FY 2007 President's Budget: Advancing Science and Innovation

U.S. Environmental Protection Agency
Office of Research and Development

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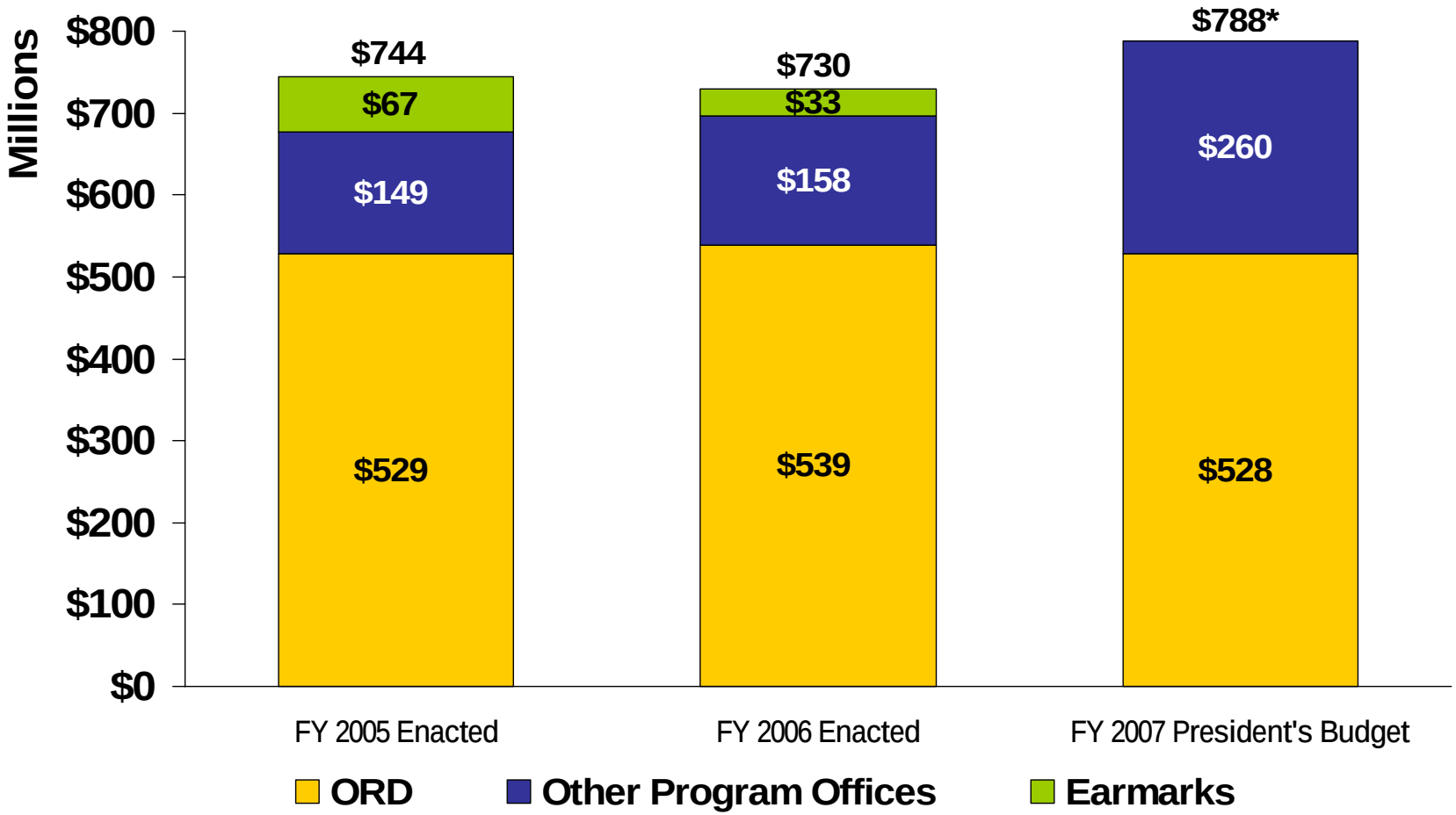
Briefing Overview

- FY 2007 President's Budget for EPA S&T
- ORD Research Priorities
- R&D Investment Criteria and PART
- FY 2007 President's Budget for ORD
- Major ORD Increases
- Research Highlights by Strategic Plan Goal
- Conclusions

EPA's S&T Account



*Note: In the FY 2007 President's Budget, EPA changed its methodology for allocating the Agency's rent, security, and utility costs, which resulted in a $61M transfer from the EPM account to an S&T account held by OARM.

Research Areas for FY 2007

- Air
- Drinking Water
- Water Quality
- Land Preservation and Restoration
- Safe Pesticides/Safe Products
- EDCs
- Global Climate Change
- Mercury
- Human Health Risk Assessment
- Human Health
- Ecology
- Computational Toxicology
- P2/Sustainability
- Homeland Security
- GEOSS/AMI
- Nanotechnology
- Economics and Decision Sciences
- Water Infrastructure
- Fellowships

Ensuring Relevance, Quality, and Performance

Relevance

- Programs/Regions
- Outside Peer Advice:
  BOSC, SAB, NAS
- EPA/ORD Strategic Plans
- ORD Multi-Year Plans

Quality

- External Peer Review
- Outside Peer Advice:
  BOSC, SAB, NAS
- Data Quality Guidelines

Performance

- Performance Assessment
  - Programs/Regions
  - Outside Peer Advice:
    BOSC, SAB, NAS
- GPRA Reporting
- Executive Accountability

Science Advisory Board Reviews

FY 2005

Multi-year Plans

- Air Toxics Research Strategy and Multi-year Plan
- Drinking Water Multi-year Plan
- Contaminated Sites/RCRA Multi-year Plan

Other Research/Science Products

- Ozone Criteria Document
- PM Criteria Document
- 3MRA Modeling System
- Draft Report on the Environment

FY 2006

- Air Quality Criteria Document for Lead
- Air Quality Criteria Document for Ozone
- Various IRIS Assessments
- Evaluation of the Carcinogenicity of Ethylene Oxide
- Arsenic Carcinogenicity
- ReVA Program
- Framework for Inorganic Metals Risk Assessment
- Update to the 1992 Guidelines for Exposure Assessment
- Report on the Environment 2006
- All-Ages Lead Biokinetic Model
- Homeland Security Science

Board of Scientific Counselors

FY 2005

- Endocrine Disrupting Chemicals Program Review
- Human Health Program Review
- Particulate Matter/Ozone Program Review
- Ecological Research Program Review
- National Coastal Condition II Letter Report
- Mercury Multi-Year Plan Letter Report
- National Center for Computational Toxicology Letter Report

FY 2006

- Global Change Program Review
- Water Quality Program Review
- STAR/GRO Fellowship Program Review
- Risk Assessment Proceedings Document
- Drinking Water Program Review
- Land Preservation and Restoration Program Review
- Management Multi-Year Plan Letter Report

Program Assessment Rating Tool (PART)

- Measure and diagnose program performance
- Evaluate programs in a systematic, consistent, and transparent manner
- Programs receive a numerical score and rating (Effective, Moderately Effective, Adequate, Ineffective, Results Not Demonstrated)
- PART frames and informs Agency and OMB decisions for management, legislative, or regulatory improvements
- PART ratings inform the budget process, but are not determinative

ORD PART Reviews

2003

- Pollution Prevention/ New Technologies - Results Not Demonstrated
- National Ambient Air Quality Standards - Results Not Demonstrated
- Ecological Research - Results Not Demonstrated

2004

- Endocrine Disruptors Research (Joint PART with OPPTS) - Adequate

2005

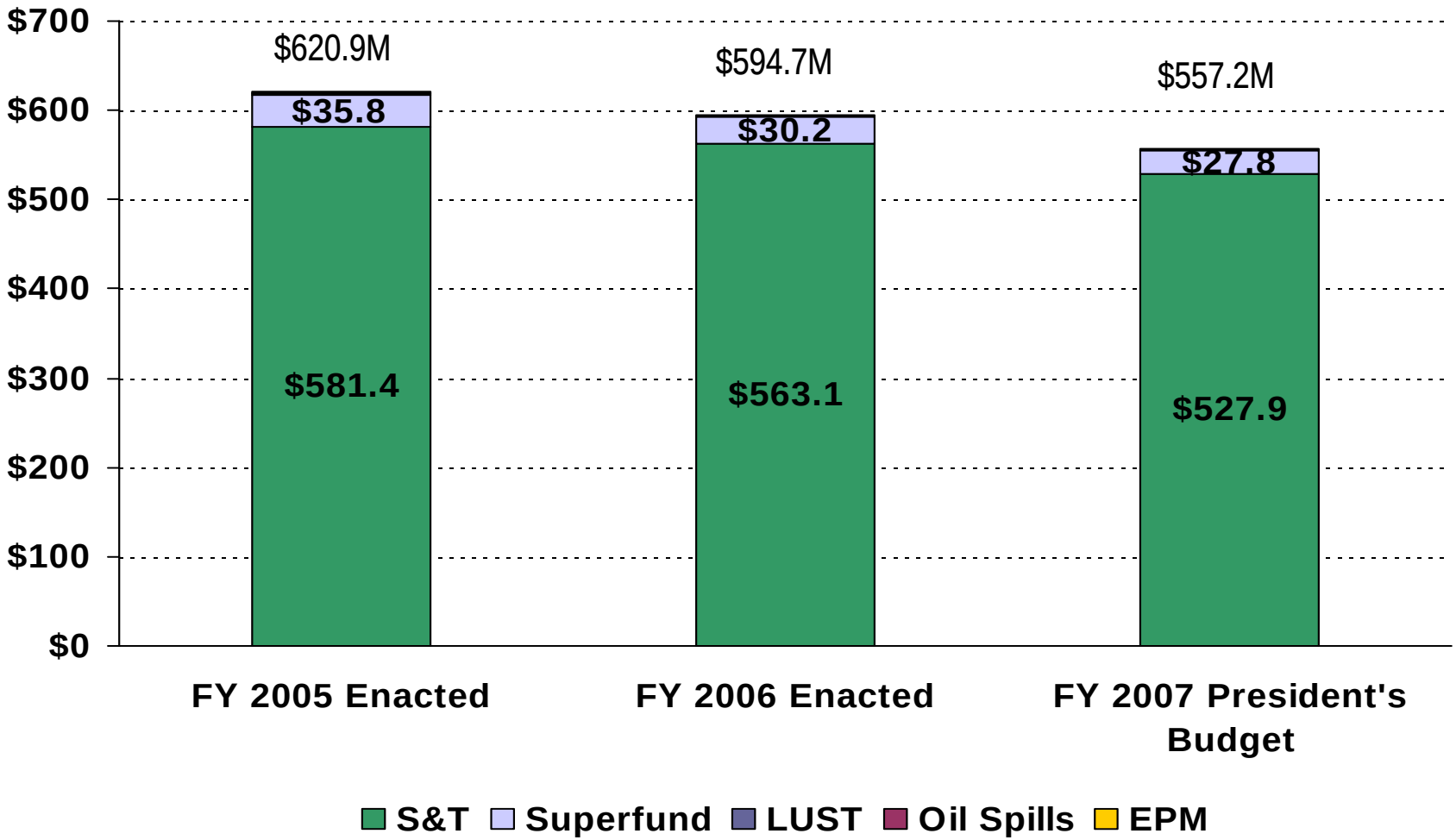
- Human Health Research - Adequate
- Drinking Water Research - Adequate
- National Ambient Air Quality Standards (re-PART) - Adequate
- Ecological Research (re-PART) – Ineffective

Proposed for 2006

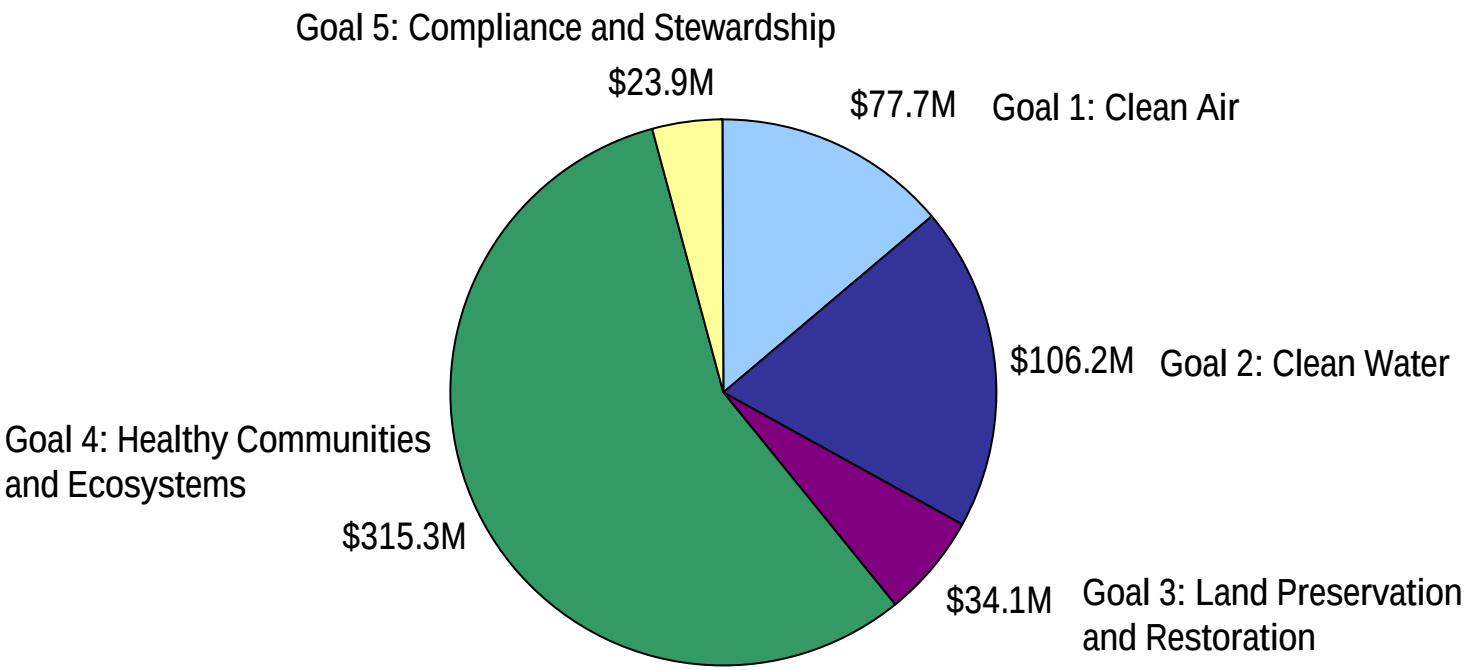
- Global Change Research
- Superfund/Land Protection & Restoration Research
- Water Quality Research

ORD Budget by Appropriation

(Dollars in Millions)

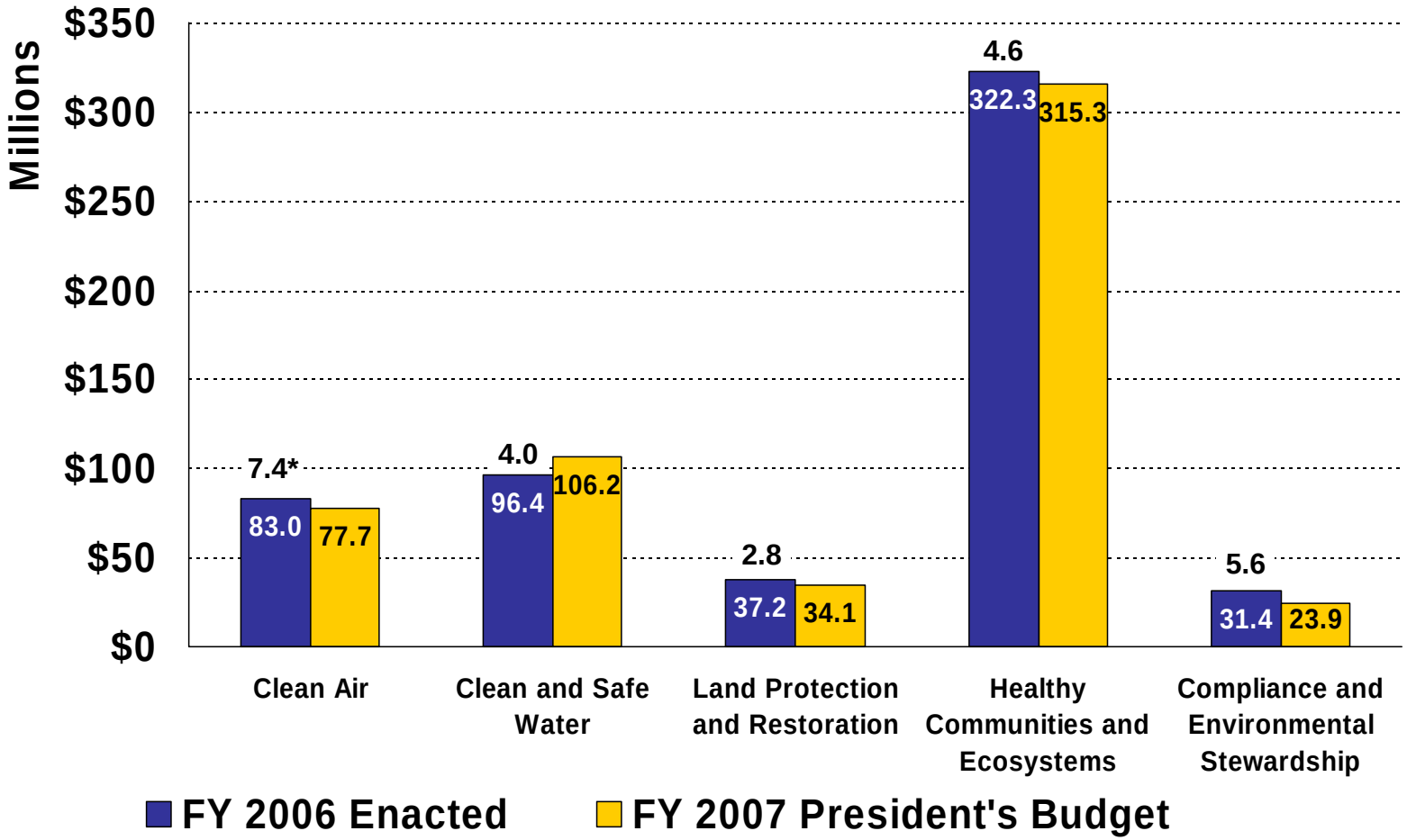


ORD's FY 2007 President's Budget by Goal $557.2M (Total All Appropriations*)



*Includes S&T, SF, Oil, and LUST

ORD Budget by Strategic Goal



*Earmarks above bars.

Major ORD Increases in FY 2007

- Homeland Security (Goal 4) *+$7.8M*
- Water Infrastructure (Goal 2) *+$7.0M*
- Nanotechnology (Goal 4) *+$4.0M*
- Computational Toxicology (Goal 4) *+$2.7M*
- Transparency in Risk Assessment (Goal 4) *+$0.5M*

Major Decreases in FY 2007

- Grants and Fellowships (Goal 4) *-$5.3M*
- Ecosystems Protection (Goal 4) *-$5.0M*
- Air Toxics and NAAQS (Goal 1) *-$4.9M*
- Sustainability and ETV (Goal 5) *-$4.6M*
- Pesticides and Toxics (Goal 4) *-$4.1M*
- Human Health and HHRA (Goal 4) *-$3.8M*
- Land Preservation, SITE (Goal 3) *-$3.7M*
- Endocrine Disruptors (Goal 4) *-$1.4M*
- Global Change (Goal 4) *-$1.2M*

Homeland Security: + $7.8M

Increase focuses on decontamination and consequence management, including:

- Testing and evaluating decontamination methods and systems for outdoor areas
- Developing new or revised sampling and analytical methods for contaminants of concern
- Evaluating risk characterization information to determine cleanup goals
- Evaluating existing technologies to manage contaminated crops and animal carcasses

Water Infrastructure: + $7.0M

- EPA's *"Gap Analysis"* report identified several issues concerning the ability of our nation to keep up with the water infrastructure needs in the future, citing a $200 - $400 Billion cost for upgrading the U.S. water infrastructure

- In addition, the U.S. Conference of Mayors 2005 National City Water Survey rated aging water infrastructure a top priority

- EPA's FY 2007 Water Infrastructure initiative will support innovative approaches/technologies to reduce that cost

- Better Management of Existing Wastewater Collection System Infrastructure: $5.0M
  - Investigation of advanced design concepts for wastewater collection systems that reduce construction costs and increase carrying capacity and storage capabilities
  - Research and evaluation of performance and cost of innovative repair, rehabilitation, and replacement technologies
  - Evaluation of novel techniques to improve performance and extend service life of existing wastewater systems

- Increase Water Efficiency in Drinking Water Distribution Systems: $2.0M
  - Research and evaluation of innovative approaches to: detect, locate, characterize, and repair leakage in distribution systems; and inspect and assess the condition of high risk water mains

- Results will assist municipal utilities to meet CWA and SDWA requirements and, in turn, help narrow the gap between available infrastructure funding and the projected national need

Nanotechnology at ORD: +$4.0M

- To help advance nanotechnology's potential to create new and enhanced products in an environmentally sound manner, the President's Budget will strengthen EPA's ongoing efforts to:

  (1) understand the potential human health and ecological impacts of manufactured nanomaterials, and

  (2) investigate how nanotechnology can be used in environmental applications such as improved monitoring, pollution control, and site remediation

- Based on recommendations in the EPA Science Policy Council's 2006 draft Nanotechnology White Paper, the focus of EPA's nanotechnology research will be on Agency decision support and the safe use of nanomaterials in environmental applications

- For FY 2007, a new in-house program will be integrated with ORD's existing STAR and SBIR extramural nanotechnology research and will be coordinated with other federal environmental, health, and safety research conducted under the National Nanotechnology Initiative, as well as with international organizations such as the OECD

Computational Toxicology: +$2.7M

- The computational toxicology program addresses the need to increase the soundness of risk assessment decisions within the Agency and increase the capacity to prioritize, screen, and evaluate chemicals by enhancing the predictive understanding of toxicity pathways

- In FY 2007, ORD will:

  - Support research to implement a biologically-based system to reduce uncertainty in the prioritization and categorization of chemicals for classical toxicological testing

  - Add a number of new toxicological databases to the distributed structure-searchable toxicity (DSSTox) system, a web based effort bringing carefully annotated, standardized toxicity databases together as a public resource

  - Develop computational models of biological processes relevant to the toxicity of high priority environmental contaminants

- As a result of these efforts, the Agency will be less reliant on default assumptions for risk assessments and able to accurately characterize the true uncertainty associated with risk predictions for various chemical classes (e.g., EDCs, HPVs)

Promoting Transparency and Participation in EPA Risk Assessments : + $0.5M

- Enhance the risk assessment process through incorporating additional peer review and consultation from the National Academy of Sciences (NAS) for high impact and controversial risk assessments

- Expansion of peer review to the NAS, in addition to increased opportunities for review by other federal agencies and the public, will directly improve the quality, objectivity, and utility of information disseminated by EPA

Some Strategic Directions

Goal 1: Clean Air

- Reduce uncertainty in standard setting and air quality management through advances in air pollution science, considering multiple pollutants
- Provide improved assessments of source-to-health linkages, reducing uncertainties that obscure these linkages

Goal 2: Clean and Safe Water

- Diagnose and detect distribution system (infrastructure) problems; CCL support; source water protection
- Assess designated uses for aquatic systems; use of biosolids.

Goal 3: Land Protection and Restoration

- Evaluate most problematic site types, contaminants, and exposure pathways
- Provide tools for resource conservation

Goal 4: Healthy Communities and Ecosystems

- Advance molecular and computational methods as approaches for testing and screening
- Evaluate cumulative risk; susceptible subpopulations; tools to measure public health outcomes
- Improve tools and technologies for ecological assessment; tools for resource management

Goal 5: Compliance and Environmental Stewardship

- Develop the tools to support national and regional sustainability initiatives and policies

Conclusions

- Robust research programs that uniquely address both human health and the environment
- Increased resources for
  - Homeland Security
  - Water Infrastructure
  - Nanotechnology
  - Transparency in Risk Assessment
  - Computational Toxicology
- Tough decisions in deciding where to allocate resources
- Appreciate your input on ORD science and technology directions