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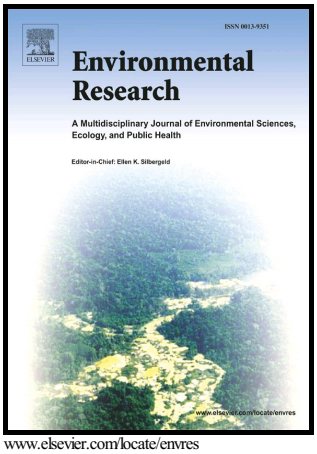

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PII: S0013-9351(18)30395-5
DOI: https://doi.org/10.1016/j.envres.2018.07.025
Reference: YENRS8009

To appear in: *Environmental Research*

Received date: 5 June 2018
Revised date: 6 July 2018
Accepted date: 14 July 2018

Cite this article as: J.F. Provencher, S. Avery-Gomm, M. Liboiron, B.M. Braune, J.B. Macaulay, M.L. Mallory and R.J. Letcher, Are ingested plastics a vector of PCB contamination in northern fulmars from coastal Newfoundland and Labrador? , *Environmental Research,* https://doi.org/10.1016/j.envres.2018.07.025

Are ingested plastics a vector of PCB contamination in northern fulmars from coastal Newfoundland and Labrador?

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Abstract:

While marine animals are exposed to environmental contaminants via their prey, because plastic pollution in the aquatic environment can concentrate some chemicals, ingested plastics are thought to increase the exposure of biota to contaminants. Currently, in the literature there are contradictory results relating to how higher levels of ingested plastics by birds may lead to higher levels of polychlorinated biphenyl (PCBs). To date none of these have incorporated known Toxic Equivalency Factors (TEFs) for non-*ortho* and mono-*ortho* congeners of PCB which is critical to assessing the potential effects from PCBs. We examined northern fulmars (*Fulmarus glacialis*) from the Labrador Sea region Canada, and the ingested plastics from these same birds for comparative PCB concentrations. We found no significant correlations between the PCB concentrations in the birds and the mass or number of retained ingested plastic pieces in the stomach, this held true when PCBs were considered by a number of different ways, including $\sum_4$PCB, $\sum$PCB, lower-chlorinated, high-chlorinated, non-ortho PCB, and mono-*ortho* congeners. PCB concentrations were lower in plastics as compared with livers. We found significant differences in congener profiles between the ingested plastics and seabird livers suggesting that while plastics do not contribute to the PCB concentrations, there may be some interactions between plastics and the chemicals that the birds are exposed to via ingested plastics.

Keywords:

Plastic, polymer, seabird, contaminant, biotransfer, accumulation, sub-Arctic

1.1 Introduction