Levels in Asphalt-Based and Coal-Tar-Based Sealcoat

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.[3] 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.[3]

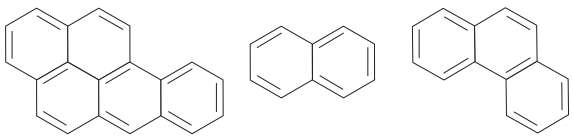
Asphalt-based sealcoat, primarily used west of the Continental Divide, typically contains about 50 mg/kg PAHs.[4]



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

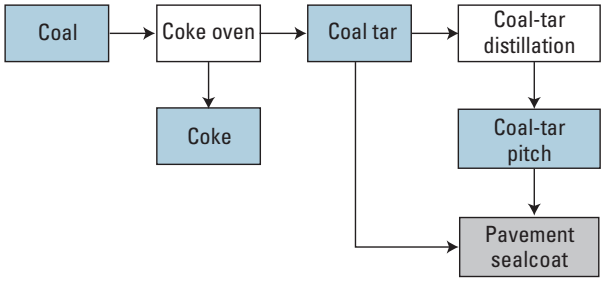
PAH levels in dust swept from sealed parking lots reflect the type of pavement sealcoat commonly used west and east of the Continental Divide.[1] Concentrations, in units of milligrams per kilogram (mg/kg), also referred to as "parts per million" (ppm), shown here are for the sum of the 16 PAHs listed 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.[5]

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).[6] PAHs are an environmental concern because many cause cancer, mutations, birth defects, or death in fish, wildlife, and invertebrates.[7] 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.[8] 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.[9]

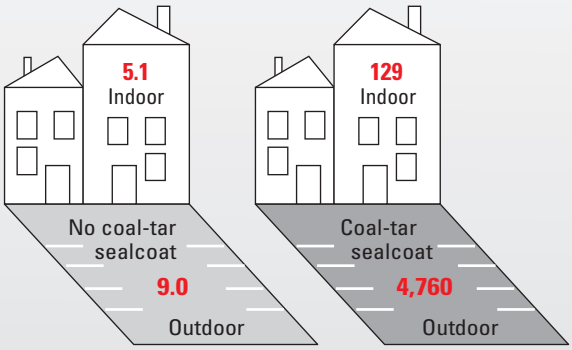


Potential Risks to Human Health

PAHs from coal-tar-based sealcoat contaminate house dust[10]

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 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.



PAH-contaminated dust on coal-tar-sealcoated pavement (right) is tracked indoors.[10] 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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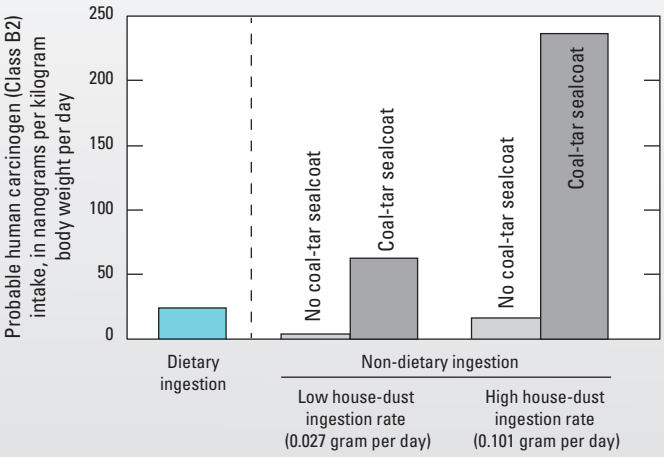

The preschooler living in a residence adjacent to coal-tar-sealed pavement who has relatively low hand-to-mouth activity consumes about 2.5 times more PAHs from house dust than from their diet.[11] For the more active preschooler, whose hand-to-mouth activity is higher, the PAH intake from house dust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

Living adjacent to coal-tar-sealed pavement increases cancer risk[12]

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.[5, 10]

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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.

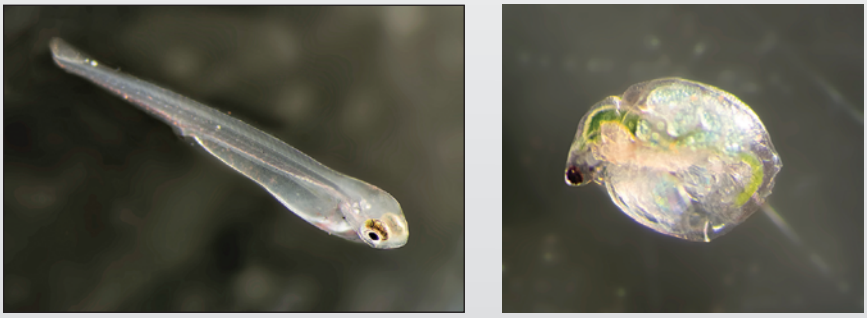
Potential Risks to Aquatic Life

Runoff from coal-tar-sealcoated pavement is acutely toxic to aquatic biota[13]

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.[14] 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.[15] They also reported that filtration of the runoff through a biorention 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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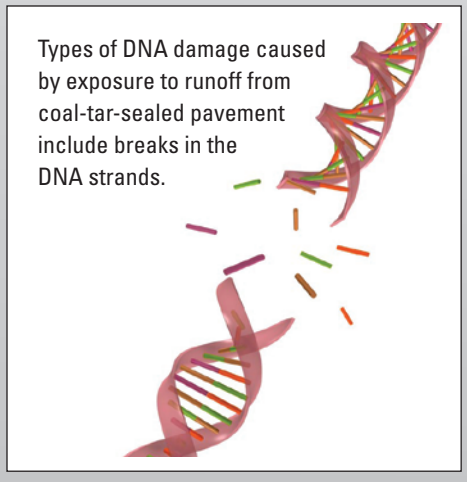
http://pubs.acs.org/doi/abs/10.1021/acs.est.5b00933

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.[16]

Runoff from coal-tar-sealcoated pavement damages DNA and impairs DNA repair[17]

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[18, 19]

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.[18] PAH releases shown here are in units of micrograms per meter squared per hour (µg/m²-h).

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For more information

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

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ISSN 2327-6916 (print)
ISSN 2327-6932 (online)
http://dx.doi.org/10.3133/fs20163017

Environmental Science & Technology

Article

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Cancer Risk from Incidental Ingestion Exposures to PAHs Associated with Coal-Tar-Sealed Pavement

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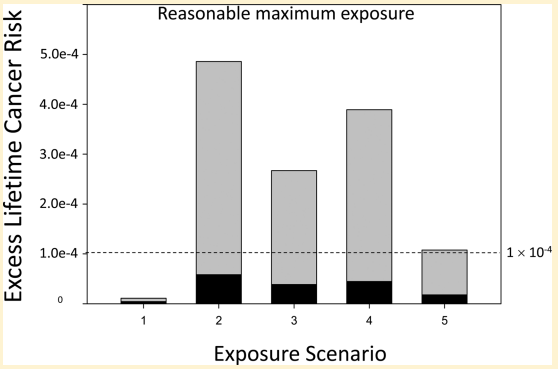
Supporting Information

ABSTRACT: Recent (2009−10) studies documented significantly higher concentrations of polycyclic aromatic hydrocarbons (PAHs) in settled house dust in living spaces and soil adjacent to parking lots sealed with coal-tar-based products. To date, no studies have examined the potential human health effects of PAHs from these products in dust and soil. Here we present the results of an analysis of potential cancer risk associated with incidental ingestion exposures to PAHs in settings near coal-tar-sealed pavement. Exposures to benzo[*a*]pyrene equivalents were characterized across five scenarios. The central tendency estimate of excess cancer risk resulting from lifetime exposures to soil and dust from nondietary ingestion in these settings exceeded 1×10^{-4}, as determined using deterministic and probabilistic methods. Soil was the primary driver of risk, but according to probabilistic calculations, reasonable maximum exposure to affected house dust in the first 6 years of life was sufficient to generate an estimated excess lifetime cancer risk of 6×10^{-5}. Our results indicate that the presence of coal-tar-based pavement sealants is associated with significant increases in estimated excess lifetime cancer risk for nearby residents. Much of this calculated excess risk arises from exposures to PAHs in early childhood (i.e., 0−6 years of age).



INTRODUCTION

The presence of coal-tar-based sealants on asphalt parking lots is associated with elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) in the surrounding environment.[1−6] Sealcoat is a black, shiny substance sprayed or painted on the asphalt pavement of parking lots, driveways, and playgrounds to improve appearance and protect the underlying asphalt. An estimated 85 million gallons (320 million liters) of coal-tar-based sealant are applied to pavement each year,[7] primarily east of the Continental Divide in the U.S. and parts of Canada.[4,8] Coal-tar-based pavement sealants are 15−35% coal-tar pitch, which has been classified as a human carcinogen (IARC Group 1).[9] PAHs are the major constituents of coal-tar pitch,[10] and commercially available coal-tar-based sealants contain on the order of 50 000−100 000 mg/kg PAHs [sum of the 16 U.S. Environmental Protection Agency (USEPA) Priority Pollutant PAHs (ΣPAH_{16})].[7,11] Over time, the dried sealant is abraded from pavement surfaces, and the resulting mobile particles can be transported into nearby environmental compartments.[7,12]

Coal-tar-based pavement sealants are the predominant source of PAHs in the sediment of many urban and suburban lakes, especially areas where population is rapidly growing.[3,13] Coal-tar-based sealants are associated with deleterious effects on local ecosystems, including decreases in species richness and abundance among benthic invertebrates,[14,15] slower growth and impaired swimming behaviors in salamanders,[16] and impaired growth and development of frogs.[17] PAHs from coal-tar-based pavement sealants also contaminate environmental media that are relevant to human exposures. In a study of 23 apartments in Austin, Texas, the median concentration of ΣPAH_{16} in settled house dust (SHD) in residences adjacent to coal-tar-sealed asphalt (CSA) parking lots was 31 times higher than in SHD in apartments adjacent to unsealed asphalt (UA) lots.[18] The presence or absence of coal-tar-based sealants on the adjacent lot explained 48% of the variance in PAH concentrations measured in SHD.[18] Elevated PAH concentrations also have been reported for soil adjacent to CSA lots relative to soil adjacent to UA lots.[2,4] Hereinafter, soil and SHD near CSA or UA parking lots are described as "CSA-affected" or "UA-affected", respectively.

Exposure to PAHs is linked to increased risk for multiple cancer types, including lung, skin, bladder, respiratory, and urinary tract.[19] These studies have mostly examined inhalation exposure at sintering plants, foundries, and similar industrial settings. The carcinogenic properties of tobacco smoke are attributed, in part, to the presence of PAHs.[20] Aside from

Received: August 27, 2012
Revised: November 20, 2012
Accepted: November 23, 2012
Published: November 23, 2012

   dx.doi.org/10.1021/es303371t | Environ. Sci. Technol. 2013, 47, 1101−1109

smoking, nonoccupational exposures to PAHs are believed to occur primarily through dietary ingestion.[21] In the interest of understanding aggregate doses, several studies have characterized the presence of PAHs in a wide array of foodstuffs in different countries, including the U.S., as reviewed in Ramesh et al. (2004).[21] Seven PAHs—benz[*a*]anthracene, benzo[*k*]-fluoranthene, benzo[*b*]fluoranthene, benzo[*a*]pyrene (BaP), chrysene, dibenz[*a*,*h*]anthracene (diBahA), and indeno[123-*cd*]pyrene—have been classified by the USEPA as probable human carcinogens (B2 PAHs).

Nondietary ingestion (incidental ingestion of soil and SHD) is a pathway for exposure to numerous chemicals, including lead, pesticides, polychlorinated dioxins and furans, polybrominated diphenyl ethers, and PAHs, especially in children.[22,23] Many sources and activities are hypothesized to contribute PAHs to SHD, including cooking, smoking, vehicle exhaust, and indoor heating.[24,25] These exposures have been characterized as minor relative to those associated with dietary ingestion;[26,27] however, recent research indicates that in CSA-affected residences, nondietary ingestion of PAHs likely exceeds dietary ingestion.[28]

To date (November 2012), the authors are not aware of any published studies that have assessed the potential risks to human health associated with the elevated concentrations of PAHs measured in CSA-affected environments. The objective of the current study was to examine and compare exposure to and risk arising from ingestion of B2 PAHs in SHD and soil in settings adjacent to CSA and UA parking lots. Standard deterministic risk-assessment techniques were used to estimate B2 PAH doses and associated excess lifetime cancer risk (ELCR) for five exposure scenarios spanning childhood, adolescence, and adulthood, and probabilistic risk calculations were conducted for three of these scenarios.[29]

METHODS

This risk assessment focuses on the B2 PAHs. Each of these compounds has been assigned a potency factor (RPF) relative to the potency of BaP, ranging from 0.001 for chrysene to 1 for diBahA and BaP.[30] Ingestion dose estimates are presented for BaP equivalents (BaPEQ), computed as the sum of the product of the concentration of each B2 PAH and its RPF. Bioavailability is assumed to be 100%.

As noted in ref 18, analytical difficulties with diBahA resulted in nondetections in all but one SHD sample collected for that study. Thus, diBahA is not included here in any computations of BaPEQ in SHD or soil. Estimates of dose including diBahA at the limit of detection divided by two (not shown) indicate that it likely accounted for no more than 5−7% of the total dose of BaPEQ. By comparison, BaP accounted for 72−73% of BaPEQ in SHD samples, and 76−77% in soil samples.

Concentrations of BaPEQ in Dust and Soil. Data on PAHs in SHD used for this analysis were published previously.[18] In that study, SHD and parking lot dust were sampled for 23 ground-floor apartments in Austin, Texas. The parking lot surface adjacent to the apartment complexes was CSA (n = 11), UA (n = 7), asphalt-based sealant over asphalt pavement (n = 3), or unsealed concrete (n = 2). For this analysis, doses and risk associated with residences adjacent to UA parking lots were considered relative to those adjacent to CSA parking lots. BaP concentrations in CSA-affected SHD were high (median and maximum of 4.5 and 24.2 μg/g, respectively) relative to those reported in most parts of the U.S. where coal-tar-based sealcoat is not used (e.g., California: median and maximum of 0.04 and 1.0 μg/g, respectively; Arizona: median and maximum of 0.06 and 0.07 μg/g, respectively[25]). We computed BaPEQ for data presented in;[18] concentrations of BaPEQ in SHD in apartments adjacent to CSA parking lots (8.1 μg/g, geometric mean) were significantly higher than those in apartments adjacent to UA lots (0.61 μg/g, geometric mean) (p = 0.002, Mann−Whitney−Wilcoxon). Risk-assessment guidance recommends the use of the 95% upper confidence limit of the arithmetic mean,[29] but high standard deviations in the data sets, normality testing in log-transformed data, and an emphasis on conservatism in dose and risk estimates dictated the decision to use geometric means of these data to represent the BaPEQ exposure concentration in deterministic calculations.

Dust loading was computed for each location sampled in ref. 18 (Supporting Information Table S1). Loading of BaPEQ in the dust is significantly higher in residences adjacent to CSA pavement (medians of 15.7 μg/m^2 CSA vs 0.63 μg/m^2 UA; p = 0.01, Mann−Whitney−Wilcoxon). Total dust loading is higher in the CSA group relative to the UA group (medians of 346 and 72.3 μg/cm^2, respectively), but the difference was not significant (p = 0.365, Mann−Whitney−Wilcoxon). However, one data point in the UA SHD data set is an outlier (884 μg/cm^2) more than 4 times larger than all other data points and after removal of this data point, CSA settings have significantly higher dust loadings than UA settings (p = 0.043, Student's t test; data passed normality testing after elimination of the outlier). One issue that could not be resolved in this analysis is the relative importance of flooring type, because some samples were collected in combinations of bare and carpeted flooring.

Data for PAHs in CSA- and UA-affected soils are available for samples from New Hampshire (UA n = 1, CSA n = 5)[2] and suburban Chicago (UA n = 2, CSA n = 2).[4] Concentrations of BaP in UA-affected soils ranged from below detection limit to 0.7 μg/g. These are consistent with background concentrations reported for U.S. soils of up to 1.3 μg/g,[19] and somewhat higher than those reported for soil samples collected in remote areas around the world (range <0.0001 to 0.386 μg/g).[31] Concentrations of BaP in CSA-affected soils were substantially higher, ranging from 2.98 to 29.2 μg/g.[2,4] Concentrations of BaP in dust on pavement with coal-tar-based sealant are typically in the 100s of μg/g.[2,18] Concentrations of BaP in the 100s of μg/g in soil are typical of those in soils at manufactured gas sites and wood preservative sites,[32,33] some of which have been classified as Superfund sites (http://www.epa.gov/region5/cleanup/mgp.htm). Geometric mean BaPEQ soil concentrations for CSA-affected settings were 12.4 μg BaPEQ/g soil, and for UA-affected settings were 0.19 μg BaPEQ/g soil.

Deterministic and Probabilistic Estimates of Dose and Excess Lifetime Cancer Risk. Doses of BaPEQ were estimated using the standard equation (eq 1) included in the Risk Assessment Guidance for Superfund, Part A.[29] Exposure assumptions for both deterministic and probabilistic risk calculations are given in Supporting Information Table S2.

$$\text{dose} = \frac{\text{Cm} \times \text{CF} \times \text{IR} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}} \quad (1)$$

where Cm is the concentration of BaPEQ in the dust, soil, or both, CF is the conversion factor, IR is ingestion rate, EF is exposure frequency, ED is exposure duration, BW is body weight, and AT is averaging time.

Table 1. Excess Lifetime Cancer Risk (ELCR) Estimates for Central Tendency (CTE) and Reasonable Maximum (RME) Exposures in Five Scenarios for Carcinogenic Polycyclic Aromatic Hydrocarbons by Ingestion of Settled House Dust, Soil, And Both Media[a]

	age of exposure (years of age)		settled house dust only		soil only		dust and soil	
scenario	UA	CSA	CTE	RME	CTE	RME	CTE	RME
1	0−70	N/A	1.5×10^{-6}	4.4×10^{-6}	1.4×10^{-6}	6.7×10^{-6}	2.9×10^{-6}	1.1×10^{-5}
2	N/A	0−70	2.0×10^{-5}	5.8×10^{-5}	8.9×10^{-5}	4.3×10^{-4}	1.1×10^{-4}	4.9×10^{-4}
3	6−70	0−<6	1.1×10^{-5}	3.8×10^{-5}	2.9×10^{-5}	2.3×10^{-4}	4.0×10^{-5}	2.7×10^{-4}
4	18−70	0−<18	1.4×10^{-5}	4.4×10^{-5}	4.7×10^{-5}	3.4×10^{-4}	6.1×10^{-5}	3.9×10^{-4}
5	0−<18	18−70	8.2×10^{-6}	1.8×10^{-5}	4.3×10^{-5}	9.0×10^{-5}	5.1×10^{-5}	1.1×10^{-4}

[a]UA, unsealed asphalt pavement; CSA, coal-tar-sealed asphalt pavement; N/A, not applicable.

The geometric mean BaPEQ for SHD and soil were used as point estimates for deterministic dose and risk calculations. Lognormal distributions based on data from refs 2,4,18 were developed for probabilistic calculations [UA soil: mean 0.423 μg/g (standard deviation (sd) = 0.523), CSA soil: mean 15.8 μg/g (sd =11.9); UA SHD: mean 1.10 μg/g (sd =1.08), CSA SHD: mean 11.4 μg/g (sd = 9.41)]. Lognormal distributions and corresponding geometric means were chosen to reflect the frequent observation of distributions of this type in environmental contaminant concentrations.

For deterministic calculations of SHD ingestion, we used recently published SHD intake rates for children determined using the Stochastic Human Exposure and Dose Simulation (SHEDS) model for multimedia pollutants.[34] The SHEDS model addresses two pathways of exposure to dust: direct ingestion of SHD from hand-to-mouth contact, and indirect ingestion resulting from mouth contact with inanimate objects such as toys (especially relevant for preschool children). The model takes into account the importance of SHD loading, a strong predictor of blood lead levels related to dust-mediated exposure. The model relies on the Consolidated Human Activity Database, which has activity diaries for over 22 000 individuals.[35] We employed the mean SHD IR estimate from ref. 34 of 27 mg/day (rounded to two significant figures to account for the inherent uncertainty of the model) for children 3−<6 years of age as a central tendency estimate (CTE) of exposure for children 0−6 years of age, and the 95th percentile values from [34] as a reasonable maximum estimate (RME) of exposure. For individuals older than 6 years of age, who are expected to be away from the home for much of the day, we used one-half of the early childhood CTE dust IR (13 mg/day), and 27 mg/day as the RME dust IR. Few data are available for SHD IRs for adults, but previous risk assessments have employed adult SHD IRs of 20 and 50 mg/day,[22,36] higher than the IRs used in this analysis. The distribution of child IRs for SHD was adapted from ref. 34 (mean = 27 mg/day, sd = 40, log-normal) for probabilistic dose and risk calculations, and a similarly shaped distribution was postulated for SHD IR for 6−70 years of age (mean = 13.3 mg/day, sd = 19.6, log-normal).[34]

For deterministic calculations of soil ingestion, default IRs from the Exposure Factors Handbooks and the Child Specific Exposure Factors Handbook,[37,38] with some minor modifications, were used. For persons of all ages, 50 mg/day was used for the CTE soil IR, and the RME IRs used were 400 mg/day from 1−13 years of age and 100 mg/day from 13−70 years of age.

For a distribution for soil IRs for children 0−<13 years of age, we used data generated by the SHEDS model that indicated an arithmetic mean of 60.6 mg/day, sd of 80.5 mg/day.[39] These values are similar to those from a recent review of all published tracer studies on soil ingestion by children, in which the arithmetic mean was estimated at 63 mg/day, with a median of 27 mg/day and a 95th percentile of 195 mg/day.[39] The SHEDS model result was used as the basis for probabilistic calculations of dose and risk in children. For children and adults 13−70 years of age, the arithmetic mean of all available soil ingestion rates from tracer studies was 46 mg/day (rounded to 50 mg/day in deterministic calculations).[39] A distribution similar to that for soil ingestion in children was postulated, and an appropriate standard deviation was calculated for use in a Monte Carlo analysis (http://www.epa.gov/oswer/riskassessment/rags3adt/index.htm). Adult IRs have been updated in the most recent (2011) version of the Exposure Factors Handbook to indicate a central tendency for adults of 20 mg/day for the soil IR and 30 mg/day for the dust IR.[40] These values rely on relative proportions of soil and dust ingestion for children, and thus we have chosen to retain the value of 50 mg/day (i.e., 46 mg/day, rounded to one significant digit) from the previous Handbook, which also is the value indicated in the current Handbook for adults 18−21 years of age.[40] Recalculation of risk estimates using soil and dust ingestion rates in the 2011 version of the Handbook do not change the overall conclusions of this assessment.

Body weight distributions were obtained from a recent (2007) analysis of the National Health and Nutrition Examination Survey (NHANES) data set.[41] Exposure frequency was set at 365 days/year in both deterministic and probabilistic calculations.

Exposure Scenarios. Five scenarios that describe exposures to combinations of UA- and CSA-affected SHD and soil were used (Table 1): exposures in UA-adjacent spaces (UA exposures) during a 70-year lifetime (scenario 1); exposure in CSA-adjacent spaces (CSA exposures) during a 70-year lifetime (scenario 2); CSA exposures during 0−<6 years of age followed by UA exposures during 6−70 years of age (scenario 3); CSA exposures during childhood (0−<18 years of age) followed by UA exposures during adulthood (18−70 years of age, scenario 4); and UA exposures during 0−<18 years of age followed by CSA exposures during adulthood (18−70 years of age, scenario 5). Incremental ELCR values for timeframes of 1 year from 0 to 18 years of age and of 1 year from 18 to 70 years of age were summed to arrive at a lifetime ELCR value for each scenario. Exposure to UA-affected environments during a 70-year lifetime (Scenario 1) was assumed to represent urban background for the purpose of evaluating the potential differences in risks associated with exposure to CSA-affected media. Scenario 1 considers lifetime exposures to SHD and soil not affected by PAHs associated with CSA pavement, and thus represents a reasonable measure of urban background.

dx.doi.org/10.1021/es303371t | Environ. Sci. Technol. 2013, 47, 1101−1109

For the probabilistic calculations, Monte Carlo simulations were performed for 10 000 trials. These simulations were conducted only for scenarios covering lifetime exposures to UA environments (scenario 1), lifetime exposures to CSA environments (scenario 2), and exposures to CSA-affected media in the first 6 years of life (scenario 3).

Estimation of Excess Lifetime Cancer Risk. The ELCR from exposure to a chemical is described in terms of the probability that an exposed individual will develop cancer by age 70 because of that exposure.[42] Estimates of BaPEQ dose were multiplied by the oral cancer slope factor for BaP of 7.3 per mg/kg/day.[43] For single-year calculations of risk (0−18 years of age), the slope factor was divided by 70, and for calculation of risk for adulthood (18−70 years of age), it was divided by (70/52); risk estimates were generated by summing yearly risks from 0−18 years of age and during adulthood (i.e., 18−70 years of age). In general, the USEPA considers excess cancer risks less than 1×10^{-6} so small as to be negligible (i.e., de minimus), and those greater than 1×10^{-4} to be sufficiently large that some sort of remediation is desirable.[42] Excess cancer risks between 1×10^{-6} and 1×10^{-4} generally are considered to be acceptable, although this is evaluated on a case-by-case basis and the USEPA may determine that risks lower than 1×10^{-4} are not sufficiently protective and warrant remedial action.[42]

RESULTS

Deterministic Dose Estimates. Estimated lifetime CTE BaPEQ dose from ingestion of SHD and soil in CSA-affected settings was 38 times greater than that estimated for UA-affected settings (Supporting Information Table S3). Maximum doses occur at young ages (Figure 1), when body weights are lower and ingestion rates are higher than later in life (Supporting Information Table S3). About 50% of the total estimated RME lifetime dose occurs during 0−<6 years of age, and about 80% occurs during 0−<18 years of age. Doses of BaPEQ for ingestion of CSA-affected soil were greater than those for CSA-affected SHD (Figure 1), comprising about 80% of the aggregate (soil + SHD) lifetime dose. The difference arises because BaPEQ concentrations and IRs are higher for CSA-affected soil than for CSA-affected SHD (Supporting Information Table S2). The CTE lifetime dose from CSA-affected SHD alone, however, is not insubstantial, exceeding the lifetime aggregate dose in UA-affected settings by a factor of 7. The RME lifetime aggregate dose estimate for CSA-affected settings is about 4.5 times higher than the CTE lifetime aggregate dose estimate.

Risk Estimates. Deterministic estimates of ELCR were calculated for the five exposure scenarios (Table 1, Figure 2). Under scenario 1 conditions (urban background), soil is estimated to contribute about one-half (48%) of the aggregate (SHD + soil) CTE estimate of ELCR of 2.9×10^{-6} and the majority (61%) of the RME estimate of 1.1×10^{-5}.

Estimated aggregate CTE ELCR for lifetime exposure to CSA-affected settings (1.1×10^{-4}; scenario 2) was 38 times higher than urban background (scenario 1) (Figure 2). About 36% of the increased ELCR attributable to ingestion of CSA-affected SHD and soil occurs during exposures during the first 6 years of life (scenario 3), when IRs are highest and body weights are lowest, and 56% occurs during the first 18 years of life (scenario 4). The RME ELCRs were from 2.2 to 6.8 times higher than CTE ELCRs across all CSA-affected scenarios (2−5), and the difference was greatest for exposure to CSA-affected environments from 0−6 years of age (scenario 3) (Figure 2).

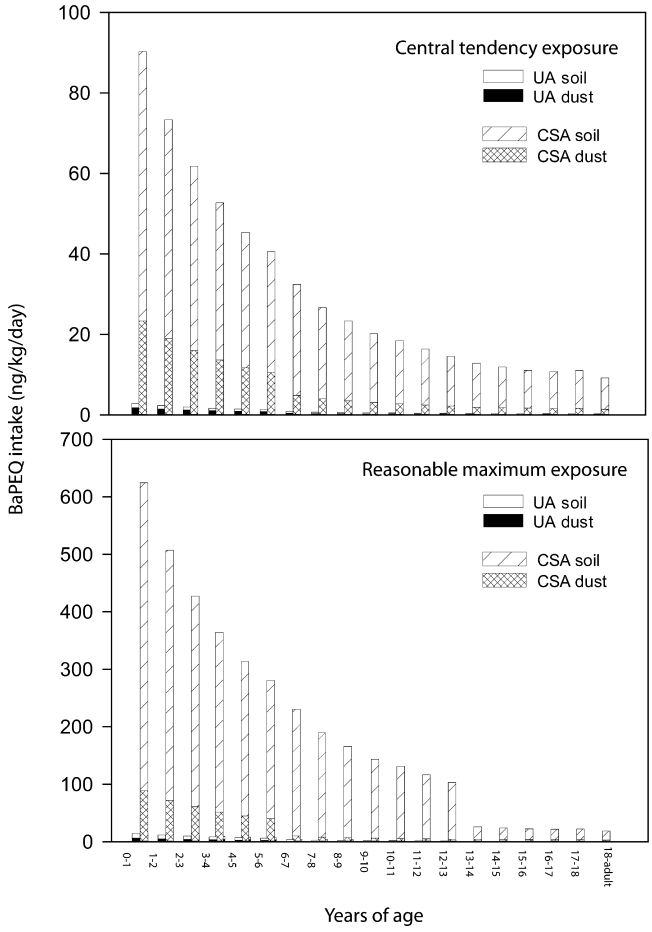


Figure 1. Aggregate doses of benzo[*a*]pyrene equivalents (BaPEQ) (ng/kg/day) from settled house dust and soil in settings adjacent to unsealed asphalt and coal tar-sealed asphalt pavement (UA and CSA, respectively) by year for central tendency and reasonable maximum exposures. Adult years (i.e., 18−70 years of age) are noted as "18-adult.".

In this analysis, ingestion of CSA-affected soil is a more important driver of risk than ingestion of CSA-affected SHD. Ingestion of soil made up about one-half (48%) of ELCR in urban background settings, but made up 72 to 84% of ELCR in CSA-affected settings (Figure 2). Over a lifetime of exposure (scenario 2, CTE), ELCR is estimated to be about 64 times greater for persons who ingest CSA-affected soil relative to their counterparts who are exposed to background concentrations; the comparable difference for CSA-affected and unaffected SHD is a factor of 13. The CTE ELCR for soil alone approaches 1×10^{-4}, and the RME ELCR was estimated at 4.3×10^{-4} (Table 1). Much of the lifetime risk occurs during early childhood (0−<6 years of age, scenario 3) and all childhood (0−<18 years of age, scenario 4) exposures (33 and 53%, respectively). All RME scenarios in CSA-affected environments involving childhood exposure (scenarios 2−4) had ELCR values associated with ingestion of soil exceeding 1×10^{-4}.

Although SHD-mediated exposure to BaPEQ in CSA settings results in less risk compared to soil-mediated exposure, it nonetheless represents a substantial increase in risk over urban background exposure. This is a particularly important pathway of exposure for children. Even more of the lifetime risk

dx.doi.org/10.1021/es303371t | *Environ. Sci. Technol.* 2013, 47, 1101−1109

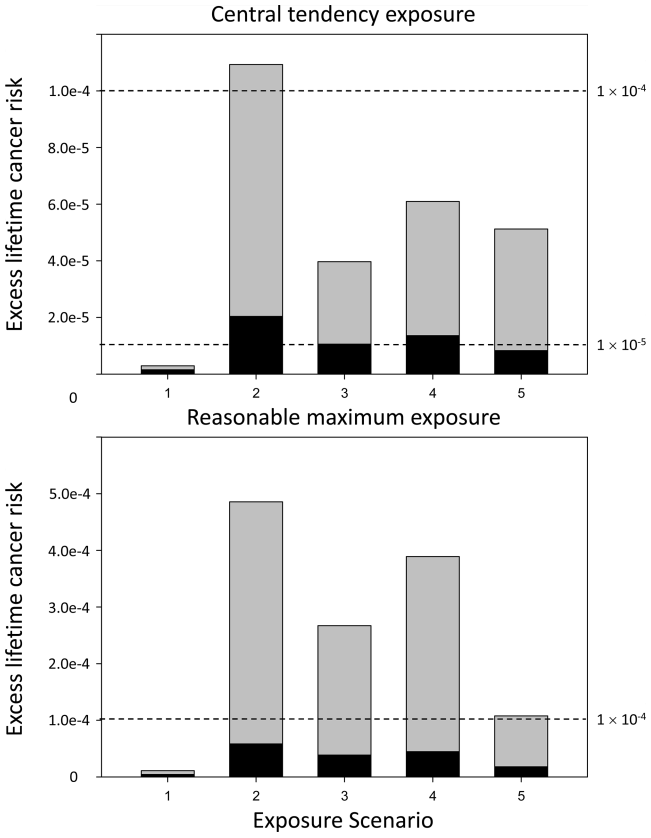


Figure 2. Deterministic excess lifetime cancer risk estimates for the five exposure scenarios described in Table 1 under central tendency and reasonable maximum exposure conditions. Risk attributable to dust is shown in black, and risk attributable to soil is shown in gray.

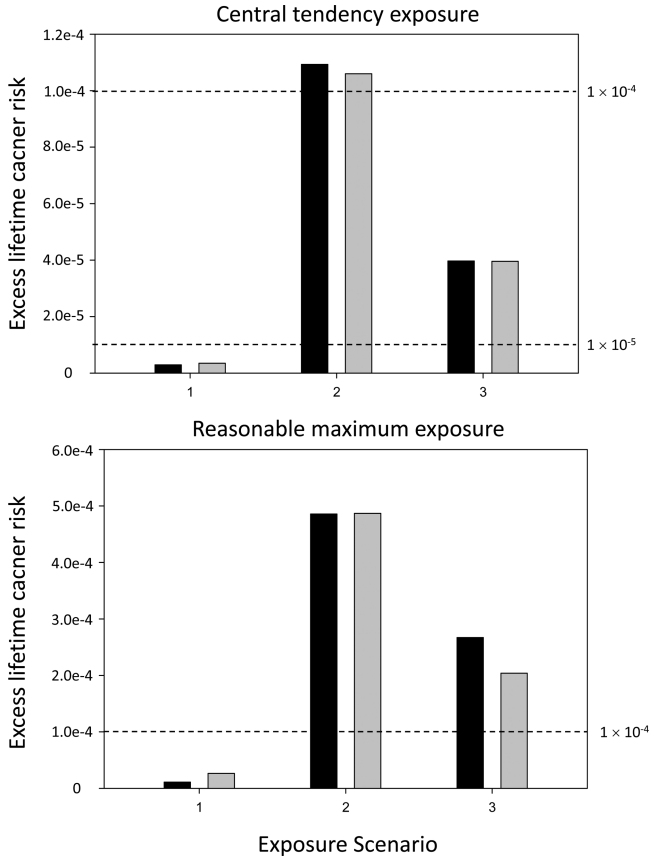


Figure 3. Comparison of deterministic and probabilistic estimates of excess lifetime cancer risk for three exposure scenarios for central tendency exposures (CTE) and reasonable maximum exposures (RME). Deterministic CTE estimates are analogous to 50th percentile probabilistic values, and deterministic RME estimates are analogous to 95th percentile probabilistic values. Black and gray bars depict deterministic and probabilistic risk estimates, respectively.

occurs during early childhood than it does for soil-mediated exposure, with 48 and 64% of the SHD-mediated risk occurring during the first 6 and 18 years of life, respectively. This difference results because the CTE IR for SHD is decreased to one-half its value at age 6 but the CTE IR for soil remains constant from 0−70 years of age (Supporting Information Table S2). All RME scenarios in CSA-affected environments (scenarios 2−5) had ELCR values for ingestion of SHD alone exceeding 1×10^{-5} but none exceeding 1×10^{-4}.

A probabilistic analysis (Monte Carlo) for scenarios 1, 2, and 3 yielded ELCR estimates in a range similar to those estimated deterministically (Table 2, Figure 3), where the 50th percentile statistic is treated as analogous to the CTE and the 95th percentile statistic is treated as analogous to the RME. As with deterministic estimates, probabilistic estimates for ELCR in CSA-affected settings for soil exposures (scenarios 2 and 3) were markedly higher than those for urban background settings (scenario 1) (Table 2). Probabilistic CTE ELCR estimates were very similar to deterministic estimates (Table 1), within 21% for urban background (scenario 1) and identical for 70-year lifespan and the first 6 years of life (scenarios 2 and 3). Probabilistic 95th percentile ELCR estimates differed more from the deterministic estimates, exceeding the deterministic RME for urban background (scenario 1) by a factor of more than 2 and being less than it for the first 6 years of life (scenario 3) by 26%, but the probabilistic and deterministic RME estimates for a 70-year lifespan (scenario 2) were identical.

Sensitivity analyses for the probabilistic ELCR estimates indicate that the proportion of the variability in ELCR contributed by contaminant concentration and IR was different for each scenario (Table 3). For environments where ingestion of UA-affected media only was considered (scenario 1), BaPEQ concentration contributed most of the variability and IR

Table 2. Summary of Probabilistic Estimates (Monte Carlo Simulations, 10 000 runs, 50th Percentile Represents the Central Tendency Exposure and 95th Percentile Represents the Reasonable Maximum Exposure) of Excess Lifetime Cancer Risk for Exposure Scenarios 1−3

	settled house dust only		soil only		dust and soil	
scenario	50th	95th	50th	95th	50th	95th
1	1.2×10^{-6}	1.4×10^{-5}	1.1×10^{-6}	1.6×10^{-5}	3.5×10^{-6}	2.6×10^{-5}
2	1.8×10^{-5}	1.2×10^{-4}	7.3×10^{-5}	4.3×10^{-4}	1.1×10^{-4}	4.9×10^{-4}
3	8.3×10^{-6}	6.1×10^{-5}	2.4×10^{-5}	1.7×10^{-4}	4.0×10^{-5}	2.0×10^{-4}

dx.doi.org/10.1021/es303371t | Environ. Sci. Technol. 2013, 47, 1101−1109

Table 3. Proportion of the Variability in Estimates of Excess Lifetime Cancer Risk Contributed by Parameters Considered[ab]

	scenario 1			scenario 2			scenario 3		
	dust alone	soil alone	dust and soil	dust alone	soil alone[c]	dust and soil[c]	dust alone	soil alone	dust and soil
$[BaPEQ]_{UA\ dust}$	0.71	--	0.33	--	--	--	0.03	--	
$[BaPEQ]_{CSA\ dust}$	--	--	--	0.55		0.07	0.35	--	0.07
$[BaPEQ]_{UA\ soil}$	--	0.80	0.42	--	--	--	--	0.01	0.01
$[BaPEQ]_{CSA\ soil}$	--	--	--	--	0.50	0.44	--	0.32	0.25
$IR_{dust,\ 0-6\ years}$	0.13	--	0.06	0.19	--	0.02	0.59	--	0.12
$IR_{dust,\ 6-70\ years}$	0.16	--	0.08	0.24	--	0.04	0.03	--	0.01
$IR_{soil,\ 0-18\ years}$	--	0.13	0.07	--	0.30	0.26	--	0.66	0.53
$IR_{soil,\ 18-70\ years}$	--	0.06	0.03	--	0.18	0.15	--		

[a][BaPEQ, benzo[a]pyrene equivalents; UA, unsealed asphalt pavement; CSA, coal-tar-sealed pavement; IR, ingestion rate]. [b]-- No contribution to variability is expected from this parameter. [c]Body weight 18−70 years of age contributed ∼1% to variability of estimates.

contributed relatively little. When lifetime exposure or exposure only during the first 6 years of life to CSA environments was considered (scenarios 2 and 3), IR contributed a greater proportion of the variability in estimated ELCR.

DISCUSSION

Four exposure scenarios for nondietary ingestion of CSA-affected soil and SHD resulted in estimated BaPEQ doses that are substantially elevated over the dose for urban background (Table 1). BaPEQ doses from nondietary ingestion of CSA-affected soil and dust range from 91 ng/kg/day during the first year of life to 9.1 ng/kg/day for adults. For comparison, Chuang et al. (1999)[26] reported dietary intake for the sum of B2 PAHs for children (2−4 years of age) in North Carolina as 24.8 ng/kg/day. Dietary intakes among adults of B2 PAHs have been estimated at between 1 and 5 μg/day on average (about 12.5−62.5 ng/kg/day).[44] We recently demonstrated that exposures to B2 PAHs in CSA-affected SHD are expected to exceed dietary intakes in children.[28]

ELCRs associated with CSA-affected settings (scenarios 2−5) greatly exceed those for the urban background (scenario 1). To put CSA-associated ELCRs into context, estimated CTE ELCR for lifetime exposure to CSA-affected soils (8.9×10^{-5}) exceeds that for urban soils in Beijing, China (1.77×10^{-6}),[45] and CTE ELCR for lifetime exposure to CSA-affected SHD (2.0×10^{-5}) exceeds that for exposure to urban surface dust (pavement and road dust) in an industrial area in China (1.05×10^{-6}).[46] However, estimated RME ELCR for lifetime exposure to CSA-affected SHD (5.82×10^{-5}) was less than that reported by Maertens et al. (2008)[47] for children in those residences in Ottawa, Canada, with SHD PAH in the top 10th percentile ($>1 \times 10^{-4}$), although the IR and SHD PAH concentrations were comparable to those used here. The difference likely arises because Maertens et al. included an adjustment factor in their risk analysis to account for exposures taking place during early life stages. ELCRs estimated here for CSA-affected settings exceed those for some other types of exposure to PAHs. For example, estimated CTE ELCRs for CSA-affected settings are much greater than those estimated for ingestion of grilled and smoked meat (2.63×10^{-7})[48] and for inhalation of granulates associated with intense 30-year activity on artificial turf (1×10^{-6} for presumed worst case conditions).[49]

The increased cancer risk associated with CSA-affecting settings likely affects a large number of people in the U.S. Use of the product is widespread in the U.S. east of the Continental Divide,[4] and it also is used in some parts of Canada.[8] Sealed parking lots constituted 1−2% of the area of four mixed commercial and residential neighborhoods mapped in Texas; in a suburb of Chicago, IL, sealcoated pavement constituted 4% of the area, and 89% of driveway area was sealcoated.[18]

Uncertainty. The analysis presented here contains several sources of uncertainty, and many of the choices made for the analysis result in conservative (lower) estimates of ELCR. Concentrations of one of the B2 PAH, diBahA, were not included in computation of BaPEQ because analytical difficulties resulted in nondetections in all but one of the SHD samples.[18] The cancer slope factor used was 7.3; Schneider et al., (2002)[50] on the basis of oral carcinogenicity studies with BaP and coal-tar mixtures, recommend use of a slope factor of 11.5, which would increase ELCR reported here by about 50%. No adjustment factor was used to account for increased risk associated with exposure during early life stages, when children are more susceptible to the effects of chemical exposures.[51]

Although seven carcinogenic PAHs, all of which have a RPF ≤ 1, were considered here, the USEPA recently has proposed that 24 PAHs, with RPFs ranging from 0.1 to 60, be used to determine the relative potency of PAH mixtures.[52] At least three of the PAHs with proposed RPFs exceeding 1—benzo[c]fluorene, proposed RPF of 30; dibenz[a,h]anthracene, proposed RPF of 10; and dibenzo[a,l]pyrene, proposed RPF of 30 [52]—are components of coal tar,[53,54] and BaPEQs associated with coal tar are estimated to increase by almost a factor of 10 if the proposed RPFs are adopted.[55]

Other elements of the analysis also contributed to conservative ELCRs estimates. Most importantly, the risk analysis presented here did not consider nondietary ingestion of outdoor dust on parking lots, driveways, and playgrounds with coal-tar-based sealcoat, as no data are available that quantify IR for these settings. PAH concentrations in dust from coal-tar-sealcoated pavement, however, are 10 or more times higher than those measured in CSA-affected SHD and soil: median BaPEQ concentrations reported range from 60 [2] to 392 μg/g.[18] Ingestion of 4−8 mg of dust from CSA parking lots per day in children less than 6 years of age would add 100 ng BaPEQ/kg/day to the overall dose (data not shown). By comparison, the maximum calculated dose in the CTE scenarios is 91 ng/kg/day.

Further, the BaPEQ concentrations for CSA SHD in the analysis presented here might underrepresent typical BaPEQ associated with CSA-affected environments, because the samples used as representative were collected in Austin in 2008, about 2 1/2 years after use of coal-tar-based pavement sealant was banned in that city.[56] It is not known if or how rapidly concentrations of PAH in SHD decrease as sealant on

the adjacent pavement ages. Inhalation of gas-phase PAHs also was not considered here, and recent measurements of air concentrations of PAHs indicate relatively high concentrations above old (3.6−8 yr) coal-tar-based sealant[58] and very high concentrations above pavement within hours to weeks following sealant application.[57]

Other sources of uncertainty in this risk analysis include choice of IRs, assumption of 100% bioavailability, sample size, and dust loading. Ingestion rate contributed a large proportion of the variability in estimated ELCR associated with CSA-affected settings. For this analysis we used IRs from.[37,39] Dust IRs recently recommended by the USEPA are higher than those used here, but soil IRs are lower.[40] Recalculation of risk estimates using those in the 2011 updated version of the Handbook slightly changes risk estimates but does not change the overall conclusions of our assessment. The assumption of 100% bioavailability likely causes moderate overstatement of risks from ingestion of CSA-affected SHD and soil. The bioavailability of PAHs in abraded particles of coal tar-based sealant has not been investigated, and thus the relevance of studies of the bioavailability of BaP and other B2 PAHs in soil may or may not be robustly applicable to these calculations. Our calculations indicate that bioavailability on the order of 20% would still be associated with risk in excess of 1×10^{-4} in some exposure scenarios (RME, scenario 2). Bioavailability of PAHs in soil has been observed to range as high as 90%.[21]

The data set available for PAHs specifically associated with CSA- and UA-affected settings was relatively small. In particular, data from only three soil samples were available for soil adjacent to unsealed asphalt. However, these concentrations are consistent with upper ranges of concentrations reported in the literature as "background." Sensitivity analysis indicates that the much of the variability in risk estimates arises from concentrations of BaPEQ in SHD and soil (Table 3).

Finally, the data on dust loading adds some uncertainty to the risk estimates. Recall that one data point in the UA SHD data set is an outlier (883 $\mu g/cm^2$, compared to a mean of 85 $\mu g/cm^2$ for the remaining 6 data points). Reanalysis of the set without this data point shows that CSA settings had a significantly higher dust loading than the UA settings (p = 0.043, Student's t test). The source of this difference between the sampled settings is unclear.

In this analysis, lifetime estimated ELCRs for deterministic and probabilistic approaches were virtually identical (Tables 1 and 2, Figure 3). This indicates that point estimates for these parameters, as applied here, reasonably represent values in the center and upper reaches of the distributions of these data. Several of the factors contributing to uncertainty associated with the ELCRs presented here could be more fully accounted for with additional data, resulting in less uncertainty. Because the recognition of coal-tar-based pavement sealants as a source of PAHs to the environment is relatively recent (the first study was published in 2004), there are data gaps for such information as bioavailability of PAHs associated with dried sealant particles, IRs for pavement dust, and change in PAH concentrations in CSA-affected soils and SHD with time since sealant application. Additional data on PAH concentrations in CSA-affected soils and SHD will result in more robust ELCR estimates.

Estimates of excess cancer risk arising from exposure to carcinogenic PAHs in settled house dust and soil near coal tar-sealed parking lots exceeded 1×10^{-4} for the central tendency estimate for lifetime exposure, and for reasonable maximum estimates for all exposure scenarios considered. Exposure to these compounds in settled house dust is a particularly important source of risk for children younger than 6 years of age, as they are expected to ingest this material at higher rates. This indicates that the use of coal-tar-based pavement sealants magnifies aggregate exposures to B2 PAHs in children and adults in residences adjacent to where these products are used, and is associated with human health risks in excess of widely accepted standards. Although the analysis presented here is based on a limited data set, the results indicate that biomonitoring might be warranted to characterize the exposure of children and adults to PAHs associated with coal-tar-based pavement sealant.

■ ASSOCIATED CONTENT

Supporting Information

Additional information on dose and exposure assumptions, estimated doses, and dust loading. Table S1. Mass of house dust (<0.5 mm) collected, area sampled, surface dust loading, and benzo[a]pyrene equivalent (BaPEQ) loading for 18 apartments in the Austin, Tex., area. Table S2. Exposure assumptions for deterministic and probabilistic risk calculations. Table S3. Theoretical yearly doses of benzo[a]pyrene equivalents under central tendency and reasonable maximum exposure conditions. This material is available free of charge via the Internet at http://pubs.acs.org.

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Notes

The authors declare no competing financial interest.

■ ACKNOWLEDGMENTS

This work was conducted without the benefit of external funding. Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

■ ABBREVIATIONS:

AT	averaging time
B2 PAH	carcinogenic polycyclic aromatic hydrocarbons (classified B2 by EPA)
BaP	benzo[a]pyrene
CSA	coal-tar-sealed asphalt
CTE	central tendency exposure
BaPEQ	benzo[a]pyrene equivalents
BW	body weight
ED	exposure duration
EF	exposure frequency
ELCR	excess lifetime cancer risk
IR	ingestion rate
PAH	polycyclic aromatic hydrocarbon
RME	reasonable maximum exposure
RPF	relative potency factor
SHD	settled house dust
SHEDS	Stochastic Human Exposure and Dose Simulation
UA	unsealed asphalt

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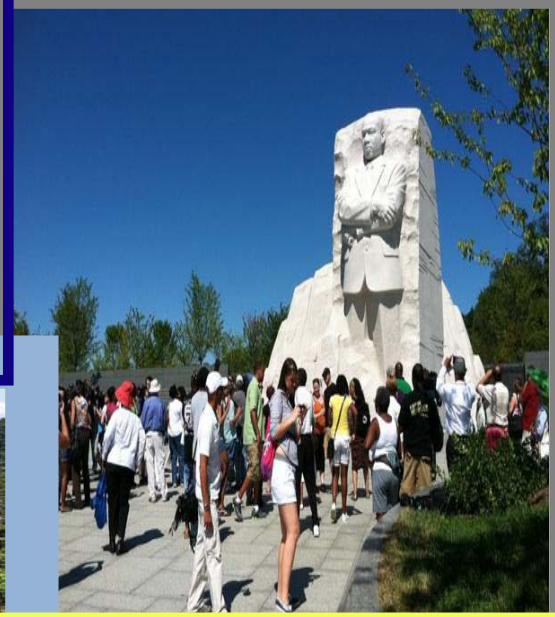
U.S. DEPARTMENT OF THE INTERIOR

ENVIRONMENTAL JUSTICE STRATEGIC PLAN 2012 – 2017



ASSISTANT SECRETARY, POLICY MANAGEMENT AND BUDGET

OFFICE OF ENVIRONMENTAL POLICY AND COMPLIANCE
https://www.doi.gov/oepc/justice.html

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Mission

Protecting America's Great Outdoors and Powering Our Future.

The U.S. Department of the Interior protects America's natural resources and heritage, honors our cultures and tribal communities, and supplies the energy to power our future.

Environmental Justice Vision Statement

To provide outstanding management of the natural and cultural resources entrusted to us in a manner that is sustainable, equitable, accessible, and inclusive of all populations.

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MESSAGE FROM THE SECRETARY

Secretary of the Interior Ken Salazar

I am pleased to present the Department of the Interior's Environmental Justice Strategic Plan for the years 2012-2017, which guides the work we do at the Department of the Interior. As custodian of the Nation's natural resources, it is vitally important in our day-to-day activities that we identify and address actions that may have a disproportionately high impact on minority and low-income populations.

Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) outlined an important task for Federal agencies: to ensure no racial, ethnic, cultural or socioeconomic group disproportionately bears the negative environmental consequences resulting from governmental programs, policies, or activities. Executive Order 12898 also asks that these programs, policies, and activities be conducted in a manner that does not have the effects of exclusion or discrimination toward minority, low income, or tribal populations. Executive Order 12898 directed each Federal agency to prepare a plan to integrate environmental justice into its activities.

Every community deserves strong Federal protection against pollution and other environmental hazards. I believe environmental justice is achieved when everyone enjoys the same degree of protection from environmental and health hazards and has equal access to the decision-making process, so they are assured a healthy environment in which to live, learn, work, and play. We will strive to ensure the American people and their communities are always an integral part of the process in the decisions we make, especially when the health of the environment is at stake.

The Department of the Interior is committed to ensuring environmental justice for everyone who may be affected by the Department's management of the resources entrusted to its care in the United States, U.S. Territories, and Insular areas. In particular, as the Department is entrusted with managing the Nation's Indian trust, social services, and self-determination programs, we take seriously our responsibility to ensure American Indians and Alaska Natives are protected from disproportionate environmental and health impacts of agency decisions.

A part of our mission is to protect America's natural resources and heritage, and to honor our cultures and tribal communities. Our mission embodies the special relationship we have with the people of this great Nation. These issues are not remote or abstract, but are part of our everyday activities.

The Department's environmental justice strategy provides a long-term overarching vision, as reflected in our environmental justice goals, which are intentionally broad in scope to guide the bureaus in the development of work plans with specific and measureable targets adapted to their responsibilities and priorities. We have adopted this approach in order to address the complexity of environmental justice in a timely, deliberate, and coordinated manner.

In addition to implementing this strategy, the Department remains committed to actively participating in the Federal Interagency Working Group on Environmental Justice and to collaborating with other Federal agencies on joint efforts to achieve our environmental justice goals.

We look forward to continuing this important work toward the attainment of environmental justice for all Americans.

Sincerely,

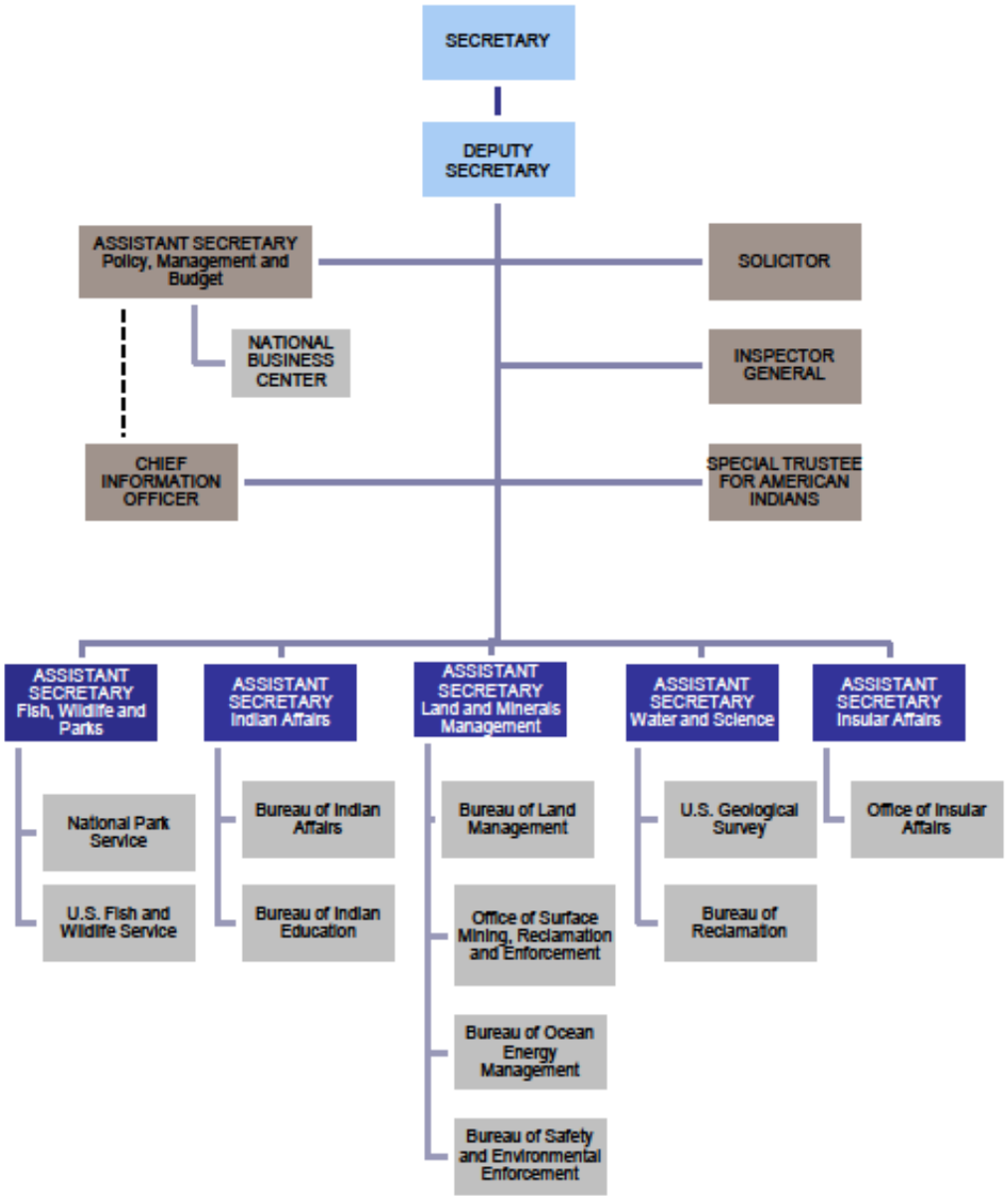
Ken Salazar

HOW ENVIRONMENTAL JUSTICE ACTIVITIES ARE ALIGNED AT THE DEPARTMENT OF THE INTERIOR

The U.S. Department of the Interior (Department) is a multifaceted organization comprised of ten distinct bureaus, each with a unique mission, and several offices all within the Office of the Secretary. The senior appointed official charged with the Department's implementation of Executive Order 12898 (EO 12898) is the Assistant Secretary-Policy, Management and Budget (AS-PMB). AS-PMB responsibilities in part include overseeing compliance with environmental statutes and standards, developing and maintaining internal administrative policy, standards, objectives, and procedures for use throughout the Department. Environmental Justice (EJ) activities are administered within AS-PMB by the Office of Environmental Policy and Compliance (OEPC). Each of the Department's bureaus [Bureau of Indian Affairs (BIA), Bureau of Indian Education (BIE), Bureau of Land Management (BLM), Bureau of Ocean Energy Management (BOEM), Bureau of Safety and Environmental Enforcement (BSEE), Bureau of Reclamation (BR), U.S. Fish and Wildlife Service (FWS), National Park Service (NPS), Office of Surface Mining Reclamation, and Enforcement (OSM), and U.S. Geological Survey (USGS)] has a Primary EJ Coordinator [1] who works directly with OEPC in carrying out the Department's EJ activities. Each bureau has regional and field level offices that assist in local and regional EJ initiatives.

[1] Primary EJ Coordinator is the bureau or office staff person normally at the headquarters level whose duties and tasks may include helping to integrate EJ throughout their particular bureau or office. Duties may also include carrying out day-to-day EJ tasks, internal and external coordination, public outreach, public contact, and acting as the liaison with their field level and regional offices.

U.S. DEPARTMENT OF THE INTERIOR
ORGANIZATIONAL CHART



I. Introduction

A. Overview

EO 12898 (http://www.archives.gov/federal-register/executive-orders/pdf/12898.pdf) outlined an important mandate for Federal agencies to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands."

In addition, the EO called for the creation of the Federal Interagency Working Group on Environmental Justice (EJ IWG). The EJ IWG is comprised of Federal agency staff to fact find, receive public comments, and conduct inquiries concerning EJ. EO 12898 also directed Federal agencies to prepare a strategic plan on EJ.

In 1995, the Department assigned to OEPC the coordination of its EJ activities. OEPC established a committee comprised of representatives from each of the Department's bureaus to develop the Department of the Interior's Strategic Plan for EJ. The 1995 plan was adopted and integrated into Departmental policy which increased the visibility of EJ.

In August 2011, the Department joined with other Federal agency members in the signing of the *Memorandum of Understanding on Environmental Justice and Executive Order 12898* (MOU). This MOU reaffirms the Federal government's commitment to EJ. Provisions of the MOU call on each Federal agency to review and update existing EJ strategic plans where applicable and as appropriate. This document is the Department's revised Environmental Justice Strategic Plan (EJ SP).

B. Relationship of Environmental Justice to the Department's Strategic Plan Goals, Initiatives, and Activities

The Department's 2011-2016 Strategic Plan outlines five mission areas that provide the framework for its overarching stewardship responsibilities ("Natural and Cultural Resources, Sustainable Use of Resources, Government-to-Government Relationships, Scientific Foundation for Decision Making, and Building a 21st Century DOI"). Five priority goals have been set forth for achieving near term results ("renewable energy, sustainable water management and conservation, climate change adaptation, youth in natural resources, and efforts to improve the safety of Indian communities"). This draft EJ SP supports and compliments those overarching responsibilities and priority goals, and links the Department's responsibilities under EO 12898 to the Department's 2011-2016 Strategic Plan, (http://www.doi.gov/bpp/data/PPP/DOI_StrategicPlan.pdf). The Department also has several initiatives that further these mission areas and priority goals.

Many of the Department's activities, although not specifically labeled or titled "EJ," embody the spirit and intent of EO 12898 and help in the effort of, "focusing Federal attention on the

environmental and human health conditions in minority communities and low-income communities…" Some representative examples of these activities are listed below.

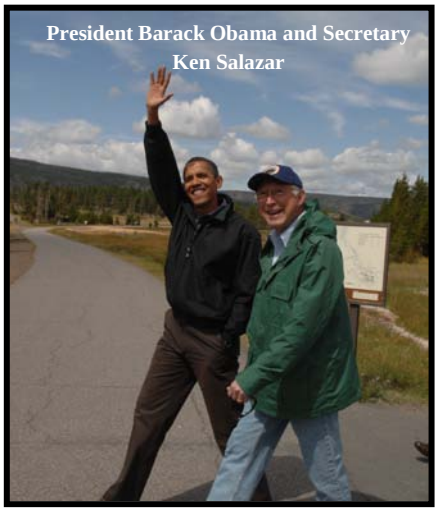
The Department is committed to the sustainable management of natural resources. The *Department's Strategic Sustainability Performance Plan* (http://www.doi.gov/greening/sustainability_plan/index.html) of June 3, 2011 sets forth goals and objectives in the achievement of reducing green house gases, and reducing our carbon footprint. This sustainability plan supports the Department's mission area of sustainable use of resources.

The Department is the keeper of national treasures such as national parks, refuges, and historic and natural landmarks. These assets support the First Lady's *Let's Move!* Initiative by encouraging youth and their families to recreate on public lands to improve their health. In collaboration with the White House Domestic Policy Council and other Federal agencies this initiative has been extended to Indian country. This initiative supports the Department's mission area of natural and cultural resources, and government-to-government relationships.


Junior Rangers on the trail at Shenandoah National Park in Virginia


Let's Move in Indian Country

The *America's Great Outdoors Initiative* was established by the President in April 2010. The Presidential memorandum called on the Secretaries of the Interior and of Agriculture, the Administrator of the Environmental Protection Agency (EPA), and the Chair of the Council on Environmental Quality (CEQ) to lead the initiative, in collaboration with several other Federal agencies. The initiative supports a 21st century conservation agenda that builds on successes in communities across the country, and has started a national dialogue about conservation that supports the efforts of private citizens and local communities. This initiative seeks the input of communities, including those living in cities and suburbs, as well as more rural areas, and helps to increase public access to parks and open spaces. This initiative supports the Department's mission areas of natural and cultural resources and building a 21st century Department.


President Barack Obama and Secretary Ken Salazar

The Department's National Environmental Policy Act (NEPA) regulations at 43 CFR Part 46 encourage public participation and community involvement. The Department is using the definition of proposed major Federal actions as found in the CEQ's NEPA regulations.

The Department's EJ SP will be implemented through bureau and Departmental activities. The EJ SP is intended to be a living document and we expect it to evolve over time. As the Department conducts its annual review, the Department may provide alternative measures to those described in this document. In addition, as the Department moves forward and emphasizes EJ, we expect that our strategies will evolve as well. The Department will utilize existing programs and authorities to further the goals of EJ; thereby integrating EJ into all activities of the Department.

C. Previous Environmental Justice Strategy

The *1995 U.S. Department of the Interior Strategic Plan - Environmental Justice*, outlined a plan to ensure the costs and risks of the Department's environmental decisions did not fall disproportionately upon minority, low-income and tribal populations and communities. The plan both built on longstanding partnerships and sought to create new relationships to solve environmental problems. The Department worked in partnership with tribal governments to address their environmental concerns and shared expertise in science and resource management with others when seeking resolution of environmental health and safety problems. The four goals of the 1995 Strategic Plan were:

> Goal 1. The Department will involve minority and low-income communities as we make environmental decisions and assure public access to environmental information.
>
> Goal 2. The Department will provide its employees with environmental justice guidance and with the help of minorities and low-income communities develop training which will reduce their exposure to environmental health and safety hazards.
>
> Goal 3. The Department will use and expand its science, research, and data collection capabilities on innovative solutions to environmental justice related issues (for example, assisting in the identification of different consumption patterns of populations who rely principally on fish and/or wildlife for subsistence).
>
> Goal 4. The Department will use our public partnership opportunities with environmental and grassroots groups, business, academic, labor organizations, and Federal, Tribal, and local Governments to advance environmental justice.

The Department and its bureaus participated in several EJ IWG Demonstration Projects. Bureaus were able to provide technical assistance to communities to obtain their input on project decision making.

The Department's EJ implementation was largely carried out in analyses performed under the NEPA and rulemakings.

The 1995 EJ Strategic Plan did not establish quantitative measures or reporting requirements. Nevertheless, we recognize the value that such tools provide in achieving our goals. Therefore, in order to build upon our past efforts we have included quantitative measures and reporting requirements in this revised EJ SP.

The Department's 2012-2017 EJ SP sets forth five major goals to guide the Department in its pursuit of EJ. In the coming years, we will employ an integrated strategy to:

- Ensure responsible officials[2] are aware of the provisions of EO 12898 and are able to identify and amend programs, policies, and activities under their purview that may have disproportionately high and adverse human health or environmental effects on minority, low-income, or tribal populations;

- Ensure minority, low-income, and tribal populations are provided with the opportunity to engage in meaningful involvement in the Department's decision making processes;

- The Department will, on its own or in collaboration with partners, identify and address environmental impacts that may result in disproportionately high and adverse human health or environmental effects on minority, low-income, or tribal populations;

- Use existing grant programs, training, and educational opportunities as available to aid and empower minority, low-income, and tribal populations in their efforts to build and sustain environmentally and economically sound communities; and

- Integrate the Department's EJ Strategies with its Title VI of the Civil Rights Act enforcement responsibilities to improve efficiencies while preserving the integrity of Title VI and EJ activities.

II. How this Environmental Justice Strategic Plan was Developed

This strategy was developed under the direction of the AS-PMB using a template developed by the EJ IWG. This EJ SP is based on input and review by our bureaus and several selected offices. The draft of this EJ SP was made available on the OEPC web site (http://www.doi.gov/oepc/justice.html) and was provided to the EPA for publication on the EJ IWG web site (http://www.epa.gov/compliance/environmentaljustice/interagency/iwg-compendium.html) and for distribution to members on their EJ list serve. All public comments were reviewed and considered to the extent practicable in the finalization of the Department's 2012-2017 EJ SP. The Department has made several revisions based upon public comments, such as adding language to the Secretary's message regarding exclusion and discrimination, expanding upon our strategies under goals 2, 4, and 5, and adding an explanation for EJ Coordinator in our footnotes. The recommendations specifically related to civil rights have been provided to the Department's Office of Civil Rights for further review. The recommendations

[2] *Responsible Official* is the bureau employee who is delegated the authority to make and implement a decision on a proposed action and is responsible for ensuring compliance with NEPA.

specifically related to the NPS have been provided to the NPS for further review. The Department appreciates the comments received and wishes to reiterate that this is intended to be a living document and we expect it to evolve over time.

III. 2012-2017 Goals, Strategies, and Performance Measures

GOAL # 1

Ensure responsible officials are aware of the provisions of EO 12898 and are able to identify and amend programs, policies, and activities under their purview that may have disproportionately high and adverse human health or environmental effects on minority, low-income, or tribal populations.

Strategies include, but are not limited to:

- Develop and implement EJ training for managers and others.
- Use existing committees, working groups, and forums to champion EJ throughout the Department.
- Require that rules reviewed under Executive Order 13563 "Improving Regulation and Regulatory Review" ensure there is no disproportionate adverse impact on minority, low-income or tribal populations.

Bureaus/Offices Reporting	Performance Measures	2017 Target
All	Percentage of responsible officials Trained.	75% of the target population.
All	Each region of a relevant bureau or office has an individual(s) designated as an EJ coordinator.	100%

Examples of Departmental or bureau specific goals, programs, activities, or policies that currently or potentially could be used to support this strategic goal:

The NPS's A Call To Action: Preparing for a Second Century of Stewardship & Engagement (Call to Action) was released August 25, 2011. A Call to Action charts a path toward that second-century vision by asking NPS employees and partners to commit to concrete actions that advance the mission of the NPS. The report contains actions that the NPS will accomplish by 2016, NPS's 100th anniversary. The first goal is to connect people to parks in the next century. Action 1, "Fill in the Blanks," states: "Identify a national system of parks and protected sites (rivers, heritage areas, trails, and landmarks) that fully represents our natural resources and the nation's cultural experience. To achieve this we will work with communities and partners to

submit to Congress a comprehensive National Park System plan that delineates the ecological regions, cultural themes, and stories of diverse communities that are not currently protected and interpreted." http://www.nps.gov/calltoaction/

Action 13 of A Call to Action is entitled "Stop Talking and Listen" and it states, "Learn about the challenges and opportunities associated with connecting diverse communities to the great outdoors and our collective history. To accomplish this we will conduct in-depth, ongoing conversations with citizens in seven communities, one in each NPS Region, representing broadly varied cultures and locations. We will create and implement work plans at each location, which explore new approaches for building and sustaining mutually beneficial relationships with diverse communities."

The FWS co-sponsors the *Environmental Justice in America Conference* which brings state and Federal employees, tribes, academics, business and industry, non-profit organizations, faith-based organizations and others to participate in a dialogue on and training to achieve EJ. http://www.ejconference.net/home.html

2011 EJ in America Conference
Washington, DC

GOAL # 2

Ensure minority, low-income, and tribal populations are provided with the opportunity to engage in meaningful involvement in the Department's decision making processes.

Strategies include, but are not limited to:

- Provide opportunities for the involvement of minority, low-income, and tribal populations as appropriate early and throughout program and planning activities and NEPA processes.
- Establish working partnerships with minority, low-income, and tribal populations.
- Engage in government-to-government consultation with tribal governments consistent with the Department's and applicable bureau's policies on consulting with tribal governments.
- Consistent with law and resources provide the public with information necessary for meaningful participation.
- Conduct public meetings, listening sessions, and forums in a manner that is accessible to and inclusive of minority, low-income, and tribal populations.

- Develop and maintain a list of headquarters and regional EJ contacts, and make it accessible to the public.

- Where appropriate, use alternative dispute resolution (ADR) processes, such as negotiation, mediation, and joint fact-finding, to resolve disputes involving disproportionate adverse impacts of bureau decisions on minority, low-income, and tribal populations.

Bureaus/Offices Reporting	Performance Measures	2017 Target
All	Annual percentage of major Federal actions[3], having a potential for EJ implications that also qualify as Departmental actions with tribal implications[4].	The Department will determine the baseline in 2012 and subsequently establish targets.
All	Annual percentage of environmental impact statements that identify minority and low-income communities and, if they exist, provide opportunities for meaningful involvement.	The Department will determine the baseline in 2012 and subsequently establish targets.

Examples of Department or bureau specific goals, programs, activities, or policies that currently or potentially could be used to support this strategic goal:

The Rivers, Trails, and Conservation Assistance (RTCA) Program supports community-led natural resource conservation and outdoor recreation projects. The RTCA program implements the natural resource conservation and outdoor recreation mission of the NPS in communities across America. RTCA works with nonprofit organizations, community groups, tribes or tribal governments, and local, state, or Federal government agencies.
http://www.nps.gov/ncrc/programs/rtca/


Tree Planting Project

The NPS's Land and Water Conservation Fund (LWCF) program provides matching grants to state and local governments for the acquisition and development of public outdoor recreation areas and facilities. The program is intended to create and maintain a nationwide legacy of high

[3] A major Federal action is defined in the Council on Environmental Quality's NEPA regulations found at 40 CFR 1508.18.

[4] For a definition of Departmental actions with tribal implications see the Department's Tribal Consultation Policy at: http://www.doi.gov/news/pressreleases/loader.cfm?csModule=security/getfile&pageid=269697.

quality recreation areas and facilities and to stimulate non-Federal investments in the protection and maintenance of recreation resources across the United States. http://www.nps.gov/lwcf/

The National Center for Preservation Technology & Training (PTT) seeks innovative projects that advance the application of science and technology to historic preservation. The PTT grants program funds projects that develop new technologies or adapt existing technologies to preserve cultural resources. http://www.ncptt.nps.gov/grants/

The Department, including BIA and BR supports tribal self-governance and self-determination. Tribes assume an expanded role in the operation of Indian programs through Public Law 93-638 contracting. The Department's bureaus promote this by entering into a variety of contract, compact, and annual funding agreements with tribes. http://www.bia.gov/WhoWeAre/AS-IA/OSG/index.htm

GOAL # 3

The Department will, on its own or in collaboration with partners, identify and address environmental impacts that may result in disproportionately high and adverse human health or environmental effects on minority, low-income, or tribal populations.

Strategies include, but are not limited to:

- Prepare Department-wide guidance on fish consumption advisories[5].
- Use scientific information to plan effectively for changes that could disproportionately affect minority, low-income, or tribal populations.
- Consider enhancing mitigation and monitoring efforts in the planning processes to lessen any disproportionate environmental, social, and economic impacts on minority, low-income, and tribal communities.
- Establish working relationships or memoranda of understanding/memoranda of agreement with academic institutions, including those serving primarily minority populations, to further EJ goals and further develop special expertise and knowledge to address EJ goals.
- Establish partnerships and collaborate with other Federal agencies to pool resources and assist communities in addressing environmental issues.

[5] When contaminant levels are unsafe, consumption advisories may recommend that people limit or avoid eating certain species of fish caught in certain places.

- Establish partnerships and collaborate with minority, low-income, and tribal populations to share and benefit from specialized expertise that the partnering groups may have about environmental, social, and other issues pertinent to EJ.

- Use internships and other work programs to gain and share expertise or scientific knowledge to further EJ goals.

- Consider consensus-based alternatives in NEPA analyses in accordance with Departmental NEPA regulations at 43 CFR 46.110.

- Develop Department-wide and subsequent bureau-specific criteria for assessing the effectiveness of EJ analyses, to guide periodic effectiveness reviews conducted by each bureau.

Bureaus/Offices Reporting	Performance Measures	2017 Target
All	Number of partnerships with others, including educational institutions and tribes, to share and benefit from specialized expertise in furthering EJ goals.	The Department will determine the baseline in 2012 and subsequently establish targets.
All	Percentage of bureaus that have established a process for periodically assessing the effectiveness of EJ analyses, based on Departmental criteria.	The Department will determine the baseline in 2012 and subsequently establish targets.

Examples of Department or bureau specific goals, programs, activities, or policies that currently or potentially could be used to support this strategic goal:

Water Quality Studies for Tribal Communities

The USGS Oklahoma Water Science Center (OK WSC) has partnered with the EPA and the Army Corps of Engineers in providing critical data to Oklahoma Indian Tribes[6] related to the Tar Creek superfund site. The site is one of the largest superfund sites in the Nation and its environmental effects impact the lands of nine tribes. The site has a 100 year history of lead and zinc mining. With the mining activities comes the risk of subsidence and heavy metal contamination of surface water, groundwater, and sediment. The USGS OK WSC has provided these tribal communities with data related to environmental effects of the metals on the ecology of the area. This information is crucial for tribes in assessing health threats to their communities.

[6] "Indian Tribe" means any tribe, band, nation, or other organized group or community of Indians, including any Alaska Native village (as defined in, or established pursuant to, the Alaska Native Claims Settlement Act), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

Mining Impacts Workshop for Tribal Communities

The USGS's Office of Tribal Relations, through its Technical Training in Support of Native American Relations Program, and the USGS Midwest Area Mining Initiative, sponsored a tribal workshop on understanding the impacts of mining in the Western Lake Superior region hosted by the Bad River Band of Lake Superior Chippewa Indians in September, 2011. The goal of the workshop was to provide technical information to tribal natural resource managers and others who make decisions or influence decisions regarding proposed mining. Many tribes in the Western Lake Superior region are currently reviewing environmental impact statements for proposed mining and other types of land development activities near lakes and wetlands used by tribes for wild rice production and other vitally important cultural activities. Representatives from 11 tribal government agencies attended the workshop. During this workshop, 24 presenters from Federal, state, and tribal governments, and private organizations and foundations provided technical information on mineral deposits, geology, mineral economics, and mining impacts on the environment (air quality, geochemistry, water quality and sediments and mine permitting).

USGS Urban Waters Initiative

Studies by the USGS have identified coal-tar-based sealcoat, the black viscous liquid sprayed or painted on asphalt pavement such as in parking lots, as a major source of polycyclic aromatic hydrocarbon (PAH) contamination in urban areas for large parts of the Nation. Several PAHs are suspected human carcinogens and are toxic to aquatic life. Based on USGS studies, several jurisdictions, including the City of Austin, Texas; the District of Columbia.; Dane County, Wisconsin; the State of Washington; Sussex County, NY; and several suburbs of Minneapolis, Minnesota, have banned the use of coal-tar-based sealcoat. Similar bans are under consideration in additional jurisdictions. In the District of Columbia the ban was issued to protect human health and the environment. The ban includes the entire District of Columbia, but the EJ relevance is in the Anacostia River watershed. The Anacostia is one of the pilot studies in the Urban Waters Initiative.

The BIA is particularly focused on protection of Indian treaty and subsistence rights and assists tribes in developing effective studies and projects to improve Federal and tribal management of subsistence resources.
http://www.bia.gov/WhoWeAre/BIA/OTS/NaturalResources/FishWildlifeRec/index.htm

Water supply problems are frequently found in Indian Country. Both the BIA and BR offer tribes assistance in managing, conserving, utilizing, and protecting trust water resources through projects and/or programs that support water management, planning, and development. Additional information for BIA and BR can respectively be found at http://www.bia.gov/WhoWeAre/BIA/OTS/NaturalResources/Water/index.htm and www.usbr.gov/native.

The NPS's Federal Lands to Parks Program help communities create new parks and recreation areas by transferring surplus Federal land to state and local governments. This program helps ensure public access to properties and stewardship of the

Rail Trail in Charles County, Maryland, outside Washington D.C.

properties' natural, cultural and recreational resources. http://www.nps.gov/flp/

The NPS administers the Rivers, Trails and Conservation Assistance Program, Land and Water Conservation Fund, National Natural Landmarks Program, National Historic Landmarks Program, the Tribal Preservation Program, Tribal Projects Grants, and the Native American Graves Protection and Repatriation Act Program.

The NPS's Research Learning Centers have been developed to facilitate research efforts and provide educational opportunities. They are places where science and education come together to preserve and protect areas of national significance. They have been designed as public-private partnerships that involve a wide range of people and organizations including researchers, universities, educators, and community groups. http://www.nature.nps.gov/learningcenters/

The NPS's Tribal Preservation Program assists Indian Tribes in preserving their historic properties and cultural traditions. The program originated in 1990, when Congress directed the NPS to study and report on preservation funding needs. The findings of that report, the Keepers of the Treasures: Protecting Historic Properties and Cultural Traditions on Indian Lands http://www.nps.gov/history/crdi/publications/Keepers.htm, are the foundation of the Tribal Preservation Program. Based on that report, Congress has appropriated annual grants for tribal preservation. http://www.nps.gov/history/hps/tribal/

The OSM's Appalachian Coal Country Team (ACCT) works closely with community organizations in some of the poorest regions of the country to restore the health of local watersheds affected by decades of environmental degradation from surface coal mining. Through an innovative partnership between OSM, AmeriCorps Volunteers in Service to America (VISTA), the Citizen's Conservation Corps of West Virginia, and local community sponsors, the ACCT addresses both the environmental and economic consequences of past coal mining. The ACCT encourages environmental stewardship, enhances outreach and education efforts, and builds local capacity for communities to continue restoration efforts independently. In 2007, based on the success of the ACCT, OSM partnered with the Southwest Conservation Corps to establish the Western Hardrock Watershed Team (WHWT) – a coalition of community and watershed improvement groups restoring land and water resources damaged by historic mining in the West. In Fiscal Year 2011 alone, the ACCT and WHWT placed 94 OSM/VISTA volunteers in rural mining communities for year-long service positions. http://www.osmre.gov/aml/vista/vista.shtm

GOAL # 4

Use existing grant programs, training, and educational opportunities, as available, to aid and empower minority, low-income, and tribal populations in their efforts to build and sustain environmentally and economically sound communities.

Strategies include, but are not limited to:

- Develop, implement, and promote communication strategies through outreach to inform minority, low-income, and tribal populations of the Department's programs, policies and activities.

- Provide technical assistance and grants as available to minority, low-income, and tribal populations to identify disproportionately high and adverse human health or environmental effects on minority, low-income, and tribal populations, and to develop methods to reduce these hazards.

- Provide targeted training to minority, low-income and tribal populations to better enable them to achieve EJ for their communities.

- Conduct community-based training to achieve EJ for communities.

- Consult with local community groups to ensure that outreach programs are accessible.

- Assist minority, low-income, and tribal populations in developing and expanding programs that promote healthy ecosystems.

Bureaus/Offices Reporting	Performance Measures	2017 Target
BIA/BIE	Percentage of school facilities which are maintained in an acceptable condition based on a Facility Condition Index rating of "good".	The Department will determine the baseline in 2012 and subsequently establish targets.

Examples of Department or bureau specific goals, programs, activities, or policies that currently or potentially could be used to support this strategic goal:

The FWS offers Tribal Wildlife Grants to provide technical and financial assistance to Federally recognized tribes for the development and implementation of programs that benefit fish and wildlife resources and their habitat. The funds may be used for salaries, equipment, consultation services, subcontracts, and acquisitions and travel. The program has been provided with appropriations of $7,000,000 in each of the past three fiscal years (2009-2011).

The OSM has partnered with the Citizen's Conservation Corps of West Virginia, the Southwest Conservation Corps and AmeriCorps to create two VISTA Teams to help restore land and water resources damaged by past coal mining in rural communities in Appalachia and the Rocky Mountain West. In the summer of 2011, in coordination with the Department's Office of Youth Partnership and Service and other bureaus, OSM provided administrative funding for OSM/VISTA Teams to run a Summer Program, placing 59 full-time youth all across the country in non-profits, community organizations, state agencies, and Department bureaus for 10-week

assignments. Participants completed critical projects, such as stream assessments, building community gardens, facilitating civic education, and running youth outdoor programs – many in low-income communities.

The BR has a technical assistance for tribes program, as well as other assistance programs available to tribes. In keeping with BR's mission, all such programs pertain to the area of water and related resources. http://www.usbr.gov/native

The NPS offers exciting employment and volunteer opportunities to help young people ages 5 to 25 learn more about the national parks, to gain some valuable work experience, and to make new discoveries. Some of the opportunities include:

Youth Conservation Corps (ages 15-18)
Public Land Corps (ages 16-25)
Programs for Boy Scouts (ages 7-18)
Programs for Girl Scouts (ages 5-18)
Student Conservation Association (ages 15 and up)
Partner with the National Park Service (for organizations)
http://home.nps.gov/gettinginvolved//youthprograms/

The Pathways Program: The Pathways Program consists of three discrete excepted service internship programs for students and recent graduates: the Internship Program; the Recent Graduates Program; and the Presidential Management Fellows Program. The Pathways Program is expected to be effective April 1, 2012. http://www.opm.gov/HiringReform/Pathways/.

Department Workforce Diversity: The Department wants a workforce that reflects the diversity of America. Potential employees must be a United States citizen to be eligible for consideration for employment. Certain jobs may also have age and physical qualifications. Generally, potential employees must be at least 18 years of age.

NPS Learning Opportunities to Engage Youth and Web Rangers: WebRangers online program for children. The NPS can build volunteerism at an early age by encouraging children to take an interest in their national parks. http://www.nps.gov/webrangers/

September 18, 2009, the Secretary of the Interior announced the 20 Historically Black Colleges and Universities (HBCUs) that will be the beneficiaries of historic preservation grants aimed at providing assistance in the repair of historic buildings on their campuses. These grants will be awarded to HBCUs for the preservation of campus buildings listed in the National Register of Historic Places. http://www.nps.gov/history/hps/hpg/HBCU/index.htm

The BIE seeks to strengthen Indian education, by assessing schools for their Adequate Yearly Progress (AYP) and maintaining school facilities in an acceptable condition.
http://www.bie.edu/

GOAL # 5

Integrate the Department's EJ Strategies with its Title VI of the Civil Rights Act enforcement responsibilities to improve efficiencies while preserving the integrity of Title VI and EJ activities.

The Department has Title VI responsibilities for hundreds of recipients of Federal financial assistance. All bureaus have Title VI enforcement responsibilities. Recipients of Federal financial assistance from the Department are required to sign statements assuring they will not discriminate on certain protected bases to include, but not limited to: race, color, and national origin in their programs and activities as a condition of receiving funding from the Department. The Departmental regulations that cover Title VI are found at 43 CFR Part 17, Subpart A. Some bureaus also have regulations applying Title VI standards to programs, activities and facilities of those bureaus (for example: 50 CFR, Part 3 for the FWS).

Since most of the Department's recipients of Federal financial assistance are environmental organizations, allegations about racial/national origin disparities under Title VI have the potential to impact EO 12898 requirements as well. The Department and its bureaus enforce Title VI linked to EJ in two ways. The first is via the public civil rights complaint system. Any member of the public, or a community group, may file a complaint alleging discrimination on the basis of race, color or national origin. These complaints are processed by the Department's Office of Civil Rights, Public Civil Rights Division, and/or the bureau civil rights offices. The second way the Department monitors for Title VI and EJ is via the civil rights review process. This is a systemic analysis of the patterns and practices of recipient organizations to determine how their programs and activities (mostly environmental in nature), impact different racial/national origin communities.

Strategies include but are not limited to:

- Effectively resolve or adjudicate all EJ related Title VI complaints.
- Include EJ as a key component of civil rights compliance reviews.
- Provide technical assistance and training on EJ to recipients of Federal financial assistance.
- Actively monitor recipients' compliance with the signed Title VI statements prior to receiving Federal financial assistance.

Bureaus/Office Reporting	Performance Measures	2017 Target
All	Percentage of Title VI EJ complaints resolved or adjudicated.	The Department will determine the baseline in 2012 and subsequently establish targets.
All	Percentage of civil rights compliance reviews where EJ is a review factor.	The Department will determine the baseline in 2012 and subsequently establish targets.
All	Recipients of Federal financial assistance receiving technical guidance on EJ as linked to Title VI.	The Department will determine the baseline in 2012 and subsequently establish targets.

Examples of Department or bureau specific goals, programs, activities, or policies that currently or potentially could be used to support this strategic goal:

The FWS's Wildlife and Sport Fish Restoration Program provides Federal financial assistance to state and wildlife agencies. The FWS plans to conduct annually at least nine civil rights compliance reviews of these state fish and wildlife agencies. Compliance with EJ will be a major component of those reviews. In particular, the FWS will monitor state's activities in working with minority and low-income communities on environmental assessments conducted. The FWS will monitor the emission of toxins into the air, ground or water by these state agencies. EJ Requirements will be considered on a project by project basis where Federal funds are being spent.

Action 9 of the NPS's *A Call to Action* is "Keep the Dream Alive." The NPS will foster civic dialogue about the stories of the civil rights movement found within the parks. The NPS will conduct a coordinated series of special events to commemorate significant 50th anniversaries of the civil rights movement (Civil Rights Act passage, "I Have a Dream" speech, etc.)."

About this Environmental Justice Strategic Plan:

This EJ SP should not be viewed as a mechanism to provide direct solutions to EJ issues in a particular community. Instead, the EJ SP is intended for the Department to assess different environmental scenarios, identify challenges and opportunities, explore practical application of strategies, and develop recommendations to address EJ issues.

This EJ SP does not confer any legal right and is not a rule requiring notice and comment under the Administrative Procedure Act (Public Law 89-554).

This EJ SP is intended only to improve the internal management of the U.S. Department

of the Interior and is not intended to, nor does it create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity by a party against the Department, its bureaus, its officers, or any person. This EJ SP shall not be construed to create any right to judicial review involving the compliance or noncompliance of the Department, its bureaus, its officers, or any person.

Public Involvement

The Department will continue to involve minority and low-income communities as we make environmental decisions and assure public access to our environmental information.

For further information contact**:** Loretta Sutton, Program Analyst; Natural Resources Management Team; Office of Environmental Policy and Compliance; Telephone: 202–208–7565 or email: revised_EJ_strategicplan@ios.doi.gov.

The Department welcomes further comment on its EJ SP and Implementation Progress Report. Comments may be emailed to: revised_EJ_strategicplan@ios.doi.gov or mailed to: U.S. Department of the Interior, Office of Environmental Policy and Compliance (MS-2462), 1849 C Street NW, Washington, DC 20240. Any announcements related to the Department's EJ SP or Annual Implementation Progress Report will be posted at: http://www.doi.gov/oepc/justice.html.

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U.S. DEPARTMENT OF THE INTERIOR

ENVIRONMENTAL JUSTICE STRATEGIC PLAN
2012-2017

ASSISTANT SECRETARY, POLICY MANAGEMENT AND BUDGET

OFFICE OF ENVIRONMENTAL POLICY AND COMPLIANCE
WASHINGTON D.C. 20240
http://www.doi.gov/oepc/justice.html

HB77 - Safer Sealant Act - EHEA - Stewart - 24Marc
Uploaded by: Tulkin, Josh
Position: FAV

7338 Baltimore Ave
Suite 102
College Park, MD 20740

Committee: Education, Health and Environmental Affairs

Testimony on: HB77 "Environment - Application of Coal Tar Pavement Products – Prohibitions (Safer Sealant Act of 2021)"

Position: Support

Hearing Date: March 24, 2021

The Maryland Chapter of the Sierra Club supports HB77, which would prohibit a person from applying a coal tar sealant to pavement or a similar surface if it contains specified high levels of polycyclic aromatic hydrocarbons (PAH).

Pavement sealant products containing coal tar are highly hazardous to public health and the environment. Extensive research by the U.S. Geological Survey (USGS) has confirmed the dangers of coal tar sealants.[1] The coal tar ingredient in pavement sealants contains high levels of PAH which can cause rashes, skin irritations, cancers, mutations, birth defects and death. Workers employed to apply these sealants, pregnant women and young children are particularly susceptible. PAH is also toxic to aquatic animals. Coal tar doesn't remain just where applied but is distributed throughout the environment by weathering, friction from car tires and foot traffic. PAH particles then travel in air-borne dust and water run-off.

PAH levels in coal tar sealants are 1000 times higher than in asphalt-based products. Sealant manufacturers' safety data sheets on products such as GemSeal's PolyTar warn that the PAHs contained in their products are classified as a Category 1A *known* carcinogen. Selling or using coal tar sealants which are known to cause significant health and environmental harms is unnecessary because many product alternatives, such as asphalt and latex based sealants, are widely available at comparable prices. Due to growing concerns and the availability of much safer and affordable substitutes, Ace Hardware, Home Depot, Lowe's and United Hardware stopped selling coal tar sealants at least seven years ago.[2]

Coal tar sealant restrictions are already in effect in Montgomery, Prince George's, Anne Arundel and Howard Counties. The Safer Sealant Act of 2021 is an opportunity to extend vital health and environmental protections for the benefit of all Marylanders. We urge the committee to issue a favorable report on this legislation.

Charles T. Skinner
Transportation Committee
cskinnec@gmai.com

Josh Tulkin
Chapter Director
Josh.Tulkin@MDSierra.org

1 "Coal-Tar-Based Pavement Sealcoat, PAHs, and Environmental Health," USGS Fact Sheet 2016-3017, April 2016
2 "Toxic Driveways? Cities Ban Coal Tar Sealants," Wendy Koch, USA Today, 16-Jun-2013

Support for HB 0077 from Claire Wang (1).pdf
Uploaded by: Wang, Claire
Position: FAV

Support for HB 0077
Education, Health, and Environmental Affairs Committee

Dear Senator Pinsky and Senator Kagan:

As a concerned resident of Maryland, I strongly support House Bill 0077, calling for a ban on coal tar sealants and a limit on PAHs in Maryland. They are not only harmful to human health, but they are also harmful to aquatic health.

I looked through many safety data sheets that sealcoating companies provided on their websites. Sealcoating companies are required to put these on their websites and they explain properties of the sealants and the health hazards. One safety data sheet that I read says that coal tar may cause fertility damage, genetic defects, and organ damage.

There are many other alternatives to coal tar such as latex and asphalt-based sealers, which means that banning coal tar won't be too bad. These alternatives are easy to get and are not that expensive. Home Depot and Lowe's have already stopped selling coal tar because they know about its health effects.

Al Innes is a Minnesota state official who's running an EPA-funded program to reduce the use of coal tar sealants. He held webinars throughout the Great Lakes region last summer to educate businesses about how to shift to asphalt products. He said that there are few applications for which asphalt sealants won't work well.

I read an article from the Sheboygan Press about coal tar. In it, there was a man named Lonnie Harris who is the president of West Suburban Asphalt and Concrete. He said that he applied coal tar sealants to parking lots for years and got second-degree burns on his neck from carrying an applicator hose around his shoulders. He said that he got lightheaded and had panic attacks, which would go away during his work's off-season. He said he now uses only asphalt-based products and feels better. This shows that asphalt-based sealants are better for human health than coal tar.

Because of all these reasons, I highly suggest that we ban coal tar sealants in Maryland.

Signed,
Claire Wang

HB77_FAV_SaferSealantsJennifer.pdf
Uploaded by: Littlefield, Jennifer
Position: FWA

Support for HB 0077
Education, Health, and Environment Affairs Committee

Dear Senators Pinsky and Kagan,

Coal tar is a horrible substance put on driveways, parking lots, and roads to improve their appearance. Varying levels of exposure to PAHs from sealants are toxic to human and aquatic health, acutely toxic to fathead minnows and water fleas, and may be linked to tumors in brown bullhead catfish in the Anacostia and Potomac Rivers. Fish embryos that are exposed to low amounts of PAHs can develop eyes with shorter retinas and smaller lenses, misshaped hearts, and abnormal heartbeats. Wind, runoff, and especially snow plows, can move PAH-contaminated pavement dust into nearby soil. PAH concentrations in soil can range from 2.3 to 14 times higher in soils adjacent to sealcoated pavement than unsealed pavement. Elevated levels of PAHs can be found for up to three years after the sealcoat is applied. A 2013 Minnesota Pollution Control Agency sediment study found that coal-tar sealants contributed 67% of total PAHs in 15 metro-area stormwater ponds. High concentrations of PAHs have accumulated in some stormwater pond sediments around the state. Research conducted by these agencies show that coal tar-based sealants are a significant source of PAHs to urban waterways. Cities must maintain stormwater ponds by dredging them, and if the PAH concentrations in the dredged material are high enough, disposal can be very costly, in the hundreds of millions of dollars statewide. Studies have shown that the decrease in the use of coal tar products will reduce the cleanup costs.

For these reasons and many more, coal tar sealants must be banned in Maryland to ensure environmental health.

Signed,

Jennifer Littlefield
Ellicott City, MD

HB77_FAV_SaferSealantsPavin (1).pdf
Uploaded by: Rajagopal, Pavin
Position: FWA

Support for HB 077
Education, Health, and Environmental Affairs

Dear Senator Pinsky and Kagan:

My name is Pavin, and I support House Bill 077.

These are the ways that coal tar can travel through our environment. Adhesion is when a car tire takes some substance on their tire and the coal tar falls off somewhere else. Tracking is when someone steps in a substance, and walks into a building still having the coal tar on his/her shoes, and it falls off there. Wind can take loose coal tar particles on the road and take them somewhere else. Run-off is when rainfall takes some loose particles of a substance and brings it to the nearest water. The run-off could take some loose coal tar particles and pollute a river with it.

Houses adjacent to coal tar sealed parking lots have PAH concentrations 25 times higher than houses adjacent asphalt sealed parking lots. When children crawl on the floor and put their fingers in their mouth, they have a higher chance of being affected with PAH's. Children are the most vulnerable to being infected by PAHs. Household dust with PAH's leaves an elevated cancer risk for children.

The International Agency for research on cancer and the World Health Organization consider PAH's as a group 1 carcinogen, which means it is carcinogenic to humans. The National Toxicology Program classifies it as a "Known to cause cancer." The Environmental Protection Agency classifies it as a Group A carcinogen. The Centers for Disease Control and Prevention classify PAH's as an Occupational Carcinogen. All these groups know about the harm that PAHs cause to the environment and us.

Key health agencies have found that exposure to PAHs increases the chances of skin, lung, bladder, kidney, and stomach cancer in both humans and animals. For these reasons and more, the state of Maryland must ban coal tar sealants.

Pavin Rajagopal
3734 Garand Rd

Ellicott City, MD 21042

Support for HB 77 from MR.pdf
Uploaded by: Ritter, Melanie
Position: FWA

Support for HB 077
Education, Health, and Environmental Affairs Commitee

Dear Senators Pinskey and Kagen,

I support the passing of House Bill 077 to ban coal tar sealants. Coal tar sealants contain PAHs that are extremely toxic to humans and animals. The Columbia University Center for Children's Environmental Health led a 2012 study that was conducted on 164 pregnant women. The scientists concluded that PAH exposure is associated with changing DNA segments, genes, and white blood cells in the umbilical cord of the participants. The study also showed that PAHs can cross the placenta and fetal blood-brain barrier, triggering inflammation that is toxic to the developing brain. Also the inflammation caused by coal tar sealants lower IQs. Secondly, there was a case about a gas plant in Taylorville, Ill. The gas plant buried 50,000 gallons of coal tar in secrecy. Construction disturbed the coal tar and contaminated the local water supply and air. A jury awarded $3.2 million to families of 4 children stricken with neuroblastoma, a rare childhood cancer that resulted from their exposure to coal tar. The four children were diagnosed with neural cancer that experts linked to coal tar exposure, according to court records. Coal tar is also way more dangerous than other sealants and used motor oil. Concentrations of mg per kg of PAHs in coal tar based sealants are about **14 hundred times higher** than in asphalt-based products. Coal tar sealants also contain approximately **16 times more** mg per kg of PAHs than used motor oil. Most people think that used motor oil is extremely toxic for the environment but coal tar sealants are worse. Humans are not the only ones affected by coal tar, benthic organisms (bottom dwellers) are as well. Bottom dwellers include mussels, snails, and a wide range of larvae. When these benthic organisms are exposed to large amounts of PAHs, they can experience a series of problems such as loss of consciousness, inability to reproduce, and death. That can disrupt entire food chains.

Coal tar should be banned in Maryland because of the extreme danger. We do not want our children to get neuroblastoma or grow up with lower IQs. We do not want the food chain to collapse. We want our state to thrive, not die. The good news is that we have alternatives and can switch very easily. So please ban coal tar sealants in Maryland and protect its citizens and our environment!

Sincerely,
Melanie Ritter
Ellicott City, MD 21042

Petition - Save Our Jobs - Vote No on HB77.pdf
Uploaded by: Berg, Rick
Position: UNF

Change.org Petition-Vote NO on HB77

Below are the signatures of those opposed to HB77, each representing a potential job loss. While most signatures are out of state, we are appreciative of the industry wide support. Please take these pleas into strong consideration, and vote NO on HB77

Rick Berg

SealMaster Maryland

Name	City	State	Postal Code
Kaylin Urrego	Waldorf	MD	20603
Jacqueline Burch	Bel Alton	MD	20611
carol Feimster	Bel Alton	MD	20611
Denis Jamison	Brandywine	MD	20613
Brandon Gilk	Bryans Road	MD	20616
Jeremiah Williams	California	MD	20619
Margaret Lee	La Plata	MD	20646
Jeff Huffman	La Plata	MD	20646
Tammyy Breitenbach	Mechanicsville	MD	20659
Ben Tilley	St Leonard	MD	20685
Pat Fitz	Laurel	MD	20707
Melissa Vonella	Laurel	MD	20707
Nancy Rico	Laurel	MD	20707
Courtney Chagnon	Bowie	MD	20715
Dolley Busch	Bowie	MD	20715
Gregory Anderson	Chesapeake Beach	MD	20732
Charled Palmer	Fulton	MD	20759
Richard tarbaby Galloway	Shady Side	MD	20764
Sandra Rogers	Shady Side	MD	20764
Sabir Hayatullah	Greenbelt	MD	20770
Joseph Albert	Bethesda	MD	20816
Lucy Sholtis	Olney	MD	20832
Christine Elder	Olney	MD	20832
Robert Mccubbin	Olney	MD	20832
Jo Rasa	Olney	MD	20832
Vivian Robinson	Olney	MD	20832
Victoria Sholtis	Olney	MD	20832
Ryan Haney	Olney	MD	20832
Janita Parker	Clarksburg	MD	20871
Jeff Juneau	Damascus	MD	20872
Steve Stanley	Damascus	MD	20872
Andrew Hyman	Germantown	MD	20874
Susan Grossmann	Germantown	MD	20874
Amy Romano	Gaithersburg	MD	20878

Johnny Elder	Gaithersburg	MD	20882
Matthew Stanley	Gaithersburg	MD	20882
Carl Stahlman	Silver Spring	MD	20904
Carl Stahlman	Silver Spring	MD	20904
Dan Smith	Arnold	MD	21012
Phillip scott Scott	Bel Air	MD	21014
Jake Bullock	Cockeysville	MD	21030
Tom Decker	Cockeysville	MD	21030
Jake Bullock	Cockeysville	MD	21030
Rick Berg	Cockeysville	MD	21030
David Branton	Ellicott City	MD	21042
victor davis	Columbia	MD	21044
Zachary Devlin	Columbia	MD	21044
Harold Green	Columbia	MD	21044
Mike Burke	Columbia	MD	21044
Vickie Glenn	Columbia	MD	21044
William LaWall	Columbia	MD	21044
Jim Flynn	Glen Burnie	MD	21061
Dianna Herget	Glen Burnie	MD	21061
Rebecca Docherty	Baltimore	MD	21061
Dawn Crawford	Elkridge	MD	21076
Matthew James	Hanover	MD	21076
Shannon Lucas	Hanover	MD	21076
Thomas Fitzpatrick	Havre De Grace	MD	21078
Keith Pruitt	Millersville	MD	21108
Russell Lobb	Parkton	MD	21120
Kacey Marshall	Pasadena	MD	21122
frank kenney	Pasadena	MD	21122
Alan Yospe	Reisterstown	MD	21136
Jason Turner	Street	MD	21154
Christian Harbom	Westminster	MD	21157
William Mahoney	Baltimore	MD	21214
Andrew Stallings	Baltimore	MD	21215
John Lindner	Baltimore	MD	21218
Christine Abdis	Middle River	MD	21220
Jeff Vogtman	Essex	MD	21221
Kevin Duran	Baltimore	MD	21223
Edwin Vargas	Baltimore	MD	21223
Christina Smith	Baltimore	MD	21223
Jonathan Navarro	Brooklyn	MD	21225
Eric Rogers	Catonsville	MD	21228
Darrell Diehl	Baltimore	MD	21229
Jack Rogers	Baltimore	MD	21230
Natalie Dement	Baltimore	MD	21230
Tracy McGowan	Annapolis	MD	21409
Robert Joseph	Annapolis	MD	21409
Dominic Joseph	Annapolis	MD	21409

Carol Hutzell		MD	21536
Dave Rayner		MD	21539
Morris Harrison	Cambridge	MD	21613
Ron Getek	Grasonville	MD	21638
Janice Getek	Grasonville	MD	21638
James Burns	Queen Anne	MD	21657
Michael Tyler	Frederick	MD	21703
Andrew Stanley	Frederick	MD	21703
Peter Stanley	Frederick	MD	21703
Dominic Stanley	Frederick	MD	21703
theresa davis	Frederick	MD	21704
Donna Arcidiacono	Frederick	MD	21704
Peter Arcidiacono	Frederick	MD	21704
James Testa	Frederick	MD	21704
Abigail Jones	Frederick	MD	21704
Gabriel Stanley	Frederick	MD	21704
Raphael Stanley	Hi	MD	21704
Allen Bowen	Frederick	MD	21705
Shannon Durboraw	BOONSBORO	MD	21713
Rob Wasson	Glenwood	MD	21738
Max G	Hagerstown	MD	21740
Marlene Culberson	Hagerstown	MD	21740
Nick Golobo	Hagerstown	MD	21740
Sam George	Hagerstown	MD	21740
Ron Jeter	Hagerstown	MD	21740
James Remsburg	Middletown	MD	21769
Dakota Davis	Mount Airy	MD	21771
rachel kelly	Mt AIry	MD	21771
Daniel Green	Frederick	MD	21774
Laurie Russell	New Market	MD	21774
DEREK DRY	New Market	MD	21774
Melanie Gallagher	New Market	MD	21774
NIeko Stanley	Sykesville	MD	21784
William Lease	Taneytown	MD	21787
Erin Murphy	Woodbine	MD	21797
Chris Filippelli	Salisbury	MD	21801
JOHN BOWSER	North East	MD	21901
Connor Roark	Perryville	MD	21903
Briana Lucas	Elkton	MD	21921
Lainie MaMidov	Elkton	MD	21921
Marla Mort	Elkton	MD	21921
Shirley Klotz	Laplata	MD	22040
Carol Drury	Pasadena	MD	22122
Aidan Miller	Springfield		1101
Ryan Behan	Greenfield	MA	1301
Scott Laliberte	Uxbridge		1569
Nicholas Brault	Worcester		1609

Kersia Alvarez	Lawrence		1843
KEITH KOCHANSKY	Medway	MA	2053
Amanda Koch	Millis	MA	2054
Steve Boyd	Boston	MA	2127
Mari Peguero	Roslindale		2131
Ariel Cruzlugo	Chelsea		2150
Scott Joseph Putney	Carver	MA	2330
Nathan Dasilva	Rockland		2370
Rory Colby	Poland		4274
Billy Reinschmidt	Ledyard		6339
Tyler Vashalifski	Meriden	CT	6450
douglas barnett	Newtown	CT	6470
James McGlone	Shelton		6484
Samanta Rivera	West Haven		6516
Dawn Casey	Boonton Township		7005
Ghj Ghjj	Harrison		7029
Abraham Wisdom	North Bergen		7047
Mark Gilk	Newark	NJ	7114
John Gilk	Hawthorne	NJ	7506
Yvonne Stevens	Mount Arlington	NJ	7856
Raymond Mundrick	Morristown	NJ	7960
Dave Pribulick	Voorhees	NJ	8043
Laura McKenna	Mount Royal		8061
Vini aka Vania	Hightstown		8520
Tony Heffernan	Trenton	NJ	8611
Lety Rivera	Brick		8723
Isabella Orpilla	Manchester Township		8759
Quincy Cooper	Iseim	NJ	8830
Frances Cortimiglia	New York		10023
Neville Newtown	New York		10118
Justin Ragozzino	Staten Island		10309
Russell Giobbie	Staten Island		10312
Joann Jones	Nokesville	VA	10452
Kristina Waden	Bronx	NY	10457
Mary Zurita	Bronx		10468
chris cosentino	Harrison		10528
Katrina Moore	Yonkers		10701
Henry Morel	Yonkers	NY	10701
Kristina Marte	Yonkers		10701
Mazilane Gusmao	New Rochelle		10801
Maria Alvarez	Middletown		10940
Maribel Marulanda	New York		11106
JON INWOOD	Brooklyn	NY	11230
Marilyn Howard	Rego Park		11374
Jenny Kolbjornsen	Queens Village		11428
Drequan Jackson	New York		11434
Vishnu Sharma	Queens	NY	11435

Patricia Ferrara	Patchogue		11772
Jacob Hammerman	Plainview		11803
Abigail Canuteson	Castleton On Hudson		12033
Robert Lohnes	Ravena	NY	12143
Kelly Prins	Rensselaer		12144
D W	Troy	NY	12180
Daniel O'Brien	MILTON		12547
Gerard Evans	Newburgh		12550
Gordon Parrell	Jeffersonville		12748
John Parsons	Lake George		12845
Anthony Deso	Saratoga Springs	NY	12866
phyllis macey	West Chazy		12992
Dj Farney	Elbridge	NY	13060
Nathan Eberhardt	Moravia		13118
Michala Maciolek	Syracuse	NY	13210
Maryy Furmanski	Camden	NY	13316
Kristen Howell	Dolgevile		13329
William Atwell	Rome	NY	13440
Theresa G	Sherburne		13460
Pamela hall	Buffalo		14224
Kimberly Smith	Niagara Falls		14304
Tanya Bjornstad	Albion		14411
J Michener	Sewickley		15143
Alejandro Pietz	Sewickley		15143
Todd Deal	Grantsville	MD	15601
Amanda Reese	Vandergrift	PA	15690
Meah Walkins	Indiana		15701
James Craig	New York		15902
Nicole Tupitza	Edinboro		16444
Robert Evans	Erie	PA	16507
Albina Poudel	Harrisburg		17104
Gillian Adams	Harrisburg		17110
todd bowder	Dover	PA	17315
Jeremy Ault	Hanover	PA	17331
Jeff Jacoby	Hanover	PA	17331
Taylor hart	Hanover	PA	17331
Glenn Holland	Orrtanna	PA	17353
COLLEEN GEMMILL	RED LION	PA	17356
Corey Semerad	Red Lion	PA	17356
Ashley Buckingham	Red Lion	PA	17356
Jessica Gemmill	Red Lion	PA	17356
Jeremy Hellmann	Stewartstown	PA	17363
Bruce J Lutz	Ephrata	PA	17522
Gabrielle Brown	East Earl	PA	17566
Travis Woodling	Millmont	PA	17845
Mike Tarvin	Bethlehem	PA	18015
Barry Eichelberger	Easton	PA	18042

Kathi Kline	Easton	PA	18045
John Tremblay	135 Maple St	PA	18104
Barbara Farrington	Milford	PA	18337
Jennifer Patituce	Milan	PA	18831
John Bergin	Drexel Hill	PA	19026
James Lynch	Bristol	PA	19057
Bruce SNYDER	Media	PA	19063
Don Cianelli	Newtown Square	PA	19073
Rodger Rowles	Sharon Hill	PA	19079
BEtt Cara	Havertown	PA	19083
Altynai Skorich	Philadelphia	PA	19114
Gary Hunt	Philadelphia	PA	19132
Braheim Carter	Philadelphia	PA	19132
Lawrence Jones	Philadelphia	PA	19142
Susan Herring	Philadelphia	PA	19142
Deseree Keith	Philadelphia	PA	19143
Gianna Wilson	Philadelphia	PA	19148
Marco Menna	Philadelphia	PA	19151
Jason Thomas	Philadelphia	PA	19151
Eric Corliss	Honey Brook	PA	19344
Mark Morris	West Conshohocken	PA	19428
Maria Cipparone	Lansdale	PA	19446
Mark Jones	Claymont	DE	19703
Lisa Malatesta	Hockessin	DE	19707
Nick Jones	Newark	DE	19711
Brandi Jones	Newark	DE	19711
Rachael Nichols	Newark	DE	19713
Timothy Collins	New Castle	DE	19720
Richard Piendak	Wilmington	DE	19803
Rick Romero	Wilmington	DE	19804
Elsworth Smith	Felton	DE	19963
David Lewis	Smyrna	DE	19977
Kevin Vargas	Washington	DC	20002
Vic Rass	Washington	DC	20002
Darrel Stein	Washington	DC	20008
Victor Davis	Washington	DC	20009
Aaron Joseph	Washington	DC	20009
Jacob Joseph	Washington	DC	20011
Mulugeta Abraha Mulugeta	Washington	DC	20019
Darius Brown	Aldie	VA	20105
Dan Constantino	Aldie	VA	20105
Tiffany Lucas	Manassas	VA	20112
Shawn Boyce	Catlett	VA	20119
Richard Cornicello	Chantilly	VA	20152
Michelle Doss	Gainesville	VA	20155
Jason Judy	Gainesville	VA	20155
Edward Stuart	Sterling	VA	20166

Ryan Howell	Herndon	VA	20170
Anna Kistler	Leesburg	VA	20176
Luke Jones	Leesburg	VA	20176
Tom Corvetti	Reston	VA	20191
Tim Crocker	Falls Church	VA	22042
Shirley Klotz	Falls Church	VA	22042
Karyne Miller	Springfield	VA	22152
Nicholas Miller	Springfield	VA	22152
Nick Dimitrov	Vienna	VA	22180
William Bell	Woodbridge	VA	22193
Anne LeHuray	Alexandria	VA	22301
Nyssie Kitty	Alexandria	VA	22304
Cordell Hall	Alexandria	VA	22304
Allen Lambert	Alexandria	VA	22312
Clark Stevens	Fredericksburg	VA	22407
Cody Lucas	Stafford	VA	22554
John Stanko	Stafford	VA	22554
Tracy Lucas	Stafford	VA	22554
Kenneth Scott	Culpeper	VA	22701
Charles Harrison	Harrisonburg	VA	22802
Joseph Mullen	Elkton	VA	22827
Marky Garabedian	Glen Allen	VA	23060
Savannah Janke	Mechanicsville	VA	23111
Richard Gravel Jr	Midlothian	VA	23112
Sheri Reynolds	Mechanicsville	VA	23116
Jade Wells	Mechanicsville	VA	23124
Max Pastor	Richmond	VA	23224
Billy Doyle	Chesapeake	VA	23320
George Doyle	Chesapeake	VA	23320
John Barton	Chesapeake	VA	23320
DENNIS ROBERTS	Virginia Beach	VA	23452
Jeff Brown	Virginia Beach	VA	23456
Analy Perez	Norfolk	VA	23462
Donald Curtis	Virginia Beach	VA	23464
Gerald OBrien	Virginia Beach	VA	23464
Joshua Clausson	Norfolk	VA	23508
Jeffrey Jones	Portsmouth	VA	23703
Jessica Tackett	Portsmouth	VA	23704
Christopher Francisco	Salem	VA	24153
John hartman	Bristol	VA	24202
Ella Laney	Tazewell		24651
Adan Dallas	Lewisburg		24901
Donald Watson	Charles Town	WV	25414
Mark Graves	Fairfax	VA	25414
wayne young	Inwood	WV	25428
Tyler Goldsberry	Hurricane		25526
Evan Sieler	Randleman	NC	27317

pamela richardson	Stokesdale	NC	27357
Giselle Stevens	Greensboro	NC	27407
Mark Lamar	Greensboro	NC	27409
Jacob George	Knightdale	NC	27545
Angelina Lucas	Knightdale	NC	27545
US Powerbase	Zebulon	NC	27597
Justin Lane	Grimesland	NC	27837
Cynthia Tyre	Williamston	NC	27892
Zachary Bare	Concord	NC	28027
John McClendon	Kannapolis	NC	28081
Olivia George	Matthews	NC	28105
Salena Nobles	Charlotte	NC	28202
Joshua Lowery	Charlotte	NC	28207
Benjamin Tarkenton	Charlotte	NC	28211
Marcus Ormond	Charlotte	NC	28212
James Williams	Charlotte	NC	28262
Tom Wilkinson	Charlotte	NC	28273
Abigale Stanbery	millers creek		28651
Terry Quinn	Sherrills Ford		28673
Gina Sprankle	Statesville		28677
Kenny Swanger	Waynesville		28786
Christopher Mcaulay	Lexington		29123
Ashley Green	Sumter		29150
Adam Clobes	Inman	SC	29349
Jonathan Session	Summerville		29483
michael lee	Loris		29569
Cathy Wuehr	Westminster		29678
David Stinson	Fort Mill		29715
Lenora Hall	Cumming		30040
Jamila Daniels	Rome		30165
Chaae Kacsor	Atlanta		30318
Landon Karoffa	Williamson		30392
Richard Dobbins	Byron		31008
Topanga Katzer	Juliette		31046
Jon Rasmussen	Savannah		31404
Rene Johnson	Valdosta		31603
Jeff Spencer	Fernandina Beach	FL	32034
rachel weldon	jacksonvile		32225
Crystal Revis	Lynn Haven		32444
CJ Blancett	Orlando		32725
Shawnette Ramone	Orlando		32808
Quang Hoang	Orlando		32810
George Broadway	Orlando	FL	32818
Crystal Wilson	Barefott Bay		32976
catherine socarras	Pompano Beach		33063
Katherine Stevens	Pompano Beach	FL	33065
Emma Ramirez	Miami		33122

Sofia Garcia	Miami		33134
Christopher Mercier	Miami	FL	33169
SANDRA MASSEY	Fort Lauderdale		33314
Peter Stanley	West Palm Beach	FL	33411
Sonia Nicholas	Delray Beach		33483
Catherine Nazario	Tampa		33619
Jean Hayes	Clearwater	FL	33756
Sarah Webb	Largo		33770
Richard Habora	Bradenton		34208
Jill Yancer	ARCADIA		34266
Hunter Larsen	Nokomis		34275
Gabrielle Boyd	Land O Lakes		34638
Brandon Boudreau	New Port Richey		34654
Yasmine Horton	Bessemer		35020
Ashton Deshazo	Birmingham		35213
Kayla Wicker	Northport		35475
Patricia Baugh	Sylvania		35988
Katie Robbins	Fruithurst		36262
Cole Frost	Ohatchee		36271
Cameron Saxon	Orange beach		36561
Jason Whiticker	Maddison		37115
Mason Davis	Murfreesboro	TN	37128
Douglas McCullough	Pleasant View		37146
Teresa Karimian	Louisville	TN	37777
Juan Valdes	Morristown		37814
Catherine Goodman	Sweetwater	TN	37874
Elizabeth Hernandez	Memphis		38111
Jun Ladnier	Collins	MS	39428
gene weber	Dry Ridge	KY	41035
mckenzie thacker	Pikeville		41501
Nancy Gooslin	Phyllis		41554
TaReysha Evans	Tompkinsville		42167
Mike Simmons	Blacklick	OH	43004
Jason Donaldson	Heath		43056
Kendall Jacobson	Lancaster		43130
Paco Salvani	Columbus		43228
Jon Wilson	Maumee	OH	43537
Alexa Hennessey	Lakewood		44107
Kaithlyn Udivich	Lakewood		44107
cece gibson	Cleveland		44109
PICKLE JOE	Cleveland		44124
Jessica Bruegge	Cincinnati		45202
Mike Sindiong	Cincinnati	OH	45231
ellen hopkins	Cincinnati		45251
Amanda Stilabower	Xenia		45385
Blaine Johnson	Marietta		45750
haley hillman	martinsville		46151

Bill Rose	Indianapolis		46237
Mark Lukacek	DeMotte		46310
Logan B	Salem		47167
Dylan Edwards	Columbus		47201
Mike Goeller	Terre Haute	IN	47807
Broc Balding	Cayuga		47928
Noel Viger	Algonac		48001
Bonnie Culberson	Belleville	MI	48111
Rosemarie Stanko	Belleville	MI	48111
Jaylah Thomas	Detroit		48228
Justin Wilson	Sterling Heights	MI	48313
Aiden Cogar	Holland		49424
Nadine Miller	Postville		52162
Thomas DuPree	Waukesha	WI	53186
Dormie Roberts	Fort Atkinson	WI	53538
Colyn Murphy	LaValle		53941
Ben Thiel	New Richmond		54017
John Holmes	Appleton		54911
Josh Hot	Appleton		54913
Bryce Johnson	Cottage Grove		55016
Melissa Walbridge	Isanti		55040
Lizzie Rosa	Isanti		55040
Mark Gill	Minneapolis	MN	55428
paul brott	saint lcoud		56304
Tristan Lucas	Manhattan		59741
Larry Pranger	Kenosha		60041
Joanna Cortes	Batavia		60510
Brett Pickering	Chicago		60515
Jackie Ortega	Chicago		60623
Roosevelt Potts	Chicago	IL	60623
Rahwa Wolde	Chicago		60626
Carolyn Lawrence	Chicago		60636
Sheila Jones	Danville	IN	60651
Haven Hollins	Chicago		60651
Cortney Forrester	Rockford		61101
Kriss Smith	CHAMPAIGN		61821
Tim Spinner	Decatur		62521
Nicholas Buckner	Lincoln		62656
Kevin Gaul	Springfield		62704
Demetra Todd	Florissant		63033
Jonathan Smith	Monroe city		63456
Sean Callahan	Buckner	MO	64016
Joseph Rogers	Kansas City	MO	64114
Eli Anderson	Bolivar		65452
Larry Wooten	Billings	MO	65610
Mike Paul	Olathe		66062
Melisa Botello	Kansas City		66106

Adrian Schlicker	Topeka		66605
blanca estes	Topeka		66609
Justin Wright	Independence		67301
Mackenzie McDermott	Omaha		68106
Brandon Folsom	Lincoln		68516
Nancy Ueckert	Bristow		68719
Chey Lang	Chicago		69640
Gary Wilson	Luling	LA	70070
Hayden Keigley	Lafayette		70506
Austin Tammen	Pineville		71360
Oleta Payne	Rogers		72758
otom otom	Allen		75002
Calleigh Koons	Allen		75002
River Brock	Lewisville		75067
John Battey	Kaufman		75142
Alex Reyes	Mesquite		75149
Doris Elaine Gaffney	Dallas	TX	75237
Micah Caldwell	Sheridan		75237
Ronnie Atkins	Dallas		75237
Michael Daniel	Dallas		75243
Albert Murphy	Dallas		75244
John Mance	Dallas		75287
Robert Simpson	Texarkana		75501
Joe King	Lufkin		75901
Ricky Lowery	Lufkin		75904
Brian Denby	Center		75935
David Johnson	Arlington	GA	76006
Sean Mullins	North Richland Hills		76182
Mauretta Shaw	North Richland Hills		76182
Roberto J. Navarrete	Houston		77002
Derek Stanley	Houston	TX	77020
Kathy McClain	Livingston		77351
Randall Bowman	Katy		77494
Jay C	San Antonio		78222
Matthew Birkinbine	Round Rock	TX	78664
Aaron Miller	Fort Worth		79107
Jason Presley	Abilene	TX	79606
india fernandez	El Paso		79907
Alexa Valdez	El Paso		79934
Stephanie Medina	Westminster		80031
robyn parker	castle rock		80109
Michael Jensen	Littleton		80127
peyton ross	Parker		80134
Robert Stabile	Parker		80134
Justin willhoite	Denver		80227
Josefina Medellin	Denver		80239
Kaleb Hil	Meridian		83646

Mohamed Jabril	Boise		83703
Kirk Birkinbine	Boise	ID	83705
Austin Hansen	Sandy		84070
Camille Fisher	Tooele	UT	84074
James Mallory	West Jordan		84088
Cheryl Lady	Salt Lake City		84118
Kelly Hall	Salt Lake City	UT	84118
Shawn Russell	Ogden		84404
Megan Hammond	Mesa		85203
Urbiegato Morbidendus	Gilbert	AZ	85233
raymond zamora	Albuquerque		87107
Joshua Bowman	Hobbs	NM	88240
Saul Vega	Las Vegas		89101
Nolan Truong	Las Vegas		89117
Savanna Green	Las Vegas		89169
Reza Naghipour	Los Angeles		90013
Gordana Ostojic	Los Angeles		90034
Simya Smith	Los Angeles		90048
Paul Wilson	Los Angeles	CA	90059
Javier Alas	Los Angeles		90063
Angelina Ramirez	Compton		90221
Stephanie Chen	Gardena		90247
Chang Cho Chung Chung	Lakewood		90712
Justin Jalandoni	Glendale		91205
William Horrell	Northridge		91325
Soo Hwang	Valencia		91355
Frank Dean	Covina		91724
Bryan Chang	Monterey Park		91754
Arely Celis	Oceanside		92056
Abram Romero	Oceanside		92057
Heather Isaac	Vista		92084
Kerry Woods	Vista		92084
Joi Wright	San Diego		92103
Jean Cockrell	San Diego		92145
Viviana Sormani	La Quinta	CA	92253
alexander Awada	Big Bear City		92314
Isaac Yanez	San Bernardino		92410
John Mitchell	Perris	CA	92570
Rachel Salazar	Perris		92570
Barbara Venegas	Winchester		92596
elli farrell	Rancho Santa Margarita		92688
Leo Barajas	Visalia		93292
Robert dalrymple	Arroyo grande		93420
Miguel Vallejo	Los Banos		93635
Christina Rodriguez	Fresno		93705
Robert Libardo	Salinas		93901
Damian Ortiz	Soledad		93960

La Phipps	Los altos hills		94022
Jake Garibaldi	San Mateo		94403
Lynda Sedoud	Concord		94520
Jim Todorovitch	Antioch	CA	94531
سارا گوشوارفروش	Fremont		94536
Robert Fierros	Hayward		94544
Diego Zarate	Pinole		94564
Aungkhant Hein	Santa Clara		95051
Sodden Suzuki	San Jose		95122
Carolyn Zuk	Modesto	CA	95356
Tracee Scoggin	Modesto		95358
Lee Brautovich	Sonora		95370
alena ponce	Vacaville		95687
Lissa Flare	Grass Valley	CA	95945
Marcela Gomez	Orland		95963
Laura Bronson	Papaikou		96781
Stephen West	Portland		97230
Marina Segura	Salem		97302
Austin Ward	Corvallis	OR	97330
Dean Wilson	Roseburg		97470
Chris Gall	Boardman		97818
Kyle Ballard	Enterprise		97828
Hawa Tunkara	University Place		98467
Alessandra C.	Lakewood		98498
Ka Ua Tubania	Vancouver		98665
James Sampson	Moses Lake		98837
Shonie Baker	Yakima		98901
Ruby Trujillo	Wapato		98951
isaiah moss	Spokane		99205
Joseph Harris	Sitka		99835
Christine Kiourtsis	ASTORIA		
Sami Gh	Newyork		
Eileen. Riley	Blackpool		
Mckenna Miller	Canby	OR	
James Black			
Franco Carlo		NY	
jeremy smith			
wise girl			
Hannah Roeser			
Matthew Krugh			
Drew Sotka	Dayton		
Ryan Hambor			
Crystal Sturgill			
Reza toorkzade			
Christopher Houston			
Mary Clark	Winston salem		
Rory Fallon			

Alexis Estremadoyro	33135		
Abigail Stinkling	Why		
James Koncar			
Angeles Guzman	Caguas		

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Maryland State Senate
Education, Health, and Environmental Affairs Committee

Dear Mr. Chairman and Members of the Committee:

My name is Victor Davis, owner of Pavement Depot of MD and we are in the business of preserving asphalt pavement, which increases the life of the asphalt by more than double. In Maryland, housing and commercial properties are growing at a rapid pace putting a not so friendly impact on our footprint on the environment. Just like painting the exterior of a building (to preserve and increase life span), sealers preserve and increase the life span of asphalt (driveways, parking lots, schools, airports, roads) etc. We will never be able to eliminate the impact that humans have had on the environment, but it only makes sense to preserve and maintain the structures and infrastructures we have created. This cuts down on more disruption to our environment by removing and replacing which outweighs the maintenance 10-fold.

Little history about our industry. All the sealants we are talking about are water based, similar to water-based paints. Coal tar has been around for over 50 years as the preferred, longest lasting asphalt preservation sealant. In 2012, Montgomery county banned this product due to reported elevated PAH levels. When I watched the hearing in the house, Delegate Barve was asked about what PAH's were and he was unable to explain, only saying they were poison. PAH's (Polycyclic Aromatic Hydrocarbons) are present in coal, oil, gas, and anything that is burnt or decomposed. Facts are that PAHs are everywhere. * **PAH's have never been identified as a "cause of impairment" in any of Maryland's reports under the Clean Water Act.**

HB77 will not only harm the environment, but it will also destroy 1k plus jobs here in Maryland and cost Maryland property owner's big money. Since Coal Tar was banned in Montgomery County in 2012 asphalt preservation has dropped off significantly. Since then, 3 other counties have banned Coal Tar with the same results. We had logged thousands of calls from unhappy property owners in these counties. Since then, our manufactures have developed a close alternative to Coal Tars (100,000 PPM PAH's) with a product called LP based sealers that have over 90% less PAH's at 10,000 PPM PAH's. **This bill will ban these LP based sealers as well.** Manufacturers spent a tremendous amount of money and research to develop this **Safer Sealer.** This LP product has been working great for our 150 plus contractors that purchase from us with thousands of happy customers. If this current HB 77 bill is passed, this would eliminate asphalt preservation and maintenance in Maryland forever. The asphalt sealants that are 1,000 PPM PAH's (that are in the bill) the House has recommended is subpar and ineffective in preservation of asphalt. We have tested every product at this 1,000 PPM PAH's on the market and they all have failed every test and would be ineffective in preserving asphalt.

I say "Kudos" to the kids for their presentation on the banning of coal tar and its negative effects on the environment however I challenge you to do the same research and demonstrate the negative impact on the environment to not preserve what is already here and send millions of broken-down asphalts into the dumps/landfills across the state. There are always two sides to an argument and only assessing one side is both unfair to all the companies that will be put out of work as well as to the kids themselves, for not understanding the other side to this issue. A good argument reflects both sides of the issue. Simply banning all driveway/parking lot sealers is just not the answer. Taxpayers have the right to products to make their lives better, products that are cost effective and have a solid performance. Especially during a nationwide pandemic, thousands are without work and will be required to preserve what they already have and again, this bill would eliminate that.

FACTS

PAH's are present in everything that is burnt and decomposed. (heat in your house, hamburgers, compost, fuel, tires, telephone poles), etc. We will always have PAH'S if we have living organisms & their fossils on this earth.

PAH's have never been identified as a "cause of impairment" in any of Maryland's reports under the Clean Water Act.

Coal Tars and new lower PAH's (10,000PPM PAH's) extended the asphalt pavement by 2-3 times and save the property owners more than half over 20 years. this does Not include the inferior Asphalt emulsions.

Coal tar and LP sealants have 70% less PAH's when dried and cured on the surface.

Surfaced sealed with Coal Tar sealants do not contribute significant amounts of PAH's to the aquatic environments. Science not theory!

Bottom Line:

There is no scientific evidence that PAH's from coal tar or LP have ever harmed anyone or our waterways in Maryland. Bill HB77 will cost thousands of jobs, millions of dollars in avoidable property repairs, and millions in tax revenue.

Please vote NO on HB77

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HB77-Unfavorable Tom Decker Jr written testimony.p
Uploaded by: Decker, Tom
Position: UNF

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Pavement Products & Equipment

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Testimony of Tom Decker, Jr. –
President - SealMaster – Cockeysville, MD
HB77 Oppose

Our Products Safely Provide a Needed Service

In Maryland, a vast amount of pavement sealer is applied to extend the useful life of commercial parking lots. HB77, if passed, will eliminate the most effective pavement sealer products that Maryland commercial parking lot owners and sealcoating contractors depend upon to keep costs down.

Our Products Help Reduce Costs and Harm to the Environment

If HB77 passes the alternative for commercial parking lot owners would be milling off the top 2 inches of asphalt, then repaving with new asphalt. Milling and repaving with new asphalt are clearly much more damaging to the environment than an application of coal tar or LP pavement sealer. Moreover, milling and repaving is often 10 times the cost to apply coal tar or LP pavement sealer.

Product Bans Have Led to a Maryland Plant Closing and Loss of Jobs

Product bans in four (4) of Maryland's most heavily populated counties have already resulted in the closing of GemSeal Pavement Products in White Marsh. Since 1987, GemSeal safely manufactured pavement sealer products, but the bans forced them to close, and 14 well-paid employees lost their jobs.

I Will Lose my Livelihood and My Employees Will Lose their Jobs

For 25 years, I've operated SealMaster in Cockeysville, the only remaining manufacturer of coal tar and LP base pavement sealer in Maryland. The passage of HB77 will reduce our revenue to a point where we will have no choice but to close our business permanently. I will lose my livelihood and 22 of my employees will lose good-paying jobs and health insurance. Moreover, hundreds of Maryland sealcoating contractors and their employees will lose their jobs as well.

Since the early 1960s, Maryland manufacturers, and contractors have safely applied these products. The bill's proponents cannot produce evidence of a single person who has had been affected by the products. The passage of HB77 will only cause a significant loss of Maryland jobs and increase costs for owners of commercial parking lots and driveways.

Please Vote no on HB77.

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Uploaded by: Ferrare, Heather
Position: UNF

SealMaster
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25th Anniversary
Celebrating 25 Years
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March 22, 2021
HB77

OPPOSE

Dear Senators,

My name is Heather Ferrare, and currently I am the Director of Accounting and Human Resources for Decker Enterprises, Inc. OBA Seal Master. It has come to my attention that there are recent efforts to ban Coal Tar in the State of Maryland. I would like to write you today to recap my job here at SealMaster, my family life, and how it would be affected if Coal Tar is banned.

I was hired at Seal Master in December of 2015, after years of working in the legal industry. I came to Seal Master for its appeal of being a family friendly company. Both of the Decker's, Tom, Jr. and Tom, Sr., have made it possible for me to completely balance home life and work life. With my work being done timely and accurately I am able to cut my childcare expenses down to a minimum with there being no late hours. Our company functions more as a family versus a business, and with 23+ employees that is a rare thing in today's society.

In May 2018 my family was blessed with another son being born successfully, weighing 8 lbs. 2 oz. and having no health complications what so ever. During pregnancy as well as after his birth we both remain healthy. The Decker's graciously gave me 10 weeks of paid Maternity leave to make sure that our family did not suffer during the weeks that I would be home with my newborn son.

In closing, banning Coal Tar, to me would potentially be devastating to my family, as for the need for two Accounting personnel here at Seal Master would be unnecessary. Also, I feel that with the Coal Tar ban, the company would no longer be able to support my salary. Please consider how banning a product for which there is no evidence that it is harming any person or the environment, will affect the lives of people in our company, forcing unemployment upon individuals who are willing and able to work.

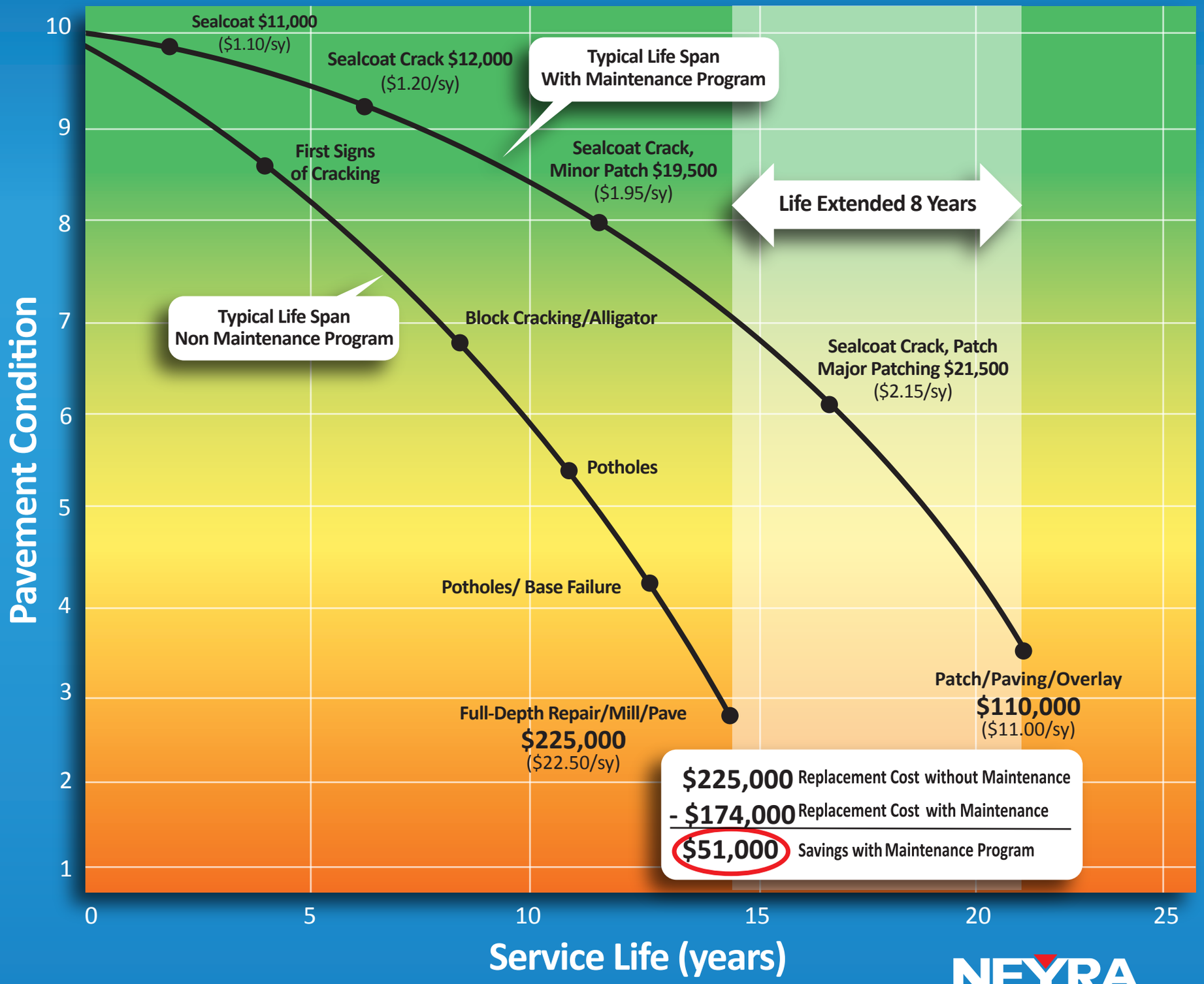
Sincerely,

Heather Ferrare
Director of Accounting
& Human Resources
SealMaster

Pavement Service Life Chart 8-14-15.pdf
Uploaded by: Heffernan, Tony
Position: UNF

10,000 sy. Commercial Parking Lot

(Standard Installation)



*Above prices are used for example purposes only and are subject to change. Numbers will vary based on geographic region, market fluctuation, condition of pavement and other variables. For more information, contact a Neyra representative at 1-800-543-7077.

NEYRA

Neyra Industries, Inc.
www.neyra.com

EPA's 2021 Multi-Sector General Permit (MSGP) Does

Uploaded by: LeHuray, Anne

Position: UNF

THE USE OF REFINED COAL TAR-BASED SEALANTS (RTS) IN EPA'S 2021 INDUSTRIAL STORMWATER GENERAL PERMIT IS NOT RESTRICTED

Highlights

- As in EPA's 2015 Multi-Sector General Permit (MSGP), there are no restrictions on the use of RTS in the 2021 MSGP.
- EPA's decision to exclude restrictions was made "following consideration of the comments" received from the public on the draft MSGP.
- EPA received 61 comments from both individual and coalitions of public and private sector entities opposing the restriction and 6 in support.
- In its summary of legal, scientific, cost, and policy considerations that influenced its decision, EPA highlighted the continued lack of sound data that indicates a problem that needs to be solved.

The federal Clean Water Act authorizes EPA and the states to set requirements for stormwater discharges from industrial facilities. Since 1995 EPA has reviewed and renewed its Multi-Sector General Permit (MSGP), which covers a large number of different types of industrial facilities, every 5 years. The MSGP issued by EPA is directly applied in a small number of states, territories, and federal facilities and is often used as a model for permits issued by states that issue their own permits.

In comments submitted to EPA during the process of renewing the 2015 MSGP, a coalition of Environmental Non-Governmental Organizations (ENGOs) asked EPA to include a restriction on the use of RTS at industrial facilities. EPA declined to do so for several reasons, including that EPA had (1) no data about the use of RTS at covered facilities, (2) no data that indicate RTS use was associated with exceedances of water quality standards, (3) RTS is typically used on parking lots, and stormwater discharges from parking lots are not included in the definition of "industrial activity" that are regulated under EPA's industrial stormwater program, (4) if discharges from covered facilities that may use RTS exceed water quality standards, the facility is already required to address the exceedances, and, (5) for non-storm water discharges, EPA does not have the authority under its current industrial stormwater program to regulate such discharges from parking lots at industrial facilities.

After the 2015 MSGP was issued, several ENGOs filed challenges resulting in 2016 in a settlement agreement with EPA. One of the clauses of the settlement agreement required EPA "to propose for comment a condition of eligibility that operators who, during their coverage under the next MSGP, will use coal tar sealant to initially seal or to re-seal pavement and thereby discharge polycyclic aromatic hydrocarbons (PAHs) in stormwater are not eligible for coverage under the MSGP and must either eliminate such discharge or apply for an individual permit."

As agreed, in 2020 EPA requested comment from the public on whether the MSGP should include an eligibility criterion related to the application of coal-tar sealcoat to paved areas where industrial activities are located.

As it had in 2015, EPA did not include the proposed eligibility restriction in its 2021 MSGP. EPA's decision was based on its consideration of comments received from the public, most of which opposed the restriction.

HB77 - PCTC - Anne LeHuray - False Arguments.pdf
Uploaded by: LeHuray, Anne
Position: UNF

PCTC
PAVEMENT COATINGS TECHNOLOGY COUNCIL

ACTIVISTS FALSE ARGUMENTS

Activists who are campaigning against the use of refined tar-based pavement sealer (RTS) generally make arguments that rely on distortions and discredited interpretations of environmental and health science evidence.

False Argument #1: RTS is the source of a high percentage of compounds known as polycyclic aromatic hydrocarbons (PAHs) in sediments in lakes, streams and storm water retention ponds.

This argument is based on a mathematical model manipulated to falsely identify sealants as the source of PAHs. Results given by the manipulated model have been shown to be inconsistent with other methods (graphical, statistical, mathematical models) commonly used to help identify sources of PAHs. The manipulated model identifies sealant as the main source of PAHs even in locations where sealant is not likely to have been used as well as remote locations with no nearby paved surfaces. When other common methods are used to identify sources of PAHs, little or no contributions from RTS have been found in most locations. Comprehensive studies of sources of PAHs in New York/New Jersey Harbor and Puget Sound (Seattle) have both found that wood burning from fireplaces and stoves is the largest source of PAHs (about a third in both cases), whereas PAHs from pavement sealants contribute less than 1% of the total.

False Argument #2: RTS is a health hazard.

Across the two, three and four generation memories of the many family-owned companies in the RTS business, there are no reports of adverse chronic health effects directly attributable to RTS. Expanding the search for possible health hazards to other products made from refined tar, every day millions of people world-wide use coal tar soaps, shampoos and creams approved for over-the-counter sales to treat skin disorders such as eczema, psoriasis and dandruff. A refined tar product is used to coat the inside surfaces of pipes used to distribute drinking water in many areas, with no demonstrable adverse effects on the water-drinking public. The false argument is that, theoretically, there could be health effects based on the classification of constituent ingredients as possible human carcinogens, which classifications in turn are based on exposure of laboratory animals to high concentrations of individual PAH compounds[1] or on occupational exposure of coke oven workers who are

[1] PAHs are never found as individual compounds in nature and are rarely isolated for commercial purposes. Individual PAH compounds are artificially isolated for laboratory testing. RTS is a mixture of clays, sand and refined tar that itself is a mixture that includes PAHs..

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exposed to a variety of possible hazards at very high temperatures. There is simply **NO** evidence that RTS causes cancer.

False Argument #3: RTS pollutes water supplies.

The false argument is that PAHs derived from RTS are a threat to water supplies. Even if RTS were an important source of PAHs found in sediments, neither RTS nor PAHs pose any threat to water supplies because RTS and indeed, PAHs in any form, are virtually insoluble in water. Examples of the virtual absence of PAHs in water can be found in every US state's Clean Water Act Section 303(d) reports, in which reports of PAHs as a cause of impairment of water quality are extremely rare. A review of the past several Maryland Section 303(d) reports for PAHs as a cause of impairment found that PAHs have **NO** instance of PAHs identified as a cause of impairment anywhere in the state. Every drinking water system in the US is required to analyze and report chemicals found in water distributed to homes – it is exceedingly rare for drinking water suppliers to find PAHs in drinking water supplies.

False Argument #4: RTS is based on a hazardous waste, and banning it is a factor in approval of MS-4 permits.

Neither RTS nor its coal tar base are hazardous wastes because they pass EPA's hazardous waste TCLP test, and so are not subject to Land Disposal Restrictions in federal hazardous waste regulation program. This has been affirmed by federal courts. Measures to control PAHs or coal tars are not factors in approval of MS-4 permits. PCTC has challenged EPA to correct misinformation about RTS on its storm water web site.

False Argument #5: There's an alternative product available, so why not just ban RTS?

Asphalt-based pavement sealers (ABS) are indeed an alternative, but they are not a replacement because ABS does not do the same job. Where both are available, RTS is preferred for most applications. This preference is mostly because RTS is resistant to degradation caused by leaks/spills of petroleum-based products (such as gasoline, jet fuel, motor oil, etcetera), to other corrosive materials and because of longevity. ABS needs to be re-applied more often than RTS – depending on the situation, the longevity of RTS can be years longer than ABS. In addition, RTS is manufactured to a standard which, among other things, means its physicochemical properties are predictable. There have been and continue to be attempts to develop standards for ABS manufacture, but there isn't one at this time. The predictability and performance characteristics of RTS are the prime reasons RTS is specified for many situations.

****

Most of the companies involved in the RTS industry are small and medium size businesses – just the sort of businesses that are disadvantaged by the rush to regulation that seems to be popular now. RTS manufacturers and suppliers are good corporate citizens, with well paid, often unionized work forces. Recently, the Pavement Coatings Technology Council held a webinar for sealcoating contractors. Of the 265 industry participants who registered for the webinar, 47% were from companies with 10 or fewer employees. Another 32% were from companies with 11 to 35 employees. This reflects the industry, dominated by small to very small local businesses. Contractors in northern states estimate that using ABS rather than RTS reduces their sealcoating season by, at a minimum, 20%, thereby reducing their income by 20% or more.

HB77 - PCTC - Anne LeHuray - Industry Concerns.pdf
Uploaded by: LeHuray, Anne
Position: UNF

Appendix C
Industry-Related Concerns

I. Despite EPA's Multiple Assertions that There Are Alternative Products with Similar Performance and Cost to RTS, No Such Alternatives Are Available.

In its 2020 Proposed MSGP Fact Sheet, EPA contends, without supporting facts, that it has identified alternatives that are similar in product performance and cost to RTS. The agency cites asphalt emulsion sealants and acrylic sealants as examples. It also notes that pervious concrete, permeable asphalt, and paver systems that do not require sealants would reduce discharges, "but may not be appropriate for use with all industrial activities."[160] EPA concludes:

> Given the comparable costs among products, EPA assumes that most facilities who intend to use coal-tar sealcoat will be able to find a product alternative at negligible cost difference yet with similar performance.[161]

EPA offers no support for its contentions in the Fact Sheet, nor does it list any references that would support these assertions and assumptions. In fact, there is substantial information in the public domain that should have led EPA to the opposite conclusion.

While there are certainly alternatives to RTS, none of them come close to RTS in terms of performance and cost. As documented below, the alternatives do not perform as well as RTS and their lifetime costs are higher. These are not our observations alone, but reflect the conclusions of many independent parties who have studied the matter.

A. RTS Performs Better Than the Alternatives.

1. Asphalt Sealants

Where RTS is available, the market prefers it over other alternatives. The reason lies in its performance at protecting asphalt from damage related to petroleum chemicals, road salts, and a variety of other chemicals, as well as UV radiation and oxidation. Protection against damage related to petroleum products is an important reason why coal tar-based sealants are specified at civilian and military airports. Because of its superior performance at resisting chemical and environmental insult, RTS has been the preferred pavement maintenance sealant used on pavements in industrial and commercial areas for decades, including parking lots, gas stations, truck and bus terminals, airport aprons, and taxiways. RTS is also used on driveways for protection and to enhance curb appeal.

While asphalt-based emulsions have many of the same beneficial properties as RTS, they lack coal tar emulsion's superior resistance to petroleum, ultraviolet bleaching, and salts. An asphalt emulsion is a mixture of liquid asphalt and water. Manufacturers have started adding special chemicals and pigments to asphalt emulsions to improve their resistance to petroleum products and to enhance other performance characteristics, but they are still more susceptible to

[160] Fact Sheet at 24
[161] *Id.*

damage caused by petroleum products. Asphalt-based emulsions generally have life spans of two to three years, whereas RTS sealants will generally last four to six years.

a) From manufacture to application of RTS, every step in the process is governed by performance-based standards.

Beginning in the 1970s, the US Army Corps of Engineers (Corps) undertook investigations of fuel-resistant sealers. Shoenberger (1994) gave an overview of performance issues from the perspective of the military that is still applicable:

> Asphalt concrete pavements make up approximately 96% of the surfaced pavements in the United States (Roberts et al. 1991[162]). The majority of parking areas used for low-pressure tire vehicles (automobiles and light trucks) are also paved with asphalt concrete. Since asphalt cement is a petroleum-based product obtained in the distillation of crude oil, it will dissolve or soften when exposed to petroleum-based products. Therefore, asphalt concrete pavements are susceptible to damage from fuel or oil spills or drippage. The damaging materials include gasoline, diesel fuel, hydraulic and brake fluids, aviation fuels, and other petrochemical and synthetic materials. These oils and fluids are required for the operation of vehicles, and the amount of these fluids that falls to the pavement surface from these vehicles depends on the condition of the vehicle and its maintenance operations. … Fuel spills and drippage result in the softening and leaching away of asphalt binder from the aggregate. This causes pavement failures due to rutting or raveling of the surface aggregate in the spillage areas.
>
> Normally, fuel or solvent spillage is not a problem on roadways. The speed and movement of the vehicle spreads out the spillage over a large area. The spilled material tends to be worn off or it evaporates from the pavement due to traffic and the effects of weather (rain or sunshine). But, areas of slow speed or highly channelized traffic often have sufficient fuel spillage accumulation to cause damage to the asphalt concrete pavement. Parking areas, especially those with constant vehicle turnover, are very susceptible to damage from such spillage. …..
>
> Fuel spillage problems can also be particularly severe for airfield pavements because several types of aircraft engines release the unused portion of fuel remaining in the engine at shutdown, in addition to normal drippage and other losses. These materials will damage the pavement surface almost immediately and even prompt flushing or flooding of the area with water, and ideal evaporation conditions cannot entirely prevent damage. Military installations have all of these problems with fuel spillage plus the possibility of a sabotage scenario. Such a

[162] Roberts, F. L., Kandhal, P. S., Brown, E. R., Lee, D.-Y., and Kennedy, T. W. (1991). "Hot mix asphalt material, mixture, design, and construction." Rep., NAPA, Lanham, MD

scenario could involve fuel being intentionally dumped on an airfield pavement in order to interfere with airplane operations.[163]

Among the early findings of the Corps' research was that coal tar-based sealants had superior fuel resistance, but that the products available at the time were inconsistent in performance. The industry responded in 1994 by establishing PCTC as an engineering research and standard-setting program within the Engineering Department at the University of Nevada – Reno (UNR).[164] The program's goal was to research and establish performance-based standards for the manufacture of what the industry now calls refined coal tar-based sealant (RTS). The results of the UNR phase of PCTC's history are reflected in the ASTM standards that cover everything from the production of the refined coal tar base, RT-12, to its application. These standards are:

- ASTM D490-92(2016), Standard Specification for Road Tar;
- ASTM D4866/D4866M-88(2017)e1, Standard Performance Specification for Coal Tar Pitch Emulsion Pavement Sealer Mix Formulations Containing Mineral Aggregates and Optional Polymeric Admixtures;
- ASTM D5727/D5727M-00(2017)e1, Standard Specification for Emulsified Refined Coal Tar (Mineral Colloid Type);
- ASTM D6945-03(2017), Standard Specification for Emulsified Refined Coal-Tar (Ready to Use, Commercial Grade);
- ASTM D6946-13, Standard Specification for Emulsified Refined Coal-Tar (Driveway Sealer, Ready to Use, Primary Residential Grade), 2013); and
- ASTM D3423 / D3423M-84(2015)e1, Standard Practice for Application of Emulsified Coal-Tar Pitch (Mineral Colloid Type).

The ASTM standards are supplemented by PCTC's guides for preparation of performance-based specifications for RTS:[165]

- PCTC Guide Specification-PCTC01: Guide for Preparation of Specifications for the Application of a Refined Coal Tar Emulsion Without Additives Over Asphaltic Pavements
- PCTC Guide Specification-PCTC02: Guide for Preparation of Specifications for the Application of a Refined Coal Tar Emulsion With Additives Over Asphaltic Pavements

RTS manufactured following ASTM's performance-based standards has, for nearly three decades, been consistent and predictable in its resistance to petroleum products and other chemicals and environmental factors that can damage, and shorten the service life of asphalt surfaces. The market still prefers it over the alternatives.

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[163] Shoenberger, J. (1994). Performance of FuelResistant Sealers for Asphalt Concrete Pavements. *Journal of Materials in Civil Engineering*, *6*(1), 137-149. doi:doi:10.1061/(ASCE)0899-1561(1994)6:1(137).

[164] PCTC was originally named the Pavement Coatings Technology *Center*. It was renamed as the Pavement Coatings Technology *Council* in 2008 when sponsors of the original Center reorganized PCTC as a 501(c)(6) trade association.

[165] Available at http://www.pavementcouncil.org/1520/.

b) While the performance of some asphalt-based sealants has improved, the variability of such sealants limits consistency.

The performance of some asphalt-based emulsion sealants (ABS) has greatly improved in recent years, although the inherent problem of resistance to petroleum fuels remains less satisfactory. Through research and development into factors such as the composition of asphalts and ingredients to improve asphalt characteristics, companies that make both RTS and ABS have developed ABS that meets the needs of many customers who have less stringent performance requirements. Product consistency, however, is a continuing problem.

To date, performance-based standards have not been developed for ABS because, by both the nature of petroleum and the choices made in petroleum markets and refining processes, the physical properties of asphalt are inconsistent. The asphalt used in the manufacture of ABS is essentially what remains at the end of distillation of heavier crude oils.[166] Crude petroleum extracted from the many different oil fields around the world varies widely from light-to-heavy crude. Over the years, refining processes have evolved to remove increasing amounts of the more-valuable lighter crude components from refining residuals, resulting in asphalts that vary widely in both chemical and physical characteristics. These process changes have exacerbated the inherent variability resulting from the different compositions and characteristics of crude oil extracted from different oil fields around the world.

Changes in the asphalt available to the paving market in recent years have been described, as follows:

> North America has experienced (i) significant shifts in the availability of asphalt, (ii) higher costs for the available asphalt but more importantly, (iii) dramatic changes in asphalt quality; all of which, threaten the paving contractor's and roofing manufacturer's long-term ability to provide a high quality product, significantly increases the costs of paving our highways and ultimately, impacts the life cycle of those roofs and highways.[167]

The key to success of a sealant is its performance in protecting underlying asphalt pavements. The reason RTS is the preferred product is because it meets customer performance criteria and does so consistently. Through understanding of the qualities of asphalts available on the market, as well as inclusion of additives in the manufacturing process, some ABS that meets performance criteria is available. But, for reasons beyond the control of the sealant industry, consistency of performance of ABS has been elusive, limiting the ability of ABS sealant manufacturers to consistently provide a high-quality product that meets customer performance expectations.

2. Acrylic Sealants

Acrylic sealants are a specialty product principally used for tennis courts, where they have the advantage of allowing control of the speed of play. As experience has shown on tennis courts,

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[166] Little-to-no asphalt is produced from light crude oils, such as from some southern US oil fields, or from shale oil.

[167] *The Asphalt Challenge*. Engineered Additives LLC. http://engineeredadditives.com/asphaltchallenge.html

however, acrylic coatings are brittle, resulting in the need to resurface courts every few years even though they are not subject to vehicle traffic. Brittleness even more severely limits the useful life of acrylic sealants used on pavements exposed to the heavy load of cars and trucks. Reduced service life only adds to the additional limitation that acrylic sealers are prohibitively expensive for use on large asphalt-paved surfaces. For these reasons, acrylic sealants are not competitive in the pavement maintenance world and are not generally regarded as a viable alternative to RTS.

3. Permeable Pavements

Permeable pavements are considered a means of ameliorating storm water runoff issues because they are engineered with pore space that allows dissolved and particulate materials washed off by rainfall to permeate the pavement for capture or immobilization by an underlying drainage system or by soils. A standard method of making large concrete or asphalt roadway or parking lot surfaces more porous is to reduce fine particles in the concrete/asphalt mix. Unfortunately, this reduces the load bearing capacity of the pavement. Installation of permeable pavements is also more expensive than traditional pavement, and the pore space available for permeability decreases over time, as the material is compressed or collapsed under the weight of vehicles.

Once such pavements are installed, particulates infiltrate the pore space, leading to declining effectiveness over time and, eventually, complete clogging. In more northerly climates, application of sand and de-icing chemicals can lead to very rapid clogging. To maintain permeability of acrylic pavements, it is necessary to institute a maintenance program involving routine removal of particles from pore space, typically with an industrial vacuum. Without such elaborate and expensive maintenance, infiltration of storm water becomes increasingly inefficient, leading to runoff that is no different than from impervious pavements.

For these reasons alone, permeable products are usually inappropriate for application on surfaces with vehicle traffic. Additionally, the costs of alternative permeable products at the point of application are often greater than those for RTS products, and the cost of maintenance can be much greater than for maintenance of traditional pavements.

B. Life-Cycle Cost-Competitiveness of RTS Is Superior

Pavement maintenance programs consist of three different types of operation: preventive maintenance, corrective maintenance, and emergency maintenance. As concluded by the University of Minnesota's Airport Technical Assistance Program (AirTAP) from an assessment of the benefits of a pavement maintenance program:

> Preventive maintenance is generally the least expensive type of maintenance, and emergency the most. Emphasizing preventive maintenance will keep pavement in good condition and prolong the time until corrective maintenance is required. A pavement preservation program is designed to preserve a pavement structure, enhance its performance, extend pavement life, and meet user needs. An effective program integrates many preventive maintenance strategies and rehabilitation treatments with the goal of cost-effectively and efficiently enhancing pavement performance. . . .

Pavement preservation has many benefits, the most important of which is preserving a pavement's structural integrity and realizing a substantial maintenance cost savings over the life of the pavement. . . .

To be cost-effective, pavement preventive maintenance treatments should be applied early in the life of a pavement. It is much less expensive to repair a pavement when distresses are just beginning to appear.[168]

Figure 1 below illustrates AirTAP's assessment of the value of a pavement maintenance program.

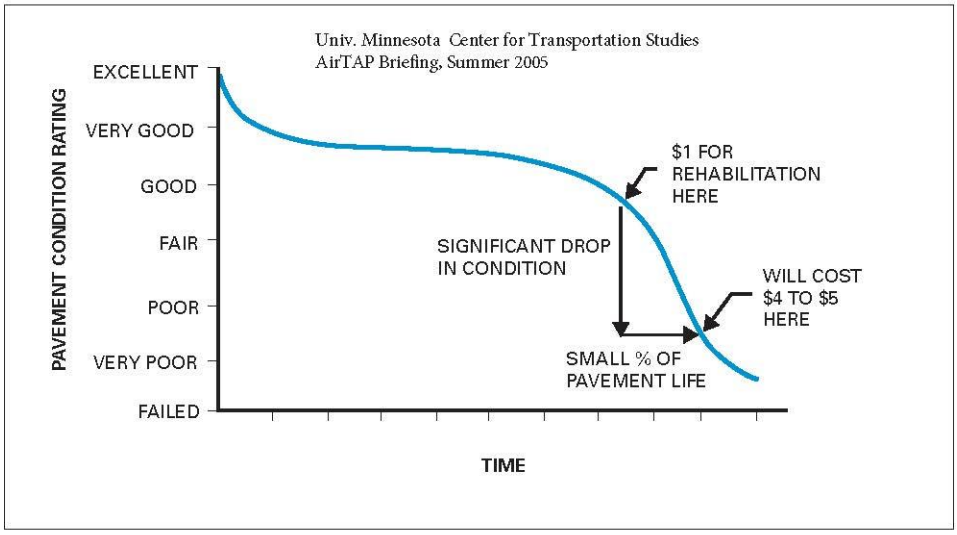

Figure 1. Preventive maintenance preserves the condition of the pavement and costs significantly less than rehabilitation.

Sealcoating is an integral part of a preventive maintenance program. It extends the useful service life of a pavement asset and costs considerably less than repaving or other measures that may be needed later to correct chronic or acute pavement problems.

A comprehensive assessment of the costs associated with any sealcoating must include the costs incurred over the life cycle of a paved surface. The initial cost is the cost of the sealant being applied to a surface—either RTS or ABS—and the cost of applying it. The cost of application is virtually the same. And, the initial cost of the sealant can be compared in the moment using the price of RTS versus the price of ABS. But, the initial cost does not tell the whole story—the cost over the life cycle of a paved surface must be considered, and this factor favors RTS.

PCTC/COETF estimate that the cost savings of a pavement maintenance program that includes sealcoating results in a 12-year total cost for a commercial installation of about $0.39/sq. ft. versus an unsealed total cost of $1.76/sq. ft. This assumes that, after 12 years of use, an unsealed lot would require an overlay with 2" of asphalt.[169] This figure assumes equal longevity for RTS

[168] *Pavement preservation: protecting your airport's biggest investment*. AirTAP Briefing Summer 2005.
[169] Details of the assumptions used in both commercial and residential examples are illustrated in infographics available at http://www.pavementcouncil.org/education/.

and ABS. When the longer period between needed sealcoat applications of RTS is considered, the 12-year cost of a sealcoat program would be even less than the example calculation.

EPA needs to consider that, in the real world, cost is more than an initial, one-time consideration. The life-cycle cost must be considered. And, when it is, RTS is the clear winner. For this reason, EPA's assumption that,

> [g]iven the comparable costs among products, EPA assumes that most facilities who intend to use coal-tar sealcoat will be able to find a product alternative at negligible cost difference yet with similar performance,[170]

is not based in fact.

C. Independent Sources Recognize the Superior Value and Performance of RTS

Missouri State University (MSU) studied the relative merits of RTS vs. alternative products in 2015. The MSU Board of Governors, after "much research completed," found asphalt sealant was not recommended due to "cost and longevity." More specifically, MSU found that the asphalt life-cycle was two to three years, while that for RTS was four to six years. And, yet, the cost of installation was almost the same, $0.09/ft^2$ for asphalt emulsion and $0.11/ft^2$ for RTS.[171] And, according to an article in the Springfield (MO) News-Leader, the University found that asphalt emulsion was "less effective at blocking water and lasts half as long."[172]

Another exhaustive study of sealcoat alternatives was conducted in 2010 by Geoffrey H. Butler, an architect based in Springfield, Missouri. In his white paper, which he provided to the City of Springfield, Mr. Butler explained what he had learned about pavement sealers from designing projects that involved parking lots:

> As a developer and property owner, I have experience with both the coal tar sealers and the asphalt based sealers. . . . The [asphalt based sealer] wore off rather quickly lasting only two years. . . I have used coal-tar sealants. . . very successfully. It lasts 4-6 years per application, does not track. . . and has never re-emulsified. . . . Coal tar sealant is highly resistant to gas and oil. . . . The cost to properly repair or replace an asphalt parking lot exceeds the cost to build it in the first place.[173]

These two independent sources confirm the cost and performance qualities discussed above. Many other could be cited. In contrast, EPA provides no explanation or references to support its assertions that cost-effective alternatives are available. In fact, alternatives of similar performance and cost to RTS are not available. EPA's claims to the contrary are simply untrue, and the Agency needs to correct the record.

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[170] Fact Sheet, p. 24. EPA provides no supporting information for this "assumption."

[171] Parking Lot Sealant Summary, Board of Governors Meeting, Missouri State University, February 26, 2015

[172] Riley, C. "After trying alternative, MSU resumes use of coal tar sealant," April 3, 2015 Springfield News-Leader, Springfield, Missouri.

[173] Geoffrey Butler, AIA, "What I have learned about Coal Tar Sealers," January 14, 2010

HB 77 - Oppose - Gem Seal.pdf
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February 18, 2021

Maryland State Senate
Education, Health, and Environmental Affairs Committee
Miller Senate Office Building, 2 West Wing
11 Bladen Street
Annapolis, MD 21401

Re: Vote No on HB-77

Dear Mr. Chairman & Committee Members:

After previous multiple attempts to ban coal tar sealer from both production and use in the state of Maryland by its' legislature, and by the bans put in place by the four Maryland counties surrounding Washington, D.C., Gem Seal Pavement Products decided to close our Baltimore production and storefront distribution facilities in February of 2020, prior to the Corona-virus pandemic. It was a disappointment to us and especially to our employees whom we had to permanently layoff; a plant manager, a production manager, an administrative assistant, a marketing representative, four plant employees, storefront manager, and 2 truck drivers. All were well paid with full benefits too.

We believed it was too risky to spend the capital to upgrade our White Marsh manufacturing facility and our Rosedale storefront location, given the hostile legislative climate over the past decade in Maryland and the misplaced animosity for refined tar products given in a presentation by school children who only presented one side of the story from the USGS, easily obtained on the internet. The fact remains that there is no legacy of adverse health effects within and outside of the pavement maintenance industry from refined coal tar sealers during the 65 years they have been in commercial use. Not one documented incident. Since we sold and transported nearly 75% of the refined coal tar and petroleum pitch pavement sealer produced at our White Marsh plant to clients in neighboring states following the coal tar bans in the 4 Maryland counties, we determined that we could supply those customers from two other facilities located in North Carolina and Pennsylvania. None of the White Marsh employees we had to layoff were relocated.

The school children who presented to the Howard County Council and the House of Delegates only consulted sources provided by advocates of the coal tar and petroleum pitch sealer bans. Never once did they consult or visit one of the refined tar sealer companies located in Maryland, Gem Seal or SealMaster. Never once did they consult with me, a 41-year veteran of the industry and still working, or Tom Decker, who has operated a coal tar manufacturing plant in Cockeysville for 25 years. Never once did they consult Dr. Brian Magee, Dr. Kirk O'Reilly, or the multitude of other science experts who have refuted through multiple and repeatable peer reviewed research publications how misguided Barbara Mahler and Peter Van Metre's research into refined coal tar sealer really is. Did they document even one incident of adverse human health effect to a person who worked in a Maryland sealer production facility? No. A commercial sealcoating contractor? No. Or, any employee who *was* and no longer employed at Gem Seal? No. Are they aware that there are no .1% PAH pavement sealers that wear as well as the current coal tar and petroleum pitch products which are the current preferred choices of contractors and property owners in Maryland? No…

We are permanently closed in Maryland due to this misuse of legislation in the 4 counties closest to Washington, D.C.

I find ironic, if not tragic, that Washington is spending vast sums of time and money to keep businesses stable through the corona-virus crisis and yet, at the same time, Maryland is about to severely cripple our industry with this over-reaching and targeted bill, HB-77. As for the current pandemic that overshadows our country, **I am proud that our company is one of few that has remained open, with exception to Maryland, *without laying off a single employee or***

taking a single dime in Federal assistance. HB77, if passed, however, will bring a rapid decline to our industry that will shut down additional plants and layoff salaried and wage-earning employees of manufacturers, resellers, and sealcoating contractors.

Chris Mariani

Gem Seal Pavement Products
Southern Regional GM

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HB77 Testimony Safer Sealant Act-Kevin Miller 3 (1

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Position: UNF

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March 22, 2021

Maryland State Senate
Education, Health, and Environmental Affairs Committee
Miller Senate Office Building, 2 West Wing
11 Bladen Street
Annapolis Md 21401

Good afternoon Chairman and Members of the Committee,

Thank you for the opportunity to testify as an industry contractor expert for the HB77 Safer Sealant Act of 2021.

I am President of Image Asphalt Maintenance Inc. In 1990, as a 20-year-old College Park student, I started sealing driveways and continued to maintain pavement ever since. I've had no adverse health effects from applying sealer, nor has any of the hundreds of employees who have worked for me. In fact, I have never heard of any health-related issues from applying pavement sealer. Not from industry publications, OSHA bulletins, the State of Maryland, or any other source. Coal tar sealer is so easy to work with that it doesn't even harm vegetation.

Liquid Asphalt Sealer is a common and successful product to prevent the deterioration of asphalt pavement, reduce expense and add curb appeal to driveways and parking lots. Throughout the years I have tried every kind of sealer on the market and have determined (as has the entire industry) that coal tar-based sealers are far superior to any sealer available today.

At Image Asphalt, we will not sell inferior sealers because of their poor value and inability to warranty the product. If coal tar sealers are banned the process of maintaining your pavement will be less effective, more expensive, and more important, would result in a much larger carbon footprint. It's worth considering that using an inferior sealer that is half as effective, would result in twice as much application and twice the CO2 emissions compared to using coal tar.

Without proper and effective sealing, the pavement will need to be replaced more often, which involves many dump trucks, sweeper trucks, milling machines, pavers, rollers, skid steers not to mention the equipment required to simply make the asphalt. All of this equipment will be spewing CO2 emissions and harming the environment. Alternatively, sealing operations emissions come from only a seal coat truck, and a blower, which might be 10% of the emissions of a paving operation.

Most important, please also consider that The Safer Sealant Act would put many of my employees out-of-

work. I have employees that have been with me 15-20 years, who have perfected their position in the pavement maintenance trade and would have nowhere else to go.

Before voting on the Safer Sealant Act please consider that:

- Coal tar-based sealers are not dangerous to personal or environmental health
- Without coal tar sealers pavement maintenance will require a dramatic increase in CO2 emissions
- Banning coal tar sealers will cost many industry professionals their jobs

Hoping the above is satisfactory we remain,

Very Truly Yours,

Kevin Miller, President
Image Asphalt Maintenance Inc.

Neyra No HB-77 Letter 2-12-2021.pdf
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February 12, 2021

Mr. Chairman and Members of Committee
Environment and Transportation Committee
House Office Building
6 Bladen Street
Annapolis, MD 21401

Re: Vote No on HB-77

Dear Mr. Chairman and Committee Members:

As a second-generation owner of a long-standing and well-respected pavement maintenance manufacturing company, I would like to share my concerns with the effects HB-77 would have not only on my company and our customers in Maryland, but also our industry as a whole.

A family-owned and operated company since 1975, Neyra Industries manufactures a full line of pavement sealers made from various raw materials, including asphalt and refined coal tar. We have always provided an assortment of coatings to support the needs of our customers, and we will continue to provide innovative coatings that meet those ever-changing needs. However, a ban such as HB-77 could completely shut down our industry making pavement maintenance an unpreferred and even feared practice altogether regardless of what products are used.

The type of coal tar used in sealants is a by-product of the steel-making process. It has a long history of safe use. It is classified as "generally regarded as safe" by the FDA, and is an active ingredient in many products used by consumers. Coal tar sealcoat is formulated, distributed, and applied by thousands of local businesses across the United States, virtually all of which are small, family-owned enterprises offering good-paying jobs for general and skilled labor. We need more, not less, of these kinds of jobs in the United States. The HB-77 bill could not only destroy sealer manufacturers and the contracting companies that apply our products, but also thousands of jobs filled by the blue-collar labor force that is already hurting for employment.

Because they have been thoroughly tested, studied and analyzed, the risks thought to be associated with exposures to PAH-containing materials, such as coal tar sealer, are understood by the scientific community. Those risks are low—whether evaluated from the point of view of real-world exposures or from the perspective of studies conducted in a laboratory. Proponents for HB-77 do not have evidence that PAHs from coal tar or alternative sealer products have ever harmed anyone or the waterways in Maryland.

For the consideration of the entire pavement maintenance industry and the thousands of contractors and laborers that could be severely affected in Maryland, please vote "no" on HB-77.

Thank you,

Nathan Neyra
President
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Victor Sealcoating.pdf
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As a Maryland resident, I am urging you to vote against HB77 for a variety of reasons. Unlike some people who often deal in hysteria, I researched the topic, and found that this industry has done an excellent job of policing itself. They abandoned the coal tar product they had been using, even though there were no studies or evidence that linked the product to endangering the environment.

The current product they are using is safe, non-toxic and gives the consumer a quality product. When I was informed of this bill being introduced and passed with no supporting evidence, I was terribly upset and dismayed that all this was going to do was to put more people out of work and add more misery to the economy. You might want to observe, as I did, that the individuals who perform this work obviously don't have much and depend on this summer work to support their families. If they have to use an inferior product, the consumer will stop having the work done. Also, like other industries, there are numerous other jobs created from the manufacture, distribution, support products, installers, and finally to the consumer.

As you know, people are suffering. "PLEASE DON'T PUT THESE PEOPLE OUT OF WORK." Thank you for your consideration of this matter.

Mr. And Mrs. Thomas M. Sholtis

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Position: INFO

Maryland
Department of
the Environment

Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor

Ben Grumbles, Secretary
Horacio Tablada, Deputy Secretary

March 24, 2021

The Honorable Paul G. Pinsky, Chair
Senate Education, Health, and Environmental Affairs Committee
2 West, Miller Senate Office Building
Annapolis, MD 21401

Re: House Bill 77 - Environment - Driveway Sealers - Prohibitions (Safer Sealant Act of 2021)

Dear Chair Pinsky and Members of the Committee:

The Maryland Department of the Environment (MDE or the Department) has reviewed House Bill 77 entitled *Environment - Driveway Sealers - Prohibitions (Safer Sealant Act of 2021)* and would like to provide additional information regarding this bill.

Beginning October 1, 2022, a person would be prohibited from manufacturing or distributing for use in the State a high-PAH driveway sealer, and from applying or soliciting the application of a high-PAH driveway sealer on pavement in the State. A high-PAH driveway sealer is defined as a driveway sealer containing more than 0.100% polycyclic aromatic hydrocarbon (PAH) by weight. Also beginning October 1, 2022, a person would be prohibited from manufacturing or distributing a driveway sealer for use in the State unless the driveway sealer is labeled in accordance with labeling standards developed by the Department. MDE would be required to develop labeling standards for a person distributing or manufacturing a driveway sealer for use in Maryland, including the placement of the composition of the driveway sealer as a percentage of PAHs by weight on the label. MDE would also be required to adopt regulations to allow a sealant manufacturer to label a product containing less than 50 ppm (0.005%) PAH by weight as "low PAH". The Department would enforce violations of this bill under existing enforcement provisions in §§9-334—9-344 of the Environment Article. MDE would use the Maryland Clean Water Fund to cover expenses related to implementing this bill and to collect penalties paid by violators.

MDE supports the concept of reducing the use of products containing PAHs as a means to protect public health and the environment. Pavement sealants contain PAHs, persistent organic compounds of which several are known or probable human carcinogens and toxic to aquatic life. Sealants applied to pavements eroded due to weathering and abrasion from vehicles and foot traffic break down into fine dust or particles. The PAH-contaminated dust or particles can contaminate soil, bodies of water, and homes. The Department has regulations that set a maximum concentration level for Benzo(a)pyrene, a PAH found in coal tar pavement products,

in surface waters used as a public water supply. Approximately 70 percent of Marylanders' water supply comes from surface waters.

The sale and use of coal tar pavement sealants in the District of Columbia has been banned since 2009. In 2018, the D.C. Council passed a law broadening the definition of sealant products banned in the District to include sealant products that contains more than de minimis levels of PAHs, referred to as a high PAH sealant product. The District is currently developing a pavement sealant certification program funded through the Chesapeake Bay Program Goal Implementation Team Project Initiative to identify products with less than 0.100% PAH by weight, and thus not considered a high PAH sealant product. Under House Bill 77, the pavement sealants identified by the District could also be used in Maryland provided the products comply with the labeling standards to be developed by MDE.

MDE does not currently regulate the application of driveway sealers or any other pavement sealant product. Therefore, MDE would need to hire a temporary contractual Environmental Compliance Specialist to implement this bill. The Department's enforcement would occur on a complaint basis, with the performance of targeted inspection and compliance activities. The complaint-based approach would be necessary because MDE would not typically be present for the application of driveway sealers, and the bill contains no mechanism to notify MDE of where and when applications of driveway sealers occur. The Environment Compliance Specialist would also assist in the development of labeling standards for a person distributing or manufacturing a driveway sealer for use in the State, and the adoption of regulations to allow a sealant manufacturer to label a product containing less than 50 ppm PAH by weight as "low PAH".

Thank you for your consideration. We will continue to monitor House Bill 77 during the Committee's deliberations, and I am available to answer any questions you may have. Please feel free to contact me at 410-260-6301 or by e-mail at tyler.abbott@maryland.gov.

Sincerely,

Tyler Abbott
Director, Legislative and Intergovernmental Relations

cc: The Honorable Vaughn Stewart
Kaley Laleker, Director, Land and Materials Administration