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Implementing Environmental Health Tracking and Biomonitoring (EHTB) in Minnesota

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2007 Minnesota Statutes

Environmental Health Tracking and Biomonitoring

- ★ Annual Budget resources
 - \$100,000 to MPCA/ \$900,000 to MDH
 - MDH: Laboratory, Chronic Disease, and Environmental Health
- ★ Staffing resources (MDH)
 - Epidemiologist/Program Director
 - Planner/Communications/ Program Coordinator
 - Health Educator
 - Biomonitoring
 - Laboratory scientists
 - Epidemiologist/project coordinator
 - Field staff
 - Tracking
 - Epidemiologist
 - Exposure Scientist
 - Biostatistician

Biomonitoring in Minnesota

Minnesota Statutes 144.995- 144.998

- ★ Measures chemical or metabolites in human biological specimens
- ★ 4 Pilot projects in legislation:
 - Perfluorocarbons (PFCs)
 - Arsenic
 - Mercury
 - To be designated (TBD)
- ★ Projects must be done in communities “likely to be exposed”
- ★ Seeks recommendations for ongoing “Base” program

Biomonitoring Pilot Projects Protocol Development

EHTB Workgroup drafts preliminary protocol



EHTB Advisory Panel Review and Recommendations



Community Engagement, Review and Recommendations



EHTB Advisory Panel Review and Recommendations



MDH Institutional Review Board (IRB)
Review and Approval

Arsenic pilot project

- ★ Residents of households in South Minneapolis where EPA testing has found arsenic in soil at concentrations > 20 ppm
- ★ Children ages 3 to 10 years (randomly selected)
- ★ With parental consent, each child will provide 2 urine samples
- ★ MDH laboratory will analyze for total urinary arsenic

If total arsenic is greater than 15 ppb, a speciated arsenic test will be run. Speciation separates organic arsenic (from food mostly) and inorganic arsenic (from soil, water)

- ★ Status: IRB Approved, Ready to start contacting participants

Perfluorochemicals (PFC) Pilot Project

Individuals must be living in one of the two pilot project communities:

- 100 people from households served by the Oakdale municipal water supply.
- 100 people from households with private wells that contain PFCs in Lake Elmo and Cottage Grove.

Participants must be adults, age 20 or older

Blood serum will be collected at nearby clinic.

Results will be returned in 3 months.

Status: Waiting for IRB approval



Controversy...(lessons learned?)

- ★ Managing expectations
 - Limitations of biomonitoring
 - “It’s a pilot...”
- ★ “Volunteers” vs. voluntary consent
- ★ Exclusion of children
- ★ Diverse, low-income, minority communities
- ★ Storage of samples
- ★ Need for policy guidelines

Developing Biomonitoring Program Guidelines

- ★ 144.997, Subd4...guided by protocols developed by the CDC National Biomonitoring Program
 - Ensuring privacy
 - Informed consent (NIH)
 - Inclusion of children
 - Storage (banking) of samples
 - Interpretation, communication of results
 - Educational materials
 - Training programs for health care professionals
 - Follow-up support and medical consult
 - Community participation
 - Purpose of the pilots

Proposed Mercury Pilot Project

- ★ Collaborate with other MDH scientist on EPA-funded study of mercury levels in newborn screening dried blood spots
- ★ Approx. 700 births in Lake Superior Basin (most of Cook, Lake, St. Louis and Carlton Counties)
- ★ Purpose is to pilot a new laboratory method
- ★ Uses anonymized specimens stored by the MDH Public Health Lab
- ★ Status: Proposal will be presented at next Advisory Panel Meeting for Recommendation

Controversy...

- ★ Need to build laboratory capacity vs. need for an interpretable result
- ★ Use of anonymized stored specimens
 - Does not allow for communication of individual results
 - Consent at time of specimen collection applies
 - Did they agree to other uses of the stored specimen?
 - What about genetic testing if individuals can be identified?

4th pilot project

- ★ To be determined
- ★ Chemical selection process is now being developed
- ★ Exploring other collaborations with U of M researchers for use of stored specimens
- ★ Discussion with other states about how state-based biomonitoring programs should be conducted

What is the vision for a state biomonitoring program in the future?

What questions do we want answered, or actions affected?

★ Public Health Surveillance

- Is it in us?
- How much, where, and in who?
- What are the trends over time?
- Do our interventions and programs make a difference?

★ Research

- What are the sources that contribute to exposure?
- What are the health outcomes?

★ Community Screening Assessments

- Is it reassuring to be “normal”?
- Does biomonitoring improve medical care and health outcomes?
- Will biomonitoring influence agency or RP clean up decisions?