



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D.C. 20460**

**OFFICE OF THE ADMINISTRATOR
SCIENCE ADVISORY BOARD**

Re: Written Statement of Deborah L. Swackhamer, PhD, Chair of U.S. Environmental Protection Agency Science Advisory Board to the Subcommittee on Energy and Environment, Committee on Science, Space, and Technology, U.S. House of Representatives

March 10, 2011

The Honorable Ralph Hall
Chairman, Committee on
Science, Space and Technology
U.S. House of Representatives
Washington, D.C. 20515

The Honorable Eddie Bernice Johnson
Ranking Minority Member, Committee on
Science, Space and Technology
U.S. House of Representatives
Washington, D.C. 20515

Dear Chairman Hall and Representative Johnson:

Thank you for the opportunity to provide a written statement for the record to present my views on the FY2012 President's request for the US EPA Science and Research budget. I am Professor and Charles M. Denny, Jr. Chair in Science, Technology, and Public Policy at the Hubert H. Humphrey School of Public Affairs and Professor of Environmental Health Sciences in the School of Public Health at the University of Minnesota, and serve as the current Chair of the U.S. Environmental Protection Agency Science Advisory Board (SAB).

The SAB has been working with EPA since 2007 to review their research and science program directions and annual budgets in a systematic manner, and has a long history of commenting on the President's annual budget request for EPA's Office of Research and Development (ORD) in regard to how well it aligns with and supports the science plan and mission of the EPA. We have shared these comments with the Congress and with the EPA Administrator in the past and will share them again this year. The comments that follow are informed by a meeting of the EPA SAB Budget Work Group that recently met in Washington, D.C. on March 3-4, 2011. An expanded report that reflects these comments will be provided to Administrator Jackson in a few weeks following approval of the full SAB.

Over the last 6-12 months the EPA has realigned its research organization from 16 project-areas, defined by specific problems and media-type, into four integrated programs and two cross-cutting areas (Human Health Risk Assessment and Homeland Security Research). Motivation for this consolidation and realignment of programs reflects an emphasis on integrated transdisciplinary research, multi-pollutant exposures, and sustainability. These are not new programs, but represent a new way of thinking about programs. Considerable synergies will be realized in combining research into the four programmatic areas: Air, Climate and Energy; Safe

and Sustainable Water Resources (water quality plus drinking water); Sustainable and Healthy Communities; and Chemical Safety for Sustainability. We strongly commend ORD for a dramatic response to SAB recommendations concerning its realignment of research areas and dedication to transdisciplinary research for protecting human health and the environment.

ORD's realignment is ambitious and moves EPA research in a new and bold direction. ORD is moving from a *risk management paradigm*, which has guided and influenced research over the past two decades, towards a *sustainability paradigm* and that effort is welcome. It is consistent to the public health approach of prevention rather than a medical approach to treating disease after it occurs, and recognizes that environment and health are an interconnected system. We recognize that this is a significant challenge, and the Agency must consider how to translate research results from this new approach into science-informed environmental decisions.

The President's FY2012 budget request recommends a 13 % decrease in EPA's budget, a 2.6 % cut to Science and Technology programs within EPA, and a 2.1 % cut to EPA ORD. Overall, we recognize the difficult budget environment with which the nation is dealing in FY2012, and although we consider these planned cuts to EPA's budget to be extremely unfortunate, we understand that they may be necessary to reduce overall government spending. We understand the relative priority given to ORD in this budget, but we also recognize that Agency cuts do not come from fat, but rather from the marrow of its activity and mission. EPA research is addressing the nation's most critical science and technology priorities to assure that policy and regulatory actions needed to protect health and our natural environment will be based on strong science. We cannot ignore threats to our air quality, ecosystems, and climate change for long before they will significantly reduce the health of our people and the vitality of our economy and ecosystems.

In the President's FY2012 budget request, ORD has received a budget reduced by 2.1 % relative to the FY2010 enacted budget. We applaud EPA for making strategic investments and disinvestments in addition to realigning research programs, and not just cutting programs evenly across the board. While largely supportive of these choices, we are not in complete agreement with some of them, and caution that there are consequences of some of the reductions.

The FY2012 President's budget request includes significant reductions to homeland security (-25 %, \$8.1 M), human health research (-16.2 %, \$8.8 M), ecosystems research (-15.1 %, \$10.8 M), and air/climate/energy research (-3.1 %, \$3.5 M). Waste clean-up undergoes a substantially reduced budget (Hazardous Substances Superfund, -16.7 %; Inland Oil Spill programs, -3.9 %).

Reductions in homeland security were made largely because the emergency response science products and tools for water and wastewater treatment plants and buildings under threat of a chemical, biological, or radiological attack have reached a mature stage of development. However, at a minimum, funds should be directed to the dissemination of EPA's knowledge and software products to the states and communities. These products could help make our nation's water infrastructure more sustainable in the event of either terrorist attack or natural disasters.

A consequence of reductions in human health research makes it impossible for EPA to conduct major epidemiological studies. Future budgets need to provide for more high-quality

epidemiological studies to better understand exposures, especially for susceptible and vulnerable populations, and dose-responses of hazards so as to develop regulations to protect public health using the best possible science. Reductions in ecosystems services research will slow programs for valuing species, and research on the prevention of environmental degradation through utilization of behavioral science.

Funds for ORD research on Air, Climate and Energy decline about 3 %. Relative to other budget cuts, this is modest, and it indicates that certain research programs like biofuels (\$2.2 M) and mercury-in-air regulations (\$2.4 M) are completed and are no longer in the budget. But there are cuts in resources to the Clean Air Research Program for source-receptor and dose-effect research that investigate human exposure to air pollutants and resulting health effects in the nation's major cities (\$ 0.150 M) which is a high priority, and also cuts in research on the effects of climate change on estuaries (\$0.625 M). Funds for the modeling and development of State Implementation Strategies will be reduced (\$ 0.762 M) and Small Business Innovation Research programs (\$0.247 M) that would have met the priorities of the Agency and created jobs. The CERES organization (2011) estimates that the National Ambient Air Quality Standards alone will result in the creation of 1.5 million jobs over the next five years. The country needs clean energy and clean air as well as jobs, and the former can provide the latter.

Budgets for climate change research must be strengthened, not weakened, because we are already living with climate change (e.g., melting ice, more intense storms and frequent floods) and it is likely to increase in coming years. Sensitive populations suffer the most from chemical exposures exacerbated by a warmer, wetter climate (childhood asthma); and environmental injustice is also linked (e.g., roadside air pollution). We cannot change our genes, but we can change our environment. Clean air and safe water is the statutory role of EPA.

The largest increases for ORD in the President's FY2012 budget request include new funds for Chemical Safety and Sustainability (+22.9 %; \$17.8 M), especially endocrine disruptors research, and for Safe and Sustainable Water Resources, SSWR (+ 6.9 %, \$7.7 M). We especially applaud the \$4 million increase to the STAR Fellowship program (+ 40%), which is a Presidential Science Technology Engineering and Math (STEM) initiative. In the SSWR program, we recommend an increased focus on viewing water and wastewater holistically as an integral part of the overall water cycle. This systems approach is in concert with EPA's changing role from purely a regulatory agency, to one which participates in and promotes Sustainable and Healthy Communities.

The requested budget for Chemical Safety and Sustainability appears justified given the ambitious goals of the newly aligned program. The realignment changes will allow the EPA to streamline its work and be more effective in achieving public health and environmental protection. The EPA has needed to develop more robust transdisciplinary research directions, and the articulation of ORD's realignment for Chemical Safety and Sustainability is a good step in this direction. By leveraging the talents and expertise of existing ORD staff within disciplines to work with each other toward common new research goals, the EPA will be able to successfully implement true multi-disciplinary research. We support the investments in endocrine disrupting chemicals research (+\$7 M), the new green chemistry and design for the environment initiative (+\$5.4 M), and next-generation computational toxicology tools (+\$2 M), and support the net reductions gained by efficiencies.

We agree with the requested reallocation of funds and increase in the FY 2012 budget for Safe and Sustainable Water Resources. Realignment of Drinking Water and Water Quality programs into integrated water resources and water infrastructure will increase efficiency and foster transformative research that focuses on entire watersheds for both ecological and human health. It is clear that by implementing this alignment and integration that the EPA is responding to recent recommendations and suggestions of the SAB and other external advisory groups.

We are very supportive of the \$6 M requested increase to develop innovative new tools and information research in the development of green water infrastructure, especially in the face of nationally restricted financial resources. First and foremost, given the tight integration of larger watersheds with urban water resources, larger watersheds need to be explicitly studied. Only in this manner can specific program goals be obtained that focus on innovative solutions to reducing and managing groups of chemicals and pathogens and nitrogen and phosphorus pollution.

The new paradigm in wastewater management is to view wastewater not as a waste, but rather as a resource that can provide water, nutrients, and energy to meet social, economic, and environment needs. This paradigm fits within ORD's focus of sustainability and a systems approach, and it links management of wastewater with issues of food production, land use, water quality, and energy production. It also provides opportunities to advance science in understanding the direct and indirect energy use in public infrastructure, as well as understanding risk associated with use of non-potable water.

We are very supportive of the \$4.2 M increase in funding to assess the potential public health and environmental risks associated with hydraulic fracturing. While the funding is sufficient for this fiscal year, we encourage the Safe and Sustainable Water Resources program to ensure that new case studies are conducted that expands the knowledge gained from this initial program. Proposed funding levels for 2012 are likely insufficient for the out-years.

We understand the requested \$2 M reduction in the Beaches Program as it draws to a conclusion. However, these studies are still critical and we would like to encourage the program to provide a phased reduction approach that maintains the high quality of research and management guidelines that has already emanated from this program.

The President's FY2012 budget includes a slight reduction (about \$ 0.5 M) in the Human Health Risk Assessment program relative to the 2010 enacted budget. While EPA appears poised to maintain its strategic research and meet its stated priorities, it will be difficult for EPA to keep abreast of the "-omics" revolution (genomics, proteomics, metabolomics) and be able to use the latest biotechnology to protect public and environmental health. The budget changes since 2010 do not appear to be sufficient for innovation and modernization of risk assessment for the Agency. As ORD moves from a risk management paradigm to a sustainability paradigm, increased resources are needed. The program should begin incorporating this new science information into IRIS assessments as well as cumulative risk assessments.

Finally, the President's budget request includes no explicit research in social, behavioral, and decision sciences. The funds for the National Center for Environmental Economics (not part of

ORD) is funded at a mere \$1 M. Sustainability is a challenge grounded in the human dimensions of a coupled human and natural system: humans are the driving force of environmental changes both good and bad, and human institutions and behavior will have to change if a transition toward a sustainable economy is to be achieved. It is accordingly striking that EPA's requested budget accords so little explicit attention to research on the human elements of coupled systems. The fragments of social science research continue to be eaten away due to declining budgets. A long-term dataset, the Pollution Abatement Cost and Expenditure survey series, is a casualty of these cuts, limiting our ability to understand the economic implications of environmental regulation. This is a serious loss because of the length of time needed to collect data on industries making long-term capital investments in response to globalization and national economic shifts, as well as environmental regulations. The National Center for Environmental Economics retains a function as an internal consultant group, available for studies in the Office of Policy and elsewhere within the EPA. This is a potentially important function, not only for EPA's immediate responsibilities, but as a way to maintain awareness within EPA of the perspectives and utility of understanding the human dimensions of environmental problems. Yet social science has no explicit place within the four national program areas around which ORD is being reorganized. The neglect of social science is a problem of long standing, on which the SAB has commented repeatedly through the years. A time of politically frightening budget deficits is not a moment for a sweeping vision of investment in the social sciences. But people and the institutions that shape human behavior – including markets and informal norms, as well as the regulations and laws that fall within EPA's legal responsibility – are central to sustainability. All of ORD's four new integrated program areas acknowledge research issues ranging from decision analysis to risk communication to behavior change, and dedicated resources for behavioral and social sciences is essential for their success.

I greatly appreciate the opportunity to provide comments for your consideration.

Sincerely,

/Signed/

Deborah L. Swackhamer, Ph.D.
Chair, U.S. EPA Science Advisory Board