

Concept Clearance

Branch: Population Health

Council Period: 202110

Concept Title: Maintaining and Enriching Environmental Epidemiology Cohorts to Support Workforce Diversity

Introduction

Objective: We are proposing the continuation of the Maintaining and Enriching Environmental Epidemiology Cohorts Program with added emphasis on opportunities to support greater scientific and workforce diversity.

Background: The mission of the National Institutes of Environmental Health Sciences (NIEHS) is to discover how the environment affects people, in order to promote healthier lives. As such, NIEHS makes significant investments in environmental epidemiology cohorts (EECs) that help scientists better understand how environmental exposures affect human health during different stages of life in various populations. These studies advance our understanding of how exposure to harmful chemicals, modifiable lifestyle factors, and genetics contribute to health and disease.

The goal of the existing Maintaining and Enriching Environmental Epidemiology Cohorts Program is to maintain and maximize NIEHS cohort investments within the environmental epidemiology community by supporting the infrastructure needed to prepare for future research opportunities and to promote broader scientific collaborations. As such, the purpose of previous Funding Opportunity Announcements (FOAs) has been to: provide stability to existing environmental epidemiology cohorts by supporting the necessary EEC maintenance and infrastructure to retain trained field personnel essential to continue ongoing longitudinal data collection; follow-up study participants; preserve the integrity and quality of specimen collection; continue ongoing community engagement activities and to facilitate data science and data preparation activities to facilitate data sharing. Through three iterations of the R24 solicitation [(RFA-ES-16-004, 2016), (NOT-ES-17-007, 2017) and (NOT-ES-18-009, 2018)] the Program has provided support for a wide range of EECs, including pregnant women and their offspring, children or adults, and the assessment of varying environmental exposures and health outcomes. Data from these EECs are a valuable resource to the entire environmental health community.

Still, for biomedical research to achieve scientific advances to improve human health in a diverse US population, increased diversity and inclusion is necessary in environmental epidemiology cohorts and the biomedical workforce (AlShebli et al., 2018 *Nature Communications*; Swartz et al., 2019 *The Journal of Infectious Diseases*; Tilghman et al., 2021 *Science*). Black, Indigenous, and other People of Color remain underrepresented in the biomedical workforce (National Science Foundation, 2019 <https://ncses.nsf.gov/pubs/nsf19304>), are less likely to secure federal funding (Ginther et al., 2011 *Science*; Ginther et al., 2018 *PLoS ONE*), and face unique barriers pertaining to access to, and utilization of data sharing resources, especially at under-resourced institutions (Zhang et al., 2017 *Ethnicity & Disease*).

In March of 2020, NIH Director Dr. Francis Collins issued a statement emphasizing NIH's strong stand against structural racism in biomedical research and introduced the UNITE initiative. NIEHS Director Dr. Rick Woychik has since called upon the NIEHS community to make sure that UNITE concepts are "embraced and implemented both throughout our institute and, to the best of our ability, across every component of the Environmental Health Sciences research community".

In an effort to support a diverse scientific workforce and enhance the breadth of populations represented in scientific inquiry, we propose to continue the Maintaining and Enriching Environmental Epidemiology Cohorts Program and to revise the language in the FOA to emphasize the goal of creating stable funding for EEC maintenance and data sharing for the purposes of expanding data collection for under-represented populations to advance environmental health equity (where relevant) and promoting widespread data sharing and scientific collaborations to benefit under-resourced minority-serving institutions and under-represented minority researchers.

Research Goals and Scope

Through the data rich Maintaining and Enriching Environmental Epidemiology Cohorts Program, NIEHS has a unique opportunity to improve data collection on under-represented populations in environmental health studies, strengthen workforce diversity and promote greater scientific collaboration. As such, the research goals are similar to the previous FOAs, 1) maintenance and resource infrastructure enrichment for existing EECs and (2) enrichment of EEC data management and sharing, with more emphasis on the following:

- Support infrastructure to retain personnel essential to continue and expand cohort enrollment of underrepresented populations, including community partnerships.
- Refine data science element to focus on supporting infrastructure and personnel essential to data preparation to facilitate and ensure broader data sharing.

- Enhance outreach activities to bring greater awareness to the research community of opportunities to pursue new and possibly unlikely collaborations and interdisciplinary partnerships.

Cohort maintenance and related activities may include:

For new applications -

- Expansion of recruitment to enroll under-represented populations to enhance the breadth of the science or power of the cohort.
- Re-consenting of participants for broad data sharing as appropriate and consistent with achieving the goals of the program.
- Continuation and enhancement of sample collection and management of existing biorepositories and environmental sample repositories to be inclusive of under-represented populations.
- Continuation and enhancement of community engagement and outreach activities.
- Additional data collection to assess structural or individual racism as factors of exposure-outcome associations.

For renewals -

- Continuation and enhancement of community engagement and outreach activities.
- Data collection on upstream socioeconomic factors in the context of environmental health.
- Development or validation of methodology to integrate structural or individual racism data into existing research efforts.

Enrichment of EEC data management and sharing may include retaining or hiring of personnel for:

For new applications -

- Implementation of an improved quality assurance and quality control plan across the full data lifecycle, including the identification and handling of potentially erroneous or missing values.
- Formatting and depositing individual-level de-identified data in an existing repository.
- Development and implementation of a searchable web-based platform for broader data sharing and integration.
- Linkage and integration of multiple data sets from different sources such as health records and environmental data sources to address social determinants of environmental health.

For renewals -

- Building awareness of available NIEHS-supported epidemiological cohort data at minority serving institutions.
- Capacity building and investigator development centered around biospecimen collection and processing, and data management.
- Development and implementation of a searchable web-based platform for broader data sharing and integration.
- Linkage and integration of multiple data sets from different sources such as health records and environmental data sources to address social determinants of environmental health.

Mechanism and Justification

We propose that the goals of the Maintaining and Enriching Environmental Epidemiology Cohorts Program will be best supported through a U24 mechanism, Resource-Related Research Projects-Cooperative Agreements. The purpose of the U24 mechanism is to support research projects contributing to the improvement of the capability of resources to serve biomedical research, allowing for extensive programmatic involvement.

Although this infrastructure support will be awarded to applicants with an existing epidemiology cohort, the U24 mechanism would allow NIEHS to actively coordinate and manage the enrichment and expansion of EECs to improve the diversity of population studies (where relevant), including the organization of regular Program meetings to allow awardees to provide an update on cohort enrichment and expansion activities.

Furthermore, through the U24 mechanism NIEHS will assist with the facilitation of opportunities for awardees to reach out to the broader scientific community with an emphasis on benefit to under-resourced minority-serving institutions (MSIs) and under-represented minority researchers. The NIEHS will continue to catalog the data that has been collected across cohorts and make the information available online. This will assist the research community in identifying potential cohorts to address specific research questions and facilitate data sharing and cross-cohort efforts such as replication and meta-analyses, beyond the primary institution or faculty of the awardees in the Program.

There will be active management by NIEHS to ensure that there is documentation of activities toward the development and active reuse of data and biospecimen resources by the broader environmental health sciences research community. Awardees will be expected to document utilization beyond their institution and known collaborators in the non-competitive renewal and will be held accountable for meeting these goals.

As in previous iterations of this program, we propose solicitation through a Request for Application (RFA) with a single receipt date for three consecutive years. Applicants can ask up to 5 years of funding at a direct cost not to exceed \$250K. We are proposing a set aside of \$2.5M per year for this Program.