Massachusetts Department of Public Health

APHL Annual Meeting

Biomonitoring Session, May 19, 2015

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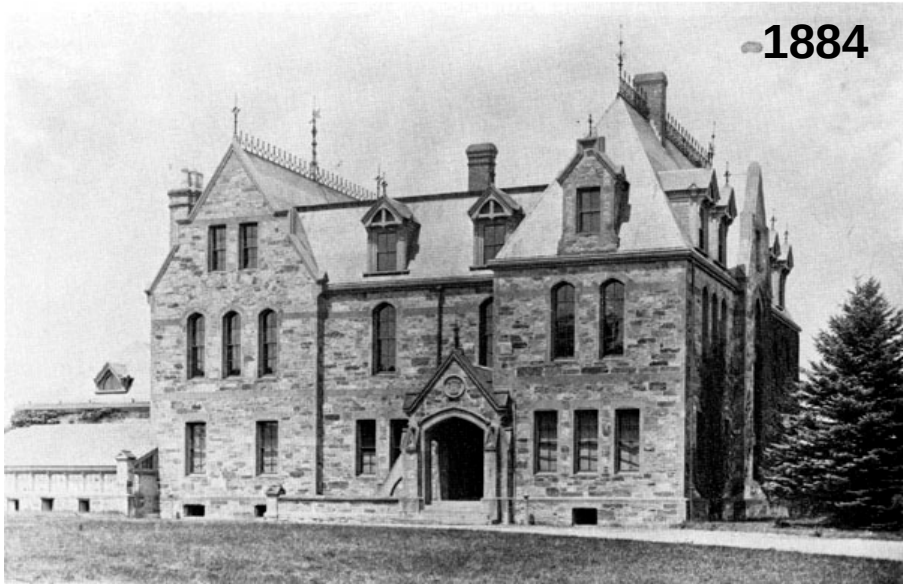
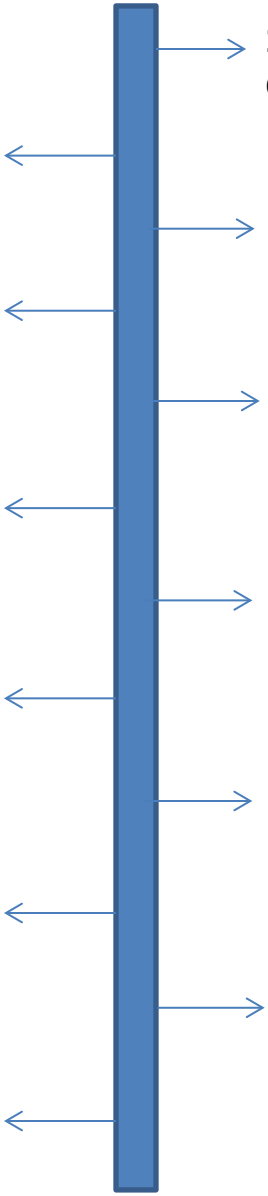
William A Hinton State Laboratory Institute (HSLI)



- DPH Bureau of Laboratory Sciences
- DPH Bureau of Infectious Diseases
- DPH Bureau of Environmental Health (BEH)/ Food Protection Program
- UMMS Newborn Screening Program

History of Biomonitoring in Massachusetts



1978-present: Blood lead screening for children

1983-1984: Norwood PCB Exposure Assessment

1984-87: Greater New Bedford Health Effects Study (Serum PCB analysis)

1993-97: Determining arsenic exposure in relation to Baird and McGuire (Hair & urine sample analysis)

1995-96: Housatonic River Area PCB Exposure Assessment Study (Serum PCB analysis)

2001-2003: Weymouth urinary arsenic investigation

2006: Assessment of exposure at Allendale Elementary School (Serum PCB analysis)

2006-07: Lead in jewelry and children's toys (Blood lead levels)

2009: Sherwood Middle School (Serum PCB analysis)

2009-2010: Arsenic and uranium in private wells (Urine sample analysis)

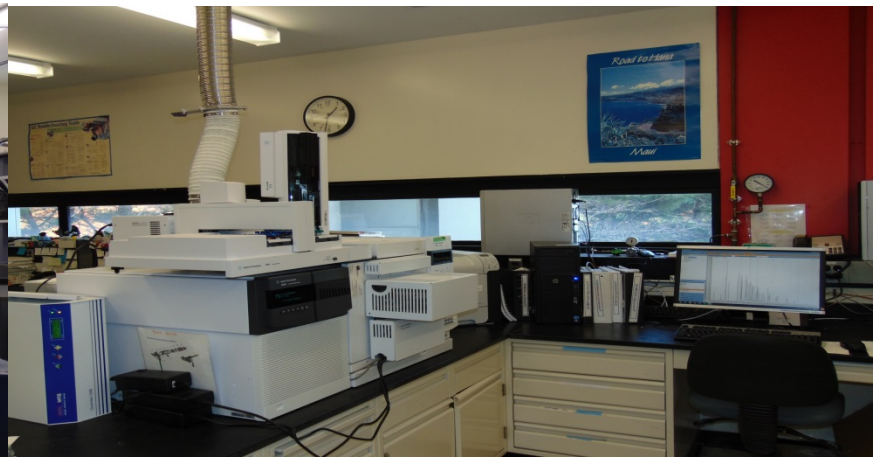
2009-2011: New Bedford High School/Keith Middle School – PCBs in building materials (Serum PCB analysis)

1981-present: Multiple emergency events (Urine mercury analysis)

MA Project's Goals

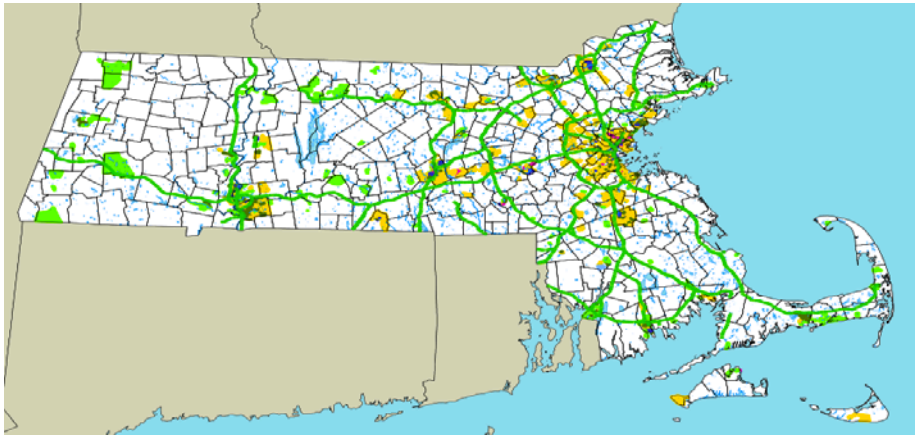
Biomonitoring Cooperative Agreement Project

- Enhance State laboratory biomonitoring and surveillance capabilities & readiness
- Conduct Statewide Surveillance (**Metals and PCBs**)
- Complete targeted projects in high risk communities (Metals)
- Have rapid biomonitoring capabilities in response to Emergencies



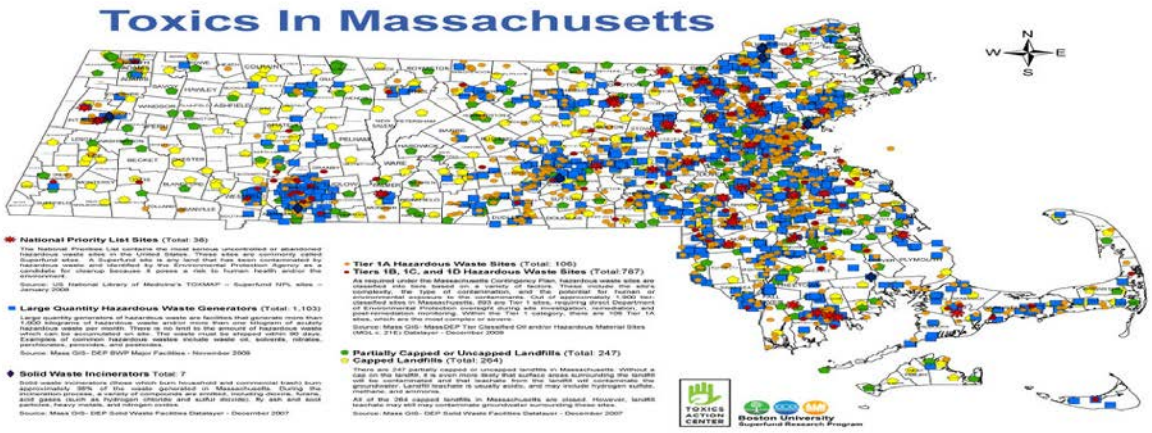
Statewide Surveillance (Metals & PCBs)

- Purpose: Establish state-specific background levels for contaminants of community environmental health concern and for comparison with NHANES
- Study Population: Representative sample of MA residents
- metals in urine
- PCBs and Metals in blood
- Targeted sample size: n=2000



Targeted Project in High Risk Communities

- Purpose: Assess environmental exposures to sensitive populations in high risk communities (e.g. CLPPP/EJ)
- Study Population: Low income women of childbearing age and children (age 5-12)
- Lead, mercury, cadmium, manganese
- Urine and blood
- targeted sample size: n=1000
- Anticipated Outcome: Assess human exposure and identify needs for additional prevention and outreach



The Approach

Challenges:

- Identifying representative populations and actually getting people to give us their blood and urine

- Using Behavioral Risk Factor Surveillance System (BRFSS) for targeted high risk population identification

- How the Environmental Toxicology Program is collaborating with the Childhood Lead Poisoning Prevention Program (CLPPP) and Environmental Epidemiology Program (EEP) within BEH to target a high risk population?

BEH team is developing the following approaches:

Community Health Workers: Enroll participants through the use of CLPPP contracted Community Health Workers (CHWs) who perform follow-up on cases of lead elevations and/or poisonings. Under this scenario, we would provide outreach materials for these contractors to distribute to the families that they visit.

CLPPP Database: Select participants (a) prospectively from the existing CLPPP database by identifying children currently age 3 – 4 years old, for future contact by BEH staff (i.e., enroll in the biomonitoring study when the children reach an age > 5); (b) retrospectively select participants using the CLPPP database to identify children who are currently aged 5 to 12 years old.

Community Health Centers: Partner with Community Health Centers in High Risk communities to assist with identification of persons/families meeting a target population criterion. We are in the process of coordinating meetings with potential contacts related to enrollment via this methodology faculty at the Boston University School of Medicine/Boston Medical Center and the Refugee and Immigrant Health Program at MDPH.

Training and Mentoring:

- As a level I lab, MA state laboratory is well equip and staffed

- Training and mentoring opportunity is available at Hinton State Laboratory (e.g. ICPMS, LC/MS and GC/MS)

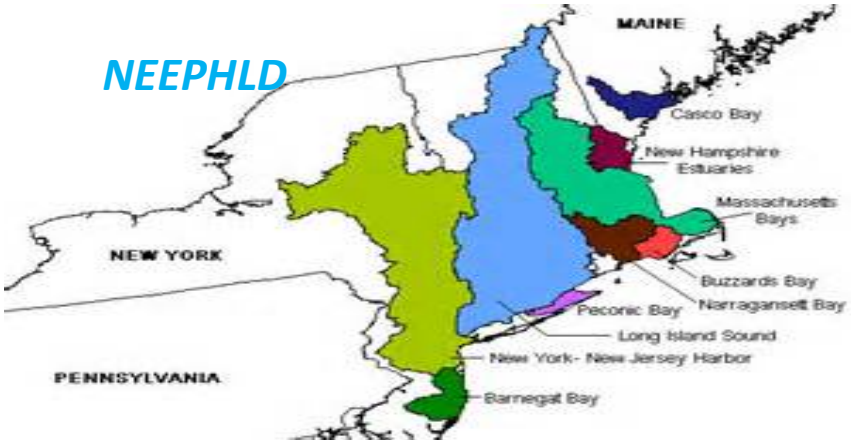
Sharing of specimens with other SPHL:

Good idea, but is it possible?!

Things to consider:

- Benefits
  - expanded regional coverage
  - more data (some state may have limited samples or not participating in the program)
  - data comparison
- Limitation
  - State & local law & regulation
  - IRB issue (if any)
  - Use of data & participants personal information and limitations
  - Sample quantity

Collaboration:



- Similar testing (analytes)
- Equipment suitability and feedback on service, robustness, sensitivity , etc.
- Method Harmonizing (benefits & challenges)
- Exchanging QC's and samples for method comparison
- Data sharing (if allowed), how the data used

Collaboration (Cont'd):

- Create partnership and collaboration with other states, government agencies, and academia to achieve the best results
- Get epidemiologist(s) expertise and recommendation
- Be part of the biomonitoring network & possible method comparison studies
- Have regional discussion group (quarterly meeting or as needed)

Thank you!