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**SAB Science Integration for Decision Making Fact Finding Interviews**  
**January 21, 2010, 2009**

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### Schedule for January 21, 2010

9:15 - 9:45	Meeting with Associate Administrator, Office of Policy, Economics, and Innovation, Ariel Rios Room 3500
9:45 - 10:15	Meeting with Staff of the National Center for Environmental Economics, Ariel Rios Room 3500
10:30 - 12:00	Meeting with the Director and Staff of the Office of Children's Health Protection, Room 2528, Ariel Rios North
12:00 - 1:00	Lunch
1:00 - 2:00	Meeting with Scientific Staff, Office of the Science Advisor, ORMA Conf Rm 1 and 2 in Ronald Reagan 4th floor
2:00 - 3:00	Meeting with Managers, Office of the Science Advisor, ORMA Conf Rm 1 and 2 in Ronald Reagan 4th floor
3:30 - 4:30	Meeting with Rob Brenner, Director OAR's Office of Policy Analysis and Review, Conference Room 5428 Ariel Rios North

## Logistics

Please meet at 8:15 at the entrance to **Ariel Rios North** (1200 Pennsylvania Avenue, entrance near the Federal Triangle Metro station). We can get some coffee and then go through security screening.

If you are travelling on the night of January 21st, please bring your bags. There will be a secure place in the office suite of the Office of Air and Radiation where we can leave bags for the day and pick them up after the last meeting ends at 4:30

**SAB Science Integration for Decision Making Fact-Finding Meeting  
Meeting with the Associate Administrator, Office of Policy, Economics, and Innovation  
Conference Room 3500**

**Ariel Rios North, 1200 Pennsylvania Avenue, NW, Washington, DC 20064**

**Call-in Number for SAB subgroup: 866-299-3188, access code 343-9981 and press the #  
sign.**

**January 21, 2009, 9:15 - 9:45 a.m.**

**Draft Agenda**

**Purpose of Interview:** to help SAB Committee members learn about the Office of Policy, Economics, and Innovation's current and recent experience with science integration supporting EPA decision making so that the SAB can develop advice to support and/or strengthen Agency science integration efforts.

1. Introductions facilitated by the SAB Staff Office
2. Discussion facilitated by SAB Members
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  - Drivers and impediments to implementing past recommendations for science integration
  - Ways program receives feedback on how science is used in decision-making
  - Workforce to support science integration for decision making
3. Identification of any follow-up actions

**Planned participants:**

EPA Office of Policy, Economics, and Innovation

Dr. Lisa Heinzerling, Associate Administrator, Office of Policy, Economics, and Innovation

Dr. Al McGartland Director, National Center for Environmental Information

SAB Committee on Science Integration Committee Members

Dr. Terry Daniel, University of Arizona

Dr. Catherine Kling, Iowa State University

Dr. Thomas Wallsten, University of Maryland

Dr. Thomas Theis, University of Illinois at Chicago (by telephone)

Dr. Wayne Landis, Western Washington University (by telephone)

SAB Staff Office

Dr. Vanessa Vu, Director

Dr. Angela Nugent, Designated Federal Officer

## Biosketches for OPEI and NCEE Managers

**Lisa Heinzerling** is Associate Administrator of the Office of Policy, Economics, and Innovation at EPA. She is Professor of Law at the Georgetown University Law Center. She received an A.B. from Princeton University and a J.D. from the University of Chicago Law School, where she was editor-in-chief of the *Law Review*. She clerked for Judge Richard A. Posner on the United States Court of Appeals for the Seventh Circuit and for Justice William J. Brennan, Jr. on the United States Supreme Court. She served as an assistant attorney general in Massachusetts, specializing in environmental law, before becoming a faculty member at Georgetown. She has been a visiting professor at the Yale and Harvard law schools. In 2003 she won the faculty teaching award at Georgetown. Heinzerling is also a member-scholar of the Center for Progressive Reform, a think tank dedicated to making the positive case for health, safety, and environmental protection. Her book, written with Frank Ackerman and entitled [Priceless: On Knowing the Price of Everything and the Value of Nothing](#), was published by The New Press in February 2004.

**Al McGartland** is the director of the National Center for Environmental Economics. He is responsible for developing interdisciplinary risk and benefit assessment methods to be used in the EPA's regulatory analyses and for assessing the benefits, costs, and impacts of environmental policies. The National Center for Environmental Economics issues the EPA's Guidelines for Preparing Economic Analyses and conducts numerous studies to assess the benefits and costs of environmental programs. Prior to serving at the EPA, Dr. McGartland worked at the Office of Information and Regulatory Affairs in the Office of Management and Budget. While there, he reviewed environmental regulations and supporting analyses. He also served as the economic advisor to the chairman at the Commodity Futures Trading Commission. Dr. McGartland was a vice president at Abt Associates, a public policy and economics consulting firm. He has published in several journals, including *The American Economic Review*, the *Canadian Journal of Economics*, the *Journal of Environmental Management*, *The Lancet*, and the *Journal of Environmental Economics and Management*. He has contributed to numerous books and reports on environmental economic issues.

**SAB Science Integration for Decision Making Fact-Finding Meeting  
National Center for Environmental Economics Scientific and Technical Staff  
Ariel Rios North, 1200 Pennsylvania Avenue, NW, Washington, DC 20064  
Ariel Rios Conference Room Conference Room 3500**

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**January 21, 2009, 9:45 a.m.-10:15 p.m.**

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3. Identification of any follow-up actions

**Planned participants:**

EPA National Center for Environmental Economics

Dr. Charles Griffiths, Economist  
Dr. Steve Newbold, Ecologist  
Dr. Chris Dockins, Economist  
Dr. David Simpson, Economist,  
Dr. David Evans, Economist,  
Dr. Elizabeth Kopits, Economist  
Dr. Nathalie Simon, Economist

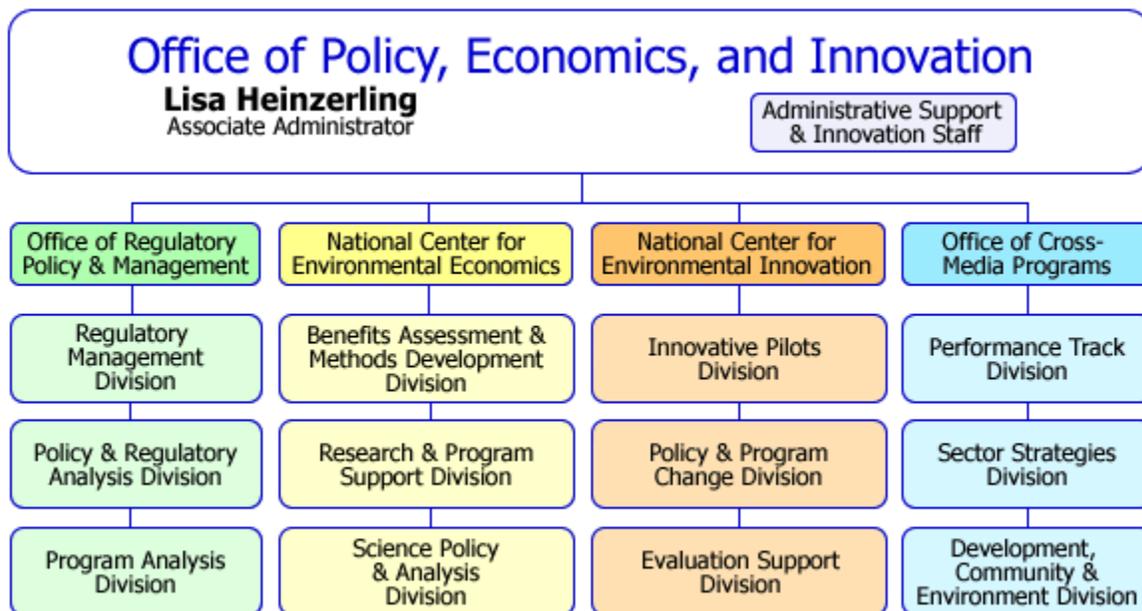
SAB Committee on Science Integration Committee Members

Dr. Terry Daniel, University of Arizona  
Dr. Catherine Kling, Iowa State University  
Dr. Thomas Wallsten, University of Maryland  
Dr. Thomas Theis, University of Illinois at Chicago (by telephone)  
Dr. Wayne Landis, Western Washington University (by telephone)

SAB Staff Office

Dr. Vanessa Vu, Director  
Dr. Angela Nugent, Designated Federal Officer

## Organizational chart and functional statement for EPA's Office of Policy, Economics, and Innovation



### Functional statement:

EPA's Office of Policy, Economics, and Innovation supports the Agency's mission by promoting innovation that achieves greater and more cost effective public health and environmental protection. The Office, in consultation with its different internal and external stakeholders and partners, supports and oversees the testing of new and innovative approaches to environmental protection and related policy changes. OPEI is the focal point for regulatory analyses, policy development, and economic analyses necessary to support EPA's regulatory development process and changes in today's business conditions. OPEI's role in the regulatory development process is to manage the process and ensure that the underlying policy analyses are sound. OPEI helps strengthen the analytic foundation of the Agency's decisionmaking processes, working with EPA's Science Advisor to strengthen the integration of scientific and economic analyses. Specifically, the Office performs the following major functions:

- Promotes change and Agency-wide integration of new practices that result in increased achievements in environmental protection.
- Participates in the development of Agency regulations and policies to ensure that decision processes are invested with high quality science and economic analysis and timely information, and that a range of well-conceived policy alternatives are available for senior management consideration.
- Manages the Agency's regulation development and review process.
- Serves as EPA's Economics Advisor: as such, helps ensure that the Agency relies on sound economic science to support its activities and advises the Administrator on all economics issues as they relate to EPA policies, regulations, procedures and decisions.

- Provides critical economic analyses to augment and support the Agency's understanding of the financial and societal impacts of environmental policies and regulations. Conducts economic research that leads to the development of analytic tools used by Federal, State and local governments.
- Develops sector, industry specific and place-based approaches to environmental protection; identifies specific industrial sectors within which environmental gains can be made and working with industry, governmental and non-governmental stakeholders, craft and promote innovative policies which foster positive change.
- Engages small business and communities to represent their specific concerns and interests with regard to environmental policies and protection.
- Provides procedural management and planning of Agency standards, regulations, guidelines, and information collection activities. Executes the Administrative Procedure Act and the Paperwork Reduction Act; and assures consideration of Regulatory Flexibility Act requirements in the Agency's regulatory decisions. In particular, advocates for appropriate Small Business outreach and accommodation in EPA rulemaking, and coordinates the Agency's compliance with the Small Business Regulatory Fairness Act (SBREFA).
- Serves as the principal advisor to the Administrator in matters pertaining to policies and economics that promote innovative approaches to protecting public health and the environment.
- Provides leadership to ensure new approaches and related policies are identified, designed, and tested by supporting program-specific approaches in other EPA offices.
- Directs a coherent strategy for change in cross-Agency programs.
- Ensures successful new approaches and related policies are incorporated into the way EPA does business.
- Communicates system change successes and lessons learned both publicly and throughout EPA.
- Manages and coordinates communications functions in the Office including comprehensive and integrated communications planning.

## Background on EPA's National Center for Environmental Economics

### About NCEE ([www.epa.gov/economics](http://www.epa.gov/economics))

The U.S. Environmental Protection Agency's National Center for Environmental Economics (NCEE) offers a centralized source of technical expertise to the Agency, as well as other federal agencies, Congress, universities, and other organizations. NCEE's staff specializes in analyzing the economic and health impacts of environmental regulations and policies, and assists EPA by informing important policy decisions with sound economics and other sciences. NCEE also contributes to and manages EPA's research on environmental economics to improve the methods and data available for policy analysis.

NCEE staff hold advanced degrees in such fields as economics, political science, statistics, public policy, city and regional planning, bioengineering, public health, natural sciences and mathematics.

NCEE is part of the [Office of Policy, Economics, and Innovation](#), and has an immediate office (Al McGartland, Director and Nathalie Simon, Associate Office Director), as well as three divisions:

- Benefits Assessment and Methods Development Division (BAMDD) - Brett Snyder, Division Director
- Science Policy and Analysis Division (SPAD) - Chris Dockins, Division Director
- Research and Program Support Division (RPSD) - Jennifer Bowen, Division Director

NCEE's Primary Functions are:

- Putting Theory into Practice - Legislation and executive orders have expanded EPA's obligation to articulate the benefits and costs of environmental policies and regulations. The Center is responsible for assisting EPA's offices in applying sound economic science in the preparation of economic analyses.
- Improving EPA's Economic Tools - The Center develops data and methods for benefit cost assessments through research aimed at filling priority needs common to many programs in the agency.
- Linking Science and Policy - Identifying better ways to link the natural and social sciences can help improve risk assessments and benefit-cost analyses. The Center works to provide risk assessment information that can be fed easily into economic analyses. The goal is to improve EPA's ability to evaluate its progress in addressing risks to public health and the environment.
- Gateway for Academic Research - The Center communicates EPA's research priorities to economics professionals across the nation. NCEE helps academicians identify topics pertinent to the Agency's needs and funds research in those areas through grants and cooperative agreements with universities. Through these efforts as well as seminars, workshops, and a website with online resources, NCEE serves as a gateway for academic research.
- Exploring Emerging and Crosscutting Issues - The Center explores the changing nature of environmental problems that face EPA and the nation. This work includes identifying a wide range of emerging issues, trends, and challenges; assessing their potential impacts on the environment; and positioning the Agency to respond.

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**Planned participants:**

EPA Office of Children's Health Protection

Dr. Peter Grevatt, Director

Dr. Greg Miller, Public Health Scientist and Coordinator for OCHPEE's regulation and science team.

Dr. Lou D'Amico, AAAS fellow working on chemicals management and children's special vulnerabilities to environmental hazards.

Dr. Carolyn Hubbard is the designated federal official for the Children's Health Protection Advisory Committee.

SAB Committee on Science Integration Committee Members

Dr. Terry Daniel, University of Arizona

Dr. Catherine Kling, Iowa State University

Dr. Thomas Wallsten, University of Maryland

Dr. Thomas Theis, University of Illinois at Chicago (by telephone)

Dr. Deborah Cory-Slechta, University of Rochester (by telephone)

SAB Staff Office

Dr. Vanessa Vu, Director

Dr. Angela Nugent, Designated Federal Officer

## **Biosketch for Dr. Peter Grevatt**

Peter Grevatt is the Director of the Office of Children's Health Protection and Environmental Education and the Senior Advisor to EPA Administrator Jackson for Children's Environmental Health. He is responsible for ensuring that all EPA decisions are protective of children's health and that EPA is an international leader on children's environmental health issues.

Peter served as the Senior Science Advisor in EPA's Office of Solid Waste and Emergency Response and as the senior health scientist in EPA's Region 2 office. In these roles, Peter was responsible for ensuring that science, public health, risk assessment, environmental justice and children's health were fully considered for a range of critical issues such as asbestos, PCBs, lead and arsenic.

Peter led the national water quality monitoring program in EPA's Office of Water, and more recently, as Director of the Economics, Methods and Risk Analysis Division in EPA's Office of Resource Conservation and Recovery, he provided leadership to the Regions and States on RCRA implementation, and provided health risk assessments and economic cost-benefit analyses on major rulemakings.

Peter received his B.A. degree in Biology from Earlham College and his M.S. and Ph.D. degrees in Basic Medical Sciences from New York University Medical Center.

## Office of Children's Health Protection and Environmental Education - Background

EPA established the Office of Children's Health Protection (OCHP) in May 1997 to make the protection of children's health a fundamental goal of public health and environmental protection in the United States.

On April 21, 1997, the President signed the Executive Order on the Protection of Children from Environmental Health Risks and Safety Risks ([http://yosemite.epa.gov/ochp/ochpweb.nsf/content/whatwe\\_executiv.htm](http://yosemite.epa.gov/ochp/ochpweb.nsf/content/whatwe_executiv.htm)). This Executive Order requires all federal agencies to assign a high priority to addressing health and safety risks to children, coordinate research priorities on children's health, and ensure that their standards take into account special risks to children.

The Office of Children's Health Protection (OCHP) has been working with others both inside and outside the Environmental Protection Agency to improve the scientific understanding of children's environmental health concerns. Some scientific data and methods project are as follows:

### ***Risk Assessment***

- Children's Inhalation Dosimetry and Health Effects for Risk Assessment  
The summary manuscripts from the 2006 workshop co-sponsored by OCHPEE were published in the *Journal of Toxicology and Environmental Health*, Part A, Volume 71, Number 3 (2008). The special issue includes an overview of the workshop, four summary manuscripts of topics presented at the workshop, as well as four original manuscripts on related issues that were contributed by workshop participants.
- Risk Assessment Portal  
EPA has developed a new Web site that provides basic information about environmental risk assessments to the public. The site also offers links to key EPA tools, guidance, and guidelines used by scientists to help them develop risk assessments.
- Publication: A Framework for Assessing Health Risks of Environmental Exposures to Children (Final)  
The framework identifies existing guidance, guidelines and policy papers that relate to children's health risk assessment. It emphasizes the importance of an iterative approach between hazard, dose response, and exposure analyses. In addition, it includes discussion of principles for weight of evidence consideration across life stages.
- Publication: Child-Specific Exposure Factors Handbook (Final Report)  
The Child-Specific Exposure Factors Handbook (EPA/600/R-06/096F) is an update of the Child-Specific Exposure Factors Handbook 2002 interim final. This final version reflects EPA's recommended set of childhood age groups identified in its recent Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants.

The Handbook provides a summary of statistical data on various exposure factors used in assessing children's exposures, including: drinking water

consumption; soil ingestion and mouthing behavior; inhalation rates; dermal factors including skin surface area and soil adherence factors; consumption of retail and home-grown foods; breast milk intake; and activity pattern data.

### ***Indicators***

OCHP is working in the US and internationally to track trends, or "indicators," in children's environmental health. Specifically, OCHP is working to identify measures that can be tracked to better understand the potential impacts of the environment on children's health and, ultimately, to identify and evaluate ways to minimize these impacts.

Children's environmental health indicators can be effective tools for understanding children's environmental health in specific geographic areas. These indicators can be used to monitor environmental trends in order to identify risks to children's health, to measure progress towards stated goals, and to target actions where they are most needed. In addition, they can help raise awareness of children's environmental health and inform policy making. [Learn more about what OCHP and EPA are doing to help track indicators of children's environmental health and view recent publications on the topic.](#)

### ***Research***

- The EPA and the National Institute of Environmental Health Sciences have established 14 [Centers for Children's Environmental Health and Disease Prevention Research](#) dedicated solely to the study of children's environmental health hazards. These unique centers perform targeted research in children's environmental health and translate their scientific findings into intervention and prevention strategies by working with communities.

The first eight centers were established in 1998 to study the effects of environmental factors, such as pesticides and air pollution, on childhood asthma and children's growth and development. Four more Centers were established in 2001 to study the basis of neurodevelopmental and behavioral disorders such as autism. Additional Centers were established in 2004 and 2007 to investigate how exposure to mixtures of chemicals affects children's health. Each Center fosters community participation in one or more studies.

The EPA [National Center for Environmental Research](#) also supports extramural research grants and contracts on topics related to children's environmental health.

- The [National Children's Study](#) has been proposed and developed through the cooperation of the Environmental Protection Agency, the National Institute of Child Health and Development, the National Institute of Environmental Health Sciences, and the Centers for Disease Control and Prevention. The National Children's Study will examine the effects of environmental influences on the health and development of more than 100,000 children across the United States, following them from before birth until age 21. The goal of the study is

to improve the health and well-being of children. Endorsement of the National Children's Study (then called the Children's Longitudinal Cohort Study) was passed by the U.S. Congress and signed into law on October 17, 2000 as a part of the Children's Health Bill of 2000 (Public Law 106-310).

Around the world, several large infant/child prospective studies have been launched to examine environmental and biological determinants of common diseases. A workshop in September 2005 established the International Childhood Cancer Cohort Consortium (I4C) – a global alliance of longitudinal studies of children to enable investigations of the role of various environmental exposures in the etiology of childhood cancer. Because of its longitudinal design and large sample size, it will be easier to see associations considered statistically meaningful. Initially, this effort may provide valuable insights about the causes of childhood leukemia, and later may be helpful for studying other types of cancer as well as other rare childhood diseases.

On January 25, 2007, "Cohort Profile: The International Childhood Cancer Cohort Consortium (I4C)" was published in the *International Journal of Epidemiology*. The article discusses the formation of the I4C, its purpose, what it covers, its sample size, and major areas of research. Learn more about I4C by visiting the National Children's Study Web site.

- In April of 2004, the American Academy of Pediatrics' Center for Child Health Research published a supplement to the Journal *Pediatrics* – The Vulnerability, Sensitivity, and Resiliency of the Developing Embryo, Infant, Child, and Adolescent to the Effects of Environmental Chemicals, Drugs, and Physical Agents as Compared to Adults. The supplement contains articles addressing the vulnerability and sensitivity of the developing embryo, infant, child and adolescent to the effects of environmental chemicals, drugs, and physical agents, including the importance of the stage of development and the magnitude of the exposure. EPA provided support for the Supplement.
- In October 2000 EPA released the Strategy for Research on Environmental Risks to Children. The strategy provides a framework for research needs and priorities to guide programs over the next five to 10 years. The *Strategy for Research on Environmental Risks to Children* includes a stable, long-term, core program of research in hazard identification, dose-response assessment, exposure assessment, and risk management, as well as problem-oriented research that addresses current critical needs identified by EPA Program Offices and Regions.

### ***Exposure***

- On February 8, 2006, EPA announced the release of the final document, "Guidance on Selecting Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants (2005)." This document provides guidance to EPA scientists on selecting age groups to consider when assessing childhood exposure and potential dose to environmental contaminants.
-

- The National Health and Nutrition Examination Study (NHANES) has published the National Report on Human Exposures to Environmental Chemicals. This study used biomonitoring to assess human exposures to a set of 116 environmental pollutants. (Biomonitoring is the assessment of human exposure by measuring the chemicals or their metabolites in human specimens, such as blood or urine.) This study included exposures to children as well as adults. The study is becoming an annual survey, so that in the future it will be possible to determine how environmental exposures are changing over time.
- EPA hosted a national "Workshop to Identify Critical Windows of Exposure for Children's Health" in September 1999. The workshop considered the importance of the timing of exposure to toxic chemicals, and how time of exposure affects the observed outcomes. Such information is valuable in determining when children may be the most susceptible to the effects of toxic chemicals in the environment. The workshop addressed effects to the respiratory, immune, reproductive, nervous, cardiovascular, and endocrine systems, as well as general growth and cancer. The conclusions of the workshop were published in the June 2000 supplement to the journal Environmental Health Perspectives.
- The EPA held a peer-involvement workshop in July 2000 on considering developmental changes in behavior and anatomy when assessing exposure to children. The workshop addressed defining and characterizing the important facets of child development and how to best estimate childhood exposures given the limitations in existing exposure information. The results of the workshop may help to define a minimum set of early life stages that EPA would consistently utilize in its exposure and risk assessments. The Summary Report of the Technical Workshop on Issues Associated with Considering Developmental Changes in Behavior and Anatomy when Assessing Exposure to Children is available as an EPA Risk Assessment Forum publication.

### **Cancer**

- EPA has completed Guidelines for Carcinogenic Risk Assessment and Supplemental Guidance for Assessing Cancer Susceptibility Resulting from Early-Life Exposure to Carcinogens. The Supplemental Guidance contains an analysis of studies and a possible approach for how quantitative scientific data could inform risk assessments when exposure to carcinogens occurs during childhood is considered.
- EPA hosted the first-ever national conference on "Preventable Causes of Childhood Cancer" in September 1997. Approximately 300 scientists, government officials, representatives of advocacy organizations and other members of the public participated. Health experts presented their perspectives on a broad range of issues including the special vulnerability of children to environmental toxicants, studies on the role of parental occupational exposures, trends in childhood cancer, and methods used to study environmental factors in childhood cancer. A detailed research agenda and the scientific presentations from the conference were published in the June 1998 supplement of the journal Environmental Health Perspectives. This research

agenda is intended to provide a blueprint for closing gaps in knowledge, and thus for guiding prevention of childhood cancer.

### ***Ethics***

- In October 2006, Environmental Health Perspectives published the mini-monograph “Ethics in Children's Environmental Health Research,” based on a papers submitted to a symposium hosted by the Children 's Environmental Health Network.<http://www.epa.gov/epahome/exitepa.htm>
- 
- *Ethical Considerations for Research on Housing-Related Health Hazards Involving Children*, a study published by the National Academy of Sciences and funded by the U.S. Department of Housing and Urban Development, the Environmental Protection Agency and the Centers for Disease Control and Prevention, explores the ethical issues posed when conducting research designed to identify, understand, or ameliorate housing-related health hazards among children. View a four-page Report Brief (PDF) <http://www.epa.gov/epahome/exitepa.htm> on the study from September 2005.

### ***Other***

- The Office of Children's Health Protection is a participant in the World Health Organization's (WHO) Task Force for the Protection of Children's Environmental Health <http://www.epa.gov/epahome/exitepa.htm>. The Task Force's current and proposed activities include: developing a manual on children's environmental health; preparing a plan of action for countries; providing advice on specific threats; preparing and disseminating training materials; and promoting research on emerging issues. Working with the WHO is a valuable activity for promoting children's environmental health science, since the scientific basis to protect children's environmental health is developed and needed around the globe.
- The World Health Organization sponsored the International Conference on Environmental Threats to the Health of Children: Hazards and Vulnerability <http://www.epa.gov/epahome/exitepa.htm> on March 3-7, 2002 in Bangkok, Thailand. The objectives of this conference were to address new scientific data and research on children's vulnerability; discuss how to improve the current health conditions of children; increase awareness in the health, education, and environmental sectors; and promote action on the protection on children's environmental health around the world.
- The European Environment Agency and the WHO Regional Office for Europe have jointly developed the report Children's Health and Environment: A Review of Evidence <http://www.epa.gov/epahome/exitepa.htm>. This publication provides an overview of the available evidence of the relationship between the physical environment and children's health. It identifies both research needs and policy priorities to protect children's health from environmental hazards.

In December 2000 EPA announced the Voluntary Children's Chemical Evaluation Program (VCCEP), which is designed to provide data that will enable the public to understand the potential health risks to children associated with certain chemical exposures. The pilot phase of VCCEP is currently underway, and volunteers from the

chemical industry have sponsored 20 of the 23 chemicals listed for consideration in the pilot. The initial phase of the pilot (tier 1) is in progress for the sponsored chemicals

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**Planned participants:**

EPA Office of the Science Advisor

Dr. Noha Gaber, Council on Regulatory Environmental Modeling Lead

Dr. Kathryn Gallagher, Risk Assessment Forum, Executive Director

Ms. Lisa Matthews, EPA Chair of the EPA Group on Earth Observations (EPA  
GEO)

Dr. Santhini Ramasamy, Science Policy Council Staff

Dr. Neil Stiber, Science Policy Council Lead

SAB Committee on Science Integration Committee Members

Dr. Terry Daniel, University of Arizona

Dr. Catherine Kling, Iowa State University

Dr. Thomas Wallsten, University of Maryland

Dr. Thomas Theis, University of Illinois at Chicago (by telephone)

Dr. Deborah Cory-Slechta, University of Rochester (by telephone)

SAB Staff Office

Dr. Vanessa Vu, Director

Dr. Angela Nugent, Designated Federal Officer

## **Biosketches for Scientific Staff, Office of the Science Advisor**

**Dr. Noha Gaber**  
**Team Lead, CREM**  
**Office of Science Advisor**

Noha Gaber is the Executive Director for EPA's Council for Regulatory Environmental Modeling (CREM). She has served as an environmental engineer on the CREM staff since joining the Agency in 2005. The primary focus of her position is to provide leadership in developing and implementing activities to help ensure that the Agency's model-based decisions are founded on the best available science and are legally defensible. Noha has initiated a new initiative at EPA on "Integrated Modeling for Integrated Environmental Decision Making". Under this initiative, she organized and facilitated two international workshops on integrated modeling, lead the development of an Agency white paper on "Integrated Modeling for Integrated Environmental Decision Making" and is leading the development of an international Community of Practice on Integrated Environmental Modeling. She is also the co-author of the EPA Guidance on the Development, Evaluation and Application of Environmental Models and 3 book chapters in a book on Environmental Modeling. The book chapters were entitled "Good Modelling Practice", "Bridging the gaps between design and use: developing tools to support environmental management and policy", and "Complexity and Uncertainty: Rethinking the Modelling Activity". Noha received her Bachelors and Doctoral degrees in Environmental Engineering from the University of Southampton in the UK. Her doctoral thesis focused on developing a model to determine the fate of heavy metals in municipal wastewater treatment plants.

**Kathryn Gallagher, Ph.D.**  
**Executive Director, Risk Assessment Forum**  
**Office of the Science Advisor**

Kathryn Gallagher is the Executive Director of the Risk Assessment Forum (RAF). In this role she directs Forum staff, briefs the Science Policy Council on Forum activities, coordinates peer review of Forum products, collaborates with the Forum Chair to assist technical panels in all aspects of guidance product development, works with offices and Regions to present issues to the Forum, interfaces with senior Agency officials, resolves significant issues, ensures the quality of Forum products, manages the Forum budget, and serves as liaison between the Forum and other EPA and non-EPA organizations.

Kathryn was previously on the Science Policy Council Staff (SPC) staff for the past 6 years, serving as Team Leader for the SPC staff for several years. She served as SPC staff lead on projects including genomics and nanotechnology. She has been member of the Risk RAF Ecological Oversight Committee for several years, and serves as a technical panel co-chair on the Forum effort on probabilistic risk assessment. From 2002-2003 Kathryn was the Toxics Coordinator for the Chesapeake Bay Program. Kathryn started her career at EPA in 1998 as a chemist, developing ecological risk assessments in

the Environmental Fate and Effects Division of the Office of Pesticide Programs (OPP). While in OPP she served as the Team Leader of the Aquatic Probabilistic Risk Assessment Implementation Team which was responsible for developing a new technical approach for conducting national risk assessments for pesticides in aquatic ecosystems. In that role, she has defined and communicated research needs for aquatic risk assessments for pesticides, and concurrently served as co-chair of Aquatic Biology Technical Team. Her duties included conducting scientific evaluation of ecotoxicological studies and chemical fate studies submitted to the Agency for pesticide registration, and writing risk assessments.

Kathryn holds a Ph.D. in Marine Science and a B.S. in Biology. She earned her doctorate through the Department of Environmental Chemistry at the College of William and Mary's Virginia Institute of Marine Science. Her dissertation work was on the environmental fate of polychlorinated terphenyls in estuarine environments and the biochemical effects of laboratory and field exposure to these chemicals on estuarine fish. Kathryn conducted her postdoctoral research in molecular biology at the National Institute of Environmental Health Sciences, evaluating the comparative toxicity of a mutagenic carcinogen on transgenic fish and mice. She has authored or co-authored approximately 25 peer-reviewed scientific papers/technical reports and made numerous presentations at scientific meetings.

#### Awards

EPA Silver Medal, Science Policy Council Nanotechnology White Paper, 2008.

EPA Bronze Medal, Genomics Technical Training Panel, 2008.

EPA Joseph Siefer Award for Human Health Risk Assessment, for Toxicity and Exposure Assessment for Children's Health database, 2008.

EPA, Office of Pesticides and Toxic Substances James Ackerman Award for Ecological Effects Risk Assessment, Ecological Committee on the FIFRA Risk Assessment Team, 2000.

EPA Bronze Medal for Commendable Service, for participation as biologist in collaborative pesticide risk assessment with Canada, 1999.

#### **Lisa Matthews**

**Chair, EPA GEO**

**Office of the Science Advisor**

Lisa Matthews serves as Chair of the EPA Group on Earth Observations (EPA GEO) since June 2009, and is the lead for GEOSS/Advanced Monitoring Initiative (AMI) project development. From June 2007 through March 2009, Lisa was on an Intergovernmental Personnel Act (IPA) assignment to the Environmental Council of the States (ECOS), the national association of State environmental agency leaders, to foster cooperation and coordination in environment management between EPA and state agencies. She focused primarily on air, climate, environmental health and planning issues in this work. Prior to ECOS, Lisa served as Executive Assistant to the EPA Science Advisor and provided advice and guidance on a range of cross-cutting science

and science policy issues. She led the ORD and Region 2 team supporting the World Trade Center Expert Technical Review Panel, and served as Executive Secretary for the interagency Committee on Environment and Natural Resources and its Subcommittee on Toxics and Risk. Lisa has 20 years EPA experience, having also worked in the Office of the Administrator, ORD and the Superfund program. She also served as an Agency representative to the National Science and Technology Council in the Environment Division of the White House Office of Science and Technology Policy. A native North Carolinian, Lisa received her M.S. degree in analytical chemistry from the University of North Carolina at Chapel Hill and received her B.S. degree in chemistry from Wake Forest University.

**Santhini Ramasamy, PhD, MPH, DABT**  
**SPC Staff (Detail)**  
**Office of Science Advisor**

Santhini Ramasamy joined Science Policy Council (SPC) staff on detail from the Office of Water during Sep 2009. In this capacity, she assists in the planning and operations of the SPC and SPC steering committee meetings towards providing guidance to Agency on complex and emerging science policy issues. She chairs a SPC workgroup, Science Inventory (SI) towards exploring SI as an Agency-wide tool to store science activities and products. For the past four years in the Office of Water (OW), she has provided technical support for many drinking water contaminant assessments for regulatory decision-making (CCL3, Regulatory Determination 2 and 3, Six year Review Two). She is the lead chemical manager for the Agency's IRIS assessment for inorganic arsenic. She has also represented OW in research planning and in a few Agency-wide work groups on cutting edge technologies (e.g., genomics and future toxicity testing). Prior coming to OW, she worked in Office of Pesticide Programs (OPP) conducting both human and environmental risk assessments for many pesticides for five years.

She received her Ph.D. in Biochemistry from University of Madras, India and Masters in Public Health in Environmental and Occupational Health from Emory University, Atlanta, GA. She is a board-certified toxicologist. She has received several science achievement awards and bronze medal awards from the Agency during the past nine years.

**Neil A. Stiber, Ph.D.**  
**Team Lead, Science Policy Council**  
**Office of Science Advisor**

Dr. Neil A. Stiber is an environmental scientist in the U.S. EPA's Office of the Science Advisor (OSA) where he is the lead for the Science Policy Council (SPC) staff. Upon joining the EPA in 2003, he worked in the Office of Research and Development (ORD) for the Council for Regulatory Environmental Modeling (CREM) where he was a co-author of the Guidance on Environmental Modeling and the primary developer of the CREM Models Knowledge Base. Following that, Dr. Stiber served in ORD's Office of Science Policy where he focused on waste, contaminated sites, asbestos, and brownfields.

Since 2006, he worked as staff to the Science Policy Council (SPC). While at the SPC, he promoted collaboration among agency-wide and inter-agency asbestos workgroups, supported the Expert Elicitation Task Force, coordinated activities between EPA and the NAS, engaged in multiple activities to encourage and improve peer review and transparency, and worked on many issues at the nexus of science policy, including climate change. During 2009, he served on detail as the Special Assistant to the Chief Scientist. Prior to joining the EPA, he worked for several years as a consultant specializing in environmental risk assessment, site investigation, and remediation. Dr. Stiber received a B.S. in civil engineering from Duke University, a M.S. in civil engineering from Northwestern University, and M.S & Ph.D. degrees from the Department of Engineering and Public Policy at Carnegie Mellon University. He can be contacted at 202-564-1573 or [stiber.neil@epa.gov](mailto:stiber.neil@epa.gov).

**. SAB Science Integration for Decision Making Fact-Finding Meeting  
Meeting with Chief Scientist and Managers, Office of the Science Advisor  
ORMA Conf Rm 1 and 2 in Ronald Reagan 4th floor  
Washington, DC 20064**

**Call-in Number for SAB subgroup: 866-299-3188, access code 343-9981 and press  
the # sign.**

**January 21, 2009, 1:00 p.m.-2:00 p.m.**

**Draft Agenda**

**Purpose of Interview:** to help SAB Committee members learn about the Office of the Science Advisor's current and recent experience with science integration supporting EPA decision making so that the SAB can develop advice to support and/or strengthen Agency science integration efforts.

1. Introductions facilitated by the SAB Staff Office
2. Discussion facilitated by SAB Members
  - Practices for integrating science to support decision making
  - Consideration of public, stakeholder, external scientific, and other input in science assessment
  - Drivers and impediments to implementing past recommendations for science integration
  - Ways program receives feedback on how science is used in decision-making
  - Workforce to support science integration for decision making
3. Identification of any follow-up actions

**Planned participants:**

EPA Office of the Science Advisor  
Dr. Pai-Yei Whung, Chief Scientist  
Dr. Mary Greene, Deputy Director  
Dr. Gary Foley, Senior Advisor

SAB Committee on Science Integration Committee Members  
Dr. Terry Daniel, University of Arizona  
Dr. Catherine Kling, Iowa State University  
Dr. Thomas Wallsten, University of Maryland  
Dr. Thomas Theis, University of Illinois at Chicago (by telephone)  
Dr. Deborah Cory-Slechta, University of Rochester (by telephone)

SAB Staff Office  
Dr. Vanessa Vu, Director  
Dr. Angela Nugent, Designated Federal Officer

## **Biosketches for Managers and Senior Advisor, Office of the Science Advisor**

**Pai-Yei Whung, Ph.D.**  
**Chief Scientist**  
**U.S. EPA Office of the Science Advisor**

As Chief Scientist, Dr. Pai-Yei Whung shares fully with the EPA Science Advisor in planning and developing cross-Agency scientific efforts. Dr. Whung joined EPA in April 2008, and led the completion of the first cross-EPA Science Priorities initiative. In support of President's Green Jobs and Environment efforts, Dr. Whung is leading an integrated environmental technology portfolio to provide rapid solutions to emerging environmental challenges. In the area of climate change, as a trained climate change scientist, Dr. Whung chairs an intra-Agency and inter-Agency workgroup on climate and health science for decision and policy making. She is also spear heading a climate change and health initiative with the World Health Organization to focus on co-benefits of greenhouse gas and/or black carbon reduction.

Dr. Whung has a doctoral degree in climate change, marine and atmospheric chemistry, a masters degree in oceanography and marine chemistry, and a bachelors degree in oceanography and geology. She has fifteen years of field research experience and eight years of program management and leadership in air quality, water quality, weather, sustainable ecosystems, climate change, and agricultural research. Her research has been published in peer-reviewed journals and presented at many professional meetings.

Dr. Whung has worked successfully with states, private-sector stakeholders, cross-federal agencies, the Office of Management and Budget, the Office of Science and Technology, and Congress to develop science for policy and decision making initiatives, such as National Integrated Drought Information System, National Air Quality Forecasting Program and improved weather and climate information for advancing energy management.

Prior to joining EPA, Dr. Whung served as the senior executive director for international in the Agricultural Research Service at U.S. Department of Agriculture. One of her major accomplishments is to open the dialogue between U.S. and Brazil on science and technology exchanges in renewable energy, particularly in agricultural based biofuel. Dr. Whung also worked at the National Oceanic and Atmospheric Administration where she was seconded to the World Meteorological Organization. Dr. Whung successfully worked with the Weather Channel, Energy CEOs, and federal agencies to launch an U.S. led twelve-nation climate prediction program. Through these positions, Dr. Whung has cultivated a broad perspective on science and technology in the federal government and our partners.

**Dr. Mary E. Greene**  
**Deputy Director**  
**Office of Science Advisor**

Dr. Greene has over 20 years of federal experience in environmental and natural resource programs and has held positions at the Environmental Protection Agency (EPA), the Department of Energy, the Drug Enforcement Administration, and the U.S. Geological Survey. Prior to joining the federal government, she was also with the Oklahoma State Department of Health. While starting as a medical microbiologist, most of her career has been in the environmental arena, working on issues as varied as researching medical waste treatment technologies, regulating the accidental release of toxic chemicals, evaluating the impacts of nuclear and hazardous wastes, cleaning up illegal drug manufacturing laboratories, sharing and integrating environmental information, and planning for and reviewing biological research programs. During her career, not only has she been involved in research and the develop of programs, but has implemented and ensured compliance with environmental requirements.

Dr. Greene has expertise in policy analysis, research planning, program reviews, and performance measurement, and has successfully managed a research office and staff. She has experience in using science for decision making under the National Environmental Policy Act and through the regulatory and program development processes at EPA. While at EPA she also provided leadership in the deployment of the National Environmental Information Exchange Network, a collaboration among EPA, state, territories, and Native American tribes, to exchange and integrate data using a common computer language and accepted data standards.

She has successfully worked across EPA programs and with many federal and state agencies, as well as Native American tribes on a variety of environmental issues. At the international level, the United Nations requested that she participate in the development of the Guidelines for the Safe Handling and Disposal of Chemicals used in the Illicit Manufacture of Drugs. She represented the U.S. and worked in collaboration with representatives of eight other countries to prepare the guidelines.

Dr. Greene holds a doctoral degree in environmental science and public policy, and masters degrees in public policy and microbiology. She has also taught Environmental Health at George Mason University.

**Gary J. Foley, Ph.D.**  
**Senior Advisor**  
**Office of Science Advisor, USEPA**

Dr. Gary J. Foley has been the Senior Policy Advisor for the Office of Science Advisor (OSA) since 2007. During this period, Dr. Foley also served as OSA Acting Deputy Director for 5 months. Prior coming to OSA, Dr. Foley was the Director for the National Center for Environmental Research from 2005 to 2007. He was the first Director of the National Exposure Research Laboratory since its inception in 1995 and served there for 10 years. For almost two years (1993-94), Dr. Foley served as the Acting Assistant Administrator for ORD. He has been in ORD for most of his 37 year career at EPA, working within different laboratories and offices on a broad set of environmental research areas focusing on engineering, monitoring, modeling and integrated analysis across the risk paradigm. He has continually been involved in promoting new research approaches, such as creating a metabionics facility and utilizing the wind tunnel facility to understand complex urban environments. For three years, EPA loaned him to the Organization for Economic Cooperation and Development (OECD) to work on international air pollution, acid rain and energy-environment issues. Earlier in his career, he worked for Amoco for five years in the research and development department on chemical and petroleum process modeling and optimization.

He currently chairs the EPA's Council for Regulatory Environmental Modeling (CREM). He served on the National Oceanic and Atmospheric Administration (NOAA) Air Quality Forecasting Oversight Board and is a member on NOAA's Federal Committee for Meteorological Services and Supporting Research. Internationally, he is the US Co-Chair of the Air Board of the International Joint Commission and has been active in persistent toxic substances work with the North American Commission for Environmental Cooperation and the United Nations Long range Transport of Air Pollutants Long-range Transboundary Air Pollution (LRTAP) program. He served as a member of the Advisory Board for the World Community Grid, an IBM-led initiative to create the world's largest public computational grid to help tackle projects for the benefit of humanity.

Dr. Foley was appointed as the United States Co-Chair on the User Interface Committee of the Group on Earth Observations (GEO) in 2003. He leads EPA's involvement in GEO, developing opportunities for EPA to collaborate globally and domestically to bring new sources of data and information into environmental decision making.

Dr. Foley is the recipient of the Meritorious Executive Presidential Rank Award, four EPA Bronze Medals, and six Special Achievement Awards. He received a Bachelor of Science degree from Manhattan College in New York. He holds Master and Doctoral of Science degrees in chemical engineering from the University of Wisconsin

**Office of the Science Advisor - Responses to questions in the Preliminary Study Plan developed by the SAB Committee on Science Integration for Decision Making**

**Questions for Policy and Decision Makers:**

**1. Practices for integrating science to support decision making**

***1.1. What kinds of decisions does your organization make?***

Office of Science Advisor (OSA) provides leadership and facilitates that the best science is integrated and practiced across the Program and Regional offices in their decision makings through its core functions (Science Policy Council (SPC), Risk Assessment Forum (RAF), Environmental Technology Innovations, and Program in Human Research Ethics (PHRE)). However, OSA does not directly make environmental decisions.

OSA integrates policies that guide Agency decision makers in their use of scientific and technical information (SPC).

OSA promotes consensus and consistency on complex risk assessment issues and ensures that this consensus is incorporated into appropriate Agency risk assessment (RAF).

OSA works on integrating measurements and monitoring (water, land, air) with modeling and technology to support and inform environmental decision-making (Forum on Environmental Measurements FEM, Global Earth Observation System of Systems (GEOSS)).

OSA promotes the adoption of practices that ensure the scientifically-robust and legally defensible development and application of computational models in environmental decision making (Council for Regulatory Environmental Modeling (CREM)).

OSA seeks to catalyze the development, verification, and deployment of sustainable technologies that help solve environmental problems (Environmental Technology Council (ETC)).

OSA provides review guidance on ethical issues of research involving human subjects (PHRE).

***1.2. What is (are) your role(s) in the decision-making process?***

Chief Scientist:

The Chief Scientist shares fully with the Science Advisor in planning, policy development and implementation, oversight, and direction of all cross-Agency scientific efforts.

Provides program management and technical support to the EPA Science Advisor both independently and by leading the OSA staff.

Serves as OSA's Science Policy Council Member.

Deputy Director:

The Deputy Director supports Chief Scientist in OSA management and operations (budget and planning, supervision and performance).

Also, serves as Science Policy Council Steering Committee member.

***1.3. For each type of decision please describe the process by which it is made. What types of assessments do you include to inform your decisions?***

OSA accomplishes its functions through core competencies and through an Agency system of connections (committees, workgroups and programs of more than 300 members).

The science and policy decisions are made through discussions from the committees and workgroups on projects, as aligned with Administrator's priorities, and after receiving feedback from public and stakeholders.

***1.4. Do the decision-making processes used by your office employ planning and scoping, and problem formulation phases? If yes, how are planning and scoping, and problem formulation conducted? What kinds of preliminary assessments are conducted?***

OSA supports Administrator's priorities and critical science issues that underpin Agency rule makings through innovative and forward thinking processes.

OSA uses systematic approaches aligning science priorities through SPC and RAF processes.

In OSA's core functions, OSA does planning and scoping and problem formulation towards the development of guidance documents by seeking input from stakeholders both within and outside the Agency. OSA conducts colloquiums and/or workshops and other means (soliciting input from stakeholders) during the initial stages of technical guidance document development.

***1.5. Has your organization applied any of the processes and approaches recommended by the SAB and NRC for integrating science supporting decision making? Has it used other models and approaches? If so, has it been useful to apply these models/approaches?***

Yes.

A. The Science Priorities document is integration in nature. The document includes four priorities: Climate and Energy, Environmental Contaminants, Security and Emergency Response, Modernization of Infrastructure. The criteria include: multi-media and multi-program implications, regulatory relevance, economic and societal benefit, etc.

B. The Science Policy Council and Risk Assessment Forum activities are transboundary in nature.

OSA seeks advice from experts in the field for interpretation of complex science issues and incorporates the recommendations as appropriate before finalizing the Agency's major guidance documents and issuing policy decisions.

External Review is conducted by several mechanisms depending upon the complexity of science issues and needs. Examples of some of the reports that went through the NAS and SAB processes are provided below. These examples reflect the consideration of the recommendations before finalizing the Agency's guidance documents and science/policy products.

The finalization of 'Guidance Document on the Development, Evaluation and Application of Environmental Models' during March 2009 reflects the considerations of recommendations provided in the SAB 2006 Report on 'Review of the CREM Draft Guidance on the Development, Evaluation and Application of Environmental Models and the Models Knowledge Base' and NRC 2007 Report on Models in Environmental Regulatory Decision Making.

The Office of the Science Advisor also requested the National Advisory Council for Environmental Policy and Technology's (NACEPT) critical review of the CREM White Paper on Integrated Modeling for Integrated Environmental Decision Making in February 2008. NACEPT endorsed the White Paper and provided recommendations for the Agency to move forward with the action plan in the White Paper. The CREM is moving ahead with several of these recommendations.

There are many RAF guidance documents developed and completed after seeking input from SAB.

RAF's Framework for Metals Risk Assessment completed in 2007 considered the recommendations from SAB. Similarly, the Guidelines for Carcinogen Risk Assessment and Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens published in 2005 considered the recommendations from SAB.

In addition to SAB and NAS, OSA also seeks input from scientific expert bodies through external peer reviews conducted by contractor mechanisms.

***1.6. As applicable, discuss a particular past recommendation that relates to the example(s) of science-based decisions you have described for the committee. Did the***

***recommendation affect your decision(s)? If it affected the decisions, in what ways did this occur?***

The Risk Assessment Forum based products are examples of science-based decisions.

The CREM Guidance on the Development, Evaluation and Application of Environmental Models published during March 2009 provides specific recommendations (e.g. life cycle model evaluation) to regulatory offices on model development, evaluation and application for effective use of models in environmental decision making. These specific recommendations were developed based on the input received from NAS and SAB.

***1.7. How do you assess the level of analysis needed for a particular science assessment, and when is the analysis judged to be sufficiently completed to allow decision making?***

This question is not applicable to the OSA's core activities.

***1.8. Is the science assessment and decision-making process altered to accommodate different locations in the United States or different spatial scales? Do science assessment and decision-making processes change to address short-term and long-term needs?***

RAF guidance broadly outlines science assessment approaches applicable in different locations in US. The environmental measurements and monitoring data gathered through GEOSS efforts may support site specific risk assessment decisions made by EPA.

Creating a "system of systems" (GEOSS) by combining existing and future data at various temporal and spatial scales in a meaningful way will improve the current framework for environmental monitoring and accountability. The development of new data products, models and tools will assist decision makers and the public in understanding today's complex environmental issues.

The second part of the question is not directly applicable to OSA's activities.

***1.9. What scientific data or information do you need to support decisions? Do you have the data/information that you need, when you need it? If not, what do you do? Are you constrained from using all available scientific information in decisions or generating new data and information to support decisions?***

OSA provides support to EPA Program offices and Regional offices by making the real time monitoring and observational data available to support environmental decisions. In the absence of the monitoring data, the modeled data supported by evaluated input parameters should help regulatory offices in making the environmental decisions supported by science. To that end, OSA provides leadership in providing earth observations, modeling and measurements available for Agency's decision makers.

***1.10 How are different assessments in different disciplines (including social and decision sciences) integrated as part of the science decision-making process?***

OSA ensures that social and decision sciences are integrated in science priorities, risk assessment modeling and other scientific efforts.

***1.11 How do you like information about the uncertainties in scientific assessments presented? What are some examples of presentation of uncertainties in scientific assessments that have helped you understand the science related to a decision and had an impact on that decision?***

OSA does not conduct individual contaminant environmental assessments. However, it plays an important role in aiding EPA Program offices and Regional offices in integrating best available science in environmental decisions. The Risk Characterization guidance document and Probabilistic Analysis in Risk Assessment document developed by SPC should provide guidance on describing and discussing uncertainty associated with individual scientific assessments. OSA's current efforts engaging NAS (Decision making Under Uncertainty) and SAB (Probabilistic Methods to Enhance the Role of Risk Analysis in Decision-Making and Expert Elicitation projects) would provide further guidance for environmental decision makers in addressing uncertainty in scientific assessments.

**2. Consideration of public, stakeholder, external scientific, and other governmental input in science assessment for decision making**

***2.1. What role do the regulated community; non-governmental organizations; and the general public play in your organization's science assessment process? If involvement occurs, how is it accomplished? At what steps in the process are these groups involved?***

OSA solicits input from regulatory offices and stakeholders to understand the need for the development of cross-Agency policies and guidance documents. This input is sought at multiple stages of the project.

As an example for early stage input, ETC has sought advice from NACEPT on developing strategies to Environmental Technology Council (ETC) directions at EPA. This advice is providing basis for the formative discussion on Environmental Technology at EPA. As the project develops ETC expects to obtain reiterative advice from NACEPT.

During the development of the guidance documents on very complex and/or controversial subjects, OSA seeks advice from scientific experts via SAB, NRC and other mechanisms as appropriate. This process occurs at the later stages after OSA has developed a draft document with specific charges. Examples of these efforts, but not limited to, include: a 2007 NAS Report on Models in Environmental Regulatory Decision Making, SAB Report on Framework for Metals Risk Assessment and Carcinogenic Risk Assessment guidelines.

OSA also keeps the public engaged at various stages, as warranted, during the problem formulation, development and/or review before the cross-Agency guidance documents are issued.

***2.2. To what degree and how do you coordinate scientific assessments with international organizations, other federal agencies, states and tribes? How does this coordination happen?***

OSA establishes EPA partnership with World Health Organization to support six Actions in WHO Climate Change and Health Resolution that benefits EPA (e.g., burden of diseases, health indicator, economic costs of health effects, health effects of mitigation and adaptation strategies, health outcome monitoring, and population vulnerability).

OSA serves as Executive Secretary for Committee on Environment and Natural Resources Research (CENR).

During the development of the guidance documents, public, other federal agencies, and stakeholders are allowed to comment on the contents of the document. The comments received from public, stakeholders and others are considered and incorporated, as appropriate, before finalizing and issuing science guidance products.

The EPA Group on Earth Observations (EPA GEO), chaired by OSA, plays a leadership role in coordinating the use of observations, measurement and monitoring data and modeling from multiple media (land, air, water), as well as measures of the health of humans, plants and animals, to better understand environmental and related problems. EPA GEO coordinates these activities with EPA Program Offices and Regions, other federal agencies, States and Local governments, and the broader scientific and international communities to apply science observational data to support and inform environmental decision-making. This coordination happens through biweekly EPA GEO Committee meetings, GEO Communities of Practice, workshops, and training and GEOSS product demonstrations to Regional, state and other partners.

***2.3. What role does the external scientific community play in integrating science to support decision-making in your organization? How does your organization engage the external scientific community to help your decision makers get the science needed to support decisions?***

The external scientific community often plays a role in OSA activities during the peer review process, which happens at the late stages of product development. OSA is also engaged with external scientific community at the early stages during planning and scoping and problem formulation.

***2.4. Has your organization applied any of the SAB's or NRC's recommendations relating to public participation in science supporting environmental decision-making? Have these reports influenced how public/stakeholder input has been used in your***

*organization's science assessments? If so, has it been useful to apply these models/approaches?*

OSA realizes the importance of public participation in science supporting environmental decision making. As described in the responses under question title 2.0 , OSA solicits input from public before the guidance documents are finalized. OSA also seeks input from stakeholders as deemed necessary.

### **3. Drivers and impediments to implementing past recommendations for science Integration**

*3.1. Are there perceived or actual barriers for developing and/or implementing new or existing decision-making processes or frameworks that integrate the best available science? If yes, what are they?*

Integrating science in decision making process via dissemination and implementation of technical, policy and guidance documents could face barrier depending upon many factors. Complexities of the science issues, conflicting scientific opinions among experts, paucity of information, and change in Administration priorities might pose delays in developing and/or implementing the guidance documents and science/policy decisions. Climate change project is a perfect example in this context.

### **4. Ways EPA receives feedback on how science is used in decision-making**

*4.1. How does your organization determine the effectiveness of implemented decisions (whether the decision resulted in reduced risk and improvement to public health and the environment)?*

As mentioned earlier, OSA does not make direct environmental decisions. However, OSA's effort on monitoring and measurements could feed decisions makers in tracking the effectiveness of implemented environmental decisions.

*4.2. Does your organization use feedback on decisions to detect emerging science, influence future policy, set priorities? If so, how?*

Depending upon the input received by regulatory programs, stakeholders and public, OSA is well equipped to address the emerging issues and provide guidance for environmental decision makers. To note, OSA has developed guidance documents on emerging science issues. Examples on this category include: an Interim genomics policy document finalized in 2002, Genomics White Paper developed in 2004 and a Nanotechnology White Paper completed in 2007.

### **5. EPA workforce related to science integration supporting decision making**

*5.1. How does your organization's scientific and technical workforce adapt to shifts in priorities and resources?*

OSA staff members are in general very independent and highly skilled professionals and have expertise and experience necessary to adapt to shifts in priorities and resources without compromising the OSA's role in integrating the science in Agency's decision making. Limited resources may lead to reduction in the number of products delivered but the integration of science in decision making is not expected to be compromised.

***5.2. How do scientists stay current in their areas of expertise, or expand their expertise based on current and future scientific needs?***

Scientists are encouraged to attend the trainings offered at the annual respective professional meetings to stay current with advancement in science and apply the new science knowledge for supporting better environmental decision making via development and implementation of technical guidance documents that withstand the scientific scrutiny.

***5.3. What is the current balance between near-term program support research and longterm research to advance the science?***

OSA does not conduct basic research projects like ORD; however, OSA funds and supports GEOSS/Advanced Monitoring Initiative (AMI) projects that will apply science observational data to support and inform environmental decision-making. Investments will be made in the following AMI Strategic Theme areas: Data and Information Infrastructure; Integrated Applications; Sensor and Observational Methods Development; and Support for Communities of Practice and Engagement of Users and Decision-Makers. AMI funds are not meant to supplement operational programs.

**6. Are there other questions we should ask that would help us understand how science and scientific assessments are integrated to support your decisions?**

None.

## Questions for Scientific and Technical Staff:

### **1. Practices for integrating science to support decision making**

***1.1. What kinds of decisions are made in your organization and what is your role(s) in the decision-making process?***

- Support science policy decisions
- Develop guidance documents to assist Agency in incorporating the best science in decision making.

***1.2. What types of science assessments are done to support your organization's decisions (e.g., technology, benefits, human health, ecological, behavioral/social/economic, etc.)?***

- Science policy memos and documents
- Guidance documents – ecological and human health
- Technology documents

***1.3. Who actually conducts science assessments (e.g., your organization's staff, contractors, other EPA offices/personnel)?***

OSA conducts science assessments through workgroups/subcommittees comprised of members from Program and Regional offices. OSA staff also takes support from the contractors in organizing workshops, meetings and development and review of OSA's guidance documents.

***1.4. How are assessments in different disciplines (including social and decision sciences) integrated as part of the science decision-making process?***

OSA does not conduct risk benefit or economic analysis. However, OSA ensures that social and decision sciences are integrated in science priorities, risk assessment modeling and other scientific efforts.

***1.5. How do you work within your own office, and with other EPA Offices and Regions to coordinate analyses needed for decision-making? What science data, models, analyses, etc. do you obtain from other units to support decision making in your unit?***

By nature of OSA's role in developing products through workgroups and subcommittees, OSA works with other offices in seeking their input for the development of technical guidance and policy documents.

***1.6. Do you conduct formal uncertainty analyses? How are analyses matched to the needs of decision makers? How is uncertainty communicated to decision makers, stakeholders and the public?***

The uncertainty analysis is conducted as warranted by the available data. OSA provides guidance (e.g., Risk Characterization and Probabilistic Analysis in Risk Assessment policy documents) on including uncertainty analysis in risk assessments developed for decision making purposes.

***1.7. What roles do computational models have in science integration for decision making in your organization. Do you make use of EPA's Council for Regulatory Environmental Modeling or the Models Knowledge Base, and if so, how?***

Modeling plays a crucial role in the information analysis supporting regulatory decision making. The staffing and management of the Council for Regulatory Environmental Modeling (CREM) is part of OSA. Since its establishment the CREM has served as the only EPA body to discuss modeling issues of cross-EPA importance and has led the development of activities and products that have cross-programmatic relevance. The CREM activities and products are viewed by the internal and external modeling community as a standard for best modeling practices.

The CREM is currently implementing activities to fulfill the following strategic goals that support the effective use of modeling to support environmental decision making:

- Strategic Goal 1: Advancing Modeling Science and Application to Ensure Model Quality - To support activities that foster continuous improvement and innovation in model development and application and help to ensure consistency in the quality of model development, evaluation and application throughout the Agency.
- Strategic Goal 2: Improving Inter and Intra-Agency Coordination - To improve communication among the model development and user groups, including enhancing communication between IT experts (developing the underlying IT and IM infrastructure) and model developers and between model developers and users (including decision-makers).
- Strategic Goal 3: Reinforcing a Culture of Transparency in Modeling - To improve access to information on EPA's models and modeling tools that support EPA decisions and programs.
- Strategic Goal 4: Enhancing Integrated Modeling for Environmental Decision Making - To bridge disciplines and foster a more integrated and joined up thinking approach to modeling in environmental management and advance integrated modeling science and technology.

To support EPA's guidance on best modeling practices and the goal of improved model transparency, the CREM established the Models Knowledge Base in 2003. The Models Knowledge Base is an important tool that guides the Agency and others in developing and using models for environmental analyses and decision making. The CREM is currently working to enhance the Models Knowledge Base and improve its comprehensiveness and utility for all stakeholders.

***1.8. What improvements are needed to integrate science assessments to support decisionmaking processes?***

Adequate resources from the management and time would be helpful.

***1.9. What are current interactions among your organization and the Agency's laboratories (e.g., ORD, Regional, Program-specific)?***

As OSA's role is providing leadership on cross-Agency science and science policy and technology issues, OSA interacts with ORD, Regions and Program offices regularly to achieve its core functions. These interactions are manifested through activities from all OSA's core operations (SPC, RAF, ETC, FEM, EPA GEO, CREM, PHRE).

**2. Consideration of public, stakeholder, external scientific, and other governmental input in science assessment for decision making**

***2.1. To what degree do you coordinate development of your organization's scientific assessments with international organizations, other federal agencies, states and tribes? How does this coordination happen?***

During the development of the guidance documents, public, other federal agencies, and stakeholders are allowed to comment on the contents of the document. The comments received from public, stakeholders and others are considered and incorporated, as appropriate, before finalizing and issuing science guidance products.

The EPA Group on Earth Observations (EPA GEO), chaired by OSA, plays a leadership role in coordinating the use of observations, measurement and monitoring data and modeling from multiple media (land, air, water), as well as measures of the health of humans, plants and animals, to better understand environmental and related problems. EPA GEO coordinates these activities with EPA Program Offices and Regions, other federal agencies, States and Local governments, and the broader scientific and international communities to apply science observational data to support and inform environmental decision-making. This coordination happens through biweekly EPA GEO Committee meetings, GEO Communities of Practice, workshops, and training and GEOSS product demonstrations to regional, state and other partners.

***2.2. What role do the regulated community, non-governmental organizations, other international, federal, state or tribal governments and the general public play in your organization's science assessment process? If involvement occurs, how is it accomplished? At what steps in the process are these groups involved?***

OSA solicits input from regulatory offices and stakeholders to understand the need for the development of cross-Agency policies and guidance documents. This input is sought at multiple stages of the project.

As an example for early stage input, ETC has sought advice from National Advisory Council for Environmental Policy and Technology (NACEPT) on developing strategies to Environmental Technology Council (ETC) directions at EPA. This advice is providing basis for the formative discussion on Environmental Technology at EPA. As the project develops ETC expects to obtain reiterative advice from NACEPT.

During the development of the guidance documents on very complex and/or controversial subjects, OSA seeks advice from scientific experts via SAB, NRC and other mechanisms as appropriate. This process occurs at the later stages after OSA has developed a draft document with specific charges. Examples of these efforts, but not limited to, include: a 2007 NAS Report on Models in Environmental Regulatory Decision Making, SAB Report on Framework for Metals Risk Assessment and Carcinogenic Risk Assessment guidelines.

OSA also keeps the public engaged at various stages, as warranted, during the problem formulation, development and/or review before the cross-Agency guidance documents are issued.

***2.3. What role does the external scientific community play in integrating science to support your organization's decision-making? How does your organization engage the external scientific community in getting the science needed to support environmental decisions?***

The external scientific community often plays a role in OSA activities during the peer review process, which happens at the late stages of product development. OSA is also engaged with external scientific community at the early stages during planning and scoping and problem formulation.

### **3. Drivers and impediments to implementing past recommendations for science Integration**

***3.1. Are there perceived or actual barriers for developing and/or implementing new or existing decision-making processes or frameworks that integrate the best available science? If yes, what are they?***

Integrating science in decision making process via dissemination and implementation of technical, policy and guidance documents could face barrier depending upon many factors. Complexities of the science issues, conflicting scientific opinions among experts, paucity of information, and change in Administration priorities might pose delays in developing and/or implementing the guidance documents and science/policy decisions. Climate change project is a perfect example in this context.

### **4. Ways EPA receives feedback on how science is used in decision-making**

***4.1. How does your organization determine the effectiveness of implemented decisions (whether the decision resulted in reduced risk and improvement to public health and the environment)?***

As mentioned earlier, OSA does not make direct environmental decisions. However, OSA's effort on monitoring and measurements could feed decisions makers in tracking the effectiveness of implemented environmental decisions.

***4.2. Does your organization use feedback on decisions to detect emerging science, influence future policy, set priorities? If so, how?***

Depending upon the input received by regulatory programs, stakeholders and public, OSA is well equipped to address the emerging issues and provide guidance for environmental decision makers. To note, OSA has developed guidance documents on emerging science issues. Examples on this category include: an Interim genomics policy document finalized in 2002, Genomics White Paper developed in 2004 and a Nanotechnology White Paper completed in 2007.

**5. EPA workforce related to science integration supporting decision making**

***5.1. How do you stay current in their areas of expertise, or expand their expertise based on current and future scientific needs?***

Scientists are encouraged to attend the trainings offered at the annual respective professional meetings to stay current with advancement in science and apply the new science knowledge for supporting better environmental decision making via development and implementation of technical guidance documents that withstand the scientific scrutiny.

**6. Are there other questions we should ask that would help us understand how science and scientific assessments are integrated in support of your organization's decisions?**

None.



# ***Office of the Science Advisor***

Pai-Yei Whung, Ph.D., Chief Scientist  
Mary Greene, Ph.D., Deputy Director  
Gary Foley, Ph.D., Senior Advisor

January 14, 2010

U n i t e d   S t a t e s   E n v i r o n m e n t a l   P r o t e c t i o n   A g e n c y



# ***The Creation of the Science Advisor, Chief Scientist, and the Office of the Science Advisor***

- EPA Administrator, Christine Todd Whitman
  - Establishment of the Science Advisor
  - Strengthening Science at the Environmental Protection Agency, 05/24/2002
- Acting EPA Administrator, Linda Fisher
  - Establishment of the Chief Scientist and the Office of the Science Advisor, 07/11/2003



## ***The Office of the Science Advisor (OSA) Mission and Functions***

- Provides leadership in cross-Agency science and science policy development and integration to promote the best use of science by the Agency.
  - The Science Advisor works across the Agency to ensure that the highest quality science is well integrated into the Agency's policies and decisions.
  - The Chief Scientist shares fully with the Science Advisor in planning, policy development and implementation, oversight, and direction of all cross-Agency scientific efforts and provides program management and technical support to the EPA Science Advisor both independently and by leading the OSA staff.



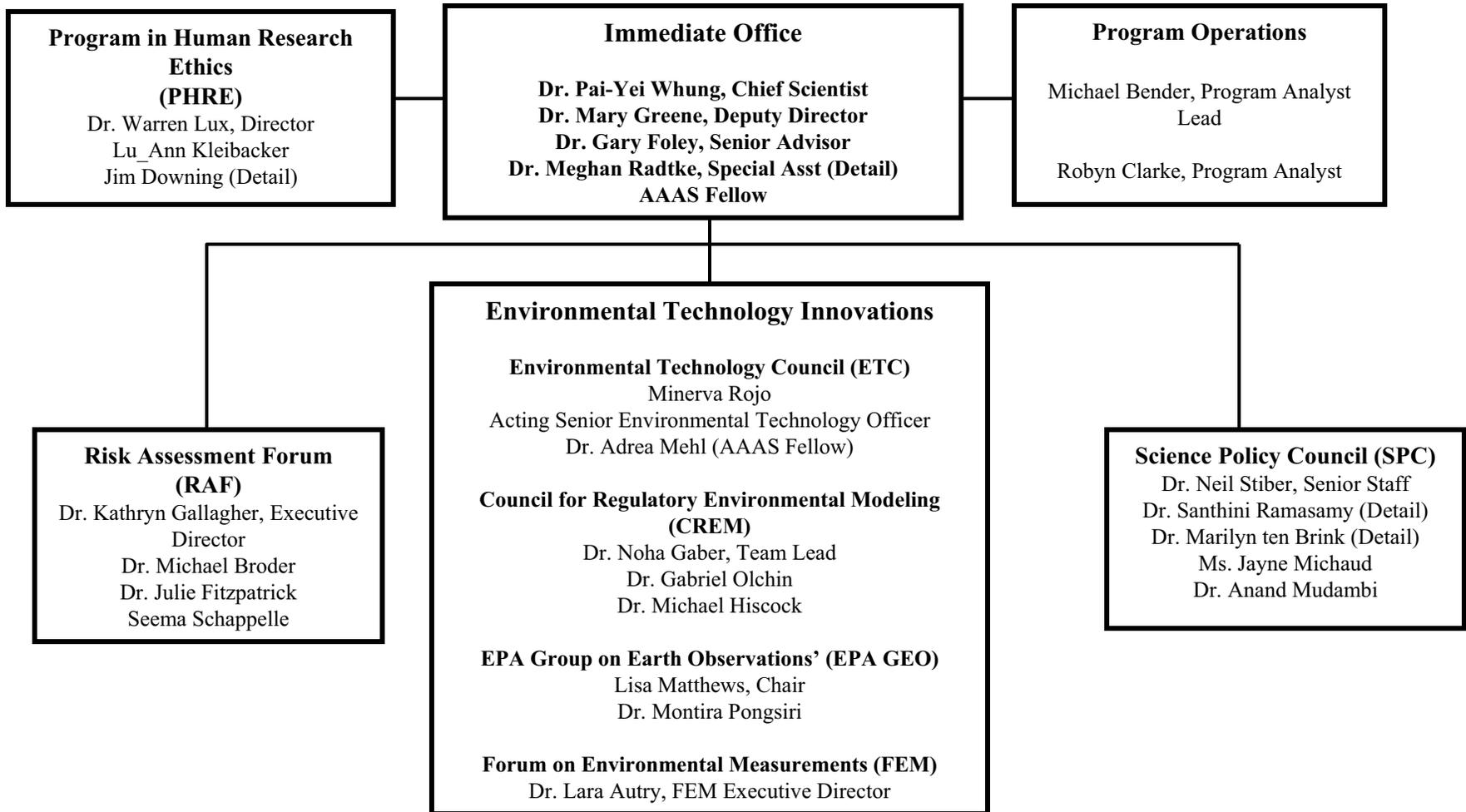
## ***The Office of the Science Advisor (OSA) Mission and Functions***

OSA promotes science integration through several functions.

- Science Policy Council (SPC)
- Risk Assessment Forum (RAF)
- Program in Human Research Ethics (PHRE)
- Global Earth Observations (EPA GEO)
- Council for Regulatory Environmental Modeling (CREM)
- Forum on Environmental Measurements (FEM)
- Environmental Technology Council (ETC)



# Office of the Science Advisor





## ***OSA Goals and Objectives***

- **Focus and Support Four Principles:**
  - Strengthening Science at EPA
  - Transparency
  - Scientific Integrity
  - Administrator's Priorities



## ***Strengthening Science at EPA***

- “Throughout EPA’s history our greatest successes have occurred when policies, regulations, and decisions are based on the results of appropriate and relevant scientific research.”
- “Ensure consistent cross-Agency application of strategic planning for research and use of science” – Inception of Science Advisor, 05/24/02
- “Science must be the backbone for EPA Programs” – Administrator Lisa Jackson, 01/23/09

## ***Transparency***

- “EPA’s actions must be transparent. - As your Administrator, I will uphold the values of scientific integrity, rule of law and transparency every day.” Administrator Lisa Jackson, 01/29/09



## ***Scientific Integrity***

- “Science and the scientific process must inform and guide decisions of my Administration on a wide range of issues, including improvement of public health, protection of the environment, increased efficiency in the use of energy and other resources, mitigation of the threat of climate change, and protection of national security.” – President Obama, 03/09/09

## ***Administrator’s Priorities***

- Five Priorities – EPA Administrator Lisa Jackson, 01/23/09
  - Reducing greenhouse gas emissions
  - Improving air quality
  - Managing chemical risks
  - Cleaning up hazardous-waste sites
  - Protecting America’s water



## ***OSA Fosters Science and Policy Integration to Support Decision Making***

We build both on our core competencies and through an Agency system of connections (committees, workgroups and programs of more than 300 members) to achieve our accomplishments.

- OSA's principal actions:
  - Listens to the needs of the policy and decision makers (external and internal EPA).
  - Identifies science/policy needs.
  - Leads and facilitates the development and updating of cross-Agency science and policy products.
  - Communicates these Agency science and technology outcomes with environmental decision makers.
  - Bridges EPA and external collaborators and partners.



## ***Role of OSA in Rule-Making***

- OSA supports Administrator's priorities on critical science issues that underpin rulemaking.
- OSA tracks the activities of the Regulatory Steering Committee for opportunities to contribute to select rulemakings.
- OSA participates in the Action Development Process by encouraging science communication that improves the development of Analytic Blueprints.



## ***Recent OSA Accomplishments***

- Cross-Agency Science Priorities Document
- Climate Change and Health Initiative
- EPA Environmental Technology Innovation
- Accomplishments of Committees that are housed and staffed in OSA (i.e., RAF, SPC, Environmental Technology Committees, PHRE)



# ***Cross-Agency Science Priorities Document***

- A roadmap seamlessly connecting research, application and decision making.
- Four priorities: Climate and Energy, Environmental Contaminants, Security and Emergency Response, Modernization of Infrastructure.
- Criteria include: Multi-media and multi-program implications, regulatory relevance, economic and societal benefit, etc.
- Framework: Advance environmental science and technology, science to inform policy decisions, and create tools for implementation.



## ***Cross-Agency Science Priorities Document – Impacts***

- Raised cross-Agency senior leadership awareness of science and technology and their importance in policy and decision-making (SPC approved the document for EPA leadership comments).
- Encouraged advances to the Agency science planning paradigm (e.g., from single medium to multi-media, integrating economics and social science in science planning).
- Established a sustainable Agency platform (SPC Subcommittee) to communicate critical science issues across EPA.



## ***Climate Change and Health Initiative (EPA)***

- Led the formation of a ***cross-Agency working group*** to initiate a science focus on Climate Change and Health (CC&H).
- Cross-walked SPC's draft final Science Priorities and on-going EPA CC&H activities to identify science gaps and needs in EPA.
- Recommended development of six multi-media and Programs (Regions) concept papers focusing on susceptible populations and environmental justice for pilot projects.
  - Health risk assessment and adaptation, health vulnerability mapping, water and vector-borne diseases, local-level air quality, regional ecosystem degradation, and health effects forest fires.



## ***Climate Change and Health Initiative (Interagency)***

- Co-lead the formation of an *ad hoc* Interagency Working Group on Climate Change and Health (IWGCC) (e.g., HHS, EPA, NOAA, USDA, USGCRP).
- Represent EPA interests with inputs from the Agency CC&H working group.
- USGCRP, directed by OSTP, uses of the document as a pilot project to bridge climate and societal consequences.



## ***Climate Change and Health Initiative (International)***

- Establish EPA partnership with World Health Organization to support six Actions in WHO Climate Change and Health Resolution that benefits EPA (e.g., burden of diseases, health indicator, economic costs of health effects, health effects of mitigation and adaptation strategies, health outcome monitoring, and population vulnerability).
- Invited by GEO Science and Technology Council co-chairs to lead the Health Task session – First of its kind.



## ***Climate Change and Health Initiative (All)***

- Built Agency consensus and synergy on climate change and health science to support Administrator's priorities.
- Raised the awareness of one of the most important societal consequences of climate change to internal EPA and cross-Federal Agencies.
- Elevated the recognition of EPA's role in climate and health science domestically and internationally.
- Lead the Agency to be forward-looking at integrating climate change into risk assessment based decision making.



## ***Science Policy Council (SPC)***

- SPC mission is to integrate policies that guide Agency decision makers in their use of scientific and technical information.
- SPC is chaired by the Science Advisor and consists of cross-Agency group of senior managers.
- SPC is charged with primary responsibility within the Agency for addressing and resolving cross-media and interdisciplinary science policy issues.



## ***Science Policy Council Accomplishments***

- Strategic Plan for evaluating the toxicity testing of chemicals (2009).
- Addendum to the Peer Review Handbook, 3rd Edition: Appearance of a Lack of Impartiality in External Peer Reviews (2009).
- Nanotechnology White Paper (2007).
- Genomics Microarray Guidance, External Review Draft (2007).
- Peer Review Policy and Handbook, 3<sup>rd</sup> edition (2006).
- Contaminated Sediments Science Priorities (2004).
- Genomics White Paper (2004).



## ***Science Policy Council Accomplishments – (Cont.)***

- Assessment Factors for Evaluating the Quality of Scientific and Technical Information (2003).
- Review of the Reference Dose and Reference Concentration Processes (2003).
- Interim Genomics Policy (2002).
- Establishment of:
  - EPA Group on Earth Observations, EPA GEO (2005)
  - Environmental Technology Council, ETC (2004)
  - Forum on Environmental Measurement, FEM (2003)
  - Council for Regulatory Environmental Modeling, CREM (2000)



## ***Risk Assessment Forum (RAF)***

The RAF mission is to promote consensus on risk assessment issues and to ensure that this consensus is incorporated into appropriate Agency risk assessment guidance.



## ***RAF Accomplishments***

- Population-level Ecological Risk Assessment Workshop Report (2009).
- Framework for Application of the Toxicity Equivalence Methodology for Polychlorinated Dioxins, Furans and Biphenyls in Ecological Risk Assessment (2008).
- Framework for Metals Risk Assessment (2007).
- Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants (2006).
- Cancer Guidelines and Children's Supplemental Guidance (2005).
- Framework for Cumulative Risk Assessment (2003).



## ***RAF Accomplishments (Cont.)***

- Recommended Toxicity Equivalency Factors for Human Health Risk Assessment of Dioxin and Dioxin-like Compounds (Final draft).
- Harmonization in Interspecies Extrapolation: Use of Body Weight  $\frac{3}{4}$  as a Default Method in Derivation of the Oral RfD (Final draft).
- Framework for Determining a Mutagenic Mode of Action for Carcinogenicity (External review draft).
- Application of Quantitative Data to Develop Data-Derived Extrapolation Factors for Interspecies and Intraspecies Extrapolation (External review draft).
- Probabilistic Risk Assessment White Papers (External review draft).
- Microbial Risk Assessment Guidance (Interagency draft).
- Exposure Assessment Guidelines (Internal draft).

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# ***Environmental Technology Innovations***

*Technology is “Application of Science”*

***An Innovative Approach to Address Environmental Problems***

- Leverage and integrate existing EPA environmental technology capabilities (e.g., modeling, measurements and monitoring, technology).
- Enhance Agency technology-relevant committees communications, coordination, and collaborations (e.g., from sensor technologies to decision-support tools).
- Ensure technology innovation and investment is policy and decision-making relevant.
- Incrementally change Agency paradigm to define EPA uniqueness in environmental technology endeavor.



# ***Environmental Technology Innovations Accomplishments (cont.)***

## **Modeling (CREM)**

- Supports Model Quality and Scientific Integrity
  - Guidance Document on the Development, Evaluation and Application of Environmental Models (March 2009).
- Enhances Communication and Transparency in Agency Model Usage
  - CREM Models Knowledge Base.
- Develops a Systematic Program to Support Integrated Modeling for Cross-Agency Science Priorities.
  - White Paper on Integrated Modeling for Integrated Environmental Decision Making (November 2008)
  - Administrator Jackson's response to NACEPT's review of the CREM White Paper on Integrated Modeling provided support to the activities of the CREM Integrated Modeling Program (April 21, 2009).
  - Provided a forum for coordination, discussion, and exchange of information on the development and use of integrated modeling for high priority issues such large aquatic ecosystems and climate change impacts.
  - Formed an internal/external Community of Practice on Integrated Environmental Modeling.

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# ***Environmental Technology Innovations Accomplishments (cont.)***

## **Environmental Technology Council (ETC)**

- Re-invigorated the ETC.
- EPA Climate Change Mitigation Technology Gaps and Opportunities.
- Selection of four innovative monitoring technologies for verification funding.
- Development of framework for working with the venture capital community.
- Evaluation of solid-state lighting as a compact fluorescent alternative.



# ***Environmental Technology Innovations Accomplishments (cont.)***

## **Measurements and Monitoring (FEM)**

- Finalized four policies and guidance documents for chemical, radiochemical, microbiology, and sampling for chemical and radiochemical environmental methods on validation and peer review before Agency's use.
- Made web portal available to connect all the test method information available across the entire Agency and outside the Agency.
- Established Agency policy and implementation plans for EPA laboratories.
- Established the National Environmental Laboratory Accreditation Conference (NELAC) and Program (NELAP) under a new non-profit organization called, The NELAC Institute (TNI).
- Revitalized the National Environmental Monitoring Conference (NEMC).
- Prepared draft inventory of routine or continuous monitoring programs to identify the current state of EPA monitoring information.
- Prepared preliminary inventory of all method detection limit, method quantitation limit, and calibration procedures across the Agency in addition to an accompanying glossary.
- Supported projects to further environmental technology growth.

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# ***Environmental Technology Innovations Accomplishments (cont.)***

## **Global Earth Observation System of Systems (GEOSS)**

- Jointly with OAR, funds and supports first international deployment of AIRNow in Shanghai, China and other efforts to form the backbone of an international air quality information network.
- Jointly with OEI, funded development of EPA Earth designed to view and analyze diverse types of environmental data and geospatial information from many sources that can be used for environmental decision-making.
- Virtual Beach Model Builder (i.e., four bacteria prediction models being used in the Great Lakes).
- Jointly with OPP, funded two new extramural grants under the sector Infectious Diseases IPM.
- “Biodiversity loss impacts global disease ecology,” published in Bioscience.
- Natural Resources-Canada, EPA/OSA and Environment Canada report on “Urbanization Impacts on the Near-Shore Environment of the Great Lakes: Transportation and Urban Form”.
- User Engagement Accomplishments.



## ***PHRE Accomplishments***

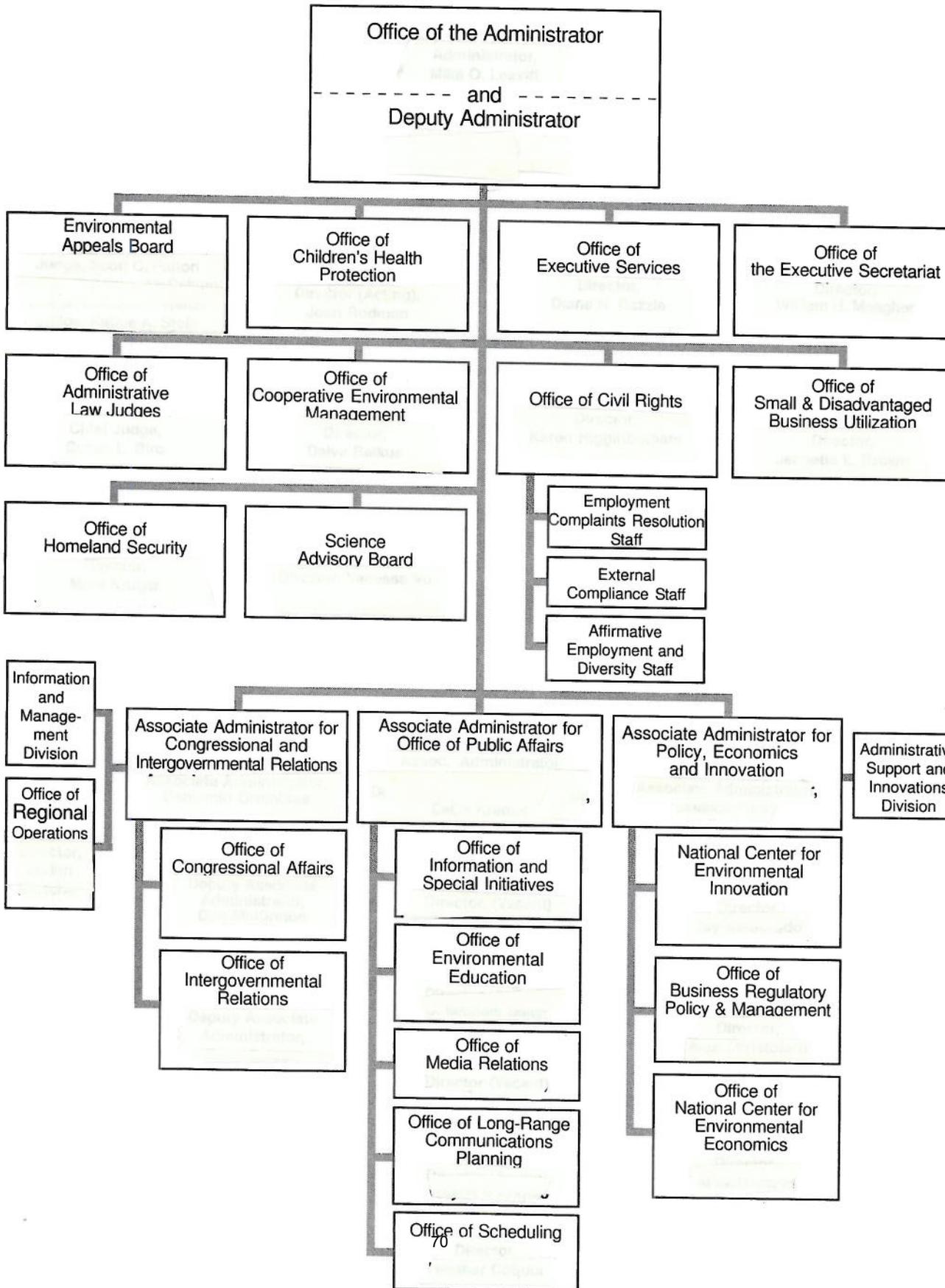
- Guided the development of the EPA Human Studies Review Board into an effective advisory body.
- Established the basic administrative infrastructure necessary for all EPA researchers to achieve compliance with the Federal regulations for the protection of human subjects.
- Established a respected EPA presence in the greater human research ethics community.



## ***OSA's Future Directions***

- Continue to support strengthening EPA Science, Transparency, Scientific Integrity, and Administrator's Priorities.
- Advance EPA science, technology and science policy with a focus on climate change, EJ and children's health.
- Continue to provide policy guidance for Agency decision-makers in their use of scientific and technical information.
- Support and strengthen Agency's development and implementation of RAF Guidance Documents.
- Enhancing Integrated Modeling for Environmental Decision Making.
- Affirm the Agency's uniqueness in environmental technology innovation and build partnership with other federal agencies and private sectors for environmental technology commercialization.
- Prepare to showcase EPA GEOS/AMI at the 2010 GEO Summit in China.
- Continue to provide regulatory oversight on human subjects research.

# OFFICE OF THE ADMINISTRATOR



**SAB Science Integration for Decision Making Fact-Finding Meeting  
Meeting with the Director, Office of the Office of Air and Radiation's Office of Policy  
Analysis and Review**

**Room 5428 ARN Ariel Rios North, 1200 Pennsylvania Avenue, NW, Washington, DC  
20064**

**Call-in Number for SAB subgroup: 866-299-3188, access code 343-9981 and press the #  
sign.**

**January 21, 2009, 3:30 - 4:30 p.m.**

**Draft Agenda**

**Purpose of Interview:** to help SAB Committee members learn about the Office of Air and Radiation's current and recent experience with science integration supporting EPA decision making so that the SAB can develop advice to support and/or strengthen Agency science integration efforts.

1. Introductions facilitated by the SAB Staff Office
2. Discussion facilitated by SAB Members
  - Practices for integrating science to support decision making
  - Consideration of public, stakeholder, external scientific, and other input in science assessment
  - Drivers and impediments to implementing past recommendations for science integration
  - Ways program receives feedback on how science is used in decision-making
  - Workforce to support science integration for decision making
3. Identification of any follow-up actions

**Planned participants:**

EPA Office of Air and Radiation

Mr. Robert Brenner, Director, Office of Policy Analysis and Review and former Acting Deputy Assistant Administrator

SAB Committee on Science Integration Committee Members

Dr. Terry Daniel, University of Arizona

Dr. Catherine Kling, Iowa State University

Dr. Thomas Wallsten, University of Maryland

Dr. Thomas Theis, University of Illinois at Chicago (by telephone)

SAB Staff Office

Dr. Vanessa Vu, Director

Dr. Angela Nugent, Designated Federal Officer

# Office of Air and Radiation Organizational Chart

