Supporting Material

1. Procedure for eluting Phenanthrene from PUF

A. Glass-tube column sorption tests

1. Remove PUF from the glass tube column and place it in a clean beaker.
2. Allow the PUF to dry overnight (12 h) in fume hood.
3. Put the dried PUF and 50 ml of methanol in a beaker, then cover the beaker with parafilm to decrease volatilization.
4. Place the covered beaker into fume hood and stir with a magnetic stirrer.
5. After elution in the first beaker containing methanol for 720 min, remove the PUF from the methanol, squeeze the foam dry by tweezers, and allow it further dry for one hour in a clean beaker under fume hood.
6. Put the PUF into a new beaker (the second) containing 50 ml methanol, after 720 min, repeat step 5.
7. Put the PUF into a new beaker (the third) containing 50 ml methanol, eluting the foam for the third 720 min.
8. After the three elution cycles, sample the elution solvent, and pour the used desorption solvent (altogether 150 ml) into a bottle for ^{14}C-PHE analysis.

B. BMP tests

1. Removal the PUF passive sampler from the lab-scale BMP.

2. Removal the PUF plug from the passive sampler (PVC tube) by tweezers and allow the foam to dry overnight (12 h), then put it into a beaker containing 50 ml methanol, covering the beaker with parafilm.
3. Stir the beaker with a magnetic stirrer for 1200 min under fume hood.
4. Conduct the elution process for three times as in glass-tube column sorption tests.
5. Pour the desorption solvent into a bottle for ^{14}C-PHE analysis.

2. Calculation of runoff depth based on storm characteristics

To calculate how long it would take a storm to generate the water quality volume (WQV) of 0.5 in runoff, one needs to consider storm and watershed characteristics. Assuming a site might be half pavement and shoulder (CN = 90) and half grassed slope/ditch (CN = 80), a curve number of 85 is obtained. The table below shows one way to look at it. It shows that if the curve number is 85, one-half inch of runoff is produced from: 1) a 1-yr 12-hr storm; 2) a 2-yr 3-hr storm; or 3) a 10-yr 0.5-hr storm. Different combinations can be obtained by playing with the curve number, which can show how that affects the runoff and the frequency of one-half inch of runoff.

Calculation of runoff depth based on storm characteristics in central Nebraska, USA

Return Period (yr)	Duration (hr)	Rain Intensity P (in)	Q (in)
1	0.5	0.9	0.13
1	3	1.4	0.39
1	12	1.6	0.52
2	0.5	1.09	0.21
2	3	1.55	0.49
2	12	1.66	0.56
5	0.5	1.34	0.35
5	3	1.98	0.78
5	12	2.13	0.89
10	0.5	1.60	0.52
10	3	2.51	1.19
10	12	2.75	1.38
25	0.5	1.92	0.73
25	3	3.28	1.83
25	12	3.68	2.17
50	0.5	2.19	0.94
50	3	3.62	2.12
50	12	4.02	2.47
100	0.5	2.38	1.08
100	3	4.12	2.57
100	12	4.63	3.03

Note: $Q = (P - 0.25S)^2/(P + 0.8S)$ where Q = depth of runoff over the watershed (in), P = precipitation (in), and S = potential maximum retention of water by the soil = 1.76 in[S1].

References

S1 Natural Resources Conservation Service (NRCS) Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. http://websoilsurvey.nrcs.usda.gov/, **2011** (accessed Nov. 2012).