Environmental Health Indicators

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Pew Environmental Health Commission

- Launched in May, 1999 for 18 months
- Funded by The Pew Charitable Trusts
- Part of the Johns Hopkins School of Public Health
- http://pewenvironhealth.jhsph.edu

Goals and Objectives

- Provide practical strategies and recommendations for improving the public health response to environmental threats
- Create a vision for rebuilding this country's public health capacity
- Raise visibility of environmental health problems facing this country

Advisory Board

- High profile commissioners
- "Public Face" of the Commission's Activities
- Provide Guidance, Review and Approval of Commission Reports

Health Policy Questions:

- How can we stem rising health care costs and assure coverage for all Americans?
- How are we to control these rising costs when prescription drugs and treatment efforts get ever more expensive?

A Public Health Response

- Focus on preventing disease and making Americans healthier

Burden of Chronic Disease

- Majority of death and illness in America
- Three of every four deaths in the U.S. annually (about 1.8 million)
- Yearly economic cost of $325 billion.
- Affects about 100 million Americans, more than a third of the population
- By 2020, chronic disease is expected to afflict 134 million people and cost $1 trillion a year.

America's Environmental Health Gap

Why the Country Needs a Nationwide Health Tracking Network

A Pew Environmental Health Commission Report

The Failure

- More than half of the states (27) have no ongoing tracking and monitoring of asthma.
- Less than half of the nation's population is covered by birth defects registries.
- Only seven states track developmental disabilities.
- Only four states track autoimmune diseases such as lupus.
- Little tracking of exposures

Lessons Learned

- The need for parity between disease prevention and treatment
- The need to build state and local capacity for prevention and response to health threats
- The need for a Nationwide Health Tracking Network with appropriate privacy protections to provide the capacity to better understand, respond to and prevent chronic disease in this country

Nationwide health tracking priorities (1)

- asthma and chronic respiratory diseases
- birth defects and developmental diseases
- cancers, especially childhood cancers
- neurological diseases such as Alzheimer's, multiple sclerosis and Parkinson's
- priority exposures such as PCBs, and dioxin; heavy metals such as mercury and lead; pesticides and water and air contaminants.

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National health tracking (2)

- Early warning systems for immediate health crises such as heavy metal and pesticide poisonings.
- Twenty state pilot programs to allow for the addressing of regional concern
- Federal, state and local rapid investigative capability for clusters, outbreaks and emerging threats.
- Supporting community interests and scientific research to further health tracking efforts.

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National health tracking (3)

- Estimated to cost the federal government $275 million annually
- This is less than 0.1% of the current annual economic cost of treating and living with chronic disease (or $325 billion in annual chronic diseases costs.)

Environmental Public Health Indicators

- Development project in collaboration with the Council of State and Territorial Epidemiologists
- Partners: EPA, ATSDR, state environmental agencies, state laboratories, city and county health officials … others?
- Provides information about a population's health with respect to environmental factors
- Proposed use: national and state level surveillance of environmental exposures and related diseases.

Environmental Health Tracking Issues

- Air
  - Indoor
  - Outdoor
- Water
  - Drinking water
  - Recreational water
- Agents
  - Chemicals: pesticides
  - Physical: ultra-violet, noise

EPHI Proposed Uses

- Surveillance of status and trends
- Program and policy development/evaluation
- Build core capacity to respond to problems

Tracking of Status and Trends

- Prevent known or suspected adverse public health events associated with environmental exposures.
- Detect new adverse health events associated with environmental exposures.

Program and Policy Development, Planning, and Evaluation

- Track program goals and objectives,
- Support existing programs, and
- Guide research initiatives

Build Core Capacity and Cooperative Relationships

- Problem response, e.g., outbreaks, clusters, identification of new threats
- Strengthen ability of health and environmental agencies to cooperate on addressing environmental health problems
- Enhance right to know and empowerment of communities

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An "Ideal" Indicator Is: (1)

- Measurable, quantifiable, utilizes data
- Possible to track over time
- Based on demonstrated linkages between environment and health
- Usable, useful, and understandable at different levels and to diverse populations
- Informative to the public and to responsible agencies

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An "Ideal" Indicator Is: (2)

- Tied to public health objective(s)
- Action-oriented, directs responsible parties to perform specific actions
- Based on clearly defined hazards, exposures, and health outcomes
- Relevant to existing standards as well as health objectives

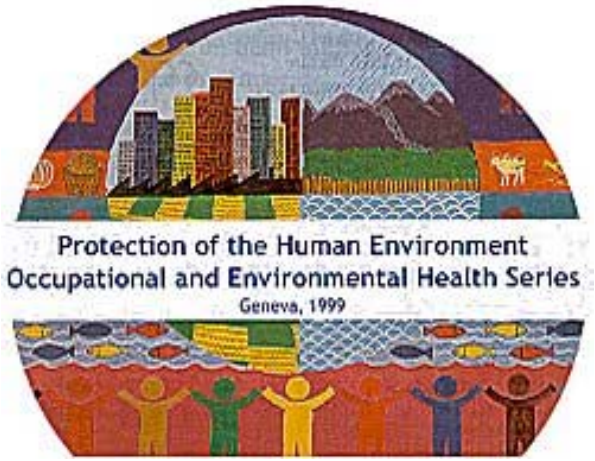
Building on Past Efforts

- WHO
- US Public Health Service Healthy People 2010
- US CDC Chronic Disease Indicators: http://www.cste.org/CDindicators.pdf
- US EPA Environmental Goals
- US State Health and Environmental Health Projects
- US County and City Health Officials PACE Project

WHO Environmental Health Indicators Framework and Methodologies:

http://www.northampton.ac.uk/ncr/who/index.html

http://193.172.235.142/download/doc45/EHI-report.pdf



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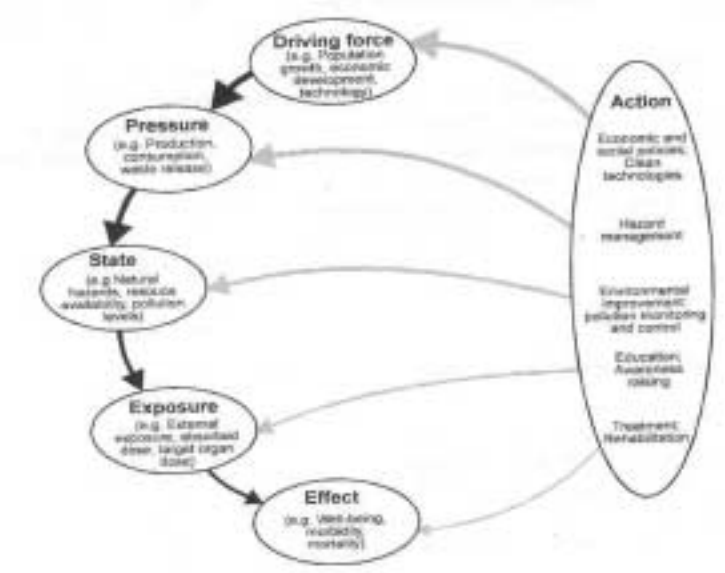
WHO "DPSEEA" (Pressure State) Model



PHS Healthy People 2010:

http://www.health.gov/healthypeople/

EPA Strategic Plan

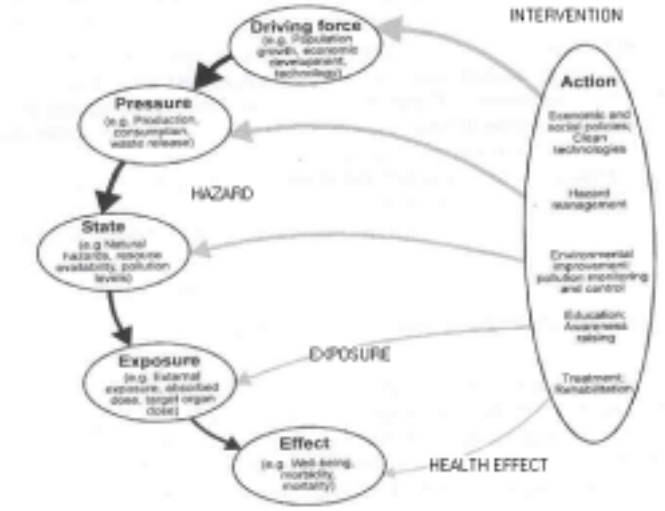
PACE-EH

- National Association of City and County Health Officials
- PACE-EH = Protocol for Assessing Community Excellence in Environmental Health
- A process for identifying environmental health indicators at the local level
- http://www.naccho.org/project26.cfm

Types of EPHI

- Hazard
- Exposure
- Health Effect
- Intervention

CDC/CSTE Framework



Hazard Indicator

- A condition or activity that identifies the potential for exposure
- Example:
  - Levels of monitored contaminants in water supplies

Exposure Indicator

- Biological marker in tissue or fluid that identifies the presence of a substance of combination of substances that may potentially harm the individual
- Example:
  - Elevated blood lead levels

Health Effect Indicator

- A disease or condition that identifies the occurrence of an adverse effect from exposure to a known or suspected environmental hazard.
- Example:
  - Unusual patterns of acute respiratory disease

Intervention Indicator

- Implementation of a program or official policy that minimizes or prevents an environmental hazard, exposure, or health effect.
- Example:
  - Degree to which drinking water systems meet standards

EPHI: Environmental Information Sources

- National Air Quality and Emissions Trends Report
- National Exposure Inventory
- EPA Urban Air toxics program
- Safe Drinking Water Information system
- Poison control centers
- Pesticide monitoring systems
- State environmental agencies

EPHI: Health Outcome Information Sources

- Vital statistics
- National Health and Nutrition Examination Survey
- National Health Interview Survey
- Behavioral Risk Factor Surveillance System
- Cancer registries
- State health agencies

EPHI Information Evaluation

- Who is responsible for data systems?
- How are data stored and maintained?
- How accessible are data?
- How reliable are data?
- Can multiple data systems be linked?

Indicator Types

- "Core" Indicators
  - Generally data is available or in the process of development and relevant nationally
- "Optional" Indicators
  - Information may not be relevant nationally and/or available in all states
- "Developmental" Indicators
  - Will require extensive developmental effort

EPHI: Hazard Indicators (1)

- Level of criteria pollutants in ambient air
- Amount of hazardous and toxic chemicals released in ambient air
- Proximity of population to areas not meeting ambient air quality standards
- Vehicle miles driven
- Noise complaints
- Amount of pesticide used
- Pattern of pesticide use
- Level of residual pesticide in food

EPHI: Hazard Indicators (2)

- Chemical spills
- Degree to which recreational waters meet water quality regulations or guidelines
- Level of monitored contaminants in ambient water
- Point-source discharges into ambient water
- Level of contaminants in shellfish and sport and commercial fish
- Degree to which drinking water systems comply with regulations or guidelines
- Level of monitored contaminants in drinking water

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EPHI: Exposure indicators

- Blood lead level (in children)

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EPHI: Health Effect Indicators (1)

- CO poisoning deaths
- Temperature-attributed deaths
- Hearing loss
- Pesticide-related poisoning and illness
- Unusual pattern of acute asthma events
- Unusual pattern of cardiovascular and respiratory events (with environmental contribution)
- Methemoglobinemia
- Melanoma

EPHI: Health Effect Indicators (2)

- Outbreaks attributed to consumption of ambient water contaminants
- Outbreaks attributed to consumption of contaminated shellfish or sport and commercial fish
- Outbreaks attributed to contaminated drinking water

EPHI: Intervention Indicators (1)

- Implementation of programs that address motor vehicle emissions
- Level of alternative fuel use in registered vehicles
- Availability of mass transit
- Schools with indoor air policies that address environmental hazards
- Jurisdictions with laws pertaining to smoke-free indoor air
- Complaint-related indoor air inspections
- Jurisdictions with emergency preparedness training programs, plans, and protocols
- Jurisdictions that conduct annual multi-institutional exercises to prepare for response to disasters

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EPHI: Intervention Indicators (2)

- Employee compliance with pesticide-related training standards
- Fish or seafood consumption advisories
- Activity restrictions (health-related) in ambient water
- Implementation of sanitary surveys
- Degree to which drinking water systems meet operational and maintenance standards
- Boil-water advisories

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Where we are ….

- First draft of EPHI has been reviewed by several state environmental and health agencies, EPA, CDC, ATSDR

Next steps ….

- Council of State and Territorial Epidemiologists and Association of Public Health Laboratories Meeting in June
- Refine indicators, wider public input, pilot projects

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