



Minnesota Department of Health
Environmental Public Health Tracking and Biomonitoring:
Connecting Environment, Exposure, and Public Health



State Biomonitoring Summit 2013

Sharing Successes and Looking to the Future

June 27th, Dakota Lodge, West Saint Paul, MN

Minnesota Department of Health
Environmental Public Health Tracking and Biomonitoring:
Connecting Environment, Exposure, and Public Health

State Biomonitoring Summit Report 2013
Sharing Successes and Looking to the Future

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Introduction

Monitoring chemicals in people – biomonitoring – has become an important tool in public health practice nationwide. Since initiating a State Biomonitoring Program in 2007, the Minnesota Department of Health (MDH) has conducted 6 projects examining a range of chemicals, including perfluorinated chemicals (PFCs), mercury and arsenic, in different populations of Minnesota. The results have informed public policy decisions affecting these populations, and interest in using this tool to address important public health questions in the state has grown.

In order to share successes and look towards the future of Minnesota's Biomonitoring Program, the MDH partnered with Wilder Research to sponsor a State Biomonitoring Summit on Thursday, June 27th at the Dakota Lodge in West Saint Paul. Nearly 100 participants from a variety of disciplines attended, representing state and local government agencies, academic institutions, private and non-profit businesses, health laboratories, advocacy groups and the Minnesota Legislature, along with leaders from state biomonitoring programs in California, Minnesota, Washington and Wisconsin.



Aggie Leitheiser

Summit Objectives

The Summit brought together national leaders in biomonitoring and Minnesota stakeholders to:

- Share accomplishments from Minnesota's Biomonitoring Program.
- Learn about key states' biomonitoring programs, with a particular focus on how results are being used to inform public health action.
- Envision the future of biomonitoring in public health improvement in Minnesota.

Minnesota Biomonitoring Program Background

In 2007 the Minnesota Legislature established the Environmental Health Tracking and Biomonitoring Program (Minnesota Statutes, sections 144.995 to 144.998) directing MDH, in cooperation with the Minnesota Pollution Control Agency, the Minnesota Department of Agriculture, and the University of Minnesota, to:

1. Collect, integrate, analyze and disseminate health and environmental data.
2. Implement a pilot Biomonitoring Program to assess exposures to chemicals that affect health or development, and communicate the findings to the public.



Michael J. DiBartolomeis



Jessica Nelson



Deanna Scher

Program activities are guided by the Commissioner of Health and an expert Advisory Panel. Projects conducted in the first five years of the program include¹:

- [South Minneapolis Children's Arsenic Study*](#)
- [East Metro PFC Biomonitoring Pilot Project*](#)
- [Riverside Prenatal Biomonitoring Pilot Project*](#)
- [Mercury in Newborns in the Lake Superior Basin*](#)
- [Pregnancy and Newborns Exposure Study](#)
- [East Metro PFC Biomonitoring Follow-up Project](#)

*Biomonitoring pilot projects conducted by MDH, as directed by Minnesota Statutes

Among the Program's successes to date, biomonitoring demonstrated that public health actions to reduce perfluorinated chemicals (PFCs) in drinking water in the East Metro of Minneapolis-St. Paul reduced exposure in the population. Additionally, the Program responded to Minneapolis community concerns about children's exposure to arsenic in soil, finding that the primary source of arsenic among highly exposed children was a much less toxic arsenic found in foods.



Reed Sorenson

Summary of Summit Presentations and Discussions

State Experiences: Successes and Challenges

State biomonitoring program leaders from California, Minnesota, Washington and Wisconsin² described their programs, focusing on program design, funding, past projects and future plans. Presenters included:

- Michael J. DiBartolomeis, PhD, DABT, Lead, California Environmental Contaminant Biomonitoring Program and Chief, Exposure Assessment Section, California Department of Public Health
- Jessica Nelson, PhD, MPH, Program Coordinator, Biomonitoring Program, Minnesota Department of Health
- Deanna Scher, PhD, Principal Investigator, GLRI Biomonitoring Study, Minnesota Department of Health
- Reed Sorenson, MPH, CDC/CSTE Applied Epidemiology Fellow, Washington State Department of Health
- Kristen Malecki, PhD, MPH, Associate Director, Survey of the Health of Wisconsin, University of Wisconsin, Madison
- Mark Werner, PhD, Chief, Health Hazard Evaluation Section, Bureau of Environmental and Occupational Health, Wisconsin Division of Public Health



Kristen Malecki



Mark Werner

¹ See <http://www.health.state.mn.us/divs/hpcd/tracking/biomonitoring/program.html> for detailed project information.

² New York City's Biomonitoring Program was also on the agenda, but due to technical difficulties at the conference site their representative was unable to join the conference. However, materials on the program were made available to summit participants and are included in the presentations posted online at <http://www.health.state.mn.us/summit>

Full presentations in pdf form are available at <http://www.health.state.mn.us/summit>. Some themes heard throughout the presentations included:

STATE PROGRAM SUCCESSES:

- Using the National Health and Nutrition Examination Survey (NHANES) model to develop statewide population health surveys: Survey of the Health of Wisconsin (SHOW) and Washington Environmental Biomonitoring Survey (WEBS).
- Addressing stakeholder concerns about exposures, including affected communities and local public health agencies.
- Using biomonitoring data from NHANES as a national reference population.
- Collaborating with external partners, such as universities, to address funding and staffing needs.
- Using Environmental Public Health Tracking portals to display biomonitoring data and using Tracking funds to supplement funding for biomonitoring projects.

STATE PROGRAM CHALLENGES:

- Maintaining program continuity with limited, patchwork funding.
- Interpreting and disseminating study results to participants, particularly when the health effects of a chemical are not well understood.
- Recruiting certain populations such as minorities and other disadvantaged groups who may be at higher risk for environmental exposures and their effects.
- Coordinating biomonitoring, environmental health, laboratory, and toxicology expertise within state public health departments as well as input from external partners.
- Discrepancies between legislative directives and biomonitoring needs identified by scientists and public health professionals.

FUTURE DIRECTIONS:

- Filling state and local biomonitoring data gaps left by NHANES.
- Using biomonitoring as a tool for addressing health disparities and environmental justice.
- Using biomonitoring data to generate hypotheses for health research.
- Continuing to focus on high risk populations (e.g. women of childbearing age and children).



State experiences panel



Bruce Alexander

Perspectives on the Future of Biomonitoring in Public Health Practice in Minnesota

A panel of knowledgeable stakeholders shared their perspectives on the success of the Biomonitoring Program at achieving its vision and how biomonitoring can improve public health in the future. Panelists included:

- Dr. Bruce Alexander, Professor at the University of Minnesota School of Public Health
- Lowell Johnson, Director of the Washington County, MN, Department of Public Health and Environment
- Dr. Timothy O'Brien, Director of Product Safety and Compliance and Corporate Toxicologist at Ecolab
- Senator Katie Sieben, Minnesota Senate District 54
- Allison Wolf, Legislative Director at the Minnesota Center for Environmental Advocacy



Lowell Johnson

KEY POINTS INCLUDED:

Ways the Program fulfilled its original vision:

- Provided decision makers with data to address concerns.
- Addressed local issues and gave local partners and the public information to answer some of their questions.
- Impressive leadership put Minnesota in the forefront of state biomonitoring in the U.S.
- Pilot and follow-up projects provided new information on the body burden of PFCs from exposure to drinking water in East Metro communities.



Timothy O'Brien

Ways biomonitoring can improve public health in the future:

- Continue to provide useful information to citizens and supply policy makers with good science for decision-making. Environmental justice is of particular concern.
- Biomonitoring data must be interpreted in a broader context to address the questions of "What does this data mean for the population?" and "What are the health impacts of these chemicals?"
- State biomonitoring programs can work with each other and the federal government to develop more information and better responses to questions about the impact of chemicals on health.
- Publishing biomonitoring results in peer-reviewed journals can give this research more credibility and support a cautious approach to using new, untested chemicals and removing harmful chemicals from the market.
- Biomonitoring results can help policy makers, state agencies, and advocates to ensure that state policies are best protecting public health



Senator Katie Sieben



Allison Wolf

Roundtable Discussions

Following these presentations, attendees participated in facilitated roundtable discussions. Each of eight roundtables had between five and seven participants, including a facilitator and a note taker. Participants were asked where they saw opportunities for biomonitoring to have a positive impact on public health, what they would like to see happen in Minnesota and what is needed to sustain a state Biomonitoring Program that can support these positive impacts.

A full set of roundtable discussion notes can be found in appendix D. Some highlights included:

- Work more closely with other health programs, like what is being done in Wisconsin and New York City. It will be difficult for biomonitoring to stand alone and be sustainable.
- Biomonitoring can be used as a tool to identify and study social determinants of health and environmental justice concerns for at-risk groups such as minority populations.
- Gather information on multiple chemicals at once, not just one at a time.
- When communicating the value of the Biomonitoring Program to the legislature, emphasis should be placed on the impact the program has by identifying at-risk populations and assessing the effectiveness of interventions.
- Communicating with the public about the value and benefits of biomonitoring is important in creating support for the Program.
- The program can foster partnerships with academia to produce peer-reviewed published research that links biomonitoring data to specific health effects.
- Develop additional partnerships with other MDH programs, local public health, environmental organizations, community groups, businesses, and health plans or foundations.



Barb Deming



Conference Room



Jean Johnson

Moving forward

At the end of the summit, a few stakeholders were asked to share key insights they had gained from the day. Their comments included:

“I appreciated the comment made by Allison Wolfe during the afternoon panel. She observed that when it comes to sustained funding, ‘biomonitoring can fall through the cracks’. I have observed this as well, when talking to legislators and others. Biomonitoring is an activity that has similarities to both environmental monitoring and to public health (disease) surveillance. It is not always clear where the support for biomonitoring should come from when health and environmental programs (and their legislative committees) are so often siloed. We need to build bridges between health surveillance, disease prevention and pollution control programs for biomonitoring to be sustained.”

–Jean Johnson



Shannon Lotthammer

“Prior to the Summit, I had thought of biomonitoring more in the area of identifying problems but the Summit really showed the value of biomonitoring in tracking progress and addressing public health concerns. The Summit also provided great opportunities for collaboration and learning between biomonitoring efforts and efforts to identify and address environmental health risks.”

–Shannon Lotthammer



Melanie Ferris

“One thing that excited me about the day was the idea of including biomonitoring as a tool to understanding health disparities and social determinants of health. I heard repeatedly about the challenge of sustainability for the program, and the need for residents and policy-makers to see the Program’s value. It seems that discussing biomonitoring in this broader framework is one way to help make this information feel more relevant to these audiences.”

–Melanie Ferris



Joanne Bartkus

“We in public health are, or should be, in the business of putting ourselves out of business. Our ultimate goal is that people are healthy and are not exposed to harmful chemicals. Biomonitoring is a tool to help us understand where to focus our intervention efforts because it is impossible for us to address all chemical hazards. So the East Metro PFC Biomonitoring study is good because, even if we can’t say what the ultimate health effects are, we were able to show that intervention reduced exposure.”

–Joanne Bartkus

Apendix A:

Sponsorship

Wilder Research, a division of the Amherst H. Wilder Foundation in Saint Paul, Minnesota, is one of the nation's largest nonprofit research and evaluation groups. Through their work, they aim to increase public awareness and inform practice and policy-making around critical issues, including health disparities. Wilder Research is also home to Minnesota Compass (www.mncompass.org), a social indicators project that tracks trends in topics including health, environment, and disparities in our state. Melanie Ferris, a Research Scientist at Wilder Research, serves on the Environmental public health tracking & Biomonitoring Advisory Panel.



Apendix B:

Attendees

ACADEMIC INSTITUTIONS

Blue Sky Charter School

Barbara DeGrote

College of St. Benedict/ St. John's University

Ganard Orionzi

University of Minnesota

Bruce Alexander

Molly Hein

Patricia McGovern

Anirudu Rao

Karin Vineretsky

Emmy Waldhart

University of Wisconsin, Madison

Kristen Malecki

BUSINESSES

Ecolab

Tim O'Brien

iDiagnostics Inc.

Eli Sirotin

J&J Behavioral Support
and Training

Joy Johnson

Norwex

Sheri Thompson

3M Company

Dave Ehresman

Geary Olsen

Robert Skoglund

HEALTH LABORATORIES

Association of Public Health Laboratories

Megan Latshaw

Local Public Health

City of Minneapolis

Andre Reed

Eliza Schell

Hennepin County Environmental Health

Debra Anderson

Minneapolis Department of Health

Farhiya Farah

Washington County Public Health & Environment

Lowell Johnson

Stephanie Souter

Wright County Human Services Agency

Catherine Main

MINNESOTA LEGISLATURE

MN State Senate

Former Senator Julie

Bunn

Senator Katie Sieben

NON-GOVERNMENTAL ORGANIZATIONS

Clean Water Action

Daniel Endreson

ClearWay Minnesota

Barbara Schillo

Institute for Agriculture
and Trade Policy
Kathleen Schuler

Minnesota Center for Environmental Advocacy

Allison Wolf

Minnesota Dental Association

Bridgett Rasset

North American Water Office

Lea Foushee

Wilder Research

Melanie Ferris

STATE GOVERNMENT

California Department of Public Health

Dr. Michael J.

DiBartolomeis

Institut National de Santé Publique du Québec

Michelle Gagné

Minnesota Department of Agriculture

Cathy Villas-Horns

Joe Zachmann

Minnesota Department of Health

Cheryl Barber

Joanne Bartkus

Alan Bender

Alex Boland

Yaming Chen

Sook Ja Cho

Deborah Durkin

Betsy Edhlund

Christopher Elvrum

Tannie Eshenaur

Bradley Frazier

Helen Goeden

Tess Gallagher

Emily Hansen

Carl Herbrandson

Tom Hogan

Carin Huset

Jean Johnson

David Jones

Julie Kadrie

James Kelly

Renee Kidney

Debra Lee

Mary Jeanne Levitt

Patricia McCann

Rita Messing

Matthew Montesano

Paul Moyer

Barbara Scott Murdock

Jessica Nelson

Kathleen Norlien

Dave Orren

David Rindal

Dianna Roerig

Christina Rosebush

Deanna Scher

Janis Smith

Cheryl Smoot

John Sonnek

Patti Stoika

Chuck Stroebel

Patrick Tschida

Ashley Wahl

Minnesota Management & Budget

Barb Deming

Minnesota Pollution Control Agency

John Gilkeson

Frank Kohlasch

Shannon Lotthammer

Greg Pratt

Washington State Department of Health

Reed Sorensen

Wisconsin Division of Public Health

Mark Werner

Appendix C:

Agenda

8:00 REGISTRATION & BREAKFAST

8:30 WELCOME & SUMMIT OVERVIEW

Welcome

Aggie Leitheiser, MPH. Assistant Commissioner, Health Protection Bureau, Minnesota Department of Health

Overview of biomonitoring in state public health practice

Jean Johnson, PhD. Program Director, Environmental Public Health Tracking and Biomonitoring Program, Minnesota Department of Health

9:00 STATE EXPERIENCES: SUCCESSES AND CHALLENGES

California

Michael J. DiBartolomeis, PhD, DABT. Lead, California Environmental Contaminant Biomonitoring Program and Chief, Exposure Assessment Section, California Department of Public Health

Minnesota

Jessica Nelson, PhD, MPH. Program Coordinator, Biomonitoring Program, Minnesota Department of Health and

Deanna Scher, PhD. Principal Investigator, GLRI Biomonitoring Study, Minnesota Department of Health

10:00 BREAK

10:15 STATE EXPERIENCES: SUCCESSES AND CHALLENGES (CONTINUED)

Washington

Reed Sorenson, MPH. CDC/CSTE Applied Epidemiology Fellow, Washington State Department of Health

Wisconsin

Kristen Malecki, PhD, MPH. Associate Director, Survey of the Health of Wisconsin, University of Wisconsin, Madison and

Mark Werner, PhD. Chief, Health Hazard Evaluation Section, Bureau of Environmental and Occupational Health, Wisconsin Division of Public Health

New York City

Wendy McKelvey, PhD, MPH. Director, Environmental Health Surveillance, New York City Department of Health and Mental Hygiene

Panel discussion:

Moderated question & answer session

12:00 LUNCH

1:00 PERSPECTIVES ON THE FUTURE OF BIOMONITORING IN PUBLIC HEALTH PRACTICE IN MINNESOTA

Bruce Alexander, PhD. Professor, Division of Environmental Health Sciences, University of Minnesota School of Public Health

Lowell Johnson, MA. Director of Department of Public Health and Environment, Washington County

Timothy O'Brien, PhD. Director of Product Safety and Compliance, Corporate Toxicologist, Ecolab

Senator Katie Sieben, MPA. Minnesota State Senator, District 54

Allison Wolf, JD. Legislative Director, Minnesota Center for Environmental Advocacy

Moderated question & answer session

2:00 ROUNDTABLE DISCUSSIONS

2:45 WRAP-UP

Themes and insights from the day

Next steps

3:00 ADJOURN TO NETWORKING, SNACKS, DISPLAY TABLES, AND POSTERS

4:00 SUMMIT CLOSE

Appendix D:

Roundtable Discussion Notes*

The comments below are those of one or more meeting attendees recorded during the roundtable session, and are not the conclusions or recommendations of MDH, the attendees as a whole, or their employers.

1. Where do you see opportunities for biomonitoring to have a positive impact on public health? What would you like to see happen in Minnesota?

a. Lessons from other states

- California's strategy of an ongoing study of chemicals of highest concern should be used in Minnesota.
- Like Washington's program, Minnesota needs to make sure there is a balance between monitoring the high risk population and the general population.
- Minnesota should develop a base line of specific measures such as Wisconsin and Washington have to make policy more specific.
- Develop a population based survey similar to Survey of the Health of Wisconsin (SHOW).
- There is an opportunity for working with other programs like what is being done in New York City. It will be very difficult for biomonitoring to stand alone and be sustainable.
- There is a high occurrence of arsenic in drinking water wells in Washington. This could help us connect the dots between what is in drinking water and how that affects human health.

b. New project ideas

- Since Minnesota has such a strong agricultural community, could study nitrates in the drinking water.
- Could look at toxic substances in children that are exposed to natural medicines
- Monitor contaminants in placental blood or in breast milk (with appropriate communication).
- An important chemical to look at is acrylamide.
- Look at pesticide and cosmetic pesticide exposure.
- Use fish monitoring data as a source of information on chemicals likely to appear eventually in human biomonitoring. Also need more specificity in the fish consumption advisory.



- Need to follow up on known environmental contamination, for example; watersheds that we know contain high levels of toxins.
 - Have a study focused on the potential determinants of autism such as heavy metals and dietary constituents or air pollutants.
 - Moving forward the focus could be shifted away from lead and towards newer chemicals and larger data collection in general.
 - Should work with other states to share data and better determine health impacts of chemical exposure. Could also do a project with another state, for example Wisconsin, to do an even larger study on a specific chemical or a set of chemicals. Contamination does not stop at the border.
- c. Communication
- Need to communicate the Program's efforts by using the general media.
 - Use Program as a way to start the conversation about chemicals in the environment that the public would otherwise not think about.
 - Could measure exposure from products to inform consumers about whether or not to switch products. The public should have data on this to show that these chemicals do not just originate from industrial sources. Market demand drives production so better education of the public can reduce products with harmful chemicals in them.
 - Informed citizens influence representatives. Education so that public knows that they have X amount of hundreds of chemicals in their bodies. Cautionary approach must be driven at the state level.
- d. Focus on minorities
- Environmental justice for minorities, Native American, Hmong, Somali, etc.
 - Need more data on social determinants of health.

- Should focus on communities that are disproportionately impacted since they are least inclined to participate.
 - Develop protocols for working with Native American tribes.
- e. Publishing and peer review
- Peer-reviewed published data will make program more reputable, but need to make sure high quality people collect high quality data to be able to do this.
 - Need partnerships with academia to do research that links the data collected to specific health effects.
- f. Define health effects
- In order to link biomonitoring data collected to other health data could use medical records or conduct a follow up survey in order to get a sense of what these exposures mean for health. Electronic health records may not be conclusive but they may inform other effects.
 - Need to focus on the next step of connecting data to health effects, especially when there is a combination of low dosage and multiple chemicals. The department can say “avoid the products that contain suspicious chemicals.”
 - Assess the body burden of chemicals for both long term or short term exposure.
- g. Potential new partnerships
- Need to link the biomonitoring program to other programs within the government and with other partners in the community who may be able to facilitate the process.
 - Get more local groups involved such as Native Americans and local public health to make monitoring more focused and successful.
 - The FDA and EPA should become more involved and approach new chemicals in a more cautionary manner.
 - Continue communication between different states biomonitoring programs, share lessons learned and how to communicate results to the public in order to avoid repeating mistakes.
 - Integrate state agency green chemistry work with biomonitoring.
- h. Program design and scope
- The lead surveillance program identifies individuals at risk at the population level. The mercury program looks at the community level. It would be interesting to combine these



two levels of approach in other surveillance programs.

- Have an online form that a citizen can fill out to voice a concern about an environmental exposure.
 - Need to confirm that there is a complete exposure pathway from the chemical to the population. If we know for certain that the chemical is entering the body then we can begin to monitor.
 - When collecting data, gather information on multiple chemicals at once, not just one at a time.
 - Increase ability to collect and analyze blood spot data.
 - When funding is too specific the focus can become too narrow and the program can become distracted from the most important issues.
 - Need to develop a statewide baseline.
 - Process to review and act upon public requests.
 - Need to focus only on chemicals that have health effects.
2. What is needed to sustain a state Biomonitoring Program that can support these positive impacts?
- a. Partnership opportunities
- Better collaboration between local government and state government.
 - Forge partnerships with business which is an important but sometimes forgotten or avoided stakeholder.
 - Advocacy groups can use the data to advocate for more funding and the Program in general.
 - Nonprofit and environmental groups.
 - Other MDH programs.
 - Academic partnerships would mean making compromises but a lot can be gained in data analysis, sharing and publication.

- Chemical companies with specific interests.
 - Health insurance companies or foundations.
 - Community partnerships promote trust, medical and university partnerships promote reliable trustworthy data.
 - Could work with health plans. PFC study is good example since it shows that the intervention helped lead to a decrease of the levels in humans.
- b. Approaches to state legislature
- See value for informing surveillance and allocating resources. Let legislators know that this needs to be funded.
 - Funding needs to come from somewhere. Perhaps we need a legacy amendment. The atmosphere is unlikely to be ready for tax increases; will need to sell it to people.
 - Policies can sometimes drive good science. Policy makers should take a cautious stand in the absence of available science.
 - The program should be driven by Minnesota values, not federal. Need to be as Minnesota-specific as possible since this will justify state funding.
 - Market program to legislators by showing them the benefits and ideas for expansion outside the metro area.
 - Legislators need to be able to show results, impacts, and health improvements to constituents –need to show the return on the government’s investment in the program.
 - Could tax chemicals or sources of pollution emissions such as coal as a way to fund the program.
 - More enforcement once policy is made.
 - Regulatory intervention upstream to prevent exposure.
- c. Other funding ideas
- Look to NIH for funding.
 - Look outside of the government for funding.
 - Staff need enough time for grant writing and to seek funding.
 - A lot of money is still going to lead [exposure], which we currently know a lot about. Maybe should move the funding to chemicals we know less about because they are currently limited by funding.
 - Gather cross-sectional data to identify
- problems and then use this as a basis for a longitudinal study that requires long term funding.
- Show how biomonitoring aids other programs to achieve specific health improvements which may lead to additional funding.
- d. Media and communication
- Better communication to the Minnesota public that there is a biomonitoring program; build relationship and understanding not based on fear but the idea that the program is working towards long-term improvements. Creating a grassroots movement will increase sustainability.
 - Use social media to increase visibility and awareness of the program.
 - May need to rename program so it is more understandable to the public. APHL uses ‘pollution in people.’
 - New York City is really working on marketing. A lot of stuff is designed for the legislature but needs to also be geared toward the public.
 - Communicate effectively and honestly with participants and communities.
- e. Other ideas and considerations
- Make testing low-cost and convenient for the public.
 - Should we measure chemicals we can’t take action on? Should we do it because it might benefit future generations?
 - Increase credibility with scientific community; allocate time for working on publications.
 - Need a flexible program that can balance between projects that are necessary and respond to emergency concerns.
 - Leverage what other people are doing so you [the program] is not reinventing the wheel or spending limited resources.
 - Compile “best practices” for communicating biomonitoring results.
 - Have a clear program vision and mission.
 - Define a focus so that resources can be used effectively.

Appendix E:

Speaker Biographies

WELCOME & SUMMIT OVERVIEW:

- **Aggie Leitheiser** was appointed in March 2011 to serve as assistant commissioner for the Minnesota Department of Health for the Health Protection Bureau. This bureau includes the divisions of Environmental Health; Infectious Disease Epidemiology, Prevention and Control; Public Health Laboratory; and the Office of Emergency Preparedness. Prior to this appointment, Leitheiser served as the director of the Office of Emergency Preparedness at MDH and as the assistant commissioner of the Health Protection Bureau. Prior to serving as assistant commissioner, Ms. Leitheiser was the Director of the Disease Prevention and Control division at MDH and the Community Health Services supervisor for Wright County Human Services Agency in Buffalo, Minn. She was also the Director of the Certificate Program in Preparedness, Response and Recovery and an instructor in the School of Public Health at the University of Minnesota. Ms. Leitheiser holds a Masters of Public Health in Public Health Administration from the University of Minnesota and a Bachelor of Science in Nursing from South Dakota State University, Brookings, South Dakota.
 - **Jean Johnson** is the director for Minnesota's Environmental Public Health Tracking and Biomonitoring Program at the Minnesota Department of Health (MDH) and supervises the Environmental Epidemiology Unit. Dr. Johnson received her Ph.D. and M.S. degrees from the University of Minnesota, School of Public Health in Environmental Health. At MDH, her work has focused on special investigations of population exposure and health, including studies of the impacts of air pollution and community asbestos exposure on chronic respiratory diseases, and biomonitoring studies of arsenic and perfluorochemicals in drinking water. She is an adjunct faculty member at the University of Minnesota, School of Public Health.
- STATE EXPERIENCES:
SUCCESS AND CHALLENGES:**
- **Michael J. DiBartolomeis** has over 28 years of professional experience practicing public health, environmental protection, and chemical policy development in the public and private sectors. He is currently the Chief of the Exposure Assessment Section in the Environmental Health Investigations Branch of CDPH and the newly appointed Lead for Biomonitoring California. For the past eight years, Michael directed CDPH's Occupational Lead Poisoning Prevention Program and in 2006 he also created and ran the California Safe Cosmetics Program. Prior to rejoining the health department in 2004, he spent 15 years in OEHHA focusing on pesticide and food toxicology where he was responsible for supervising activities related to pesticide use and safety and community environmental and occupational health issues. Dr. DiBartolomeis earned his doctorate degree in toxicology in 1984 from the University of Wisconsin, Madison, is certified by the American Board of Toxicology, and has presented original research and scientific assessments in over 270 peer-reviewed publications, conference proceedings, government publications, and consultant reports. Dr. DiBartolomeis' professional interests include reforming chemical management policy in the United States and internationally by integrating the principles of environmental justice and precaution into environmental decision-making, developing approaches and methods to identify and evaluate safer chemical alternatives, and applying prevention and precautionary practices to protect public health and the environment.
 - **Jessica Nelson** is an epidemiologist with the Minnesota Environmental Public Health Tracking and Biomonitoring Program, working primarily on design, coordination, and analysis of biomonitoring projects. Dr. Nelson received her PhD and MPH in Environmental Health from the Boston University School of Public Health where her research involved the epidemiologic analysis of biomonitoring data on perfluorochemicals. Dr. Nelson also served as the

coordinator of the Boston Consensus Conference on Biomonitoring, a project that gathered input and recommendations on the practice and uses of biomonitoring from a group of Boston-area lay people.

- **Deanna Scher** is an epidemiologist in the Environmental Health Division at MDH. She is the principal investigator of a biomonitoring study of American Indians in Northeastern Minnesota, funded by ATSDR. Dr. Scher is also involved in an MDH perfluorochemical exposure study (PFCs in Homes and Gardens Study). Prior to coming to MDH, she conducted pesticide risk assessment and mitigation at the US EPA Office of Pesticide Programs. Dr. Scher received her Ph.D. in Environmental Health Sciences from the University of Minnesota School of Public Health where her research involved methods to integrate biomonitoring and biological plausibility into pesticide risk assessment and epidemiology.
- **Reed Sorensen** is an Applied Epidemiology Fellow at the Washington State Department of Health. He works primarily as a data analyst for their state biomonitoring program, and contributes to study planning and field work activities. He earned a MPH degree in epidemiology from University of Michigan, and has a BA degree in Spanish. Recently, Mr. Sorenson collaborated with the Washington Tracking Network to make the results of Washington's statewide biomonitoring study available to the public online.
- **Kristen Malecki**, is the Associate Director for SHOW and Assistant Professor in the Department of Population Health Sciences at the University of Wisconsin-Madison's School of Medicine and Public Health, Dr. Kristen Malecki has training in environmental epidemiology and health policy from Johns Hopkins Bloomberg School of Public Health. In her previous role as lead epidemiologist for the Environmental Public Health Tracking Program for the Wisconsin Department of Health, she led and managed a multidisciplinary team of researchers, practitioners and policy makers in development of environmental health surveillance and epidemiologic data for addressing health disparities in Wisconsin and the nation. Dr. Malecki's current research interests include the analysis of multilevel determinants of health, the use of community-based participatory research, and mixed methods approaches to examine mechanisms of health disparities from environmental exposures. She has led the SHOW program in development and pilot testing of multiple measures for assessing the social and built environment in particular the Wisconsin Assessment of the Social and Built Environment, an objective audit based tool. Dr. Malecki has extensive experience in linking SHOW data with contextual information and is currently partnering with the Wisconsin Department of Health Services to develop an integrated biomonitoring program using SHOW resources.
- **Mark Werner** is the chief of the Health Hazard Evaluation Section in the Wisconsin Division of Public Health, and has worked for the state's Bureau of Environmental and Occupational Health since 1997. Dr. Werner received his Ph.D. from the University of Minnesota School of Public Health and completed a postdoctoral fellowship in occupational respiratory disease epidemiology at the National Institute for Occupational Safety and Health. He currently holds adjunct faculty appointments at the University of Wisconsin – Madison's School of Medicine and Public Health and the Zilber School of Public Health at the University of Wisconsin – Milwaukee.
- **Wendy McKelvey** is the Director of Environmental Health Surveillance at the NYC Department of Health and Mental Hygiene. She is the Principal Investigator for the CDC-funded Environmental Public Health Tracking grant and is currently directing the environmental biomonitoring component of NYC HANES 2013. She has authored papers on exposure to mercury, lead, cadmium and pesticides using biomonitoring data from the first NYC HANES, which was conducted in 2004. Dr. McKelvey received her Doctorate and Master's degrees in Epidemiology from the University of California in Los Angeles, School of Public Health, and received post-doctoral training in Environmental Sciences at the University of North Carolina in Chapel Hill, School of Public Health.

PERSPECTIVES ON THE FUTURE OF BIOMONITORING IN PUBLIC HEALTH PRACTICE IN MINNESOTA:

- **Melanie Ferris** is a Research Scientist at Wilder Research, a nonprofit research organization based in St. Paul, Minnesota. She conducts a variety of program evaluation and applied research projects focused primarily in the areas of public health and mental health. She has worked on a number of recent projects that focus on identifying disparities across populations and using existing data sources to develop meaningful indicators of health and wellness. Examples of these projects include a study of health inequities in the Twin Cities region related to income, race, and place, development of a dashboard of mental health and wellness indicators for youth living in Hennepin County, and work on local community health needs assessments. Ms. Ferris has a Master's of Public Health degree in Community Health Education from the University of Minnesota's School of Public Health.
- **Bruce H. Alexander** is a Professor in the Division of Environmental Health Sciences at the University of Minnesota's School of Public Health and the Director of the Upper Midwest Agricultural Safety and Health Center. Dr. Alexander is an environmental and occupational epidemiologist with expertise in cancer, respiratory disease, injury, exposure assessment, and use of biological markers in public health applications.
- **Lowell Johnson** is the Director of the Washington County, MN, Department of Public Health and Environment. He has been employed with the Department since 1985. Prior to coming to Washington County he worked as an EMT - Paramedic. He also held the position of Emergency Medical Services Planner for the South Central Region EMS Program in Mankato, Minnesota. During his career with Washington County, Mr. Johnson has served as the County's Emergency Management Director, Supervisor of Environmental Health and Land Use programs, Senior Program Manager for Policy and Planning and the position of Deputy Director. As Director, Mr. Johnson oversees a Department with wide-ranging services including: Family Health; Disease Prevention and Control; Health Promotion and Health Education; Women, Infants and Children Nutrition program; Food, Beverage and Lodging licensing and inspections; Groundwater Protection; Hazardous Waste regulation; Solid Waste Management, and Public Health Preparedness. Mr. Johnson is a frequent presenter at state and regional training conferences and seminars. He has served as an Adjunct Faculty member with the University of Minnesota School of Public Health as a part of their Summer Institute. Lowell is a past Chair and current active member of the Local Public Health Association (LPHA) of Minnesota. He has an M.A. in Public Administration from Hamline University.
- **Timothy M O'Brien** grew up on a small family farm in NW Wisconsin, served in the US Army reserve and received his undergraduate training in Chemistry and Aquatic biology at the University of Wisconsin, Superior. After graduation from UWS in 1994, he worked as a licensed waste water operator and managed the waste water collection system for the City of Superior, WI. In 2000 he entered the Toxicology Graduate Program at the University of Minnesota conducting safety assessments describing the mechanism of metabolic toxicity of perfluorooctanes. Concurrent with his graduate research Dr. O'Brien also consulted for a nation-wide environmental engineering firm on water and waste water management topics. He joined Ecolab in 2008 as a toxicologist and is now the Global Director of Product Safety and Corporate Toxicologist. While at Ecolab Dr. O'Brien has participated in a number of activities and programs surrounding chemical management in Minnesota; including the Environmental Initiative Minnesota Chemical Regulation and Policy Program, and the MDH chemicals of emerging concern in drinking water program development.
- **Senator Katie Sieben** represents residents of Minnesota Senate District 54, which includes the cities of Newport, Saint Paul Park, Cottage Grove, South Saint Paul, Hastings, and Afton; and Denmark, Nininger and Grey Cloud Island townships. Senator Sieben was re-elected to the Minnesota Senate in November 2012 after

serving two terms in the Minnesota House of Representatives and two terms in the Senate. She serves as the Assistant Majority Leader, the Chair of the Subcommittee on Elections and as a member of the Rules, Environment and Energy, Finance, and Capital Investment committees. Senator Sieben grew up in Newport and attended South Washington public schools. She graduated from Colorado College and was a policy fellow at the University of Minnesota's Humphrey Institute for Public Affairs, and received her Masters degree in Public Administration from the Harvard Kennedy School. Prior to her election, Katie worked as an aide in the United States Senate. Senator Sieben, her husband, Josh Straka, their two sons, and their daughter live in Cottage Grove.

- **Allison Wolf** has been Legislative Director at the Minnesota Center for Environmental Advocacy (MCEA) for nearly 8 years. MCEA uses science and law to protect our state's natural resources and the health of its people. While with MCEA, Allison successfully advocated in 2007 to establish the state's environmental health tracking and biomonitoring program, and has also worked on a wide range of environmental efforts including the Clean Water, Land and Legacy Amendment. Her prior work includes service as Minnesota Senate Counsel and as a Legislative Assistant in the US Senate. Ms. Wolf graduated from Carleton College and the Law School at Washington University in St. Louis. A native of Northfield, she lives in the Longfellow neighborhood of Minneapolis.

ROUNDTABLE DISCUSSIONS:

- **Barb Deming** is a Consultant with Management Analysis & Development, a part of Minnesota Management & Budget (MMB).



Minnesota Department of Health
Environmental Public Health Tracking and Biomonitoring:
Connecting Environment, Exposure, and Public Health

State Biomonitoring Summit Report 2013
Sharing Successes and Looking to the Future

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