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Project Number: 5R21ES024108-02

Title: ASSESSING THE IMPACT OF CLEAN HEAT POLICY INTERVENTION IN NEW YORK CITY

Contact PI / Project Leader: [HERNANDEZ, DIANA](#)

Awardee Organization: COLUMBIA UNIVERSITY HEALTH SCIENCES

Abstract Text:

DESCRIPTION (provided by applicant): This study will investigate the impacts of timely and progressive Clean Heat regulations that have a short implementation cycle ending to be fully executed by 2015. The proposed project will examine the variance in residential exposure to black carbon (BC) before and after implementation and analyze the policy process. BC is produced by any incomplete combustion process and is a surrogate tracer of different combustion sources. In NYC, major sources of BC include space heating and high density vehicle traffic (especially trucks).1,9-19 A significant contributor to the city's current BC emissions are buildings that burn residual oil (No. 4 and No. 6) for heating.14,18-19 Previous **research** has demonstrated that residual oil represents a significant environmental and public health threat. These environmental hazards are linked to a variety of health problems including **Cardiovascular** disease, **respiratory** illness and lung cancer. A recent policy measure issued by the New York City Department of Environmental Protection mandates conversion from No. 6 fuel to cleaner burning fuel sources including lower sulfur No. 2 fuel, biodiesel or natural gas. This public health law is intended to address widespread air pollution by reducing fine particulate matter (PM2.5) emissions that produce soot and black carbon in NYC. As NYC is the most populated city in the United States, this new regulation marks one of the largest and most comprehensive pieces of environmental, energy and public health policy in the nation in the past decade. This study will substantially improve the evidence base for the efficacy of environmental and public health policies. We will measure residential indoor/outdoor air quality prior to heating fuel conversion in the 2013-2014 heating season and one-year post-conversion in the 2014-2015 heating season (Aim 1). We will also use the NYC Clean Heat policy intervention as a case study and identify the contextual and process-level factors involved in the effective passage and implementation of these laws (Aim 2). Together the mixed method approaches in Aims 1 and 2 will yield contextualized results to demonstrate changes in domestic and neighborhood levels of fine particulate matter (PM2.5) associated with BC generated in buildings that burn residual oil (i.e., No. 6), but by legal mandate are obligated to convert to cleaner burning fuel sources before the 2014/2015 heating season. The proposed study will document changes associated with the Clean Heat regulations in a neighborhood context beset by asthma and other adverse health effects linked to BC exposure to address issues related to health disparities. If successful our innovative **study design** will advance our scientific knowledge about residential exposure changes to BC in the aftermath of this policy intervention and the impact on vulnerable populations. Responsive to NIEHS' "Strategic Themes," the proposed study focuses on exposure **research** and health, the translation of science to public policy, health disparities, interdisciplinary approaches to environmental health, diversity and the broad dissemination of **research** findings.

Public Health Relevance Statement:

PUBLIC HEALTH RELEVANCE: The proposed study capitalizes on a unique and time-sensitive policy intervention that seeks to reduce airborne black carbon (BC) in NYC. Together the mixed method approaches in Aims 1 and 2 will yield contextualized results to demonstrate changes in domestic and neighborhood levels of fine particulate matter (PM2.5) associated with BC generated in buildings that burn residual oil (i.e., No. 6), but by legal mandate are obligated to convert to cleaner burning fuel sources before the 2014/2015 heating season. If successful our innovative **study design** will advance our scientific knowledge about residential exposure changes to BC in the aftermath of this policy intervention and the impact on vulnerable populations.

NIH Spending Category:

Climate-Related Exposures and Conditions; Clinical **research**; Health Effects of Household Energy Combustion; Health Effects of Indoor Air Pollution; Prevention

Project Terms:

Address; Affect; Air; Air Pollution; Asthma; base; Burn injury; Carbon Black; carbon emissions; **Cardiovascular** Diseases; **Cardiovascular** system; Case Study; Child; Cities; climate change; cognitive function; Collaborations; Communities; community based participatory **research**; Data Collection; density; Disadvantaged; dissemination **research**; Distal; Environment; Environmental Exposure; Environmental Hazards; Environmental Health; Environmental Protection; evidence base; exhaust; Exposure to; Face; Funding Mechanisms; Future; Geographic Locations; Health; health disparity; Health Hazards; Health Policy; Heating; improved; informant; innovation; interdisciplinary approach; Intervention; Interview; Knowledge; Laws; Legal; Life; Link; Low income; Malignant neoplasm of lung; Measures; Methods; Minor; multidisciplinary; National Institute of Environmental Health Sciences; Natural Gas; Neighborhoods; New York City; Oils; Outcome; Particulate Matter; Policies; Policy Analysis; Pollution; Positioning Attribute; Prevalence; Process; Public Health; Public Policy; Qualitative Methods; Regulation; **research**; **research** Design; **research** Project Grants; Residual state; **respiratory**; Science; Scientist; Seasons; social; Soot; Source; stem; Sulfur; Testing; Time; Tracer; trafficking; Translations; United States; Vulnerable Populations; Work

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