



September 15, 2021

Re: NIH Climate Change and Human Health RFI NOT-ES-21-009

Dear Steering Committee of the National Institutes of Health (NIH) Climate Change and Human Health Working Group,

The Association of Public Health Laboratories (APHL) appreciates the opportunity to provide feedback on NIH's priority areas pertaining to the health consequences of climate change. APHL's members, state, local and territorial governmental public health laboratories, provide surveillance, routine testing, and response for infectious disease, environmental health and food safety threats. Our laboratories have provided critical data during public health emergencies such as Zika, the opioid crisis, EVALI and SARS-CoV-2. As climate change progressively affects public health, timely, quality, accessible, equitable laboratory data will be vital to a more comprehensive understanding of changing health threats and evaluating response to this emergency. We would like to address four of the priority areas in the Request for Information.

Innovative Research that Addresses Climate Change and Human Health

Baseline, community level data is critical to understanding the effects of climate on health. One expanding program is the National Biomonitoring Network (NBN), a collaboration of federal, regional, state and local laboratories that conduct biomonitoring for use in public health practice and in response to environmental emergenciesⁱ. Biomonitoring measures exposure to chemicals, through inhalation, drinking, water and agricultural run-off. The network aims to advance the science of biomonitoring, encourage its use in addressing environmental health questions and ensure quality practices, which will help produce comparable biomonitoring data. The ability to provide community level surveillance data is critical for an equitable understanding of exposure.

Climate change's effects on human health are bound tightly with its effects on animals and the environment. While the One Health concept is not new, the need for transdisciplinary approaches and solutions, from human, animal and environmental health may have never been greater. Along with traditional public health laboratories, it is important that NIH consider data from our environmental and agricultural member laboratories, as well as veterinary and wildlife laboratories, to ensure the most comprehensive understanding of research topics. The Centers for Disease Control and Prevention (CDC) initiated the National Wastewater Surveillance System (NWSS) in response to the COVID-19 pandemicⁱⁱ. The data generated by NWSS, in part from our environmental laboratories, improved understanding of the extent of infections in communities. Going forward, expansion of NWSS to other markers could potentially provide valuable surveillance data. The NIH RadX initiative was a critical piece of the response to COVID-19, including wastewater surveillance, and the climate crisis calls for further investments in innovative diagnostics.

There are notable gaps in research and understanding of the complex relationships between climate change and the burden of foodborne pathogens and parasites, harmful algal blooms, pesticides,

mycotoxins and heavy metals^{iiiiiv}. Alongside the analysis of comprehensive surveillance testing, new environmental studies will help countries protect their food and water supplies.

Scientific Infrastructure to Address Human Health and Climate Change

The COVID pandemic dramatically showed the antiquated public health data infrastructure, and highlighted the lack of data for minority, under resourced and historically disadvantaged communities. There is a critical need for investments in data systems for epidemiology and vital statistics as well as laboratory reporting. CDC's Data Modernization Initiative is beginning to make these foundational investments. The CDC's Center for Forecasting and Outbreak Analytics, will be a beneficiary of this improved data, enabling CDC and communities to respond to climate induced disease events^v. The pandemic has also showed the importance of interoperable data, data standards and cooperation and coordination between federal agencies and the private sector.

Given the breadth and interrelations of factors in the climate crisis, NIH should ensure its data systems are functioning to allow for optimal data acceptance and exchange, and have adequate staff support. For example, the National Center for Biotechnology Information (NCBI), a valuable repository of genomic information, vital in particular to food safety, should have investments that match the exponential rise in data related to next generation sequencing techniques. Environmental health, and indeed food safety, are yet to see the levels of investment in testing and data needed for climate change response that the pandemic has provided for infectious disease.

There are existing data portals such as the state and national environmental public health tracking systems. CDC's Environmental Public Health Tracking Network has data and information on the environment, exposures, health effects and population characteristics^{vi}. The state programs help people understand the link between the environment and health by integrating existing health and environmental data in a standardized format, providing the necessary information, tools, and resources to prevent and control environmentally related health effects. NIH investments in environmental health data transfer, storage and analysis, in coordination with CDC and EPA could go a long way to bridging this data gap.

Tried through various disasters, many of our laboratories have well tested surge and continuity of operations plans (COOP plans)^{vii}. As extreme weather events become more common, any NIH research and response plans should include plans for continuity of laboratory operations and data storage/use if buildings and storage facilities are inoperable.

Research and Community Partnerships to Address Environmental Injustice and Foster Resilience

While our laboratories and agencies such as the NIH can develop data regarding communities, citizen science also plays a role in combatting environmental injustice. Providing tools for communities to understand their environment can empower change. It can also provide information that may not have been otherwise available, likely of increasing importance in an unpredictable climate. One important tool

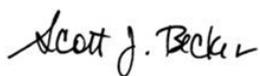
developed by EPA is a quality assurance handbook and guidance documents that are designed to help communities ensure their data is of sufficient quality to be relied on for decision making^{viii}. Including opportunities and support for meaningful citizen science can assist in providing justice and resiliency in communities.

Diverse Workforce to Address Human Health and Climate Change

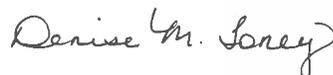
The public health laboratory workforce, like much of the public health sector, has been facing a slow rolling staffing crisis that has been made acutely worse due to the strain of the COVID-19 pandemic^{ix}. These needs are particularly large in informatics and some subspecialties such as radiochemistry. Simultaneously, our organization and our members, like many, are working to better understand and improve diversity, equity and inclusiveness^x. While pandemic relief investments may provide some staffing relief, developing a diverse STEAM workforce that can adequately address the health effects of climate change, with multidisciplinary and transdisciplinary training will take broader efforts. APHL has been involved in the development of a Global Laboratory Leadership Curriculum that provides a transdisciplinary approach to laboratory leadership training, a model that may be of some use in the biomedical sector^{xi}.

APHL applauds the recent establishment of an Office of Climate Change and Health Equity in the US Department of Health and Human Services and hope this enables cross agency coordination on this important work. We appreciate the great need for research and solutions in this area and would be happy to discuss our comments further. For any questions, please contact Kuki Hansen, Manager Regulatory and Public Policy (kuki.hansen@aphl.org).

Sincerely,



Scott Becker
Chief Executive Officer



Denise Toney
President

ⁱ https://www.aphl.org/programs/environmental_health/nbn/Pages/default.aspx

ⁱⁱ <https://www.cdc.gov/healthywater/surveillance/wastewater-surveillance/wastewater-surveillance.html>

ⁱⁱⁱ S.L. Harper, A. Cunsolo, A. Babujee, S. Coggins, E. De Jongh, T. Rusnak, C.J. Wright, M. Domínguez Aguilar, Trends and gaps in climate change and health research in North America, *Environmental Research*, Volume 199, 2021, 111205, ISSN 0013-9351, <https://doi.org/10.1016/j.envres.2021.111205>.

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- ^{iv} <http://www.fao.org/3/ca8185en/CA8185EN.pdf>
- ^v <https://www.cdc.gov/media/releases/2021/p0818-disease-forecasting-center.html>
- ^{vi} <https://www.cdc.gov/nceh/tracking/>
- ^{vii} <https://www.aphl.org/programs/preparedness/Pages/Training-and-Tools.aspx>
- ^{viii} <https://www.epa.gov/citizen-science/quality-assurance-citizen-science-projects>
- ^{ix} <https://www.aphl.org/aboutAPHL/publications/Documents/QSA-2021-PHL-Workforce-Needs.pdf>
- ^x https://www.aphl.org/professional_development/Pages/DEI.aspx
- ^{xi} <https://www.who.int/initiatives/global-laboratory-leadership-programme>