



APHL Position Statement

Biomonitoring

A. Statement of Position

A crucial tool for assessing population exposure to environmental chemicals, biomonitoring must be integrated into environmental and public health systems across the United States.

B. Implementation

1. Partner with the Tracking Network to include state biomonitoring data in the state databases.
2. Formalize the National Biomonitoring Network. This network will connect local, state and federal agencies and provide opportunities for a formal proficiency testing program.
3. Advocate for increased congressional funding for CDC/NCEH to support state biomonitoring and tracking programs.
4. Encourage partner organizations (such as ASTHO and CSTE) to take or promote a position on the incorporation of biomonitoring into public health practice.
5. Work with the environmental health system to create policies to integrate biomonitoring.

C. Background/Data Supporting Position

Biomonitoring measures human exposure to environmental chemicals directly in bodily fluids or tissues.¹ During an era of heightened concern

about chemical exposures, this tool **helps answer community questions related to exposures to environmental contaminants and the potential human health impacts.**

Biomonitoring helps to:

- set environmental and public health priorities, such as what sites to clean up, given limited budgets
- design effective environmental or public health interventions, such as installing water filters
- measure the outcome of policy actions on the public's health, such as the impact of smoking policy
- inform health equity issues by providing data on differentially-exposed populations or to show the impact that gender, ethnicity, or other characteristics may have on exposure

For example in Minnesota, when a community living near a major perfluorochemical (PFC), also known as polyfluoroalkyl acids or polyfluoroalkyl substances, waste disposal site found PFCs in their well water, they asked the legislature to fund a study to assess their level of exposure.

Biomonitoring identified PFC levels above those found in the general US population, and helped to assess the effectiveness of the intervention used to reduce exposure.²

Yet, **despite being around for decades and despite success story upon success story, biomonitoring remains at the fringe of public health.**^{3,4} Due to large investments in public health preparedness (especially the [Laboratory Response Network for Chemical Threats](#) or LRN-C) and grant funding from CDC, biomonitoring has moved from a research tool to a capability for the public health mission. Now most state and local public health laboratories can generate validated data on chemical exposures for the populations they serve. The key word is ‘can’; very few of these laboratories have actually integrated biomonitoring in their day-to-day public health surveillance [system](#).

At the national level, the CDC’s National Center for Environmental Health generates seminal biomonitoring data in the National Report on Human Exposure to Environmental Chemicals.⁵ This serves as a baseline estimate of the US population’s exposure to environmental chemicals. However, due to the national scope and limited sample size, it cannot be used at the state or local level to estimate exposure. Yet exposure to too many chemicals is greatly influenced by a variety of local or regional environmental factors that have the potential to impact human health.

In order to address this gap, **state and local public health and environmental agencies should develop a robust system to increase utilization of this important tool.** Use of LRN-C equipment has enabled laboratories to perform biomonitoring testing, pulling together laboratory, epidemiology and toxicology teams to answer real-world questions. The communication and trust among these teams, developed by working together, produces projects of increasing relevance and importance.

Another way to better integrate biomonitoring into public health surveillance would involve leveraging

the National Environmental Public Health Tracking Network (Tracking).⁶ This network focuses on the collection, integration, analysis, interpretation, and dissemination of data from environmental hazard monitoring, human exposure and health effects surveillance. Policies and plans addressing issues of environmental exposure and health effects already effectively use data from the Tracking network, but to date, the databases include little or no data on human exposure at the state or local level. **Combining state and local biomonitoring capabilities with Tracking will help make the connection between hazards in the environment and health effects by revealing what levels of those hazards are actually getting into human bodies.**

Current trends suggest that localized studies can have national implications (e.g. contaminants from consumer goods like furniture, gas, paint, cigarettes and food). Previous biomonitoring efforts have led to the removal of lead in gasoline, removal of lead in paint, banning of smoking in public places, removal of BPA from plastics, and removal of flame retardants from consumer products. Biomonitoring studies complement environmental data to complete the picture of environmental exposure and resultant ill health effects.

With sufficient resources, state public health laboratories can provide the fundamental data needed to implement and maintain effective and purposeful biomonitoring and tracking programs. This will also allow environmental remediation policy to not be guided exclusively by extrapolating environmental measurements of the environment, but by actual human exposure measurements.⁷

D. References

1. “Human Biomonitoring for Environmental Chemicals” (National Research Council, 2006) http://www.nap.edu/catalog.php?record_id=11700
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3. “Biomonitoring: An Integral Component of Public Health Practice” (The Association of Public Health Laboratories, 2013) http://www.aphl.org/AboutAPHL/publications/Documents/EH_2013July_Why-Biomonitoring-is-an-Integral-Component-of-Public-Health-Practice.pdf
4. “Biomonitoring: Measuring Chemicals in People” (The Association of Public Health Laboratories, 2004) http://www.aphl.org/AboutAPHL/publications/Documents/EH_2004May_Biomonitoring-Measuring-Chemicals-People.pdf
5. “Fourth report on Human Exposure to Environmental Chemicals” (Centers for Disease Control and Prevention, 2009) <http://www.cdc.gov/exposurereport/>
6. “National Environmental Public Health Tracking Program” (Centers for Disease Control and Prevention) <http://www.cdc.gov/nceh/tracking/>
7. “Biomonitoring: EPA Could Make Better Use of Biomonitoring Data” (United States Government Accountability Office, 2010) <http://www.gao.gov/new.items/d10419t.pdf>

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