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EPA's Report on the Environment and Electronic Report on the Environment

www.epa.gov/roe

April 16, 2009

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Presentation Outline

- History and Background of EPA's Report on the Environment – *Denice Shaw*
- Organization and Content of the ROE – *Madalene Stevens*

Question Break (5 min)

- Overview of the Air Chapter – *Jay Messer*
- Overview of the Human Health Chapter – *Pat Murphy*
- Regional Perspective – *Vance Fong*

Question Break (5 min)

- Highlights Document and electronic ROE – *Suzanne Annand & Madalene Stevens*
- Current and Future ROE projects – *Jay Messer*
- Summary and Question Session

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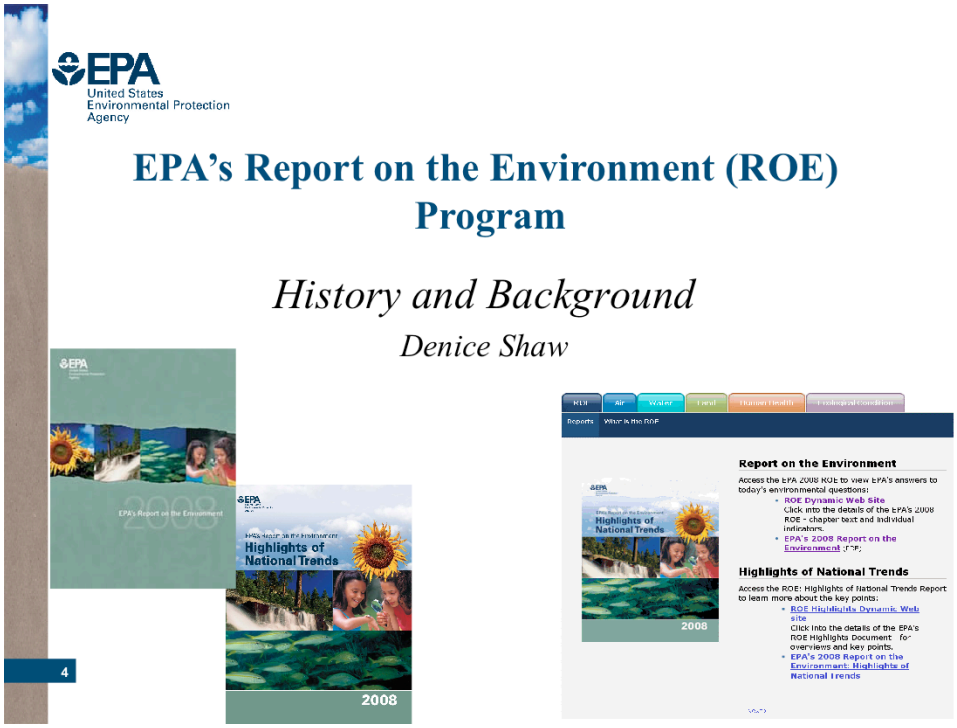

ROE program is composed of multiple products

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EPA Administrator Whitman's Vision for the ROE

"The indicators work and the State of the Environment [ROE] report are critical steps in our more comprehensive approach to identifying priorities, focusing resources on areas of greatest concern, and managing our work to achieve measurable results." (2001)

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ROE: History and Background (con't)

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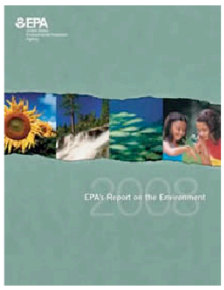
EPA's 2008 Report on the Environment

- Provides peer-reviewed scientific environmental indicators (85) that are important to answering 23 questions EPA considers most important and relevant to its mission.

- EPA defines an **environmental indicator** as a numerical value derived from actual measurements of a pressure, state, or ambient condition, exposure or human health or ecological conditions over a specified geographic domain, whose trends over time represent or draw attention to underlying trends in the condition of the environment.



ROE: History and Background (con't)

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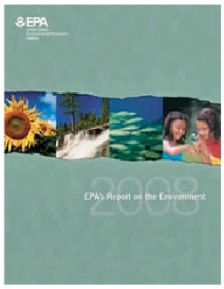
EPA's 2008 Report on the Environment

- Identifies critical indicator gaps, limitations and information needs
- Serves as a resource for educated, interested citizens to learn more about changing trends in the environment.
- Catalyst for partnerships and collaboration among Federal, State and other organizations.



ROE: History and Background (con't)

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EPA's 2008 Report on the Environment

- ROE indicators and associated gaps and limitations provide valuable input into planning and decision making at EPA

- One-third of the ROE08 indicators were used as the basis of the EPA's current and prospective strategic performance metrics.

ROE: History and Background (con't)

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EPA's 2008 Report on the Environment (ROE)

Organization and Content of the ROE

Madalene Stevens

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How is the ROE organized?

- The ROE is organized into five main chapters:
  - Air
  - Water
  - Land
  - Human Exposure and Health
  - Ecological Condition

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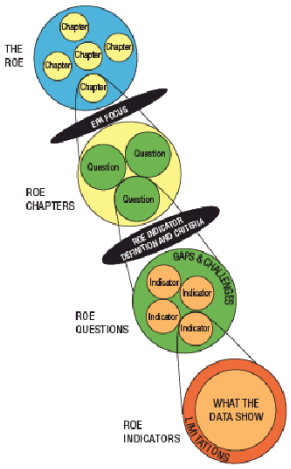
What is covered in each chapter?

- Each chapter is organized around a set of 23 **questions** important to EPA's mission. The questions ask about trends in:
  - Stressors to air, water, and land and their effects on human health and the environment
  - Human exposure and health and the condition of the environment

Exhibit 1-1. The ROE framework



ROE: Organization and Content (con't)

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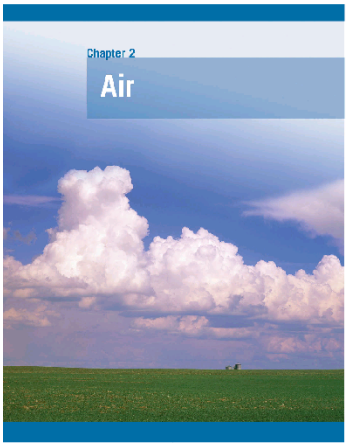
Inside the ROE

- **Air**
  - Outdoor and indoor air quality
  - Greenhouse gas emissions and concentrations



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ROE: Organization and Content (con't)

What are the trends in outdoor air quality and their effects on human health and the environment?

What are the trends in greenhouse gas emissions and concentrations?

What are the trends in indoor air quality and their effects on human health?

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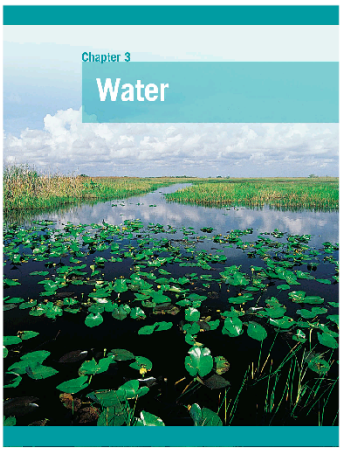
Inside the ROE *(continued)*

- **Water**
  - Extent and/or condition of fresh surface waters, ground water, wetlands, and coastal waters
  - Drinking water quality
  - Condition of recreational waters and consumable fish and shellfish



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ROE: Organization and Content (con't)

What are the trends in the extent and condition of…

fresh surface waters and their effects on human health and the environment?

ground water and their effects on human health and the environment?

wetlands and their effects on human health and the environment?

coastal waters and their effects on human health and the environment?

quality of drinking water and their effects on human health?

recreational waters and their effects on human health and the environment? - ex. Of a gap, no nat'l indicators

consumable fish and shellfish and their effects on human health?

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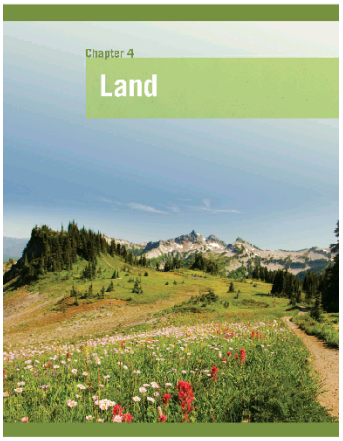
Inside the ROE *(continued)*

- **Land**
  - Land cover and land use
  - Chemicals used on the land
  - Wastes and contaminated land



ROE: Organization and Content (con't)

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

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

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

What are the trends in chemicals used on the land and their effects on human health and the environment? Chemicals to include toxic substances, pesticides, fertilizers, etc.)

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

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Inside the ROE *(continued)*

- **Human Exposure and Health**
  - –Human exposure to environmental contaminants
  - –U.S. health status
  - –Human diseases and conditions for which environmental contaminants might be a risk factor

ROE: Organization and Content (con't)

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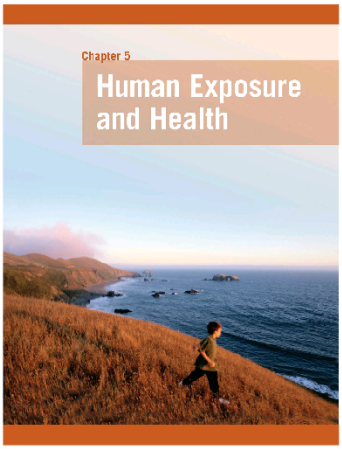

What are the trends in exposure to environmental contaminants including across population subgroups and geographic regions?

What are the trends in health status in the U.S.?

What are the trends in human disease and conditions for which environmental contaminants may be a risk factors including across population subgroups and geographic regions?

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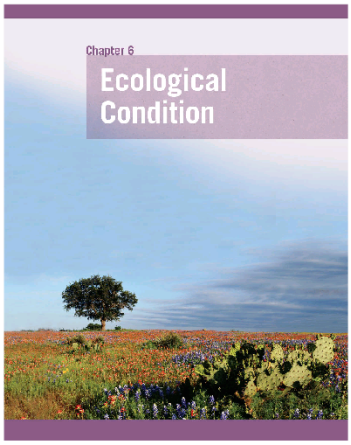
Inside the ROE *(continued)*

- **Ecological Condition**
  - Extent, distribution, diversity, biological balance, ecological processes, and critical physical and chemical attributes of the nation's ecological systems
  - Biomarkers of exposure to environmental contaminants in plants and animals

ROE: Organization and Content (con't)



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What are the trends in the extent and distribution of the Nation's ecological systems? - forest frag, land cover, land use

What are the trends in the diversity and biological balance of the Nation's ecological systems?

What are the trends in the ecological processes that sustain the Nation's ecological systems?

What are the trends in the critical physical and chemical attributes of the Nation's ecological systems?

What are the trends in biomeasures of exposure to common environmental pollutants in plants and animals?

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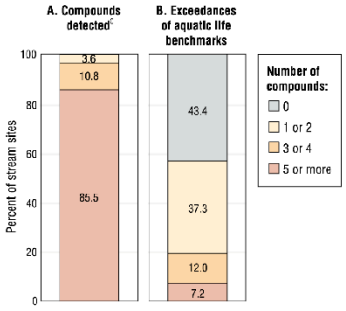
ROE Indicator Examples

- Example Question from the Water Chapter:

  What are the trends in the extent and condition of fresh surface waters and their effects on human health and the environment?
- Supporting Indicators: High and Low Stream Flows; Lake and Stream Acidity; Nitrogen and Phosphorus in: Wadeable Streams, Agricultural Watersheds, Large Rivers
- See Indicator: Pesticides in Streams in Agricultural Watersheds

ROE: Organization and Content (con't)

Exhibit 3-12. Pesticides in streams in agricultural watersheds of the contiguous U.S., 1992-2001[a,b]



[a]**Coverage:** 83 stream sites in watersheds where agriculture is the predominant land use. These watersheds are within 36 major river basins studied by the USGS NAWQA program.

[b]Totals may not add to 100% due to rounding.

[c]All streams had at least one compound detected.

Data source: *Gilliom et al., 2007*

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Do the indicators completely answer the questions?

- No, but for each question, the ROE presents:
  - The **gaps**—indicators needed to fully answer the question
  - The **challenges** to filling these gaps

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National-level focus

- ROE focuses on *national-level* indicators as a matter of organizational priorities.
- EPA wants to present data at finer geographic scales where appropriate and possible.

ROE: Organization and Content (con't)

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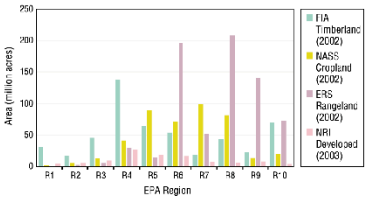
Subnational indicators

- In the 2008 ROE, national data are broken out by major geographic regions for 32 indicators for which the data are sufficiently representative at that geographic scale.
  - EPA Regions are used because of Regional role in Agency's environmental protection efforts.
- Eight "regional-pilot" indicators were chosen to demonstrate how such indicators can answer part of an ROE question unique to a particular geographic area, or could eventually be expanded to answer an ROE question at the national level.
- Subnational indicators, like national-level indicators, must meet the indicator criteria.

Exhibit 4-6. Land use in the U.S. by EPA Region, 2002-2003[a]



[a]See box in text for definitions of land use categories.

Data source: *Lubowski et al., 2006; Smith et al., 2004; USDA NASS, 2004; USDA NRCS, 2007*

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Five Minute Question Break

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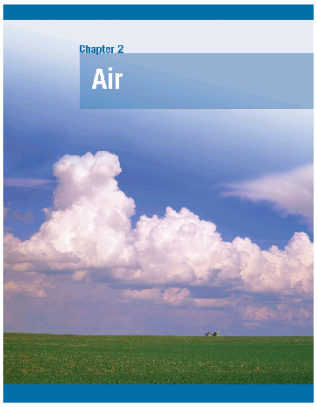
2008 Report on the Environment

Overview of the Air Chapter

Jay Messer



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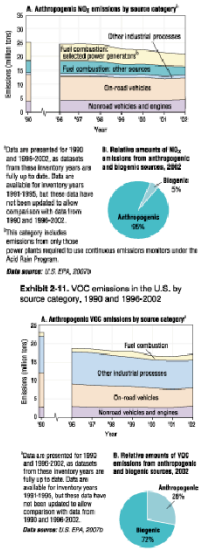
Tropospheric Ozone

Exhibit 2-7. NO_x emissions in the U.S. by source category, 1990 and 1996-2002



[a]Data are presented for 1990 and 1996-2002, as datasets from these inventory years are fully up to date. Data are available for inventory years 1985-1995, but these data have not been updated to allow comparison with data from 1990 and 1996-2002.

[b]This category includes emissions from only those power plants required to use continuous emissions monitors under the Acid Rain Program.

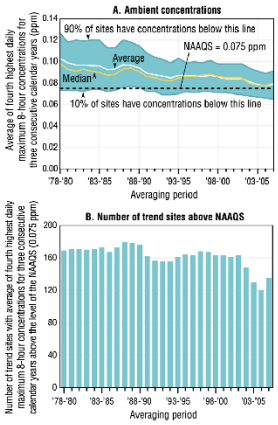
Data source: *U.S. EPA, 2007b*

Exhibit 2-11. VOC emissions in the U.S. by source category, 1990 and 1996-2002

[a]Data are presented for 1990 and 1996-2002, as datasets from these inventory years are fully up to date. Data are available for inventory years 1981-1995, but these data have not been updated to allow comparison with data from 1990 and 1996-2002.

Data source: *U.S. EPA, 2007b*

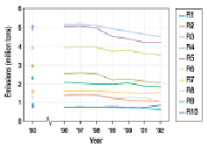
Exhibit 2-13. Ambient 8-hour ozone concentrations in the U.S., 1978-2007[a]



[a]**Coverage:** 194 monitoring sites in 148 counties nationwide (out of a total of 1,208 sites measuring ozone in 2007) that have sufficient data to assess ozone trends since 1978.

Data source: *U.S. EPA, 2008b*

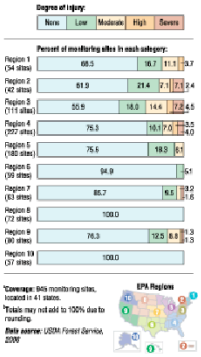
Exhibit 2-8. NO_x emissions in the U.S. by EPA Region, 1990 and 1996-2002[a]



[a]Data are presented for 1990 and 1996-2002, as datasets from these inventory years are fully up to date. Data are available for inventory years 1985-1995, but these data have not been updated to allow comparison with data from 1990 and 1996-2002.

Data source: *U.S. EPA, 2007b*

Exhibit 2-15. Ozone injury to forest plants in the U.S. by EPA Region, 2002[a,b]



[a]**Coverage:** 845 monitoring sites, located in 41 states.

[b]Totals may not add to 100% due to rounding.

Data source: *USDA Forest Service, 2006*

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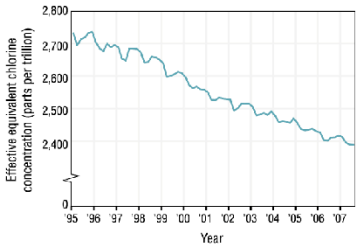
Stratospheric Ozone

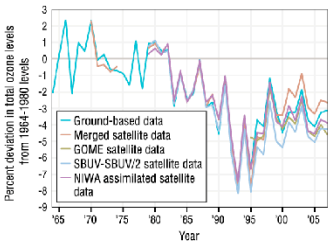
Exhibit 2-44. Global effective equivalent chlorine concentrations, 1995-2007[a]



[a]Effective equivalent chlorine (EECl) is typically used to represent atmospheric concentrations of ozone-depleting substances. The EECl reflects contributions from multiple ozone-depleting substances, weighted by their potential to catalyze the destruction of stratospheric ozone.

Data source: *NOAA, 2008*

Exhibit 2-46. Total ozone levels over North America, 1964-2007[a,b]



[a]Total ozone refers to the total ozone concentration in a column of air between the Earth's surface and the top of the atmosphere.

[b]Trend data are representative of latitudes ranging from 35 degrees north to 60 degrees north.

Data source: *WMO et al., 2007; Fioletov, 2008*

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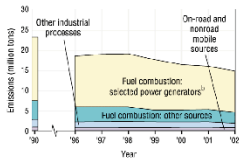
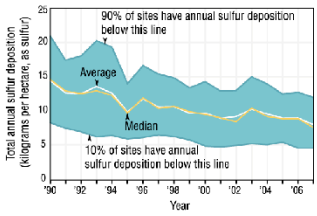
Acid Deposition

Exhibit 2-27. SO_2 emissions in the U.S. by source category, 1990 and 1996-2002[a]



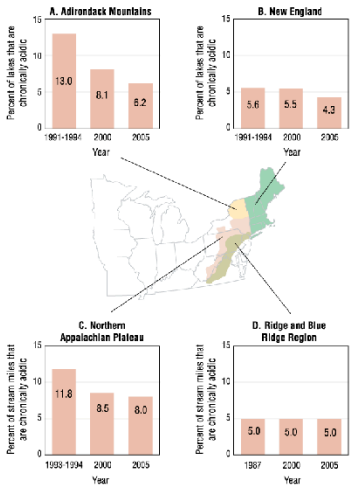
[a]Data are presented for 1990 and 1996-2002, as datasets from these inventory years are fully up to date. Data are available for inventory years 1991-1995, but these data have not been updated

Exhibit 2-33. Total sulfur deposition in the eastern United States, 1990-2007[a]



[a]**Coverage:** 34 monitoring sites in the eastern United States.
Data source: *MACTEC Engineering and Consulting, Inc., 2008*

Exhibit 2-36. Lake and stream acidity in selected acid-sensitive regions in the U.S., 1987-2005



Data source: *U.S. EPA, 1988, 2003, 2007*

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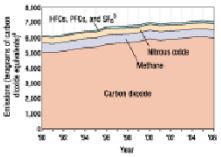
Greenhouse gases

Exhibit 2-50. Greenhouse gas emissions in the U.S. by gas, 1990-2006



[1]Teragrams of carbon dioxide equivalents are the units conventionally used in greenhouse gas inventories prepared worldwide. For reference, one teragram equals one million metric tons.

[2]HFCs are hydrofluorocarbons, PFCs are perfluorocarbons, and SF_6 is sulfur hexafluoride.

Data source: U.S. EPA, 2008

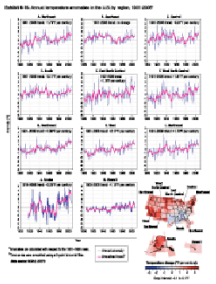
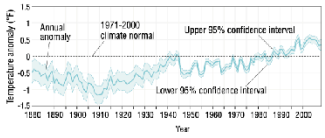


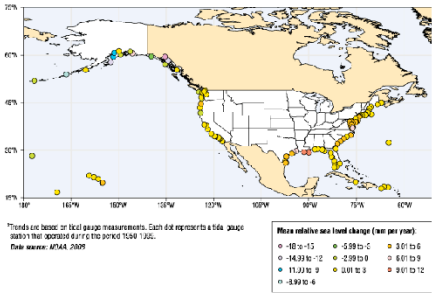
Exhibit 6-19. Annual global sea surface temperature anomaly, 1880-2008[1]



[1]**Coverage:** Anomaly with respect to the 1971-2000 climate normal, which is plotted as zero.

Data source: NOAA, 2009b

Exhibit 6-20. Changes in relative sea level along U.S. coasts, 1950-1999[1]



[1]Trends are based on local gauge measurements. Each dot represents a tide gauge station that operated during the period 1950-1999.

Data source: NOAA, 2009

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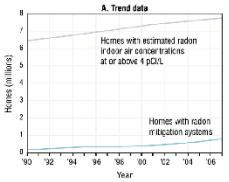
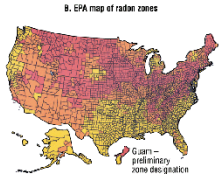
Indoor Air

Exhibit 2-56. Homes at or above EPA's radon action level and homes with operating mitigation systems in the U.S., 1990-2007





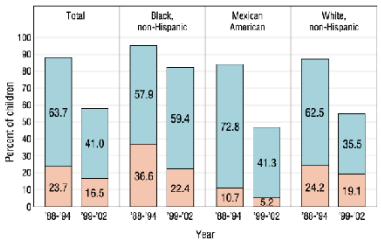
Zone 1: Counties with predicted average indoor radon screening levels greater than 4 pCi/L

Zone 2: Counties with predicted average indoor radon screening levels from 2 to 4 pCi/l

Zone 3: Counties with predicted average indoor radon screening levels less than 2 pCi/L

Data source: *U.S. EPA, 1992a, 2008*

Exhibit 2-58. Blood cotinine concentrations in U.S. children age 4 to 17 by race and ethnicity, 1988-1994 and 1999-2002[a]



[a]Cotinine concentrations are reported for non-smoking children only.

[b]Concentrations below 0.05 ng/mL are not presented here because this was the detection limit for many of the samples.

Concentration:[b]
- 0.05 to 1.0 ng/mL
- More than 1.0 ng/mL

Data source: *Federal Interagency Forum on Child Family Statistics, 2006*

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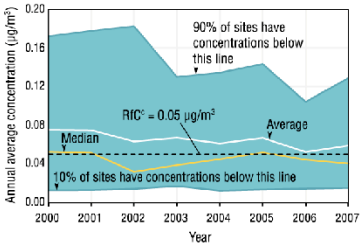
Ambient Manganese in Region 5

Exhibit 2-49. Ambient manganese concentrations in EPA Region 5, 2000-2007[a,b]



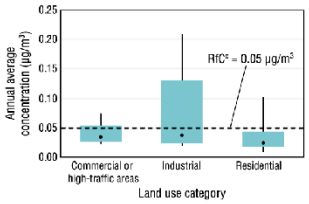
[a]**Coverage:** 21 monitoring sites in EPA Region 5 (out of a total of 47 sites measuring manganese in 2007) that have sufficient data to assess manganese trends since 2000.

[b]Concentrations are for manganese in total suspended particulate matter.

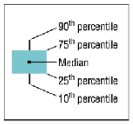
[c]The reference concentration (RfC) is an estimate of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.

Data source: *U.S. EPA, 2008*

Exhibit 2-48. Ambient manganese concentrations in EPA Region 5 by land use category, 2007[a,b]



[a]**Coverage:** 44 monitoring sites in EPA Region 5, with 11 sites in commercial or high-traffic land use areas, 21 sites in industrial areas, and 12 sites in residential areas.



[b]Concentrations are for manganese in total suspended particulate matter.

[c]The reference concentration (RfC) is an estimate of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.

Data source: *U.S. EPA, 2008*

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Example of Gaps and Challenges

- Question:
  - *What are the trends in outdoor air quality and their effects on human health and the environment?*
- Gap:
  - No national indicators are available that track over time the incidence of health effects attributable specifically to exposure to one or more air pollutants.
- Challenges:
  - Measurements of human exposure to air pollutants nationwide would be highly resource intensive.
  - Incomplete scientific understanding of how all air pollutants, whether acting alone or in combination, can affect human health.

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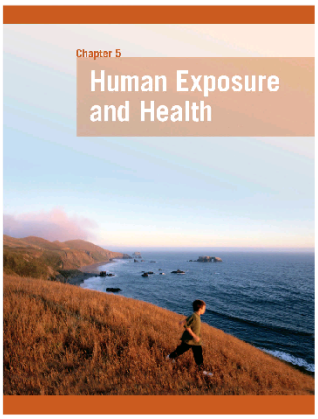
2008 Report on the Environment

Overview of the Health Chapter

Pat Murphy



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Human Exposure and Health

- Clarify
  - Health (and ecological condition) indicators are influenced by contaminants in more than one medium and integrate across land, water, and air and different ecosystem types.
- Examples
- Gaps and Challenges

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Question	Indicator Name
What are the trends in human exposure to environmental contaminants, including across population subgroups and geographic regions?	Blood Lead Level Blood Mercury Level Blood Cadmium Level Blood Persistent Organic Pollutants Level **Blood Cotinine Level** Urinary Pesticide Level Urinary Phthalate Level
What are the trends in health status in the United States?	**General Mortality** **Life Expectancy at Birth** Infant Mortality
What are the trends in human disease and conditions for which environmental contaminants may be a risk factor, including across population subgroups and geographic regions?	**Cancer Incidence** Childhood Cancer Incidence **Cardiovascular Disease Prevalence and Mortality** **Chronic Obstructive Pulmonary Disease Prevalence and Mortality** **Asthma Prevalence** Infectious Diseases Associated with Environmental Exposures or Conditions Birth Defects Prevalence and Mortality Low Birthweight Preterm Delivery

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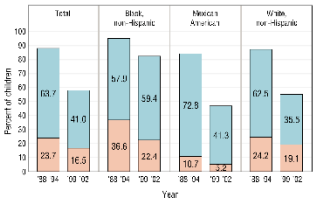
Indoor Air and Health

Exhibit 2-58. Blood cotinine concentrations in U.S. children age 4 to 17 by race and ethnicity, 1988-1994 and 1999-2002[a]

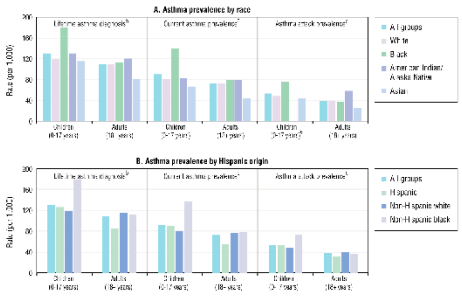


[a]Cotinine concentrations are reported for non-smoking children only.

[b]Concentrations below 0.05 ng/mL are not presented here because this was the detection limit for many of the samples.

Data source: *Federal Interagency Forum on Child and F*

Exhibit 5-30. Asthma prevalence in the U.S. by race and Hispanic origin, 2005-2007[a]



[a]Rates presented for age 0-17 are crude rates; rates presented for age 18 and older are age-adjusted.

[b]Lifetime asthma diagnosis is determined by asking survey participants if they were "ever" told that they had asthma.

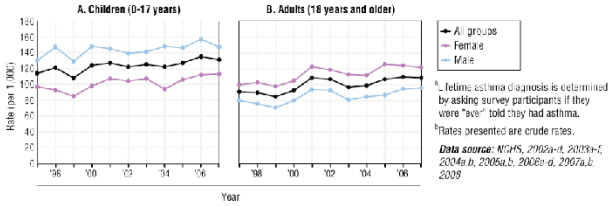
[c]Current asthma prevalence is determined by asking if the survey participant still has asthma.

[d]Asthma attack prevalence is determined by asking if the survey participant has had an asthma attack within the past 12 months.

[e]American Indian/Alaska Native data are not considered reliable and were not reported.

Data source: *NCHS, 2005*

Exhibit 5-29. Estimated lifetime asthma diagnosis prevalence in children and adults in the U.S., 1997-2007[a,b]



[a]Lifetime asthma diagnosis is determined by asking survey participants if they were "ever" told they had asthma.

[b]Rates presented are crude rates.

Data source: *NCHS, 2002a-d, 2003a-f, 2004a,b, 2005a,b, 2006a-d, 2007a,b, 2008*

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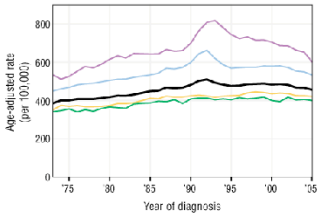
Cancer Incidence

Exhibit 5-17. Age-adjusted cancer incidence rates in the U.S., 1973-2005: All cancer sites for all ages, by race and sex[a]

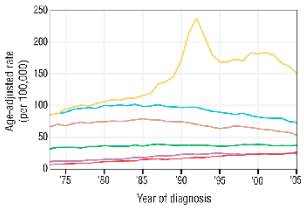


[a]Rates are age-adjusted to the 2000 U.S. standard population.

Data source: *NCI, 2008*

- All groups
- Male (white)
- Female (white)
- Male (black)
- Female (black)

Exhibit 5-19. Age-adjusted cancer incidence rates in the U.S., 1973-2005: Top six cancers in males of all ages[a]

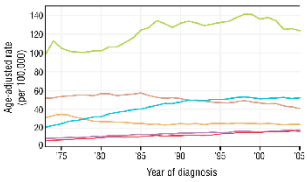


[a]Rates are age-adjusted to the 2000 U.S. standard population.

Data source: *NCI, 2008*

- Colon and rectum
- Lung and bronchus
- Melanoma of the skin
- Non-Hodgkin's lymphoma
- Prostate
- Urinary bladder

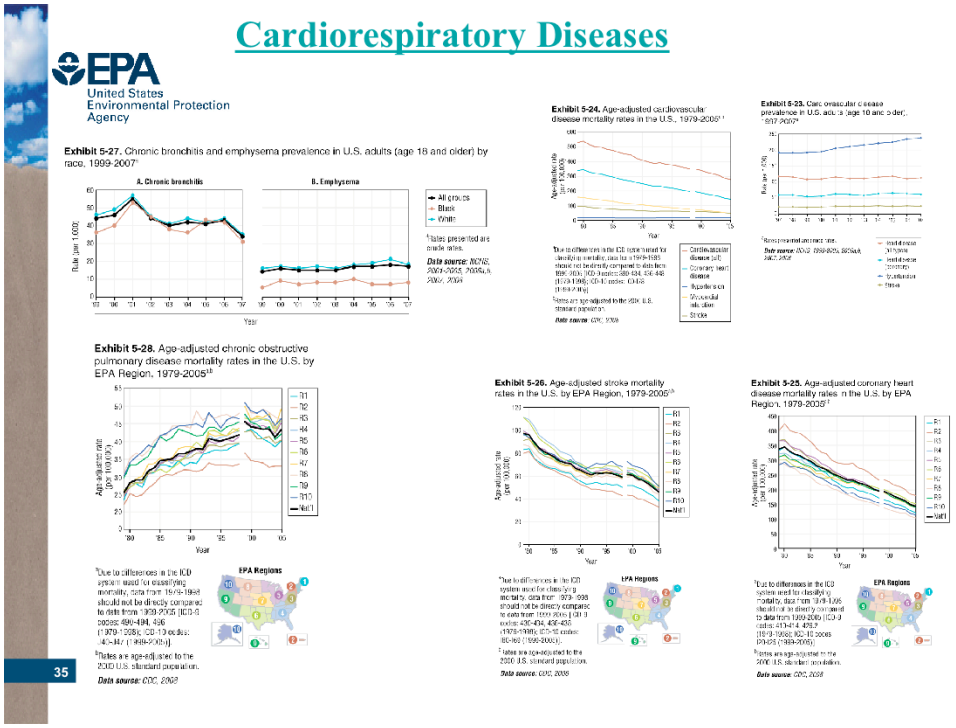
Exhibit 5-20. Age-adjusted cancer incidence rates in the U.S., 1973-2005: Top six cancers in females of all ages[a]



[a]Rates are age-adjusted to the 2000 U.S. standard population.

Data source: *NCI, 2008*

- Breast
- Colon and rectum
- Corpus uteri
- Lung and bronchus
- Melanoma of the skin
- Non-Hodgkin's lymphoma



http://cfpub.epa.gov/eroe/index.cfm?fuseaction=detail.viewInd&lv=list.listByAlpha&r=201584&subtop=381

Exhibit 5-27 presents the prevalence of chronic bronchitis (panel A) and emphysema (panel B) from 1999 to 2007. The prevalence of chronic bronchitis in U.S. adults over the age of 18 years ranged from a high of 55 (2001) cases per 1,000 to a low of 34 (2007). The reported total prevalence of chronic bronchitis appears to have peaked in 2001, followed by a subsequent decline from 2001 to 2007. A notable decline is seen between 2006 (43 cases per 1,000) and 2007 (34 cases per 1,000), the most current reporting year. The reported prevalence of emphysema in U.S. adults during the same time period ranged from 14 (1999) to 18 (2006) cases per 1,000. No notable change in the prevalence for emphysema was evident during this time period. Exhibit 5-27 also displays chronic bronchitis and emphysema prevalence by race. Chronic bronchitis prevalence was higher among white (designated as "white only") adults than black ("black or African American only") adults during 1999 (46 versus 36 cases per 1,000, respectively), 2000 (49 versus 40 cases per 1,000, respectively), and 2004 (44 versus 36 cases per 1,000, respectively). In 2007, rates in white adults continued to be higher (35 cases per 1,000) compared with black adults (31 cases per 1,000), but both groups exhibited similar declines. Throughout the entire time period, emphysema prevalence is consistently higher among white adults than black adults.

COPD Mortality

In 2005, COPD continues to be the fourth leading cause of mortality, accounting for 130,933 (5.3 percent) of all deaths (General Mortality indicator). Exhibit 5-28 shows that the age-adjusted mortality rate for COPD as a whole has increased over time, with rates ranging from 25.5 per 100,000 in 1979 to 41.8 per 100,000 in 1998. From 1999 to 2005, rates held steadier, ranging from 45.4 per 100,000 in 1999 to 43.2 per 100,000 in 2005. Mortality rates for emphysema (6.9 and 6.5 per 100,000 for 1979 and 1998, respectively, and 6.5 and 4.6 per 100,000 for 1999 and 2005, respectively) and chronic bronchitis (1.7 and 0.9 per 100,000 for 1979 and 1998, respectively, and 0.2 and 0.1 per 100,000 for 1999 and 2005, respectively) have not changed substantially during the same time period. (Data not shown.)

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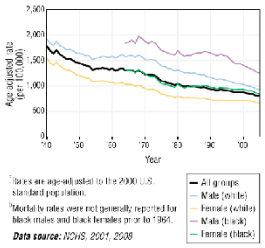
Health Status

Exhibit 5-11. Age-adjusted "all cause" mortality rates in the U.S., 1940-2005[a,b]



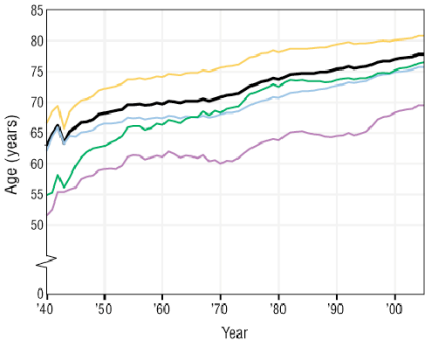
[a]Rates are age-adjusted to the 2000 U.S. standard population.
[b]Mortality rates were not generally reported for black males and black females prior to 1964.
Data source: *NCHS, 2001, 2008*

Exhibit 5-12. Leading causes of death in the U.S., 2005

Cause of death	Number of deaths	Percent of all deaths[a]
Heart disease	652,091	26.6
Cancer (malignant neoplasms)	559,312	22.8
Stroke (cerebrovascular)	143,579	5.9
Chronic lower respiratory diseases	130,933	5.3
Accidents (unintentional injuries)	117,809	4.8
Diabetes mellitus	75,119	3.1
Alzheimer's disease	71,599	2.9
Influenza and pneumonia	63,001	2.6
Nephritis	43,901	1.8
Septicemia	34,136	1.4
All other causes	559,337	22.7

[a]Totals may not add to 100% due to rounding.
Data source: *CDC, 2008*

Exhibit 5-14. Life expectancy in the U.S. by race and sex, 1940-2005



Data source: *NCHS, 2006b, 2008*

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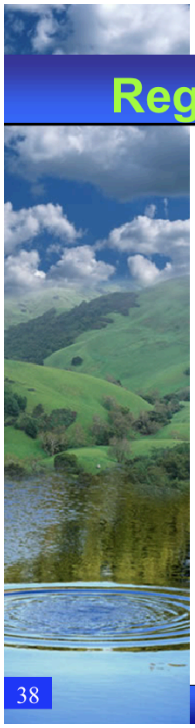
Example of Gaps and Challenges

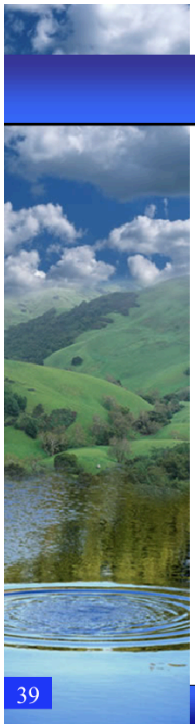
- Question:
  - *What are the trends in human disease and conditions for which environmental contaminants may be a risk factor, including across population subgroups and geographic regions?*
- Gap:
  - No national indicators are available for many diseases and conditions of interest, e.g., neurodegenerative disorders such as Parkinson's and Alzheimer's disease
- Challenges:
  - Incomplete understanding and variable scientific evidence base establishing "environmentally-related disease"
  - Establishing and maintaining (outside EPA) comprehensive and standardized surveillance for conditions of interest



Regional Perspective to the ROE

Vance S. Fong

Region 9 representative to EPA Indicators Work Group



Regional Contribution to the ROE

Regional role in supporting ROE effort

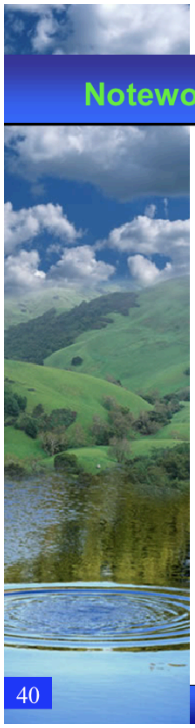
- Provide input the Indicator Work Group (IWG)
- Market the use of the ROE in regions and states/ tribes

Regional trends and conditions in the ROE

- Work with national program offices and states to ensure the ROE is telling accurate stories

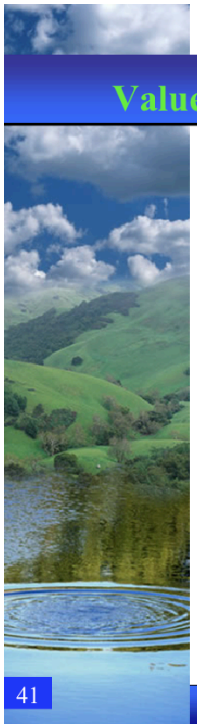
Regional pilots in the ROE

- Contribute pilot indicators to the ROE and provide periodic data updates



Noteworthy Trends in Sub-national Indicators

- **Atmospheric manganese concentrations in R5**
  - Average annual atmospheric manganese concentrations in R5 declined by 28% between 2000 and 2006, and are much higher in industrial than in residential or commercial areas
- **Submerged aquatic vegetation in the Chesapeake Bay**
  - Increased from 41,000 acres in 1978 to a peak of 90,000 acres in 2002, before declining to 59,000 acres in 2006
- **Hypoxia**
  - In 2007 the 7,900 mi^2 midsummer bottom hypoxia area in the Gulf of Mexico was the second largest area on record
  - The 31 mi^2 hypoxic area in Long Island Sound was the third smallest on record
- **Ecological connectivity**
  - 43% of the land and water in R4 is ecologically connected
- **Invasive species**
  - 15% of the estuarine sites in R10 had more invasive species than native ones
  - Another 20% were moderately invaded



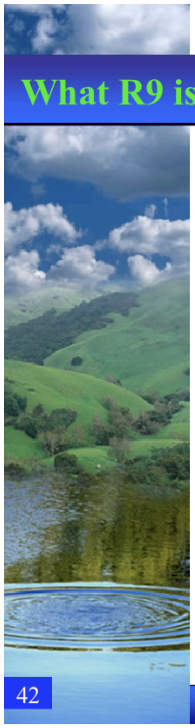
Value of the ROE to Regions/States/Tribes

Uses of the ROE in an EPA region

- The ROE provides nation-wide trends and conditions
- The Regions use the ROE and supplement it with finer scale information

Connectivity between the ROE and regional/state indicators

- The Regions identify connections, wherever possible, between ROE indicators, regional and state level indicators
- The complete picture is necessary to inform strategic planning and the public



What R9 is doing to further Agency indicator effort

US-MEX Border Indicator Report

- Work with OEI and Region 6 on the Border Indicator Report to support US – MEX Border 2012 program decisions
- Share indicators and tools with audiences using a web site
- Develop Border Gateway for internal audiences

Web 2.0 Technology – wiki to track and share key R9 Indicators

- Set up the R9 Environmental Information Wiki site to develop R9 indicators
- The site will be used to connect applicable ROE indicators with regional and state/tribal indicators

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Five Minute Question Break

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Report on the Environment: Highlights of National Trends

and

Electronic Report on the Environment

Suzanne Annand

Madalene Stevens

44

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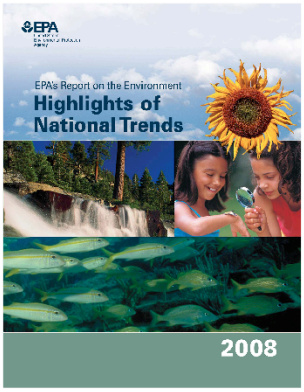
EPA's 2008 Report on the Environment: Highlights of National Trends

- Presents key findings from the more comprehensive technical report
- Written for a general audience
- 40-page document organized around 25 topics
- topics cover air, water, and land – as well as human health and ecological condition.
- Topic pages include a brief overview of the topic, and a series of key points



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ROE

- Intended for a technical audience
- Presents an extensive set of 85 indicators
- Very comprehensive. Contains almost 400 pages

ROE Highlights Document

- Targeted to a more general audience
- Organized around 25 topics
- Less than 40 pages. Brief and written in an easy to understand format.

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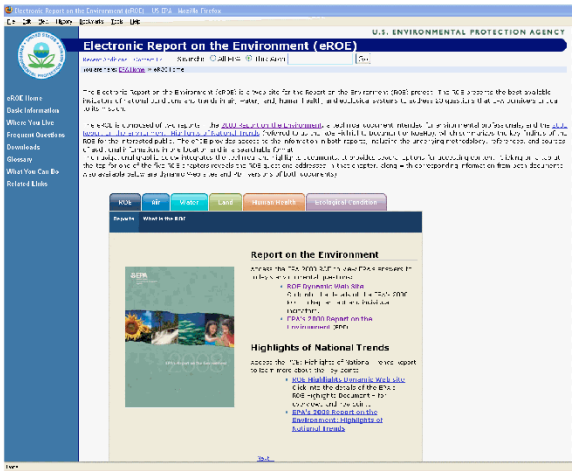
Electronic Report on the Environment (eROE)
http://www.epa.gov/roe

- Interactive public website

- Provides access to the *ROE* and companion *Highlights Document* in one location and in a searchable format.



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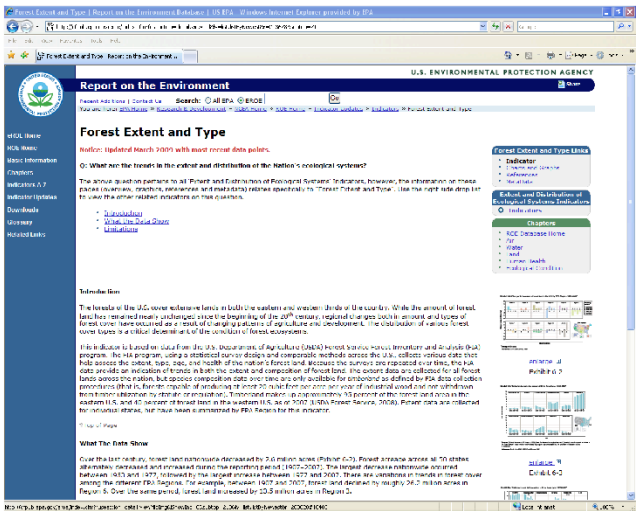
Electronic Report on the Environment (eROE)

- eROE provides the most current indicator data
  - Updated on a quarterly basis with new data points and supporting text and figures



Most recently, 8 indicators were updated on March 2, 2009. Previously, over 30 indicators were updated in December 2008.

EPA will keep the ROE current and relevant by adding new indicators and updating indicators as new data become available.

Insert HD slides

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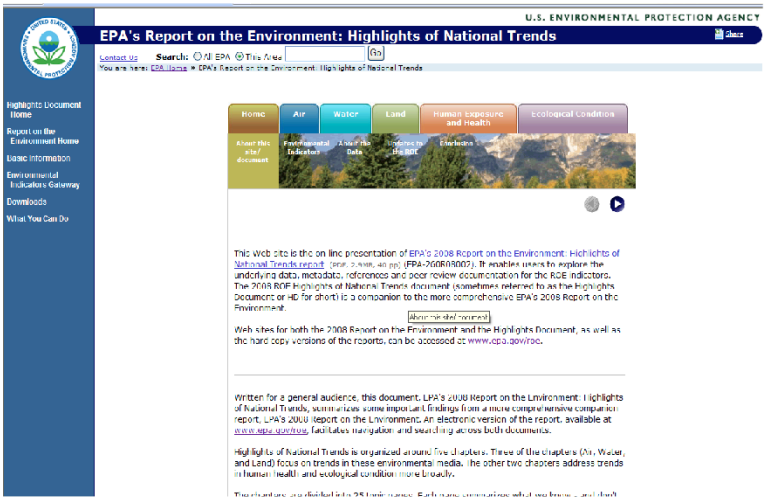
eROE Highlights Document
Main Navigation Page



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eROE Highlights Document

Air Chapter Topic Page

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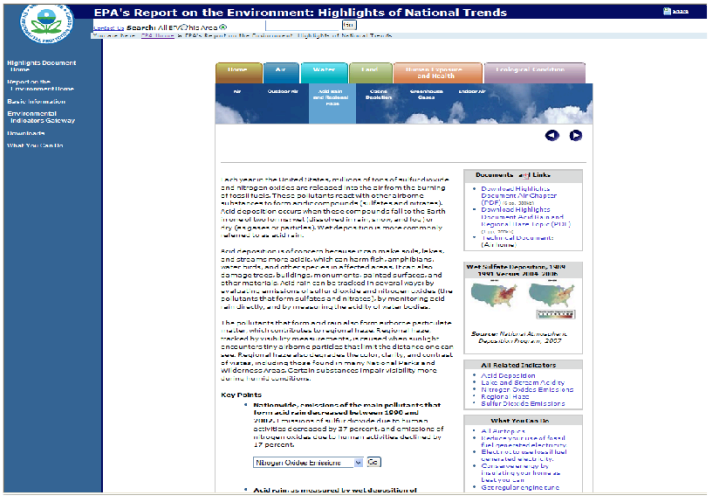
eROE Highlights Document

Acid Rain Subtopic Page



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eROE Highlights Document

What You Can Do

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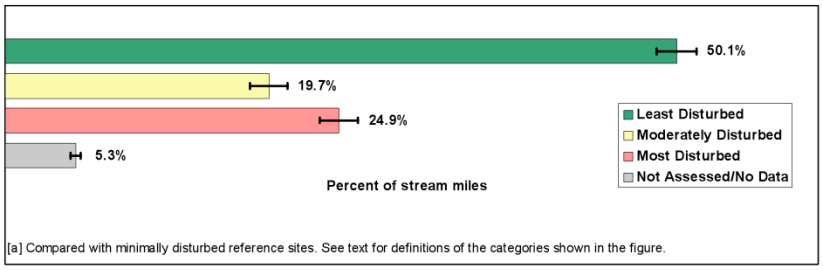
Coming Soon to the eROE

Quantifying uncertainty information for indicators and developing presentation options for eROE

Streambed Stability in Wadeable Streams



[a] Compared with minimally disturbed reference sites. See text for definitions of the categories shown in the figure.

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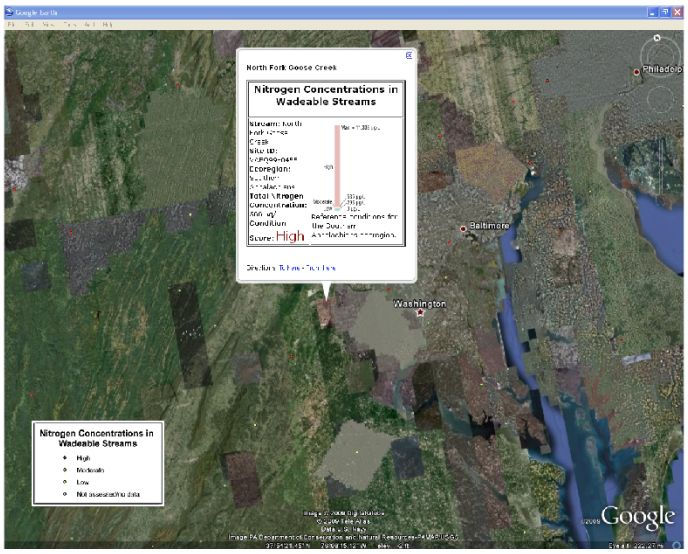
Coming Soon to the eROE



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Thank you

www.epa.gov/roe

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Recommended Links

- **EPA's Electronic Report on the Environment:** www.epa.gov/roe
- **EPA's Environmental Indicators Gateway**: www.epa.gov/indicators
- **Biological Indicators of Watershed Health:** www.epa.gov/bioindicators
- **US-Mexico Border 2012 Program - Measuring Conditions and Progress:** http://www.epa.gov/usmexicoborder/indicators/
- **EPA's National Center for Environmental Assessment:** www.epa.gov/ncea

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Links to Additional Resources

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