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Introduction

Good morning Mr. Chairman and Members of the Subcommittee. I am honored to appear before you today to discuss the Fiscal Year (FY) 2005 budget request for the U.S. Environmental Protection Agency's (EPA) Office of Research and Development (ORD), and to share with you the uniqueness and success of ORD's research program from my perspective as both the Assistant Administrator for ORD and the EPA Science Advisor.

The President's FY 2005 budget request for ORD is $572.2 million. This includes funding for ORD's in-house program carried out by 1,975 employees, who account for 11% of EPA's workforce. In addition, the budget request supports our Science to Achieve Results (STAR) research grants program. Together, our in-house and STAR programs allow our nation's brightest scientists to apply their talents and knowledge to solve environmental science problems. My testimony highlights the contributions we and our partners have made and describes changes to the Agency's research budget for STAR research in FY 2005.

ORD's Unique Contributions

ORD conducts leading-edge research and fosters the use of science and technology in environmental decisions in support of EPA's mission to protect human health and safeguard the environment. This research tackles problems to which solutions will have both immediate and long-term public health and environmental benefits. The advancement of science and the development of answers to questions posed by environmental issues makes ORD unique among Federal research agencies. No other Federal agency has a comprehensive research program devoted to improving our understanding of both public health and environmental impacts. No other agency is researching these issues in an integrated fashion. In addition, no other agency can claim as large an impact on ensuring EPA's decisions are informed by the strongest possible science. To further strengthen our science program, EPA has been implementing the National Research Council (NRC) recommendations in its 2000 report, "Strengthening Science at the U.S. Environmental Protection Agency: Research Management and Peer Review Practices," as I will describe below. In sum, ORD is conducting leading-edge research that informs the risk-based environmental decision making of EPA's program and regional offices and helps States and Tribes decide how best to implement these policies.

Ensuring these decisions are based on sound science requires *relevant, high quality,*

integrated, leading-edge research in human health, ecology, pollution prevention and control, and socio-economics. To maintain both short- and long-term *relevance* to EPA's mission, ORD's scientific research activities are mainly focused on applied research, which is problem-driven and, to a lesser extent, basic research. To ensure the *quality* of our research program, ORD uses a coordinated, cooperative research planning process; rigorous, independent peer review; and interagency partnerships and extramural grants to academia that complement EPA's own in-house scientific expertise. We have a uniquely *integrated* research program in that we address both human and ecological endpoints, conduct research across the risk assessment/risk management paradigm, have expertise across scientific disciplines and within the different environmental media, and draw from expertise in other agencies, organizations, and academia. Lastly, ORD keeps a *leading edge* in research by focusing our efforts and resources on those areas where EPA can add the most value toward reducing uncertainty in risk assessments and enhancing environmental management.

The following are a few examples of our more recent accomplishments. ORD researchers:

- Collaborated with the Department of Homeland Security, Department of Energy, Department of Defense, and Centers for Disease Control to strengthen water security, develop rapid risk assessment techniques, and develop building decontamination methods.

- Partnered with 24 marine coastal States, 4 territories, and other Federal agencies through the Environmental Monitoring and Assessment Program's National Coastal Assessment, to conduct sampling of estuaries using probabilistic methods.

- Collaborated with EPA's Office of Environmental Information to deliver the draft Report on the Environment, the first-ever national picture of U.S. environmental quality and human health using science-based indicators.

- Developed the Computational Toxicology Program, which has moved EPA to the leading edge in the use of genetics, genomics, and computation for environmental protection.

- Completed an evaluation of Superfund clean-up technologies citing 143 successfully demonstrated technologies and $2.6 billion in total inflation-adjusted cost savings.

- Continued our tradition of leadership in the use of external scientific expertise to enhance the quality and relevance of our scientific products, by relying on the processes of peer participation and peer review.

I am proud of these accomplishments and the others I will identify later. They are the direct result of careful research planning that relies on the active involvement of the Agency's

program and regional offices, as well as outside peer input.

Research Planning

The President's budget request for FY 2005 will allow us to build upon these accomplishments by continuing a research program that directly serves EPA's mission. EPA's science and technology efforts are aligned with the Agency's strategic goals, and we now have gone a step further by including science objectives within each of EPA's five strategic goals. ORD created these science objectives in collaboration with EPA's program and regional offices, to ensure that we produce the right scientific and technical information to meet EPA's programmatic needs and thereby advance the Agency's mission.

The alignment of our science and technology program with EPA's strategic goals is carried forward into ORD's planning of our research and development program. We have divided our R&D program into topical areas, each of which is guided by a multi-year research plan (the plans can be found at www.epa.gov/osp/myp.htm). Each multi-year plan contains long-term research and development goals for the next 5-10 years that tie back to EPA's strategic goals, and are supported by annual performance goals and measures. Every multi-year plan, and the goals and measures that comprise the plan, is developed in concert with colleagues across EPA and in consultation with our stakeholders and the broader scientific community. The plans also undergo expert, external peer review by EPA's Science Advisory Board (SAB) and ORD's Board of Scientific Counselors (BOSC). Both groups have endorsed this research planning process.

The multi-year plans are "road maps" that mark the progress our research programs have already made, as well as lay out the new directions we are taking to adjust as changes occur in the complex scientific landscape ahead. Developing this road map requires identifying a logical progression of scientific research to be contributed by EPA and its partners. This progression is defined in each multi-year plan using "logic models" that demonstrate how research results contribute to EPA's desired long-term outcomes of improved human and ecosystem health. By following the logic diagram, one can begin to see how each research project contributes to the achievement of the long-term outcome. For illustration purposes, I have attached the logic diagram from our Particulate Matter (PM) multi-year plan. I discuss logic models in greater detail later in this testimony.

The multi-year research plans help EPA maintain its focus on high-priority science issues. They also assist in coordinating research efforts across the environmental science community, including other Federal entities; State, Tribal, and Local governments; international organizations; and academia. Such coordination is essential. EPA's science and technology budget is only a small fraction of the total annual expenditures on environmental research, so leveraging our efforts with others – and, most important, identifying the appropriate niche for EPA's science and technology programs – is necessary for our doing the right science in a fiscally responsible manner.

Independent scientific bodies have lauded EPA's process for planning its research efforts. In its 2000 publication, *Strengthening Science at the U.S. Environmental Protection Agency,* the National Research Council stated, "Our committee expects that ORD's recent efforts in multi-year planning will contribute greatly to research program continuity and the achievement of strategic goals, and ORD merits commendation for these initiatives." Four years later, I can state with confidence that our research planning process is meeting – and perhaps exceeding – the NRC's expectations.

I wish to discuss two of our research programs – airborne particulate matter and ecosystem protection – to illustrate how EPA's science complements the scientific work of others, to advance scientific understanding and inform the decisions that solve environmental problems. Both of these research programs were evaluated using the Program Assessment Rating Tool (PART). The principles and practices applied in the particulate matter and ecosystem protection programs are those used in each of EPA's research and development programs.

Particulate Matter

Among the most serious environmental problems affecting the health of Americans is exposure to airborne particulate matter. Based on the best science available to us, these exposures contribute to the premature deaths of tens of thousands of Americans annually, as well as the hospitalization of children and adults for diseases such as asthma. This has been documented in the Office of Management and Budget's (OMB) "Thompson Report" (68 Fed. Reg. 5492, 5499 (2003)). To protect the public against these effects, the Clean Air Act calls for the promulgation and periodic review of National Ambient Air Quality Standards, or NAAQS. In the late 1990s, after such a review yielded new standards for fine PM (particles less than 2.5 microns in diameter), Congress authorized and appropriated funds to EPA for a greatly expanded PM research program, to be guided by advice from the National Research Council. I would like to describe how we have organized this program and share what we have learned.

To deliver the best science needed to inform sound public policy decisions, we have worked with our Agency partners in the Office of Air and Radiation and the regions to develop a multi-year plan for PM research that looks forward a little more than a decade. This plan, which will be peer reviewed by the EPA Science Advisory Board later this year, describes research activities in two major areas: (1) PM health effects and exposure, to guide future reviews of the NAAQS to refine the type and amount of PM that needs to be controlled to protect public health; and (2) implementation tools, so that EPA, the States and the Tribes, and the private sector can ensure that these standards are met.

The PM multi-year plan integrates the strengths of our in-house scientists with those of the external scientific community, through the extensive use of our STAR research grants program, including the support of five PM Research Centers. In addition, EPA's researchers are coordinating their efforts with others in the public and private sectors, both domestically and internationally. For example, health research is being conducted overseas by several

organizations, while in the United States, studies are being supported by industrial organizations including the Electric Power Research Institute and the Coordinating Research Council through their support of the Health Effects Institute (co-funded by EPA). Recently, EPA, the National Institute of Environmental Health Sciences, and the National Heart, Lung, and Blood Institute co-sponsored a workshop on the cardiovascular effects of environmental pollutants, and planning is now underway to develop joint Requests For Applications in the area of cardiovascular effects of PM exposure. Through these and other mechanisms, EPA contributes to and keeps abreast of the scientific advancements and initiatives in the PM area.

What have we learned since the setting of the 1997 NAAQS? Here are a few examples:

- In 1997, questions were raised about the legitimacy of findings showing associations between centrally-monitored PM and health effects. We now understand that these monitors actually do a good job at estimating population exposures, which has lent further credence to the health associations found in epidemiologic studies.

- While we knew of these associations between PM and increased mortality in 1997, we were at something of a loss to explain them biologically. Due to work done by both ORD in-house and STAR-supported extramural scientists, we now have several plausible hypotheses for the biological mechanisms leading to those associations, including recent findings showing an effect of PM directly on the heart.

- In 1997, we had a poor understanding of the chemical composition and size distribution of PM that correlated with health effects. Today, we have detailed profiles of the PM associated with many significant sources and geographic areas, and we continue to refine our understanding about the specific types of sources responsible for these public health risks.

While EPA's PM research program has been a success, there continues to be more to learn, as described in the PM multi-year plan. One focus of the program in the coming years will be to integrate the methods of diverse disciplines to determine the specific types of PM, and their sources, that have the greatest effect on public health. This will allow future standards and control strategies to focus attention only on those sources of pollution that need to be addressed. Another major focus will be on understanding the effects of long-term exposures to PM, through the funding of a long-term epidemiologic study to be conducted as part of our STAR research program. Lastly, EPA will evaluate new technologies for reducing air pollution, examining the ability of controls to reduce emissions of many pollutants at once. The results of these efforts will inform EPA's future PM policies, to ensure these policies protect human health in the most effective ways.

Ecological Research

Current ecological management approaches have made important contributions to

improved environmental quality through greatly reducing emissions of pollutants from point sources and waste disposal sites, and reducing the mishandling of toxic or hazardous chemicals and pesticides. Future ecological problems, however, will likely be more subtle, potentially more far-reaching, and require very different solutions. Examples include non-point source pollution control, regional-scale effects of air pollutants on aquatic ecosystems, dislocations in ecologically and economically important species due to invasions by non-indigenous species, and the cumulative effects and synergistic interactions of multiple stressors on the health of aquatic species and communities.

To deliver sound science for informed decision making, EPA has focused its ecological research program to assess and compare risks to ecosystems, to protect and restore them, and to demonstrate progress in terms of ecological outcomes. The ecological research program also reflects the growing ethic of environmental stewardship and the recognition that the implementation of these ecological management approaches will be largely community and sector-based, place-based, and performance-based.

Environment and natural resource research is coordinated government-wide through the Committee on Environmental and Natural Resources (CENR). EPA is an active member on this committee, whose goal is to increase the overall effectiveness and productivity of Federal research and development in environmental issues. Given the current fiscal constraints, EPA believes it is more important than ever for Federal agencies to collaborate and coordinate research activities. EPA has a long history of collaborating ecosystem research with the National Science Foundation. EPA plans to continue, and wherever appropriate enhance, its coordination with NSF and other agencies.

ORD's Ecological Research Strategy underwent interagency peer review by the CENR in June 1997, and external review by the Science Advisory Board's Ecological Processes and Effects Committee in July 1997. The final Strategy, published in June 1998, formed the basis for ORD's Ecological Research Multi-Year Plan, which describes how the Agency plans to align its resources to achieve the plan's goals, including the integration of ORD's in-house research efforts with those conducted by our STAR research grants program.

The Ecological Research Multi-Year Plan lays out four critical scientific questions to be addressed and their associated research emphases and programmatic goals. These questions are:

- What is the current condition of ecosystems and what are the trends in their condition over time? (Assessing condition)
- How do natural ecological disturbances and human activities affect ecosystems? How can we most accurately diagnose the causes of ecosystem deterioration? (Diagnosis)
- How can we reliably predict the vulnerability of ecosystems to harm from current resource development and management practices? How can we predict the most probable responses of ecosystems to best management and sustainable development practices? (Forecasting)
- How can we most effectively control risks and manage to protect ecosystems once they

have been degraded? (Restoration)

The PART evaluation on the ecological research program found that the program addresses a clear and continuing need and that it is generally well-managed, with adequate grantee and resource oversight. Its work has lead to accomplishments such as the Environmental Monitoring and Assessment Program (EMAP) National Coastal Assessment accomplishments that I mentioned earlier. Additional examples include:

- Research methods and findings from ORD's EMAP have enabled State and Tribal water monitoring programs to obtain more reliable data on the ecological condition of their streams and rivers, at significantly lower cost than the methods they had been using.

- ORD produced national guidelines on assessing ecological risks. For the first time, these guidelines extend the principles of EPA's risk assessment paradigms to assessing and comparing risks to ecosystems.

- STAR researchers have developed and applied integrated methods to model and evaluate the effect of stressors on water quality. These include development of models to: (1) estimate annual nutrient loading to Lake Tahoe from atmospheric deposition, precipitation, stream discharge, overland runoff, groundwater and shoreline erosion; (2) estimate how "build-out" in urbanizing watersheds affects nutrient cycling, water quality, and the ecological health of rivers and streams in Gwynns Falls, Maryland; (3) evaluate the effects of agricultural best management practices on stream flow, sediment, and nitrate loadings in the lower Minnesota River; and (4) contaminant loading and bioaccumulation in Lake Erie.

As described in the Ecological Research multi-year plan, however, we are committed to building upon these achievements, and in the future, the ecological research program will focus heavily on diagnosis, forecasting, and restoration research. This research will enable the Agency to implement performance oriented, place-based protection of ecological systems. Our challenge now is to translate these successes into performance measures that demonstrate the utility of the tools and other protocols that we develop. In particular, long-term goals are difficult for any environmental program to develop, even more so for an environmental research program. I am committed to working with OMB and others to create long-term, annual, and efficiency measures that capture the important work our program is doing. In the end, these measures will help advance our program by demonstrating the value of our achievements.

Science Quality Across EPA

While our comprehensive and collaborative research planning process guides EPA to do the right science, as EPA's Science Advisor, I believe EPA's integrated approach to scientific quality makes sure that we also *do the science right,* not only in ORD but across the Agency. The three pillars of this approach are our Quality System, Information Quality Guidelines, and Peer Review Policy.

EPA's Quality System is the means by which we manage our scientific information in a systematic, organized manner. It provides a framework for planning, implementing, and assessing the scientific work performed by EPA and for carrying out quality assurance and quality control activities. Each EPA organization develops a quality management plan that describes its quality system in terms of the organizational structure, policy and procedures, functional responsibilities of management and staff, lines of authority, and necessary interfaces for the planning, implementing, documenting, and assessing of all activities conducted. At the individual project level, we develop quality assurance project plans that describe the necessary quality assurance, quality control, and other technical activities that must be implemented to ensure that work outputs will satisfy the stated performance criteria. The goals of the EPA Quality System are to ensure that environmental programs and decisions are supported by data of the type and quality needed and expected for their intended use, and that decisions involving environmental technology are supported by appropriate quality-assured engineering standards and practices.

EPA recognizes that the Office of Management and Budget's Information Quality Guidelines, together with our own Information Quality Guidelines issued in October 2002, are an important step forward in the quest for quality. The OMB guidelines call for all Federal agencies to develop quality performance goals, including procedures to assure quality before information is disseminated. In response to these guidelines, EPA has established a system for addressing complaints about the quality of information that the Agency has disseminated. We now have more than a year's worth of experience in addressing challenges to EPA information under the guidelines, and this experience has validated our belief that ensuring the quality of our scientific information is paramount to maintaining the integrity of, and the public's confidence in, EPA's policies and decisions.

Consistent Agency-wide application of independent, expert scientific peer review has been an EPA priority for many years. Since issuing our peer review policy in 1993, we have taken several major steps to support and strengthen the policy. But proof of a policy's value lies in its implementation, and here also EPA has been very active to ensure that our peer review policy is not only understood across the Agency, but is *applied* rigorously across EPA's program and regional offices. EPA has in place a strong and extensive program for peer reviewing our scientific and technical work products.

EPA's approach to peer review is articulated in our policy, *Peer Review and Peer Involvement at the U.S. Environmental Protection Agency*. In addition to the policy, EPA has published a handbook that provides detailed guidance for implementing the policy. The *Peer Review Handbook* can be found at www.epa.gov/osp/spc/2peerrev.htm. We believe this is one of the most advanced treatments of peer review for intramural research and scientific/technical analysis of any Federal agency.

Most of EPA's scientific and technical work products now undergo peer review. In 1995, the Agency identified 120 work products for peer review. In 2002, of 859 work products

generated by or for EPA, only 111 were deemed, usually because of their repetitive or routine nature, not to be candidates for peer review. So, we see that nearly 90 percent of our scientific and technical work products receive internal or external peer review. And 90 percent of those peer-reviewed products received independent, external review.

We were confident enough in the strength of our peer review program that we made it a cornerstone of our Information Quality Guidelines. Since issuing our policy ten years ago, peer review has become a part of EPA's culture, and its use is widespread across the Agency. Our challenge for the future is to continue the significant progress we have achieved to date and, not being content with the status quo, to look for ways to enhance the use of peer review as a tool for ensuring that EPA's decisions are supported by a firm foundation of scientific and technical information.

Doing the right science through forward-looking collaborative research planning, and *doing the science right* by adherence to information quality and peer review standards, have given EPA policy makers relevant, timely, and credible scientific information to guide Agency decisions.

ORD – Making a Difference

ORD scientists are committed to generating products of the highest quality to ensure sound science informs Agency decision making. Our successes have been numerous, and we continue to build upon them. I have highlighted below a sampling of such successes, to illustrate the depth, breadth, and relevance of our research programs' contributions to environmental science generally and to EPA's mission in particular. As these examples demonstrate, ORD's research program – as a major part of the entire EPA scientific endeavor – plays a critical role in protecting human health and safeguarding the environment.

- In July 2003, EPA conducted an important drinking water distribution field study to map the movement of contaminants in a water system. This research is helping water system managers and emergency responders better predict how a biological or chemical contaminant would react in a drinking water system. This study ties directly into EPA's community support and homeland security efforts.

- ORD, working with academia, developed the first air quality model (Models-3/CMAQ) to use a "one atmosphere" approach to simulate the interactions among many air pollutants, which is necessary to achieve truly cost-effective air pollution control strategies. This work is critical for local air pollution forecasting, as well as supporting the Agency's multi-pollutant control strategies.

- Working with the Department of Energy and the National Oceanic and Atmospheric Administration, ORD is researching exposures to air pollutants in complex terrains, such as urban canyons created by high-rise buildings and complex traffic patterns. This

research combines field monitoring with wind tunnel studies to refine exposure models that can be applied to different U.S. cities.

- ORD developed toxicity methods for determining acute and chronic toxicity to plants, invertebrates, and vertebrates, using several different end points. ORD also participated in the development of the Whole Effluent Toxicity Test Methods Rule, which allows these methods to be used as a basis for decision making in the National Pollutant Discharge Elimination Systems Program.

- ORD developed analytical methods for *Cryptosporidium* and evaluated technologies that could be used for removing *Cryptosporidium* from drinking water sources. ORD worked with the Office of Water to use these results in promulgating the Long Term 2 Enhanced Surface Water Treatment Rule. This rule will protect drinking water consumers, including sensitive subpopulations such as children, by avoiding *Cryptosporidium* incidents that have resulted in health impacts and even death in the past.

- EPA's cancer risk assessment prompted industry decisions to phase-out the use of chromated copper arsenate (CCA) treated wood in home settings, due to concerns of exposure to kids from decks and play equipment. ORD is working with other EPA scientists to analyze exposures to homeowners and children from CCA-treated decks and play equipment and to evaluate coatings and sealants that can be used to reduce risk from exposure to CCA-treated wood.

- ORD developed a DNA-based system that allows rapid identification and quantification of molds in a matter of hours, as opposed to current methods that require days or even weeks. The new technology can be used to detect the mold *Stachybotrys*, commonly known as "black mold," and more than 50 other possibly harmful molds. The new method has been licensed to 13 companies for use in detecting mold, and four additional licenses are pending.

- EPA chairs the coordination of endocrine disruptor research across Federal agencies through an interagency working group under the Committee on Environment and Natural Resources, under the President's National Science and Technology Council. Through this interagency working group, EPA and its partners issued two joint solicitations for research proposals to address the critical data gaps of understanding the impact of endocrine disruptors on humans and wildlife.

Linking Research Results to Outcomes

EPA recognizes that research findings – no matter how insightful or cutting-edge – cannot of their own accord achieve environmental outcomes. Achieving environmental outcomes depends on decisions made and actions taken by the Agency's program and regional offices, as well as by our State and Tribal partners. We are working with our Office of Inspector General (OIG) to develop better ways to describe the link between our research program and

environmental and public health outcomes. Our efforts are focused on the use of a logic model that was developed by the OIG.

The OIG, in collaboration with the ORD, piloted using the logic model to determine if the design of the Pollution Prevention and New Technology research program was conducive to achieving desired environmental outcomes. The pilot was successful, and we now employ logic models to clearly identify the outputs of our research and their associated near-term outcomes. Logic model techniques are particularly useful for identifying outputs and methods for transferring research results to our clients, helping them to achieve environmental outcomes.

The logic model also emphasizes that there are factors outside the realm of science that may help or hinder the success of the program and the accomplishment of its results. ORD scientists, EPA program offices, and our State, Tribal, and Local clients each have their respective roles for helping to achieve environmental outcomes. In light of this, ORD believes that research programs are most appropriately evaluated with respect to the soundness of the research strategy, the significance of the research findings, and the usefulness of the resulting scientific tools or policies for their intended applications. We also believe there is an important role for independent, expert peer review for accomplishing such evaluations.

ORD is moving forward with its plans to conduct reviews of its research programs by external independent experts. These expert panels will review our research in accordance with the Administration's investment criteria for research and development; namely, quality, relevance, and performance. These reviews will provide valuable input for determining that ORD is managing its programs to ensure scientific quality, and is providing relevant results for achieving the Agency's mission.

It is a challenging task to relate research, especially inherently long-term research, to specific environmental and public health outcomes. However, as I mentioned earlier, I am committted to moving ORD in that direction. The PARTs conducted last year have provided up with valuable experience that will help us demonstrate the value of our programs, and we are working with OMB to develop recommendations to improve program performance.

Science to Achieve Results Research

Mr. Chairman, your letter of invitation asked me to specifically address the reduction of EPA's STAR grants for research on ecological systems, pollution prevention, endocrine disruptors, and mercury. While I will address the specific reductions later in my testimony, I want to share at this point some of my thoughts and the thoughts of others about our STAR program and how it continues to be a vital part of ORD's research portfolio.

In 1995, ORD created the Science To Achieve Results extramural research program. This program was created for the purpose of providing ORD swift, flexible access to nationally and internationally acclaimed scientists who could conduct independent and original research to complement the efforts of ORD's intramural research program.

Since the program's inception, all or parts of the STAR program have been reviewed three times by the EPA SAB and twice by the NRC. These reviews have been very favorable, but have also noted areas for improvement. As the NRC is also a witness today, I will leave it to them to describe the findings of their 2003 review of the STAR program, *The Measure of STAR*.

EPA has developed an in-house staff capability to address environmental research needs. In some cases, EPA lacks a critical mass of in-house expertise that can devote itself full-time to new research issues, and the STAR program enables ORD to quickly deploy resources to access nationally and internationally acclaimed scientists to conduct independent and original research where the Agency lacks capacity or specialized expertise.

The STAR program remains strong and is aligned to most effectively support EPA's priority research needs. For example, STAR research efforts will be funded consistent with previous years' investments in important areas including children's health, particulate matter, safe food, and drinking water. In those areas where STAR will be eliminated in FY 2005 (ecological systems, pollution prevention, endocrine disruptors, and mercury), EPA will continue to conduct in-house research as well as look to increase its ongoing research partnerships with university researchers and initiate new ones. STAR currently leverages its resources through joint solicitations with 12 Federal and private sector research partners, enabling EPA to enhance its research portfolio by about 30 to 50 additional grants.

FY 2005 President's Budget

The President's FY 2005 budget request continues the tradition of ORD research excellence by emphasizing cutting-edge science and technology, collaboration with other agencies, and an orientation on results.

Mr. Chairman, in your letter of invitation you asked me to identify what research would not be done as a result of the proposed reductions in the STAR grants program in the President's Budget request and the associated impacts. The following are areas of decreased STAR research.

<u>Ecological Protection Research Grants (-$22.2M)</u>

> EPA would no longer fund STAR grants in the area of ecological protection, a reduction of about 50 grants. In response to PART findings, EPA is working to develop long-term, annual, and efficiency performance measures for the program. Key areas of research at academic institutions across the nation would no longer be conducted, affecting Agency efforts to assess ecosystem condition, diagnose ecosystem impairment, and forecast ecosystem health.

<u>Hazardous Substance Research Centers (HSRCs) (-$2.25M)</u>

Eliminate most of the research in the fifth and final year of planned funding for the HSRCs, as well as the technical support and outreach efforts of the centers that directly support EPA regional, State, and Tribal efforts to evaluate and manage risk at clean- up sites.

Mercury Research (- $2.0M)

Eliminate STAR-supported university research in support of understanding the atmospheric processes that affect the transport, transformation, and deposition of mercury emissions from natural and anthropogenic sources.

Endocrine Disruptors (-$4.7M)

Eliminate funding for the STAR portion of the Endocrine Disruptors research program. However, the President's Budget provides a $3.5 million increase for EPA's computational toxicology program, which uses computational chemistry and molecular biology to more accurately predict health effects from chemicals, thereby improving linkages between potential exposure and disease. Our computational toxicology program offers more promising and timely application for our Endocrine Disruptors Screening Program.

Pollution Prevention and New Technologies (-$6.0M)

Transfer funding of the research program to the Office of Pesticides, Prevention, and Toxic Substances pollution prevention program, which the PART analysis has shown a reduction in the use of chemicals and pollution. In response to PART findings, the program is working to develop long-term, annual, and efficiency performance measures.

Conclusion

By uniquely combining human health and ecological research in one Federal agency, ORD has made significant contributions to developing a better understanding of environmental risks to both human health and ecosystems. The results of this research have consistently and effectively informed EPA's environmental decision making, leading to environmental policies based on sound science at the Federal, State, Tribal, and Local level.

The President's FY 2005 budget request for ORD continues this tradition of excellence, by emphasizing cutting-edge science and technology, collaboration with other agencies, and an orientation on results.

Thank you.