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Advancing the National Biomonitoring System

National Biomonitoring Network Plan:
2026-2031



National
Biomonitoring
Network

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Introduction

In 2009, the Association of Public Health Laboratories (APHL) published a five-year National Biomonitoring Plan for Public Health Laboratories aimed at building biomonitoring capability and capacity in the states. The plan sought to build a network of public health laboratories integrated into the environmental health system producing high-quality information to guide public health practice. The result was the creation of the National Biomonitoring Network (NBN), a collaborative effort of APHL and the Division of Laboratory Sciences at the National Center for Environmental Health of the US Centers for Disease Control and Prevention (CDC) providing technical assistance and resources for member laboratories health and their public health partners.

Strategic direction of the NBN was provided by the Network Steering Committee (NBNSC), a multi-disciplinary group of experts who continue to establish priorities and guide NBN activities. Subsequent NBN plans formalized the structure of the network, the application process, identified resource needs and aided in the development of technical resources (Nassif, Calafat and Aldous, 2021, IJHEH).

This new five-year plan has equally ambitious goals. This plan seeks to:

- ▶ **Re-imagine the network structure**
- ▶ **Harmonize biomonitoring measurements and practices**
- ▶ **Increase biomonitoring capability and capacity through technical assistance and training**
- ▶ **Maximize the use of biomonitoring measurements into routine public health practice**
- ▶ **Ensure vulnerable populations are represented in biomonitoring.**

About Biomonitoring

Biomonitoring is a multi-disciplinary science that assesses human exposure to environmental chemicals that may impact people's health. Environmental and public health agencies use biomonitoring information in multiple ways to:

- ▶ **Address community concerns of chemical exposures**
- ▶ **Gather information on exposure trends**
- ▶ **Inform public policy and practice**
- ▶ **Evaluate the efficacy of public health interventions**



With the implementation of this new five-year national plan, assessment of human chemical exposures will be further enhanced through nationally harmonized, high-quality biomonitoring program activities to inform public health practice and improve health. Beyond this five-year plan, public health laboratories may find opportunities to expand their work to new biomonitoring areas like nutritional biomarkers for fatty acids, iron and folic acid, or searching for markers of chronic disease, like cardiovascular indicators, toxic stress (cortisol) and oxidative stress.



Work Plan Vision and Mission

- **Vision:** Improved health through the integration of biomonitoring into routine public health practice.
- **Mission:** To provide timely and accurate human exposure data to inform public health, environmental protection and consumer decisions.

The Need for Continued Action

For the last three decades, the US Centers for Disease Control and Prevention's (CDC) Environmental Health Laboratory has generated biomonitoring data to understand the US population's exposure to hundreds of environmental chemicals. These findings have been published in peer-reviewed literature and in CDC's National Report on Human Exposure to Environmental Chemicals, an ongoing assessment of exposure for the civilian, non-institutionalized US population.

CDC's current survey design is representative of the US population but does not allow calculation of exposure estimates on a state-by-state or city-by-city basis. For example, CDC cannot extract a subset of data and examine levels of blood lead that represent a state population. To produce jurisdiction-level data, states need the capability and capacity to conduct biomonitoring assessments statewide or in areas of community concern.

This National Biomonitoring Plan for 2026-2031 serves as a framework for building a nation-wide, state-based system for biomonitoring. It will promote the comparison of data across multiple jurisdictional levels and will ultimately enable public health practitioners to better address community exposures.

The Work Plan

The work plan has been broken down into five goals. Each has a set of activities outlined that will help accomplish the goal, and each activity has an organization or group identified to maintain accountability.

Goal 1: Strengthen NBN Governance and Evaluation

#	Activities	Accountability
1.1	Formalize a logic model for the next five-year plan (2026-2031).	APHL
1.2	Review and define the composition of the NBN Steering Committee.	APHL
1.3	Update the NBN charter to: • Define network requirements • Establish member benefits, requirements, responsibilities and recognition • Set up formal governance structure and application process.	APHL
1.4	If deemed necessary by the NBNSC, APHL will establish workgroups which report to the NBNSC.	NBNSC
1.5	Finalize and publish the 2026 National Biomonitoring Plan document.	APHL
1.6	Explore the economic impact of biomonitoring.	CDC, APHL

Goal 2: Expand Capacity, Funding and Infrastructure

#	Activities	Accountability
2.1	Ensure sustained funding to maintain and expand state biomonitoring programs. • Educate elected officials and decision makers about the opportunities and impacts of biomonitoring to improve public health. • Highlight the accomplishments of the network members especially the recipients of CDC funding.	CDC, APHL
2.2	Work with NIST to develop additional reference materials, as funding permits.	APHL, NIST
2.3	Work with CDC and NBN member laboratories to develop quality systems including assessment panels and practices to advance harmonization of laboratory measures (especially for organics).	APHL
2.4	Incorporate biomonitoring into exposure assessments, response plans, exercises and training programs.	APHL
2.5	Leverage existing analytical capabilities and expertise (e.g., LRN-C, biomonitoring, overdose biosurveillance to increase biomonitoring capacity).	CDC, NBN
2.6	Develop an emergency response and community investigation framework with partner associations.	APHL, CSTE, ASTHO, NACCHO, CDC
2.7	Create resources for biomonitoring programs in vulnerable communities and demonstrate the value of doing such work (NBNSC).	APHL, NBNSC

Goal 3: Bolster a Multi-disciplinary Workforce to Support Biomonitoring

#	Activities	Accountability
3.1	Advocate and encourage multi-disciplinary teams.	APHL, NBN member laboratories
3.2	Promote and update, as appropriate, the APHL Biomonitoring Guidance: - Define minimum viable product as best practices for biomonitoring. - Share successful practices for enhancing participant recruitment, refining study development, and harmonizing exposure questionnaires.	APHL
3.3	Consider and promote opportunities for multi-disciplinary trainings (e.g., webinars, workshops, conferences).	APHL
3.4	Engage the poison center, nurses and community health workers.	APHL, NBN member laboratories
3.5	Promote the public health workforce through support of fellows and interns, as funding allows.	CDC, APHL
3.6	Conduct biomonitoring-specific sessions at professional meetings such as the International Society for Environmental Epidemiology (ISEE) and the International Society of Exposure Science (ISES), pairing laboratorians and epidemiologists, toxicologists and clinicians.	CDC, APHL, CSTE
3.7	Provide biomonitoring resources, including lists of relevant publications, proficiency testing programs, methods and program results.	APHL

Goal 4: Increase the Visibility and Public Understanding of Biomonitoring

#	Activities	Accountability
4.1	Publish a one-page report on the current state of the NBN.	CDC, APHL, NBN
4.2	Engage and educate community partners: - Build partnerships with communities and community organizations. - Collaborate with advocacy groups to educate legislators. - Share people-centric stories that demonstrate the power of biomonitoring to address community concerns.	APHL
4.3	Publicize the impact/success of biomonitoring activities, develop core messaging, multi-media approach, press releases, peer-reviewed publications, social media, video and webinars: - Utilize communications staff to frame biomonitoring benefits to the general public. - Develop customizable templates for states to share with their state legislative liaison to educate lawmakers about biomonitoring, its opportunities, and why it is needed. - Underscore how existing public health infrastructure can help build capacity. - Create marketing message, “We save lives, 24/7.”	APHL, ECOS, NEHA, ASTHO, CSTE, CDC and other partners

#	Activities	Accountability
4.4	Encourage the use of biomonitoring to address community concerns.	APHL
4.5	Develop communications tools for public health programs to engage and inform the public and future study participants about the benefits, value and limitations of biomonitoring, such as: - Resources to determine when biomonitoring is appropriate - Questions to ask to determine creation of a biomonitoring program - Infographics.	APHL, NBN
4.6	Develop a toolkit of available resources (e.g., guidance, fact sheets, etc.) for biomonitoring programs and trainings, templates geared towards engaging decision-makers, public health officials and the public.	APHL, NBN
4.7	Interface with partners such as the National Conference of State Legislatures (NCSL) and the Association of State and Territorial Health Officials (ASTHO) about how biomonitoring provides important data for decision making.	APHL, NCSL, ASTHO
4.8	Collaborate with EPA and ATSDR to increase the use of biomonitoring in their existing programmatic work and community investigations.	APHL

Goal 5: Advance Community Empowerment

#	Activities	Accountability
5.1	Develop communication tools for programs to use when sharing study results with participants and to use when discussing environmental exposures with patients.	APHL, NBN member laboratories
5.2	Train biomonitoring staff to communicate with the public using plain language to make messages accessible to all.	APHL, NBN member laboratories
5.3	Incorporate community feedback and encourage mutual dialogue. - Increase funding to CDC and the states. - Collect and collate existing results communication resources to share with members (NBN).	CDC, NBN, APHL
5.4	Develop public manuscript on how to engage vulnerable communities in biomonitoring (NBNSC) and publish via APHL communications vehicles.	APHL, NBNSC
5.5	Work with partners to advocate for establishing health-based reference values.	NBNSC

Glossary

APHL Association of Public Health Laboratories

ASTHO Association of State and Territorial Health Officials

ATSDR..... Agency for Toxic Substances and Disease Registry

CDC US Centers for Disease Control and Prevention

CSTE..... Council of State and Territorial Epidemiologists

ECOS..... Environmental Council of the States

NCSL National Council of State Legislatures

NEHA..... National Environmental Health Association

NBN..... National Biomonitoring Network

NBNSC NBN Network Steering Committee.

This group operates under the sponsorship of APHL to manage the activities of the National Biomonitoring Network.



Association of Public Health Laboratories

The Association of Public Health Laboratories (APHL) works to strengthen laboratory systems serving the public's health in the US and globally. APHL's member laboratories protect the public's health by monitoring and detecting infectious and foodborne diseases, environmental contaminants, terrorist agents, genetic disorders in newborns and other diverse health threats.

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