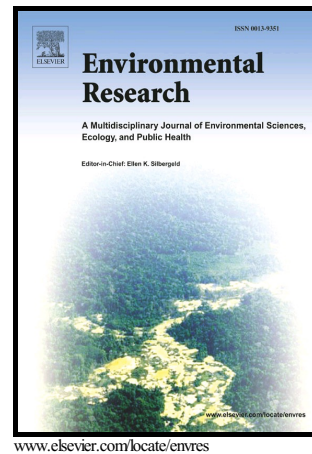


## Author's Accepted Manuscript

Persistent organic pollutants in fish from Charleston Harbor and tributaries, South Carolina, United States: A risk assessment

Patricia A. Fair, Natasha D. White, Beth Wolf, Stephen A. Arnott, Kurunthachalam Kannan, Rajendiran Karthikraj, John E. Vena



PII: S0013-9351(18)30432-8  
DOI: <https://doi.org/10.1016/j.envres.2018.08.001>  
Reference: YENRS8024

To appear in: *Environmental Research*

Received date: 23 April 2018  
Revised date: 25 July 2018  
Accepted date: 2 August 2018

Cite this article as: Patricia A. Fair, Natasha D. White, Beth Wolf, Stephen A. Arnott, Kurunthachalam Kannan, Rajendiran Karthikraj and John E. Vena, Persistent organic pollutants in fish from Charleston Harbor and tributaries, South Carolina, United States: A risk assessment, *Environmental Research*, <https://doi.org/10.1016/j.envres.2018.08.001>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

## Persistent organic pollutants in fish from Charleston Harbor and tributaries, South Carolina, United States: A risk assessment

Patricia A. Fair<sup>a,b\*</sup>, Natasha D. White<sup>b</sup>, Beth Wolf<sup>a</sup>, Stephen A. Arnott<sup>c</sup>, Kurunthachalam Kannan<sup>d</sup>, Rajendiran Karthikraj<sup>d</sup>, John E. Vena<sup>a</sup>

<sup>a</sup>*Department of Public Health Sciences, Medical University of South Carolina, Charleston, SC 29412 USA*

<sup>b</sup>*NOAA's Ocean Service, National Centers for Coastal Ocean Science, Charleston SC 29412 USA*

<sup>c</sup>*Marine Resources Research Institute, South Carolina Department of Natural Resources, Charleston, SC 29412 USA*

<sup>d</sup>*Wadsworth Center, New York State Department of Health, Empire State Plaza, PO Box 509, Albany, NY 12201-0509 USA*

\*Corresponding author Patricia A. Fair Medical University of South Carolina Hollings Marine Laboratory 221 Fort Johnson Road, Charleston, SC 29412-9110 fairp@musc.edu

### Abstract

Fish consumption is an important route of exposure to persistent organic pollutants (POPs) in dolphins as well as humans. In order to assess the potential risks associated with these contaminants, 39 whole fish and 37 fillets from fish representing species consumed by dolphins and humans captured from Charleston Harbor and tributaries, South Carolina, USA, were measured for a suite of POPs. Polychlorinated biphenyls (PCBs) were the predominant contaminant with concentrations ranging from 5.02 to 232.20 ng/g in whole fish and 5.42 to 131.95 ng/g in fillets (weight weight ww) followed by total organochlorine pesticides (OCPs) and polybrominated diphenyl ethers (PBDEs). Total POPs levels varied by location and species with general trends indicating significantly higher levels in fish from the Cooper (93.4 ng/g ww) and Ashley Rivers (56.2 ng/g ww) compared to Charleston Harbor (31.6 ng/g ww). Mullet and spot were found to have significantly higher PCBs, OCPs and total POPs, 2-3 times higher than red drum; mullet were also significantly higher in OCPs compared to seatrout. PCB concentrations in whole fish and fillets exceeded EPA human screening values for cancer risk in all fish sampled. For PCBs in fillets, all samples had values of maximum allowable meals per month that were less than the EPA, FDA guidelines for recommended fish meals per month, suggesting lower (more stringent) allowable fish meals per month. All fish exceeded PBDE wildlife values and all fish except two exceeded the level where 95% of the dolphin population would have tissue levels below the health effect threshold. Considering that POP concentrations in fish potentially consumed by humans exceed human health effect thresholds levels, consumption advisories should be considered as a prudent public health measure.

### Key words:

Persistent organic pollutants (POPs); Charleston Harbor; marine fish; human risk assessment; dolphin

Download English Version:

<https://daneshyari.com/en/article/10115868>

Download Persian Version:

<https://daneshyari.com/article/10115868>

[Daneshyari.com](https://daneshyari.com)