**Persistent Organic Pollutants and LTL Read Me**

*(All Box locations begin with:**NHANES Projects> Chemical Exposures and Telomere Length > PCBs, Dioxins and LTL)*

**Project dates**: Fall 2014 – Fall 2015

**IRB:** N/A

**Funding Source:** NIEHS R00ES019881 (Ami Zota); intramural research program of the National Cancer Institute/National Institutes of Health (Linda Birnbaum)

**Lead Institution:** GWU

**Study Objective:**

**-**Examine whether persistent organic pollutants (PCBs and dioxins) are associated with leukocyte telomere length in NHANES

-Examine whether AhR affinity of each congener affects its relationship with LTL

-First study of a set of 3 proposed studies examining the relationship between POPs, phthalates, and phytoestrogens with LTL.

**Results Summary:**

-Non-ortho PCBs and TEQ were associated with longer LTL in quartile models and linear models (per doubling of exposure).

-Non-dioxin-like PCBs were not associated with LTL.

*-*POPs with high TEFs and AhR affinity were associated with longer LTL.

-Because many dioxin-associated cancers are also associated with longer LTL, these results may provide insight into the mechanisms underlying PCB and dioxin-related carcinogenesis.

**Analysis:**

**Data Source:** NHANES 2001-2002

**Code**:

-***Final SAS code*** is called FINAL CODE.sas

-The SAS code used to generate the multiple imputation is called MultImp\_code\_02.04.15.sas and can be found in the same location as the final SAS code.

*-Box**Location:* *> Code > SAS and RDC Code*

-***Final R code*** used to make Figure 1 is called PCB\_Fig1\_Code\_FINAL.R

-Sung Kyun Park’s code, which we modified to create Figure 1, is called Sung\_Kyun\_code.R. Dr. Park’s code produces a graph that can be found in the paper SK\_Paper.pdf (Park et al. 2010).

*-Box**Location:* *> Code > R Code*

**Excel Sheets for GMs and % change calculations:**

**-**The excel sheet is called Percent change part 2.xls.

*-Box**Location:* *> Output*

**Datasets:**

**-***Box Location:* *> Data*

**Output:**

**Manuscript:**

-The manuscript was published online in Environmental Health Perspectives on 10/9/2015

-The published version can be found on Box in *> Manuscripts and Abstracts.*

-It is also available at http://ehp.niehs.nih.gov/15-10187/

**Presentations:**

-Research Days 2015: *> Presentations > Research Days Poster*

-ISEE 2015: *> Presentations > ISEE presentation*

-Slides were also shown at Ami’s January 2015 NICHD talk and November 2015 Harvard talk.

**Dissemination:**

**-**An EOH News piece about the paper can be found on Box in *> Dissemination* or online at http://publichealth.gwu.edu/content/eoh-researchers-link-exposure-pops-chronic-disease-biomarker

**Other:**

A competing paper using almost exactly the same data, published 1 month later, can be found online at http://www.sciencedirect.com/science/article/pii/S2352396415302127

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