Appendix A: Supplementary Information

Seasonal trends of PCBs in air over Washington DC reveal localized urban sources and the influence of Anacostia River

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Total number of pages: 76

Total number of tables: 20

Total number of figures: 14

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A1. Materials and Methods

A1.1. Sample processing, extraction and analysis

Low density polyethylene (PE) strips were cleaned on-site by using deionized water to remove any particles adhering to the surface of the passive samplers and transported back to the lab in a cooler. Each sample was extracted in 40 mL amber vials using pesticide-grade hexane. PCB 14 and PCB 65 were added as surrogates to quantify extraction recovery. Each sample was extracted thrice after which pooled extracts were concentrated to 1 mL under high-purity N_2 flow and subjected to a deactivated silica gel cleanup process. Extracts were eluted using hexane, again concentrated to 1 mL and transferred to GC vials. PCB 30 and PCB 204 were used as internal standards. Samples which showed interference from sulfur-containing compounds on the GC-ECD were treated with activated copper and analyzed again.

PCB analysis was performed on an Agilent 6890N gas chromatograph, with an electron capture detector and a fused silica capillary column (Rtx-5MS, 60 m x 0.25 mm i.d, 0.25 μm film thickness). PCB standards for calibration were purchased as hexane solutions from Ultra Scientific (North Kingstown, RI, USA). Internal standards, 2,4,6- trichlorobiphenyl (PCB#30) and 2,2',3,4,4',5,6,6'- octachlorobiphenyl (PCB#204) were added to all samples. Peak identification and integration were performed with Agilent Chemstation software. A total of 119 most commonly found PCB congeners and congener groups were measured using this method. The PCB congeners analyzed are based on the Mullin's mix reported in the Lake Michigan mass balance study (U.S. EPA, 1997). In some cases, peaks that coelute were identified and reported as the sum of congeners. ECD chromatograms were manually evaluated for the presence of co-eluting contamination peaks and removed from quantification when necessary.

A1.2. Method Detection Limits

Method detection limits (MDLs) were calculated as per U.S. EPA (2016). Seven samples spiked at the lowest level of the calibration were run, and the standard deviation of the measured concentrations (S_S) was calculated. A MDL based on spiked samples (MDL_S) was first determined by using the Equation (A1), where, $t_{(n-1,\ 1-\alpha=0.99)}$ is the student's t-value appropriate for a single tailed 99th percentile t statistic and a standard deviation estimate with n-1 (here 6) degrees of freedom.

$$MDL_S = t_{(n-1,1-\alpha=0.99)\times} S_S \qquad \text{– (Equation A1)}$$

The MDL_S was either used as the "initial MDL" if none of the methods blanks (i.e. procedure blanks in this document) gave numerical results, or the initial MDL was updated with the results from the method blanks if numerical value was measured for individual analytes (U.S. EPA, 2016). Briefly, if some but not all of the methods blanks gave numerical results, the MDL for blanks (MDL_b) was set equal to the highest method blank results. If all the method blanks gave numerical results, the standard deviation (S_b) of the replicates results was calculated and the MDL_b was determined using Equation (A2). The greater of MDL_S or MDL_b was set as the "initial MDL".

$$MDL_B = t_{(n-1,1-\alpha=0.99)\times} S_b \qquad \text{– (Equation A2)}$$

MDLs for dissolved PCBs in water were determined based on 1 g PE, while MDLs for air-phase PCBs were determined based on 2 g PE. MDLs for both water and air phases were calculated at an ambient temperature of 298 K. MDLs ranged from 2.58E-05 pg/L (PCB 209) to 97 pg/L (PCB 1) for water and from 3.5E-04 pg/m^3 (PCB 209) to 280 pg/m^3 (PCB 1) for air. MDLs for each deployment period are provided in **Table A2**.

A1.3. Quality Assurance (QA) and Quality Control (QC)

PCB surrogates, PE blanks, and procedure blanks were used as QA-QC measures. PCB 14 and PCB 65 were used as surrogates. Recoveries for PCB 14 ranged from 70% to 319% across all water samplers (including those deployed in the river and in the tributaries. Complete list of sampling sites can be found in Ghosh et al. (2020)), with average recovery of 104%. High recoveries (>140%) to very high recoveries (>200%) were observed in 13% and 4% of the samples, respectively, and were linked to interferent eluting near PCB 14 in the chromatograms. Excluding samples with PCB 14 recoveries >140% resulted in average recovery of 98% for water samplers. Recoveries for PCB 65 for water samplers ranged from 72 to 147%, with average recovery of 104%. Samples with recoveries >140% were flagged (3.2% of all water samples) and aberrant recoveries were linked to minor interferent eluting close to the peak. Interferent was removed to the extent possible but hindered exact quantification. Samples with recoveries <70% for both surrogates were excluded from analysis. For air samplers, recoveries for PCB 14 ranged from 67 to 119%, while those for PCB 65 ranged from 70 to 112%. Samples with recoveries <70% for both surrogates were excluded from analysis.

A few low molecular weight PCB congeners, PCB 25, PCB 21+33+53, PCB 22, and PCB 52+43, were detected in the first PE blanks processed alongside the samples. Across the PE blanks processed during all deployments, average concentrations detected in PE blanks ranged from 0.10 ng/g (PCB 22) to 0.89 ng/g (PCB 25), with average ∑PCB concentration of 1.9 ng/g. This ∑PCB concentration of 1.9 ng/g detected in PE blanks was 0.17% and 2.2% of the average ∑PCB concentration measured in field-deployed samplers in the Anacostia River and across the air-monitoring sites (AU, RT, MMR, and ECC), respectively. PE blanks were prepared to ensure the absence of background noise in the PE before impregnation with Performance Reference

Compounds (PRC). A preliminary check of freshly cleaned PE just before impregnation did not show the presence of those peaks, nor the PRC initials processed alongside the samples. Only the few PE kept in closed jars for ~ 6 months to be processed as blanks alongside with samples showed presence of background contamination, suggesting that contamination occurred during the storage period. Since those contaminant peaks were not detected in the PRC initial, no action was performed.

PCB 25, PCB 100, PCB 191, and PCB 206 were detected in procedure blanks used for water samplers. Concentrations averaged across all the deployments ranged from 1.61E-04 pg/L (PCB 206) to 0.082 pg/L (PCB 25), with average ∑PCB concentration of 0.087 pg/L. This represents 0.012% of the average ∑PCB concentration measured in the Anacostia River across the deployment periods. PCB 25, PCB 193, and PCB 194 were detected in procedure blanks used for air samplers with concentrations averaged across all the deployments ranging from 0.029 pg/m^3 (PCB 194) to 0.75 pg/m^3 (PCB 25), with average ∑PCB concentration of 0.88 pg/m^3. This represents 0.75% of the average ∑PCB concentration measured in the air above the Anacostia River across the deployment periods.

Overall, the above results for PE and procedure blanks show that ∑PCB concentrations detected in these blanks represent a minor fraction of the ∑PCB concentrations detected in the field samples and thus do not impact the overall interpretation of water-air exchange flux and transfer rates.

A1.4. Temperature correction for partitioning coefficients

PE-air and PE-water partitioning coefficients were corrected for temperature using the van't Hoff equation (Lohmann, 2012), where $K_{PE\text{-}A}$ (T) is the PE-air partitioning coefficient at any temperature T (K) (L/kg); $K_{PE\text{-}A}$ (298) is the PE-air partitioning coefficient at standard reporting temperature of 298 K (L/kg); $\Delta H_{PE\text{-}A}$ is the enthalpy of PE-air partitioning (kJ/mol) and R is the universal gas constant, 0.008314 kJ/(mol.K)

$$K_{PE-A}\,(T) = K_{PE-A}\,(298) \times \exp\left(\frac{\Delta H_{PE-A}}{R} \times \left(\frac{1}{298} - \frac{1}{T}\right)\right) \qquad \text{– Equation (A3)}$$

However, $\Delta H_{PE\text{-}A}$ values have not been reported for all PCB congeners analyzed in this study. As a result, $\Delta H_{PE\text{-}A}$ was replaced by ΔU_{OA}, which is the internal energy of octanol-air partitioning. As per Lohmann (2012), ΔU_{OA} is a suitable proxy for $\Delta H_{PE\text{-}A}$ in order to correct $K_{PE\text{-}A}$ values for temperature. For PCBs, ΔU_{OA} for each congener was calculated based on the following correlation (Schenker et al., 2005), based on the molar mass of the PCB congener and the number of ortho-chlorines.

$$\Delta U_{OA}\left(\frac{kJ}{mol}\right) = -48.7 + (-0.13 \times \text{Molar Mass}) + (2.4 \times \#\text{ of ortho} - \text{chlorines})$$

– Equation (A4)

PE-water partitioning coefficients were corrected for temperature as per Equation (A5), using the enthalpy of PE-water partitioning, $\Delta H_{PE\text{-}W}$. $\Delta H_{PE\text{-}W}$ was set to – 25 kJ/mol for all congeners, as per Lohmann (2012).

$$K_{PE-W}\,(T) = K_{PE-W}\,(298) \times \exp\left(\frac{\Delta H_{PE-W}}{R} \times \left(\frac{1}{298} - \frac{1}{T}\right)\right) \qquad \text{– Equation (A5)}$$

A1.5. PCB concentrations in water

The freely-dissolved concentrations in the water column were estimated as per Equation (A6) (Perron et al., 2013), where C_W is the water column concentration (ng/L), $C_{PE\text{-}W,t}$ is the target compound concentration in the passive sampler at time t (ng/kg), $K_{PE\text{-}W}$ is the partition coefficient of the target compound between water phase and passive sampler (L/kg), k_e is the first-order dynamic coefficient (day^{-1}), and t is the deployment time (days).

$$C_W = \frac{C_{PE-W,t}}{(1-e^{-k_e * t}) \times K_{PE-W}} \qquad \text{– Equation (A6)}$$

The first-order dynamic coefficient of release of PRCs from sampler (k_e, day-1) was calculated as per Equation (A7), based on Perron et al. (2013), where $C_{PRC,initial}$ and $C_{PRC,final}$ (ng/g) are the PRC concentrations before and after sampler retrieval, respectively, and t is the deployment time in days. Linear regressions between log k_e and log K_{OW} of PRCs were developed and used to calculate k_e for target analytes.

$$k_e = \frac{1}{t} \ln\left(\frac{C_{PRC,initial}}{C_{PRC,final}}\right) \qquad \text{– Equation (A7)}$$

The non-equilibrium correction term, f_{eq}, for each analyte was calculated as per Equation (A8).

$$f_{eq} = 1 - \exp\,(-k_e.\,t) \qquad \text{– Equation (A8)}$$

A1.6. PCB concentrations in air

Concentrations of PCBs in air were calculated as per Equation (A9) (Liu et al., 2016a), where C_A is the concentration of the compound in air (ng/m^3), $C_{PE\text{-}A,t}$ target compound concentration in the passive sampler at time t (ng/kg), $K_{PE\text{-}A}$ is the partition coefficient of the target compound between air phase and passive sampler (L/kg) and f_{eq} is the calculated non-equilibrium correction term.

$$C_A = \frac{C_{PE-A,t}}{K_{PE-A} \times f_{eq}} \quad \text{– Equation (A9)}$$

Non-equilibrium correction term, f_{eq}, was calculated based on the concentration of PRCs in the PE before and after deployment (Liu et al., 2016a), as shown in Equation (A10), where, PRC_{ini} and PRC_{final} are the concentration of the PRCs in the polymer before and after deployment.

$$f_{eq-PRC} = \frac{PRC_{ini} - PRC_{final}}{PRC_{ini}} \quad \text{– Equation (A10)}$$

The calculated $f_{eq\text{-}PRC}$ values for each PRC were then fitted to a first-order uptake/loss model by a non-linear least squares method using the Solver function in Excel, which yields the site-specific sampling rate Rs (L/day) for the passive sampler, as shown in Equation (A11):

$$f_{eq} = 1 - \exp\left(\frac{-Rs \times t}{K_{PE-A} \times m_{PE}}\right) \quad \text{– Equation (A11)}$$

Where:

- Rs: Site-specific sampling rate (L/day)
- t: Duration of passive sampler deployment (days)
- $K_{PE\text{-}A}$: PE-air partitioning coefficient for the PRC (L/kg)
- m_{PE}: Mass of the passive sampler (kg)

The sampling rate thus calculated was used to calculate the f_{eq} for the target analytes, by using the respective PE-air partitioning coefficients, as shown in Equation (A12):

$$f_{eq} = 1 - \exp\left(\frac{-Rs \times t}{K_{PE-air} \times m_{PE}}\right) \quad \text{– Equation (A12)}$$

While the non-equilibrium correction method used for water samplers has been also used for air samplers (Khairy and Lohmann, 2013; Lohmann et al., 2011), some of the more recent studies for air passive sampling have used the PRC correction method based on a nonlinear least square fitting to characterize sampling rates based on dissipation rates of PRCs from the passive samplers (Khairy et al., 2015; Liu et al., 2016a, 2016b; Minick and Anderson, 2017; Ruge et al., 2015). The air sampling apparatus used, and all calculations performed for air passive samplers and air-water exchange flux in the present study was based on Liu et al. (2016a).

A2. Temperature dependence of air-phase PCB concentrations

Claysius-Clapeyron plots were used to evaluate whether variability in air-phase PCB concentrations is primarily driven by variation in ambient temperature (Buehler et al., 2004). The natural log of average air-phase concentrations of 6 PCB congeners (1 each from tri to octa-homolog groups) during each deployment period was plotted against 1/T. Plots of ln C_A vs 1/T for these congeners were strongly correlated with R^2 values ranging from 0.75 to 0.99 **(Figure A10)**, indicating that variation in air-phase concentrations is primarily driven by variation in ambient temperature.

A3. Fugacity ratio calculations

The direction of mass transfer across the water-air interface can be determined based on the ratio of the equilibrium-corrected concentration of the pollutant in PE deployed in the water and air-phases. PCB concentrations measured on PE deployed in the air and water phases were averaged and used to calculate the fugacity ratios for each season. This ratio, referred to as fugacity ratio (f_W/f_A), is shown in Equation (A13) and can be used to distinguish volatilization (ln (f_W/f_A)

> 0), equilibrium (ln $(f_W/f_A) = 0$) and deposition ($\ln(f_W/f_A) < 0$). Although there are potential errors associated with analytical measurements that can confound the interpretation of fugacity ratios (Apell and Gschwend, 2017; Liu et al., 2016a), this approach generally provides a better estimate of the direction of transport compared to actual calculation of flux values due to additional errors that come about in the conversion of polymer concentrations to concentrations in air and water (Apell and Gschwend, 2017).

$$\ln\left(\frac{f_W}{f_A}\right) = \ln\left(\frac{C_{PE-W}}{C_{PE-A}}\right) \quad \text{– Equation (A13)}$$

A4. Flux calculations

The water-air exchange flux for PCBs was calculated using the procedure reported by (Liu et al., 2016a). Calculations were performed for each deployment period using respective surface water and gas-phase concentration data.

As shown in Equation (A14), the flux between air and water phases (ng/m^2/day) can be calculated based on the mass transfer velocity between the water-air interface and the concentration gradient between water and air.

$$\text{Flux}_{w\rightarrow a} = \nu_{a/w} \times \left(C_w - \frac{C_A}{K_{AW}}\right) \quad \text{– Equation (A14)}$$

Where:

- $\nu_{a/w}$: Overall mass transfer velocity (cm/day)
- C_W: Freely-dissolved concentration of compound in water (ng/L)
- C_A: Gas-phase concentration of compound (ng/L)

- K_{AW}: Temperature-corrected air-water partitioning coefficient

K_{AW} was calculated using the temperature corrected PE-water and PE-air partitioning coefficients using following equation reported by Apell and Gschwend (2017).

$$K_{AW} = \frac{K_{PE-W}}{K_{PE-A}} \quad \text{– Equation (A15)}$$

A4.1. Mass transfer velocities

The overall mass transfer velocity, $\nu_{a/w}$ (cm/day), was calculated for each compound based on a modified two-film air-water exchange model as shown in Equation (A16) (Liu et al., 2016a), where, ν_w and ν_a are the compound-specific mass transfer velocities in the water and air phases respectively.

$$\frac{1}{\nu_{a/w}} = \frac{1}{\nu_w} + \frac{1}{\nu_a . K_{aw}} \quad \text{– Equation (A16)}$$

A4.2. Mass transfer velocity in air phase

Mass transfer velocity in air, ν_a (cm/day), was calculated as described below in Equation (A17).

$$\nu_a = \nu_{w.vap,a} \times \left(\frac{M_{Target}}{M_{water}}\right)^{-0.5 \times a_D}, \begin{cases} a_D = 0.67 \text{ for } u_{10} < 5\text{ m/s} \\ a_D = 0.5 \text{ for } u_{10} > 5\text{ m/s} \end{cases} \quad \text{– Equation (A17)}$$

Where:

- u_{10}: Stream-wise horizontal wind speed at 10 m over the water surface (m/s)
- M_{Target}: Molecular weight of target compound
- M_{Water}: Molecular weight of water (18)

- $\nu_{water,a}$: Mass transfer velocity of water vapor in air (cm/s)

$\nu_{water,a}$ was calculated as:

$$\nu_{water,a}\ (cm/s) = (\ 0.2\ \times\ u_{10}(m/s)\ ) + 0.3 \qquad \text{– Equation (A18)}$$

u_{10} was calculated based on the height at which the wind speed was measured, as per the following equation:

$$u_{10} = u_z \times \left(\frac{10.4}{\ln(z)+8.1}\right) \qquad \text{– Equation (A19)}$$

Where, u_z is the wind speed measured at height z

A4.3. Mass transfer velocity in water phase

Mass transfer velocity in the water, ν_w (cm/day), was calculated as described below.

$$\nu_w\ (cm/s) = \nu_{CO2,w} \times \left(\frac{Sc_w}{Sc_{CO2,w}}\right)^{-a_{Sc}}, \begin{cases} a_{SC} = 0.67 \text{ for } u_{10} < 4.2\ m/s \\ a_{SC} = 0.5 \text{ for } u_{10} > 4.2\ m/s \end{cases} \qquad \text{– Equation (A20)}$$

Where:

- Sc_w: Schmidt number of target compound
- Sc_{CO2}: Schmidt number of CO_2 at 298 K (600)
- $\nu_{CO2,w}$: Mass transfer velocity of CO_2 in water phase (cm/s)

$$\nu_{CO2,w}\ (cm/s) = \begin{cases} 0.65 \times 10^{-3} & u_{10} \le 4.2\ m/s \\ (0.79 \times u_{10} - 2.68) \times 10^{-3} & 4.2 \le u_{10} \le 13\ m/s \\ (1.64 \times u_{10} - 13.69) \times 10^{-3} & u_{10} \ge 13\ m/s \end{cases}$$

– Equation (A21)

The Schmidt number of the target analyte at 298 K can be calculated as:

$$Sc_w\ (298\ K) = \frac{\nu_w\ (298\ K)}{D_w\ (298\ K)} \quad \text{– Equation (A22)}$$

Where:

- ν_w: Kinematic viscosity of water at 298 K (0.00893 cm^2/s)
- D_w: Molecular diffusivity of target analyte in water at 298 K (cm^2/s)

The molecular diffusivity in water, D_w, was calculated for each PCB congener as per Equation (A23).

$$D_w\left(\frac{cm^2}{s}, 298\ K\right) = \frac{2.7 \times 10^{-4}}{M_i^{0.71}} \quad \text{– Equation (A23)}$$

Where, M_i is the molar mass of the analyte i.

The Schmidt number of the target compound was further corrected for temperature as per the following equation:

$$Sc_w\ (T\ K) = Sc_w\ (298\ K) \times \left(\frac{\nu_w\ (T\ K)}{\nu_w\ (298\ K)}\right)^2 \times \frac{298}{T} \quad \text{– Equation (A24)}$$

Where:

- Sc_w (298 K): Schmidt number of target compound at 298 K
- ν_w (298 K): Kinematic viscosity of water at 298 K (cm^2/s)
- ν_w (T K): Kinematic viscosity of water at temperature T K (cm^2/s)

A5. Propagated error in fractional equilibrium of compounds based on PRC correction

The fractional equilibrium reached by each compound in PE deployed in water and air phases were calculated as per Equations (A25) and (A26), and described previously.

$$F_{eq-A} = 1 - \exp\left(\frac{-Rs \times t}{K_{PE-A} \times m_{PE}}\right) \quad \text{– Equation (A25)}$$

$$f_{eq-W} = 1 - \exp\left(-k_e . t\right) \quad \text{– Equation (A26)}$$

A5.1. Air samplers

For air samplers, uncertainties in fractional equilibrium **(Tables A10-A13)** were calculated as per Equation (A27) based on uncertainties in the following parameters, as per Liu et al. (2016b):

- Average R_S for each deployment ($\delta R_s/R_s$ = 10%)
- Average deployment time t ($\delta t/t$ = 1.67%, based on 1 day deviation for every 60 days of deployment)
- Average m_{PE} for each deployment ($\delta m_{PE}/m_{PE}$ = 0.5%, based 10 mg deviation every 2 g PE sampler)
- K_{PE-A} ($\delta K_{PE-A}/K_{PE-A}$ = 50%)

$$\delta f_{eq-A} = \sqrt{\left(\exp\left(\frac{-R_S \times t}{K_{PE-A} \times m_{PE}}\right)\right)^2 \times \left(\frac{-R_S \times t}{K_{PE-A} \times m_{PE}}\right)^2 \times \left[\left(\frac{\delta R_S}{R_S}\right)^2 + \left(\frac{\delta t}{t}\right)^2 + \left(\frac{\delta m_{PE}}{m_{PE}}\right)^2 + \left(\frac{\delta K_{PE-A}}{K_{PE-A}}\right)^2\right]}$$

– Equation (A27)

A5.2. Water samplers

For the PE deployed in water, calculated k_e (day^{-1}) for each compound can be expressed in terms of sampler-specific sampling rate R_S (L/day), mass of sampler m_{PE} (kg), and PE-water partitioning coefficient $K_{PE\text{-}W}$ (L/kg), as shown in Equation (A28) (Liu et al., 2021).

$$k_e = \frac{-Rs}{K_{PE-A} \times m_{PE}} \qquad \text{– Equation (A28)}$$

Although a sampler-specific Rs was not explicitly calculated for the water samplers, the uncertainty in ke ($\delta k_e/k_e$) can still be estimated based on relative uncertainties in R_s, t, m_{PE}, and $K_{PE\text{-}W}$, as shown in Equation (A29).

$$\frac{\delta k_e}{k_e} = \sqrt{\left(\frac{\delta R_S}{R_S}\right)^2 + \left(\frac{\delta m_{PE}}{m_{PE}}\right)^2 + \left(\frac{\delta K_{PE-W}}{K_{PE-W}}\right)^2} \qquad \text{– Equation (A29)}$$

Equation (A29) was used to calculate uncertainty in k_e values for each PCB congener based on 10% relative uncertainty in average R_s for each deployment, 0.5% relative uncertainty in m_{PE} for each deployment, and 50% relative uncertainty in $K_{PE\text{-}W}$ (Liu et al., 2016b), resulting in 51% relative uncertainty in the k_e values for all congeners as shown in Equation (A30).

$$\frac{\delta k_e}{k_e} = \sqrt{(0.1)^2 + (0.005)^2 + (0.5)^2} = 0.51 \text{ (i.e. 51\% uncertainty)} \qquad \text{– Equation (A30)}$$

Finally, uncertainty in fraction equilibrium achieved by compounds in PE deployed in water, ($\delta f_{eq\text{-}W}$) **(Table A15)** was calculated as per Equation (A33) by applying error propagation rules to Equation (A26).

$$f_{eq-W} = 1 - \exp\left(-k_e . t\right) \qquad \text{– Equation (A31)}$$

$$\delta f_{eq-W} = \sqrt{\left(\frac{\partial f_{eq-W}}{\partial k_e}\right)^2 (\delta k_e)^2 + \left(\frac{\partial f_{eq}}{\partial t}\right)^2 (\delta t)^2} \qquad \text{– Equation (A32)}$$

$$\delta f_{eq-W} = \sqrt{(t \times [\exp(-k_e.t)] \times \delta k_e)^2 + (k_e \times [\exp(-k_e.t)] \times \delta t)^2} \qquad \text{– Equation (A33)}$$

A6. Propagated error in water and air concentrations

Uncertainties in concentrations of PCB congeners in air and water were based on standard deviation of PE replicates, calculated uncertainties in $f_{eq\text{-}W}$ and $f_{eq\text{-}A}$, and uncertainties in $K_{PE\text{-}W}$ and $K_{PE\text{-}A}$ values (Equation A34 and A35).

$$\frac{\delta C_W}{C_W} = \sqrt{\left(\frac{\delta C_{PE-W}}{C_{PE-W}}\right)^2 + \left(\frac{\delta f_{eq-W}}{f_{eq-W}}\right)^2 + \left(\frac{\delta K_{PE-W}}{K_{PE-W}}\right)^2} \qquad \text{– Equation (A34)}$$

$$\frac{\delta C_A}{C_A} = \sqrt{\left(\frac{\delta C_{PE-A}}{C_{PE-A}}\right)^2 + \left(\frac{\delta f_{eq-A}}{f_{eq-A}}\right)^2 + \left(\frac{\delta K_{PE-A}}{K_{PE-A}}\right)^2} \qquad \text{– Equation (A35)}$$

A7. Propagated error in fugacity ratios

The propagated error in fugacity ratios was calculated taking into account the uncertainties in the measured concentrations for both dissolved and air-phase PCBs. The uncertainty in log-transformed fugacity ratio ($\delta \ln(f_W/f_A)$) was calculated as per Equation (A36) (Liu et al., 2016b), where $\delta C_{PE\text{-}W}$ and $\delta C_{PE\text{-}A}$ are the standard deviation of the concentration of each homolog group in PE deployed in water and air phases, respectively, while $\delta f_{eq\text{-}W}$ and $\delta f_{eq\text{-}A}$ are the uncertainties in the fractional equilibrium reached by each homolog group in PE deployed in water and air phases.

$$\delta \ln\left(\frac{f_W}{f_A}\right) = \sqrt{\left(\frac{\delta C_{PE-W}}{C_{PE-W}}\right)^2 + \left(\frac{\delta C_{PE-A}}{C_{PE-A}}\right)^2 + \left(\frac{\delta f_{eq-W}}{f_{eq-W}}\right)^2 + \left(\frac{\delta f_{eq-A}}{f_{eq-A}}\right)^2} \quad \text{– Equation (A36)}$$

A8. Propagated error in air-water exchange flux

For calculating the propagated error in air-water exchange flux, relative uncertainty of 30% was assumed for $\nu_{a/w}$ as per Rowe and Perlinger (2012), while relative uncertainty of 50% was assumed for all $K_{PE\text{-}W}$ values (Liu et al., 2016b). Relative uncertainty in all $K_{PE\text{-}A}$ values was assumed to be 50%. Based on uncertainties in $K_{PE\text{-}W}$ and $K_{PE\text{-}A}$ values, 71% uncertainty in K_{AW} values was calculated by applying error propagation rules to Equation (A37) as shown below.

$$\frac{\delta K_{AW}}{K_{AW}} = \sqrt{\left(\frac{\delta K_{PE-W}}{K_{PE-W}}\right)^2 + \left(\frac{\delta K_{PE-A}}{K_{PE-A}}\right)^2} \quad \text{– Equation (A37)}$$

Uncertainties in concentrations of PCB congeners in air and water were based on standard deviation of replicates, calculated uncertainties in $f_{eq\text{-}W}$ and $f_{eq\text{-}A}$, and uncertainties in $K_{PE\text{-}W}$ and $K_{PE\text{-}A}$ values (Equation A38 and A39).

$$\frac{\delta C_W}{C_W} = \sqrt{\left(\frac{\delta C_{PE-W}}{C_{PE-W}}\right)^2 + \left(\frac{\delta f_{eq-W}}{f_{eq-W}}\right)^2 + \left(\frac{\delta K_{PE-W}}{K_{PE-W}}\right)^2} \quad \text{– Equation (A38)}$$

$$\frac{\delta C_A}{C_A} = \sqrt{\left(\frac{\delta C_{PE-A}}{C_{PE-A}}\right)^2 + \left(\frac{\delta f_{eq-A}}{f_{eq-A}}\right)^2 + \left(\frac{\delta K_{PE-A}}{K_{PE-A}}\right)^2} \quad \text{– Equation (A39)}$$

The absolute uncertainty in the flux was calculated by applying error propagation rules to Equation (A14) as shown below:

$$\delta F = \sqrt{\left(\frac{\partial F}{\partial \nu_{A/W}}\right)^2 (\delta \nu_{A/W})^2 + \left(\frac{\partial F}{\partial C_W}\right)^2 (\delta C_W)^2 + \left(\frac{\partial F}{\partial C_A}\right)^2 (\delta C_A)^2 + \left(\frac{\partial F}{\partial K_{AW}}\right)^2 (\delta K_{AW})^2}$$

– Equation (A40)

$$\left(\frac{\partial F}{\partial \nu_{a/w}}\right) = \left(C_W - \frac{C_A}{K_{AW}}\right)$$ – Equation (A41)

$$\left(\frac{\partial F}{\partial C_W}\right) = \nu_{AW}$$ – Equation (A42)

$$\left(\frac{\partial F}{\partial C_A}\right) = \frac{-\nu_{a/w}}{K_{AW}}$$ – Equation (A43)

$$\left(\frac{\partial F}{\partial C_{PE-A}}\right) = \frac{\nu_{a/w} \times C_A}{(K_{AW})^2}$$ – Equation (A44)

Overall uncertainty in total flux of PCB congeners ($\delta F_{\sum PCB}$) was calculated as per Equation (A45), where δF_i indicates uncertainty in flux for congener *i*.

$$\delta F_{\Sigma PCB} = \sqrt{\sum_{i=1}^{n} \delta F_i^2}$$ – Equation (A45)

A comparison of the contribution of uncertainties in v_{AW}, C_W, C_A, and K_{AW} to the overall uncertainty in water-air exchange flux is shown in **Table A17**. Contribution of each of these parameters to the overall uncertainty was calculated as the average contribution across all congeners. Overall, the uncertainty in ∑PCB flux across all deployment periods is primarily driven by uncertainty in C_W (average contribution ranging from 84-87%), followed by uncertainty in v_{AW} (8.3 – 15%), uncertainty in C_A (0.9 – 4.0%), while contribution of uncertainty in K_{AW} ranged from 0.7 to 1.5%.

A9. Air-water fugacity ratios

Log-transformed air-water fugacity ratios were calculated for the mono- to deca- homolog groups using the equilibrium-corrected PCB concentration on PE. Log-transformed fugacity ratios ranged from 0.2 (hepta- homolog group, Winter 2017/18) to 4.7 (tri- and tetra- groups, Spring 2017) across the study period **(Figure A12)**. For all deployment periods, fugacity ratios of tri- to hexa- homolog groups were greater than zero (based on the calculated uncertainty using 1 standard deviation in measured PCB concentrations in PE), indicating volatilization of these homolog groups from the river. For the hepta-homolog group, fugacity ratios were greater than zero for Spring 2017 to Fall 2017 deployment periods. However, for the Winter 2017/18 period, the fugacity ratio for hepta was closer to zero and could not be differentiated from equilibrium due to the high propagated uncertainty associated with the fugacity ratio for this period. The octa-homolog group exhibited fugacity ratios greater than zero for Summer and Fall 2017 deployment periods but not for Spring 2017 and was not detected in the air in Winter 2017/18. Fugacity ratios for the di-homolog group also could not be differentiated from equilibrium due to high propagated uncertainty.

A10. Uncertainty in wet and dry deposition PCB fluxes to the Anacostia River

Previous estimates of total deposition fluxes (wet + dry deposition) for urban areas in the Chesapeake Bay range from 5 μg/m^2/year (Baker et al., 1994) to 16 μg/m^2/year (Chesapeake Bay Program, 1999).

Wet deposition fluxes ranged from 2.7 μg/m^2/year (Baker et al., 1994) to 8.3 μg/m^2/year (Chesapeake Bay Program, 1999). A 20% relative uncertainty in wet deposition fluxes was reported for the Chesapeake Bay Program (1999). Thus, absolute uncertainty in the wet fluxes from these studies was 0.54 and 1.7 μg/m^2/year, respectively.

Dry deposition fluxes ranged from 2.5 μg/m^2/year (Baker et al., 1994) to 8.0 μg/m^2/year (Chesapeake Bay Program, 1999). Dry deposition fluxes were estimated to be accurate within a factor of 3 (Chesapeake Bay Program, 1999). Thus, the upper end estimates for the dry deposition fluxes from these studies are 7.5 and 24 μg/m^2/year, respectively. The difference between the upper end estimate and the average deposition fluxes was assumed to be the standard deviation, resulting in the absolute uncertainties of 5 and 16 μg/m^2/year, respectively. Propagated uncertainty in the sum of wet and dry deposition fluxes (Equations A46 and A47) from these studies were thus 5.03 and 16 μg/m^2/year, respectively, resulting in 100% relative uncertainty in the total depositional fluxes for depositional flux estimates from the Baker et al. (1994) and the Chesapeake Bay Program (1999) studies.

Propagated uncertainty in the sum of wet and dry deposition fluxes was estimated as:

$$\text{Uncertainty in wet + dry deposition flux (Baker et al., 1994)} = \sqrt{0.54^2 + 5^2} = 5.03\ \mu\text{g/m}^2\text{/year} \quad \text{– Equation (A46)}$$

$$\text{Uncertainty in wet + dry deposition flux (Chesapeake Bay Program, 1999)}$$

$$= \sqrt{1.7^2 + 16^2} = 16\ \mu\text{g/m}^2\text{/year} \quad \text{– Equation (A47)}$$

Total depositional load estimates thus ranged from 17±17 g/year (Baker et al., 1994) to 56±55 g/year (Chesapeake Bay Program, 1999), resulting in upper range estimates of 34 and 110 g/year, respectively.

A11. Calculation of K_{AW} and resultant fluxes based on Henry's Law Constants

Water-air exchange fluxes were also evaluated using the conventional approach wherein K_{AW} values for individual congeners were calculated as shown in Equation (A48), based the Henry's Law constant (H_C, Pa.m^3/mol) corrected for water temperature (T_W, K), universal gas constant (R, 8.314 m^3.Pa/mol.K), and the average air temperature (T_A, K) (Khairy et al., 2014). H_C values were corrected for water temperature as per Equation (A49) (Gigliotti et al., 2002), where $H_{C,T}$ is the Henry's Law constant at water temperature T_W (K), $H_{C,298}$ is the Henry's Law constant at 298 K, and ΔH_H is the enthalpy of phase change (kJ/mol). Values for H_C and ΔH_H were obtained from Bamford et al. (2002).

$$K_{AW} = \frac{H_C}{R.T_A} \quad \text{– Equation (A48)}$$

$$\ln\left(\frac{H_{C,Tw}}{H_{C,298}}\right) = \frac{\Delta H_H}{R}\left(\frac{1}{298} - \frac{1}{T_W}\right) \quad \text{– Equation (A49)}$$

Uncertainty in K_{AW} was evaluated based on 50% relative uncertainty in H_C for all congeners (Liu et al., 2016a), and relative uncertainty in average air temperature based on variation in temperature observed over each of the deployment periods (Equation A50). Relative uncertainty in average air temperature ranged from 1.52% (Summer 2017) to 3.23% (Winter 2017/18). Overall, uncertainty in K_{AW} ranged from 50.06% (Summer 2017) to 50.1% (Winter 2017/18). Uncertainty in water-air exchange flux was calculated using the same procedure as described earlier in Equations (A38) to (A45).

$$\frac{\delta K_{AW}}{K_{AW}} = \sqrt{\left(\frac{\delta H_C}{H_C}\right)^2 + \left(\frac{\delta T_A}{T_A}\right)^2} \quad \text{– Equation (A50)}$$

A comparison of the fluxes for each deployment period derived from the Henry's Law constants approach and the approach presented in the main text ($K_{AW} = K_{PE\text{-}W}/K_{PE\text{-}A}$) is presented in **Table A19**. For the Spring, Summer, and Winter deployment periods, the fluxes and air-water transfer rates from the two approaches are similar. The annual air-water transfer rate estimated from 2 methods was also similar (180 ± 19 g/year from "$K_{AW} = K_{PE\text{-}W}/K_{PE\text{-}A}$" approach vs 220 ± 23 g/year from Henry's Law constant approach).

For Fall 2017, both the fluxes and transfer rates for ∑PCBs based on Henry's Law constants were each 66% higher than those based on use of $K_{AW} = K_{PE\text{-}W}/K_{PE\text{-}A}$" approach. These differences may be related to higher temperature gradient observed between the surface water and air, as well as the lower air temperature observed during this deployment period as compared to other deployment periods. Average air temperature (279K) was 9 degrees lower than the average surface water temperature (288K) during the Fall 2017, while difference in air and water temperature over other deployment periods was less than 3 degrees. Possible differences in the sensitivity of H_C, $K_{PE\text{-}A}$, and $K_{PE\text{-}W}$ to changes in temperature and its impact on the K_{AW} values may have contributed to the larger differences in water-air exchange fluxes from the two methods during the Fall 2017 deployment. We tested this hypothesis by assuming T_A = 285 K and T_W = 288 K for Fall 2017 flux calculations. Under this scenario, the fluxes based on the two methods showed better agreement (140 ng/m^2/day from "$K_{AW} = K_{PE\text{-}W}/K_{PE\text{-}A}$" approach vs 180 ng/m^2/day from Henry's Law constant approach). Increasing air temperature by 6 degrees increased flux from "$K_{AW} = K_{PE\text{-}W}/K_{PE\text{-}A}$" approach by 31%, while change in flux from "Henry's Law constant" approach was less than 1%. This indicates higher sensitivity of $K_{PE\text{-}A}$ to temperature corrections, especially at lower temperatures, that may partially explain the differences in fluxes in Fall 2017.

A12. Reporting concentrations below MDL

In the present work, concentrations of congeners that were detected below the MDL were set to zero. We compared water-air diffusive fluxes from this approach to those calculated when concentrations below MDL are assigned a value equal to ½ MDL. This comparison was performed for the Spring 2017 and Winter 2017/18 deployment periods which exhibited the highest and the lowest flux, respectively. Differences in the average water concentration were negligible based on these two methods **(Table A20)**. Average air-phase concentrations increased by 2 pg/m^3 for both Spring 2017 and Winter 2017/18 periods when concentrations of congeners below MDL were set to ½ of their respective MDL. These increases represent changes of 1.7 and 6.5%, respectively. However, differences in fluxes based on these two methods were negligible.

Table A1. Passive sampler deployment details

Location	Code	Location description	Latitude, Longitude	Type	Deployment Dates			
					Spring 2017	**Summer 2017**	**Fall 2017**	**Winter 2017/18**
Anacostia R. near O St. Outfall (DC)	ARO	Diamond Teague Park	38.872014, -77.004611	River	3/23/2017 – 6/28/2017	6/27/2017 – 9/15/2017	9/15/2017 – 12/13/2017	12/13/2017 – 3/28/2018
Anacostia R. Kingman Island (DC)	ARK	Benning road NE and Oklahoma Ave NE, access the parking on Oklahoma Ave NE	38.894155, -76.965957	River	3/23/2017 – 6/28/2017	6/27/2017 – 9/15/2017	9/15/2017 – 12/13/2017	12/13/2017 – 3/28/2018
Anacostia R. Pepco 101 (DC)	ARP101	Anacostia Ave NE, near River Terrace Education Campus.	38.896279, -76.961056	River	3/23/2017 – Not recovered	6/27/2017 – 9/15/2017	9/15/2017 – 12/13/2017	12/13/2017 – 3/28/2018
Anacostia R. Pepco 013 (DC)	ARP013	Anacostia Ave NE, north of Benning Rd NE.	38.901213, -76.958252	River	3/23/2017 – 6/28/2017	6/27/2017 – 9/15/2017	9/15/2017 – 12/13/2017	12/13/2017 – 3/28/2018
Washington Channel Outfall 057 (DC)	WAC	Washington Marina	38.881983, -77.029287	River	3/23/2017 – 6/28/2017	6/27/2017 – 9/15/2017	9/15/2017 – 12/13/2017	12/13/2017 – Not recovered
River Terrace (DC)	RT	420 34th Street NE, RT Education Campus	38.895653, -76.959092	Land	3/13/2017 – 7/6/2017	7/6/2017 – 10/19/2017	10/19/2017 – 1/18/2018	1/18/2018 – 5/10/2018
McMillan Reservoir (DC)	MMR	2500 1st St., NW	38.923438, -77.012289	Land	3/13/2017 – 7/6/2017	7/6/2017 – 10/19/2017	10/19/2017 – 1/18/2018	1/18/2018 – 5/10/2018
Hains Point (DC)	HP	1100 Ohio Drive SW	38.8573, -77.02235	Land	3/13/2017 – 7/6/2017	N/A	N/A	N/A
American University (DC)	AU	SIS building	38.93715, -77.0879	Land	5/3/2017 – 7/6/2017	7/6/2017 – 10/19/2017	10/19/2017 – 1/18/2018	1/18/2018 – 5/10/2018
Hensen Center	ECC	Earth Conservation Corps, 2000 Half St SW	38.86538, -77.01055	Land	N/A	7/6/2017 – 10/19/2017	10/19/2017 – 1/18/2018	1/18/2018 – 5/10/2018
Lower Beaverdam Creek (MD)	LBC	Next to Kenilworth Avenue, near USGS Gauge 1651730	38.91607, -76.932217	Land	3/30/2017 – 7/11/2017	7/6/2017 – 10/19/2017	10/19/2017 – 1/19/2018	1/19/2018 – 5/10/2018
UMBC (MD)	UMBC	Engineering building	39.2546, -76.71408	Land (Reference)	5/19/2017 – 7/11/2017	7/6/2017 – 10/19/2017	10/19/2017 – 1/19/2018	1/19/2018 – 5/14/2018

Table A2. Method Detection Limits for PCB Congeners

	Water (pg/L)				Air (pg/m^3)			
PCB Congener	**Spring 2017**	**Summer 2017**	**Fall 2017**	**Winter 2017/18**	**Spring 2017**	**Summer 2017**	**Fall 2017**	**Winter 2017/18**
1	9.68E+01	9.68E+01	9.68E+01	9.68E+01	2.76E+02	2.76E+02	2.76E+02	2.76E+02
3	4.39E+01	4.39E+01	4.39E+01	4.39E+01	9.76E+01	9.76E+01	9.76E+01	9.76E+01
4+10	1.73E+01	1.73E+01	1.73E+01	1.73E+01	4.09E+01	4.09E+01	4.09E+01	4.09E+01
7+9	7.27E-01	7.27E-01	7.27E-01	7.27E-01	2.97E+00	2.97E+00	2.97E+00	2.97E+00
6	2.23E+00	2.23E+00	2.23E+00	2.23E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00
8+5	3.63E+00	3.63E+00	3.63E+00	3.63E+00	1.19E+01	1.19E+01	1.19E+01	1.19E+01
19	1.13E+00	1.13E+00	1.13E+00	1.13E+00	3.62E+00	3.62E+00	3.62E+00	3.62E+00
12+13	4.18E-01	4.18E-01	4.18E-01	4.18E-01	9.46E-01	9.46E-01	9.46E-01	9.46E-01
18	3.03E-01	3.03E-01	3.03E-01	3.03E-01	1.06E+00	1.06E+00	1.06E+00	1.06E+00
17+15	9.05E-01	9.05E-01	9.05E-01	9.05E-01	2.55E+00	2.55E+00	2.55E+00	2.55E+00
24+27	2.80E-01	2.80E-01	2.80E-01	2.80E-01	1.10E+00	1.10E+00	1.10E+00	1.10E+00
16+32	6.14E-01	6.14E-01	6.14E-01	6.14E-01	1.30E+00	1.30E+00	1.30E+00	1.30E+00
26	2.10E-01	2.10E-01	2.10E-01	2.10E-01	1.10E+00	1.10E+00	1.10E+00	1.10E+00
25	1.39E+00	1.39E+00	2.52E-01	2.52E-01	6.60E+00	6.60E+00	1.19E+00	1.19E+00
31	1.40E-01	1.40E-01	1.40E-01	1.40E-01	6.62E-01	6.62E-01	6.62E-01	6.62E-01
28	1.66E-01	1.66E-01	1.66E-01	1.66E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01
21+33+53	2.43E-01	2.43E-01	2.43E-01	2.43E-01	7.00E-01	7.00E-01	7.00E-01	7.00E-01
51	4.85E-02	4.85E-02	4.85E-02	4.85E-02	2.07E-01	2.07E-01	2.07E-01	2.07E-01
22	2.91E-01	2.91E-01	2.91E-01	2.91E-01	8.65E-01	8.65E-01	8.65E-01	8.65E-01
45	1.11E-01	1.11E-01	1.11E-01	1.11E-01	4.37E-01	4.37E-01	4.37E-01	4.37E-01
46	9.95E-02	9.95E-02	9.95E-02	9.95E-02	2.87E-01	2.87E-01	2.87E-01	2.87E-01
52+43	7.22E-02	7.22E-02	7.22E-02	7.22E-02	3.58E-01	3.58E-01	3.58E-01	3.58E-01
49	7.26E-02	7.26E-02	7.26E-02	7.26E-02	3.40E-01	3.40E-01	3.40E-01	3.40E-01
47	3.74E-02	3.74E-02	3.74E-02	3.74E-02	1.59E-01	1.59E-01	1.59E-01	1.59E-01
48	5.71E-02	5.71E-02	5.71E-02	5.71E-02	2.18E-01	2.18E-01	2.18E-01	2.18E-01
44	1.01E-01	1.01E-01	1.01E-01	1.01E-01	3.19E-01	3.19E-01	3.19E-01	3.19E-01

Table A2 continued

	Water (pg/L)				Air (pg/m^3)			
PCB Congener	**Spring 2017**	**Summer 2017**	**Fall 2017**	**Winter 2017/18**	**Spring 2017**	**Summer 2017**	**Fall 2017**	**Winter 2017/18**
37	7.54E-02	7.54E-02	7.54E-02	7.54E-02	1.88E-01	1.88E-01	1.88E-01	1.88E-01
42	2.94E-01	2.94E-01	2.94E-01	2.94E-01	8.72E-01	8.72E-01	8.72E-01	8.72E-01
41+71	3.97E-01	3.97E-01	3.97E-01	3.97E-01	8.44E-01	8.44E-01	8.44E-01	8.44E-01
64	3.65E-02	3.65E-02	3.65E-02	3.65E-02	1.89E-01	1.89E-01	1.89E-01	1.89E-01
40	9.72E-02	9.72E-02	9.72E-02	9.72E-02	1.93E-01	1.93E-01	1.93E-01	1.93E-01
100	4.01E-02	4.01E-02	1.23E-02	1.23E-02	2.90E-01	2.90E-01	8.87E-02	8.87E-02
63	1.01E-02	1.01E-02	1.01E-02	1.01E-02	5.03E-02	5.03E-02	5.03E-02	5.03E-02
74	1.26E-02	1.26E-02	1.26E-02	1.26E-02	6.31E-02	6.31E-02	6.31E-02	6.31E-02
70+76	1.98E-02	1.98E-02	1.98E-02	1.98E-02	9.05E-02	9.05E-02	9.05E-02	9.05E-02
66+95	3.90E-02	3.90E-02	3.90E-02	3.90E-02	2.16E-01	2.16E-01	2.16E-01	2.16E-01
91	2.34E-02	2.34E-02	2.34E-02	2.34E-02	1.20E-01	1.20E-01	1.20E-01	1.20E-01
56+60	2.32E-02	2.32E-02	2.32E-02	2.32E-02	6.89E-02	6.89E-02	6.89E-02	6.89E-02
92+84+89	2.86E-02	2.86E-02	2.86E-02	2.86E-02	1.93E-01	1.93E-01	1.93E-01	1.93E-01
101	2.03E-02	2.03E-02	2.03E-02	2.03E-02	1.12E-01	1.12E-01	1.12E-01	1.12E-01
99	7.40E-03	7.40E-03	7.40E-03	7.40E-03	3.79E-02	3.79E-02	3.79E-02	3.79E-02
83	8.16E-03	8.16E-03	8.16E-03	8.16E-03	2.80E-02	2.80E-02	2.80E-02	2.80E-02
97	6.31E-03	6.31E-03	6.31E-03	6.31E-03	2.18E-02	2.18E-02	2.18E-02	2.18E-02
81+87	1.62E-02	1.62E-02	1.62E-02	1.62E-02	5.68E-02	5.68E-02	5.68E-02	5.68E-02
85	1.00E-02	1.00E-02	1.00E-02	1.00E-02	3.13E-02	3.13E-02	3.13E-02	3.13E-02
136	1.30E-02	1.30E-02	1.30E-02	1.30E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02
110+77	6.03E-03	6.03E-03	6.03E-03	6.03E-03	2.53E-02	2.53E-02	2.53E-02	2.53E-02
82+151	1.37E-02	1.37E-02	1.37E-02	1.37E-02	3.63E-02	3.63E-02	3.63E-02	3.63E-02
135+144	2.18E-02	2.18E-02	2.18E-02	2.18E-02	1.87E-01	1.87E-01	1.87E-01	1.87E-01
107	9.24E-03	9.24E-03	9.24E-03	9.24E-03	4.57E-02	4.57E-02	4.57E-02	4.57E-02
149+123	3.58E-03	3.58E-03	3.58E-03	3.58E-03	1.32E-02	1.32E-02	1.32E-02	1.32E-02
118	2.66E-03	2.66E-03	2.66E-03	2.66E-03	1.33E-02	1.33E-02	1.33E-02	1.33E-02

Table A2 continued

	Water (pg/L)					Air (pg/m^3)		
PCB Congener	**Spring 2017**	**Summer 2017**	**Fall 2017**	**Winter 2017/18**	**Spring 2017**	**Summer 2017**	**Fall 2017**	**Winter 2017/18**
134	5.02E-03	5.02E-03	5.02E-03	5.02E-03	3.23E-02	3.23E-02	3.23E-02	3.23E-02
114+131	6.99E-03	6.99E-03	6.99E-03	6.99E-03	8.97E-02	8.97E-02	8.97E-02	8.97E-02
146	1.61E-03	1.61E-03	1.61E-03	1.61E-03	9.62E-03	9.62E-03	9.62E-03	9.62E-03
153	2.75E-03	2.75E-03	2.75E-03	2.75E-03	1.65E-02	1.65E-02	1.65E-02	1.65E-02
132	4.97E-03	4.97E-03	4.97E-03	4.97E-03	1.87E-02	1.87E-02	1.87E-02	1.87E-02
105	7.08E-04	7.08E-04	7.08E-04	7.08E-04	2.15E-03	2.15E-03	2.15E-03	2.15E-03
141	3.30E-03	3.30E-03	3.30E-03	3.30E-03	4.82E-02	4.82E-02	4.82E-02	4.82E-02
137+176+130	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.18E-02	1.18E-02	1.18E-02	1.18E-02
163+138	1.68E-03	1.68E-03	1.68E-03	1.68E-03	1.24E-02	1.24E-02	1.24E-02	1.24E-02
158	1.21E-03	1.21E-03	1.21E-03	1.21E-03	1.25E-02	1.25E-02	1.25E-02	1.25E-02
178+129	2.30E-03	2.30E-03	2.30E-03	2.30E-03	4.55E-02	4.55E-02	4.55E-02	4.55E-02
175	8.76E-04	8.76E-04	8.76E-04	8.76E-04	1.08E-02	1.08E-02	1.08E-02	1.08E-02
187+182	9.76E-04	9.76E-04	9.76E-04	9.76E-04	1.36E-02	1.36E-02	1.36E-02	1.36E-02
183	4.39E-04	4.39E-04	4.39E-04	4.39E-04	5.47E-03	5.47E-03	5.47E-03	5.47E-03
128	1.28E-03	1.28E-03	1.28E-03	1.28E-03	2.86E-03	2.86E-03	2.86E-03	2.86E-03
185	4.80E-04	4.80E-04	4.80E-04	4.80E-04	5.21E-03	5.21E-03	5.21E-03	5.21E-03
174	7.77E-04	7.77E-04	7.77E-04	7.77E-04	1.28E-02	1.28E-02	1.28E-02	1.28E-02
177	2.63E-03	2.63E-03	2.63E-03	2.63E-03	1.74E-02	1.74E-02	1.74E-02	1.74E-02
202+171+156	1.19E-03	1.19E-03	1.19E-03	1.19E-03	1.53E-02	1.53E-02	1.53E-02	1.53E-02
157+200	9.47E-04	9.47E-04	9.47E-04	9.47E-04	7.42E-03	7.42E-03	7.42E-03	7.42E-03
180	2.15E-03	2.15E-03	2.15E-03	2.15E-03	3.41E-02	3.41E-02	3.41E-02	3.41E-02
193	3.24E-03	3.24E-03	4.82E-03	4.82E-03	3.25E-02	3.25E-02	4.84E-02	4.84E-02
191	3.75E-02	3.75E-02	1.03E-03	1.03E-03	6.31E-01	6.31E-01	1.74E-02	1.74E-02
199	9.50E-04	9.50E-04	9.50E-04	9.50E-04	6.71E-03	6.71E-03	6.71E-03	6.71E-03
170+190	9.99E-04	9.99E-04	9.99E-04	9.99E-04	7.74E-03	7.74E-03	7.74E-03	7.74E-03
198	2.73E-04	2.73E-04	2.73E-04	2.73E-04	3.21E-03	3.21E-03	3.21E-03	3.21E-03

Table A2 continued

	Water (pg/L)				Air (pg/m^3)			
PCB Congener	**Spring 2017**	**Summer 2017**	**Fall 2017**	**Winter 2017/18**	**Spring 2017**	**Summer 2017**	**Fall 2017**	**Winter 2017/18**
201	6.25E-04	6.25E-04	6.25E-04	6.25E-04	1.85E-02	1.85E-02	1.85E-02	1.85E-02
203+196	4.55E-04	4.55E-04	4.55E-04	4.55E-04	1.07E-02	1.07E-02	1.07E-02	1.07E-02
208+195	1.61E-04	1.61E-04	1.61E-04	1.61E-04	1.91E-03	1.91E-03	1.91E-03	1.91E-03
207	7.71E-05	7.71E-05	7.71E-05	7.71E-05	1.13E-03	1.13E-03	1.13E-03	1.13E-03
194	1.31E-04	1.31E-04	1.31E-04	1.31E-04	5.50E-03	5.50E-03	5.50E-03	5.50E-03
205	1.18E-04	1.18E-04	1.18E-04	1.18E-04	1.29E-03	1.29E-03	1.29E-03	1.29E-03
206	2.75E-03	2.75E-03	3.41E-05	3.41E-05	8.62E-02	8.62E-02	1.07E-03	1.07E-03
209	2.58E-05	2.58E-05	2.58E-05	2.58E-05	3.50E-04	3.50E-04	3.50E-04	3.50E-04

Table A3. Average Concentrations of PCB Congeners detected in PE and procedure blanks

	PE blanks (ng/g) (n=7)		Procedure Blanks (Water, ng/L) (n=17)		Procedure Blanks (Air, pg/m3) (n=9)	
PCB Congener	**Average**	**SD**	**Average**	**SD**	**Average**	**SD**
1	ND	ND	ND	ND	ND	ND
3	ND	ND	ND	ND	ND	ND
(4+10)	ND	ND	ND	ND	ND	ND
(7+9)	ND	ND	ND	ND	ND	ND
6	ND	ND	ND	ND	ND	ND
(8+5)	ND	ND	ND	ND	ND	ND
19	ND	ND	ND	ND	ND	ND
(12+13)	ND	ND	ND	ND	ND	ND
18	ND	ND	ND	ND	ND	ND
(17+15)	ND	ND	ND	ND	ND	ND
(24+27)	ND	ND	ND	ND	ND	ND
(16+32)	ND	ND	ND	ND	ND	ND
26	ND	ND	ND	ND	ND	ND
25	0.89	1.21	8.19E-05	3.38E-04	0.75	2.06
31	ND	ND	ND	ND	ND	ND
28	ND	ND	ND	ND	ND	ND
(21+33+53)	0.74	1.26	ND	ND	ND	ND
51	ND	ND	ND	ND	ND	ND
22	0.10	0.19	ND	ND	ND	ND
45	ND	ND	ND	ND	ND	ND
46	ND	ND	ND	ND	ND	ND
(52+43)	0.20	0.53	ND	ND	ND	ND
49	ND	ND	ND	ND	ND	ND
47	ND	ND	ND	ND	ND	ND
48	ND	ND	ND	ND	ND	ND
44	ND	ND	ND	ND	ND	ND
37	0.76	0.07	ND	ND	ND	ND
42	ND	ND	ND	ND	ND	ND
(41+71)	ND	ND	ND	ND	ND	ND
64	ND	ND	ND	ND	ND	ND

Table A3 continued

	PE blanks (ng/g) (n=7)		Procedure Blanks (Water, ng/L) (n=17)		Procedure Blanks (Air, pg/m3) (n=9)	
PCB Congener	**Average**	**SD**	**Average**	**PCB Congener**	**Average**	**SD**
40	ND	ND	ND	ND	ND	ND
100	ND	ND	2.36E-06	9.73E-06	ND	ND
63	ND	ND	ND	ND	ND	ND
74	ND	ND	ND	ND	ND	ND
(70+76)	ND	ND	ND	ND	ND	ND
(66+95)	ND	ND	ND	ND	ND	ND
91	ND	ND	ND	ND	ND	ND
(56+60)	ND	ND	ND	ND	ND	ND
(92+84+89)	ND	ND	ND	ND	ND	ND
101	ND	ND	ND	ND	ND	ND
99	ND	ND	ND	ND	ND	ND
83	ND	ND	ND	ND	ND	ND
97	ND	ND	ND	ND	ND	ND
(81+87)	ND	ND	ND	ND	ND	ND
85	ND	ND	ND	ND	ND	ND
136	ND	ND	ND	ND	ND	ND
(110+77)	ND	ND	ND	ND	ND	ND
(82+151)	ND	ND	ND	ND	ND	ND
(135+144)	ND	ND	ND	ND	ND	ND
107	ND	ND	ND	ND	ND	ND
(149+123)	ND	ND	ND	ND	ND	ND
118	ND	ND	ND	ND	ND	ND
134	ND	ND	ND	ND	ND	ND
(114+131)	ND	ND	ND	ND	ND	ND
146	ND	ND	ND	ND	ND	ND
153	ND	ND	ND	ND	ND	ND
132	ND	ND	ND	ND	ND	ND
105	ND	ND	ND	ND	ND	ND
141	ND	ND	ND	ND	ND	ND
(137+176+130)	2.07	N/A	ND	ND	ND	ND

Table A3 continued

	PE blanks (ng/g) (n=7)		Procedure Blanks (Water, ng/L) (n=17)		Procedure Blanks (Air, pg/m3) (n=9)	
PCB Congener	**Average**	**SD**	**Average**	**PCB Congener**	**Average**	**SD**
(163+138)	ND	ND	ND	ND	ND	ND
158	ND	ND	ND	ND	ND	ND
(178+129)	ND	ND	ND	ND	ND	ND
175	ND	ND	ND	ND	ND	ND
(187+182)	ND	ND	ND	ND	ND	ND
183	ND	ND	ND	ND	ND	ND
128	ND	ND	ND	ND	ND	ND
185	ND	ND	ND	ND	ND	ND
174	ND	ND	ND	ND	ND	ND
177	ND	ND	ND	ND	ND	ND
(202+171+156)	ND	ND	ND	ND	ND	ND
(157+200)	ND	ND	ND	ND	ND	ND
180	ND	ND	ND	ND	ND	ND
193	ND	ND	ND	ND	0.10	0.14
191	ND	ND	2.47E-06	9.10E-06	ND	ND
199	ND	ND	ND	ND	ND	ND
(170+190)	ND	ND	ND	ND	ND	ND
198	ND	ND	ND	ND	ND	ND
201	ND	ND	ND	ND	ND	ND
(203+196)	ND	ND	ND	ND	ND	ND
(208+195)	ND	ND	ND	ND	ND	ND
207	ND	ND	ND	ND	ND	ND
194	ND	ND	ND	ND	0.03	0.09
205	ND	ND	ND	ND	ND	ND
206	ND	ND	1.61E-07	6.66E-07	ND	ND
209	ND	ND	ND	ND	ND	ND

Notes:

- ND: Not Detected
- N/A: Standard deviation not available as compound detected in only 1 sample (n=1)

Table A4. Initial and final PRC concentrations and calculated sampling rates for air samplers in Spring 2017

Initial PRC concentration (ng/g PE)		Final PRC concentration (ng/g PE)								
		RT-1	**RT-2**	**MMR-1**	**MMR-2**	**HP-1**	**HP-2**	**LBC-1A**	**LBC-1B**	**UMBC-1**
PRC-29	260.29	1.20	1.28	1.21	1.18	1.23	1.15	0.69	1.16	1.67
PRC-69	201.08	0.38	0.43	0.41	0.40	0.48	0.36	0.52	0.41	0.61
PRC-155	1038.75	33.84	31.02	11.93	12.95	50.55	30.87	12.08	23.85	68.62
PRC-192	279.17	251.75	239.67	230.13	231.87	235.93	249.83	294.20*	231.47	276.38
t (days)		115	115	115	115	115	115	103	103	53
m (g)		2.37	2.48	2.33	2.50	2.39	2.15	2.22	2.31	2.01
T (K)		291.52	291.52	291.52	291.52	291.52	291.52	293.59	293.59	296.55
Sampling Rate (L/day)		13858	15611	27158	17116	14799	12756	13163	13426	11697

* $PRC_{final} > PRC_{initial}$. PRC loss assumed to be % equal to that of LBC1A.

Table A5. Initial and final PRC concentrations and calculated sampling rates for air samplers at AU site in Spring 2017

Initial PRC concentration (ng/g PE)		Final PRC concentration (ng/g PE)	
		AU-1*	**AU-2***
PRC-29	214.30	1.40	1.41
PRC-69	166.06	0.45	0.56
PRC-155	846.03	34.35	54.10
PRC-192	273.31	249.70	239.06
t (days)		64.00	64.00
m (g)		2.05	2.25
T (K)		294.98	294.98
Sampling Rate (L/day)		13654	15166

* PE batch used for AU was different from that used for other locations in Spring 2017.

Table A6. Initial and final PRC concentrations and calculated sampling rates for air samplers in Summer 2017

Initial PRC concentration (ng/g PE)				Final PRC concentration (ng/g PE)									
		AU1	**AU2**	**RT1**	**RT2**	**MMR1**	**MMR2**	**ECC1**	**ECC2**	**LBC-1A**	**LBC-1B**	**UMBC-1**	**UMBC-2**
PRC-29	125.72	0.13	0.15	0.16	0.14	0.15	0.20	0.15	0.21	0.21	0.16	0.15	0.05
PRC-69	96.42	0.00	0.02	0.07	0.03	0.07	0.07	0.08	0.09	0.05	0.05	0.07	0.04
PRC-155	358.07	4.11	3.30	2.31	4.96	1.41	1.70	4.48	3.03	13.71	5.19	13.27	10.36
PRC-192	37.33	28.78	25.39	29.68	30.11	27.18	24.58	30.09	27.33	33.19	26.50	26.44	30.80
t (days)		105	105	105	105	105	105	105	105	100	100	100	100
m (g)		2.28	2.18	2.22	2.39	2.19	2.32	2.55	2.19	2.26	2.25	2.54	2.17
T (K)		296.70	296.70	296.70	296.70	296.70	296.70	296.70	296.70	296.61	296.61	296.07	296.07
Sampling Rate (L/day)		10278	12756	9532	9908	11140	14575	10602	10941	8250	12641	14836	9581

Table A7. Initial and final PRC concentrations and calculated sampling rates for air samplers in Fall 2017

Initial PRC concentration (ng/g PE)				Final PRC concentration (ng/g PE)									
		AU1	**AU2**	**RT1**	**RT2**	**MMR1**	**MMR2**	**ECC1**	**ECC2**	**LBC-1A**	**LBC-1B**	**UMBC-1**	**UMBC-2**
PRC-29	67.53	0.06	0.02	0.00	0.00	0.00	0.08	0.05	0.03	0.09	0.16	0.74	0.39
PRC-69	49.58	2.42	2.26	1.81	1.71	0.48	1.10	1.16	1.42	1.65	2.41	6.90	5.27
PRC-155	134.30	63.65	64.57	63.06	63.01	47.36	58.63	57.36	57.10	62.90	64.96	85.64	81.21
PRC-192	7.67	6.24	6.34	6.41	6.68	6.40	6.40	7.01	6.43	6.89	6.73	6.73	6.82
t (days)		92	92	92	92	92	92	92	92	92	92	92	92
m (g)		2.07	2.18	2.02	1.98	2.05	1.99	2.12	2.11	2.08	2.12	2.06	2.15
T (K)		279.38	279.38	279.38	279.38	279.38	279.38	279.38	279.38	279.38	279.38	278.86	278.86
Sampling Rate (L/day)		24567	25404	24255	23556	33211	26103	27420	28224	24608	24037	16743	19329

Table A8. Initial and final PRC concentrations and calculated sampling rates for air samplers in Winter 2017/18

Initial PRC concentration (ng/g PE)				**Final PRC concentration (ng/g PE)**									
		AU1	**AU2**	**RT1**	**RT2**	**MMR1**	**MMR2**	**ECC1**	**ECC2**	**LBC-1A**	**LBC-1B**	**UMBC-1**	**UMBC-2**
PRC-29	107.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRC-69	95.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.34	0.08
PRC-155	59.94	14.20	13.08	12.26	9.90	9.31	7.52	10.29	13.43	11.59	12.66	15.95	14.10
PRC-192*	29.19	33.10*	32.43*	33.82*	32.96*	30.67*	33.83*	33.58*	34.30*	33.87*	29.20*	32.92*	31.74*
t (days)		112	112	112	112	112	112	112	112	112	112	112	112
m (g)		2.05	2.12	2.07	2.04	2.21	2.09	2.10	2.22	2.13	2.15	2.13	2.33
T (K)		281.99	281.99	281.99	281.99	281.99	281.99	281.99	281.99	281.99	281.99	281.52	281.52
Sampling Rate (L/day)		23390	25210	25497	27464	30436	30781	27786	26073	27087	26308	23522	27611

* $PRC_{final} > PRC_{initial}$. PRC loss assumed to be 0.

Table A9. Average air-phase ∑PCB concentrations measured in the present study and the uncertainties in these concentrations (pg/m^3)

	LBC1	**AU**	**RT**	**MMR**	**ECC**	**UMBC**	**HP**
Spring 2017	490 ± 58	140 ± 19	101 ± 14	110 ± 12	-	410 ± 49	3400 ± 440
Summer 2017	5400 ± 1100	240 ± 30	330 ± 34	260 ± 28	250 ± 27	680 ± 74	-
Fall 2017	810 ± 150	61 ± 8.6	64 ± 8.3	50 ± 7.2	34 ± 4.2	160 ± 37	-
Winter 2017/18	300 ± 41	32 ± 3.9	28 ± 3.5	35 ± 4.1	32 ± 4.6	110 ± 313	-

Notes:

- Uncertainty in average air concentration based on measured uncertainty in PE concentrations (based on replicates), uncertainties in non-equilibirum correction factors, and in PE-air partitioning coefficients

Table A10. Air-phase concentrations of individual PCB congeners (pg/m^3) measured in the present study (Spring 2017)

	LBC1	AU	RT	MMR	HP	UMBC	LBC1	AU	RT	MMR	HP	UMBC	Average f_{eq}	f_{eq} uncertainty
PCB Congener	**Air-phase PCB concentration (pg/m^3)**						**Uncertainty (pg/m^3)**							
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
4+10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
7+9	7.87	0.00	0.00	0.00	0.00	0.00	11.81	0.00	0.00	0.00	0.00	0.00	1.00	0.00
6	0.00	0.00	0.00	0.00	4.18	0.00	0.00	0.00	0.00	0.00	6.27	0.00	1.00	0.00
8+5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
12+13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
17+15	7.81	0.00	5.88	3.49	7.60	0.00	6.96	0.00	2.96	1.79	3.80	0.00	1.00	0.00
24+27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
16+32	14.38	0.00	0.71	0.00	1.34	0.00	7.21	0.00	1.06	0.00	2.02	0.00	1.00	0.00
26	12.10	4.54	8.05	5.12	7.43	5.43	6.10	2.66	4.15	2.56	3.98	2.72	1.00	0.00
25	1.76	0.00	0.00	0.00	0.00	0.00	2.64	0.00	0.00	0.00	0.00	0.00	1.00	0.00
31	48.93	0.00	1.11	0.00	14.13	0.00	25.32	0.00	0.56	0.00	7.11	0.00	1.00	0.00
28	34.14	0.00	0.00	0.00	4.50	0.00	17.08	0.00	0.00	0.00	2.27	0.00	1.00	0.00
21+33+53	21.19	0.00	0.00	0.00	4.62	0.00	10.66	0.00	0.00	0.00	2.33	0.00	1.00	0.00
51	2.99	0.00	0.22	0.17	0.00	0.00	4.49	0.00	0.34	0.26	0.00	0.00	1.00	0.00
22	16.01	0.00	1.12	1.12	9.91	0.00	12.47	0.00	0.68	0.57	4.95	0.00	1.00	0.00
45	3.45	0.00	2.96	1.00	3.34	0.00	1.75	0.00	1.53	0.64	1.87	0.00	1.00	0.00
46	0.35	0.00	0.00	0.00	0.31	0.00	0.53	0.00	0.00	0.00	0.46	0.00	1.00	0.00
52+43	21.66	0.00	0.00	0.23	130.33	10.48	10.95	0.00	0.00	0.34	66.01	5.24	1.00	0.00
49	8.60	0.00	0.00	0.00	22.06	0.00	4.44	0.00	0.00	0.00	11.05	0.00	1.00	0.00
47	5.73	0.00	0.00	0.00	5.46	0.00	3.07	0.00	0.00	0.00	2.73	0.00	1.00	0.00
48	5.14	0.00	5.62	2.49	5.95	3.37	4.76	0.00	2.82	1.61	3.05	1.69	1.00	0.00
44	16.43	0.00	0.00	0.00	63.79	2.84	8.22	0.00	0.00	0.00	32.32	1.42	1.00	0.01

Table A10 continued

	LBC1	AU	RT	MMR	HP	UMBC	LBC1	AU	RT	MMR	HP	UMBC	Average f_{eq}	f_{eq} uncertainty
PCB Congener	**Air-phase PCB concentration (pg/m^3)**						**Uncertainty (pg/m^3)**							
37	6.00	0.00	0.00	0.00	3.20	0.00	3.81	0.00	0.00	0.00	1.64	0.00	0.98	0.04
42	9.13	0.00	0.53	0.69	10.26	0.00	4.74	0.00	0.27	0.36	5.19	0.00	1.00	0.01
41+71	3.50	0.00	0.00	0.00	13.14	0.00	5.25	0.00	0.00	0.00	6.58	0.00	0.99	0.02
64	8.85	0.00	0.13	0.25	19.44	0.00	4.44	0.00	0.19	0.38	9.81	0.00	1.00	0.01
40	2.69	0.00	0.00	0.00	6.83	0.00	1.43	0.00	0.00	0.00	3.42	0.00	0.99	0.02
100	3.46	4.40	2.60	2.70	2.94	2.69	1.82	2.21	1.34	1.37	1.48	1.35	0.98	0.04
63	6.31	0.00	0.00	0.00	2.82	0.00	8.64	0.00	0.00	0.00	1.42	0.00	0.96	0.07
74	4.98	2.01	1.50	1.53	32.74	5.80	3.34	1.02	0.77	0.78	16.80	2.94	0.95	0.08
70+76	7.65	1.87	0.89	2.07	83.47	12.51	3.94	0.96	0.46	1.08	43.13	6.38	0.93	0.09
66+95	26.44	6.74	3.23	6.71	260.72	39.53	14.00	3.44	1.63	3.42	133.23	19.94	0.96	0.06
91	3.62	3.50	2.18	2.49	41.03	8.67	1.87	1.79	1.12	1.27	21.11	4.36	0.97	0.05
56+60	3.99	0.12	0.10	0.58	73.06	9.46	2.66	0.18	0.05	0.33	38.42	4.91	0.89	0.12
92+84+89	7.75	12.25	2.38	5.95	126.02	19.30	5.48	6.26	1.24	3.04	66.18	9.86	0.93	0.10
101	10.69	8.27	3.56	7.01	271.29	36.58	5.64	4.36	1.88	3.73	145.30	19.28	0.86	0.14
99	5.59	5.35	2.54	3.59	93.32	13.52	2.99	2.86	1.37	1.96	50.79	7.22	0.83	0.16
83	0.76	0.37	0.10	0.44	14.86	1.92	0.59	0.20	0.11	0.31	8.13	1.03	0.81	0.16
97	2.18	1.45	0.53	1.25	61.90	7.58	1.27	0.79	0.31	0.70	34.31	4.12	0.79	0.17
81+87	5.73	4.27	2.18	3.58	165.89	17.82	3.23	2.38	1.23	2.05	94.39	9.94	0.73	0.18
85	2.33	1.07	0.38	1.01	57.45	6.67	1.29	0.59	0.24	0.58	32.64	3.70	0.74	0.18
136	1.93	1.36	0.94	1.49	31.07	3.55	1.08	0.73	0.56	0.80	16.76	1.86	0.87	0.14
110+77	11.70	7.64	4.07	6.95	346.12	35.17	6.69	4.37	2.36	4.09	202.21	20.09	0.67	0.19
82+151	3.59	1.90	1.17	1.94	72.49	8.92	2.06	1.04	0.68	1.08	40.67	4.87	0.78	0.17
135+144	3.42	1.97	1.31	2.00	70.56	9.21	2.16	1.09	0.76	1.11	40.10	5.05	0.77	0.17
107	0.70	0.42	0.19	0.43	26.99	2.29	0.43	0.27	0.15	0.33	17.14	1.40	0.50	0.18
149+123	4.42	3.02	1.55	2.56	115.00	11.03	2.83	1.89	0.98	1.72	74.08	6.92	0.44	0.16
118	8.34	4.01	2.11	3.98	259.15	19.85	5.24	2.50	1.32	2.62	165.48	12.26	0.48	0.17

Table A10 continued

	LBC1	AU	RT	MMR	HP	UMBC	LBC1	AU	RT	MMR	HP	UMBC	Average f_{eq}	f_{eq} uncertainty
PCB Congener	**Air-phase PCB concentration (pg/m^3)**						**Uncertainty (pg/m^3)**							
134	2.21	0.76	1.17	2.06	13.90	1.31	1.37	0.80	0.65	1.24	7.94	0.72	0.75	0.18
114+131	2.27	6.99	2.56	3.06	40.63	0.49	2.70	3.65	1.37	1.73	21.87	0.26	0.88	0.13
146	6.58	9.23	4.95	3.69	35.75	13.09	4.20	5.89	3.15	2.49	23.37	8.32	0.40	0.16
153	7.23	6.46	4.36	4.41	128.31	14.50	4.69	4.14	2.89	3.29	85.47	9.28	0.37	0.15
132	1.93	0.13	0.14	1.02	81.35	3.86	1.20	0.11	0.08	0.64	51.00	2.34	0.53	0.18
105	0.70	0.54	0.30	0.34	12.94	1.41	0.45	0.34	0.19	0.23	8.54	0.90	0.39	0.16
141	0.48	0.09	0.08	0.24	9.06	1.46	0.40	0.14	0.06	0.13	5.15	0.80	0.78	0.17
137+176+130	2.68	0.98	0.75	2.11	18.50	0.98	2.47	0.79	1.06	1.32	11.41	0.58	0.60	0.19
163+138	9.79	4.20	2.51	4.33	271.54	17.42	6.64	2.69	1.61	2.98	181.22	11.14	0.38	0.15
158	1.24	0.44	0.21	0.62	40.91	2.76	0.78	0.36	0.13	0.41	26.53	1.71	0.46	0.17
178+129	1.20	0.43	0.27	0.55	28.89	1.71	0.76	0.42	0.16	0.36	17.99	1.02	0.57	0.18
175	0.75	0.09	0.04	0.06	2.16	0.49	0.86	0.14	0.03	0.05	1.93	0.31	0.38	0.15
187+182	2.33	2.37	1.27	1.27	12.10	3.76	1.61	1.54	0.82	0.83	7.93	2.37	0.42	0.16
183	0.34	0.02	0.07	0.14	9.31	0.54	0.22	0.04	0.10	0.09	6.25	0.35	0.36	0.15
128	1.26	0.45	0.31	0.42	29.62	2.12	0.86	0.30	0.23	0.31	20.61	1.41	0.25	0.11
185	0.27	0.25	0.31	0.13	1.20	0.39	0.17	0.18	0.31	0.09	0.81	0.25	0.39	0.15
174	1.57	0.54	0.80	0.57	15.29	0.88	1.26	0.33	0.82	0.35	9.77	0.53	0.53	0.18
177	0.25	0.04	0.28	0.18	8.18	0.43	0.23	0.07	0.35	0.13	5.70	0.28	0.28	0.12
202+171+156	5.31	0.46	0.52	0.25	1.06	1.74	7.07	0.32	0.55	0.18	0.70	1.13	0.34	0.14
157+200	1.57	0.76	0.54	0.46	4.51	1.60	1.37	0.51	0.37	0.35	3.13	1.07	0.25	0.11
180	6.68	7.22	4.55	3.39	21.34	10.71	4.46	4.73	3.04	2.40	14.49	7.02	0.30	0.13
193	39.68	15.78	11.90	5.30	14.49	22.77	29.16	10.42	9.95	3.56	9.60	14.93	0.30	0.13
191	0.12	0.00	0.00	0.00	0.66	0.00	0.19	0.00	0.00	0.00	0.49	0.00	0.14	0.06
199	0.06	0.00	0.09	0.04	0.62	0.17	0.10	0.00	0.14	0.03	0.44	0.11	0.20	0.09
170+190	0.85	0.69	0.45	0.35	8.84	1.28	0.63	0.46	0.31	0.27	6.29	0.86	0.22	0.10
198	0.02	0.09	0.08	0.04	0.09	0.18	0.03	0.08	0.05	0.03	0.14	0.12	0.20	0.09

Table A10 continued

	LBC1	AU	RT	MMR	HP	UMBC	LBC1	AU	RT	MMR	HP	UMBC	Average f_{eq}	f_{eq} uncertainty
PCB Congener	**Air-phase PCB concentration (pg/m^3)**						**Uncertainty (pg/m^3)**							
201	3.33	1.43	0.86	0.67	3.32	2.90	3.71	0.99	0.63	0.50	2.40	2.00	0.12	0.06
203+196	1.54	1.44	0.86	0.66	3.36	2.81	1.06	0.96	0.61	0.48	2.31	1.86	0.28	0.12
208+195	0.06	0.00	0.04	0.03	0.32	0.00	0.05	0.00	0.07	0.04	0.23	0.00	0.21	0.09
207	0.11	0.00	0.01	0.01	0.03	0.00	0.13	0.00	0.01	0.01	0.04	0.00	0.09	0.05
194	1.49	1.37	0.82	0.47	1.29	1.98	1.74	0.96	0.67	0.33	0.89	1.38	0.11	0.05
205	0.38	0.19	0.13	0.09	0.16	0.22	0.36	0.13	0.10	0.07	0.12	0.15	0.24	0.11
206	0.45	0.14	0.06	0.06	0.18	0.24	0.49	0.12	0.04	0.05	0.13	0.17	0.04	0.02
209	0.07	0.00	0.01	0.00	0.00	0.00	0.07	0.00	0.02	0.00	0.00	0.00	0.09	0.04

Notes:

- Average f_{eq} based on average sampling rate across the sites, average mass of samplers, and average deployment time.

Table A11. Air-phase concentrations of individual PCB congeners (pg/m^3) measured in the present study (Summer 2017)

	LBC1	AU	RT	MMR	ECC	UMBC	LBC1	AU	RT	MMR	ECC	UMBC	Average f_{eq}	f_{eq} uncertainty
PCB Congener	**Air-phase PCB concentration (pg/m^3)**						**Uncertainty (pg/m^3)**							
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
4+10	1448.82	0.00	0.00	0.00	0.00	0.00	728.52	0.00	0.00	0.00	0.00	0.00	1.00	0.00
7+9	116.26	0.00	0.00	0.00	0.00	0.00	60.71	0.00	0.00	0.00	0.00	0.00	1.00	0.00
6	178.98	0.00	0.00	0.00	0.00	10.62	92.23	0.00	0.00	0.00	0.00	15.94	1.00	0.00
8+5	1341.03	0.00	0.00	0.00	0.00	0.00	709.53	0.00	0.00	0.00	0.00	0.00	1.00	0.00
19	63.40	0.00	0.00	0.00	4.57	0.00	33.13	0.00	0.00	0.00	6.86	0.00	1.00	0.00
12+13	1.45	10.34	0.00	0.00	0.00	0.00	2.17	6.75	0.00	0.00	0.00	0.00	1.00	0.00
18	292.35	0.00	0.00	0.00	0.00	0.00	149.06	0.00	0.00	0.00	0.00	0.00	1.00	0.00
17+15	308.00	5.08	22.72	2.99	7.49	5.56	154.36	7.63	11.38	4.49	11.23	2.79	1.00	0.00
24+27	9.89	0.00	0.00	5.73	0.00	0.79	5.34	0.00	0.00	3.45	0.00	1.19	1.00	0.00
16+32	278.81	0.00	18.82	0.00	0.00	0.00	142.11	0.00	9.43	0.00	0.00	0.00	1.00	0.00
26	45.14	6.21	18.19	8.74	8.07	6.67	22.75	3.10	9.49	4.74	4.04	3.43	1.00	0.00
25	17.11	0.00	3.09	1.43	0.00	0.00	8.71	0.00	2.25	2.15	0.00	0.00	1.00	0.00
31	204.32	0.00	18.94	0.00	1.76	2.85	102.81	0.00	9.63	0.00	0.91	4.27	1.00	0.00
28	169.75	0.00	8.76	0.00	0.00	0.00	85.60	0.00	4.43	0.00	0.00	0.00	1.00	0.00
21+33+53	114.27	0.00	4.79	0.00	0.00	0.00	57.47	0.00	2.61	0.00	0.00	0.00	1.00	0.00
51	2.83	0.00	1.26	0.90	0.45	0.51	2.13	0.00	1.90	0.69	0.27	0.76	1.00	0.00
22	93.12	0.00	11.24	0.00	0.00	3.80	46.56	0.00	5.95	0.00	0.00	2.88	1.00	0.00
45	26.93	0.00	10.11	3.52	1.70	1.82	13.61	0.00	5.86	1.76	1.16	1.42	1.00	0.00
46	6.93	0.00	2.51	0.00	0.00	1.08	3.59	0.00	3.76	0.00	0.00	1.62	1.00	0.00
52+43	89.42	5.22	11.78	9.50	8.00	40.75	45.13	2.71	6.69	4.78	4.01	20.43	1.00	0.00
49	47.88	0.00	0.00	0.00	0.00	3.78	24.26	0.00	0.00	0.00	0.00	1.91	1.00	0.00
47	18.85	0.00	2.45	0.18	1.43	1.38	9.60	0.00	2.10	0.27	0.72	0.86	1.00	0.00
48	23.70	2.70	16.08	5.06	4.43	3.49	12.03	1.59	9.45	2.62	2.68	2.28	1.00	0.00
44	62.76	3.32	8.15	4.76	3.42	19.27	31.59	1.68	5.21	2.40	2.08	9.65	1.00	0.00

Table A11 continued

	LBC1	AU	RT	MMR	ECC	UMBC	LBC1	AU	RT	MMR	ECC	UMBC	Average f_{eq}	f_{eq} uncertainty
PCB Congener	**Air-phase PCB concentration (pg/m^3)**						**Uncertainty (pg/m^3)**							
37	13.44	7.01	20.52	8.33	15.55	7.89	6.91	10.51	11.67	12.49	7.87	11.83	0.99	0.01
42	28.60	1.67	1.03	2.56	0.49	3.26	14.33	2.51	1.55	1.45	0.74	2.13	1.00	0.00
41+71	23.08	0.00	2.01	0.00	0.00	2.19	11.87	0.00	1.00	0.00	0.00	1.54	1.00	0.00
64	29.12	0.83	4.63	2.92	2.06	6.08	14.73	0.42	2.33	1.59	1.21	3.18	1.00	0.00
40	12.55	0.00	1.65	1.41	0.91	1.55	6.43	0.00	1.25	0.72	1.36	2.33	1.00	0.00
100	8.83	9.71	7.47	8.75	7.71	6.03	4.42	4.86	3.84	4.38	3.89	3.51	0.99	0.02
63	2.59	0.00	0.68	1.79	1.28	1.30	1.47	0.00	1.02	0.91	0.65	1.94	0.98	0.03
74	15.30	5.68	4.79	5.06	5.67	9.44	7.76	2.86	2.54	2.54	2.95	4.92	0.98	0.04
70+76	18.41	5.14	3.96	5.51	4.66	20.99	9.31	2.67	2.10	2.79	2.41	10.60	0.97	0.05
66+95	54.98	18.72	13.85	18.27	16.25	70.29	27.59	9.92	7.14	9.18	8.33	35.25	0.99	0.03
91	7.39	8.58	6.40	8.17	7.20	14.84	3.71	4.45	3.48	4.09	3.60	7.58	0.99	0.02
56+60	13.25	3.44	2.17	3.20	3.62	17.02	6.73	1.86	1.35	1.64	1.84	8.71	0.94	0.08
92+84+89	21.21	29.45	11.22	19.95	18.20	44.76	10.71	14.99	5.77	10.05	9.17	22.55	0.97	0.06
101	20.38	16.25	9.29	15.65	13.61	59.16	10.44	8.43	4.83	8.12	6.99	30.42	0.92	0.10
99	9.32	10.07	6.55	8.66	7.61	21.45	4.87	5.25	3.43	4.54	3.93	11.12	0.90	0.12
83	1.23	1.33	0.62	1.48	1.46	4.14	0.64	0.71	0.76	0.85	0.76	2.16	0.89	0.12
97	4.30	3.07	1.66	3.11	2.57	12.98	2.28	1.61	0.99	1.67	1.35	6.86	0.87	0.13
81+87	9.14	7.92	5.12	7.74	6.47	27.61	4.92	4.28	2.78	4.23	3.47	14.89	0.82	0.16
85	3.82	2.49	1.37	2.49	2.04	10.13	2.04	1.33	0.85	1.38	1.09	5.44	0.84	0.15
136	3.92	3.19	2.50	4.18	5.18	8.66	2.08	1.63	1.65	2.31	2.70	4.63	0.93	0.09
110+77	17.28	13.49	9.17	14.10	12.92	48.88	9.51	7.50	5.06	7.87	7.08	27.04	0.77	0.17
82+151	6.03	3.54	2.84	4.09	4.44	13.22	3.18	1.89	1.53	2.21	2.34	6.93	0.87	0.14
135+144	4.58	3.76	3.35	4.45	4.60	11.71	2.41	2.04	1.82	2.41	2.44	6.16	0.86	0.14
107	0.86	0.86	0.60	0.86	1.06	4.53	0.50	0.54	0.37	0.52	0.63	2.70	0.61	0.19
149+123	7.89	4.42	3.33	4.87	5.16	14.87	4.83	2.75	2.01	3.04	3.13	9.09	0.54	0.18
118	8.12	6.78	4.27	7.48	6.59	24.90	4.86	4.14	2.54	4.60	3.92	15.26	0.58	0.19

Table A11 continued

	LBC1	AU	RT	MMR	ECC	UMBC	LBC1	AU	RT	MMR	ECC	UMBC	Average f_{eq}	f_{eq} uncertainty
PCB Congener	**Air-phase PCB concentration (pg/m^3)**						**Uncertainty (pg/m^3)**							
134	3.16	0.36	2.91	2.37	0.59	3.36	1.67	0.19	1.54	3.13	0.32	1.80	0.85	0.15
114+131	2.25	2.51	1.25	1.67	1.47	0.96	1.17	1.30	0.65	0.98	1.28	0.53	0.94	0.08
146	3.08	2.72	2.55	2.37	3.17	4.41	2.00	1.69	1.56	1.47	2.00	2.77	0.50	0.18
153	7.93	4.98	3.95	5.17	6.05	12.49	4.96	3.41	2.44	3.32	3.76	8.09	0.47	0.17
132	3.35	0.89	1.16	2.31	1.00	8.79	1.95	1.36	0.68	1.37	1.53	5.36	0.64	0.19
105	0.49	0.40	0.31	0.40	0.40	1.27	0.31	0.25	0.19	0.25	0.25	0.83	0.49	0.18
141	0.84	0.46	0.38	0.59	0.74	5.89	0.47	0.31	0.20	0.32	0.40	3.35	0.87	0.13
137+176+130	0.81	1.30	0.97	3.13	2.83	3.18	0.46	0.74	1.30	1.83	1.61	1.91	0.71	0.18
163+138	11.88	6.26	5.03	7.81	7.58	23.74	7.39	3.94	3.11	5.05	4.68	15.33	0.48	0.17
158	1.56	0.93	0.62	1.18	1.33	5.20	0.93	0.56	0.37	0.74	0.83	3.23	0.57	0.19
178+129	1.15	0.79	0.46	0.96	0.90	3.58	0.66	0.45	0.27	0.57	0.57	2.11	0.69	0.19
175	0.34	0.08	0.00	0.05	0.08	0.58	0.21	0.05	0.00	0.03	0.12	0.36	0.49	0.17
187+182	1.83	1.33	1.01	1.36	1.59	2.69	1.11	0.84	0.61	0.88	0.97	1.66	0.53	0.18
183	1.10	0.43	0.30	0.51	0.58	1.13	0.68	0.28	0.20	0.36	0.37	0.72	0.46	0.17
128	0.98	0.76	0.64	0.92	0.90	2.25	0.67	0.52	0.41	0.64	0.59	1.53	0.32	0.13
185	0.29	0.23	0.28	0.28	0.26	0.43	0.21	0.15	0.18	0.19	0.16	0.28	0.50	0.18
174	1.60	0.75	0.81	1.06	1.14	1.81	0.94	0.52	0.51	0.73	0.68	1.05	0.65	0.19
177	0.67	0.21	0.29	0.38	0.51	1.04	0.45	0.18	0.22	0.29	0.33	0.68	0.37	0.15
202+171+156	0.60	0.80	0.47	0.45	0.63	2.74	0.42	0.58	0.39	0.31	0.41	1.81	0.44	0.16
157+200	0.15	0.24	0.20	0.23	0.37	0.76	0.09	0.20	0.15	0.16	0.27	0.52	0.34	0.14
180	7.73	3.86	4.26	4.00	4.38	4.73	4.91	2.56	2.71	2.63	2.78	3.16	0.40	0.16
193	31.75	7.41	9.77	6.96	6.80	7.84	20.16	4.90	6.23	4.51	4.34	4.98	0.40	0.16
191	0.26	0.00	0.00	0.18	0.00	0.24	0.40	0.00	0.00	0.13	0.00	0.38	0.19	0.09
199	0.13	0.11	0.19	0.18	0.16	0.39	0.10	0.08	0.13	0.12	0.12	0.33	0.27	0.12
170+190	1.72	0.73	0.73	0.77	0.78	1.06	1.13	0.56	0.48	0.54	0.52	0.78	0.30	0.13
198	0.00	0.11	0.07	0.07	0.04	0.27	0.00	0.08	0.11	0.05	0.06	0.25	0.27	0.12

Table A11 continued

	LBC1	AU	RT	MMR	ECC	UMBC	LBC1	AU	RT	MMR	ECC	UMBC	Average f_{eq}	f_{eq} uncertainty
PCB Congener	**Air-phase PCB concentration (pg/m^3)**						**Uncertainty (pg/m^3)**							
201	1.17	1.82	1.34	1.47	1.55	3.28	0.82	1.31	0.91	1.03	1.06	2.40	0.17	0.08
203+196	1.44	1.45	1.22	1.19	1.32	2.90	0.93	0.97	0.78	0.80	0.85	1.96	0.37	0.15
208+195	0.12	0.10	0.06	0.10	0.11	0.08	0.09	0.07	0.10	0.07	0.07	0.06	0.29	0.12
207	0.03	0.01	0.02	0.02	0.00	0.08	0.04	0.02	0.03	0.03	0.00	0.05	0.14	0.06
194	3.32	1.00	1.30	0.89	0.91	0.35	2.28	0.69	0.91	0.61	0.63	0.27	0.15	0.07
205	0.06	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.33	0.14
206	0.12	0.14	0.13	0.10	0.13	0.33	0.09	0.11	0.09	0.07	0.09	0.24	0.06	0.03
209	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.13	0.06

Notes:

- Average f_{eq} based on average sampling rate across the sites, average mass of samplers, and average deployment time.

Table A12. Air-phase concentrations of individual PCB congeners (pg/m^3) measured in the present study (Fall 2017)

	LBC1	AU	RT	MMR	ECC	UMBC	LBC1	AU	RT	MMR	ECC	UMBC	Average f_{eq}	f_{eq} uncertainty
PCB Congener	**Air-phase PCB concentration (pg/m^3)**						**Uncertainty (pg/m^3)**							
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
4+10	234.02	0.00	0.00	0.00	0.00	0.00	117.23	0.00	0.00	0.00	0.00	0.00	1.00	0.00
7+9	22.47	4.49	2.21	4.14	2.01	2.50	11.51	2.71	3.32	2.37	1.26	0.00	1.00	0.00
6	18.26	0.00	0.00	1.77	0.00	2.99	9.40	0.00	0.00	2.66	0.00	0.00	1.00	0.00
8+5	161.73	7.81	6.80	2.46	0.00	32.10	81.57	5.61	3.69	3.70	0.00	33.40	1.00	0.00
19	5.02	0.00	0.00	0.00	0.00	0.00	2.57	0.00	0.00	0.00	0.00	0.00	1.00	0.00
12+13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
18	39.00	0.00	0.00	0.00	0.00	0.00	20.98	0.00	0.00	0.00	0.00	0.00	1.00	0.00
17+15	42.33	0.00	2.31	0.82	0.00	0.00	24.53	0.00	1.25	1.23	0.00	0.00	1.00	0.00
24+27	0.22	0.47	0.00	0.00	0.34	0.00	0.32	0.24	0.00	0.00	0.52	0.00	1.00	0.00
16+32	37.06	0.00	0.91	0.00	0.00	0.78	18.84	0.00	0.93	0.00	0.00	0.00	1.00	0.00
26	7.35	1.69	2.37	1.55	1.57	2.67	3.90	1.24	1.19	0.78	1.14	1.46	1.00	0.01
25	2.65	0.46	0.00	0.00	0.60	0.76	1.52	0.69	0.00	0.00	0.50	0.52	0.99	0.02
31	37.38	2.11	4.65	1.52	1.82	4.08	19.20	1.36	2.33	0.76	1.05	1.97	0.99	0.02
28	31.39	0.22	2.58	0.00	0.12	1.49	16.11	0.33	1.29	0.00	0.17	1.22	0.99	0.03
21+33+53	19.56	0.19	1.28	0.00	0.00	1.08	10.17	0.29	0.64	0.00	0.00	0.63	0.99	0.03
51	0.40	0.54	0.28	0.18	0.18	0.19	0.20	0.51	0.14	0.27	0.27	0.00	0.99	0.02
22	16.99	0.89	1.90	0.43	0.64	1.95	8.72	0.76	0.96	0.22	0.40	0.97	0.98	0.04
45	4.63	0.98	0.93	0.65	0.64	0.99	2.32	0.90	0.47	0.33	0.32	0.50	1.00	0.01
46	0.80	0.46	0.23	0.06	0.12	1.29	0.40	0.37	0.12	0.09	0.17	0.65	0.99	0.03
52+43	16.71	2.96	3.15	2.88	2.02	9.77	8.56	1.53	1.62	1.54	1.03	4.79	0.95	0.08
49	9.46	1.52	1.25	0.65	0.56	2.42	4.90	0.80	0.75	0.39	0.31	1.39	0.93	0.09
47	3.80	0.76	0.80	0.44	0.43	0.79	2.01	0.40	0.43	0.23	0.25	0.39	0.91	0.11
48	3.81	0.16	1.07	0.42	0.45	0.66	2.02	0.24	0.56	0.23	0.23	0.61	0.93	0.09
44	12.40	1.36	1.91	1.09	0.55	4.89	6.72	0.71	1.04	0.56	0.28	2.72	0.91	0.11

Table A12 continued

	LBC1	AU	RT	MMR	ECC	UMBC	LBC1	AU	RT	MMR	ECC	UMBC	Average f_{eq}	f_{eq} uncertainty
PCB Congener	**Air-phase PCB concentration (pg/m^3)**						**Uncertainty (pg/m^3)**							
37	3.59	0.00	2.29	0.00	0.00	0.00	2.24	0.00	3.47	0.00	0.00	0.00	0.78	0.17
42	6.49	1.48	1.29	1.23	0.96	1.76	3.50	0.77	1.10	0.64	0.50	1.18	0.89	0.12
41+71	5.30	0.16	0.82	0.30	0.27	1.63	2.95	0.24	0.50	0.16	0.15	1.70	0.85	0.14
64	5.80	0.93	1.04	0.72	0.47	1.50	3.08	0.53	0.56	0.39	0.26	0.91	0.90	0.12
40	2.28	0.29	0.77	0.45	0.24	0.71	1.23	0.31	0.45	0.25	0.14	0.84	0.85	0.14
100	2.14	2.91	2.36	2.11	0.83	1.65	1.18	1.60	1.31	1.17	1.26	0.86	0.76	0.18
63	0.27	0.22	0.26	0.22	0.19	0.00	0.33	0.17	0.15	0.13	0.12	0.00	0.68	0.19
74	3.37	1.41	1.18	0.96	0.81	1.48	1.95	0.81	0.69	0.56	0.47	0.80	0.65	0.19
70+76	4.61	0.85	0.90	0.94	0.54	3.46	2.70	0.50	0.53	0.55	0.34	1.92	0.62	0.19
66+95	12.75	3.54	3.10	3.77	2.46	13.21	7.25	2.01	1.76	2.14	1.45	7.22	0.69	0.19
91	2.01	1.76	1.34	1.52	1.16	3.52	1.14	0.98	0.75	0.85	0.66	2.01	0.73	0.18
56+60	2.98	0.41	0.39	0.48	0.31	2.70	1.79	0.25	0.24	0.30	0.20	1.69	0.55	0.18
92+84+89	4.59	4.72	2.95	3.12	2.19	8.77	2.71	2.77	1.74	1.83	1.29	5.33	0.61	0.19
101	4.05	2.34	1.65	2.58	1.76	9.05	2.49	1.45	1.01	1.59	1.08	5.58	0.49	0.18
99	2.59	2.34	1.80	1.94	1.47	3.73	1.62	1.46	1.12	1.21	0.92	2.46	0.45	0.17
83	0.39	0.26	0.17	0.23	0.47	0.64	0.25	0.18	0.17	0.15	0.33	0.39	0.44	0.17
97	0.86	0.35	0.12	0.42	0.34	1.84	0.54	0.22	0.10	0.28	0.22	1.06	0.42	0.16
81+87	1.59	0.92	0.55	0.97	0.63	4.60	1.02	0.59	0.36	0.63	0.41	3.55	0.36	0.15
85	0.63	0.24	0.04	0.20	0.18	2.56	0.40	0.15	0.06	0.14	0.14	2.59	0.38	0.15
136	0.68	0.70	0.28	0.50	0.73	2.35	0.43	0.43	0.24	0.31	0.55	1.71	0.50	0.18
110+77	3.82	2.09	1.47	2.37	1.80	8.47	2.49	1.37	0.96	1.54	1.17	5.47	0.32	0.13
82+151	1.03	0.53	0.18	0.43	0.46	1.91	0.67	0.34	0.15	0.28	0.32	1.13	0.40	0.16
135+144	0.74	0.60	0.25	0.47	0.40	1.78	0.51	0.39	0.20	0.32	0.26	1.04	0.39	0.15
107	0.27	0.22	0.09	0.13	0.12	0.48	0.21	0.16	0.08	0.09	0.08	0.39	0.21	0.09
149+123	1.23	0.67	0.36	0.74	0.43	2.36	0.85	0.46	0.26	0.51	0.32	1.45	0.17	0.08
118	1.68	0.77	0.50	0.84	0.47	2.88	1.14	0.53	0.35	0.57	0.35	1.80	0.19	0.09

Table A12 continued

	LBC1	AU	RT	MMR	ECC	UMBC	LBC1	AU	RT	MMR	ECC	UMBC	Average f_{eq}	f_{eq} uncertainty
PCB Congener	Air-phase PCB concentration (pg/m^3)						Uncertainty (pg/m^3)							
134	0.31	0.53	0.43	0.61	0.27	0.51	0.36	0.34	0.28	0.39	0.39	0.32	0.37	0.15
114+131	0.12	0.06	0.00	0.00	0.03	0.14	0.18	0.10	0.00	0.00	0.04	0.00	0.51	0.18
146	0.55	0.49	0.42	0.37	0.38	0.66	0.39	0.33	0.29	0.26	0.26	0.41	0.15	0.07
153	0.98	0.45	0.35	0.51	0.37	1.34	0.67	0.31	0.24	0.35	0.26	0.85	0.14	0.07
132	0.13	0.00	0.00	0.03	0.00	0.30	0.09	0.00	0.00	0.05	0.00	0.24	0.22	0.10
105	0.11	0.06	0.06	0.06	0.05	0.16	0.07	0.04	0.04	0.04	0.03	0.10	0.15	0.07
141	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.15
137+176+130	0.12	0.07	0.04	0.19	0.05	0.07	0.09	0.06	0.03	0.13	0.07	0.04	0.25	0.11
163+138	1.42	0.36	0.29	0.64	0.33	1.75	0.98	0.25	0.20	0.44	0.23	1.10	0.14	0.07
158	0.10	0.00	0.00	0.02	0.00	0.11	0.07	0.00	0.00	0.02	0.00	0.07	0.18	0.08
178+129	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.10
175	0.00	0.00	0.02	0.02	0.00	0.04	0.00	0.00	0.03	0.03	0.00	0.03	0.14	0.06
187+182	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.07
183	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.06
128	0.15	0.06	0.07	0.09	0.05	0.19	0.11	0.04	0.06	0.07	0.04	0.13	0.09	0.04
185	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.14	0.07
174	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.09
177	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.05
202+171+156	0.17	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.12	0.06
157+200	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.08	0.04
180	0.75	0.35	0.38	0.40	0.35	0.51	0.53	0.25	0.27	0.28	0.25	0.35	0.10	0.05
193	4.83	0.35	0.90	0.57	0.51	1.20	3.48	0.24	0.63	0.40	0.36	0.76	0.10	0.05
191	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02
199	0.03	0.02	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.00	0.00	0.00	0.06	0.03
170+190	0.09	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.07	0.03
198	0.05	0.00	0.00	0.00	0.01	0.03	0.03	0.00	0.00	0.00	0.01	0.06	0.06	0.03

Table A12 continued

	LBC1	AU	RT	MMR	ECC	UMBC	LBC1	AU	RT	MMR	ECC	UMBC	Average f_{eq}	f_{eq} uncertainty
PCB Congener	**Air-phase PCB concentration (pg/m^3)**						**Uncertainty (pg/m^3)**							
201	0.03	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.04	0.02
203+196	0.06	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.09	0.04
208+195	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.03
207	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01
194	0.31	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.01	0.00	0.00	0.03	0.02
205	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.04
206	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
209	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01

Notes:

- Average f_{eq} based on average sampling rate across the sites, average mass of samplers, and average deployment time.

Table A13. Air-phase concentrations of individual PCB congeners (pg/m^3) measured in the present study (Winter 2017/18)

	LBC1	AU	RT	MMR	ECC	UMBC	LBC1	AU	RT	MMR	ECC	UMBC	Average f_{eq}	f_{eq} uncertainty
PCB Congener	**Air-phase PCB concentration (pg/m^3)**						**Uncertainty (pg/m^3)**							
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
4+10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
7+9	7.83	0.00	0.00	0.00	0.00	1.39	4.01	0.00	0.00	0.00	0.00	0.74	1.00	0.00
6	9.85	0.00	0.00	0.00	0.00	1.91	6.05	0.00	0.00	0.00	0.00	0.00	1.00	0.00
8+5	57.94	0.00	0.00	0.00	0.00	0.00	29.73	0.00	0.00	0.00	0.00	0.00	1.00	0.00
19	3.84	0.00	0.00	0.00	0.00	0.00	2.06	0.00	0.00	0.00	0.00	0.00	1.00	0.00
12+13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
18	20.59	0.00	0.00	0.00	0.00	0.00	10.40	0.00	0.00	0.00	0.00	0.00	1.00	0.00
17+15	25.03	2.25	4.09	3.07	2.47	3.15	12.83	1.21	2.06	1.54	1.32	1.50	1.00	0.00
24+27	1.74	0.00	0.00	0.00	0.00	0.00	1.53	0.00	0.00	0.00	0.00	0.00	1.00	0.00
16+32	24.55	0.00	0.00	0.00	0.00	0.00	12.54	0.00	0.00	0.00	0.00	0.00	1.00	0.00
26	5.25	1.70	2.68	1.70	1.48	1.54	2.63	0.88	1.39	0.89	0.75	0.89	1.00	0.00
25	2.99	0.00	0.00	0.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	1.00	0.00
31	20.89	0.32	1.51	0.55	0.76	1.87	10.62	0.17	0.83	0.28	0.45	0.92	1.00	0.00
28	15.66	0.00	0.15	0.00	0.00	0.64	7.98	0.00	0.15	0.00	0.00	0.35	1.00	0.00
21+33+53	10.84	0.00	0.00	0.00	0.00	0.41	5.50	0.00	0.00	0.00	0.00	0.20	1.00	0.00
51	0.00	0.00	0.03	0.04	0.00	0.00	0.00	0.00	0.03	0.06	0.00	0.00	1.00	0.00
22	9.33	0.00	0.62	0.00	0.19	0.90	4.74	0.00	0.31	0.00	0.19	0.46	1.00	0.01
45	2.76	0.00	0.09	0.00	0.00	0.28	1.41	0.00	0.09	0.00	0.00	0.48	1.00	0.00
46	0.97	0.00	0.38	0.00	0.32	0.13	0.49	0.00	0.24	0.00	0.48	0.00	1.00	0.00
52+43	8.33	0.33	0.00	0.00	0.27	6.35	4.32	0.17	0.00	0.00	0.41	3.15	0.99	0.02
49	3.79	0.00	0.00	0.00	0.00	0.71	2.03	0.00	0.00	0.00	0.00	0.34	0.99	0.02
47	1.90	0.07	0.00	0.04	0.04	0.13	1.02	0.10	0.00	0.06	0.06	0.08	0.99	0.03
48	2.30	0.43	0.82	0.57	0.49	0.50	1.21	0.27	0.46	0.29	0.33	0.23	0.99	0.02
44	5.14	0.00	0.00	0.00	0.00	2.35	2.67	0.00	0.00	0.00	0.00	1.12	0.98	0.03

Table A13 continued

	LBC1	AU	RT	MMR	ECC	UMBC	LBC1	AU	RT	MMR	ECC	UMBC	Average f_{eq}	f_{eq} uncertainty
PCB Congener	**Air-phase PCB concentration (pg/m^3)**						**Uncertainty (pg/m^3)**							
37	1.92	1.57	1.32	1.07	1.47	0.00	0.99	1.01	0.68	0.55	0.98	0.00	0.93	0.10
42	2.97	0.42	0.33	0.32	0.10	0.61	1.52	0.32	0.17	0.20	0.10	0.40	0.98	0.04
41+71	2.76	0.00	0.00	0.00	1.78	0.00	1.41	0.00	0.00	0.00	2.68	0.00	0.96	0.06
64	2.88	0.37	0.39	0.30	0.36	0.96	1.48	0.24	0.20	0.21	0.22	0.46	0.98	0.04
40	1.10	0.00	0.04	0.00	0.12	0.44	0.55	0.00	0.06	0.00	0.12	0.25	0.96	0.06
100	1.07	0.85	0.71	0.75	1.14	0.84	0.56	0.44	0.37	0.40	0.90	0.42	0.91	0.11
63	0.33	0.02	0.05	0.14	0.09	0.19	0.19	0.02	0.05	0.11	0.09	0.12	0.86	0.14
74	1.86	0.42	0.35	0.55	0.12	1.68	1.01	0.26	0.19	0.34	0.18	0.93	0.84	0.15
70+76	2.64	0.56	0.36	0.76	0.43	3.54	1.51	0.30	0.21	0.43	0.26	1.93	0.81	0.16
66+95	6.97	1.98	1.30	2.42	1.61	10.87	3.87	1.04	0.74	1.30	0.89	5.80	0.87	0.14
91	1.13	1.10	0.74	1.02	0.82	2.04	0.60	0.57	0.41	0.53	0.43	1.07	0.90	0.12
56+60	2.30	0.82	0.49	0.55	0.45	2.63	1.33	0.46	0.28	0.31	0.25	1.43	0.75	0.18
92+84+89	2.85	3.67	2.07	2.65	2.35	7.72	1.59	2.02	1.14	1.45	1.32	4.19	0.80	0.16
101	2.58	1.94	1.16	2.35	1.70	8.55	1.52	1.10	0.66	1.36	0.96	4.96	0.69	0.19
99	1.42	1.26	0.83	1.23	1.02	3.03	0.84	0.73	0.48	0.72	0.59	1.81	0.65	0.19
83	0.33	0.33	0.32	0.42	0.50	0.75	0.20	0.19	0.20	0.26	0.32	0.69	0.64	0.19
97	0.63	0.40	0.22	0.46	0.35	2.32	0.39	0.24	0.14	0.30	0.22	1.53	0.61	0.19
81+87	1.00	0.68	0.38	0.80	0.49	3.61	0.65	0.41	0.24	0.51	0.30	2.23	0.54	0.18
85	0.53	0.23	0.07	0.20	0.11	1.54	0.34	0.14	0.08	0.14	0.11	0.98	0.56	0.18
136	0.46	0.72	0.51	0.54	0.56	1.27	0.28	0.41	0.38	0.31	0.47	0.84	0.71	0.18
110+77	2.82	2.16	1.21	2.24	1.58	8.41	1.82	1.34	0.77	1.41	1.02	5.36	0.49	0.18
82+151	0.85	0.69	0.27	0.56	0.50	1.50	0.52	0.41	0.21	0.35	0.38	1.58	0.59	0.19
135+144	0.60	0.80	0.38	0.61	0.52	1.48	0.36	0.48	0.25	0.38	0.36	1.00	0.58	0.19
107	0.20	0.29	0.11	0.16	0.14	0.62	0.13	0.19	0.07	0.11	0.09	0.39	0.33	0.14
149+123	0.87	0.73	0.37	0.87	0.59	2.40	0.60	0.48	0.25	0.59	0.39	1.61	0.28	0.12
118	1.44	0.83	0.49	1.18	0.66	3.46	1.00	0.54	0.32	0.81	0.44	2.36	0.31	0.13

Table A13 continued

	LBC1	AU	RT	MMR	ECC	UMBC	LBC1	AU	RT	MMR	ECC	UMBC	Average f_{eq}	f_{eq} uncertainty
PCB Congener	**Air-phase PCB concentration (pg/m^3)**						**Uncertainty (pg/m^3)**							
134	0.43	0.27	0.06	0.07	0.19	0.38	0.27	0.16	0.04	0.04	0.19	0.48	0.56	0.18
114+131	0.52	0.69	0.61	0.63	0.54	1.22	0.36	0.39	0.35	0.37	0.32	0.65	0.71	0.18
146	0.37	0.34	0.29	0.35	0.34	0.52	0.26	0.22	0.19	0.24	0.23	0.34	0.25	0.11
153	0.75	0.45	0.33	0.72	0.45	1.73	0.54	0.30	0.22	0.51	0.31	1.15	0.23	0.10
132	0.66	0.37	0.35	0.66	0.36	1.55	0.45	0.24	0.23	0.45	0.24	0.98	0.36	0.14
105	0.10	0.07	0.06	0.08	0.06	0.20	0.07	0.05	0.04	0.05	0.04	0.14	0.25	0.11
141	0.00	0.00	0.00	0.00	0.00	0.68	0.00	0.00	0.00	0.00	0.00	0.57	0.57	0.19
137+176+130	0.15	0.36	0.56	0.94	1.78	0.28	0.19	0.23	0.35	0.61	1.13	0.48	0.40	0.16
163+138	1.33	0.66	0.53	1.20	0.67	3.41	0.97	0.44	0.37	0.85	0.45	2.37	0.24	0.11
158	0.19	0.08	0.09	0.15	0.08	0.79	0.13	0.05	0.08	0.11	0.06	0.52	0.29	0.13
178+129	0.03	0.00	0.01	0.03	0.00	0.39	0.05	0.00	0.02	0.03	0.00	0.24	0.37	0.15
175	0.01	0.00	0.02	0.01	0.00	0.25	0.01	0.00	0.03	0.02	0.00	0.20	0.23	0.10
187+182	0.07	0.00	0.01	0.08	0.03	0.27	0.08	0.00	0.01	0.07	0.02	0.17	0.26	0.11
183	0.04	0.00	0.00	0.03	0.00	0.13	0.06	0.00	0.00	0.05	0.00	0.08	0.22	0.10
128	0.19	0.09	0.04	0.10	0.05	0.35	0.16	0.07	0.03	0.11	0.05	0.24	0.15	0.07
185	0.05	0.02	0.02	0.04	0.01	0.06	0.05	0.01	0.01	0.03	0.01	0.04	0.24	0.11
174	0.05	0.00	0.00	0.07	0.01	0.18	0.07	0.00	0.00	0.05	0.01	0.11	0.34	0.14
177	0.01	0.00	0.00	0.00	0.00	0.09	0.02	0.00	0.00	0.00	0.00	0.05	0.17	0.08
202+171+156	0.54	0.04	0.02	0.08	0.02	0.29	0.45	0.05	0.03	0.06	0.02	0.19	0.20	0.09
157+200	0.02	0.00	0.00	0.02	0.00	0.08	0.03	0.00	0.00	0.01	0.00	0.05	0.15	0.07
180	0.56	0.31	0.27	0.34	0.29	0.37	0.43	0.21	0.18	0.24	0.20	0.26	0.17	0.08
193	7.16	0.00	0.00	1.04	1.06	1.41	4.89	0.00	0.00	0.71	0.72	1.03	0.17	0.08
191	0.02	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.08	0.04
199	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.11	0.05
170+190	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.06
198	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.05

Table A13 continued

	LBC1	AU	RT	MMR	ECC	UMBC	LBC1	AU	RT	MMR	ECC	UMBC	Average f_{eq}	f_{eq} uncertainty
PCB Congener	**Air-phase PCB concentration (pg/m^3)**						**Uncertainty (pg/m^3)**							
201	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.03
203+196	0.07	0.00	0.00	0.00	0.00	0.10	0.08	0.00	0.00	0.00	0.00	0.09	0.15	0.07
208+195	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.05
207	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.02
194	0.70	0.36	0.21	0.04	0.05	0.04	0.53	0.55	0.27	0.03	0.04	0.03	0.06	0.03
205	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.06
206	0.02	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.02	0.01
209	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02

Notes:

- Average f_{eq} based on average sampling rate across the sites, average mass of samplers, and average deployment time.

Table A14. Average dissolved concentration of individual PCB congeners (ng/m^3) measured in the Anacostia River

	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18
PCB Congener	**Dissolved PCBs in surface water (ng/m^3)**				**Uncertainty (ng/m^3)**			
1	0.00	0.00	0.00	40.78	0.00	0.00	0.00	88.87
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4+10	33.73	20.29	55.04	0.00	96.90	61.71	120.38	0.00
7+9	0.00	0.53	0.44	0.00	0.00	1.62	0.97	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8+5	5.63	9.27	6.48	0.00	10.94	28.19	14.33	0.00
19	6.80	12.51	9.37	5.04	4.36	8.61	9.15	2.75
12+13	0.99	0.51	0.00	0.00	1.32	1.55	0.00	0.00
18	22.87	29.51	30.03	12.81	18.89	34.15	47.34	8.17
17+15	42.54	45.31	39.79	22.96	26.72	43.17	49.08	12.68
24+27	4.71	6.76	4.84	2.77	3.84	4.52	3.81	1.62
16+32	42.47	58.91	45.17	23.57	29.91	49.61	54.01	13.00
26	9.19	9.19	9.55	5.57	6.57	9.00	12.21	3.05
25	4.31	3.39	3.54	2.05	3.55	4.05	5.44	1.15
31	23.76	26.29	23.61	13.33	17.41	22.03	28.82	7.34
28	34.03	35.42	28.25	19.37	25.56	26.97	28.11	11.14
21+33+53	8.40	9.96	10.28	2.18	6.45	6.97	14.32	1.99
51	20.03	25.09	16.74	7.95	12.47	13.15	8.73	5.73
22	14.38	13.63	12.80	6.63	10.46	13.76	17.00	3.95
45	12.40	10.77	7.68	2.95	10.31	8.35	7.21	1.65
46	6.33	5.28	5.07	1.95	4.39	4.46	4.70	1.16
52+43	60.45	68.74	61.89	28.06	33.73	41.58	54.00	15.70
49	23.20	25.28	20.79	12.54	14.50	14.69	19.61	7.18
47	25.51	28.10	22.73	7.06	15.71	16.35	15.08	4.48
48	4.95	4.06	3.88	3.20	3.32	3.15	4.00	1.89
44	37.63	42.15	35.70	19.03	23.67	29.01	32.38	10.55

Table A14 continued

	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18
PCB Congener	**Dissolved PCBs in surface water (ng/m^3)**				**Uncertainty (ng/m^3)**			
37	10.51	10.43	10.07	5.73	7.27	6.98	7.01	3.48
42	13.94	15.68	13.43	8.22	9.15	10.94	12.01	4.82
41+71	18.80	20.32	19.52	8.16	11.42	12.76	17.19	4.86
64	10.64	11.40	10.34	5.46	7.34	6.94	8.55	3.28
40	20.98	25.42	17.62	8.81	17.12	16.87	12.75	5.90
100	4.10	1.48	1.14	5.05	3.91	1.76	1.09	3.95
63	1.77	1.20	1.19	0.58	1.40	0.78	0.87	0.57
74	11.92	9.64	7.51	6.56	9.42	6.48	5.31	4.83
70+76	13.67	9.84	10.07	5.53	8.31	6.05	8.89	3.62
66+95	52.91	45.84	43.67	17.52	31.29	27.27	36.49	13.33
91	10.40	8.84	8.02	2.96	6.10	5.34	6.34	2.28
56+60	15.47	12.94	8.79	6.46	9.80	8.18	9.43	4.11
92+84+89	53.41	41.36	21.12	51.92	43.75	26.47	17.46	38.82
101	26.57	17.55	18.86	9.09	17.69	12.11	16.54	6.43
99	10.71	6.46	6.12	4.49	7.10	4.48	5.06	3.10
83	5.47	3.39	2.09	1.33	4.47	2.75	1.64	1.03
97	6.37	4.86	4.56	2.30	4.25	3.37	3.70	1.57
81+87	16.07	11.06	8.72	4.97	10.42	7.27	6.79	3.55
85	6.19	4.65	3.62	2.54	4.11	3.08	2.79	1.71
136	7.41	5.81	5.33	3.01	4.39	4.00	4.57	2.01
110+77	37.30	21.21	20.20	13.91	25.30	14.91	16.40	20.31
82+151	10.69	6.31	6.59	4.37	6.97	4.42	5.58	3.09
135+144	5.84	2.44	2.90	2.41	4.34	1.98	2.52	1.83
107	1.96	0.59	0.78	0.47	1.70	0.53	0.67	0.37
149+123	13.71	5.72	7.02	5.97	10.36	4.60	6.03	4.58
118	14.06	5.16	6.37	5.31	12.47	4.60	5.22	3.82

Table A14 continued

	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18
PCB Congener	**Dissolved PCBs in surface water (ng/m^3)**				**Uncertainty (ng/m^3)**			
134	8.25	2.41	0.65	0.16	19.01	3.75	0.63	36.41
114+131	5.19	1.31	1.16	8.01	4.65	1.21	1.15	6.44
146	4.81	1.22	1.54	1.33	3.66	1.07	1.23	0.94
153	10.57	3.41	4.63	5.04	8.75	3.07	3.78	3.60
132	8.10	3.65	4.18	2.94	5.86	2.88	3.61	2.26
105	0.98	0.39	0.41	0.36	0.82	0.34	0.33	0.28
141	1.72	0.62	0.72	0.20	1.36	0.57	0.71	0.21
137+176+130	1.63	0.47	0.52	0.78	1.36	0.39	0.48	1.40
163+138	17.89	6.25	8.10	6.04	15.76	5.83	6.79	4.26
158	2.18	0.62	0.74	0.02	2.17	0.65	0.63	0.02
178+129	1.89	0.57	0.52	0.51	1.86	0.59	0.51	0.37
175	0.18	0.04	0.06	Not reported	0.13	0.04	0.06	
187+182	2.38	0.76	0.96	Not reported	1.83	0.86	0.86	
183	1.03	0.33	0.49	0.00	0.75	0.35	0.45	0.00
128	2.63	0.99	1.09	2.63	2.10	0.88	0.93	0.65
185	0.23	0.08	0.11	Not reported	0.17	0.08	0.10	
174	2.11	0.70	0.99	Not reported	1.55	0.67	0.96	
177	1.37	0.47	0.66	Not reported	1.00	0.45	0.61	
202+171+156	0.86	0.65	0.15	Not reported	1.40	0.90	0.28	
157+200	0.51	0.08	0.10	Not reported	0.51	0.12	0.11	
180	2.77	0.90	1.44	Not reported	2.09	1.02	1.12	
193	0.00	1.06	Not reported	Not reported	0.00	1.20		
191	0.00	0.00	Not reported	Not reported	0.00	0.00		
199	0.10	0.04	Not reported	Not reported	0.15	0.07		
170+190	0.95	0.38	Not reported	Not reported	0.72	0.43		
198	0.08	0.01	Not reported	Not reported	0.06	0.01		

Table A14 continued

	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18
PCB Congener	**Dissolved PCBs in surface water (ng/m^3)**				**Uncertainty (ng/m^3)**			
201	0.41	0.51	Not reported	Not reported	0.29	0.98		
203+196	Not reported	0.43	Not reported	Not reported		0.81		
208+195	0.07	0.03	Not reported	Not reported	0.05	0.04		
207	Not reported	0.01	Not reported	Not reported		0.02		
194	Not reported	0.08	Not reported	Not reported		0.18		
205	Not reported	0.00	Not reported	Not reported		0.00		
206	Not reported	0.01	Not reported	Not reported		0.03		
209	Not reported	0.00	Not reported	Not reported		0.00		

Notes:

- N/A: Congener detected in less than 2 individual samples
- Not reported: Values not reported as $f_{eq} < 0.1$ in most samples

Table A15. Average f_{eq} for individual PCB congeners for water samplers

	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18
PCB Congener	**Average f_{eq} for water samplers**				**Uncertainty in f_{eq}**			
1	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
3	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
4+10	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
7+9	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
6	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
8+5	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
19	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
12+13	1.00	1.00	0.99	1.00	0.00	0.00	0.01	0.01
18	1.00	1.00	1.00	1.00	0.00	0.00	0.01	0.01
17+15	1.00	1.00	0.99	1.00	0.00	0.00	0.02	0.01
24+27	1.00	1.00	0.98	0.99	0.01	0.01	0.04	0.03
16+32	1.00	1.00	0.99	1.00	0.00	0.00	0.02	0.01
26	0.96	0.98	0.91	0.87	0.06	0.03	0.11	0.13
25	0.96	0.98	0.90	0.87	0.07	0.04	0.11	0.14
31	0.96	0.98	0.90	0.87	0.07	0.04	0.11	0.14
28	0.96	0.98	0.90	0.87	0.07	0.04	0.11	0.14
21+33+53	0.98	0.99	0.94	0.93	0.04	0.02	0.09	0.10
51	0.97	0.99	0.92	0.89	0.05	0.03	0.10	0.12
22	0.98	0.99	0.94	0.92	0.04	0.02	0.09	0.10
45	0.99	0.99	0.95	0.95	0.03	0.02	0.07	0.08
46	0.99	0.99	0.95	0.95	0.03	0.02	0.07	0.08
52+43	0.92	0.96	0.84	0.76	0.11	0.06	0.15	0.17
49	0.89	0.95	0.81	0.71	0.12	0.08	0.16	0.18
47	0.89	0.95	0.81	0.71	0.12	0.08	0.16	0.18
48	0.92	0.96	0.85	0.78	0.10	0.06	0.15	0.17
44	0.93	0.97	0.87	0.80	0.09	0.05	0.14	0.16

Table A15 continued

	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18
PCB Congener	**Average f_{eq} for water samplers**				**Uncertainty in f_{eq}**			
37	0.90	0.95	0.82	0.73	0.12	0.07	0.16	0.18
42	0.93	0.97	0.86	0.80	0.10	0.06	0.14	0.17
41+71	0.90	0.95	0.82	0.73	0.12	0.07	0.16	0.18
64	0.83	0.92	0.74	0.61	0.15	0.10	0.18	0.19
40	0.96	0.98	0.91	0.87	0.06	0.03	0.11	0.13
100	0.63	0.79	0.55	0.36	0.19	0.17	0.18	0.15
63	0.68	0.83	0.59	0.41	0.19	0.16	0.19	0.16
74	0.66	0.81	0.57	0.39	0.19	0.16	0.19	0.15
70+76	0.68	0.83	0.59	0.42	0.19	0.15	0.19	0.16
66+95	0.68	0.83	0.59	0.42	0.19	0.15	0.19	0.16
91	0.71	0.85	0.62	0.45	0.18	0.15	0.19	0.17
56+60	0.72	0.85	0.63	0.46	0.18	0.14	0.19	0.17
92+84+89	0.69	0.83	0.60	0.43	0.19	0.15	0.19	0.16
101	0.52	0.71	0.45	0.26	0.18	0.18	0.17	0.11
99	0.51	0.70	0.44	0.25	0.18	0.18	0.17	0.11
83	0.61	0.78	0.53	0.34	0.19	0.17	0.18	0.14
97	0.59	0.76	0.51	0.32	0.19	0.17	0.18	0.13
81+87	0.56	0.74	0.48	0.30	0.18	0.18	0.17	0.13
85	0.58	0.75	0.50	0.31	0.19	0.18	0.18	0.13
136	0.64	0.80	0.56	0.37	0.19	0.16	0.18	0.15
110+77	0.49	0.68	0.42	0.24	0.18	0.19	0.16	0.11
82+151	0.49	0.68	0.42	0.24	0.18	0.19	0.16	0.11
135+144	0.34	0.54	0.29	0.13	0.14	0.18	0.13	0.06
107	0.31	0.51	0.27	0.12	0.13	0.18	0.12	0.06
149+123	0.31	0.51	0.27	0.12	0.13	0.18	0.12	0.06
118	0.29	0.49	0.26	0.11	0.13	0.18	0.11	0.05

Table A15 continued

	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18
PCB Congener	**Average f_{eq} for water samplers**				**Uncertainty in f_{eq}**			
134	0.40	0.60	0.35	0.17	0.16	0.19	0.14	0.08
114+131	0.36	0.56	0.31	0.15	0.15	0.18	0.13	0.07
146	0.23	0.41	0.20	0.07	0.10	0.16	0.09	0.04
153	0.21	0.39	0.19	0.07	0.10	0.15	0.09	0.03
132	0.38	0.59	0.33	0.16	0.15	0.19	0.14	0.08
105	0.34	0.54	0.30	0.14	0.14	0.18	0.13	0.06
141	0.26	0.45	0.22	0.09	0.11	0.17	0.10	0.04
137+176+130	0.27	0.46	0.23	0.09	0.12	0.17	0.10	0.05
163+138	0.22	0.40	0.19	0.07	0.10	0.16	0.09	0.03
158	0.18	0.34	0.16	0.05	0.08	0.14	0.07	0.03
178+129	0.21	0.39	0.18	0.07	0.09	0.15	0.08	0.03
175	0.13	0.28	0.12	0.04	0.06	0.12	0.06	0.02
187+182	0.13	0.27	0.12	0.03	0.06	0.12	0.06	0.02
183	0.13	0.27	0.11	0.03	0.06	0.12	0.06	0.02
128	0.29	0.49	0.26	0.11	0.13	0.18	0.11	0.05
185	0.15	0.30	0.13	0.04	0.07	0.13	0.06	0.02
174	0.15	0.30	0.13	0.04	0.07	0.13	0.06	0.02
177	0.16	0.32	0.14	0.05	0.07	0.13	0.07	0.02
202+171+156	0.13	0.28	0.12	0.04	0.06	0.12	0.06	0.02
157+200	0.12	0.26	0.11	0.03	0.06	0.11	0.05	0.02
180	0.09	0.21	0.09	0.02	0.04	0.10	0.04	0.01
193	0.07	0.17	0.06	0.01	0.03	0.08	0.03	0.01
191	0.06	0.16	0.06	0.01	0.03	0.07	0.03	0.01
199	0.13	0.27	0.11	0.03	0.06	0.12	0.06	0.02
170+190	0.09	0.21	0.08	0.02	0.04	0.10	0.04	0.01
198	0.05	0.14	0.05	0.01	0.03	0.07	0.03	0.01

Table A15 continued

	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18
PCB Congener	**Average f_{eq} for water samplers**				**Uncertainty in f_{eq}**			
201	0.05	0.14	0.05	0.01	0.03	0.07	0.03	0.01
203+196	0.05	0.14	0.05	0.01	0.03	0.06	0.02	0.01
208+195	0.05	0.14	0.05	0.01	0.03	0.07	0.03	0.01
207	0.04	0.12	0.04	0.01	0.02	0.06	0.02	0.00
194	0.04	0.11	0.04	0.01	0.02	0.05	0.02	0.00
205	0.03	0.08	0.03	0.00	0.01	0.04	0.01	0.00
206	0.02	0.07	0.02	0.00	0.01	0.03	0.01	0.00
209	0.02	0.06	0.02	0.00	0.01	0.03	0.01	0.00

Notes:

- Average f_{eq} based on k_e (day^{-1}) values estimated for target analytes using average measured k_e (day^{-1}) for PRCs from multiple samples, average deployment time, and average mass of sampler

Table A16. Water to air diffusive flux (ng/m^2/day) across the seasons for PCB congeners

	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18
PCB Congener	**Flux from water to air (ng/m^2/day)**				**Uncertainty in flux (ng/m^2/day)**			
1	0.00	0.00	0.00	9.32	0.00	0.00	0.00	20.51
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4+10	7.94	4.93	8.96	0.00	22.92	15.05	19.77	0.00
7+9	0.00	0.14	-0.30	0.00	0.00	0.41	0.44	0.00
6	0.00	0.00	-0.06	0.00	0.00	0.00	0.17	0.00
8+5	1.30	2.22	0.37	0.00	2.56	6.79	2.33	0.00
19	1.54	2.88	1.45	1.01	1.09	2.19	1.49	0.63
12+13	0.22	-0.02	0.00	0.00	0.30	0.46	0.00	0.00
18	5.24	6.99	4.72	2.60	4.60	8.36	7.58	1.83
17+15	9.28	10.07	5.72	4.17	6.57	10.44	7.39	2.77
24+27	1.12	1.61	0.81	0.60	0.97	1.21	0.70	0.39
16+32	9.48	13.48	6.68	4.62	7.27	12.21	8.26	2.90
26	2.01	2.01	1.52	1.10	1.72	2.34	2.24	0.76
25	1.03	0.80	0.58	0.44	0.90	1.03	0.96	0.28
31	5.68	6.33	3.80	2.82	4.50	5.76	5.12	1.80
28	8.03	8.55	4.61	4.08	6.49	7.05	4.88	2.65
21+33+53	1.91	2.30	1.51	0.43	1.57	1.79	2.22	0.42
51	4.46	5.75	2.61	1.59	3.08	3.48	1.59	1.24
22	3.13	3.02	1.67	1.24	2.49	3.31	2.46	0.84
45	2.67	2.33	1.08	0.58	2.41	2.03	1.15	0.37
46	1.31	1.12	0.64	0.33	0.99	1.03	0.66	0.23
52+43	13.48	15.58	9.32	5.55	8.54	10.66	8.87	3.53
49	5.22	5.87	3.22	2.53	3.62	3.84	3.28	1.63
47	5.66	6.42	3.42	1.39	3.88	4.22	2.54	0.97
48	0.95	0.69	0.50	0.56	0.79	0.79	0.61	0.40
44	7.93	9.08	4.64	3.45	5.53	6.94	4.58	2.17

Table A16 continued

	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18
PCB Congener	**Flux from water to air (ng/m^2/day)**				**Uncertainty in flux (ng/m^2/day)**			
37	2.29	1.81	1.26	0.91	1.73	1.80	1.04	0.71
42	2.87	3.35	1.57	1.43	2.09	2.58	1.64	0.96
41+71	3.95	4.44	2.57	1.43	2.68	3.10	2.43	0.99
64	2.43	2.61	1.64	1.10	1.83	1.81	1.51	0.75
40	4.55	5.69	2.50	1.67	3.96	4.17	2.00	1.23
100	0.84	0.19	0.03	1.00	0.92	0.43	0.25	0.87
63	0.40	0.26	0.17	0.11	0.34	0.20	0.15	0.12
74	2.64	2.12	1.08	1.30	2.28	1.65	0.92	1.05
70+76	2.94	2.10	1.39	1.02	2.03	1.53	1.38	0.76
66+95	11.79	10.29	6.67	3.42	7.93	7.10	6.21	2.89
91	2.15	1.78	1.09	0.51	1.47	1.31	1.04	0.47
56+60	3.19	2.69	1.05	1.07	2.24	1.95	1.23	0.79
92+84+89	10.79	8.33	2.52	9.16	9.65	6.26	2.55	7.54
101	5.57	3.62	2.71	1.65	4.20	2.94	2.70	1.35
99	2.17	1.24	0.72	0.78	1.67	1.08	0.82	0.64
83	1.09	0.67	0.23	0.19	0.96	0.62	0.22	0.19
97	1.23	0.94	0.54	0.36	0.94	0.77	0.50	0.29
81+87	3.02	2.06	0.95	0.77	2.27	1.66	0.88	0.64
85	1.18	0.89	0.41	0.41	0.89	0.70	0.36	0.31
136	1.39	1.07	0.60	0.46	0.96	0.88	0.61	0.37
110+77	7.28	4.09	2.34	2.25	5.59	3.42	2.23	3.58
82+151	2.22	1.30	0.91	0.78	1.63	1.05	0.86	0.62
135+144	1.23	0.49	0.46	0.46	1.02	0.47	0.45	0.39
107	0.41	0.11	0.10	0.07	0.38	0.12	0.10	0.07
149+123	2.61	1.05	0.82	0.96	2.20	1.01	0.80	0.83
118	2.88	0.99	0.85	0.94	2.81	1.07	0.80	0.77

Table A16 continued

	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18
PCB Congener	**Flux from water to air (ng/m^2/day)**				**Uncertainty in flux (ng/m^2/day)**			
134	1.70	0.49	0.06	0.02	4.05	0.83	0.11	6.92
114+131	1.08	0.28	0.21	1.65	1.09	0.29	0.22	1.43
146	0.82	0.21	0.18	0.22	0.83	0.25	0.19	0.19
153	2.05	0.63	0.64	0.90	1.94	0.70	0.59	0.72
132	1.56	0.70	0.51	0.45	1.24	0.63	0.47	0.40
105	0.17	0.07	0.04	0.05	0.17	0.07	0.04	0.05
141	0.39	0.14	0.14	0.04	0.33	0.14	0.14	0.05
137+176+130	0.31	0.07	0.08	0.11	0.30	0.09	0.08	0.27
163+138	3.47	1.16	1.10	1.02	3.32	1.26	1.01	0.82
158	0.47	0.13	0.13	0.00	0.50	0.15	0.12	0.01
178+129	0.39	0.11	0.09	0.10	0.41	0.13	0.09	0.08
175	0.04	0.01	0.01	N/A	0.03	0.01	0.01	
187+182	0.49	0.15	0.17	N/A	0.42	0.19	0.16	
183	0.22	0.07	0.09	N/A	0.17	0.08	0.08	0.00
128	0.43	0.15	0.09	0.11	0.39	0.17	0.09	0.19
185	0.04	0.01	0.02	N/A	0.04	0.02	0.02	
174	0.45	0.15	0.18	N/A	0.36	0.15	0.19	
177	0.27	0.09	0.09	N/A	0.22	0.10	0.09	
202+171+156	0.17	0.13	0.02	N/A	0.29	0.19	0.05	
157+200	0.10	0.01	0.01	N/A	0.12	0.03	0.03	
180	0.54	0.17	0.24	N/A	0.48	0.23	0.22	
193	-0.09	0.20	N/A	N/A	0.10	0.28		
191	0.00	0.00	N/A	N/A	0.00	0.00		
199	0.02	0.00	N/A	N/A	0.03	0.02		
170+190	0.19	0.07	N/A	N/A	0.16	0.10		
198	0.02	0.00	N/A	N/A	0.01	0.00		

Table A16 continued

	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18	Spring 2017	Summer 2017	Fall 2017	Winter 2017/18
PCB Congener	**Flux from water to air (ng/m²/day)**				**Uncertainty in flux (ng/m²/day)**			
201	0.07	0.09	N/A	N/A	0.07	0.21		
203+196	N/A	0.09	N/A	N/A		0.18		
208+195	0.01	0.01	N/A	N/A	0.01	0.01		
207	0.00	0.00	N/A	N/A	0.00	0.00		
194	N/A	0.01	N/A	N/A		0.04		
205	N/A	N/A	N/A	N/A				
206	N/A	0.00	N/A	N/A		0.01		
209	N/A	N/A	N/A	N/A				

Notes:

- N/A: No flux values calculated for congener as water $f_{eq} < 0.1$

Table A17. Contribution of uncertainties in v_{AW}, C_W, C_A, and K_{AW} to the uncertainty in ∑PCB flux

	Average % contribution to uncertainty in ∑PCB flux			
	$\mathbf{v_{AW}}$	$\mathbf{C_W}$	$\mathbf{C_A}$	$\mathbf{K_{AW}}$
Spring 2017	13%	85%	1.0%	0.7%
Summer 2017	9.4%	87%	2.3%	0.9%
Fall 2017	8.3%	86%	4.0%	1.5%
Winter 2017/18	15%	84%	0.9%	0.8%

Table A18. Dissolved and air-phase ∑PCB concentrations reported at various sites in the United States

Site	Dissolved ∑PCBs (ng/L)	Air-phase ∑PCBs (pg/m^3)	Reference
Anacostia River	0.38-1.9	28-5400	Present Study
Raritan Bay	1.4-1.8	472-1865	Totten et al. (2001)
New York Harbor	3.5-4.2	2789-3502	Totten et al. (2001)
Indiana Harbor	9-18	780-6800	Martinez et al. (2019)
Northern Chesapeake Bay	0.246-0.94	5.1-370	Bamford et al. (2002)
Baltimore Harbor	0.1-1.52	67-1400	Bamford et al. (2002)
Lower Great Lakes	0.0015-0.105	7.7-634	Liu et al. (2016a)
Delaware River	0.42-1.65	113-1350	Rowe et al. (2007)
Hudson River Estuary	0.37-1.6	180-3200	Yan et al. (2008)

Table A19. Comparison of ∑PCB water-air diffusive fluxes based on PE-based partitioning coefficients to those based on Henry's Law constant

	Air-water exchange flux (∑PCBs, $ng/m^2/day$)		**Air-water transfer rate (∑PCBs, g/day)**	
	K_{AW} calculated as K_{PE-W}/K_{PE-A}	**K_{AW} calculated using H_C**	**K_{AW} calculated as K_{PE-W}/K_{PE-A}**	**K_{AW} calculated using H_C**
Spring 2017	200 ± 35	220 ± 38	0.68 ± 0.12	0.75 ± 0.13
Summer 2017	180 ± 33	200 ± 36	0.63 ± 11	0.68 ± 0.12
Fall 2017	107 ± 29	180 ± 46	0.37 ± 0.10	0.61 ± 0.16
Winter 2017/18	87 ± 25	104 ± 28	0.30 ± 0.09	0.36 ± 0.10
Annual Air-Water Transfer Rate (∑PCBs, g/year)			**180 ± 19**	**220 ± 23**

Table A20. Comparison of ∑PCB concentrations in surface water and air-phase, and water-air exchange flux based on methods used for reporting concentrations below MDL

	Spring 2017		**Winter 2017**	
	Concentrations below MDL set to zero	**Concentrations below MDL set to 1/2 MDL**	**Concentrations below MDL set to zero**	**Concentrations below MDL set to 1/2 MDL**
Average C_W in Anacostia River (ng/L)	0.92	0.92	0.46	0.46
Average C_A over Anacostia River (pg/m^3)	117	119	32	34
Flux ($ng/m^2/day$)	+198	+198	+87	+87

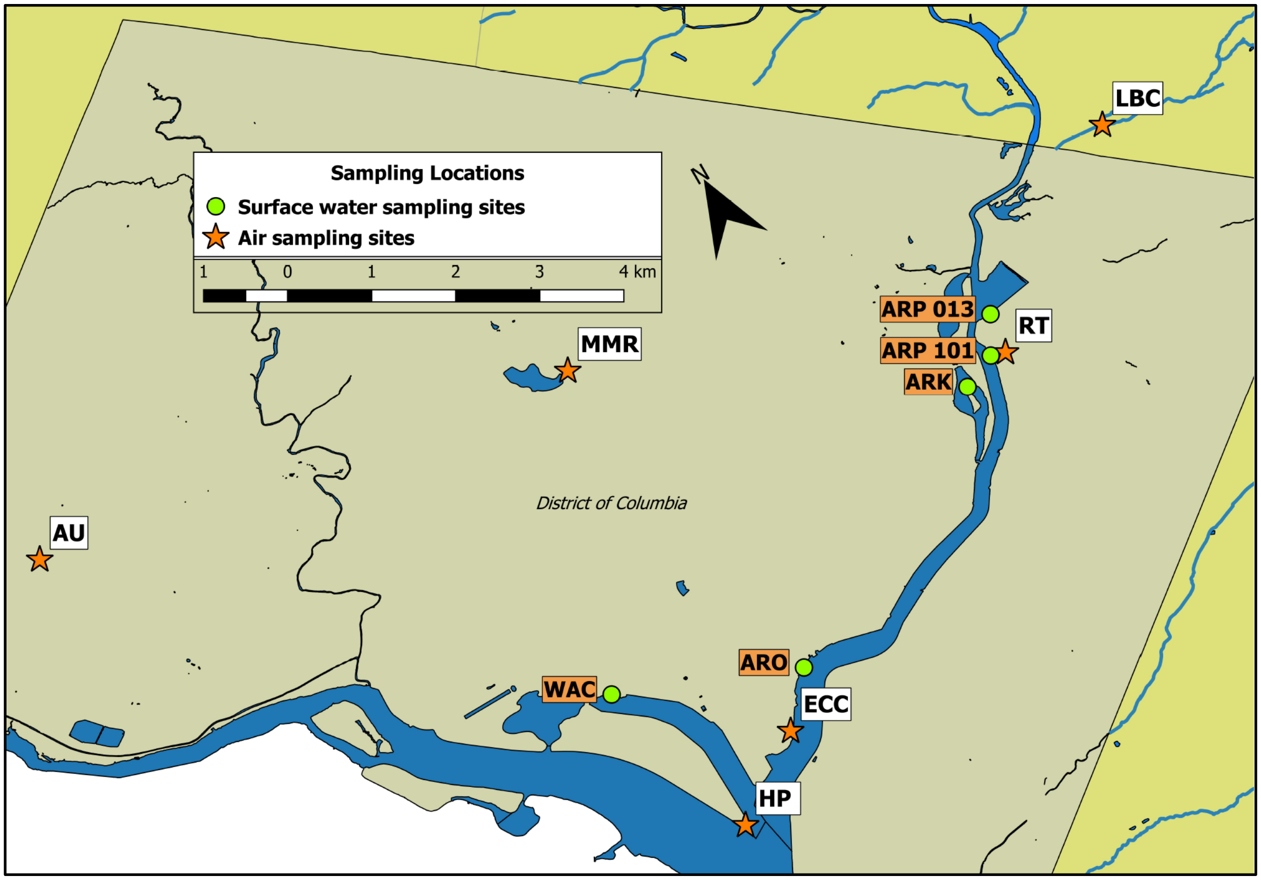

Figure A1. Surface water sampling locations along the Anacostia River and air sampling locations in the watershed

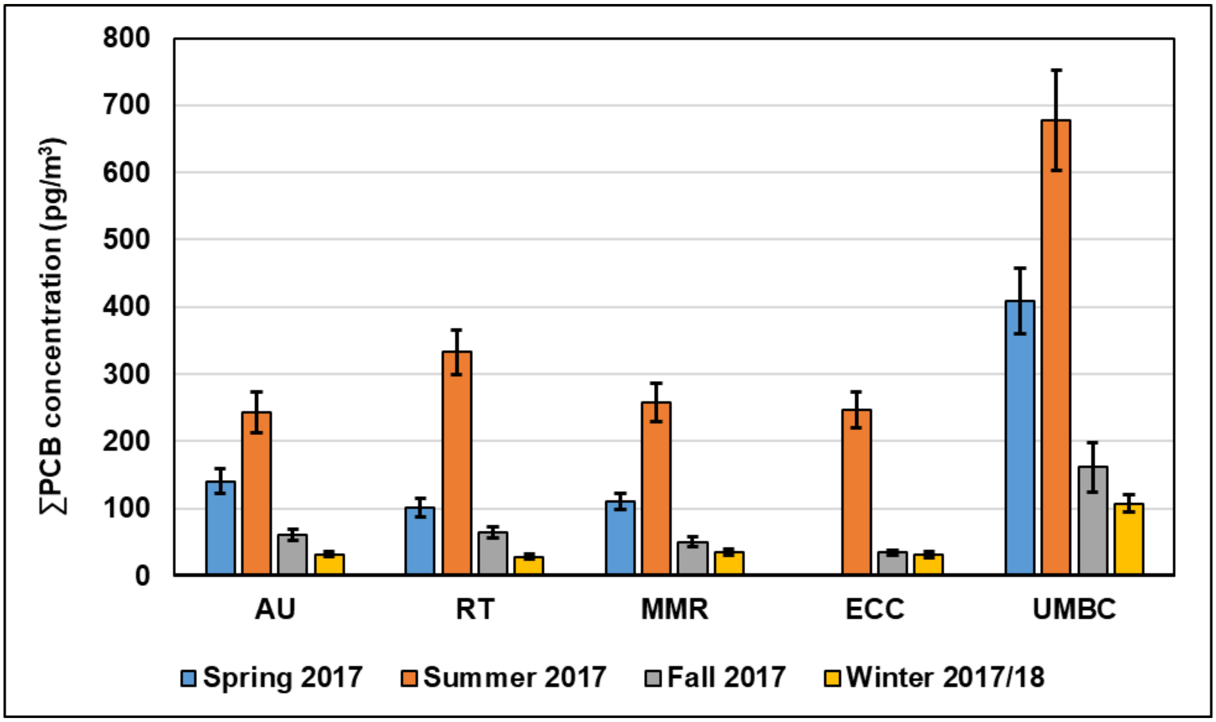

Figure A2. Seasonal variation of PCB concentration in air at the four Washington DC sites and at UMBC showing similar variation across seasons. Error bars indicate propagated uncertainty in ∑PCB concentrations based on propagated uncertainty in concentration of individual PCB congeners

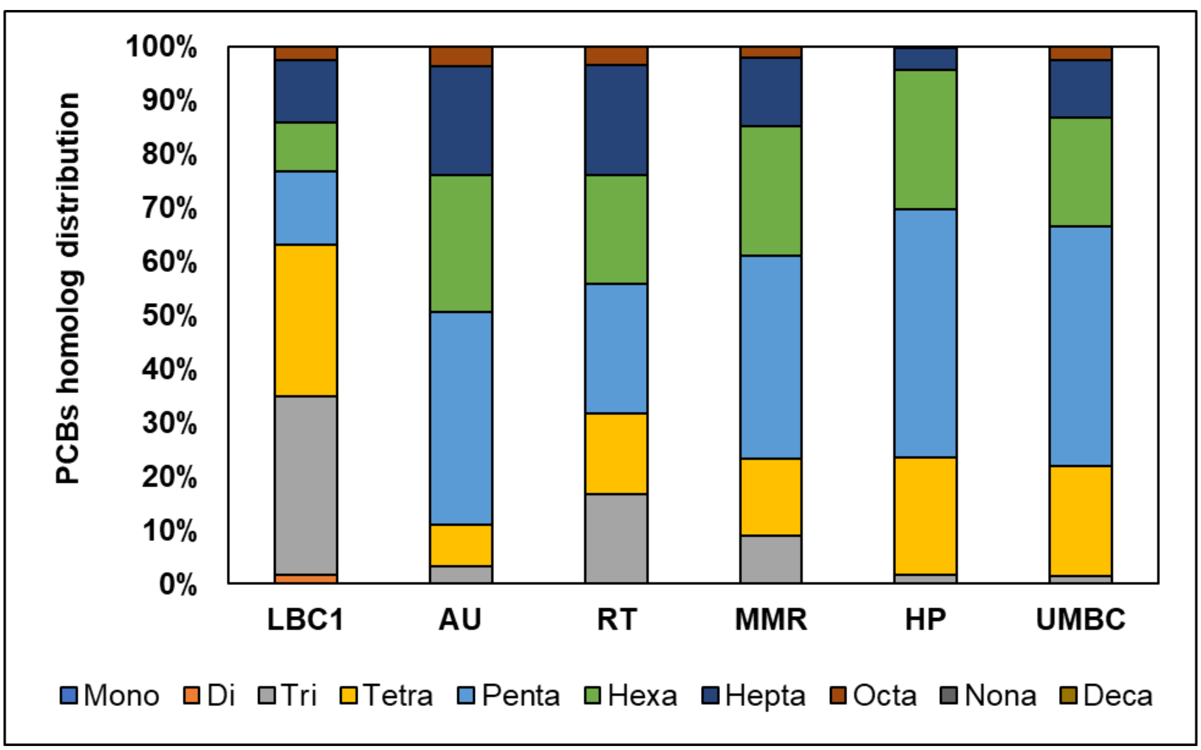

Figure A3. Homolog distribution of air-phase PCBs (Spring 2017).

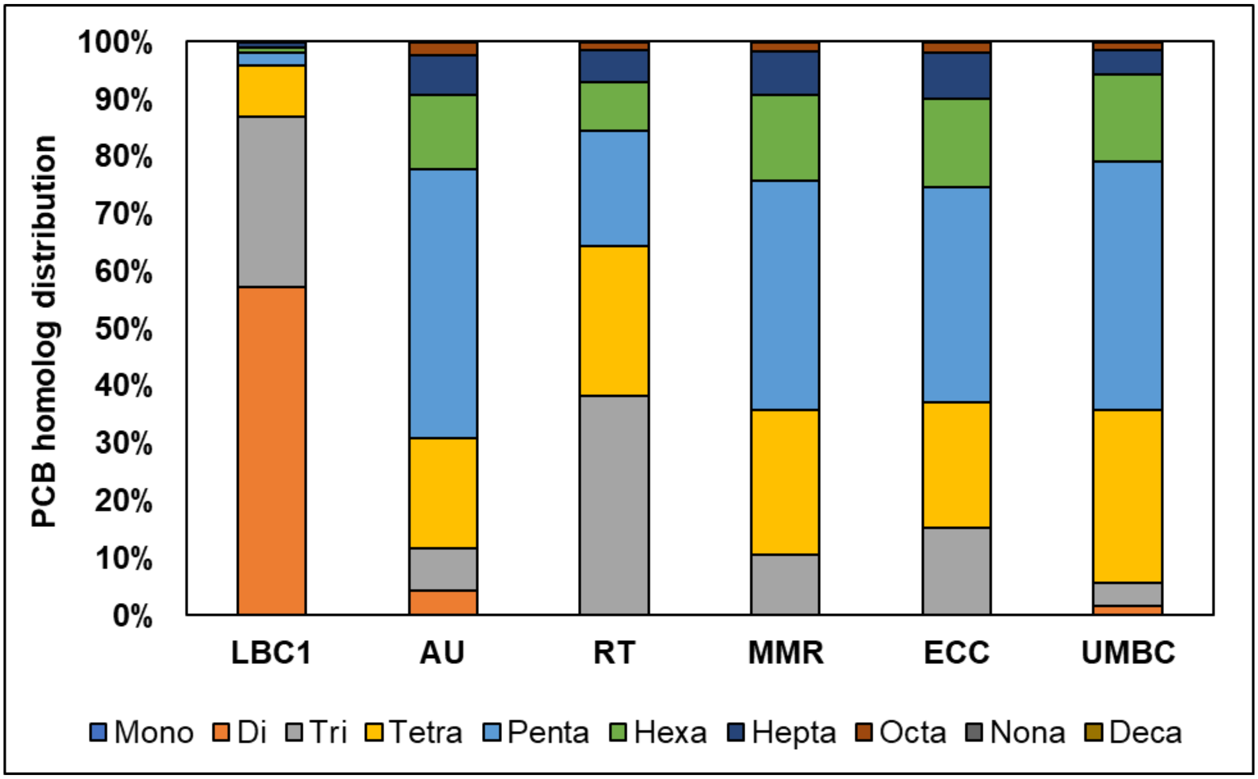

Figure A4. Homolog distribution of air-phase PCBs (Summer 2017).

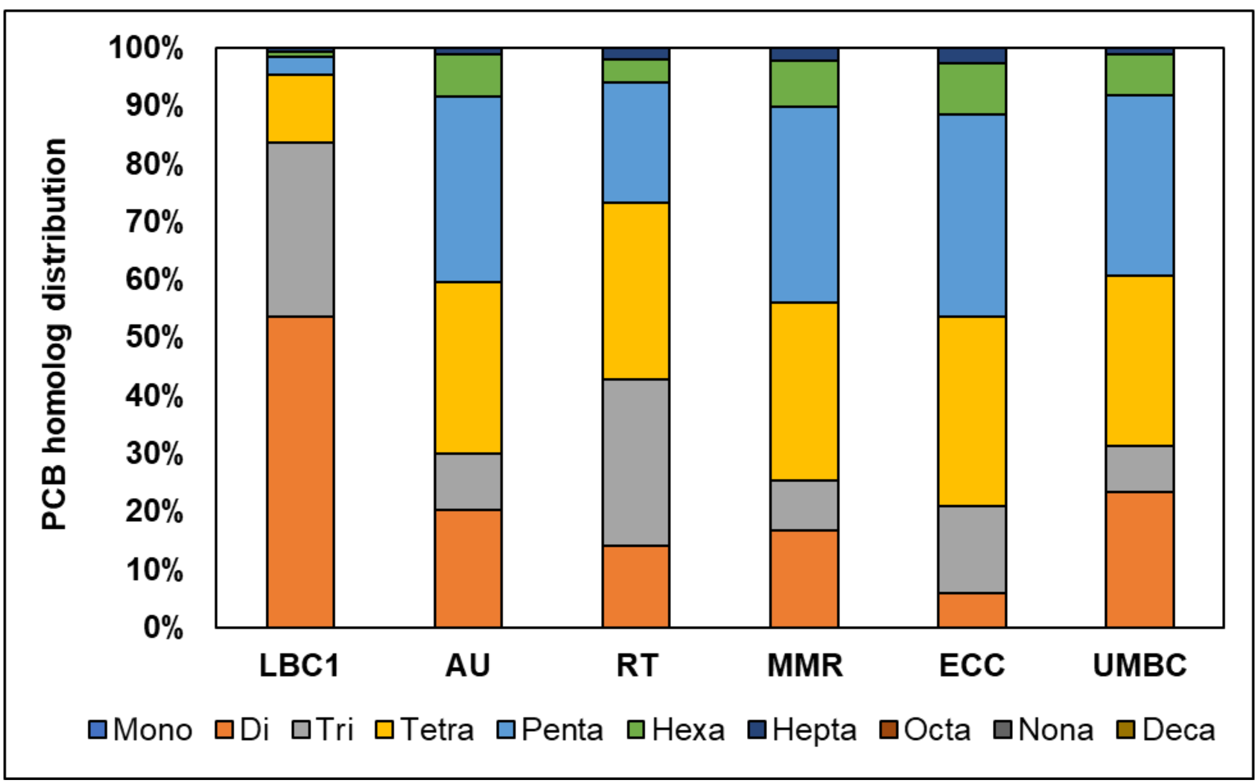

Figure A5. Homolog distribution of air-phase PCBs (Fall 2017).

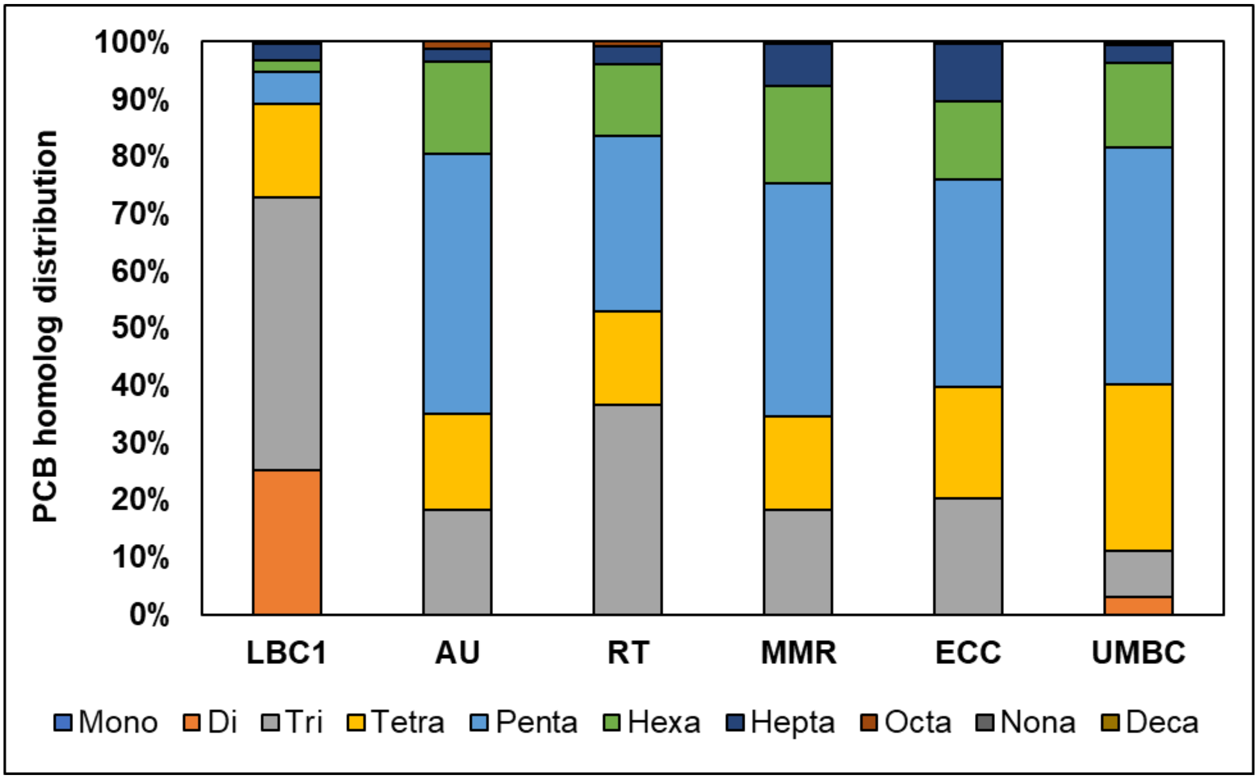

Figure A6. Homolog distribution of air-phase PCBs (Winter 2017/18).

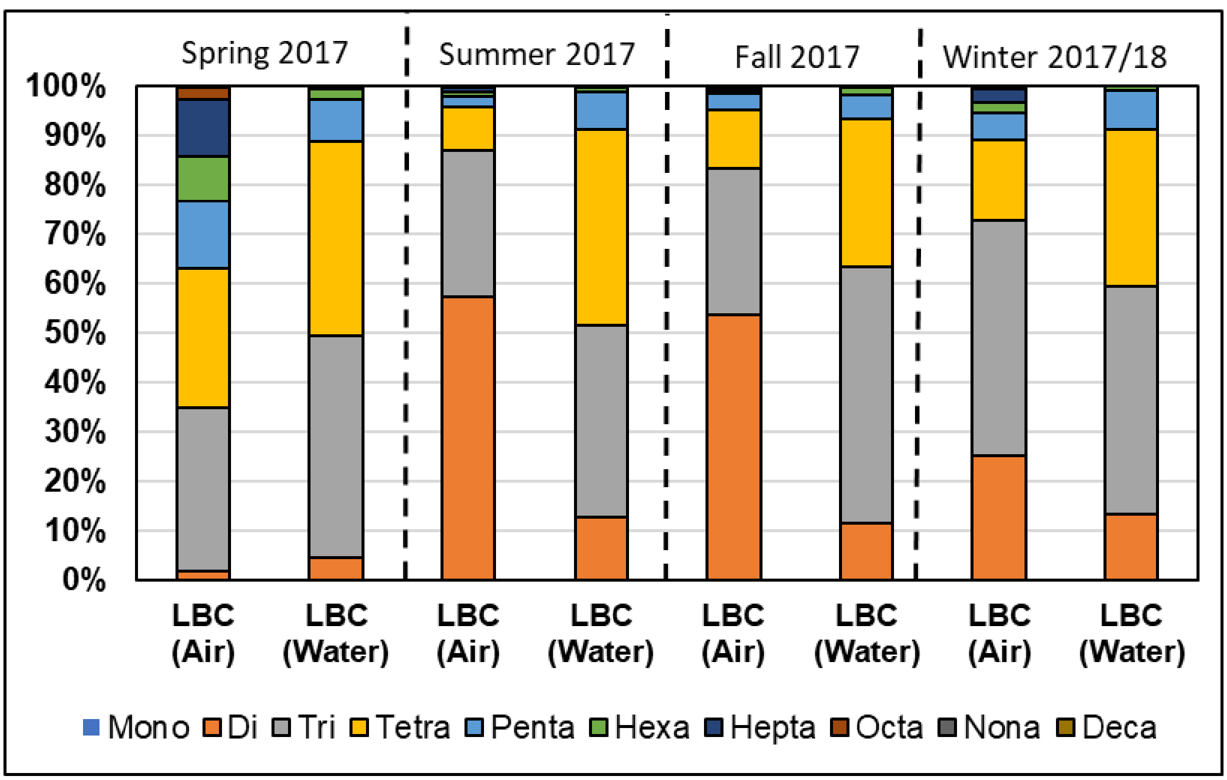

Figure A7. Homolog distribution of PCBs at LBC air and water sites.

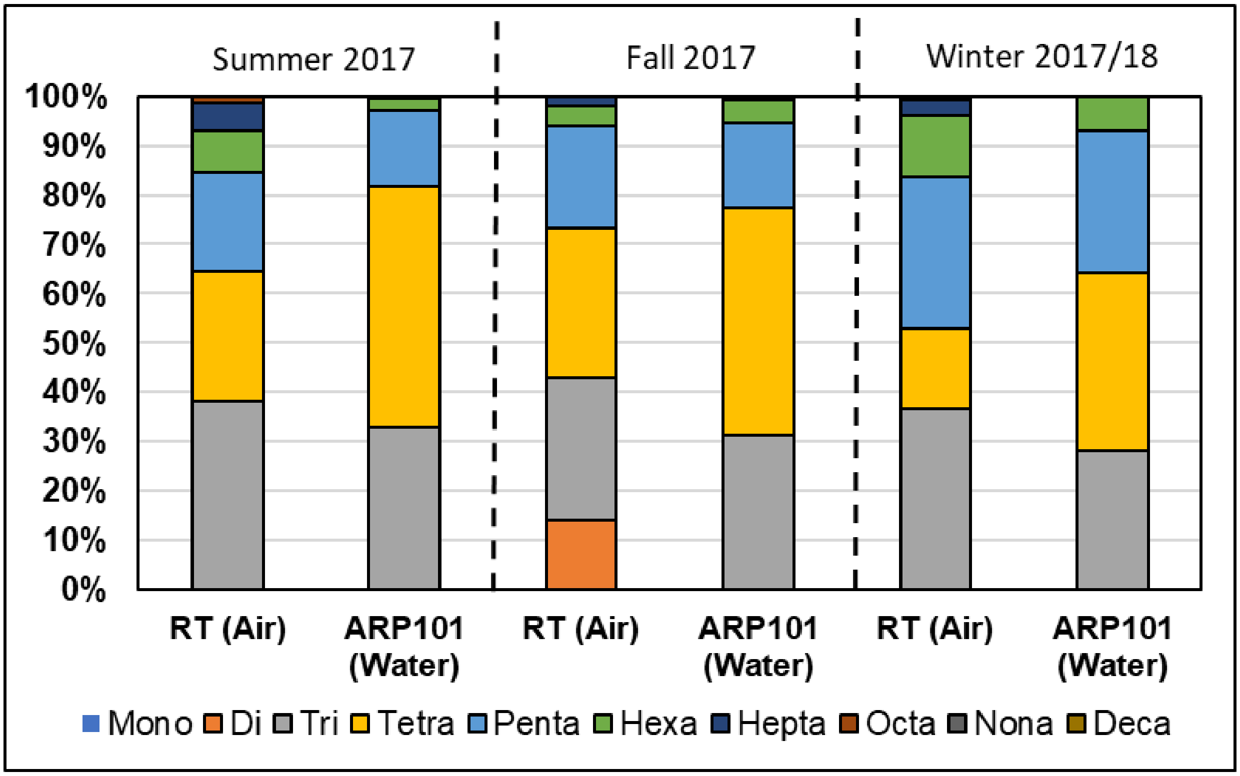

Figure A8. Homolog distribution of PCBs at RT and ARP101 sites.

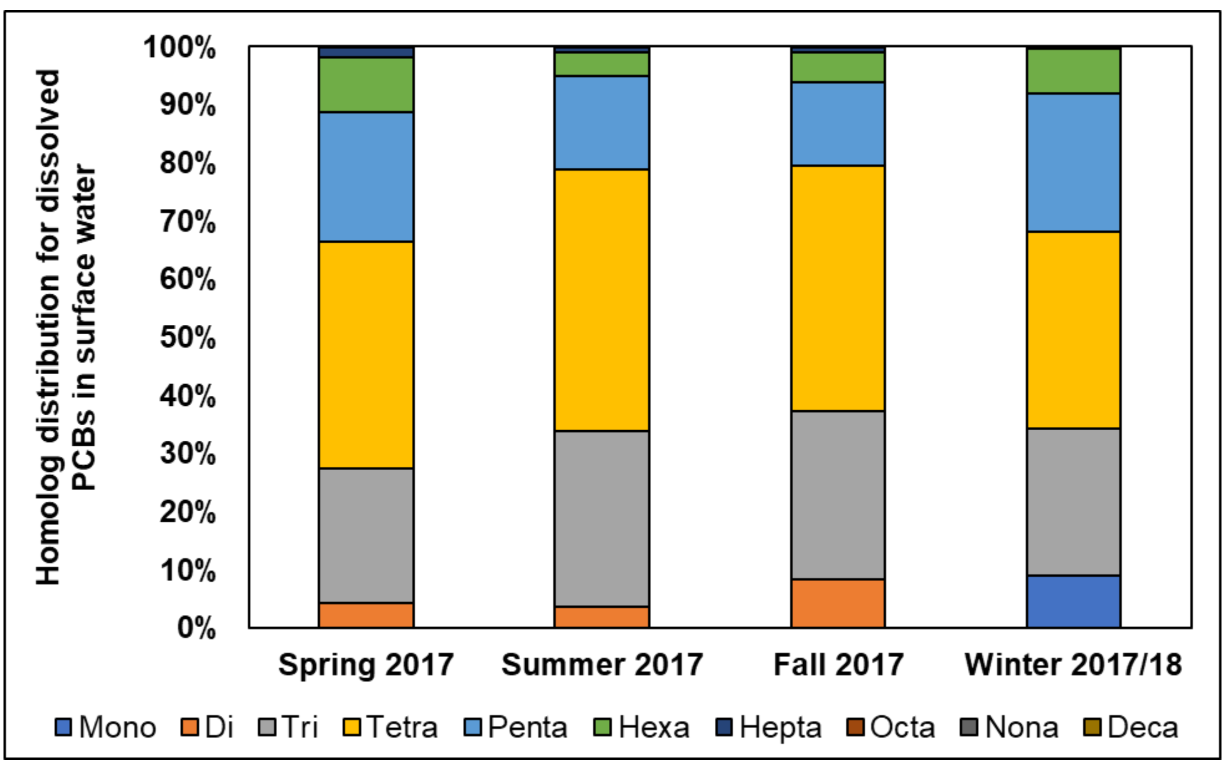

Figure A9. Seasonal homolog distribution for dissolved PCBs in Anacostia River.

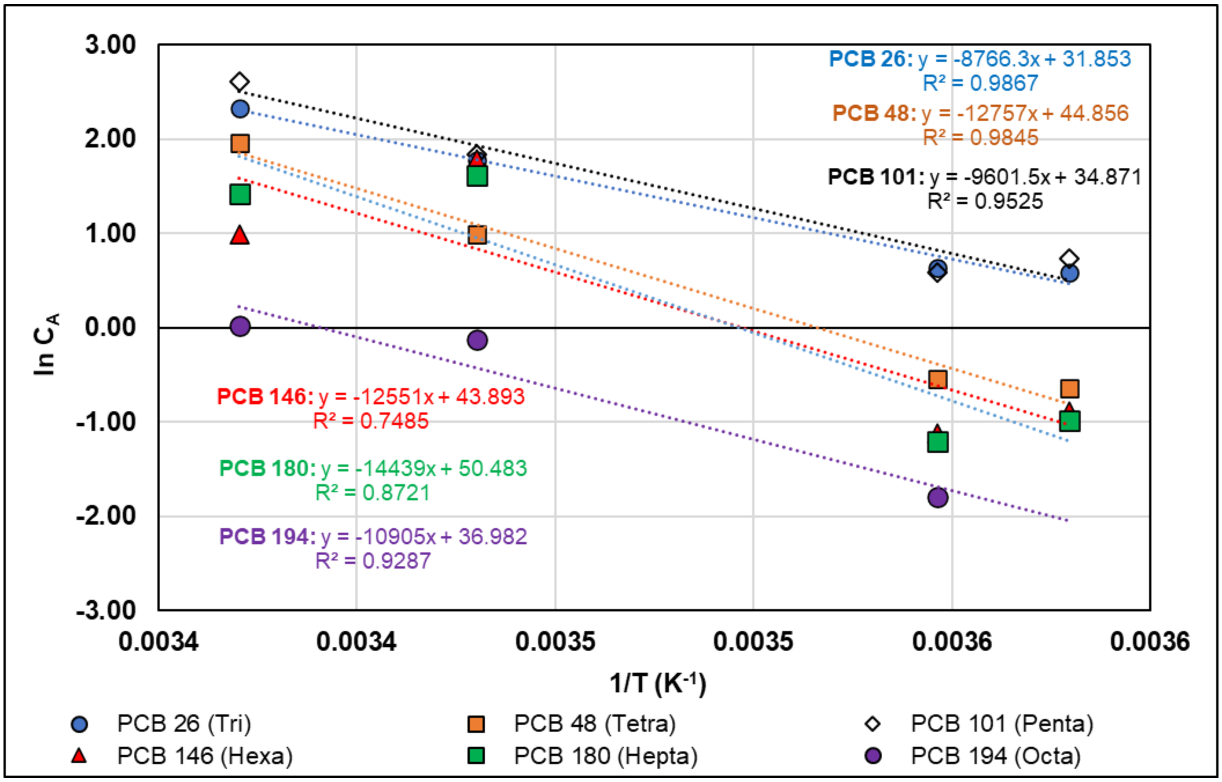

Figure A10. Claysius-Clapeyron plots (ln C_A vs 1/T) for average air-phase concentrations of PCB 26, 48, 101, 146, 180, and 194 in the watershed.

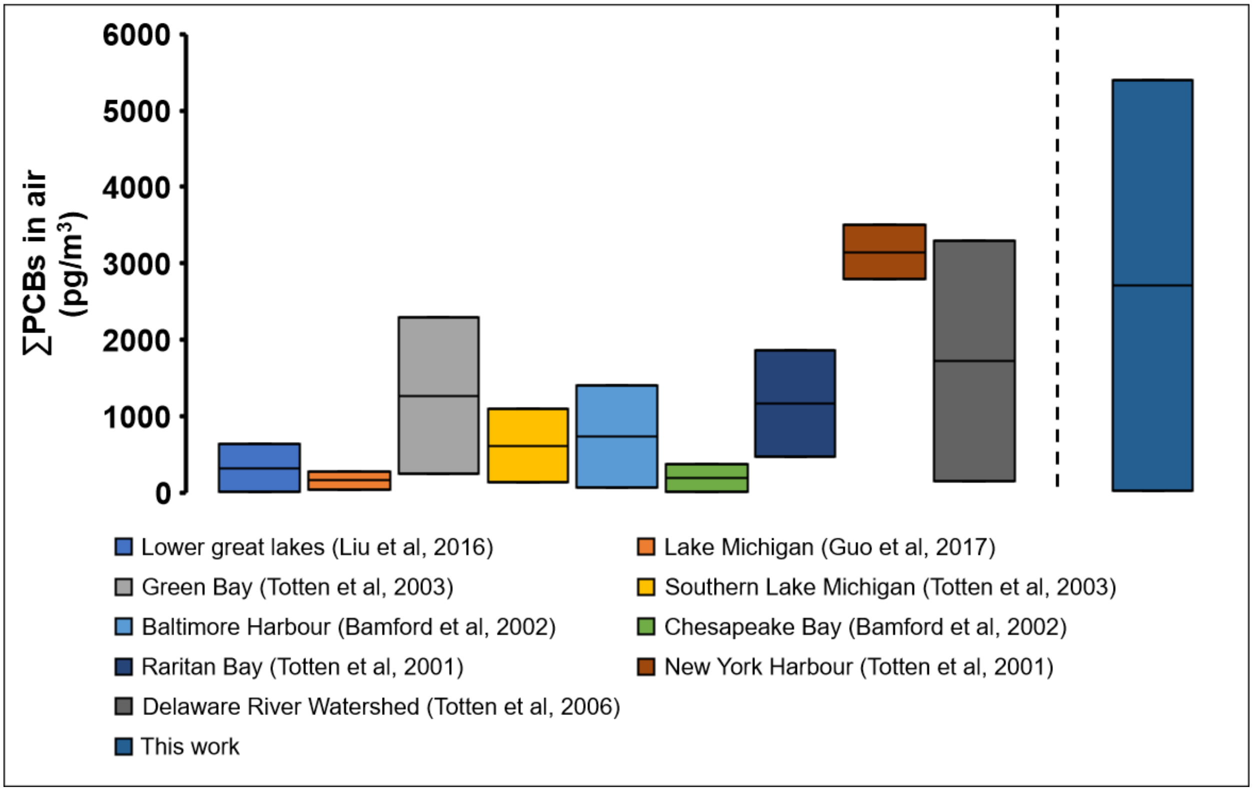

Figure A11. Comparison of range of ∑PCB concentrations in air measured in the present study with those reported previously in the US.

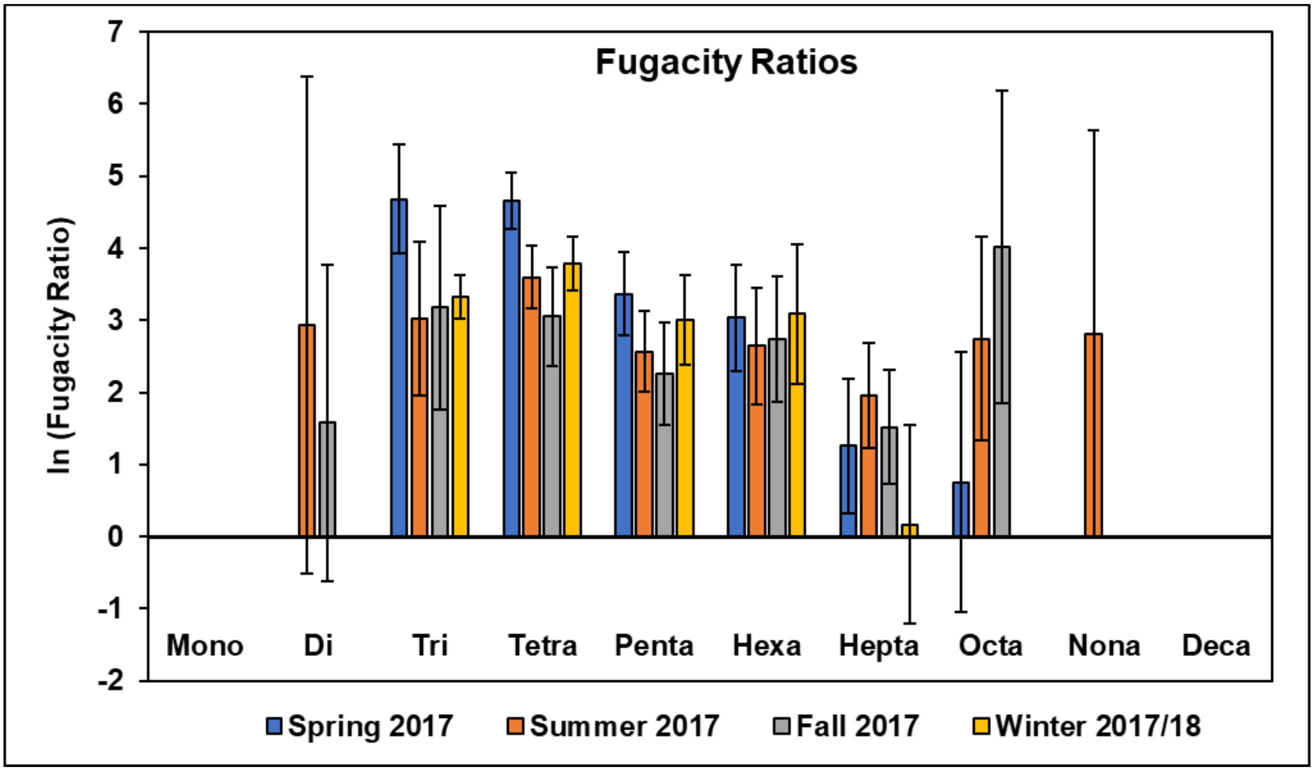

Figure A12. Log-transformed seasonal air-water fugacity ratios for PCB homolog groups, based on average concentration of PCBs on passive samplers deployed in surface water in the Anacostia River and in the air around the river.

Error bars represent propagated uncertainty in fugacity ratios based on 1 standard deviation in measured PCB concentrations in air- and water-phase PE, and uncertainty in non-equilibrium correction factors.

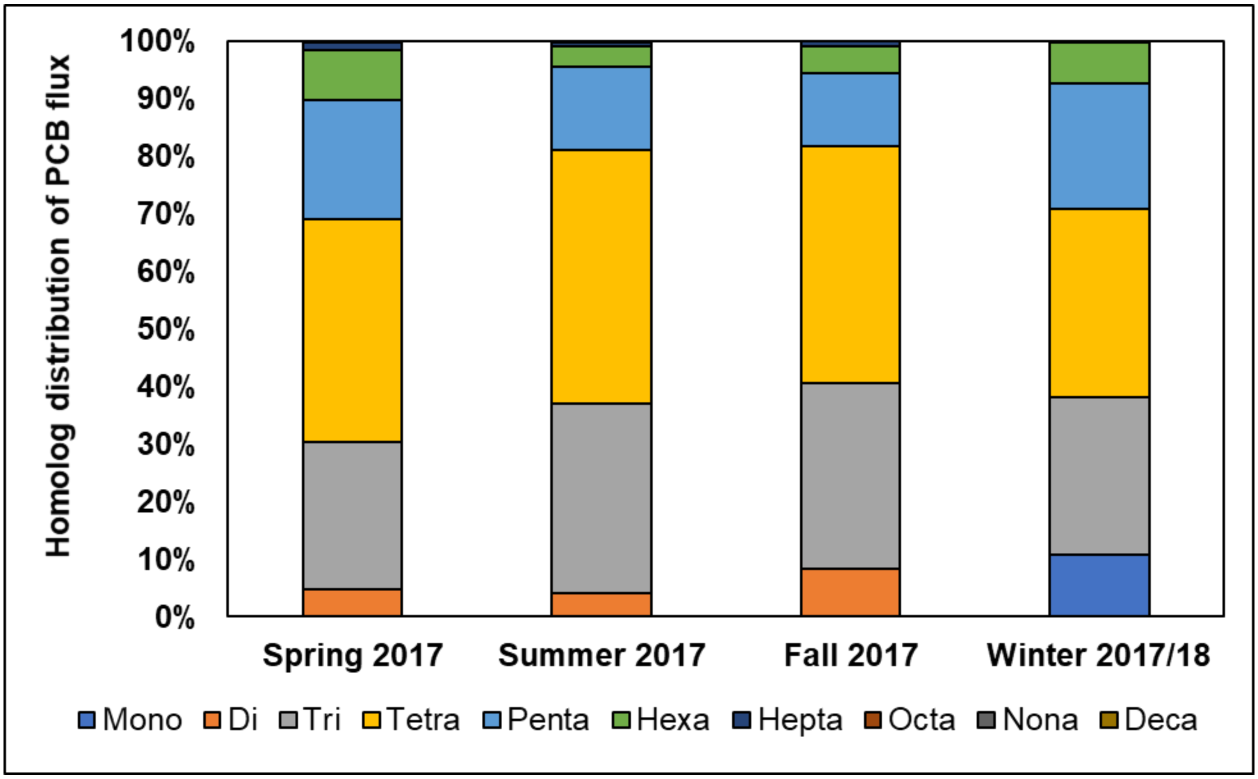

Figure A13. Seasonal homolog distribution for air-water exchange flux for the Anacostia River

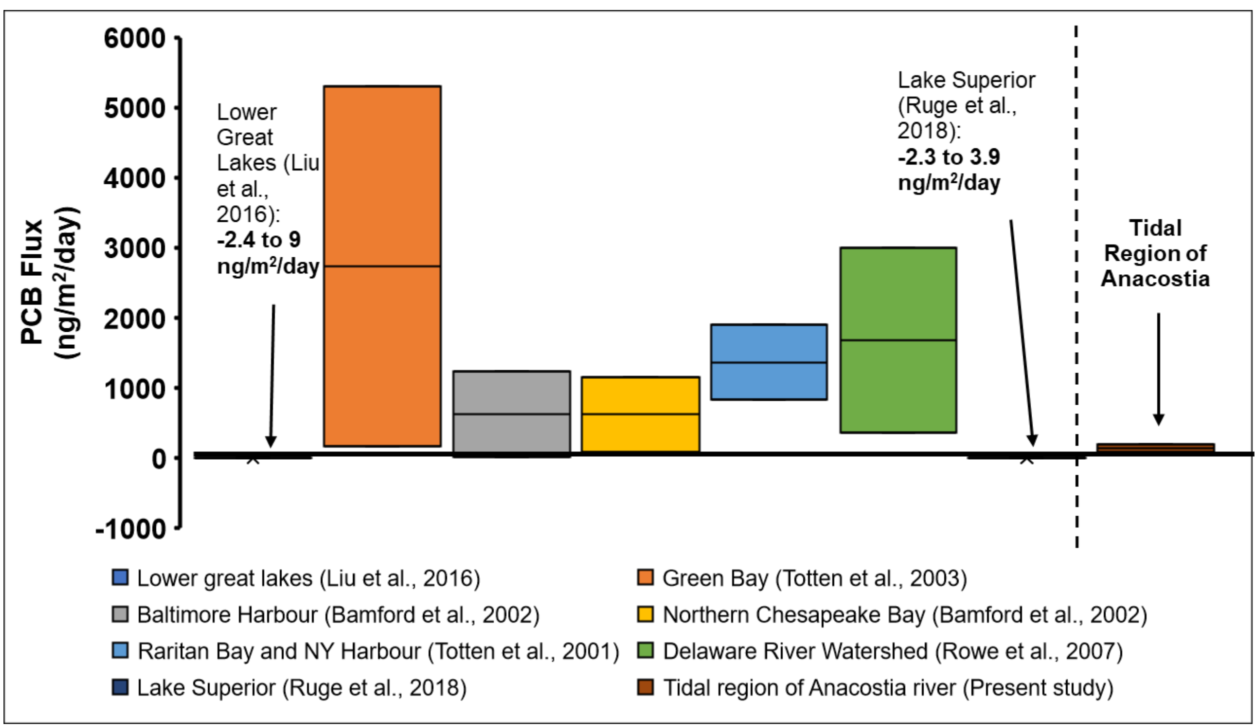

Figure A14. Comparison of reported values for air-water exchange fluxes of PCBs with those measured in the present study.

References

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