California Environmental Health Tracking Program

California Department of Health Services
Environmental Health Investigations Branch
Oakland, CA

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Project Staff

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History of Environmental Public Health Tracking in California: How Tracking leads to Policy Actions

- PEW Environmental Health Commission 2000
- California Env. Health Surveillance System 2001 (SB 702-Escutia)
- CDC Tracking Cooperative Agreement 2002
  CA Wellness Foundation award
- CA Environmental Health Tracking Act 2003 (SB 189-Escutia)
  CDC Data Linkage Demonstration Award
History of Environmental Public Health Tracking in California:
How Tracking leads to Policy Actions

• Report “Strategies for Establishing an Environmental Health Surveillance System in CA” released 2004

  Office of Environmental Health Tracking
  (SB 1446-Escutia – Pending)

  Healthy Californians Biomonitoring Program
  (SB 1168-Ortiz – Pending)

  Chemical Hazard Info/Tracking
  (AB 1940- Chan – Withdrawn)

  Parkinson’s Disease Registry
  (AB 2248 –Frommer – Pending)
California Environmental Health Tracking Program

Communication/Stakeholder Capacity
• Needs Assessment
• Data visualization
• Outreach/Education

“Best practices” Exposure assessment Methods

Chemical Hazard and Disease surveillance

Policy Development

Biomonitoring

Linkage Demonstration Projects
SB 702
Expert Panel Recommendations

• There is an urgent need for a coordinating office of all California databases that track environmental health (SB 1446)
• Environmental Health data need to be shared and integrated in a standardized manner and communicated to public in a timely way
• Public health and environmental agencies lack adequate staff and resources to respond to env. health threats.
• Industries that produce, import, or store chemical, biological, or physical agents in CA should be required to report (AB 1940):
  – Full chemical/tox properties
  – Location and quantity of manufacture
  – Lab methods for env. and biological sampling
SB 702 Report Recommendations

- State laboratory biomonitoring capabilities need to be enhanced
- California needs CALHANES and Cal-HEXAS surveys
- Surveillance systems for asthma, childhood neurodevelopmental, and neurological diseases need to be developed or enhanced. (AB 2248 – Parkinson’s Disease)
- Need to develop standardized protocols for investigating disease clusters/ Build Health Education Capability
- Hazard, exposure and health data need to be reported by race and income.
Needs Assessment

• We surveyed 29 NGOs, 13 local env. health agencies and 17 local health agencies.
  – Priority issues related to tracking:
    • Public education/outreach/advocacy
    • Building/fostering partnerships
  – Priority issues for training:
    – Interpreting/ analyzing data
    – GIS mapping/spatial statistics
Needs Assessment Results

Frequently asked by public of respondents:
• Basic information on environmental health

Frequently asked of NGOs:
  – Data on environmental hazards/exposures

Frequently asked of local agencies:
  – Data on health effects

Respondents are most able to provide:
• Basic information on environmental health
• Assistance in utilizing data for action

Respondents are least able to provide:
• Assistance in collecting community data
• Assistance in conducting community-based research/studies
Data Linkage Project 1: Traffic-Related Pollutants and Adverse Reproductive Outcomes / Asthma Exacerbations
Health Effects Associated with Motor-Vehicle Emissions

Motor-Vehicle Emissions

- Benzene → Childhood Leukemia
- CO, PM
- NO₂, Ozone, PM, DEPs
  → Fetal Hypoxia, Growth, Birth weight, Prematurity
  → Respiratory Illness, Lung Function
- PM, DEPs
  → Lung Cancer
Demonstration 1 Goals

• To examine the feasibility of tracking routinely available data on asthma and adverse pregnancy outcomes

• To identify elevated “hotspot” areas of concern of these health outcomes and traffic-related pollutants

• To explore GIS methods of mapping and linking pollution and health data for health communication and data dissemination for local stakeholders

• To assist local health departments in planning and allocation of resources
Modeled traffic pollution (ADMS-Urban)

Modeled total NO\textsubscript{x} for 2000, San Diego County
Preterm singleton births: Alameda County, 2001
Preterm singleton births: Alameda County, 2001
Asthma indicators

Decreasing quality of care

Mortality
Hospitalizations
ER visits

Increasing quality of care

Outpatient visits
Symptom medication purchasing
Maintenance medication purchasing
Asthma outpatient visits by children
Kaiser Permanente & Medi-Cal
Alameda County, 2001

Outpatient Visit Rate (per 1,000)
[0.5 mile resolution]

- 0 - 36
- 37 - 72
- 73 - 108
- 109 - 144
- 145 - 180
- 181 - 216
- 217 - 252
- 253 - 288
- 289 - 1,000

Significantly Elevated Rate (two-tailed p < 0.05)
Asthma symptom med fills by children
Kaiser Permanente & Medi-Cal
Alameda County, 2001
Asthma maintenance med fills by children
Kaiser Permanente & Medi-Cal
Alameda County, 2001

Maintenance Medication Purchase Rate (per 1,000)
[0.5 mile resolution]
- 0 - 40
- 41 - 81
- 82 - 121
- 122 - 161
- 162 - 201
- 202 - 242
- 243 - 282
- 283 - 322
- 323 - 2,360

Significantly Elevated Rate (two-tail p < 0.05)
Data Linkage Demonstration 2:
The Central Valley/South Coast (CVSC) Children’s Environmental Health Tracking Project

Eric M. Roberts, MD PhD, Principal Investigator
CVSC Project Foci

Exposures to hazards

- Autism spectrum disorders
- Mental retardation
- SIDS
- Term LBW
- Preterm birth

Health outcomes
Data Linkage model

Pesticides

Airborne Toxic Substances:
- Emissions
- Modeled concentrations

Birth Outcomes
- Gestational age
- Birthweight

Post-neonatal Outcomes
- SIDS

Neuro-developmental Outcomes
- Autism Spectrum Disorders
- Mental Retardation

Lead Biomonitoring

Linkage by geocoded address

Linkage by patient identifier
Postulated connections (selected)

**Known biological activities**
- Interference with hormone functions
- Disruption of cell proliferation
- Disruption of cell migration
- Interference with synapse formation

**Potential effects**
- Altered organ development
- Altered growth
- Impaired regulation of breathing by the brain
- Changes in brain structure and function

**Potential outcomes**
- Preterm birth or low birthweight
- SIDS
- Mental retardation
- Autism

Endocrine system

Nervous system
USING WEB SERVICES TO SECURELY INCORPORATE CAL/EPA DATA INTO DHS DISEASE SURVEILLANCE SYSTEMS

DHS Intranet

- Lead Biomonitoring
- Autism Surveillance
- Vital Stats:

Internet:
Spatial queries using Web Services over secure connection – Coordinates of health event

Cal/EPA
Air Resources Board Community Health Air Pollution System:

- GIS Database (modeled hazard data)
Distribution of Respiratory Irritant Pesticide Use at one-square mile resolution
Imperial County, CA, 1995

Source: CA Department of Pesticide Regulation
Tracking cannot survive without well trained env. public health workforce

- Public health program funding decreasing
  - 32 states cut their public health budgets between FY ’02-’03
  - $1.1 billion cut in Function 550 for FY ‘05
- Workforce is shrinking; moving to private sector
- Inability to fill new positions
- Leadership gap

Source: USDHHS, 1988; HRSA, 2000

1 per 1000 0.7 per 10,000
Recommendations For Future

• Need to continue to build capacity to address and be responsive to environmental health issues of local concern.
  – Surveillance data should support actions to protect communities and support evidence-based policies

• IT/Surveillance capabilities of tracking can only be developed with strong collaborations with key partners
Recommendations For Future (cont.)

- Continue emphasis on all areas of env. health gap (i.e. health outcome, exposure, and hazard surveillance), along with data linkage
- Continue to allow states the flexibility in program priorities which address state/local needs and are responsive to constituents. Balance national and state priorities.
Summary of Program Components

In order to involve stakeholders, incorporate needs and issues, and utilize their expertise in planning for an Environmental Health Tracking Network, we have convened a Planning Consortium composed of representatives from local agencies, community-based and non-governmental organizations, environmental advocacy groups, the University of California, and state and federal agencies such as US EPA, California Department of Health Services, and CalEPA.

The Planning Consortium has met four and has contributed significantly toward planning for an Environmental Health Tracking Network in California; especially toward our understanding of stakeholder perspectives and needs. The consortium is currently facilitating the development of protocols and policies for an Environmental Health Tracking Network in California. Examples include: accountability mechanisms, transparency policies, stakeholder involvement/public participation guidelines, procedures for responding to community concerns/requests, etc.

Click here for more information and update regarding the Planning Consortium >>