



EPA's Report on the Environment

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Early origins

“My goals for the Agency are to make our air cleaner, our water purer and our land better protected. These are the results that we are working hard to achieve. Our progress towards these goals will be the measure of our success. *To know whether we are making progress toward these goals, we need high quality information about the state of the environment.*” –

Christine Todd Whitman, November, 2001

Draft Report on the Environment 2003



- Steering Committee formed in December 2001
- Draft Report released in June 2003
- Public listening sessions and SAB review in 2004

- Asked 63 questions about trends in air, water, land, human health, and ecological condition
- Contained 143 indicators



Major SAB comments on Draft ROE

- Make questions more internally consistent and clearly linked to EPA's mission
- Clearly define "indicator"
- Establish formal criteria for indicator selection
- Treat gaps and limitations more consistently



Structure of the Report on the Environment 2007

- Five Chapters—Air, Water, Land, Human Exposure and Health, Ecological Condition
- A total of 23 Questions
- Each Question includes
 - Introduction and scope of the question
 - Indicators that help answer the question
 - Discussion
 - Summary of what the indicators say about the question
 - Important gaps, limitations, and challenges



Example: Human Exposure and Health

Question #2: What are the trends in health status in the United States?

- Introduction and Scope
- Indicators
 - General Mortality
 - Life Expectancy at Birth
 - Infant Mortality
- Discussion



Selection of Questions

- Questions are the backbone of the ROE
- Link to EPA mission to protect human health and environment
- Consistent



What are the trends in.....and their effects on human health and the environment?

- Outdoor Air Quality
- Indoor Air Quality
- Fresh Surface Water
- Ground Water
- Wetlands
- Coastal Water
- Drinking Water
- Fish and Shellfish
- Recreational Water
- Land Cover
- Land Use
- Wastes
- Chemicals used on the land
- Contaminated land



What are the trends in.....

- Greenhouse gas emissions and concentrations?
- The extent and distribution of the Nation's ecological systems?
- The diversity and biological balance of the Nation's ecological systems?
- The ecological processes that sustain the Nation's ecological systems?
- The critical physical and chemical attributes of the Nation's ecological systems?
- Biomarkers of exposure to common environmental contaminants in plants and animals?
- Health status in the U.S.?
- Human disease and condition for which environmental pollutants may be a risk factor?
- Exposure to environmental contaminants?



Indicator definition

- For the ROE, an indicator is “a numerical value derived from actual measurements of a pressure, state or ambient condition, exposure, or human health or ecological condition over a specified geographic domain, whose trends over time represent or draw attention to underlying trends in the condition of the environment.”
- Infant Mortality is one example of an ROE indicator



Six Indicator criteria

- Useful
- Objective
- Assumptions and methods clearly stated
- Sound data and quality assurance
- Data describe changes or trends, and are timely
- The data are comparable across time and space, and representative of the target population



Indicator Peer Review

- Each potential indicator was externally peer reviewed in 2005
- Some proposed indicators were dropped and many were modified
- Rationales for not using some indicators from the 2003 report were also peer reviewed
- In total, 85 indicators made it through peer review for use in the ROE



Examples of indicators from the Health chapter

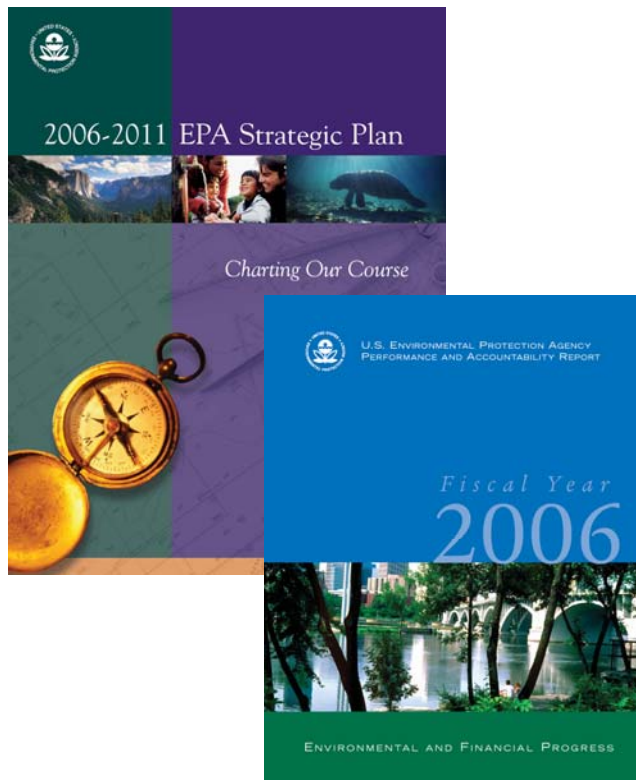
- Blood Lead Level
- Blood Cotinine Level
- Urinary Pesticide Level
- General Mortality
- Life Expectancy at Birth
- Cancer Incidence
- Cardiovascular Disease Prevalence and Mortality
- Asthma Prevalence
- Infectious Diseases Associated with Environmental Exposures or Conditions
- Birth Defects Prevalence and Mortality



Indicator Contents

- Introduction
- What the Data Show
- Limitations
- Data Sources
- References (appendix)
- Metadata forms (eROE)

EPA's Strategic Plan & Performance Report



- EPA Strategic Plan
 - Sets the Agency's goals, objectives, and strategic targets
- EPA Annual Performance Report
 - Reports on achievement of goals, objectives, and strategic targets



The ROE, research, and strategic planning

The ROE should:

- complement EPA’s strategic planning efforts
- identify important gaps in information that hinder our decisions about how to invest in the future.

- EPA Administrator Steve Johnson



Gaps identified in the ROE Health chapter

- Role of exposure to environmental contaminants
 - Additional indicators of human exposure
 - Ability to link exposure back to source of contaminant
- Strength of association between environmental contaminants and disease
 - What proportion of a disease is caused by exposure to a given environmental contaminant
- Assessment of temporal trends
- Differences among sub populations
- Consideration of multiple contaminants



How might the ROE inform research and strategic thinking at EPA?

- Identify important gaps and limitations
- Identify trends that need attention
- Quantify and communicate uncertainty in indicators
- Address scaling problems
- Use technology to improve cost effectiveness of existing or new indicators
- Determine sensitivity of indicators to management actions
- Make explicit connections between quarterly measures, annual progress, strategic goals, and environmental conditions



Where to get more information

- Additional background
 - <http://www.epa.gov/roe/abouteii.htm>
- About the indicators
 - <http://cfpub.epa.gov/eroe/>
- For the version of the 2007 ROE that went to the SAB
 - <http://www.epa.gov/roe/publications.htm>
- Other questions
 - Nickerson.william@epa.gov