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Title of Initiative: Environmental Health Disparities Centers Renewal

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Objective: To support multidisciplinary research, research capacity building, and community-engaged approaches to understand and address environmental health disparities, defined as inequities in population health mediated by disproportionate adverse exposures associated with the physical, chemical, social, and built environments, with an emphasis on environmental justice action.

Background: The Environmental Health Disparities (EHD) Centers program, initiated at NIMHD in 2011, has made significant scientific strides in documenting and addressing racial, ethnic, and socioeconomic disparities in environmentally mediated health outcomes. The current Centers conduct environmental justice (EJ) research, capacity building, and training across diverse disciplines and backgrounds to document the benefits and disproportionate environmental burden associated with inequalities among populations experiencing health disparities with a disease-agnostic focus. The Centers are comprised of three cores: administrative (project oversight and evaluation), community engagement and dissemination (sustaining relationships with community-based organizations and partners), and investigator development (research training and supervision of a pilot project program). Each center supports one to three research projects addressing research questions relevant to EHDs. For this renewal, there will be an explicit focus on EJ research addressing EHDs.

Thus far, the funded EHD Centers have successfully disseminated and translated research findings within the community, created and sustained partnerships with local communities, developed infrastructure to collect exposure data within local communities and hospitals, worked in partnership with low-resource institutions, trained EHD researchers from underrepresented backgrounds, and documented EHDs and their impacts on health. The three [funded EHD Centers](#), co-funded by NIEHS and NICHD since 2020, focus on understanding the impacts of environmental exposures on maternal and infant health and the impacts of contaminants from the degradation of microplastics on chronic diseases among Tribal communities. EHD Center work to date has shed light on heavy metal exposures from abandoned uranium mines among Tribal communities, air pollution exposure impacts on maternal mental health among low-income Latinas, and air pollution exposure disparities. Overall, the EHD Centers have disseminated their work through 66 publications and 190 presentations, received 24 grants, supported 51 trainees from underrepresented groups in science, and convened 100+ community events. The EHD Centers focus on examining environmental determinants of health within the context of social determinants of health (SDOH), as these are the most amenable to prevention and intervention strategies for reducing health disparities.

SDOH are the conditions in which people are born, grow, learn, work, play, live, and age, and the structural factors shaping conditions of daily living (e.g., social and economic policies). Structural SDOH, as well as individual demographic and social factors, play a key role in creating and

sustaining health disparities within the U.S. and occur across multiple levels of influence (e.g., individual, community). Upstream SDOH, such as housing and employment policies, are complex and extensive pathways, which can collectively contribute to health inequities, and are often the most difficult to address. Health equity research calls for accounting and addressing SDOH among populations experiencing health disparities, as they are disproportionately affected. NIH-designated populations experiencing health disparities are defined [here](#). NIMHD research priorities focus on racial and ethnic minority populations and socioeconomically disadvantaged populations. For priorities regarding rural populations, sexual and gender minorities (SGM), and people living with disabilities, more info can be found [here](#).

SDOH interacts with other determinants of health, including physical (i.e., soil, water supply), chemical, and built environmental factors (i.e., places where we live, work, and play) to further promote or compromise health. Populations experiencing health disparities endure higher levels of stress and cumulative exposures to adverse social factors such as poverty, lower-quality education, food insecurity, chronic and acute psychosocial stress, and lifelong patterns of discrimination, in addition to physical, biological, and chemical environmental hazards (e.g., microplastics in food and water supplies, exposure to extreme heat, air and water pollution). Yet, access to positive effects of the natural and built environment (e.g., green space, clean water, fresh food, opportunities for physical activity) and policies buffering against hazardous exposures are often disproportionately lower in these communities where they reside. Climate change has exacerbated these issues further as populations experiencing health disparities are at greater risk and vulnerable to poorer health outcomes.

[Indigenous Knowledges](#) – the evolving knowledge acquired by Indigenous and local Tribal peoples over time through direct contact with the environment and shared through oral tradition and cultural expressions – is often overlooked and excluded within research on environmental health.

A recent EJ executive order ([EO 14096](#)) calls for the just treatment and meaningful involvement of all people in agency decision-making and activities affecting human health and the environment to provide equitable access to a healthy environment. Building on the EHD Center's legacy, the renewal will continue to stimulate basic and applied research that generates innovative approaches to alleviating EHDs. EHD Center research to date has primarily documented EHDs with a limited emphasis on interventions to address upstream SDOH. Thus, the renewal will explicitly focus on EJ action research, which documents and addresses the disproportionate environmental burdens and benefits associated with social inequalities by soliciting multilevel studies and interventions to address upstream SDOH. The renewal will strongly encourage intervention research, equitable partnerships with low-resource institutions/communities and disseminate research findings to inform policy. Implementation science frameworks and methods will be strongly encouraged to support the adoption, integration, uptake, scale-up, and sustainability of these studies. The multilevel and multidomain [NIMHD research framework](#) and using translational frameworks such as the [NIEHS translational research framework](#) will help further develop the EHD evidence base. Additionally, leveraging

common data elements will help to harmonize with existing NIH data sources, such as [ScHARe](#) and the [PhenX SDOH toolkit](#), to further work in data science on EHDs.

An NIH portfolio analysis (FY 2018-23) indicated 105 EHD research projects and P50 center grants, with NIMHD funding 23 grants. Our analysis and literature review indicates vital research gaps in examining the interplay between physical and social environments, cumulative risk studies on populations with multiple marginalized statuses (e.g., low-income, Black- and African American, or immigrants in rural communities), community-engaged approaches, multilevel studies, policy or systems level studies, and interventions, especially at the structural level, addressing upstream SDOH.

Description of the Initiative: The EHD Centers renewal will support multidisciplinary, multilevel research (i.e., observational, interventional, implementation), research capacity building, training of early-stage investigators, and community-engaged approaches to document and mitigate EHDs among populations experiencing health disparities with an emphasis on EJ action.

Research Priorities:

- Develop models to evaluate the interaction or cumulative risks of various environmental exposures (e.g., chemical, physical, and/or biological stressors) with different SDOHs on chronic diseases.
- Examine drivers for differential exposures (i.e., social, built, and physical environment) to better understand how environmental contributions disproportionately impact health among populations with multiple marginalized statuses.
- Implementation research with community partners to develop and test strategies to promote the adoption, integration, uptake, scale-up, and spread of evidence-based/informed interventions for reducing or preventing harmful environmental exposures.
- Multilevel EHD interventions incorporating Indigenous Knowledges to promote well-being, resilience, and connection of American Indian or Alaskan Native and Native Hawaiian or Pacific Islander populations to the land and waters.
- Develop and test environmental justice-focused interventions, addressing upstream SDOH among immigrant communities.
- Develop and test models to understand community assets, environmental exposures, resiliency, and chronic disease risks to help communities recover from extreme weather events or heat exposure to bolster health.
- Structural interventions to prevent and address long-term EHDs and factors related to maternal and child health disparities across the life course.
- Systems level (i.e., healthcare, workplaces, or schools or policies) interventions to address place-based disparities in communities disproportionately affected by environmental exposures exacerbated by climate change.
- Examine the impacts of resource extraction (e.g., unconventional oil and gas development, hydraulic fracking, logging, mining) on water or air quality exposures leading to health disparities among local Tribal and low-income, rural communities.