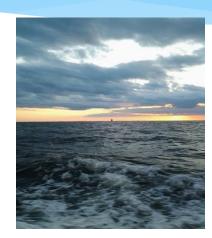
Joint Chesapeake-Potomac Regional Chapter and Hudson-Delaware Chapter SETAC 2022 Spring Meeting

PFAS in Surface Water,
Sediment and Fish from the
Delaware River
April 11, 2022
Ron MacGillivray, Ph.D.

Senior Environmental Toxicologist ron.macgillivray@drbc.gov











Why collect PFAS data?



FOR IMMEDIATE RELEASE 10/13/2021

CONTACT: Neil Shader, DEP 717-703-3564 Mike Parker, PFBC 717-705-7806

> Anglers Warned to Not Eat Fish from Neshaminy Creek Basin Perfluorooctane Sulfonate (PFOS) risk from all species

10/13/2021

Harrisburg, PA – The Pennsylvania departments of Environmental Protection (DEP), Agriculture (PDA), and Health (DOH), along with the Pennsylvania Fish and Boat Commission (PFBC), announced a "Do Not Eat" advisory for all fish species caught in the Neshaminy Creek basin in Bucks and Montgomery counties due to extremely high levels of Perfluorooctane Sulfonate (PFOS). The advisory extends to all fish throughout the Neshaminy Creek basin, including Neshaminy Creek State Park and Tyler State Park.

https://www.media.pa.gov/pages/DEP details.aspx?newsid=1501



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Bucks, MontCo Residents Can Enroll In PFA Research Study

on a long-term basis. The main result they aim to find is if the chemicals cause cancer.

John Fey · 32 mins ago



© Shutterstock High blood pressure and developmental issues in children have also been contributed to long-term exposure to the chemicals, according to researchers.

WARMINSTER, PA — Researchers re seeking up to 1,000 adults and 300 children for a new study on the relationship between cancer and PFAS, a type of chemical that was found to be present in local drinking water during 2005 to 2017.

The Agency for Toxic Substances and Disease Registry (ATSDR), which is a part of the Centers for Disease Control and Prevention (CDC), is conducting the research to find if the manmade chemicals are directly related to a series of health issues for those who were exposed to it

Delaware River Basin Commission

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UNITED STATES OF AMERICA

https://patch.com/pennsylvania/ warminster/bucks-montcoresidents-can-enroll-pfaresearch-study

Environmental Topics V Laws & Regulations V Report a Violation V About EPA V

PFOA, PFOS and Other PFAS CONTACT US

PFAS Explained
EPA actions to address PFAS
PFAS Strategic Roadmap
Data and Tools
State Information

https://www.epa.gov/pfas/pfasstrategic-roadmap-epascommitments-action-2021-2024

PFAS Strategic Roadmap: EPA's Commitments to Action 2021-2024

On October 18, 2021, EPA Administrator Michael S. Regan announced the agency's PFAS Strategic Roadmap—laying out a whole-of-agency approach to addressing PFAS.

The roadmap sets timelines by which EPA plans to take specific actions and commits to bolder new policies to safeguard public health, protect the environment, and hold polluters accountable. The actions described in the PFAS Roadmap each represent important and meaningful steps to safeguard communities from PFAS contamination. Cumulatively, these actions will build upon one another and lead to more enduring and protective solutions.

Lea en español
Infórmese acerca del
Mapa estratégico sobre
PFAS: Los compromisos
de la EPA para tomar
acción en 2021-2024



(f) 🔰 🕓 💌

COVID-19 VACCINES | WATERSHED

Does PFAS exposure affect COVID-19 illness and vaccine effectiveness? Researchers want to know

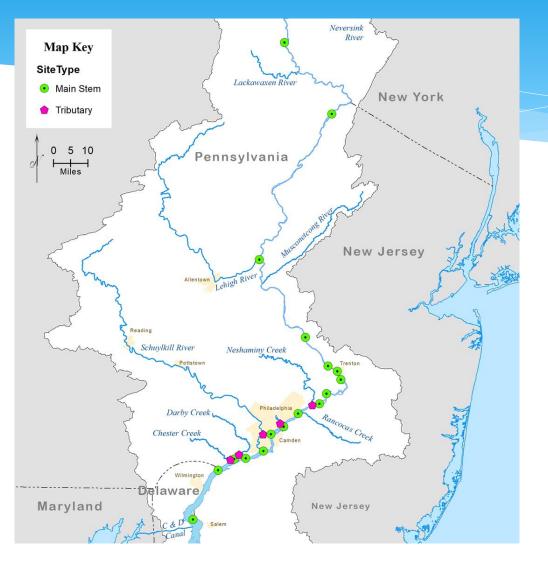


https://whyy.org/articles/does-pfas-exposure-affect-covid-19-illness-and-vaccine-effectiveness-researchers-want-to-know/

RM 289 NY RM 246 PA ▲ RM 183 NJ Non-tidal RM 149 Zone 2: RM 134 RM 128 Tidal RM 107 **RM 80** Zone 4: RM 95 ₩ 58 Map Key Zone 6: RM 48.2 Water Sample 2007 - 2015 Water Sample DE **PFAS Sediment** 2016 Fish Tissue Sampling 2004 -

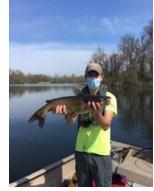
Sampling Sites and Years









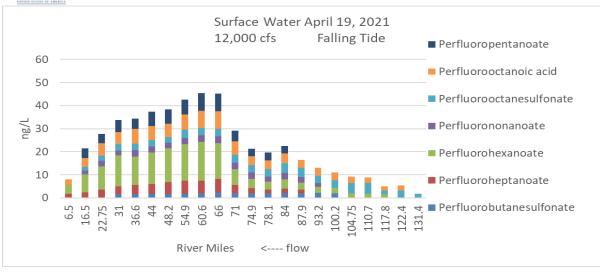


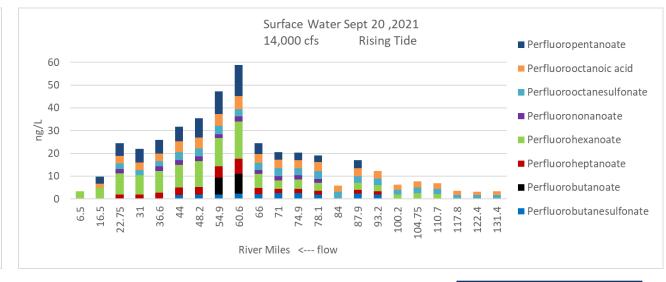




Recent Surface Water Concentrations

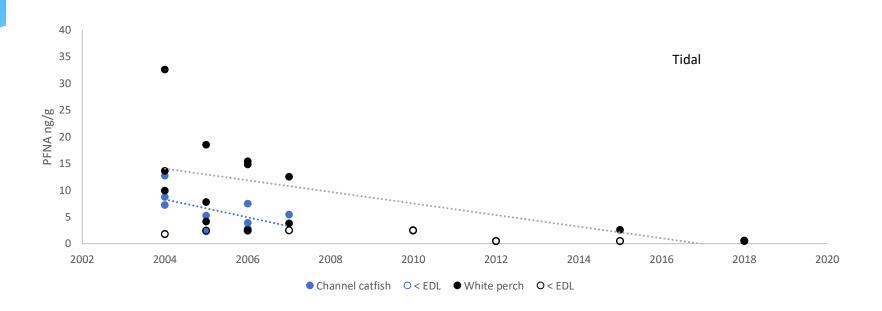
Surface water samples added to the estuary monitoring (DRBC's BoatRun) program under 106 grant in 2021, PFAS Method 1633







Temporal Trends in Fish Fillet - PFNA



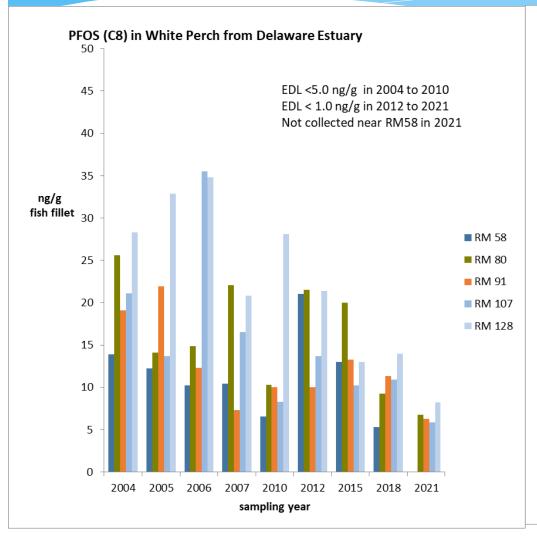
PFNA detected in tidal fish decreasing to below or near DL (1.0 ng/g) by 2018.

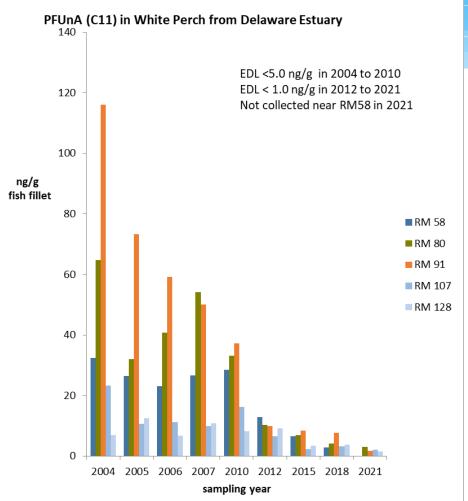
PFNA concentrations and trends are presumed to reflect early site-specific releases and subsequent actions to reduce industrial discharges of PFNA to surface water in the tidal portion of the river.

PFNA levels in non-tidal fish were below DL throughout the study.



Temporal Trends in Fish Fillet – PFOS and PFUnA

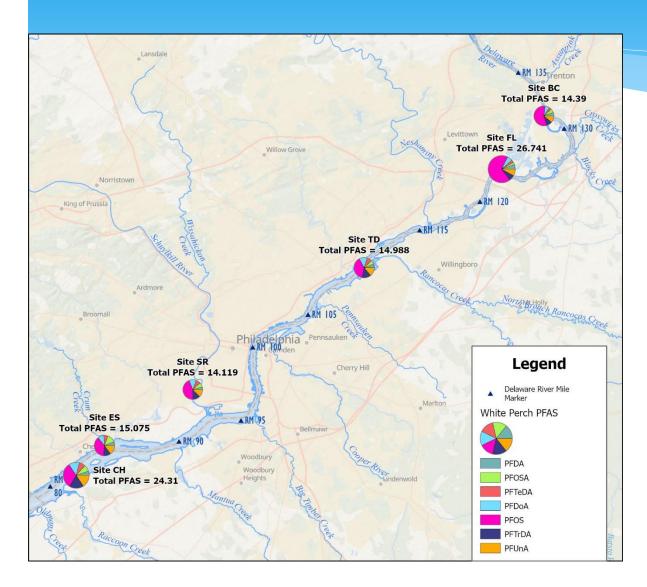


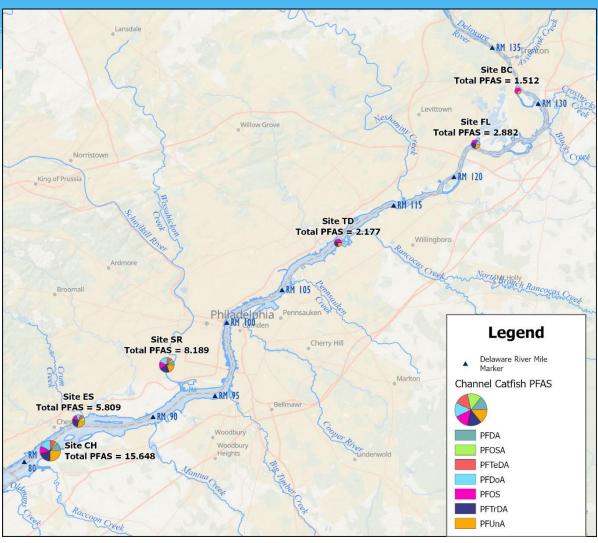




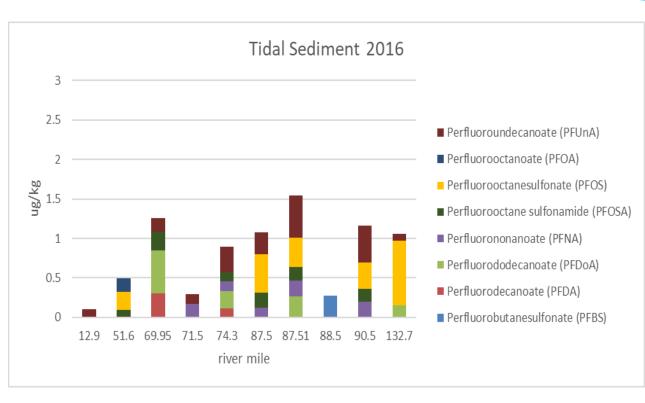
2021 Fish Fillet (ng/g) Spatial Distribution

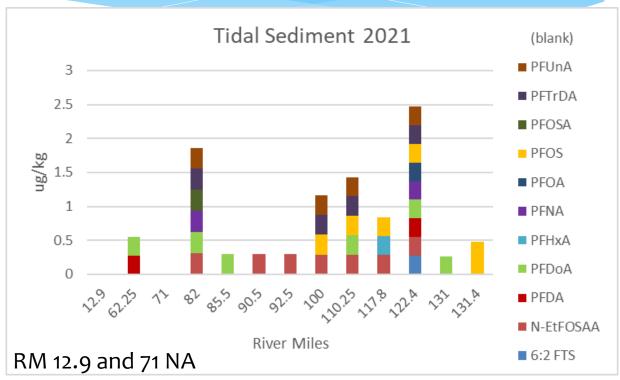






Long-chain PFAS detected at low concentrations in tidal main stem Delaware River sediment







Summary



- * While significant decreases in PFNA and PFUnA concentrations were observed in fish fillet from the tidal river over the sample period, decreases in concentrations of other PFAS in tidal fish were less substantial.
- * Elevated levels of PFOS in fish fillet can trigger restrictive fish consumption advisories.
- * Surface water samples collected from the tidal Delaware River between 2007 and 2021 found elevated levels of PFUnA and PFNA in areas not designated for drinking water sources with apparent decreases over the sample period.
- * Surface water concentrations varied for other PFAS but appear to be below regional and national guidelines in areas designated as drinking water sources.
- * Sediment from the tidal main stem Delaware River had long-chain PFAS detected at low concentrations.
- * Ongoing sampling for legacy and emerging PFAS.
 - * Surface water samples to Temple U. WET Ctr for targeted, suspect, and non-targeted analysis.

Ron MacGillivray, Ph.D. ron.macgillivray@drbc.gov https://www.nj.gov/drbc/programs/quality/cecs.html



MacGillivray, A R (2021) Temporal trends of PFAS in Delaware River Fish, USA. Integrated Environmental Assessment and Management. 17(2) 411-421.

https://setac.onlinelibrary.wiley.com/doi/10.1002/ieam.4342



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Project Funding: EPA, PACZM, and NFWF DWCF