


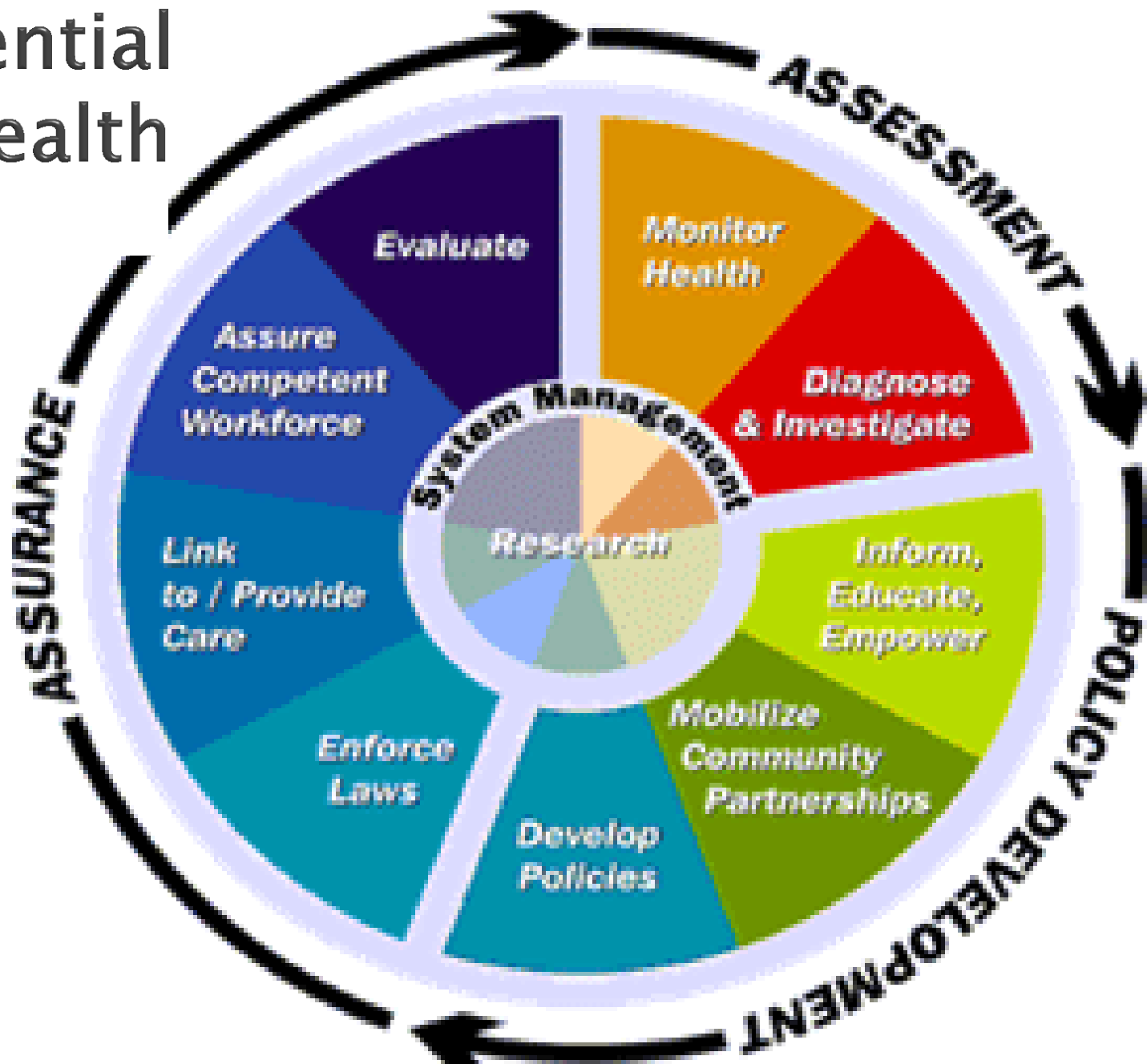
# A Public Health Context for the ROCIS Initiative

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ROCIS Stakeholders Meeting  
September 11, 2014  
Pittsburgh, PA




# Ten Essential Public Health Services



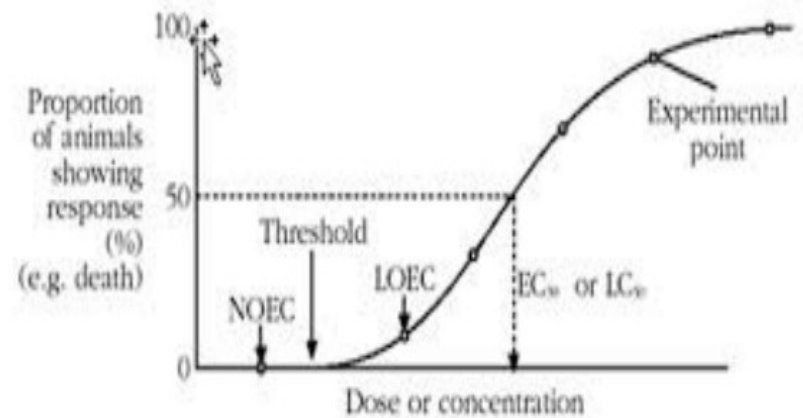
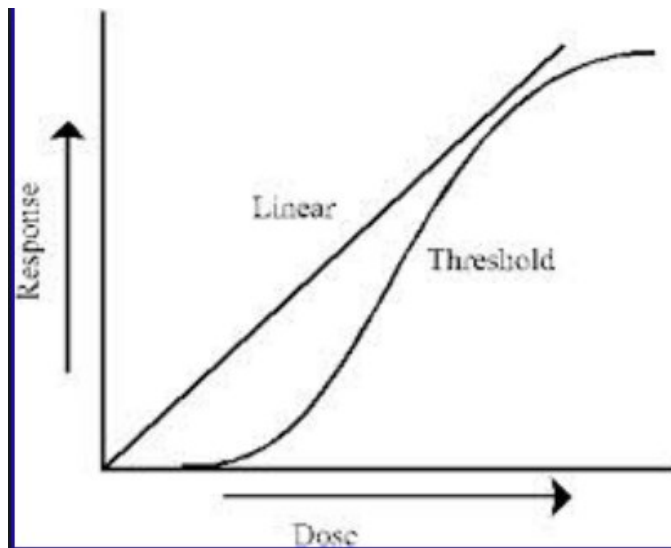
# America's Environmental Health Gap: Why the Country Needs a Nationwide Health Tracking Network

*We have as a nation invested heavily in identifying and tracking pollutants in the environment, particularly for regulatory and ecological purposes, but only minimally in tracking exposures and the distribution of disease and its relationship to the environment. As a result of decades of neglect, we have a public health system that is working without even the most basic information about chronic disease and potential environmental factors.*

# Effects of Concern

- ▶ Acute (asthma exacerbations, heart attacks, neurological effects)
  - ▶ Subacute/Subchronic (developmental effects, birth defects)
  - ▶ Chronic (cancer, development of chronic diseases – cardiovascular, neurodegenerative)
- 

# Dose-response Curves



# The Chemical Environment

- **> 82,000 synthetic chemicals on EPA inventory of chemicals manufactured in U.S. today**
- **Most first synthesized in the past 50 years**
- **700+ new chemicals introduced each year**
- **~ 3,000 chemicals are produced in quantities of over 1 million lbs/year**
- **6.5 billion lbs dumped into atmosphere each year**
- **Few chemicals tested for basic toxicity**



# Health Based Air Quality Standards Been Steadily Tightened and Refined over the Past Several Decades

- ▶ Lead
  - ▶ Particulate Matter
  - ▶ Ozone
  - ▶ Sulfur dioxide
  - ▶ Nitrogen dioxide
- 
- ▶ Ozone and PM are likely to be tightened more in future standard revisions

# Technology-Based Standards

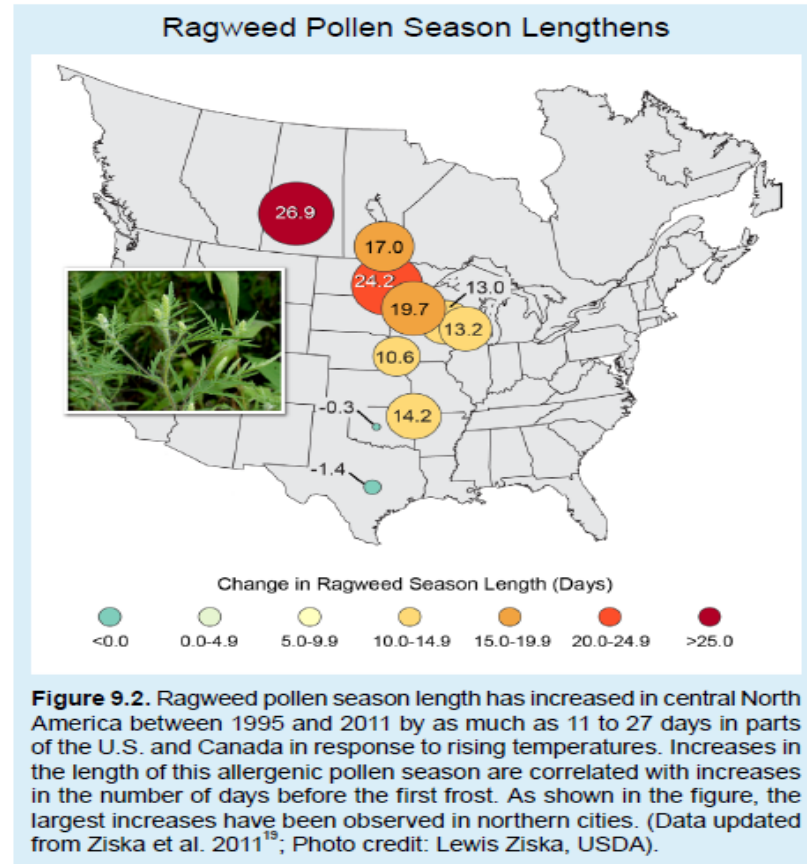
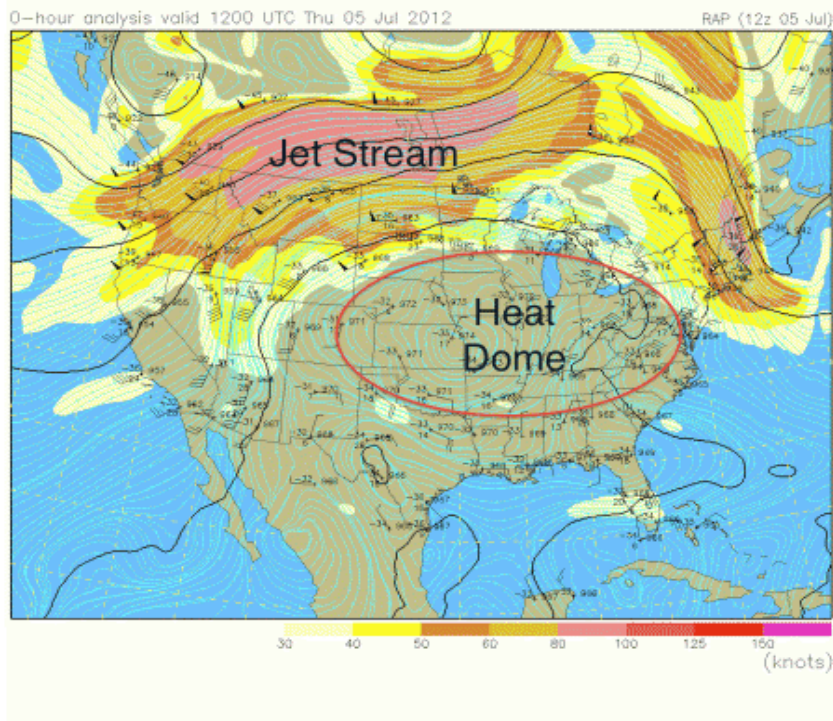
- ▶ New Source Performance Standards (NSPS)
  - ▶ Best Available Control Technology (BACT)
  - ▶ Maximum Achievable Control Technology (MACT)
- 
- ▶ Point Sources
  - ▶ Area Sources
  - ▶ Mobile Sources



# Critical Gaps

- ▶ A mass based metric may not be the most relevant for PM health effects
  - ▶ Surface area/particle counts more toxicologically relevant
  - ▶ PM is classified as a human carcinogen
  - ▶ Further categorization of sizes (e.g., 1.0, 0.1 microns)
- ▶ For acute health impacts, critical to consider sub-daily exposure peaks, and peaks influence indoor exposures
- ▶ Monitoring networks wrt the national air quality standards are largely inadequate for local impacts
- ▶ Pollutant mixtures apart from combustion mixtures still not adequately characterized
- ▶ Multiple individual and community health endpoints either impact of single source or constellation of sources

# Increasing Threats: Climate change



# Precautionary Principle

"When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof. The process of applying the precautionary principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action."

Wingspread Statement on the  
Precautionary Principle, Jan. 1998

# Where We Go From Here

- ▶ Over space and time, document exposures and symptoms (health diaries) and activities (activity logs)
  - ▶ Recognize non-threshold nature of most pollutant response relationships
    - Less emphasis on meeting benchmarks
    - Focus on achieving meaningful exposure reductions
  - ▶ Support community-based research
- 