

Honorable Toni Preckwinkle
and Honorable Members of the Board
of Commissioners of Cook County
118 North Clark Street
Chicago, Illinois 60602

RE: PROPOSED PAVEMENT SEALER ORDINANCE

Dear President Preckwinkle and Members of the Board of Commissioners,

I am a board-certified toxicologist specializing in risk assessment and stewardship for products. I am a founder of Ramboll's Product Safety and Stewardship practice and led our team evaluating food and product safety. Ramboll is a global consulting and engineering firm and the more than 50 employees in our downtown Chicago office work every day to advance environmental protection and cleanup in Cook County and beyond. I have extensive experience evaluating human health and environmental risks associated with the production, distribution, use and disposal of ingredients and products.

My purpose in contacting you is to share findings about my long-term study relating to the issues raised in a proposed ordinance pertaining to pavement sealer products. This may be a well-intentioned effort to manage human-related inputs to waterways, but the proposal will not accomplish its intended effect of lowering specifically the combustion byproducts known as PAHs by targeting the selected pavement sealer products alone.

Since 2005, I have directed a study of the country's most-referenced pavement sealer ban in Austin, Texas. That ban was represented during its consideration as a means to reduce PAHs in waterways by 90 percent. Attached you will find a summary of our latest monitoring in Austin which includes measurements from June, 2023. The primary finding is that PAH inputs to waterways across Austin have not been reduced in the 17 years since the ban. In fact, average PAH concentrations have slightly increased consistent with population growth. As combustion byproducts, PAHs characteristically follow population dynamics since human-related activities as broad as vehicle use, home heating and energy use, and transportation for commerce all involve combustion and materials including PAHs.

The data collected in the field do not support the assertion made in Austin, Texas that banning an individual product type would change PAH conditions in waterways there. There is no reason to expect that data will support the effectiveness of a similarly narrowly targeted approach via a product ban in Cook County. To be able to achieve and highlight environmental and health benefits from managing waterway conditions, alternative and more complex approaches would be necessary.

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I have studied PAH transport in the environment for more than 25 years and identified the safe levels subsequently used in environmental management programs for US Air Force and NASA facilities and adopted into state regulatory programs in Florida. Unfortunately, an ordinance focusing on a single product type will not have a significant impact on waterway quality relating to PAHs due to their numerous and ubiquitous sources.

If you have questions about my work in this area or to discuss ideas about managing PAH in the environment, please let me know.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'R. P. DeMott', written in a cursive style.

Robert P. DeMott, Ph.D.
Principal Toxicologist
Product Safety & Stewardship

9 November 2023

Since 2005 Ramboll scientists have directed a long-term study sponsored by the Pavement Coatings Technology Council to monitor levels of polycyclic aromatic hydrocarbons (PAHs) in stream sediments in Austin, Texas. Effective January 2006, the City of Austin banned the use of pavement sealer products formulated with coal tar-based materials, which contain PAHs. City staff projected a 90% reduction in PAH inputs to streams from this action. To monitor the changes potentially related to the ban, Ramboll collected sediment samples at a series of Austin stream locations in 2005, before the ban, in 2008, approximately 2 years after the ban, and in 2023, approximately 17 years after the ban.

Stream characteristics in Austin are advantageous for this type of sediment monitoring over time because there are a number of stream systems with hard rock stream beds where pockets of sediment from nearby areas collect, but are then scoured away completely during subsequent storm events that yield high velocity, flash-flood type flows. Sediment collected from these stream locations is more reflective of recent inputs from the surrounding watersheds compared with cores from the bottom of silty streams where newly deposited sediment overlays older sediment beneath, making evaluation of discrete timeframes challenging.

Using this stream characteristic as a study design feature means that the results from the stream sediment samples evaluated by Ramboll reflect snapshots in time of conditions before, shortly after, and well after the ban. Samples in 2008 and 2023 were collected from the same locations along streams as in 2005, albeit reflecting recently deposited sediment not present at the preceding event.

The primary finding of the monitoring study is that sediment PAH concentrations have not changed notably since the ban.

Timepoint	Average (Sum of 16 EPA Priority PAHs)	
Before (2005)	11.1 mg/kg	24 samples
Shortly After (2008)	17 mg/kg	20 samples
Well After (2023)	11.8 mg/kg	21 samples

When analyzed statistically, there are no significant differences between the groups of results from each year. Also, comparing 2005 to 2023 results at specific locations, total PAH levels increased at 6 locations and decreased at 7 locations. In other words, there is no consistent trend downwards, nor upwards, over time. This supports a conclusion that the pavement sealer ban did not change conditions

in Austin streams and reduce PAH levels. The sources contributing PAHs to Austin stream continue to yield conditions similar to those before the ban.

Additional analyses looked at the chemical fingerprints resulting from combinations of various PAHs found in samples. PAHs are produced by combustion of fossil fuels and organic materials, including wood. PAH fingerprints can be indicative of different sources of PAHs. The most notable finding is that the 2023 fingerprints remain similar to those found in 2005. And, both 2005 and 2023 fingerprints resemble those common for sediments from urban areas across the US. The fingerprints indicate a mixture of PAH sources, which is expected from the various combustion sources in highly populated areas. Further, the fingerprints from sediment samples before and after the ban do not match those obtained from reference samples of either coal tar or coal tar-based pavement sealer. Both of these findings indicate that coal tar-based pavement sealers were not a predominant source of PAHs in Austin streams before the ban and that targeting this specific product did not substantially change the mixture of PAHs found in area streams, nor the overall levels as presented above.

PAHs are ubiquitous in sediments around urban waterways because combustion processes are ubiquitous. Coal tar-based pavement sealer products have a service life of up to approximately 5 years. At the time of the most recent sampling, 17 years after ban, new PAH inputs to streams from old pavement sealer applications would have dropped off substantially, perhaps nearly entirely. However, no corresponding change in PAH concentrations in Austin stream sediments or PAH fingerprints has been observed. The data collected in the field do not support the assertion made by Austin City staff that the ban targeting one particular product would cut PAH inputs to streams in the city by 90%.