CHARTER TOWNSHIP OF VAN BUREN
ENVIRONMENTAL COMMISSION AGENDA

Wednesday, May 18, 2016 – 7:00 PM
Denton Room

CALL TO ORDER

ROLL CALL

ENVIRONMENTAL COMMISSION

Chairman Brownlee	_____	Commissioner Merritt	_____
Vacant	_____	Commissioner Wilson	_____
Commissioner Debuck	_____	Board Representative Jahr	_____
Commissioner Gibson	_____	Director Akers	_____
Deputy Director Best	_____	Recording Secretary Halstead	_____

APPROVAL OF AGENDA

ACCEPTANCE OF THE MINUTES OF THE PREVIOUS MEETING

1. March 16, 2016 Minutes
2. April 20, 2016 Minutes

COMMUNICATIONS

UNFINISHED BUSINESS

1. Recycling Road Map
2. Coal Tar Discussion
3. Belleville Lake Water Quality Discussion
4. Lead Containing Paint

NEW BUSINESS

ADJOURNMENT

***** If you are unable to attend, please contact Developmental Services at 699-8913 before noon on April 18, 2016*****

CHARTER TOWNSHIP OF VAN BUREN
Environmental Commission
Wednesday-March 16, 2016
MINUTES - DRAFT

The meeting was called to order at 7:03 pm in the Denton room by Chairperson Brownlee.

ROLL CALL:
Present: Brownlee, Gibson, Merritt, Wilson
Absent Excused: Akers, Jahr, Ahamiojie, Debuck
Staff: Best, Halstead
Audience: 2

APPROVAL OF AGENDA:
Motion Wilson, Seconded by Gibson to approve the agenda as presented.
Motion Carried

APPROVAL OF MINUTES:
Motion Gibson, Seconded by Wilson to approve the Minutes from January 20, 2016.
Motion Carried

CORRESPONDENCE: None

NEW BUSINESS: None

UNFINISHED BUSINESS:

1) ***Lakeshore Ordinance Update:*** At the last planning commission meeting, it was recommended that the Lakeshore Ordinance be revised. Best mentioned they were putting together small groups that are going to help come up with ideas and ways to improve the ordinance.

   Wilson had some pictures that show the condition of various properties on the lake.

2) ***Coal Tar Sealant Contractor Workshop:*** A letter regarding the upcoming workshop on, Thursday March 31, 2016 was sent to contractors who work in the area applying sealant. The Township wanted to provide a way to inform them of the 1% PAH or greater sealant ban that has been adopted and to provide information about alternatives that could be used. Rebecca Esselman of Huron River Watershed Council will be at the workshop to talk about 1% PAH or greater sealant products in general and the issues that go along with it.

   Since sending out the letters, an e-mail was received from the Pavement Coating Technology Council.

3) ***Recycling Road Map:*** Brownlee said there were outstanding items that commissioners were working on that have not been submitted. He requested that they e-mail him information that they gathered before the next Environmental Meeting. He asked that

they make the information as detailed as possible, trying to include addresses, phone numbers, special instructions and any costs that might be associated with the specific recyclables.

COMMENTS:

Best mentioned the Township did hear back from the State of Michigan regarding the Iron Belle Trail application for the grant request. The State of Michigan decided not to fund the grant request at this time. The Township is looking into additional funding sources from SEMCOG for the Iron Belle Trail.

Motion Wilson, seconded by Merritt to adjourn at 8:31 pm.
MOTION CARRIED

Respectfully submitted,

Anna Halstead, Recording Secretary

CHARTER TOWNSHIP OF VAN BUREN
Environmental Commission
Wednesday-April 20, 2016
MINUTES - DRAFT

The meeting was called to order at 7:05 pm in the Board Room by Chairperson Brownlee.

ROLL CALL:
Present: Brownlee, Ahamiojie, Debuck, Merritt, Wilson, Jahr
Absent Excused: Akers, Gibson
Staff: Best, Halstead
Audience: 13

APPROVAL OF AGENDA:
Motion Jahr, Seconded by Debuck to approve the agenda as presented with the exception of moving unfinished business item #1 to the end of the agenda, time permitting.
Motion Carried

APPROVAL OF MINUTES: The Chair directed that consideration of the meeting minutes of March 16, 2016 be postponed until the next regular meeting of the Commission.

CORRESPONDENCE: None

NEW BUSINESS:

1.) ***Coal Tar Presentation:***
Brownlee introduced Dr. Anne LeHuray from the PCTC. LeHuray gave her presentation, which included a PowerPoint presentation and handouts, and took questions and comments from both the Commission and the audience.

2.) ***Belleville Lake Water Quality Discussion:***
Best introduced Kathleen Walsh, a resident of Van Buren Twp., who had some questions and concerns about the Huron River and Belleville Lake. Mrs. Walsh asked questions regarding the Phosphorus Reduction Implementation Plan for the Middle Huron River Watershed, the current plan for addressing algae blooms in the lake, if there was a budget for the lakefront, if there were any grants available for remediation on the lakeshore, etc. Staff and Commissioners answered Ms. Walsh's questions regarding the plan, algae bloom response and budget/grants.

Rebecca Esselman, from the Huron River Watershed Council, gave information regarding the different grants that might be available.

3.) ***Lead Containing Paint:***
Dr. Wilson brought up his concern regarding lead based paint in older housing in Van Buren Township. Public information outreach ideas were discussed.

COMMENTS:
The Shoreline Committee is starting to form and they are just waiting on a few more responses from interested Lakeshore residents to complete the group.
Ahamiojie announced he would be stepping down as commissioner and going back to school full-time.

Representative from Belleville High School gave report, noting that there is no longer an ecology class and it will hopefully be starting back up within the next year.

Motion Jahr, seconded by Wilson to adjourn at 8:44 pm.
MOTION CARRIED

Respectfully submitted,

Anna Halstead, Recording Secretary

USGS
science for a changing world

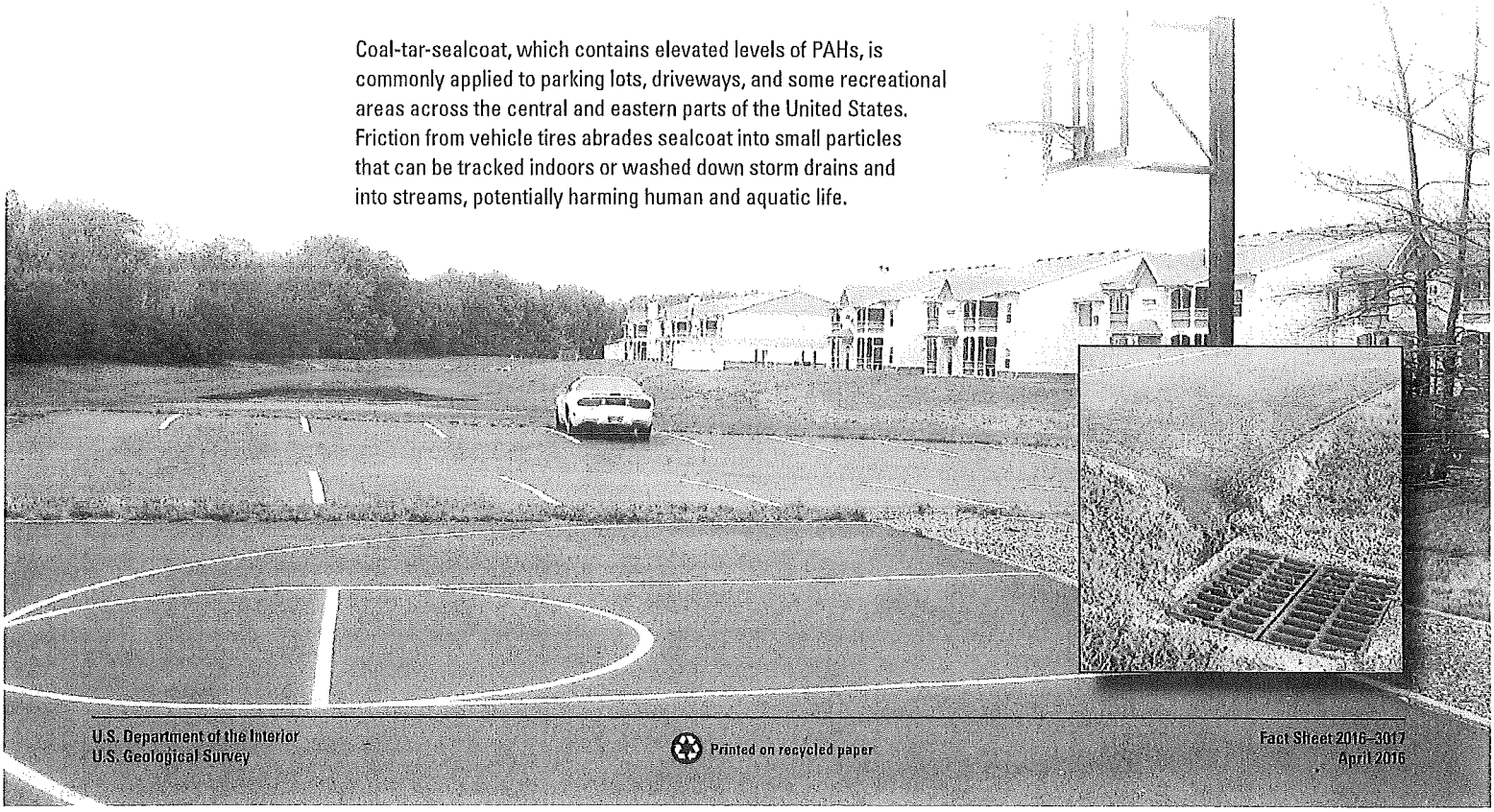
Coal-Tar-Based Pavement Sealcoat—Potential Concerns for Human Health and Aquatic Life

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.



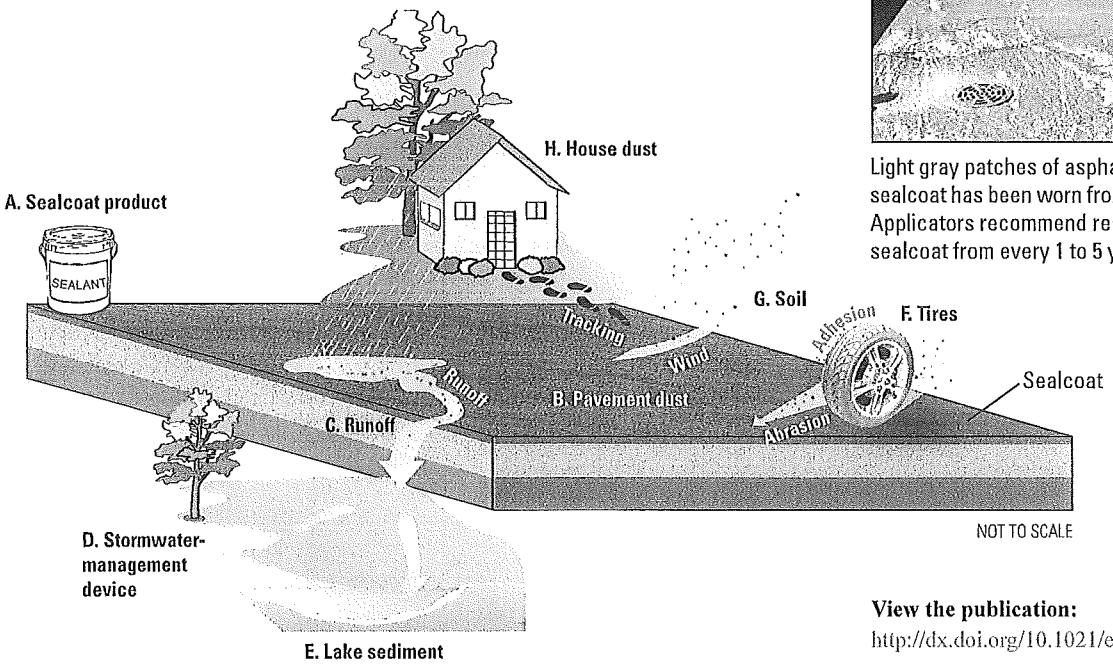
Coal-tar-sealcoat, which contains elevated levels of PAHs, is commonly applied to parking lots, driveways, and some recreational areas across the central and eastern parts of the United States. Friction from vehicle tires abrades sealcoat into small particles that can be tracked indoors or washed down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

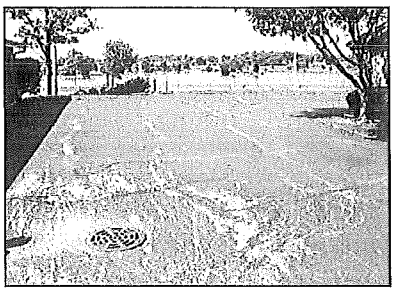
U.S. Department of the Interior
U.S. Geological Survey

Printed on recycled paper

Fact Sheet 2016–3017
April 2016

As Sealcoat Wears Off, Where Does It Go?

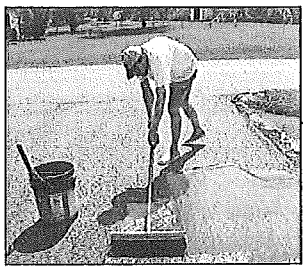


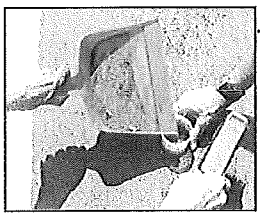


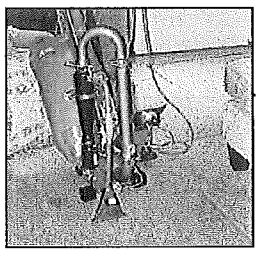
Light gray patches of asphalt show where sealcoat has been worn from the pavement. Applicators recommend reapplication of sealcoat from every 1 to 5 years.[1]

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

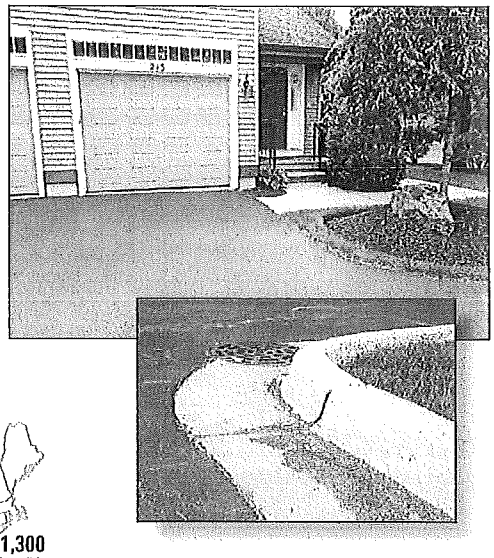
*Concentrations are means or medians. References and additional information are provided in Mahler and others (2012).[1]

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

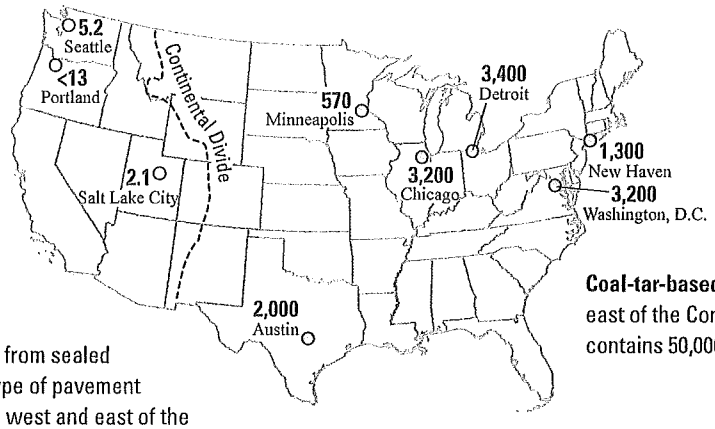
Pavement sealcoat is a commercial product that is applied to many asphalt parking lots, driveways, and playgrounds in North America in an effort to protect and beautify the underlying asphalt. It rarely is used on public roads.

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]



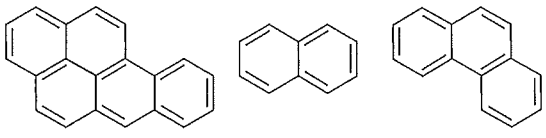
Asphalt-based sealcoat, primarily used west of the Continental Divide, typically contains about 50 mg/kg PAHs.[4]



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

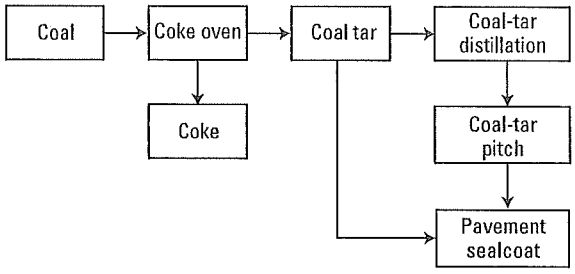
PAH levels in dust swept from sealed parking lots reflect the type of pavement sealcoat commonly used west and east of the Continental Divide.[1] Concentrations, in units of milligrams per kilogram (mg/kg), also referred to as "parts per million" (ppm), shown here are for the sum of the 16 PAHs listed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

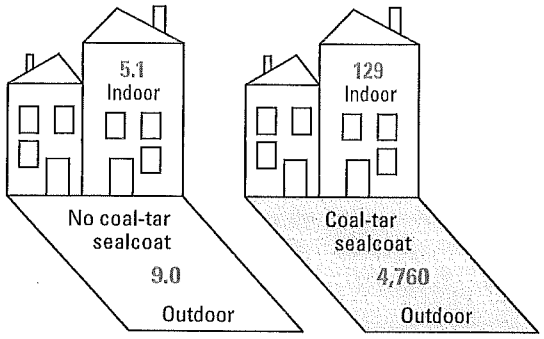


Potential Risks to Human Health

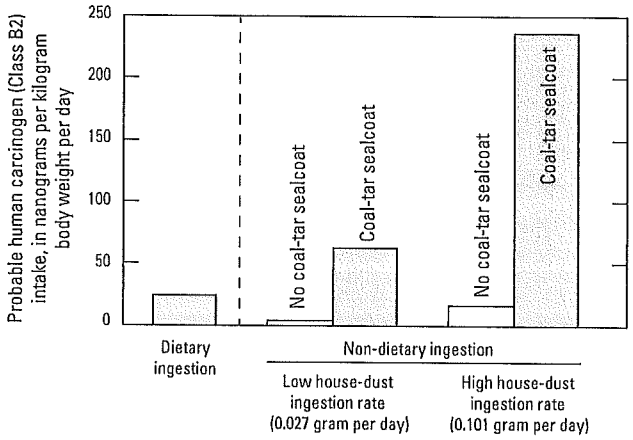
PAHs from coal-tar-based sealcoat contaminate house dust[10]

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.



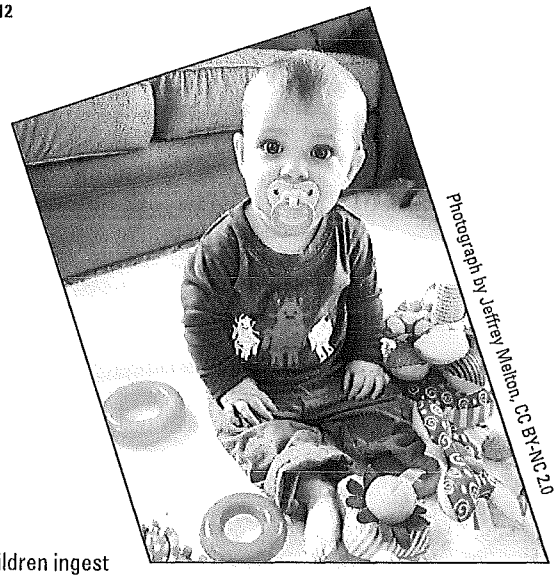
The preschooler living in a residence adjacent to coal-tar-sealed pavement who has relatively low hand-to-mouth activity consumes about 2.5 times more PAHs from house dust than from their diet.[11] For the more active preschooler, whose hand-to-mouth activity is higher, the PAH intake from house dust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

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

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]



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.

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

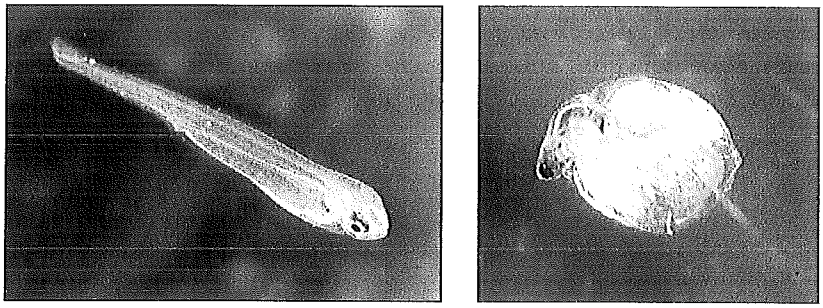
Potential Risks to Aquatic Life

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.

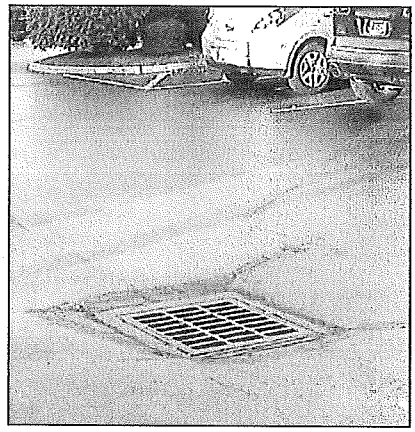
The USGS collected samples of runoff from 5 hours to 111 days following sealcoat application to pavement by a professional applicator. Total PAH concentrations varied relatively little, as rapid decreases in concentrations of low molecular weight and nitrogen-substituted PAHs were offset by increases 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

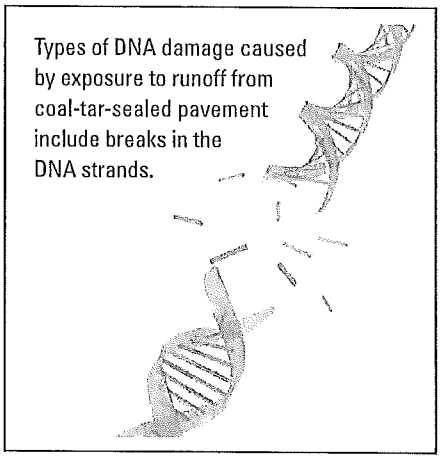


Runoff from coal-tar-sealcoated pavement goes down storm drains to receiving water bodies. The runoff contains high concentrations of PAHs and related chemicals that can harm aquatic life.[16]

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.

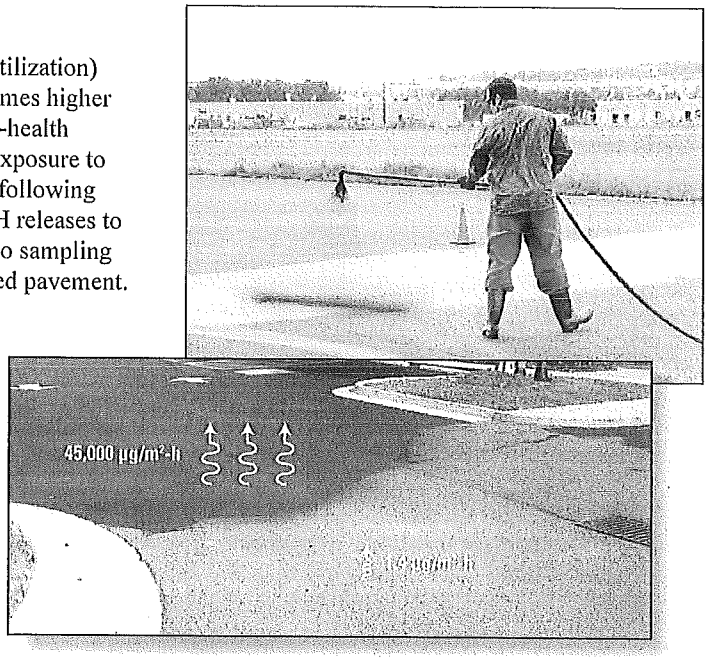


Types of DNA damage caused by exposure to runoff from coal-tar-sealed pavement include breaks in the DNA strands.

(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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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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Severe Coal Tar Sealcoat Runoff Toxicity to Fish Is Prevented by Bioretention Filtration

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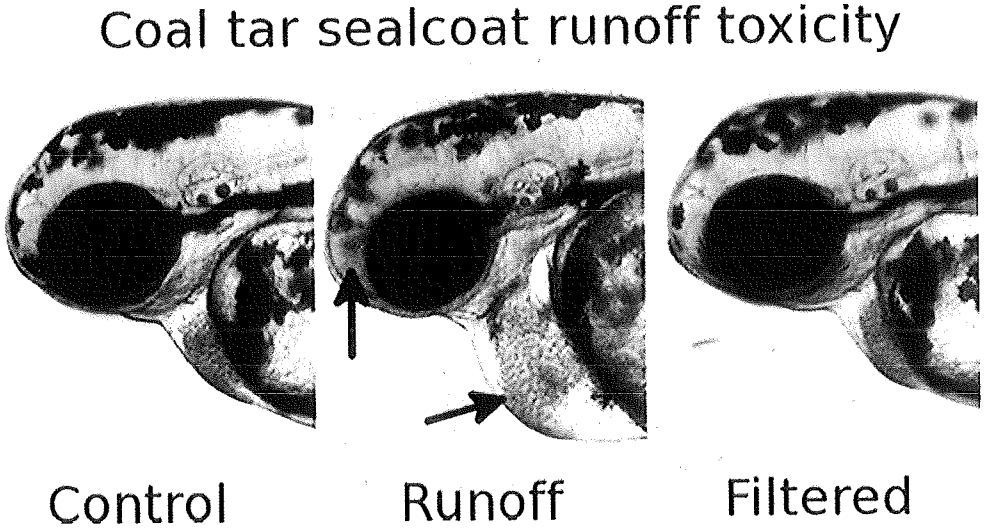
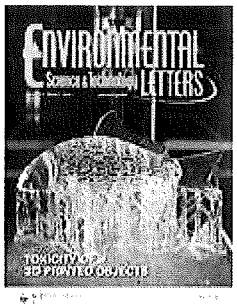
Abstract



Coal tar sealcoats applied to asphalt surfaces in North America, east of the Continental Divide, are enriched in petroleum-derived compounds, including polycyclic aromatic hydrocarbons (PAHs). The release of PAHs and other chemicals from sealcoat has the potential to contaminate nearby water

bodies, reducing the resiliency of aquatic communities. Despite this, relatively little is known about the aquatic toxicology of sealcoat-derived contaminants. We assessed the impacts of stormwater runoff from sealcoated asphalt on juvenile coho salmon (*Oncorhynchus kisutch*) and embryo-larval zebrafish (*Danio rerio).* We furthermore evaluated the effectiveness of bioretention as a green stormwater method to remove PAHs and reduce lethal and sublethal toxicity in both species. We applied a coal tar sealcoat to conventional asphalt and collected runoff from simulated rainfall events up to 7 months postapplication. Whereas sealcoat runoff was more acutely lethal to salmon, a spectrum of cardiovascular abnormalities was consistently evident in early life stage zebrafish. Soil bioretention effectively reduced PAH concentrations by an order of magnitude, prevented mortality in juvenile salmon, and significantly reduced cardiotoxicity in zebrafish. Our findings show that inexpensive bioretention methods can markedly improve stormwater quality and protect fish health.



Identification and Toxicological Evaluation of Unsubstituted PAHs and Novel PAH Derivatives in Pavement Sealcoat Products

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*Environmental Science & Technology Letters***2016** Article ASAP

Abstract | Full Text HTML | PDF | PDF w/ Links

Coal-tar based sealcoats on driveways, parking lots far more toxic than suspected

04/27/2016
CORVALLIS, Ore. – The pavement sealcoat products used widely around the nation on thousands of asphalt driveways and parking lots are significantly more toxic and mutagenic than previously suspected, according to a new paper published this week by researchers from Oregon State University.

Of particular concern are the sealcoat products based on use of coal tar emulsions, experts say. Studies done with zebrafish – an animal model that closely resembles human reaction to toxic chemicals – showed developmental toxicity to embryos.

Sealcoats are products often sprayed or brushed on asphalt pavements to improve their appearance and extend their lifespan. Products based on coal tar are most commonly used east of the U.S. continental divide, and those based on asphalt most common west of the divide.

The primary concern in sealcoats are polycyclic aromatic hydrocarbons, or PAHs, which are common products of any type of combustion, and have been shown to be toxic to birds, fish, amphibians, plants and mammals, including humans.

There are many different types of PAHs. This study was able to examine the presence and biologic activity of a much greater number of them in sealcoats than has been done in any previous research. The OSU program studying PAHs is one of the most advanced of its type in the world, and can identify and analyze more than 150 types of PAH compounds.

It found some PAHs in coal tar sealcoats that were 30 times more toxic than one of the most common PAH compounds that was studied previously in these products by the U.S. Geological Survey.
The OSU study also showed that new PAH compounds found in coal tar sealcoats had a carcinogenic risk that was 4 percent to 40 percent higher than any study had previously showed. Among the worst offenders were a group of 11 "high molecular weight" PAH derivative compounds, of which no analysis had previously been reported.

By contrast, the study showed that sealcoats based on asphalt, more commonly used in the West, were still toxic, but far less than those based on coal tar. Use of coal tar sealcoats, which are a byproduct of the coal coking process, is most common in the Midwest and East.

The research was reported this week in Environmental Science and Technology Letters, in work supported by the National Institute of Environmental Health Science's Superfund Research Program, and done by researchers in the OSU College of Agricultural Sciences and OSU College of Science.

"Our study is consistent with previous findings made by the USGS," said Staci Simonich, a professor with appointments in OSU's departments of Environmental and Molecular Toxicology and Chemistry. "But we were able to study a much wider number of PAH compounds than they did. As a result, we found even higher levels of toxicity in coal-tar based sealcoats than has previously been suspected."

"This should assist individuals and municipalities to make more informed decisions about the use of sealcoats and weigh their potential health risks against the benefits of these products," said Simonich, the corresponding author on the study. "And if a decision is made to use sealcoats, we concluded that the products based on asphalt are significantly less toxic than those based on coal tar."

The previous research done by the USGS about the potential health risks of sealcoat products has been controversial, with some industry groups arguing that the federal government agency overstated the risks. The new OSU study indicates that previous research has, if anything, understated the risks.

A 2011 report from the USGS outlined how PAH compounds from sealcoat products can find their way into soils, storm waters, ponds, streams, lakes, and even house dust, as the compounds are tracked by foot, abraded by car tires, washed by rain and volatilize into the air. They reported that the house dust in residences adjacent to pavement that had been treated with a coal tar-based sealcoat had PAH concentrations 25 times higher than those normally found in house dust.

Some states and many municipalities around the nation have already banned the use of coal tar-based sealcoats, due to the human, wildlife and environmental health concerns. In the European Union, use of coal tar-based sealcoats is limited or banned.