Polycyclic Aromatic Hydrocarbons (PAHs) in a Residential Driveway Stormwater Sample

Dover, New Hampshire, Great Bay-Piscataqua Watershed

Test results indicate significant levels of carcinogenic PAHs in a stormwater sample collected on a public street in a residential neighborhood adjacent to a driveway which had been sealcoated three months earlier.

- A New Hampshire resident[1] collected one ~200 mL stormwater sample and one 250 mL (laboratory supplied) field blank during a moderate rain event on October 21, 2023 in front of a sloped, sealcoated driveway which drains directly to the street. (See Image 1)
- This sample was collected 94 days after sealcoating had been applied to the (~ 1,500 ft²) driveway.[2]

Image 1

Google Maps satellite image[3] with sampling area circled

[1] Stormwater samples collected by Diana Carpinone, Non Toxic Communities.
[2] Driveway sealcoat applied on July 19, 2023. Stormwater samples collected on October 21, 2023.
[3] Google aerial image captured prior to 2023 sealcoating.

- Samples were refrigerated immediately after collection and packed on ice immediately prior to overnight shipment (FedEx) to Eurofins Lancaster Laboratories Environment Testing, LLC in Lancaster, PA.
- Samples were analyzed via Method: 8270E - Semivolatile Organic Compounds (GC/MS) for eighteen (18) polycyclic aromatic hydrocarbons (PAHs).
- Eleven (11) of the 18 PAHs were detected and are detailed in Table 1 below.
- Six (6) of the detected analytes are considered carcinogenic[4] and have federal regulatory limits. They are depicted with red in Table 1 and Figures 1a and 1b.[5]
- Each of these 6 carcinogenic analytes was detected at concentrations above its EPA maximum contaminant levels (MCL) in drinking water.
- The EPA recommends a maximum contaminant level *goal* (MCLG) of **zero** for carcinogenic PAHs in ambient water.[6]

Table 1

Analyte	Result [7]	Reporting Limit [7]	Method Detection Limit [7]	EPA Limit [8]	Unit[7,8]
Anthracene	0.81	0.51	0.10		ug/L
Benzo[a]anthracene	**1.10**	0.51	0.10	0.10	ug/L
Benzo[a]pyrene	**1.30**	0.51	0.11	0.20	ug/L
Benzo[b]fluoranthene	**1.60**	0.51	0.10	0.20	ug/L
Benzo[g,h,i]perylene	1.00	0.51	0.10		ug/L
Benzo[k]fluoranthene	**0.68**	0.51	0.10	0.20	ug/L
Chrysene	**2.00**	0.51	0.10	0.20	ug/L
Indeno[1,2,3-cd]pyrene	**0.99**	0.51	0.11	0.30	ug/L
Phenanthrene	1.50	0.51	0.11		ug/L
Pyrene	5.40	0.51	0.10		ug/L
Fluoranthene	9.70	0.51	0.10		ug/L

[4] https://www.epa.gov/risk/other-carcinogenic-polycyclic-aromatic-hydrocarbons
[5] Stormwater Data Graphs Created By: Kristen Mello, MSc, WRAFT.org
[6] https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations#Organic
[7] from Eurofins analytical laboratory report here: https://drive.google.com/file/d/1rxrT-ARPexyXUuwixoC70wehBXkDT8Du/view?usp=sharing
[8] from the Agency for Toxic Substances and Disease Registry (ATSDR) https://www.atsdr.cdc.gov/csem/polycyclic-aromatic-hydrocarbons/standards_and_regulations_for_exposure.html

Figure 1a

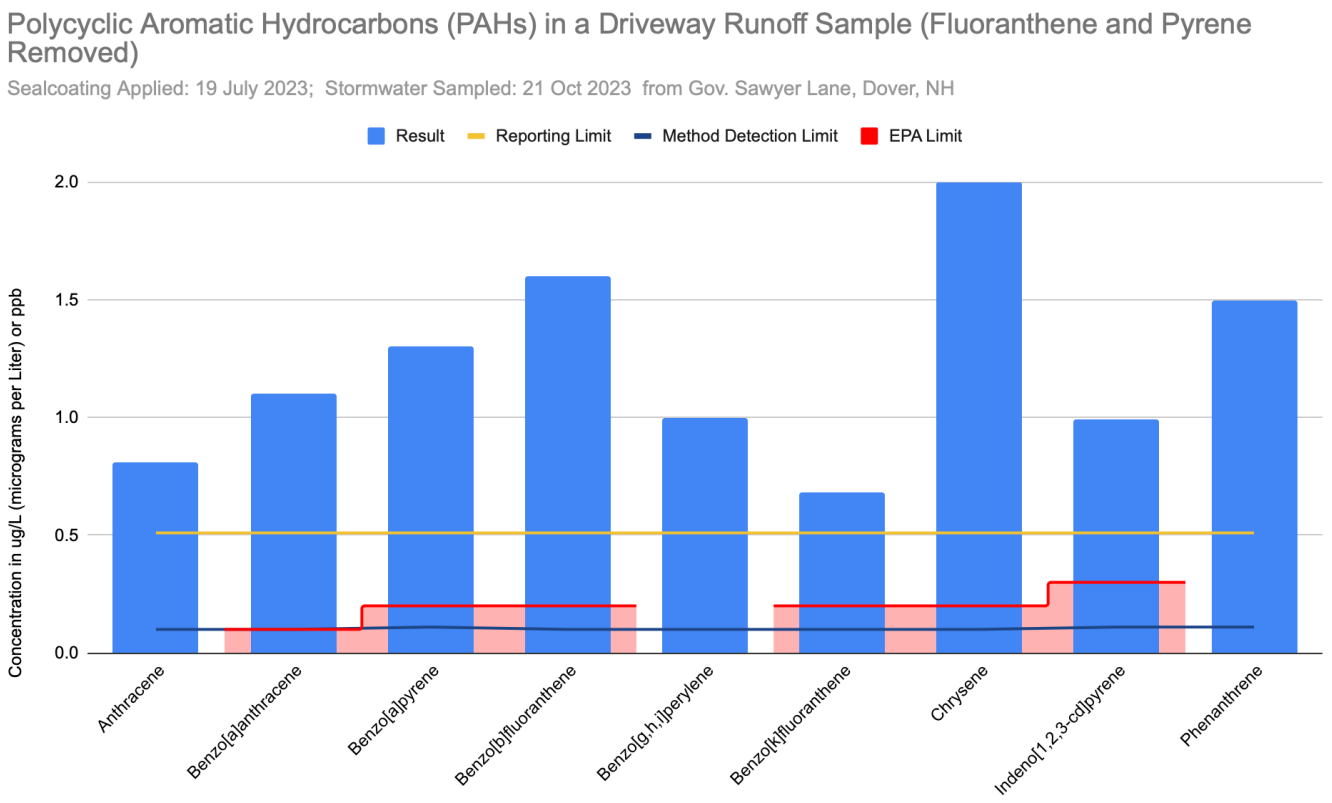

Figure 1b