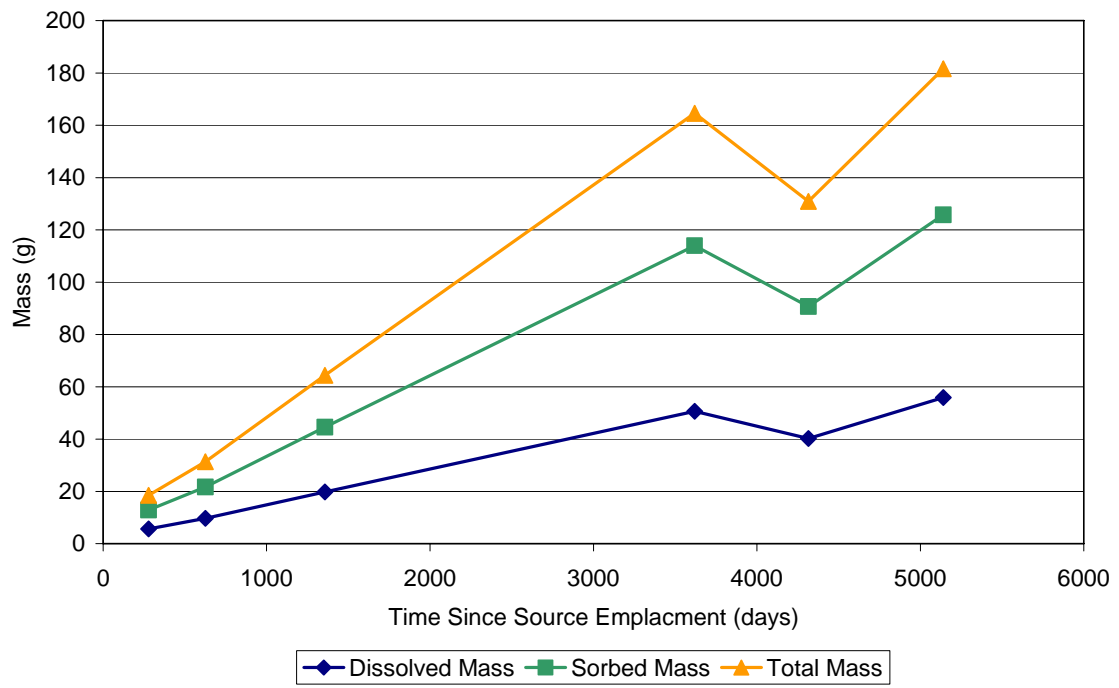
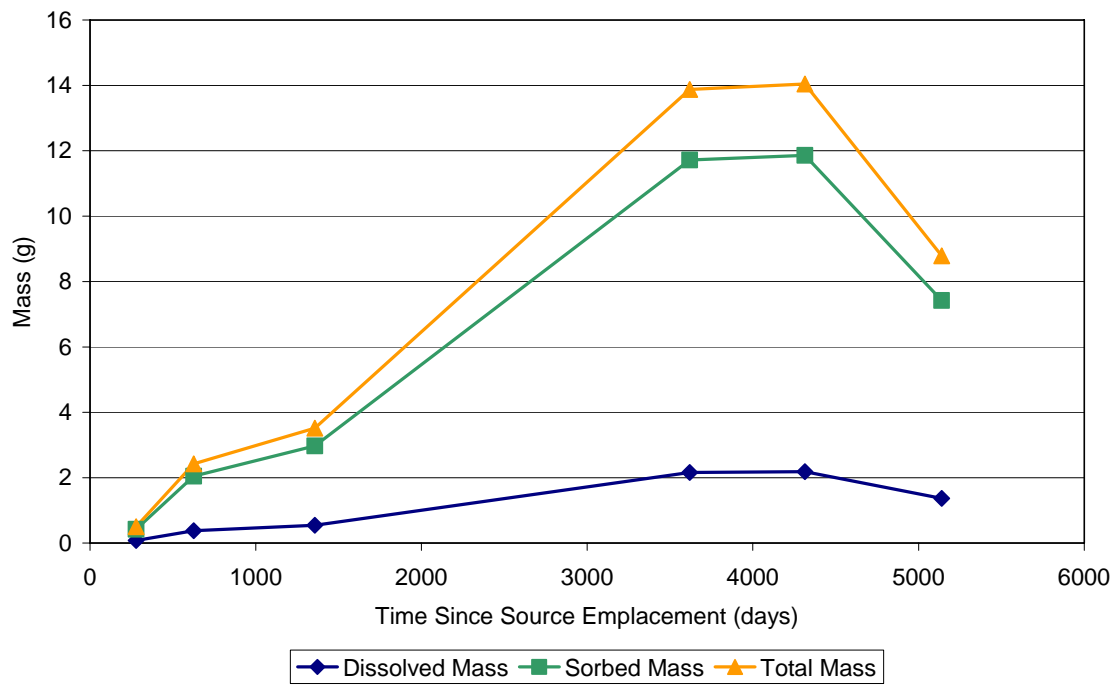


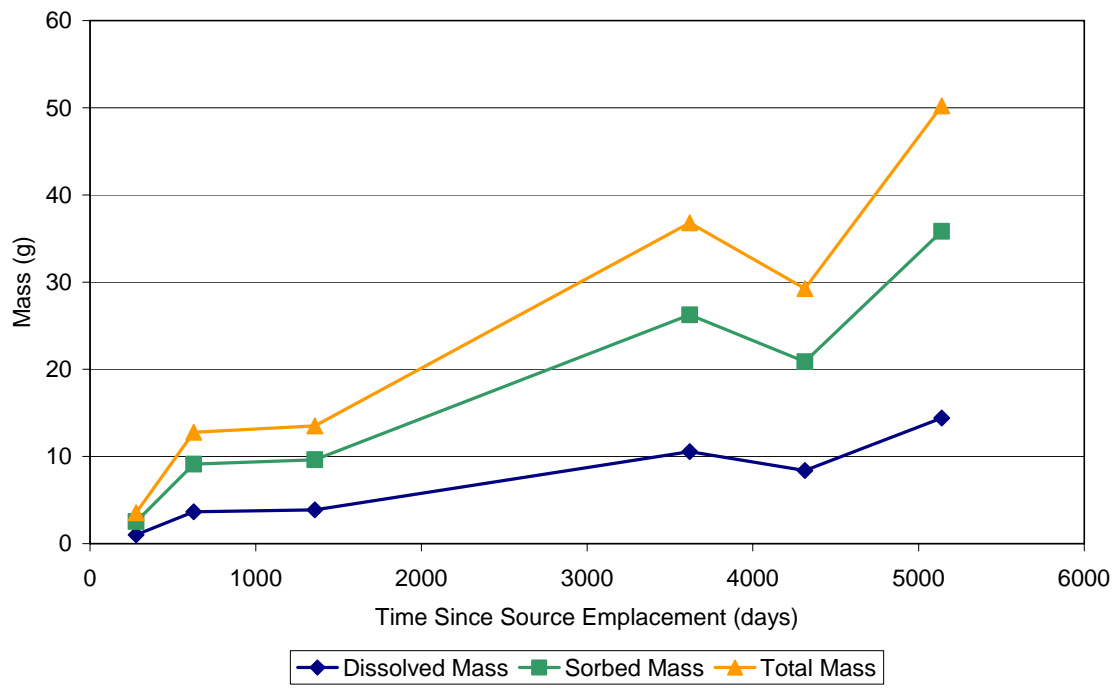
Acenaphthene - Plume Mass



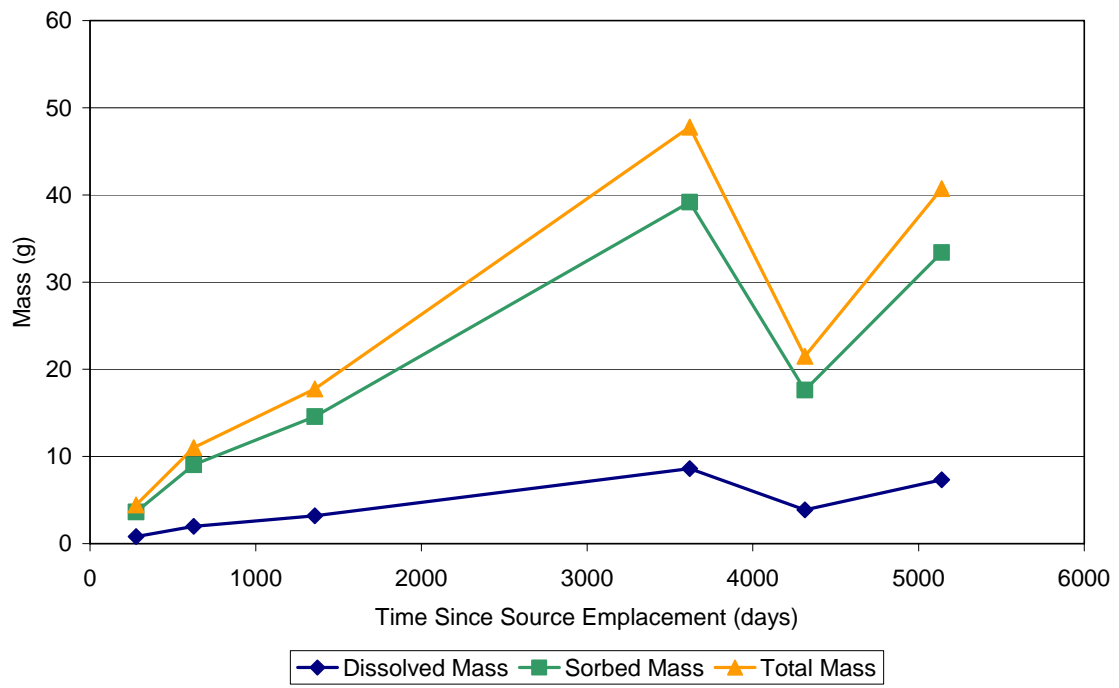
Anthracene - Plume Mass



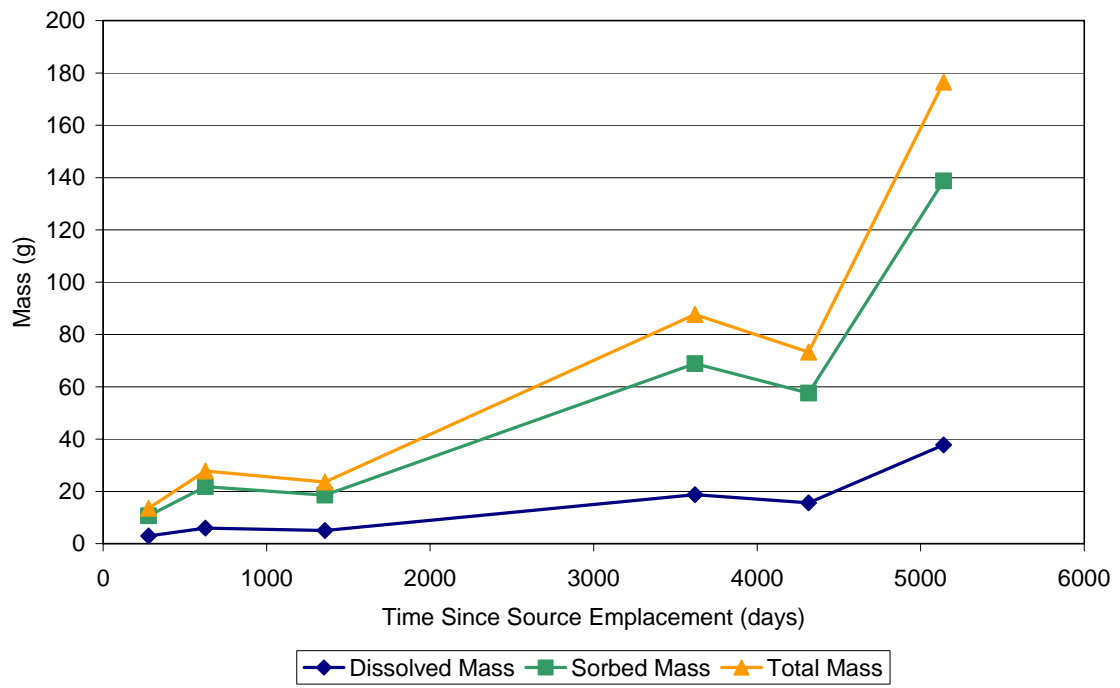
**Biphenyl - Plume Mass**



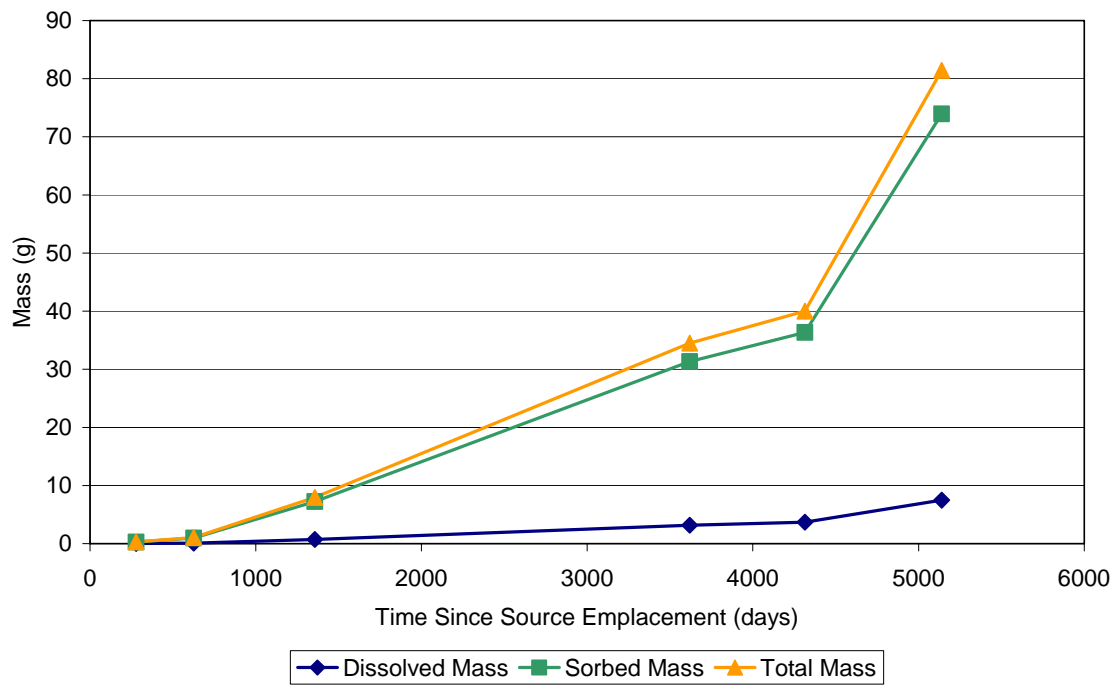
Carbazole - Plume Mass



Dibenzofuran - Plume Mass



Phenanthrene - Plume Mass



### Total Plume Mass Calculations:

Dissolved mass was determined using MATLAB code created and described by Caitlin Martin (2002)

Sorbed mass was calculated using  $K_d$  and  $\text{Log}K_{ow}$  values

$K_d$  value was determined by one of 2 methods using King, 1997 data:

- 1 Value was empirically derived since experimental data was not provided in Kings thesis regarding this compound values of  $K_d$  determined by  $\text{Log}K_{ow}$  values found on [www.chemfinder.com](http://www.chemfinder.com)
- 2 Based on batch test done by King, 1997

#### Properties:

$f_{oc}$ : 0.0002  
 $p$ : 1.81 g/cm<sup>3</sup>  
 $n$ : 0.33

#### Source:

Used by King, 1997 (determined by Mackay et al, 1986)  
Mackay et al, 1986  
Mackay et al, 1986

#### Calculations:

$\text{Log}K_d$ :  $0.72\text{Log}K_{ow} + \text{Log}f_{oc} + 0.49$

$R$ :  $1 + (p/n)K_d$

$M_S$ :  $(R-1)M_D$

$M_T$ :  $M_S + M_D$

Empirical derivation described by Karickhoff (1984)

King, 1997 ( $K_d$  is in L<sup>3</sup>/M and bulk density,  $p$ , is in M/L<sup>3</sup>)

Sorbed mass calculation from King, 1997

King, 1997

Acenaphthene			
$\text{Log}K_{ow}$ :	3.92		1
$K_d$ :	0.41 cm <sup>3</sup> /g		
$R$ :	3.25		
Day	Dissolved Mass (g)	Sorbed Mass (g)	Total Mass (g)
278	5.7	12.806	18.49
626	9.6	21.698	31.33
1357	19.8	44.564	64.35
3619	50.6	113.949	164.55
4315	40.3	90.669	130.93
5140	55.8	125.746	181.58

1-Methyl Naphthalene			
$\text{Log}K_{ow}$ :			2
$K_d$ :	0.24 cm <sup>3</sup> /g		
$R$ :	2.32		
Day	Dissolved Mass (g)	Sorbed Mass (g)	Total Mass (g)
278	4.8	6.309	11.10
626	9.5	12.534	22.06
1357	18.3	24.136	42.47
3619	32.3	42.549	74.87
4315	19.3	25.395	44.69
5140	24.4	32.148	56.57

<b>Anthracene</b>			
LogK <sub>ow</sub> :	4.45		1
K <sub>d</sub> :	0.99 cm <sup>3</sup> /g		
R:	6.42		
Day	Dissolved Mass (g)	Sorbed Mass (g)	Total Mass (g)
278	0.1	0.422	0.50
626	0.4	2.047	2.42
1357	0.5	2.970	3.52
3619	2.2	11.717	13.88
4315	2.2	11.859	14.05
5140	1.4	7.422	8.79

<b>m - Xylenes</b>			
LogK <sub>ow</sub> :	3.2		1
K <sub>d</sub> :	0.12 cm <sup>3</sup> /g		
R:	1.68		
Day	Dissolved Mass (g)	Sorbed Mass (g)	Total Mass (g)
278	342.3	233.688	576.02
626	136.9	93.469	230.39
1357	54.4	37.159	91.59
3619	2.6	1.778	4.38
4315	0.5	0.349	0.86
5140			

<b>Biphenyl</b>			
LogK <sub>ow</sub> :	3.98		1
K <sub>d</sub> :	0.45 cm <sup>3</sup> /g		
R:	3.49		
Day	Dissolved Mass (g)	Sorbed Mass (g)	Total Mass (g)
278	1.0	2.528	3.54
626	3.7	9.117	12.78
1357	3.9	9.642	13.52
3619	10.6	26.262	36.82
4315	8.4	20.874	29.27
5140	14.4	35.833	50.24

<b>Naphthalene</b>			
LogK <sub>ow</sub> :			2
K <sub>d</sub> :	0.22 cm <sup>3</sup> /g		
R:	2.21		
Day	Dissolved Mass (g)	Sorbed Mass (g)	Total Mass (g)
278	186.0	224.452	410.46
626	337.6	407.409	745.04
1357	604.4	729.343	1333.77
3619	99.1	119.616	218.75
4315	49.4	59.566	108.93
5140	48.3	58.237	106.50



Carbazole			
LogK <sub>ow</sub> :			2
K <sub>d</sub> :	0.83 cm <sup>3</sup> /g		
R:	5.55		
Day	Dissolved Mass (g)	Sorbed Mass (g)	Total Mass (g)
278	0.8	3.654	4.46
626	2.0	9.044	11.03
1357	3.2	14.565	17.76
3619	8.6	39.184	47.79
4315	3.9	17.613	21.48
5140	7.3	33.392	40.73

Phenanthrene			
LogK <sub>ow</sub> :			2
K <sub>d</sub> :	1.80 cm <sup>3</sup> /g		
R:	10.87		
Day	Dissolved Mass (g)	Sorbed Mass (g)	Total Mass (g)
278	0.03	0.279	0.31
626	0.10	0.962	1.06
1357	0.73	7.250	7.98
3619	3.17	31.345	34.52
4315	3.68	36.334	40.01
5140	7.49	73.937	81.43

Dibenzofuran			
LogK <sub>ow</sub> :			2
K <sub>d</sub> :	0.67 cm <sup>3</sup> /g		
R:	4.67		
Day	Dissolved Mass (g)	Sorbed Mass (g)	Total Mass (g)
278	2.9	10.669	13.57
626	5.9	21.827	27.77
1357	5.0	18.533	23.58
3619	18.7	68.889	87.63
4315	15.7	57.571	73.24
5140	37.8	138.733	176.48

Fluorene			
LogK <sub>ow</sub> :			1
K <sub>d</sub> :	0.63 cm <sup>3</sup> /g		
R:	4.47		
Day	Dissolved Mass (g)	Sorbed Mass (g)	Total Mass (g)
278	0.53	1.840	2.37
626	1.58	5.488	7.07
1357	8.36	28.968	37.33
3619	8.91	30.877	39.79
4315	7.01	24.308	31.32
5140	13.12	45.468	58.59