

Delaware River Basin Commission



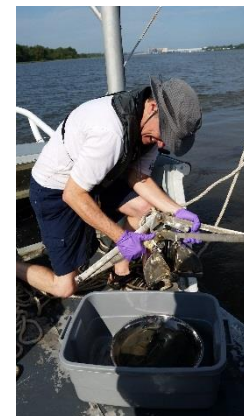
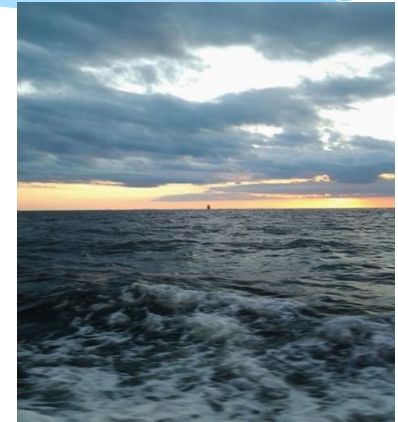
PFAS in Surface Water, Sediment and Fish from the Delaware River

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TAC



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- ❑ Water grab samples in HDPE bottles
- ❑ Fish samples are composites of five standard fillets.
- ❑ Sediment surficial grab with Ponar.
- ❑ Analytical Parameters & Methods: 13 compounds using LC/MS/MS Method
- ❑ Analysis by SGS-Axys Analytical LTD



Sulfonates and Sulfonamide

- 4 Perfluorobutanesulfonate (PFBS)
- 6 Perfluorohexanesulfonate (PFHxS)
- 8 Perfluorooctanesulfonate (PFOS)
- Perfluorooctane sulfonamide (PFOSA)

of carbons

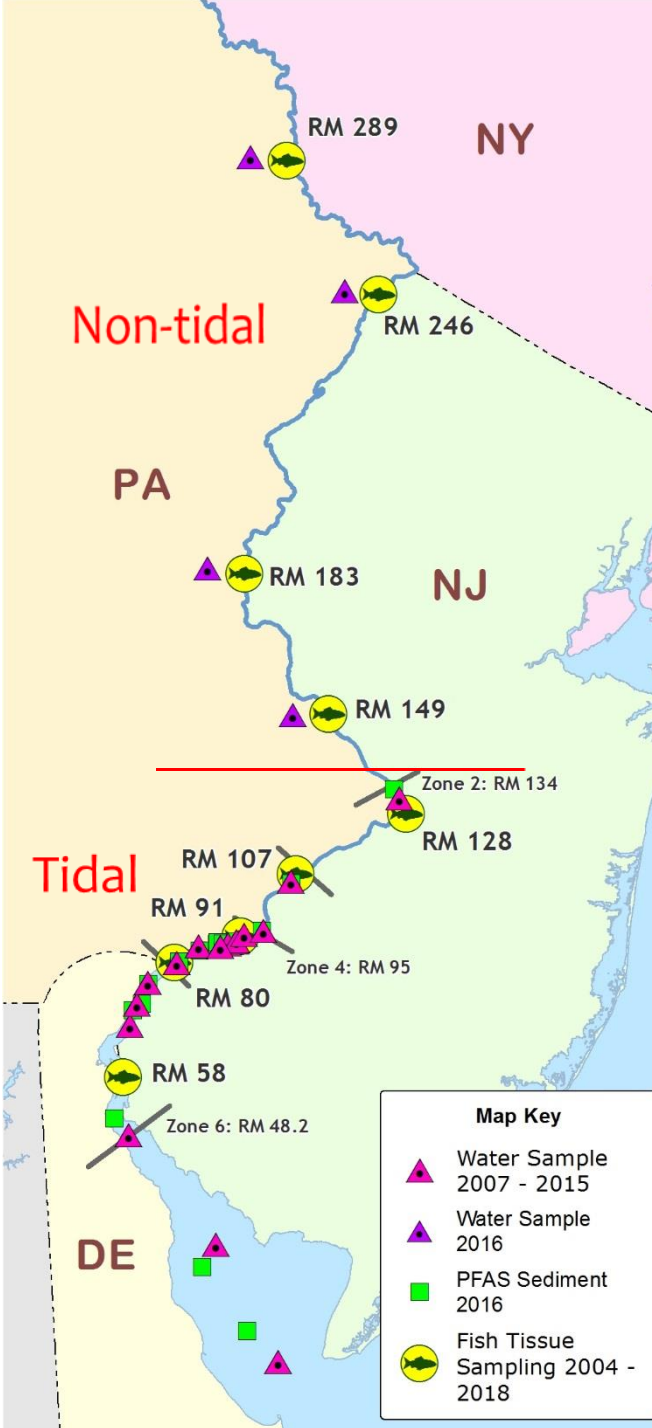


Carboxylates

- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12

- Perfluorobutanoate (PFBA)
- Perfluoropentanoate (PFPeA)
- Perfluorohexanoate (PFHxA)
- Perfluoroheptanoate (PFHpA)
- Perfluorooctanoate (PFOA)
- Perfluorononanoate (PFNA)
- Perfluorodecanoate (PFDA)
- Perfluoroundecanoate (PFUnA)
- Perfluorododecanoate (PFDoA)

PFAS Sample Sites



Surface water

Six tidal sites in 2007, 2008, 2009

Fifteen tidal sites in 2015

Four non-tidal sites in 2016

Fish

Four non-tidal and five tidal sites

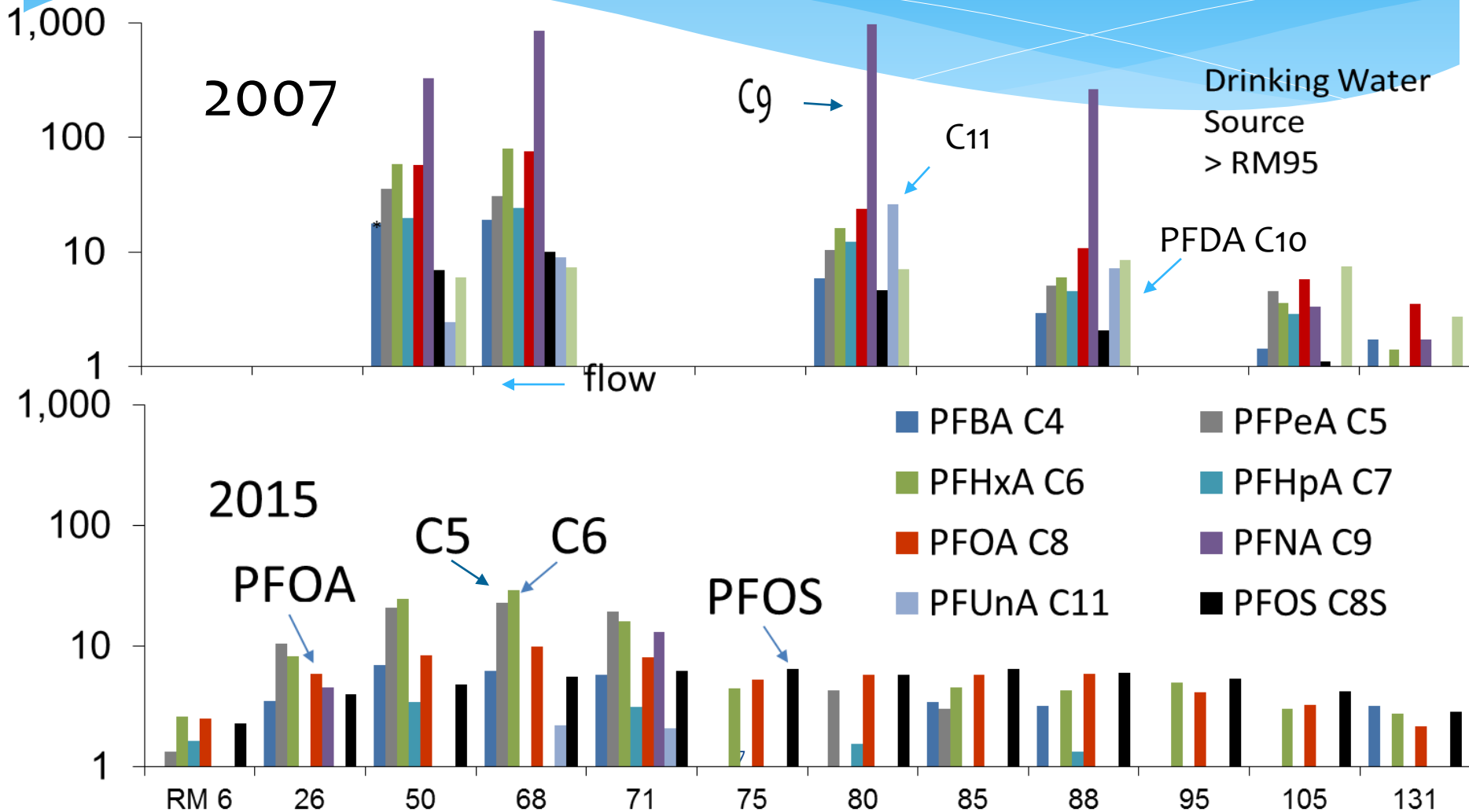
in 2004, 2005, 2006, 2007, 2010,

2012, 2015 and 2018

Sediment

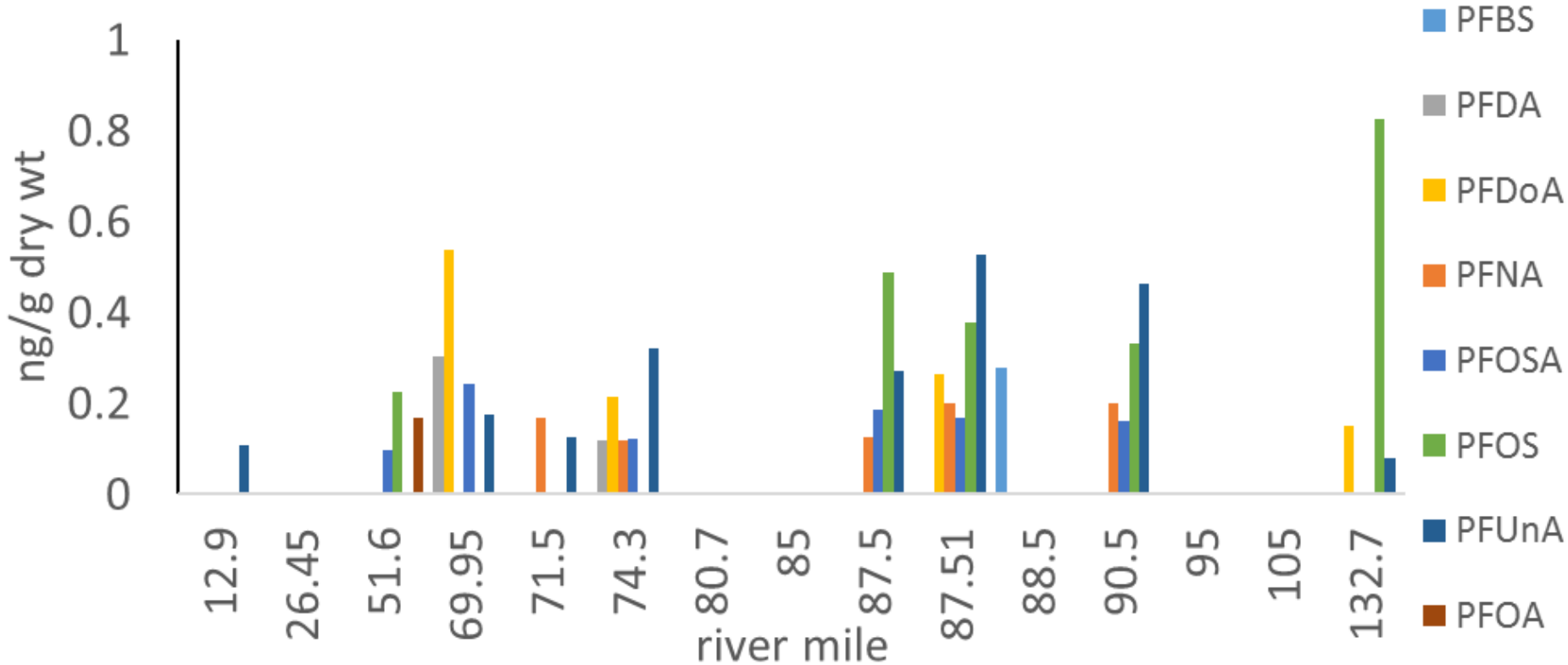
Fifteen tidal sites in 2016

PFAS (ng/L) decreases in surface water vary by compound

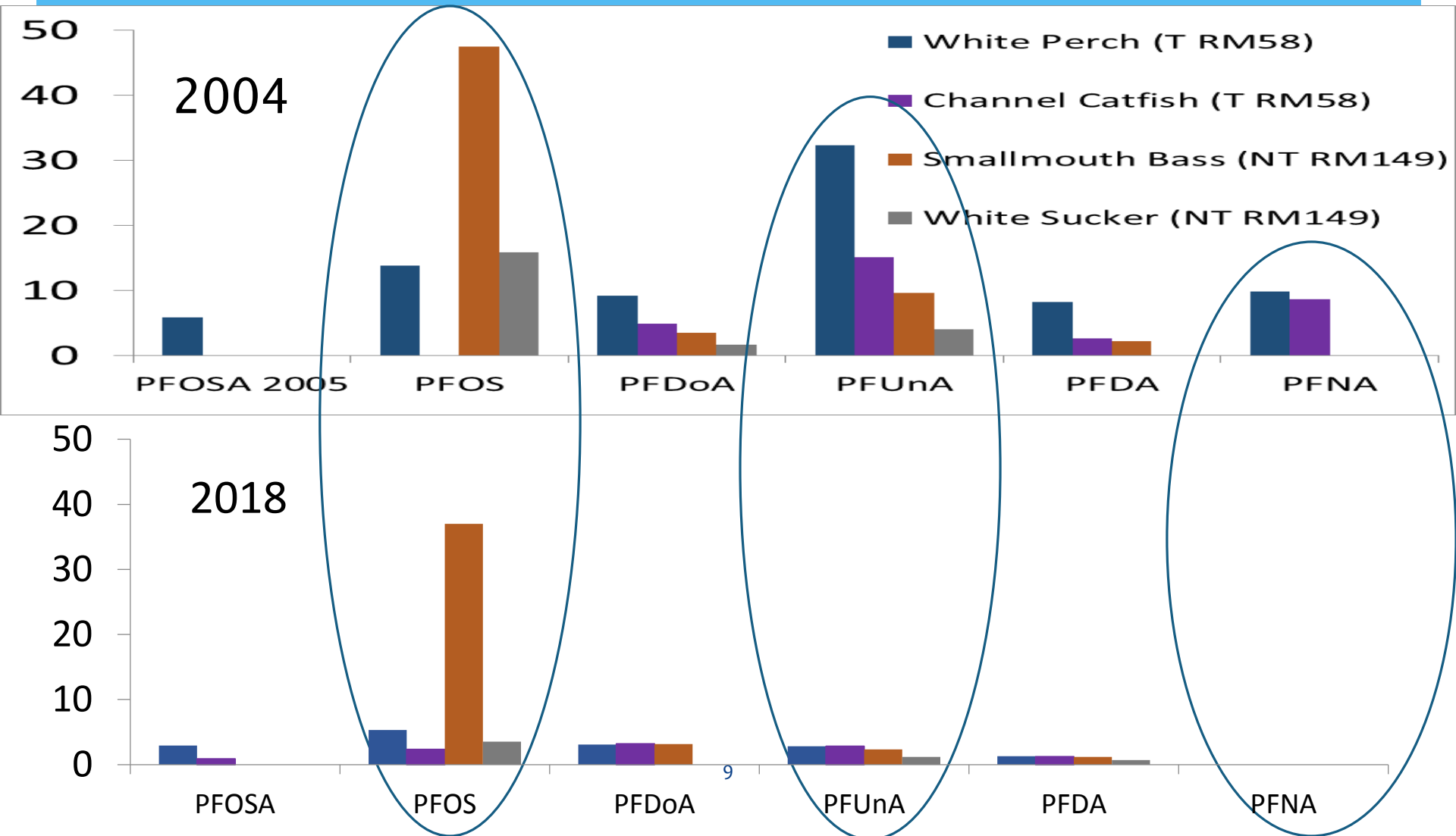


PFAS in sediment 2016

low concentrations similar to other urban areas



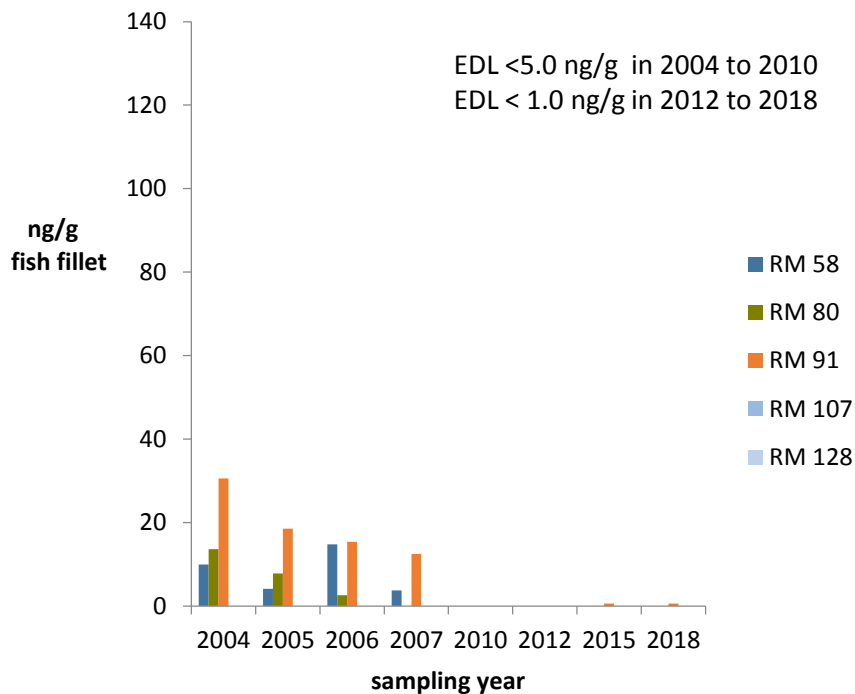
PFAS (ng/g) in fish fillet vary by species, location and year



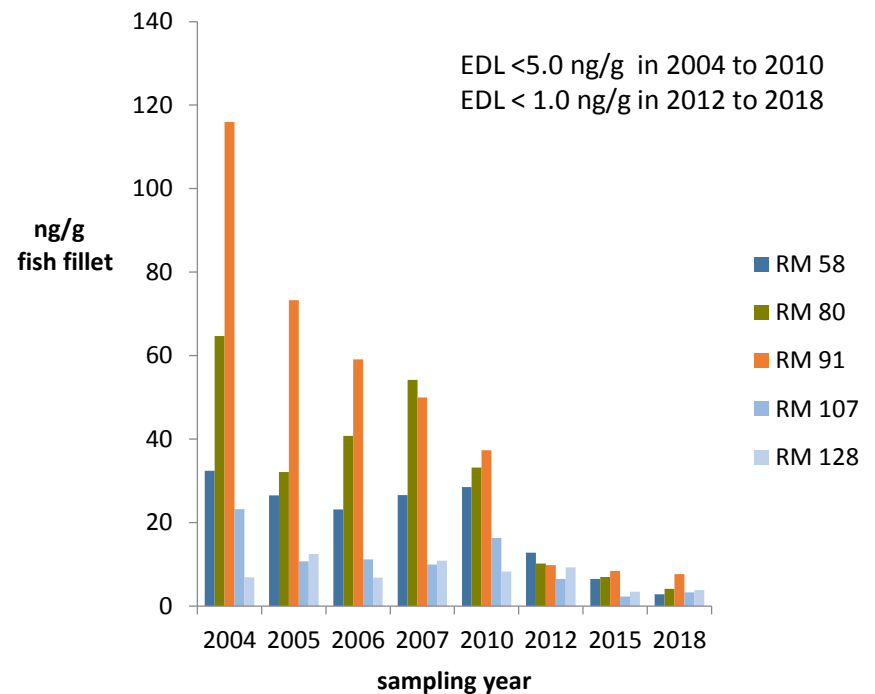
Statistically significant decreases for PFNA and PFUna concentrations in fish



PFNA (C9) in White Perch from Delaware Estuary



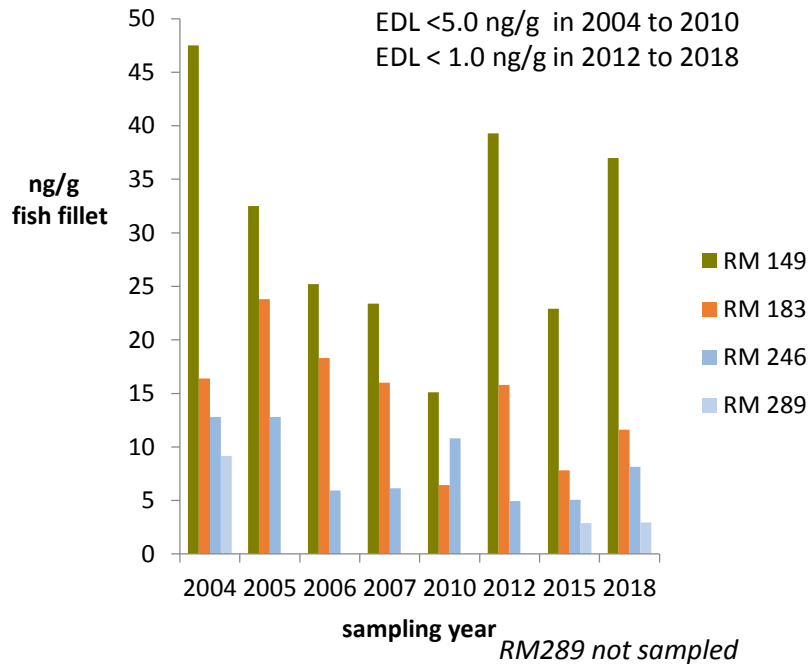
PFUna (C11) in White Perch from Delaware Estuary



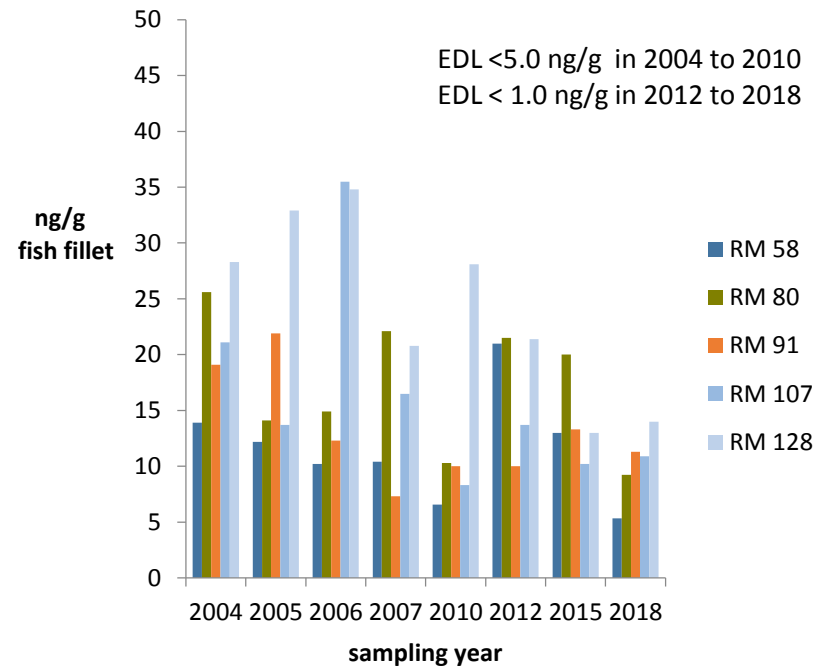
PFOS bioaccumulation in fish with limited declines in concentrations



PFOS (C8) in Smallmouth Bass from Delaware River



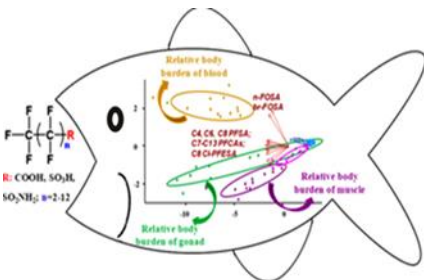
PFOS (C8) in White Perch from Delaware Estuary



Data Needs



- PFAS have been detected in surface water, sediment and fish from the main stem Delaware River
- Data needs:
 - for fish consumption advisories (more main stem data and advisory triggers)
 - for source water protection (occurrence of other PFAS , precursors and alternative cpds e.g., GenX and Solvay replacement product)
 - for protection of aquatic life (measured environmental concentrations and predicted no effect concentrations, bioaccumulation factors (BAF))



Questions



Shi et al, 2018 ES&T

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DRBC Contaminants of Emerging Concern

<https://www.state.nj.us/drbc/quality/reports/cecs.html>