Public Health Laboratories' Path Forward

Glenn Paulson, US Environmental Protection Agency
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Public Health Laboratories are Essential to Improving Public Health

Looming Issues

Moving Pollutant Assessment Forward

Multi-pollutant health effects
High throughput screening
Integrated environmental modeling
Public Health Laboratories are Essential to Improving Public Health

Top 10 Achievements in Public Health
1. Vaccination
2. Motor-vehicle safety
3. Safer workplaces
4. Control of infectious diseases
5. Decline in deaths from coronary heart disease and stroke
6. Safer and healthier foods
7. Healthier mothers and babies
8. Family planning
9. Fluoridation of drinking water
10. Recognition of tobacco use as a health hazard

Looming Issues

Environmental Health
"Climate change is the biggest public health challenge we face as well as the biggest economic challenge we face."
-Gina McCarthy 4/21/2014

In the Lab
Rapidly changing technology
Increased scrutiny
Decreased funding
Anti-science sentiment
| 1. Vaccination                          |
| 2. Motor-vehicle safety               |
| 3. Safer workplaces                   |
| 4. Control of infectious diseases     |
| 5. Decline in deaths from coronary heart disease and stroke |
| 6. Safer and healthier foods          |
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In the Lab

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Decreased funding

Anti-science sentiment
Moving Pollutant Assessment Forward

Multi-pollutant health effects
- Regulate individual pollutants
- BUT
- Pollutants exist as mixtures in environment
- AND
- Pollutant mixtures health effects can differ from single pollutant effects

High Throughput Screening
- 15,000 new substances added to CAS Registry daily
- Cannot test all through traditional toxicological methods
- High Throughput Screening (HTS) can help efficiency

Integrated Environmental Modeling
- Must consider:
  - Culture
  - Location
  - Diverse Stakeholders
  - Economics
  - Current Health Condition
- IEM can help incorporate these issues
Multi-pollutant health effects

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High Throughput Screening (HTS)

IEM can help incorporate these issues
Moving Laboratory Efficiency Forward

Laboratory Enterprises Evaluation

Purpose and Status

Competency
Assuring the competency of environmental data generation and use

Ensure effective quality management systems and technical competence

Effective and efficient laboratories

Big Data

Moving Laboratory Enterprises Evaluation

Background

2010
Presidential Memo

2011
Congress Approves Budget and GAO Report

2013
OMB "freeze federal footprint"

2014
Current

Purpose and Status

- Collect data
- Science Contribution
- Workforce
- Operating Costs
- Facilities
- Analyze Data with Smith Group and NAS
- Implement recommendations to increase efficiency and effectiveness

Big Data
Background

- Presidential Memo: 2010
- Congress Approves Budget and GAO Report: 2011
- OMB "freeze federal footprint": 2013
- Current: 2014
EPA Laboratory Portfolio contains 34 facilities

- Manchester, WA
- Newport, OR
- Corvallis, OR (Willamette Research Station)
- Richmond, CA
- Golden, CO
- Lakewood, CO
- Kansas City, KS
- Duluth, MN
- Chicago, IL
- Grosse Ile, MI
- Wheeling, WV
- Narragansett, RI
- Edison, NJ
- Ft. Meade
- RTP, NC
- Athens, Region 4
- Bay St. Louis, MS
- Gulf Breeze, FL
- Montgomery, AL
- Chapel Hill, NC
- Ada, OK
- Houston, TX
- Cincinnati, OH (Center Hill T&E Facility Experimental Stream Facility)
- Region 3 OCSPP
- Athens Region 4 and ORD
- Research Lab
- Regional Lab
- Program Lab
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Science Contribution

Operating Costs

Workforce

Facilities

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Effective and efficient laboratories
Big Data

http://www.scgcorp.com/FEM/testvis4.html
Central Data Exchange (CDX)
Effective and efficient laboratories
Moving Community Involvement Forward

Citizen Science

- Public participation
- Increase capabilities

DISCOVER-AQ

- Worked with public to test new sensor technology
- Most citizen science sensors correlated with established EPA sensors

Outreach

- Communicate laboratory science
- Increase feedback and participation
- Create better models and methods
- Improve public health
Citizen Science

Public participation
Increase capabilities
Public cooperation

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Create better models and methods

Improve public health
Public Health Laboratories are Moving Forward

Biomonitoring: An Integral Component of Public Health Practice

Laboratory Efficiencies Initiative
Transforming to a Sustainable Public Health Laboratory System

Lara Phelps
Senior Advisor on Measurement, Monitoring and Modeling
Biomonitoring: An Integral Component of Public Health Practice
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