

PUBLICATIONS OF SCIENTIFIC STUDIES OF TAR-BASED SEALANTS IN THE ENVIRONMENT

SPONSORED BY THE PAVEMENT COATINGS TECHNOLOGY COUNCIL

(REV. MAY 2018)

Peer Reviewed Papers in Science Journals:

- O'Reilly, K., Ahn, S., Pietari, J. and Boehm, P. (2015). Use of Receptor Models to Evaluate Sources of PAHs in Sediments. *Polycyclic Aromatic Compounds*. 35:1, 41-56.
- O'Reilly, K. T., Pietari, J. and Boehm, P. D. (2014), Parsing pyrogenic polycyclic aromatic hydrocarbons: Forensic chemistry, receptor models, and source control policy. *Integr Environ Assess Manag*, 10:279–285.
- O'Reilly, K., Pietari, J. and Boehm, P. (2012). A Forensic Assessment of Coal Tar Sealants as a Source of Polycyclic Aromatic Hydrocarbons in Urban Sediments. *Environmental Forensics*, 13:185-196.
- DeMott, R.P., Gauthier, T.D., Wiersema, J.M. and Crenson, G. (2010). PAHs in Austin Sediments after a Ban on Pavement Sealers. *Environmental Forensics*, 11:4, 372-382.

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

- O'Reilly, K., and S. Ahn, 2017, Letter commenting on “Primary sources and toxicity of PAHs in Milwaukee-area streambed sediment”—To the editor: *Environmental Toxicology and Chemistry*, v. 36, p. 1978-1980.
- Magee, B. H., & Forsberg, N. D. (2016). Correspondence on Identification and Toxicological Evaluation of Unsubstituted PAHs and Novel PAH Derivatives in Pavement Sealcoat Products. *Environmental Science & Technology Letters*, 3(11), 404-405. doi:10.1021/acs.estlett.6b00360
- LeHuray, A. (2015) Letter to the Editor in response to Bales. *Integr Environ Assess Manag*. 11(2):185-187. DOI: 10.1002/ieam.1619.
- Gauthier, T.D. and DeMott, R.P. (2015). Comment on “Coal-tar pavement sealant use and polycyclic aromatic hydrocarbon contamination in urban stream sediments.” *Physical Geography*. 36(1) pp 84-86 <http://dx.doi.org/10.1080/02723646.2014.981779>
- O'Reilly, K. (2015). Letter to the Editor concerning “Source apportionment and distribution of polycyclic aromatic hydrocarbons, risk considerations, and management implications for urban stormwater pond

sediments in Minnesota, USA." *Archives of Environmental Contamination and Toxicology*. 68(1) pp 1-3. DOI: 10.1007/s00244-014-0094-7.¹

DeMott, R.P.; Gauthier, T.D. (2014) Comment on "PAH Concentrations in Lake Sediment Decline Following Ban on Coal-Tar-Based Pavement Sealants in Austin, Texas." *Environ. Sci. Technol.* 48 (23), pp 14061–14062 <http://dx.doi.org/10.1021/es5046088>.

O'Reilly, K., Pietari, J. and Boehm, P. (2014). Author's Reply to Van Metre and Mahler's Letter to the Editor on "Parsing pyrogenic polycyclic aromatic hydrocarbons: Forensic chemistry, receptor models, and source control policy." *Integr Environ Assess Manag.* 10(4):489-491. DOI: 10.1002/ieam.1556.

O'Reilly, K., Pietari, J. and Boehm, P. (2014). Author's Reply to Crane's Letter to the Editor on "Parsing pyrogenic polycyclic aromatic hydrocarbons: Forensic chemistry, receptor models, and source control policy." . *Integr Environ Assess Manag.* 10:325–326. DOI:10.1002/ieam.1548

O'Reilly, Kirk (2014). Response to authors' reply on "Coal-tar-based sealcoated pavement: A major PAH source to urban stream sediments" *Environmental Pollution* 191:264-265.

O'Reilly, Kirk (2014). Article Title Misstates the Role of Pavement Sealers. Letter to the Editor of *Environmental Pollution* 191:260-261.

Magee, Brian and Janet Keating-Connolly (2014). Comment on "Cancer Risk from Incidental Ingestion Exposures to PAHs Associated with Coal-Tar-Sealed Pavement". *Environmental Science & Technology*, 48 (1), pp 868–869.

O'Reilly, K., Pietari, J. and Boehm, P. (2011). Comment on "PAHs Underfoot: Contaminated Dust from Coal-Tar Sealcoated Pavement is Widespread in the U.S." *Environ. Sci. Technol.*, 2011, 45 (7), pp 3185–3186

DeMott, R.P.; Gauthier, T.D. (2006) Comment on "Parking lot sealcoat: An unrecognized source of urban polycyclic aromatic hydrocarbons." *Environ. Sci. Technol.* 2006, 40(11), 3657-3658

Post-Publication Peer Review Reports:

Exponent (2016a). *Summary of McIntyre et al. 2016. "Severe Coal Tar Sealcoat Runoff Toxicity to Fish Is Prevented by Bioretention Filtration."* Report prepared for the Pavement Coatings Technology Council. Available at <https://www.scribd.com/document/343915511/Post-publication-peer-review-of-McIntyre-et-al-2016> . Condensed version published as a comment on PubMed Commons at <https://www.ncbi.nlm.nih.gov/myncbi/kirk.o'reilly.1/comments/>

Magee, BH, and Forsberg, ND (2016). *Critical Review of Titaly et al. (2016)*. Technical memorandum prepared for the Pavement Coatings Technology Council. August 4, 2016. Available at <https://www.scribd.com/document/343808947/Peer-Review-of-Coal-Tar-Sealed-Pavement-Risk-Assessment> . Condensed version published as a comment in Environmental Science & Technology Letters (Magee & Forsberg, 2016).

Exponent (2016b) *Evaluation of USGS's Assessment of PAH Sources in Sediments of the San Antonio River Watershed*. Report prepared for the Pavement Coatings Technology Council. Available at <https://www.scribd.com/document/344996085/Post-publication-peer-review-of-USGS-San-Antonio-Report-Wilson-et-al-2011> .

¹ Letter to the editor was peer reviewed by the journal.

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- Exponent (2015a). *Review of: Acute Toxicity of Runoff from Sealcoated Pavement to Ceriodaphnia dubia and Pimephales promelas (Mahler et al., 2015)*. Report prepared for the Pavement Coatings Technology Council. Available at <https://www.scribd.com/document/343911349/Post-publication-peer-review-of-Mahler-et-al-2015>
- Exponent (2015b). *Review of: Exposure to Runoff from Coal-Tar-Sealed Pavement Induces Genotoxicity and Impairment of DNA Repair Capacity in the RTL-W1 Fish Liver Cell Line (Keinzler et al., 2015)*. Prepared for the Pavement Coatings Technology Council. 5p. Available at <https://www.scribd.com/document/343911904/Post-publication-peer-review-of-Kienzler-et-al-2015>
- O'Reilly, K. (2014) *Comment on Van Metre and Mahler 2014: "PAH Concentrations in Lake Sediment Decline Following Ban on Coal-Tar-Based Pavement Sealants in Austin, Texas."* Unpublished comment available at <https://www.scribd.com/document/343814884/O-Reilly-K-2014-Comment-on-Van-Metre-and-Mahler-2014-PAH-Concentrations-in-Lake-Sediment-Decline-Following-Ban-on-Coal-Tar-Based-Pavement-Seala> .
- O'Reilly, K. (2014). *Technical Evaluation of Van Metre and Mahler 2010*. Report prepared for PavementCouncil.org by Exponent. Available at <https://www.scribd.com/document/343815559/Technical-Evaluation-of-Van-Metre-and-Mahler-2010>
- Gauthier, T. (2014). *Review of Pavlowsky 2013*. Report prepared for PavementCouncil.org by Environ. Available at <https://www.scribd.com/document/343890840/Post-publication-peer-review-of-Pavlowsky-2013> Condensed version published as a comment in Physical Geography (Gauthier and DeMott, 2015).
- Magee, B. (2014). *PAH Vapor Emissions from Coal Tar Pavement Sealers*. Technical memorandum prepared by ARCADIS for the Pavement Coatings Technology Council, dated July 30. 5 p. Available at <https://www.scribd.com/document/343894751/PAH-Vapor-Emissions-from-Coal-Tar-Pavement-Sealers>
- Magee, B. and Keating-Connolly, J. (2013). *Peer Review of Coal-Tar-Sealed Pavement Risk Assessment*. Report prepared for PavementCouncil.org by ARCADIS. Available at <https://www.scribd.com/document/343808947/Peer-Review-of-Coal-Tar-Sealed-Pavement-Risk-Assessment>. Condensed version published as a comment in Environmental Science & Technology (Magee and Keating-Connolly, 2013).
- DeMott, Robert, Thomas Gauthier and Michael Masonjones (2013). *Volatilization of PAHs from Coal-Tar-Sealed Parking Lots*. Report prepared for PavementCouncil.org by Environ. Available at <https://www.scribd.com/document/343894120/Post-publication-peer-review-of-Van-Metre-et-al-2012a-2012b>
- Environ International (2010). Review of "Coal-Tar-Based Parking Lot Sealcoat: An Unrecognized Source of PAH to Settled House Dust" by Mahler et al., published in Environmental Science and Technology, January 2010. Report prepared for PavementCouncil.org by Environ. Available at <https://www.scribd.com/document/343811412/Review-of-Coal-Tar-Based-Parking-Lot-Sealcoat-An-Unrecognized-Source-of-PAH-to-Settled-House-Dust-by-Mahler-et-al-published-in-Environmental-Scie>
- Environ (2006). Polycyclic Aromatic Hydrocarbon (PAH) Characteristics for Sediments Collected from Creeks and Streams in Austin, Texas. Report prepared for the Pavement Coatings Technology Center. 63 p. Available at <https://www.scribd.com/document/343808345/Polycyclic-Aromatic-Hydrocarbon-PAH-Characteristics-for-Sediments-Collected-from-Creeks-and-Streams-in-Austin-Texas>

Summaries of Post-Publication Peer Reviews Posted for Public Comment

Summaries of scientific reviews commissioned by PCTC have been posted to PubPeer.com, a web site specifically designed for public post-publication peer reviews of papers published in science journals. The links below are to summaries of individual publications.

- <https://pubpeer.com/publications/62730EDFFC17A5F85CA9EB7FD04C24#fb42729> (Mahler et al. 2005)
- <https://pubpeer.com/publications/C3ADDD65D7FDDDD9D8F3E06EC0B9A2A#fb4273> (Van Metre et al. 2009)
- <https://pubpeer.com/publications/DEC6835FF61E589EB95C8597944A7F#fb42759> (Van Metre & Mahler 2014)
- <https://pubpeer.com/publications/F7AA69C873AB96CA862322CF1929BF#fb42838> (Mahler et al. 2010)
- <https://pubpeer.com/publications/BEE4406AC9EF33CF9E3E6C238F0EDF> (Van Metre & Mahler 2010)
- <https://pubpeer.com/publications/C6EE9D26B17539950DFCE21E5BBE2F> (Williams et al., 2012)
- <https://pubpeer.com/publications/5EBEB3ACD53C7F2FF65624EC6DDA58> (Williams et al., 2013)
- <https://pubpeer.com/publications/D11E6D8EA68C093ACB155A821E5DFB> (Watts et al., 2010)
- <https://pubpeer.com/publications/F886AEF6529AA9843114E710B1AC2D> (Pavlowsky, 2013)
- <https://pubpeer.com/publications/1BC1FF805A0E9DE96ADBA73AC443AD#fb43811> (Crane, 2014)
- <https://pubpeer.com/publications/C95FA81213FD9D30144C36DD6D3DF9#fb44076> (Witter et al., 2014)
- <https://pubpeer.com/publications/747B19A6260CA08B9CA4908177268A> (Scoggins et al., 2007)
- <https://pubpeer.com/publications/456CA525683D444D8AE75DB9E88554#fb45568> (Van Metre et al., 2012a and 2012b)
- <https://pubpeer.com/publications/CA5E52B5AD1819E468B800DB24D261> (Mahler et al., 2015)
- <https://pubpeer.com/publications/EFBBA26FDD35EBF21FC7A96538B03E#fb46601> (Kienzler et al., 2015)
- <https://www.ncbi.nlm.nih.gov/myncbi/kirk.o'reilly.1/comments/> (McIntyre et al., 2016)

Submissions to Government Authorities:

August 2016. PCTC submitted comments to Environment Canada regarding two documents concerning coal tars and their distillates: (1) a Draft Screening Assessment (DSA) and (2) a Risk Management Scope (RMS). Available at <http://www.pavementcouncil.org/pctc-submits-comments-to-environment-canada/>

June 2016. PCTC participated with four other industry trade associations to submit comments to the US EPA IRIS program on its assessment of potential skin cancer hazards that could be associated with benzo(a)pyrene, a PAH compound. Comments are available at <http://www.pavementcouncil.org/pctc-joins-with-4-other-trade-associations-to-submit-comments-to-epa/>

March 2016. PCTC submitted comments to the City of San Antonio, Texas, on a Texas A&M review of the City's water programs, which included a recommendation against a ban on RTS, as well as an analysis of the sources of PAHs in San Antonio sediments conducted by Exponent. The comments are available at <http://www.pavementcouncil.org/pctc-comments-on-city-of-san-antonio-preliminary-research-report/>

Information Quality Act Request for Correction of Information Under the U.S. Environmental Protection Agency Information Quality Guidelines. Information requiring correction includes a CADDIS web page and a document titled *Stormwater Best Management Practice: Coal-Tar Sealcoat, Polycyclic Aromatic*

Hydrocarbons, and Stormwater Pollution. April 16, 2014. Available at <http://www.epa.gov/quality/informationguidelines/igq-list.html>

PCTC (2014). The Great Lakes Coal Tar Sealcoat PAH Reduction Project: Comments and Recommendations of the Pavement Coatings Technology Council. Comments submitted to the EPA Great Lakes Program Office and several state agencies located within EPA Region 5. January 21, 2014. Available at <http://www.pavementcouncil.org/blog>

Information Quality Act Requests for Correction of Information Under the U.S. Geological Survey Information Quality Guidelines, available at http://www.usgs.gov/info_qual/

- May 15, 2013: Topic – There is No Scientific Basis for the USGS to Claim that RTS is a Major Source of PAHs in U.S. Sediments
- May 31, 2013: Topic – The USGS is Using Inaccurate and Misleading Photographs of Fish with Skin Tumors as a Scare Tactic to Promote Advocacy Goals
- September 17, 2013: Topic – USGS claims of health risks are based on a “risk assessment” that exaggerates exposure, selects data for inclusion or omission without explanation, fails to consider the many other sources of PAHs, does not use best-available toxicity estimates, and many other flaws of both omission and commission. Request that the USGS publication regarding the risk assessment (Williams et al., 2012) be retracted.
- October 17, 2014: Topic – Comprehensive Review and Evaluation of the USGS application of EPA’s Chemical Mass Balance (CMB) model. Request that the USGS publication (Van Metre and Mahler, 2010) regarding the modeling exercise be retracted.

DeMott, Robert (2004). Review and Evaluation of Coal Tar Emulsion Sealers and Potential Runoff Transport of Polycyclic Aromatic Hydrocarbons. Report prepared for Pavement Coatings Technology Center of the University of Nevada-Reno by Environ, submitted to the City of Austin, TX January 8, 2004. Available at <http://www.pavementcouncil.org/scientific-journals>.

Articles Published in Magazines for Professionals:

LeHuray, A. (2014). Understanding Sealer Basics. Pavement Maintenance Magazine March 2014 (published online Feb. 25, 2014).

Pietari, J., O’Reilly, K. and Boehm, P. (2010). Polycyclic Aromatic Hydrocarbons in Stormwater and Urban Sediments: A Review. *Stormwater Magazine*. September 2010.

Presentations at Upcoming & Recent Scientific Meetings:

Ahn, S., & O’Reilly, K. (2016). *Importance of Source Preparation and Selection Strategies in Chemical Mass Balance Modeling: Source Identification of PAHs in Urban Sediments*. Presentation at the 37th annual meeting of the Society of Environmental Toxicology and Chemistry (SETAC), Orlando November 2016.

LeHuray, A. (2015). White Hat Bias in the Environmental Sciences. Presentation at the 36th annual meeting of the Society of Environmental Toxicology and Chemistry (SETAC), Salt Lake City November 2015.

Ahn, S. and O’Reilly, K. (2014). The influence of source selection on Chemical Mass Balance modeling results: Implications for source control policy. Presentation at the 35th annual meeting of the Society of Environmental Toxicology and Chemistry (SETAC) Vancouver, BC November 10, 2014.

O’Reilly, K. and Ahn, S. (2014). Mass Balance Modeling of Polycyclic Aromatic Hydrocarbons Sources to Urban Sediments. Presentation at the 35th annual meeting of the Society of Environmental Toxicology and Chemistry (SETAC) Vancouver, BC November 10, 2014.

LeHuray, A. (2014). PAHS are Rarely Causes of Impairment in U.S. Clean Water Act Section 303(D) Reports. Presentation at the 35th annual meeting of the Society of Environmental Toxicology and Chemistry (SETAC) Vancouver, BC November 10, 2014.

LeHuray, A. and Beatty, K. (2014). Key Science Issues to be Considered in the IRIS Hazard Assessment of the Index Compound for the PAHs, Benzo(a)Pyrene. Presentation at the NIOSH 2014 Toxicology and Risk Assessment Conference (TRAC), Cincinnati, OH April 7-10, 2014.

Magee, B. and Keating-Connolly, Janet (2013). Research-Based Input Parameters for Risk Assessment of Coal-Tar-Based Pavement Sealants. Presentation at the 34th annual meeting of the Society of Environmental Toxicology and Chemistry (SETAC) Nashville, TN November 17-21, 2013.

O'Reilly, K., Mudge, S. and Boehm, P. (2013). Receptor Models for PAH Source Characterization: Opportunities and Limitations. Presentation at the 34th annual meeting of the Society of Environmental Toxicology and Chemistry (SETAC) Nashville, TN November 17-21, 2013.

Pietari, J., Ahn, S., O'Reilly, K. and Boehm, P. (2013) Parsing Pyrogenic PAHs—Urban Background or Refined Tar Products? Presentation at the 29th Annual International Conference on Soils, Sediments, Water, and Energy, October 21-24, 2013, Amherst, MA.

O'Reilly, K., Ahn, S., Pietari, J. and Boehm, P. (2013). Use of Receptor Models to Evaluate Sources of PAHs in Sediments. Presentation at the 24th meeting of the International Symposium on Polycyclic Aromatic Compounds (ISPAC 2013) in Corvallis, Oregon USA September 8-12, 2013.

Magee, B. and Keating-Connolly, Janet (2013). Risk Assessment for Coal Tar-Based Pavement Sealants. Presentation at the 24th meeting of the International Symposium on Polycyclic Aromatic Compounds (ISPAC 2013) in Corvallis, Oregon USA September 8-12, 2013.

O'Reilly K, Pietari J and Boehm P. (2012). Use of Alkyl Polycyclic Aromatic Hydrocarbon Data in Evaluating the Contribution of Pavement Sealers to Urban Sediments. Abstract and Platform Presentation at the 2012 annual meeting of the *Society of Environment Toxicology and Chemistry (SETAC)*.

Feldpausch, A. and Schoof, R. (2012) Development of a residence-specific, health-based screening criterion for benzo(a)pyrene in indoor dust. Abstract of presentation at the 2012 annual meeting of the *International Society of Exposure Science*.

LeHuray, A.P. (2012). Bans of Pavement Sealers Have Demonstrably Absent Environmental Risk Reduction Benefits but Foreseeable and Knowable Economic Harms. Managing for a Healthy and Sustainable Chesapeake Bay: Human and Ecological Risk: *Joint Meeting of the National Capital Area Chapters of the Society of Environment Toxicology and Chemistry (SETAC) and the Society for Risk Analysis (SRA)*. College Park, MD, April 23-24, 2012

O'Reilly, K., Pietari, J. and Boehm, P. (2011). Managing Risks: Will banning pavement sealers have the desired effect? Abstract and Poster Presented at the 32nd Annual Meeting of the *Society of Environment Toxicology and Chemistry (SETAC)*, Boston, Nov. 2011.

DeMott, R.P. and Gauthier, T.D. (2011). Use of Mass Balance Bounding Estimates and Sensitivity Analysis to Prioritize PAH Inputs in Urban Systems. Abstract and Poster Presented at the 32nd Annual Meeting of the *Society of Environment Toxicology and Chemistry (SETAC)*, Boston, Nov. 2011.

Pietari, J., O'Reilly, K. and Boehm, P. (2011). Environmental Forensics for PAH Source Management: Pavement Sealants and Sediments. Abstract and Poster Presented at the *Sixth International Conference on Remediation of Contaminated Sediments*, New Orleans, LA Feb. 2011.

O'Reilly, K., Pietari, J. and Boehm, P. (2010). PAHs in Urban Sediments: Forensics Approaches for Assessing the Relative Contribution of Atmospheric Deposition. Abstract and Platform Presentation at the *31st Annual Meeting of the Society of Environment Toxicology and Chemistry (SETAC)*, Seattle, Nov. 2010.

Gauthier, T.D. and DeMott, R.P. (2008). Analysis of PAH Concentrations Detected in Austin Texas Stream Sediments Following a Ban on the Use of Coal Tar Sealers. Abstract of Presentation Made at the *29th Annual Meeting of the Society of Environmental Toxicology and Chemistry (SETAC)*, Tampa, Nov. 2008.