Biomonitoring – An Integral Component of Public Health Practice

The National Biomonitoring Network

Kenneth Aldous, PhD
Division of Environmental Health Sciences
Wadsworth Center
NY State Department of Health

kenneth.aldous@health.ny.gov
The Need for Biomonitoring Capacity in States

- Biomonitoring provides unique and valuable information on human exposure to environmental compounds by measuring chemicals or their breakdown products in people’s blood or urine.

- CDC uses biomonitoring to conduct an ongoing assessment of the U.S. population’s exposure to more than 300 environmental chemicals.

- CDC’s data provide nationally representative reference ranges, but do not provide exposure information by specific state or locality.
The National Biomonitoring Network

**Vision**: A formal, national network of regional, state and local laboratories conducting high quality human biomonitoring science for use in public health practice and in response to environmental emergencies

**Mission**: To advance science by ensuring the quality and consistency of biomonitoring measurements nationally
What does it mean to have a Network?

A Network is a group or system of interconnected people or things

- Component Network Biomonitoring Programs
- Working together
- For the benefit of the entire system
The Path to the NBN

• CDC and APHL are working to establish and expand states’ capacity to conduct high-quality biomonitoring laboratory sciences through:
  • The National Biomonitoring Plan
  • Funding for state biomonitoring programs
  • Technical and administrative resources for state and local programs
  • A formal National Biomonitoring Network
Timeline

- 2001 State Biomonitoring Planning Grants funded by CDC
- 2009 Biomonitoring Cooperative agreements awarded by CDC
- 2009 The National Biomonitoring Plan for Public Health Laboratories
- 2015 Assessment of Progress and introduction of new 5 Year Plan to develop a Public Health Laboratory National Biomonitoring Network
  - Formalize the Network Structure
  - Set Goals for the next 5 Years
CDC launched the State Biomonitoring Program in 2001 to help states use biomonitoring to assess chemical exposures of concern in their communities.

2014-2019 Cooperative Agreement Awards
Six awardees receive a total of $5 million annually for five years.

How Do States Use Funding?
• Purchase laboratory equipment and supplies
• Hire and train specialized staff
• Conduct fieldwork and data analysis

CDC Programmatic Support
• Site visits
• Technical support
• Analytical method transfer
• Training at the CDC
• Grantee meetings
• Quality assurance programs
National Biomonitoring Plan

• APHL developed consecutive five-year National Biomonitoring Plans to guide a nation-wide, state-based system approach for biomonitoring.

2009 Plan Goals
• Foster collaboration among environmental public health programs
• Advance biomonitoring science
• Develop a biomonitoring network
• Disseminate biomonitoring information to guide policy and practice
• Enhance biomonitoring workforce and infrastructure

2015 Plan Goals
• Formalize a national biomonitoring network structure
• Harmonize biomonitoring measurements
• Fully incorporate biomonitoring into routine public health surveillance
Laboratory Response Network (LRN-C)

What constitutes a LRN-C Laboratory?
• LRN-C infrastructure, assets + prepared.
  • Skilled analysts – method development
  • Analytical instrumentation
  • Biological sample logistics
  • Sample collection and shipping
  • Automated sample processing
  • Surge capacity training
  • Rapid results reporting
  • Outreach
NBN Structure

• Network Steering Committee
  – broad expertise across EH system
• Topic specific workgroups
  ✓ study design
  ✓ methods
  ✓ membership
• data analysis and management
• communication
National Biomonitoring Network Structure

Tier 1
- Experience with surveillance, targeted emergency response
- Successful participation in a quality assessment program.
- Well established biomonitoring team integrated within the state public health system.

Tier 2
- Targeted and emergency response biomonitoring.
- Successful participation in a quality assessment program.
- A well established biomonitoring team integrated within the state public health system.

Tier 3
- Biomonitoring capabilities and infrastructure but not actively conducting biomonitoring.

Tier 4
- Laboratories considering development of biomonitoring capabilities
Why include biomonitoring in routine public health practice?

- Assists targeted public health investigations of potential community exposures - response to health concerns or potential environmental contamination.

- Serves as a surveillance tool to detect and measure spatial and temporal differences in population exposures and provide baseline information for the state or local jurisdiction.

- Provides a way to evaluate remedial actions and public health policies aimed at reducing chemical exposures.

- Contributes to disease diagnosis or rapid response efforts, by supporting diagnosis of poisoning and informing treatment plans.

- Can inform individual and consumer choice.
Biomonitoring Resources for State and Local Programs

CDC and APHL work together to promote system-wide networking and collaboration and to provide critical non-financial resources for all state and local programs interested in conducting biomonitoring.

**Biomonitoring Guidance Document for Public Health Laboratories**
Highlights key considerations for conducting a biomonitoring study and outlines infrastructure and expertise needed for laboratory capacity

**Laboratory Capabilities List**
Searchable database with analytical capabilities of APHL member labs

**Biomonitoring Toolkit**
Houses a discussion board and resources in document libraries
Guidance for Laboratories
Biomonitoring Toolkit

New Announcement
Biomonitoring Toolkit User Guide
Libraries
Shared Documents
Methods
Publications
Reports from States
Guidance Documents
Training Documents
Communications Tools
Informatics
Reporting
Lists
Calendar
Discussions
General Discussion
A Recycle Bin

- Announcements -

Welcome to the Biomonitoring Toolkit!

Dear Colleagues in Biomonitoring,

The Association of Public Health Laboratories (APHL) proudly announces our new Biomonitoring Toolkit! Created for anyone interested in the biomonitoring system – from environmental health directors & epidemiologists, to toxicologists & academics – this resource will try to answer any question you may have about biomonitoring.

Document libraries (in the left navigation) include overarching guidance documents, laboratory methods, communication templates, and stories from the field. Links (along the right side) point to other relevant resources.

This discussion board, which functions similar to a listserv, facilitates conversation among subscribers about biomonitoring. The site allows for multiple discussion threads to take place at once, as well as a robust search engine for finding old discussion threads.

To access the toolkit, you need to log into APHL’s SharePoint site. If you have not used our SharePoint tool, you will need sign up for an account.

- Links -

− Ref : APHL Resource
− Ref : Clinical and Lab
− Ref : Environmental I
− Ref : Federal Resource
− Ref : General Resource
− Ref : Limit of Detect
− Ref : Quality Assurance

Visit www.aphl.org and click on 'Create an Account' (upper right).
Email admin.sa@aphl.org to let us know which email address you used and we will add that to the Toolkit.

Guidance for Epidemiologists
Resources for State and Local Biomonitoring Programs

Environmental Public Health Fellowships
Places fellows in state laboratories to expand biomonitoring workforce

Biomonitoring Traineeships
Travel scholarships for laboratory staff to attend biomonitoring trainings or conferences

National Meetings of State Biomonitoring Programs
CDC and APHL convene environmental public health system stakeholders to engage on scientific and programmatic biomonitoring issues.
National Biomonitoring Network

The National Biomonitoring Network (NBN) leverages outcomes from the National Biomonitoring Plan and existing laboratory infrastructure from state-funded programs, CDC’s State Biomonitoring Program, and the Laboratory Response Network – Chemical.

Network Goals
• Connect and coordinate laboratories across the country that perform biomonitoring
• Create a central platform for biomonitoring practice
• Ensure the quality and consistency of national biomonitoring measurements
• Expand biomonitoring capacity
• Better incorporate biomonitoring measurements into routine public health surveillance

Activities To Date
• Convened a strategy meeting with a broad group of stakeholders to initiate network formation
• Formed and convened a steering committee, which includes relevant non-laboratory stakeholders
• Established a draft network structure and network laboratory member criteria based on programmatic activities, capability/capacity, infrastructure, and participation in quality assessment programs
• Drafted member benefits
Next Steps and Expected Outcomes

Future Activities
• Develop NBN priorities
• Recruit NBN members and develop a process for application review and member acceptance
• Educate stakeholders about the NBN and biomonitoring broadly
• Explore a central biomonitoring data repository

What We Hope to Achieve
• Increased use of high quality biomonitoring to track state-specific exposures and reduce harmful chemical exposures
• Improved nationwide biomonitoring capacity and capability
• Greater efficiency and stronger collaborations in conducting biomonitoring
• Increased awareness of the value of biomonitoring among the general population and scientific community
• Improved quality of chemical exposure assessment across the U.S.
Resources
National Biomonitoring Program
http://www.cdc.gov/biomonitoring

APHL National Biomonitoring Plan

State Biomonitoring Grants
http://www.cdc.gov/biomonitoring/state_grants

Contact Information
Amy L. Mowbray, PhD,
Centers for Disease Control and Prevention
National Center for Environmental Health
Division of Laboratory Sciences
4770 Buford Highway NE, MS F-20,
Atlanta, GA 30341
amowbray@cdc.gov
SUMMARY

The NBN is guided by a Network Steering Committee of diverse subject matter experts in epidemiology, toxicology, analytical chemistry, data analysis, data management and communication, representing multiple states and federal agencies. Within this initial administrative structure are workgroups focusing on Membership, Study Design and Methodology. Their priorities are:

- Development of a membership structure, requirements and benefits
- Guidance and best practices for emergency response, targeted and surveillance biomonitoring
- Harmonization of validated testing methods to ensure data comparability
SUMMARY

Revision of the “Guidance for Laboratory Biomonitoring Programs” April 2012 document.

Yet to be formed are work groups on outreach, communication, results reporting, data analysis and data management.

Over time, the NBN plans to explore options for development of a national repository of high quality biomonitoring data to be accessible to health officials, researchers and communities investigating environmental health concerns or evaluating the efficacy of public health policy.
Visit The APHL Experience

Monday 5:00 - 6:00pm
Exhibit Hall

The National Biomonitoring Network
Thank You

Contact Information
Email: kenneth.aldous@health.ny.gov
Phone: (518) 474-7161