TITLE: Measuring the Exposure Trend of Polycyclic Aromatic Hydrocarbon (PAHs) in the U.S. Population with Urinary Biomarkers, 2001-2014

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STUDENT SUBMISSION: Yes

TOPIC/TARGET AUDIENCE: Public health policy-makers, community outreach coordinators, clinicians.

ABSTRACT: Background: PAHs are associated with human disease with multiple routes of exposure. While public health concerns prompted policies to monitor and control PAH exposure, few studies have evaluated PAH exposure trends over time.

Objective: Examine trends in urinary PAH exposure in the U.S. general population using data collected by the National Health Examination & Nutrition Survey (NHANES) 2001-2014.

Methods: NHANES is a stratified random-sampling of non-institutionalized U.S. citizens. A spot urine sample was collected and analyzed for metabolites of naphthalene, fluorene, phenanthrene and 1-pyrene in 19,079 participants >6 years of age. Covariate data was collected at same time as spot urine sample and includes age, sex, race/ethnicity, creatinine, smoking, BMI, income, season, and diet. Participants were excluded if missing PAH/covariate data or diagnosed with weak or failing kidneys. This left a final sample size of 15,830. Statistical analysis using weighted linear regression on log-transformed PAH metabolites in Stata 15.1.

Public Health Implications: Air toxic regulations to control PAH exposure have been in place in the U.S. since the 1990s. Also, air pollution levels in the U.S. have decreased over this period. It is important to evaluate whether these measures have had any impact on the general public's PAH exposure.

OBJECTIVE(S): Evaluate if U.S. policies to control exposure to airborne polycyclic aromatic hydrocarbons (PAHs) have been effective over the time.