

Supplemental Data

S1. Chemicals and Reagents

Nonafluorobutane-1-sulfonic acid (C4, PFBS), perfluoropentanoic acid (C5, PFPeA), perfluorohexane sulfonate (C6, PFHxS), perfluoroheptanoic acid (C7, PFHpA), perfluorooctanoate (C8, PFOA), perfluorononanoic acid (C9, PFNA), perfluorodecanoic acid (C10, PFDA), perfluoroundecanoic acid (C11, PFUnDA), perfluorododecanoic acid (C12, PFDoDA) and perfluorotetradecanoic acid (C14, PFTA) were purchased from Alfa Aesar; perfluorooctane sulfonate (C8, PFOS) and perfluorotridecanoic acid (C13, PFTrDA) were obtained from Sigma-Aldrich (Oakville, ON, Canada). Sodium perfluoro-1-(1, 2, 3, 4-¹³C₄)octanesulfonate (¹³C₄PFOS) and perfluoro-n-(1, 2, 3, 4-¹³C₄)octanoic acid (¹³C₄PFOA) were purchased from Wellington Laboratories (Canada).

S2. Chemical analysis and quality control

PFC analyses were performed with liquid chromatography (Dionex) with a tandem mass spectrometer system (API 3200, Applied Biosystems) ²¹. Each sample was extracted in duplicate, and the extract was analyzed once. Generally, the separation was achieved on a Dionex Acclaim 120 C18 column (4.6mm i.d. ×150 mm length, 5 μm; Dionex, Sunnyvale, CA, USA) with an aliquot of 10 μL injection. A nine-point standard calibration was conducted (0.02, 0.05, 0.1, 0.2, 1, 5, 10, 20, and 50 μg/L), with an aliquot of 2 ng of ¹³C₄-PFOS and ¹³C₄-PFOA spiked as the internal standards. The calibration was conducted before each analysis. A PFC standard at 1 μg/L was used as quality control, and it was checked every 10 injections to ensure the

analysis stability and to verify the calibration. The calibration curve was used for quantification only when the quality control standard was within $\pm 20\%$ of its initial value. The method detection limits (LOD) were defined as the lowest level producing a signal-to-noise ratio of three ($S/N=3$) in different matrices. The detection limits in water samples were: PFHxS 0.028 ng/L, PFBS 0.030 ng/L, PFOS 0.030 ng/L, PHPeA 0.2 ng/L, PFHpA 0.2 ng/L, PFOA 0.2 ng/L, PFNA 0.06 ng/L, PFDA 0.06 ng/L, PFUnDA 0.06 ng/L, PFDODA 0.08 ng/L, PFTrDA 0.05 ng/L, and PFTA 0.10 ng/L. The detection limits in biota samples were: PFHxS 0.070 ng/g, PFBS 0.075 ng/g, PFOS 0.075 ng/g, PHPeA 0.5 ng/g, PFHpA 0.5 ng/g, PFOA 0.5 ng/g, PFNA 0.15 ng/g, PFDA 0.15 ng/g, PFUnDA 0.15 ng/g, PFDODA 0.20 ng/g, PFTrDA 0.125 ng/g, and PFTA 0.25 ng/g. The detection limits in sediment samples were: PFHxS 0.014 ng/g, PFBS 0.015 ng/g, PFOS 0.015 ng/g, PHPeA 0.1 ng/g, PFHpA 0.1 ng/g, PFOA 0.1 ng/g, PFNA 0.03 ng/g, PFDA 0.03 ng/g, PFUnDA 0.03 ng/g, PFDODA 0.04 ng/g, PFTrDA 0.025 ng/g, and PFTA 0.05 ng/g. The procedure blanks were also checked for every batch of analysis ($n=10$), all of which were below LODs. The recoveries for water, biota, and sediment samples spiked with 2 ng PFCs were 71-114%, 74-128%, and 87-104%, respectively.

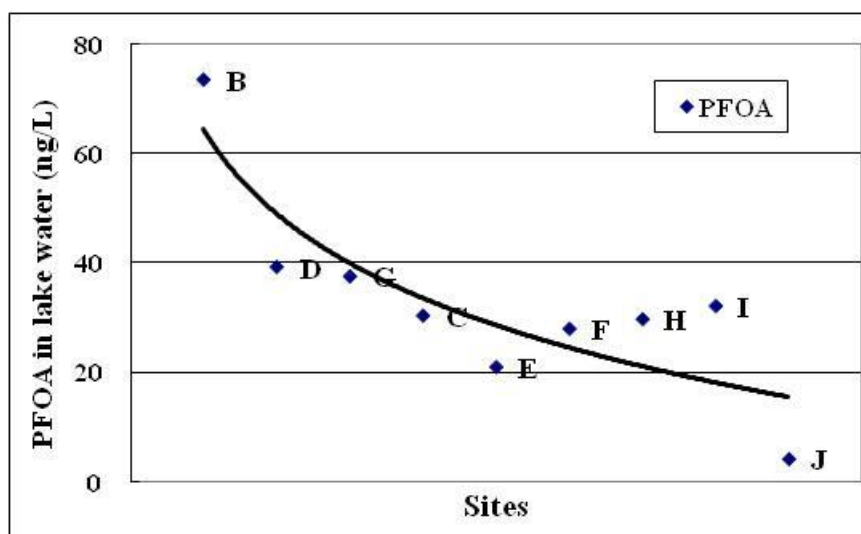


Figure S1. PFOA concentrations in Baiyangdian Lake with the increasing distance from the estuary of Fuhe River

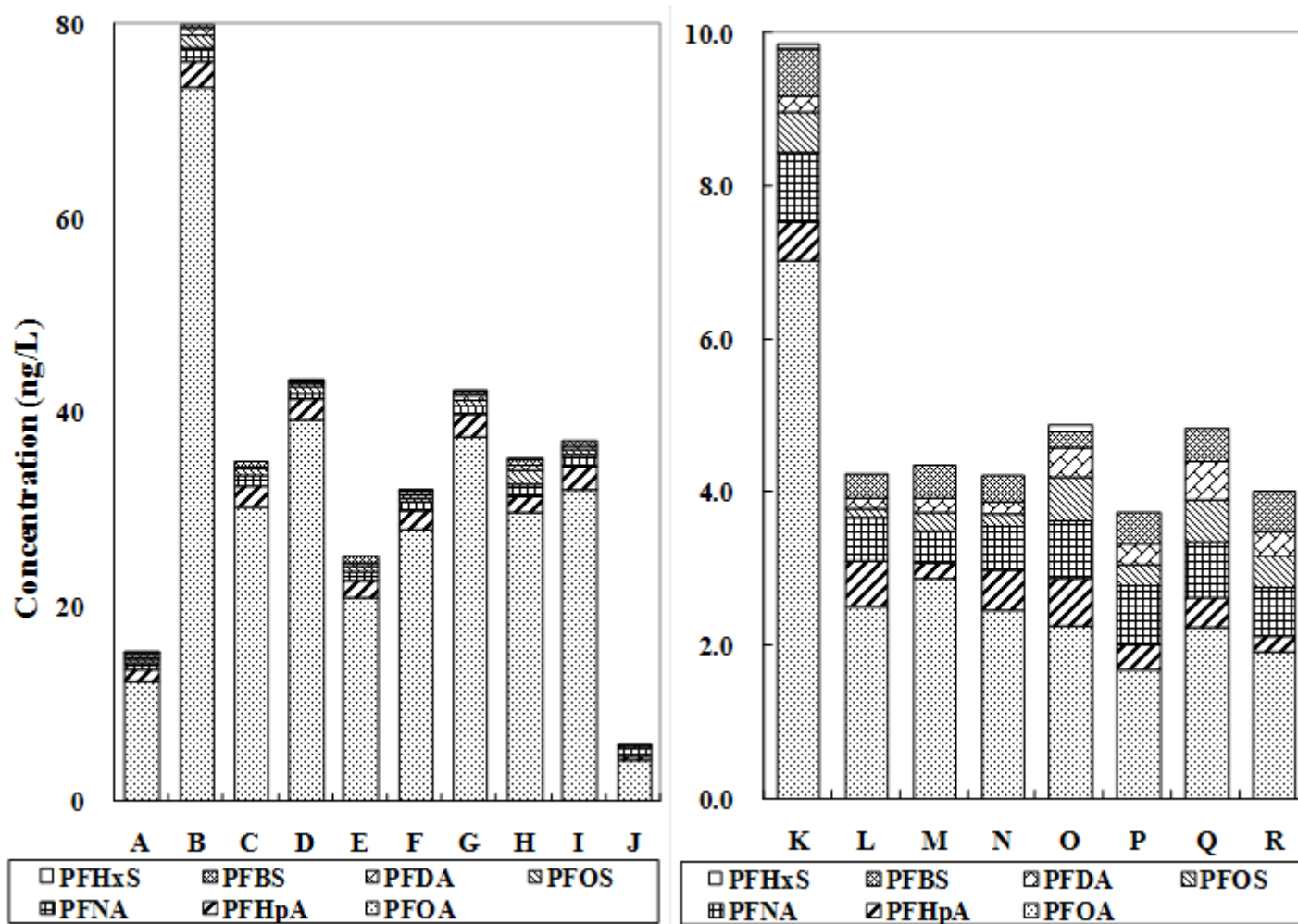


Figure S2. PFCs distribution in lake water (ng/L)