

**MINUTES from the
US Environmental Protection Agency Science Advisory Board
Meeting on the EPA's Fiscal Year 07 Research Budget
March 2-3, 2006**

Meeting Location: US EPA SAB Conference Room,
1025 F Street NW, Washington, DC 20004

PURPOSE: The EPA Science Advisory Board (SAB or the Board) met to review the FY 2007 President's Budget Request for science research at EPA. Attachment A is the Federal Register notice announcing the meeting (71 FR, 7938, February 15, 2006). A meeting agenda is included as Attachment B.

LOCATION: The meeting was held in the EPA SAB Conference Center, Room 3700, 1025 F St., NW, Washington, DC.

DATE AND TIME: Thursday, March 2, 2006 to Friday, March 3, 2006.

PARTICIPANTS: The roster of SAB members is in Attachment C and others are in the Sign in sheets in Attachment D.

MEETING SUMMARY: A summary of the meeting follows.

Thursday, March 2, 2006 (Day One of the Meeting):

1. Convene the Meeting: Mr. Thomas Miller, Designated Federal Officer convened the meeting and noted that the meeting was held under, and in compliance with, the requirements of the Federal Advisory Committee Act. Board Members are also required to adhere to conflict of interest and ethics procedures applicable to special government employees with respect to discharging their duties. Members are in compliance with these requirements.
2. Dr. Granger Morgan, EPA Science Advisory Board Chair welcomed members and identified the main topic for the meeting as the EPA FY 07 research budget review. He introduced Dr. Marty Spitzer, Congressional staff member to make a statement.
3. Dr. Spitzer welcomed the Board and noted the importance of the topic. He noted that the Board would be invited to comment before the House Science Committee's Subcommittee on Environment, Technology and Standards on the EPA research budget request. He noted that the Subcommittee is particularly interested in science investments in Homeland Security, IRIS, Water Sentinel, ecosystems (especially the continuing cuts there), sustainability, technology evaluation, and global change.
4. Mr. Jason Donaldson, US EPA OCFO, Office of Budget, Multimedia Analysis Staff, Director, provided an overview of the US EPA YF 2007 President's Budget (see Attachments E and F). He noted that overall the Agency budget for FY 2007 is down from \$7.71 Billion to \$7.32 Billion mostly reflecting decreases in infrastructure

financing. The budget highlights programs in support of homeland security (\$184 million which is an increase of \$55 million primarily for water security, environmental lab preparedness and response, and decontamination), the energy act (an increase of \$50 million for diesel emission grant program, cleaner fuels, diesel engine retrofit, underground storage tank release prevention, and renewable fuels development and implementation); regional geographic programs (Great Lakes Legacy Act for sediment cleanup; Chesapeake Bay water quality improvement, and the Corsica River pilot), state revolving funds (Clean Water State Revolving Fund reduced by \$199 million and the Drinking Water State Revolving Fund increased by \$4 million), and water infrastructure. Mr. Donaldson noted that the Science and Technology Appropriation request for FY 07 reflects a nominal increase of \$58 million (from \$730 million in the 2006 enacted to \$788 in the 2007 request); however much of this reflects an accounting change that shifts funds for facilities support into the S&T account from elsewhere in the 2006 appropriation. Of the total S&T request, \$528 million is intended for EPA Office of Research and Development. Program changes in S&T include increase for water security (\$33 million), homeland security decontamination (\$8 million), water infrastructure (\$7 million), nanotechnology (\$4 million), and Computational Toxicology (\$3 million). Decreases include climate protection (\$6 million) and ecosystems protection (\$5 million).

Member comments:

- When UST was to be phased out in favor of private sector funding?
 - Whether the continuing cuts in the face of advice to the contrary indicated a feeling in EPA that ecosystems research was not important?
 - Why EPA continues to cut climate change research?
 - Why research seemed to be decreased in favor of operational programs like monitoring?
 - How EPA assigns efforts among research and development categories?
 - What the nanotechnology increase was to address.
 - What earmarks were in the budget for FY 2006?
5. Dr. William Farland, Acting Deputy Assistant Administrator for Science, US EPA ORD, gave an overview of the ORD portion of the FY 2007 research budget (see Attachments G and H). Dr. Farland noted that ORD S&T resources for FY 2007 are proposed to be \$528 million down from the enacted level of \$539 million for FY 2006. This does not yet reflect any Congressional redirections and earmarks that last year amounted to \$33 million and in FY 2005 were \$67 million. The grants portion of the FY 07 request is about \$64 million. The ORD budget also will receive an additional \$27.8 million from the various trust funds for a total of \$557.2 million in 2007. Major increases in FY 2007 will be homeland security (\$7.8 million), water infrastructure (\$7.0 million), nanotechnology (\$4.0 million), computational toxicology \$2.7 million, and transparency in risk assessment or IRIS (\$0.5 million). Major decreases are in grants and fellowships (\$5.3 million), ecosystem protection (\$5.0 million), air toxics and NAAQS (\$4.9 million), sustainability and ETC (\$4.6 million), pesticides and toxics (\$4.1 million), human health and risk assessment (\$3.8

million), land preservation – SITE (\$3.7 million), endocrine disruptors (\$1.4 million), and global change (\$1.2 million).

Dr. Farland discussed how ORD ensures relevance, quality and performance in its programs through Peer Review, strategic and multi-year plans, data quality guidelines, and formal performance assessment.

Member comments:

- What is the level of earmarks expected for FY 2007?
 - What is the extramural vs. intramural split of the total resource?
 - BOSC has on its website, reviews of each of the research areas that are in the ORD program.
 - Are decisions to cut programs are influenced by PART (EPA representatives consistently down-played PART's role in directing cuts to programs noting that there was a need for hard decisions and PART was one of a variety of factors used in deciding on what to include in the research budget for FY 2007)? Ecosystems research is important as evidenced by the Katrina experience and it still is being reduced. What is EPA doing to find metrics for ecosystems research that reveal the true importance of the program?
 - Is EPA doing any upfront work on assessing risk from probable “released” pollutants/chemicals in case of a natural or manmade disaster?
 - How many NAS reviews does EPA believe it can get from a \$500 thousand dollar increase for IRIS?
 - How can EPA achieve a research budget doubling such as that proposed this year for NSF?
 - Where would you put the next \$10 million if it came to you today?
6. Mr. Randy Pomponio, Director, Environmental Assessment and Innovation Division, EPA Region 3 discussed ORD – Regional Office partnerships and science needs (see Attachment I). The goal of the program is to build networks and partnerships of ORD and Regional Office scientists and decision makers to plan, implement and transfer ORD research results on high-priority, longer-term science issues and to provide timely technical support on high-priority, shorter-term science issues in order to strengthen the use of science in Regional decision making. Mr. Pomponio noted ORD regional activities that are a part of this program (e.g., Regional Science Liaisons, Hazardous Substances Technical Liaisons, Regional Applied Research Efforts, Regional Science workshops, Tribal Science Council) and two specific regional science need assessments (“the 45 Day Report” and the “National Regional Science Council Top 14 Science Needs”). Mr. Pomponio noted many examples of each of these categories of efforts. ORD and Region 3 are identifying examples of how ORD research and science has led to regional outcomes. Mr. Pomponio also discussed “Sustainability Through Science: Moving from Assessment to Outcome-Based Collaborative Action that has the potential for use in PART assessments in a way that will give Regions an opportunity to help ORD demonstrate that research is resulting in environmental benefits. The potential for such evaluations was demonstrated in a presentation of the use of ORD science results in restoration of Georges Cree in Maryland. A recent 9-month initiative by ORD's Office of Science

Policy has been instrumental in demonstrating ORD's shared vision with the Regions and the commitment of ORD to future regional support.

7. Public Comments

Mr. William P. Gulledge, made a public statement on behalf of the American Chemistry Council's Nanotechnology Panel (ACCNP) (see Attachment J). Mr. Gulledge noted strong support for the view in the SAB's workshop report *Nanotechnology, Biotechnology, and Information Technology: Implications for Future Science at EPA* in which the SAB urged EPA to develop a new vision for human health and environmental protection that incorporates the latest scientific and technological advancements especially in these areas. The ACCNP urged the SAB to embrace the review of EPA projects, programs and planning documents in order to focus on strategically targeted and coordinated nanotechnology research. Mr. Gulledge suggested several efforts that the SAB could conduct to help EPA in this area.

Member Comments:

- How much is the industry itself spending on health and eco-risk research on nanotechnology?
- Could the ACC Panel provide a set of definitions relevant to this area in an attempt to bring more clarity to discussions of nanotechnology needs?

8. Member Discussions of the Air Research Budget Issues

SAB Members were provided with the following documents for use in preparing for this review and advisory. These included:

- a) **Background Information-CJ**: Portions of EPA's Congressional Justification for the FY 2007 President's Budget (see all as Attachment K in the physical FACA file):

Budget Introductory Page and Links:

<http://www.epa.gov/ocfo/budget/index.htm>

Summary of the EPA 2007 Budget

<http://www.epa.gov/ocfo/budget/2007/2007bib.pdf>

Full Congressional Justification Document for FY 2007 Budget:

a. Index Page:

<http://www.epa.gov/ocfo/budget/2007/2007cj.htm>

Table of Contents – Introduction and Overview:

<http://www.epa.gov/ocfo/budget/2007/intro.pdf>

Resource Summary Tables:

<http://www.epa.gov/ocfo/budget/2007/resource.pdf>

Goal and Objective Overview:

<http://www.epa.gov/ocfo/budget/2007/overview.pdf>

Science and Technology [Budget Request/S&T Appropriation]

<http://www.epa.gov/ocfo/budget/2007/sciencetech.pdf>

Appendix:

<http://www.epa.gov/ocfo/budget/2007/appendix.pdf>
Homeland Security (from the Superfund Appropriation)
<http://www.epa.gov/ocfo/budget/2007/superfund.pdf>
Research – Land Protection (from the Superfund Appropriation)
<http://www.epa.gov/ocfo/budget/2007/superfund.pdf>

b) **Background Information-ORD:** EPA ORD's Program/Project Descriptions for the FY 2007 President's Budget (see Attachment L)

9. **Discussion of Air Research Program Projects:** Program Projects included are i) air research, ii) mercury research, and iii) global change research. Members noted that with EPA resource constraints it will be difficult to work on NAAQS, air toxics, mobile sources, etc. all at the same time. This will make it difficult for EPA to meet its mission in all these areas. Members were also interested in how EPA would be able to handle hot-spot evaluations which are resource intensive efforts. They also pointed out the difficulty in doing all the work needed on mercury with the resource limitations in research, especially the global mass balance issue. Members also noted that EPA funds only a small portion of total federal research that might be relevant to this area. They were interested in how EPA leverages with others in this area and how much of the other federal research might be appropriate to EPA needs. From the information available to the SAB, this cannot be discerned. Members also asked about what the decrease in global climate research focused on. There is also a need to consider how global climate change issues influence other EPA mission areas. In addition, some cuts to the Eco program appear to influence this area as well. Deep sequestration of CO₂ was also an area of interest to the Board.
10. **Discussion of Water Research Program Projects:** Program Projects included are i) drinking water research, ii) water quality research, iii) water infrastructure, and iv) ecology research. Members noted the enormity of the challenges in drinking water. They were interested in the drinking water research program would be "PARTed," how EPA would be merging long term goals in this area, when multi-year plans would be revised, the intramural versus extramural proportions of the research program, and details on how the drinking water research program intersects with the homeland security program. Dr. Johnson, Chair of BOSC and Member of the Board, noted that committees concerns with the loses in the drinking water research program and the impact it would have on EPA's ability to retain its leadership role in drinking water research.

Members noted that EPA's water quality program needs are also linked to the ecological research programs and the human health research programs. Thus, cuts to those programs affect the EPA Water Quality mission. This needs to be pointed out to OMB so they understand the costs associated with cuts to these programs in terms of water quality mission reduction. Members also noted that the water monitoring programs do not provide the same quality of data as the air quality monitoring programs. They also noted that resources in the US Geologic Survey were also declining in this area.

Members were interested in how EPA arrived at its decisions to cut ecosystems research further. They also noted the links in the ecosystems restoration area to the water quality program. Members also noted the Regional Office needs for vulnerability assessment approaches that apply to ecosystems impacts. The demand is there for terrestrial landscape impact assessment. The restoration area has many links to other areas that need to be emphasized. Members noted that the BOSC and the “Millennium Assessment” both seem to go unheeded in EPA’s continuing to cut ecosystems research and reflected concern that this was due to the original PARTing of the ecosystems research program.

Members pointed out the relevance of ecosystems research to the situation that presented itself in the Gulf Coast as a result of the 2005 hurricanes, especially in the recovery area.

Members noted EPA’s advantage in the ecosystems area as being the result of its responsibility for many different issues and programs. It has a broader view than other government agencies and it should ensure there is an overarching strategy for working with them on needed research.

Members also noted the continued cuts to the Fellowship program and the negative affect it will have on the development of future environmental science leadership in the future.

11. **Discussion of Human Health Research Projects:** Program Projects included in this area are: i) human health research, ii) human health risk assessment research, iii) safe pesticides and safe products, iv) computational toxicology research, and v) endocrine disruptors research.

Members noted that cuts to the computational toxicology program seem to be inconsistent with EPA goals in this area. In addition, computational toxicology applications will require much data that does not clearly seem to be provided for. They also noted the relationship of this area to what has in the past been referred to as “core” research. Members noted their concern with what appear to be cuts in the research that would support evaluation of multiple pollutants, Members also noted concern with the apparent lack of emphasis on emerging issues in human health. Members were interested in obtaining more details on what specific research would be cut in these programs and noted that research on these issues seems always to be behind due to funding problems. Members were concerned with losses in EPA support to the National Children’s Study and other children’s research areas. Members also noted the large need for information on exposure.

Members also noted that at some point declining research funding will have an affect on whether scientists will choose to stay at EPA. This is on top of the retirement issue that EPA will face soon.

Members were interested in how EPA and other agencies coordinate on endocrine disruptors work. Even with the proposed EPA increase in this area, there is concern that enough research will be conducted.

Members reflected concern in several areas about how the resource cuts will ultimately cause these programs to receive lower scores when they are “PARTed”. Lack of resources will lead to lack of results.

Members were interested in the seeming lack of progress in getting validated studies for the endocrine disruptors program. Members noted the explosion of efforts in the many “omics” areas that could be relevant to EPA’s mission. They noted that EPA won’t be able to handle the results of all this work on its own and that there is a major need for integration with others in this area as well as retaining the expertise EPA now has. Members noted the potential benefit that work on emerging issues like “omics” might bring to resolving concerns that grew from early introductions of genetically altered organisms. Members restated their advice they first provided in the FY 2005 budget review that suggests the need for EPA to work more closely with those who are investing large amounts on developing products in the chemical, biological and nanotechnological areas. They are investing much and some of this should be directed to issues of importance to the mission of protecting human health and the environment. The agency needs to begin to communicate with industry in this area.

Members also noted that work needed to be done that will support up-front evaluation of contaminants that might be released in a natural or man-made disaster.

12. **Discussion of Technology Research Projects:** Program Projects included in this area are: i) land preservation and restoration research, nanotechnology research, and iii) GEOSS/AMI. Members were interested in how EPA was moving forward with the research that will be needed for it to attain the goal it set in the 2003 strategic plan for its Resource Conservation Challenge. Part of this would also be the need to conduct more research on economic incentives approaches.

Members noted concern that several technology programs were being terminated (environmental technology verification, Superfund innovative technology evaluation, and underground storage tanks). Members asked if the European Union continued to support such technology evaluations and how that might enhance their competitive advantage in this area.

Members echoed concerns in the nanotechnology issue discussed in the human health section of this meeting and noted the importance of research in this area. A 4\$ million increase is good, but much more is needed for EPA to be able to carry out the many missions that will involve nanotechnology. There is a need for EPA to communicate with industry on this issue and to build its capacity to evaluate nanotechnology issues that will come. EPA must be current in its expertise in this area because the industry is moving very rapidly.

Members noted concern with EPA's large cut in library capacity. This will have a large impact on the public's ability to obtain information it needs.

13. **Discussion of Economics and Decision Sciences Research Projects:** Program Projects included in this area include: i) economics and decision sciences and ii) sustainability. Members noted that the economics and decision sciences area was very small in the budget, even though it dwarfs the budget for other types of human behavioral sciences research that is critical to EPA's mission accomplishment. Members noted that research into how people are to know that a contaminated area is "clean enough" (e.g., is it safe to re-enter an area that was contaminated with weaponized or other microorganisms) have been important topics that the Board has raised in the past. This research could provide important information to the agency and it would be useful in demonstrating the results of this research program for PART. Much of the EPA research focuses on benefits transfer techniques for human risk reduction. All the ORD resource in this area is in the STAR program.

FEPA noted that it was transitioning the old pollution prevention concept to one that is focused on sustainability. The SAB will review the EPA Sustainability research strategy soon. Later, BOSC will review the Multi-year Plan for sustainability. Members noted that many outside EPA see this issue as the cutting edge in environmental decision making yet EPA has decreased resources significantly over the last years. Members were interested in the decision process that led EPA to its funding level for this area. Members wanted to know more about EPA's plans for green chemistry, life cycle analysis, assessment tools for land and water use, and technology for sustainability.

14. **Discussion of Homeland Security Research Projects:** This area is largely composed of the EPA Homeland Security Research Center program project; however, there may be resources devoted to homeland security research and/or operational support in other research program projects. This is not clear. Dr. Fischhoff, Chair of the SAB Homeland Security Committee noted the consultation that that committee had held with EPA. The Committee has drafted and will soon send a letter to the Administrator in that regard. Dr. Fischhoff complemented EPA on the interaction and noted that the HSC had discussed the Water Sentinel program with EPA though the sensitivity of the issue precludes discussing that interaction in this meeting. The HSC did note that missing research seems to be in areas of: i) organizational and behavioral science, ii) decision rules, iii) recovery or iv) risk communications. There is a persisting concern that EPA resources might be diverted from research to operations. He noted that this is an area that should be evaluated via PART given the commitment to that tool.

Members were concerned that this area was benefiting from resource transfers from other valuable research that is needed to support EPA's other mission areas (though the Agency stated that there was no such one-for-one shifting of resources in that regard). Members questioned whether the training area was seed money for training trainers and developing training or if it was to be a continuing part of the Homeland Security program.

Members had a strong concern that the program might be proceeding on the basis of further development of technologies now in the agency research portfolio because that is where successful development of a technology (e.g., sensors) could be accomplished quickly. The problem raised is that even though one can obtain a rapid development of a technology in that manner there is no assurance that the technology will fit the actual need in the field when it is called upon and that it can be used simply by those without highly advanced training. Members noted the need for a systems evaluation of threats, tools needed, turn-around time for obtaining results from the sensor, etc. so that once the tools are developed they will be useful for emergency use. Members reemphasized the need for up-front research on information needs and message acceptability so that authorities can convince the public that a “cleaned” area is safe for reuse. One member familiar with a State program in this area noted a lack of federal direction and wondered how much of the research results would be shared with the states. Members noted the need for the tools that are being developed to be useful for “all hazards” not just the envisioned the terrorism scenarios.

15. **Discussion of Fellowships:** This research includes the Fellowships Program Project only. Members noted continuing concerns with the attempts to cut this area and the criticality of the program to developing “environmental” scientists and leaders for the future. Members noted that there is only a small overlap in the fellowship program focus of the NSF with that of the EPA program.

The meeting was adjourned for the day.

Friday, March 3, 2006 (Day Two of the Meeting):

1. Dr. Stephen Heeringa, Chair of the FIFRA Scientific Advisory Panel (SAP), and Liaison Member of the SAB, updated the Board on activities of the SAP (see Attachment M).
2. Dr. George Gray, US EPA Science Advisor and Assistant Administrator for Research and Development, thanked the SAB members for taking on this task. He noted that he was new in his EPA job and that he had had extensive experience in risk analysis. Dr. Gray noted that the budget for research is an ongoing concern and that the decreases proposed caused some very difficult decisions to be made and that these had been informed by extensive discussion. He sees the need for the Board in FY 2008 to consider closely ORD’s “lines of business” – it is not the case that we can continue to take small cuts in all programs each year. ORD is now considering its overall ORD portfolio with the intention of directing research toward “what ORD is trying to do.” Then we need to have criteria to evaluate programs against those goals. It is important to work where ORD can make a difference. We also need to consider how the lines of business align with EPA’s strategic goals and what is needed for the future. It is important for ORD to focus on research that only EPA will do or which will be conducted with some EPA presence.

Members pointed out their concern with Dr. Gray's apparent starting point for program evaluation being the status quo of a decreased budget, especially since there are so many research needs and data gaps. Dr. Gray responded that salaries and expenses are increasing and that it is important for EPA to set priorities and work on areas where it can be more efficient.

Members noted the difficulty in determining what portion of ORD's total budget was to be allocated to salaries. This is important to know because with continuing salary and expense increases there must be a point at which you might not be able to fund more than salaries and have little left to apply to internal research expenses and funding research extramurally.

Members asked how the PART process influenced cuts taken in the research program. Dr. Gray replied that the Executive Council of ORD focused only on science in its decisions (i.e., the quality, relevance and importance of the research). The PART process is not playing a role at the strategic level. Members suggested that ecosystems cuts must not be at EPA's direction. The agency would like to do more but there are outside forces that are involved and EPA must learn to do a better job in informing the PART process. Members further noted the need for ORD to anticipate the requirements and inputs to PART in its linking research to strategic goals.

Members noted that there will be a need for much data in testing and validating the computational toxicology models. There appears to be very little in data generation. Dr. Gray noted that much data resides within EPA that can be used in such validation. Much data is proprietary but that does not stop its use in such tasks. Members noted that FDA appeared to be doing something like that and suggested that EPA investigate joint efforts with FDA in that regard.

Members pointed out that in regard to obtaining SAB advice on the FY 2008 and FY 2009 budgets that it will be useful for EPA to consider the advice in the report to be generated on the FY 2007 budget. Many of those issues have existed for several budget years in the past and they should be useful in informing your planning for future budgets.

Members asked Dr. Gray about his approach to balancing Homeland Security support with the more traditional areas needing research support. Dr. Gray noted that homeland security research is mandated for EPA and it must be done. EPA tries to make dual use of research it does for homeland security in that it hopes to find ways to apply that work to EPA's traditional programs.

Members noted that the EPA research budget was at best flat over the years. There appears to be no fat. How can the SAB help EPA gain increases to support research? Dr. Gray noted that the SAB could help make the case in support of the good things that ORD does. It is difficult to demonstrate the outcomes from research in terms that are easily understood.

3. **Conclusions on EPA's Research Budget:** Members developed conclusions for each of the Program Project Clusters that were discussed with EPA during Day one of the meeting. The written comments (with a light copy-edit) are presented in Attachment N in the physical file. These will provide the basis for the report to be developed for transmittal to the Administrator in the next week or two and as the basis for the testimony that the Chair must give to the US Congress on March 16, 2006. The draft report will be compiled, edited, and returned to members for comments and concurrence in the next several days and it must be completed for delivery prior to the Congressional Hearing.

4. **Points to Emphasize in the Congressional Hearing:** Members advised that the points to be emphasized in the Congressional Testimony should include:
 - a) A vigorous push back on the status quo
 - b) Recommend changing the current 25% core 75% applied research split
 - c) There is a need for greater investments, and more strategic investments in environmental research
 - d) There is a need for better structure and design for ecosystem, and sustainability research
 - e) The Board believes its research budget advice has been ignored in previous years
 - f) The Board's advice can more effective and targeted if EPA and others would provide more information on the total federal research picture on environmentally related issues
 - g) Sustainability research needs to be highlighted
 - h) Spatially distributed problems are complex and interrelated
 - i) The Chair will also use the drafted material from the meeting to refine the message.

5. **Member Issues:** Dr. Shrader-Frechette asked the Board to consider commenting to the Administrator on several issues including: i) whether to recommend conducting an independent evaluation of the voluntary Performance Track facilities program, ii) whether to recommend any changes to EPA's proposed modification of its TRI, iii) whether to recommend reconsideration of EPA's particulate matter decision, and iv) whether to recommend reconsideration of EPA's rule on human pesticide studies. Members briefly discussed the topics and decided that they would be continued until a future SAB meeting.

Mr. Miller adjourned the meeting.

Respectfully submitted

Certified as True

/ Signed /

/ Signed /

Thomas O. Miller
Designated Federal Officer

Dr. Granger Morgan, Chair
EPA Science Advisory Board

Attachments:

- A Federal Register Announcement of the Meeting
- B Meeting Agenda
- C SAB Roster
- D Sign-in Sheets
- E Presentation of Mr. Jason Donaldson, US EPA OCFO
- F US EPA OCFO Resource Tables
- G Presentation of Dr. William Farland, US EPA ORD
- H US EPA ORD Resource Tables
- I Mr. Pomponio's Presentation on Regional Office – ORD Interactions
- J Public and Written Statement of Dr. William Gullledge, ACC
- K Congressional Budget Justification FY 2007 excerpts
- L ORD Program Project Sheets
- M FIFRA SAP Update
- N Compiled and lightly edited SAB comments on the 2007 Research Budget

ATTACHMENT A

**Science Advisory Board Staff Office; Notification of a Public Meeting of the
Science Advisory Board**

[Federal Register: February 15, 2006 (Volume 71, Number 31)]

[Notices]

[Page 7938]

From the Federal Register Online via GPO Access [wais.access.gpo.gov]

[DOCID:fr15fe06-51]

ENVIRONMENTAL PROTECTION AGENCY

[FRL-8033-1]

**Science Advisory Board Staff Office; Notification of a Public
Meeting of the Science Advisory Board**

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice.

SUMMARY: The EPA Science Advisory Board (SAB) Staff Office announces a public meeting of the U.S. EPA Science Advisory Board (SAB).

DATES: A public meeting of the EPA SAB will be held on March 2, 2006 from 8:30 a.m. to approximately 5 p.m. eastern time and on March 3, 2006 from 8:30 a.m. to approximately 3 p.m. eastern time.

ADDRESSES: The meeting will be held at the U.S. EPA Science Advisory Board Staff office, 1025 F Street, NW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: Members of the public who wish to obtain further information concerning this meeting may contact Mr. Thomas O. Miller, Designated Federal Officer (DFO), by mail at EPA SAB Staff Office (1400F), U.S. EPA, 1200 Pennsylvania Avenue, NW., Washington, DC 20460; by telephone at (202) 343-9982; by fax at (202) 233-0643; or by e-mail at: miller.tom@epa.gov. General information concerning the SAB can be found on the SAB Web site at: <http://www.epa.gov/sab>.

SUPPLEMENTARY INFORMATION: The SAB was established by 42 U.S.C. 4365 to provide independent scientific and technical advice, consultation, and

recommendations to the EPA Administrator on the technical basis for Agency positions and regulations. The SAB is a Federal advisory committee chartered under the Federal Advisory Committee Act (FACA), as amended, 5 U.S.C., App. The SAB will comply with the provisions of FACA and all appropriate SAB Staff Office procedural policies.

Background: The purpose of this meeting will be to allow the SAB to discuss with Agency representatives future research priorities of importance to the achievement of EPA's mission to protect human health and the environment. If any other topics are added to the agenda, they will be reflected in the meeting agenda that will be available on the SAB Web site at: <http://www.epa.gov/sab> (under "Meeting Agendas") in advance of the meeting.

Availability of Meeting Materials: Materials in support of this meeting will be placed on the SAB Web site at: <http://www.epa.gov/sab> in advance of this meeting.

Procedures for Providing Public Input: Interested members of the public may submit relevant written or oral information for the SAB to consider during the advisory process.

Oral Statements: In general, individuals or groups requesting an oral presentation at a public meeting will be limited to five minutes per speaker, with no more than a total of one hour for all speakers. Interested parties should contact Mr. Miller, DFO, at the contact information noted above, by February 28, 2006, to be placed on the public speaker list for the March 2, 2006 meeting.

Written Statements: Written statements should be received in the SAB Staff Office by February 28, 2006, so that the information may be made available to the SAB for their consideration prior to this meeting. Written statements should be supplied to the DFO in the following formats: one hard copy with original signature, and one electronic copy via e-mail (acceptable file format: Adobe Acrobat PDF, WordPerfect, MS Word, MS PowerPoint, or Rich Text files in IBM-PC/Windows 98/2000/XP format).

Meeting Access: For information on access or services for individuals with disabilities, please contact Mr. Thomas O. Miller at 202-343-9982 or miller.tom@epa.gov. To request accommodation of a disability, please contact Mr. Miller, preferably at least 10 days prior to the meeting to give EPA as much time as possible to process your request.

Dated: February 9, 2006.

Anthony Maciorowski,
Associate Director for Science, EPA Science Advisory Board Staff Office.

[FR Doc. E6-2144 Filed 2-14-06; 8:45 am]

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Notices For 2007 2006 2005 2004 2003 2002 2001 2000 1999 1998 1997 1996 1995
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ATTACHMENT B

**U.S. Environmental Protection Agency
Science Advisory Board
Meeting Agenda
The Woodies' Building
1025 F St., NW
The SAB Conference Center
Washington, DC 20004
March 2-3, 2006**

March 1, 2006

Purpose of the Meeting: The Board will meet to discuss EPA's research priorities for FY 2007-2008 with EPA representatives. The Board will report on this activity and will conduct other business as time permits.

Thursday, March 2, 2006

8:30 a.m.	Convene the Meeting	Thomas O. Miller <i>Designated Federal Officer, EPA SAB</i>
	Welcome	Dr. Vanessa Vu <i>Director, EPA SAB Staff Office</i>
8:45 a.m.	Purpose and Approach of the Meeting	Dr. M. Granger Morgan <i>Chair EPA Science Advisory Board</i>
9:00 a.m.	Overview of the EPA FY 2007 Budget	Mr. Jason Donaldson <i>Staff Director Multimedia Analysis Staff US EPA OCFO Office of Budget</i>
9:30 a.m.	Overview of the EPA FY 2007 Research Budget	Dr. William Farland <i>Acting Deputy Assistant Administrator for Science US EPA Office of Research and Development</i>
10:00 a.m.	Overview of Regional Research and Technical Support Needs	Dr. John Pomponio <i>Director, Environmental Assessment and Innovation Division US EPA Region 3</i>

10:30 a.m.	Public Comments	See List
10:45 a.m.	Discussions of Research Program/Projects with ORD, Regions and Programs:	
	<u>Air</u>	SAB Leads
	Air Research	ORD, Regional Office
	Mercury Research	and Program Office
	Global Change Research	Representatives
11:30 a.m.	Discussions of Research Program/Projects with ORD, Regions and Programs:	
	<u>Water</u>	SAB Leads
	Drinking Water Research	ORD, Regional Office
	Water Quality Research	and Program Office
	Water Infrastructure	Representatives
	Ecology Research	
12:30 p.m.	Lunch	
1:15 p.m.	Discussions of Research Program/Projects with ORD, Regions and Programs:	
	<u>Human Health</u>	SAB Leads
	Human Health Research	ORD, Regional Office
	Human Health Risk Assessment Research	and Program Office
	Safe Pesticides and Safe Products	Representatives
	Computational Toxicology Research	
	Endocrine Disruptors Research	
2:15 p.m.	Discussions of Research Program/Projects with ORD, Regions and Programs:	
	<u>Technology</u>	SAB Leads
	Land Preservation and Restoration	ORD, Regional Office
	Nanotechnology Research	and Program Office
	GEOSS / AMI	Representatives
3:00 p.m.	Discussions of Research Program/Projects with ORD, Regions and Programs:	
	<u>Economics and Decision Sciences</u>	SAB Leads
	Economics and Decision Sciences	ORD, Regional Office
	Sustainability	and Program Office
		Representatives
3:30 p.m.	Discussions of Research Program/Projects with ORD, Regions and Programs:	
	<u>Homeland Security</u>	SAB Leads
		ORD, Regional Office
		and Program Office

National Homeland Security Research Center

Representatives

- 4:15 p.m. **Discussions of Research Program/Projects with
ORD, Regions and Programs:**
Fellowships
- 4:45 p.m. Action Items from Day 1
- 5:00 p.m. Adjourn for the Day

SAB Leads
ORD, Regional Office
and Program Office
Representatives

Dr. Granger Morgan

Friday, March 3, 2006

- 8:45 a.m. **Reconvene the Meeting**
- 9:15 a.m. **Comments by the EPA Science Advisor and Assistant
Administrator for Research and Development**
- 9:45 a.m. **Comments by the Deputy Administrator of the US
Environmental Protection Agency**
- 10:15 a.m. **Board Discussion of Conclusions and
Recommendations**
- 12:00 a.m. **Lunch**
- 1:00 p.m. **Action Items and Next Steps**
- 2:00 pm **Adjourn the Meeting**

Thomas O. Miller, *DFO*

Dr. George Gray,
*Assistant Administrator
for Research and
Development and EPA
Science Advisor*

Mr. Marcus Peacock
*Deputy Administrator
US Environmental
Protection Agency*

All

All

All

Thomas O. Miller, *DFO*

ATTACHMENT C

U.S. Environmental Protection Agency Science Advisory Board Budget Review Participants March 2-3, 2006

CHAIR

Dr. M. Granger Morgan, Carnegie Mellon University, Pittsburgh, PA

SAB MEMBERS

Dr. Gregory Biddinger, ExxonMobil Biomedical Sciences, Inc, Houston, TX

Dr. James Bus, The Dow Chemical Company, Midland, MI

Dr. Trudy Ann Cameron, University of Oregon, Eugene, OR

Dr. Deborah Cory-Slechta, University of Medicine and Dentistry of New Jersey and Rutgers State University, Piscataway, NJ

Dr. Kenneth Dickson, University of North Texas, Denton, TX

Dr. Baruch Fischhoff, Carnegie Mellon University, Pittsburgh, PA

Dr. A. Myrick Freeman, Bowdoin College, Brunswick, ME

Dr. James Galloway, University of Virginia, Charlottesville, VA

Dr. Rogene Henderson, Lovelace Respiratory Research Institute, Albuquerque, NM

Dr. Steven Heeringa, Chair, FIFRA SAP and Liaison to the SAB, University of Michigan, Ann Arbor, MI

Dr. Philip Hopke, Clarkson University, Potsdam, NY

Dr. James H. Johnson, Howard University, Washington, DC

Dr. George Lambert, UMDNJ-Robert Wood Johnson Medical School/ University of Medicine and Dentistry of New Jersey, New Brunswick, NJ

Dr. Jill Lipoti, New Jersey Department of Environmental Protection, Trenton, NJ

Dr. Genevieve Matanoski, Johns Hopkins University, Baltimore, MD

Dr. Michael J. McFarland, Utah State University, Logan, UT

Dr. Jana Milford, University of Colorado, Boulder, CO

Dr. Rebecca Parkin, The George Washington University, Washington, DC

Mr. David Rejeski, Woodrow Wilson International Center for Scholars, Washington, DC

Dr. Joan B. Rose, Michigan State University, E. Lansing, MI

Dr. Kathleen Segerson, University of Connecticut, Storrs, CT

Dr. Kristin Shrader-Frechette, University of Notre Dame, Notre Dame, IN

Dr. Deborah Swackhamer, University of Minnesota, Minneapolis, MN

Dr. Thomas L. Theis, University of Illinois at Chicago, Chicago, IL

Dr. Valerie Thomas, Georgia Institute of Technology, Atlanta, GA

Dr. Robert Twiss, University of California-Berkeley, Ross, CA

Dr. Lauren Zeise, California Environmental Protection Agency, Oakland, CA

SCIENCE ADVISORY BOARD STAFF

Mr. Thomas Miller, Washington, DC

ATTACHMENT D

---Sign-in Sheets ---

In physical FACA file only

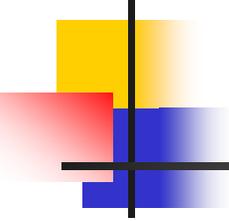
ATTACHMENT E

U.S. Environmental Protection Agency

FY 2007 President's Budget

Prepared for the Science Advisory Board March 2-3, 2006 Public Meeting



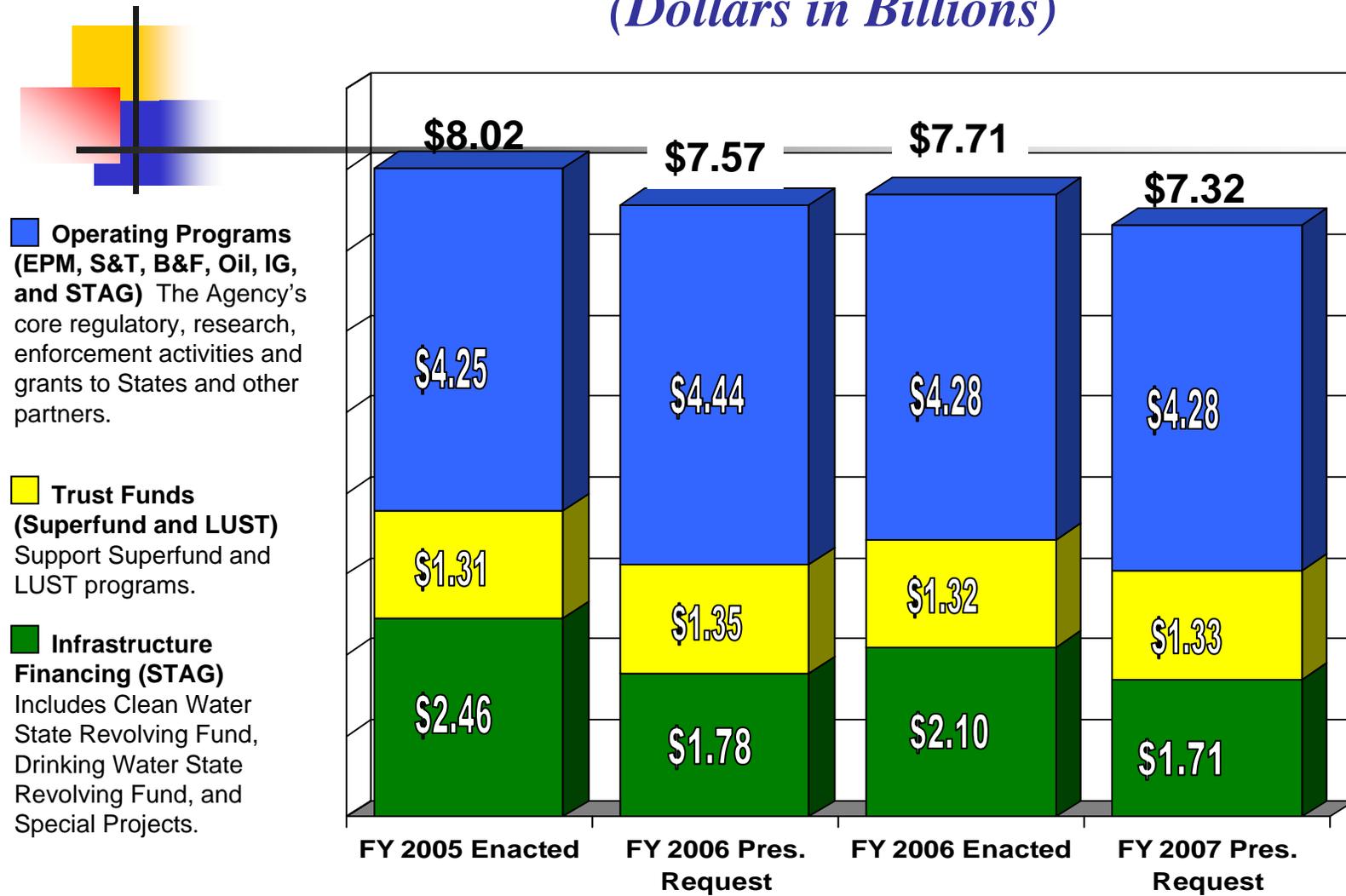


FY 2007 President's Budget Request

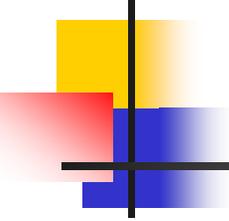
- EPA's FY 2007 Budget reflects President's commitment to providing critical resources needed for Nation's highest priorities: fighting War on Terror, strengthening our homeland defenses, and sustaining the momentum of our economic recovery.
- EPA continues to provide funding that supports innovation and collaboration, promotes economic competitiveness, ensures the best available science, and a focus on Homeland Security.

EPA Resources by Major Category

(Dollars in Billions)



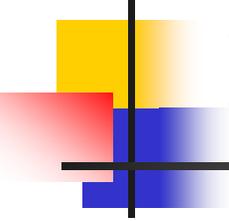
Note: Totals may not add due to rounding.



Budget Request Highlights

FY 2007 Request

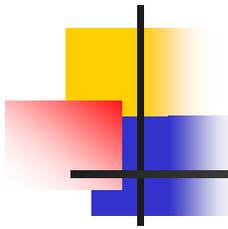
- Homeland Security
- Energy Act
- Regional Geographic Programs (Great Lakes and the Chesapeake Bay)
- State Revolving funds
- Water Infrastructure



Budget Request Highlights

Homeland Security – The FY 2007 Presidents Budget requests \$184 M, \$55 M more than FY 2006 enacted levels. Priorities include an increase of:

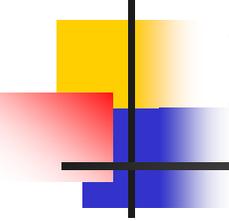
- \$33 M for improved Water Security, including additional Water Sentinel pilots. (S&T)
- \$10 M to develop Environmental Laboratory Preparedness and Response (ELPR) capability to expedite decontamination and threat assessment through a laboratory network, includes standardizing methods & measurements and connectivity between member labs. (SF)
- \$10.0 M to provide for Environmental Decontamination, including related R&D. (S&T, EPM, SF)



Budget Request Highlights

EPA Energy Act: Supports new priorities as outlined in the for Energy Policy Act of 2005:

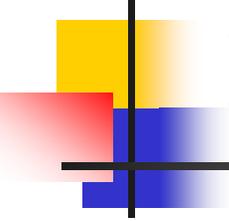
- \$50 M for the new Diesel Emission Reduction Grant Program, to support cleaner fuels, and diesel engine retrofits, rebuilds & replacements. (STAG)
- \$38 M in UST funding, \$26 M over FY 2006 enacted levels, to prevent future releases from USTs. (STAG)
- \$11 M for the development and implementation of renewable fuel standards. (EPM)



Budget Request Highlights

Regional Geographic Programs – Reflects EPA's collaborative efforts to protect and sustain our environment:

- Great Lakes– Requesting \$70 M, an increase of \$20 M over FY 2006 enacted budget levels. Includes \$50 M for the Great Lakes Legacy Act to accelerate clean up of contaminated sediments. (EPM)
- Chesapeake Bay - Requesting \$26 M, an increase of \$4 M over FY 2006 enacted, for improving water quality, overall protection, and restoration of the Chesapeake Bay and its tributaries, including \$6 M for the Corsica River pilot. (EPM)



Budget Request Highlights

Clean Water State Revolving Fund –Requesting \$688 M, a reduction of \$199 M over FY 2006 enacted Levels (STAG)

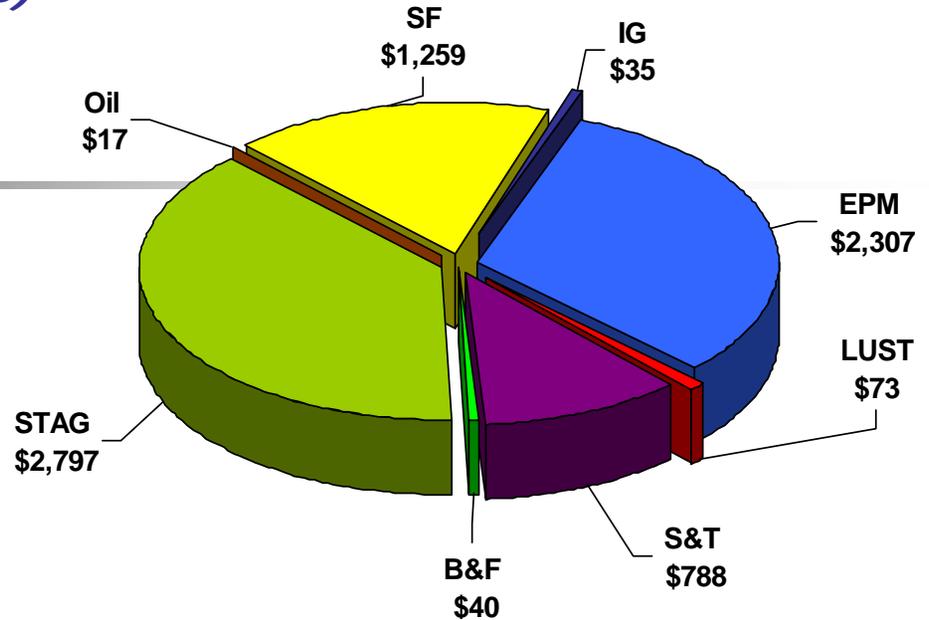
- Continues the Administration's commitment to capitalize the fund through 2011.
- The program is to meet long-term revolving target of \$3.4 B.

Drinking Water State Revolving Fund – Requesting \$842 M, an increase of \$4 M over 2006 enacted levels (STAG)

- Continues the Administration's commitment to capitalize the fund through 2018.
- The program is to meet long-term revolving target of \$1.2 B.

FY 2007 Appropriation Totals

(Dollars in Millions)



**FY 2007
President's Budget
\$7.3 Billion**

	<i>FY 2005</i> <i>Enacted</i>	<i>FY 2006</i> <i>PresBud</i>	<i>FY 2006</i> <i>Enacted</i>	<i>FY 2007</i> <i>PresBud</i>	<i>FY 2006 EN</i> <i>to FY 2007</i>
EPM	\$2,295	\$2,404	\$2,347	\$2,307	(\$40)
S&T (excludes SF transfer)	\$744	\$761	\$730	\$788	\$58
B&F	\$42	\$40	\$40	\$40	\$0
STAG	\$3,575	\$2,961	\$3,148	\$2,797	(\$350)
LUST	\$69	\$73	\$80	\$73	(\$7)
Oil	\$16	\$16	\$16	\$17	\$1
IG (excludes SF transfer)	\$38	\$37	\$37	\$35	(\$2)
SF (includes Transfers to IG and S&T)	\$1,247	\$1,279	\$1,231	\$1,259	\$28
Total	\$8,025	\$7,521	\$7,626	\$7,315	(\$311)

Numbers may not add due to rounding

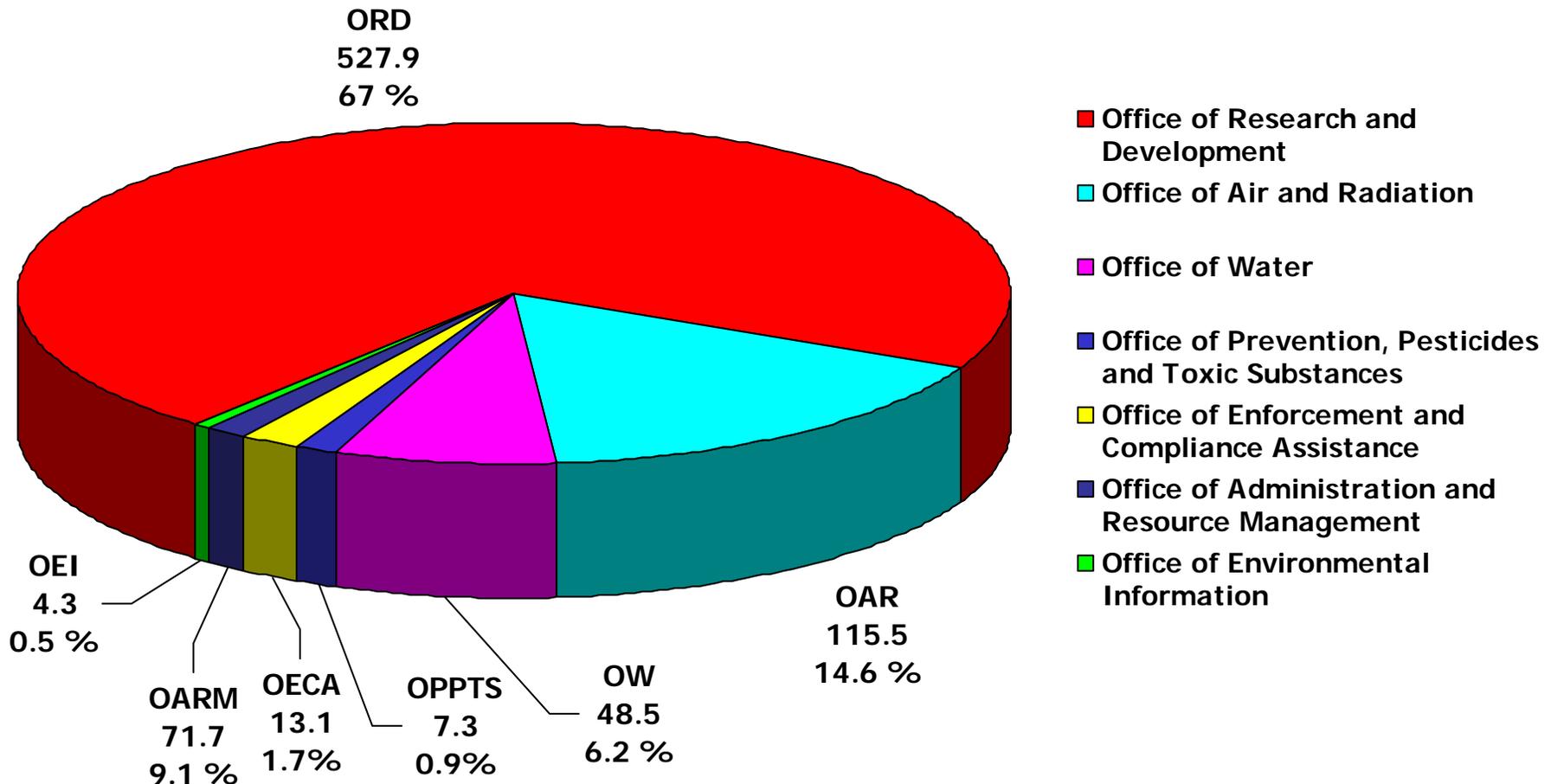
¹ Reflects FY 2005 Enacted 0.8% Rescission

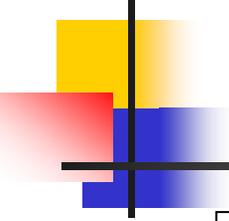
² FY 2006 President's Budget **excludes** \$50M to be derived from Toxics and Pesticides Fees

³ Reflects FY 2006 Enacted 0.476% plus 1% additional rescission. Does not include \$80M rescission.

FY 2007 S&T Request by NPM

(Dollars in Millions)





Program changes to S&T Highlights FY 2007 Request

■ Increases:

- Water Security +\$33 M
- HS Decontamination +\$8 M
- Water Infrastructure +7 M
- Nanotechnology +\$4 M
- Computational Toxicology +3 M

■ Decreases:

- Climate Protection Program - \$6 M
- Ecosystems Protection - \$5 M

ATTACHMENT F

--- EPA OCFO Resource Tables ---

In physical FACA file only

ATTACHMENT G
FY 2007 President's Budget:
Advancing Science and Innovation

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

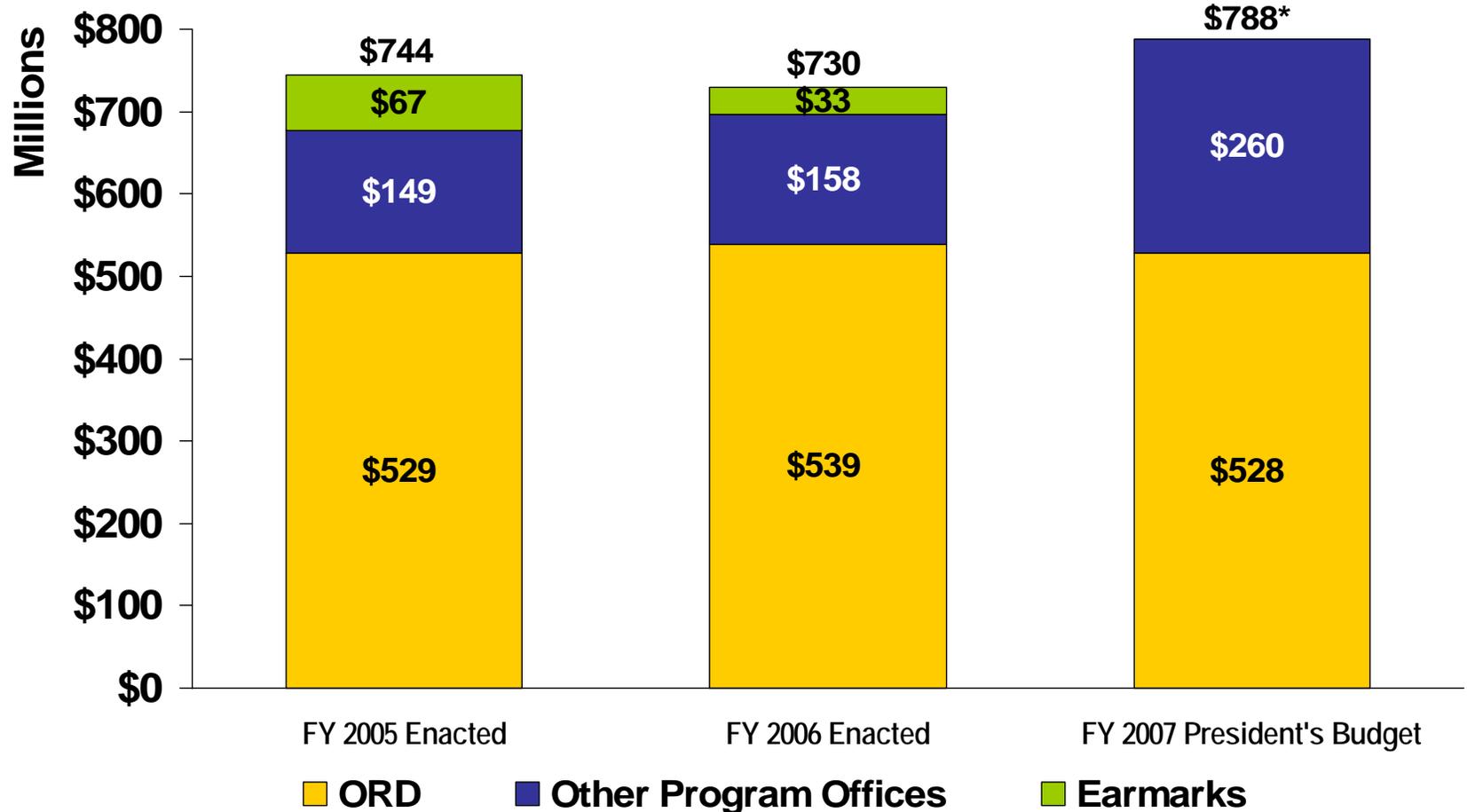
William H. Farland, Ph.D.
Acting Deputy Assistant Administrator for Science

Presentation to the
Science Advisory Board Executive Committee
March 2, 2006

Briefing Overview

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

EPA's S&T Account



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

Research Areas for FY 2007

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

Ensuring Relevance, Quality, and Performance



Relevance

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

Quality

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

Performance

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

Science Advisory Board Reviews

FY 2005

Multi-year Plans

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

Other Research/Science Products

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

FY 2006

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

Board of Scientific Counselors

FY 2005

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

FY 2006

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

Program Assessment Rating Tool (PART)

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

ORD PART Reviews

2003

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

2004

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

2005

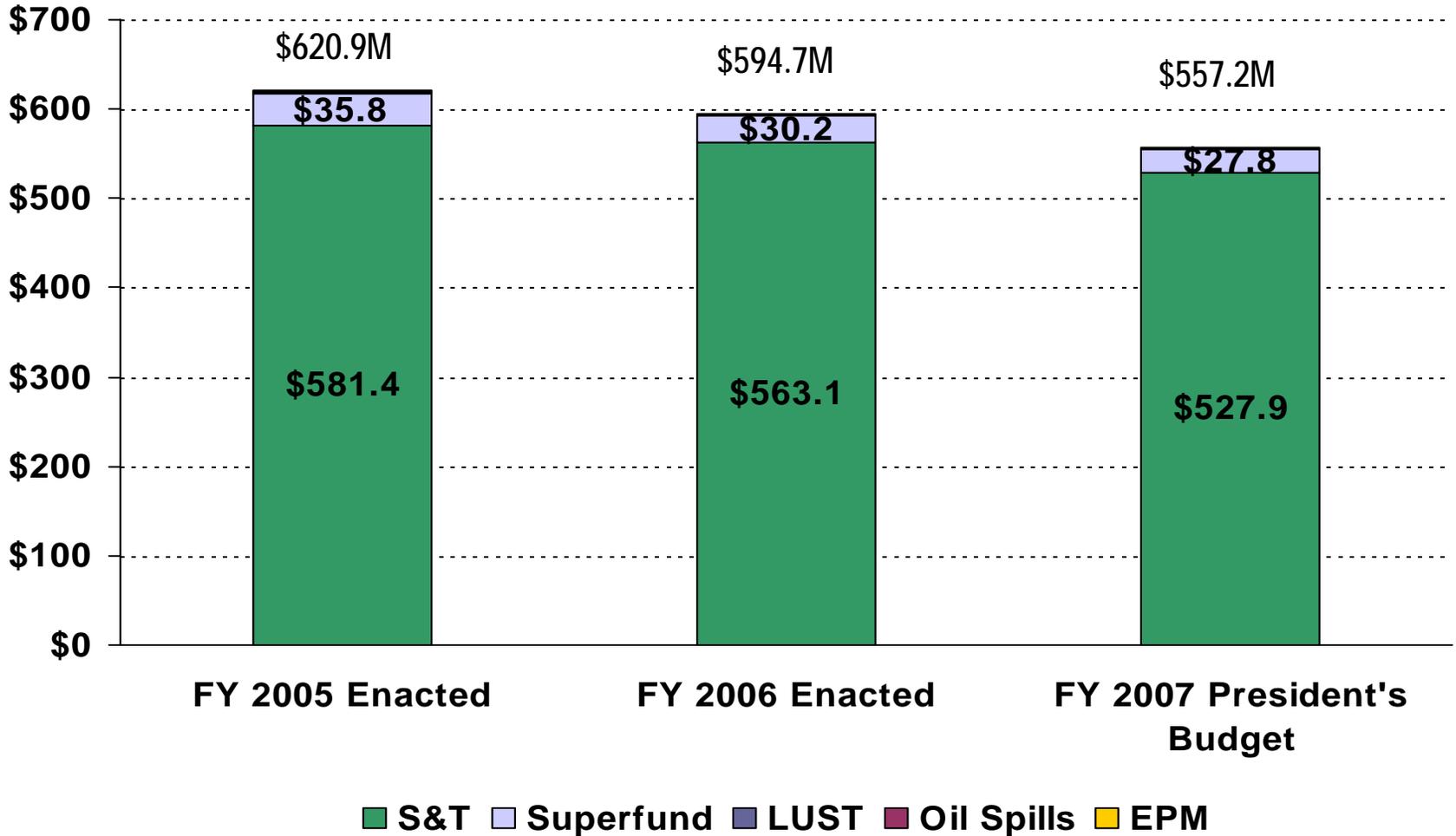
- Human Health Research - Adequate
- Drinking Water Research - Adequate
- National Ambient Air Quality Standards (re-PART) - Adequate
- Ecological Research (re-PART) – Ineffective

Proposed for 2006

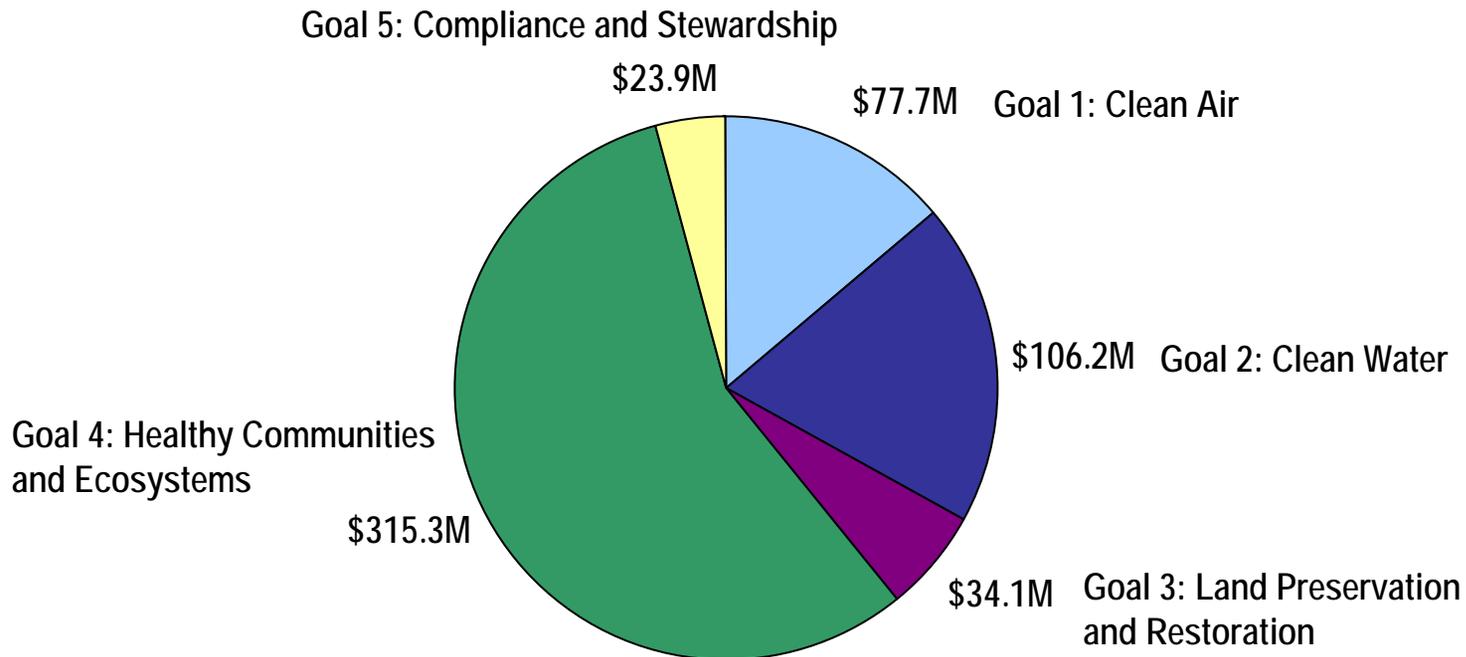
- Global Change Research
- Superfund/Land Protection & Restoration Research
- Water Quality Research

ORD Budget by Appropriation

(Dollars in Millions)

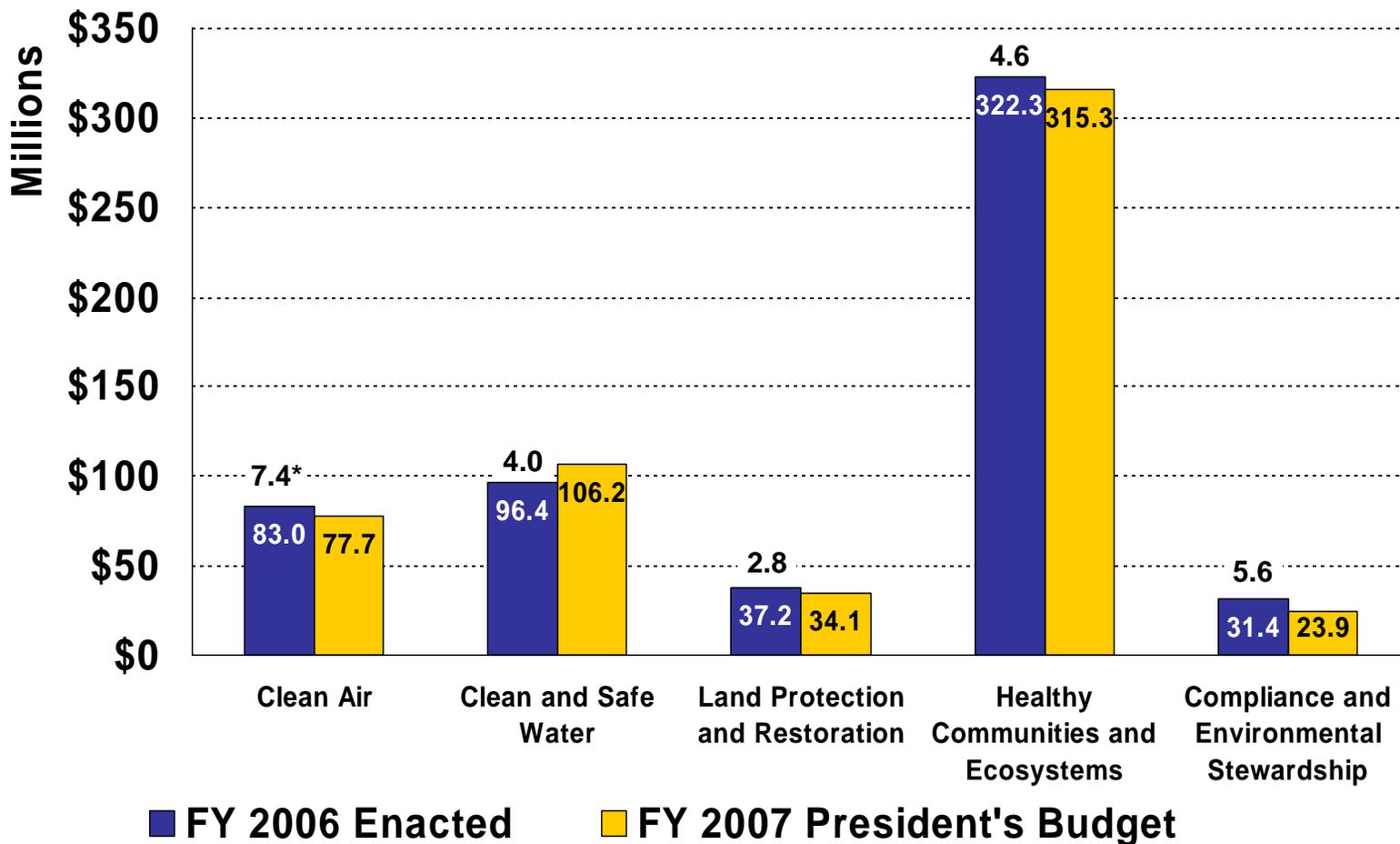


ORD's FY 2007 President's Budget by Goal \$557.2M (Total All Appropriations*)



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

ORD Budget by Strategic Goal



*Earmarks above bars.

Major ORD Increases in FY 2007

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

Major Decreases in FY 2007

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

Homeland Security: + \$7.8M

Increase focuses on decontamination and consequence management, including:

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

Water Infrastructure: + \$7.0M

- EPA's "Gap Analysis" report identified several issues concerning the ability of our nation to keep up with the water infrastructure needs in the future, citing a \$200 - \$400 Billion cost for upgrading the U.S. water infrastructure
- In addition, the U.S. Conference of Mayors 2005 National City Water Survey rated aging water infrastructure a top priority
- EPA's FY 2007 Water Infrastructure initiative will support innovative approaches/technologies to reduce that cost
- Better Management of Existing Wastewater Collection System Infrastructure: \$5.0M
 - Investigation of advanced design concepts for wastewater collection systems that reduce construction costs and increase carrying capacity and storage capabilities
 - Research and evaluation of performance and cost of innovative repair, rehabilitation, and replacement technologies
 - Evaluation of novel techniques to improve performance and extend service life of existing wastewater systems
- Increase Water Efficiency in Drinking Water Distribution Systems: \$2.0M
 - Research and evaluation of innovative approaches to: detect, locate, characterize, and repair leakage in distribution systems; and inspect and assess the condition of high risk water mains
- Results will assist municipal utilities to meet CWA and SDWA requirements and, in turn, help narrow the gap between available infrastructure funding and the projected national need

Nanotechnology at ORD: +\$4.0M

- To help advance nanotechnology's potential to create new and enhanced products in an environmentally sound manner, the President's Budget will strengthen EPA's ongoing efforts to:
 - (1) understand the potential human health and ecological impacts of manufactured nanomaterials, and
 - (2) investigate how nanotechnology can be used in environmental applications such as improved monitoring, pollution control, and site remediation
- Based on recommendations in the EPA Science Policy Council's 2006 draft Nanotechnology White Paper, the focus of EPA's nanotechnology research will be on Agency decision support and the safe use of nanomaterials in environmental applications
- For FY 2007, a new in-house program will be integrated with ORD's existing STAR and SBIR extramural nanotechnology research and will be coordinated with other federal environmental, health, and safety research conducted under the National Nanotechnology Initiative, as well as with international organizations such as the OECD

Computational Toxicology: +\$2.7M

- The computational toxicology program addresses the need to increase the soundness of risk assessment decisions within the Agency and increase the capacity to prioritize, screen, and evaluate chemicals by enhancing the predictive understanding of toxicity pathways
- In FY 2007, ORD will:
 - Support research to implement a biologically-based system to reduce uncertainty in the prioritization and categorization of chemicals for classical toxicological testing
 - Add a number of new toxicological databases to the distributed structure-searchable toxicity (DSSTox) system, a web based effort bringing carefully annotated, standardized toxicity databases together as a public resource
 - Develop computational models of biological processes relevant to the toxicity of high priority environmental contaminants
- As a result of these efforts, the Agency will be less reliant on default assumptions for risk assessments and able to accurately characterize the true uncertainty associated with risk predictions for various chemical classes (e.g., EDCs, HPVs)

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

- Enhance the risk assessment process through incorporating additional peer review and consultation from the National Academy of Sciences (NAS) for high impact and controversial risk assessments
- Expansion of peer review to the NAS, in addition to increased opportunities for review by other federal agencies and the public, will directly improve the quality, objectivity, and utility of information disseminated by EPA

Some Strategic Directions

Goal 1: Clean Air

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

Goal 2: Clean and Safe Water

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

Goal 3: Land Protection and Restoration

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

Goal 4: Healthy Communities and Ecosystems

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

Goal 5: Compliance and Environmental Stewardship

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

Conclusions

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

ATTACHMENT H

--- EPA ORD Resource Tables ---

In physical FACA file only

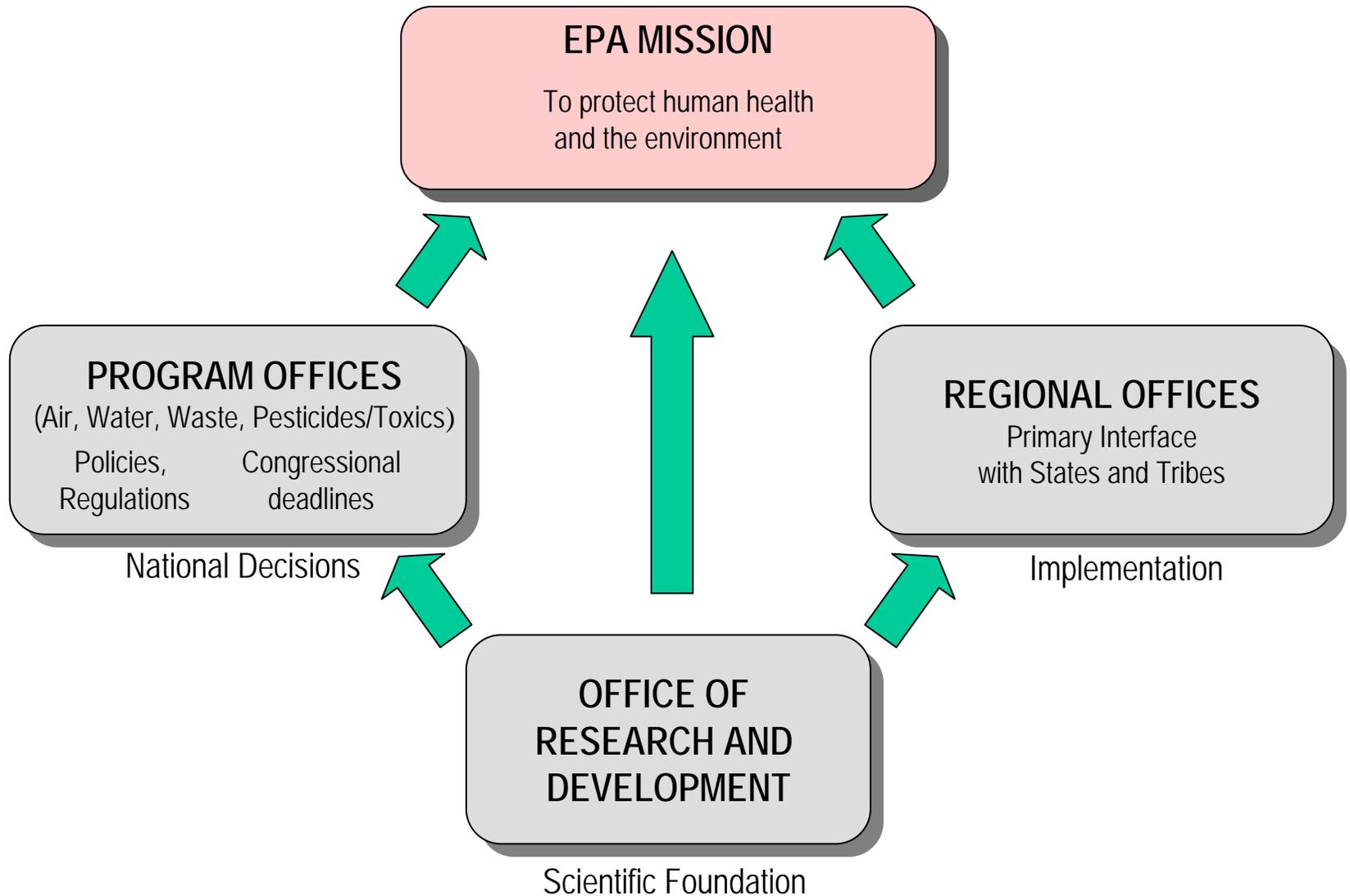


ATTACHMENT I
ORD/Regional Partnership

Briefing for
SAB

March 2, 2006

Support for EPA's Mission



ORD's Regional Science Program

■ Goal

- Build networks and partnerships of ORD and Regional Office scientists and decision makers to...
 - Plan, implement, and transfer ORD research results on high-priority, longer-term science issues
 - Provide timely technical support on high-priority, shorter-term science issues

to strengthen the use of science in Regional decision making
(Regions, States, and Tribes)



ORD's Regional Activities

- Regional Science Liaisons (RSLs)
- Hazardous Substances Technical Liaisons (HSTLs)
- After the Storm: Katrina Recovery
- ORD Lead Region Scientist
- **Regional Applied Research Effort (RARE)**
- Regional Methods Program (RM)
- Regional Research Partnership Program (R2P2)
- **Regional Science Topic Workshops**
- Regional Product Expos
- Tribal Science Council
- Science Summits
- **Science in Regional Decision Making (45-Day Report)**
- **National Regional Science Council Top 14 Science Needs**
- **Science to Outcomes Initiative**



RARE and RM Programs

- Funding
 - RARE = \$200K/Year/Region
 - RM Program = \$600K/Year
- Outcomes
 - Near-Term Research Results for Regions
 - Linkages between Regions and ORD Labs/Centers
- 28 RARE/10 RM projects awarded in FY2005
- FY2006 Regional RARE competitions underway
- FY2006 RM projects selected by RS&T Directors in December 2005
 - 8 ongoing projects; 3 new projects



Research Highlights

- Region 1: RARE--contaminated sediment inventory for New England; targeting assessment/remediation actions
- Region 2: RARE—sediment contaminant 3-D mapping of NY/NJ Harbor estuary; targeting remediation efforts
- Region 3: RM—sub-threshold PCB congener analysis; assessing risk below ambient water quality criteria
- Region 6: RARE--commercial sensing (Hawk camera); detecting previously unidentified sources of ozone precursor air emissions (barge hatches, storage tank pressure relief valves, etc.)



Regional Science Workshops

- Mercury, 10/98
- Asthma, 6/99
- Sediment, 10/99
- Science Info Fair, 10/99
- FIELDS, 1/00
- Nonindigenous Species, 5/00
- MTBE/Ground Water, 6/00
- Pesticides, 10/00
- Endocrine Disruptors, 5/01
- Emerging Pathogens, 9/01
- Aquatic Wildlife Criteria, 12/01
- Critical Ecosystems, 6/02
- Air Toxics Exposure, 6/02
- Ecological Risk at Contaminated Sediment Sites, 6/02
- Cumulative Risk, 11/02
- PCB Congeners RA/RM, 12/02
- Vapor Intrusion, 2/03
- Emerging Pollutants, 8/03
- Inhalation Risk Assessment, 9/03
- Ecological Indicators, 5/04
- Science of Environmental Justice, 5/04
- Animal Feeding Operations, 12/04
- Pharmaceuticals, 8/05
- Human Subjects, 9/05
- Remote Sensing/Landscape Characterization, 11/05
-
- Upcoming Workshops
 - Future of Risk Assessment
 - Ephemeral and Isolated Waters



Science in Regional Decision Making (45-Day Report)

- In May 2003, Regions initiated 45-day review of...
 - How the Regions use science in their decision making
 - Obstacles to the incorporation of sound science in Regional decisions
 - Recommendations for addressing these obstacles
- Workgroup issued report in July 2004
 - 44 recommendations considered; 38 recommended for action
- Status of the 38 recommendations assessed in July 2005
 - 5 recommendations completed
 - 24 have actions ongoing
 - 3 included in FY2006 budget requests or raised as budget concerns
 - 5 are on hold
 - 2 are proposed to be dropped for tracking purposes
 - 2 have no further action planned



National Regional Science Council

“Top” Science Needs

- The NRSC, working with the Regional Science Councils, identified 14 cross-regional, cross-programmatic science needs.
- OSP facilitated contact between the Regional lead and appropriate ORD National Program Director.
- Workgroups have been/are being convened to follow-up on the topics. Many workgroups are being merged with existing, related EPA efforts.



TOP REGIONAL SHORT TERM SCIENCE NEEDS

NRSC-14: Status Report (12/15/2005)

Estimate Mercury Fish Tissue Concentrations and Predict Impacts of Mercury Deposition on Watersheds

Development or Refinement of Methods to Determine Speciation of Arsenic, Chromium, and Mercury in Soils, Sediments, Water and Biota

Real Time Pathogen Indicators and Microbial Source Tracking

Development of Procedures for Calculating Non-carcinogenic Risks for Currently Non-regulated Compounds

Marine and Freshwater Contaminated Sediments

Compile and Analyze Existing Vapor Intrusion Data and Evaluation Methods

Modeling and Monitoring the Fate of Mercury Emissions Across Ecosystems

Innovative Treatment Technologies for NAPLs, Chlorinated Solvents, Chlorinated Pesticides, Dioxin, Wood Treated Wastes and Metals

TMDL Research Needs

Pharmaceuticals and Personal Care Products

Full-scale Development of Ballast Water Treatment on Ships

Viable Alternatives to Chlorinated Solvents

Mine Waste Management Techniques Using Automated Treatment Systems and Remote Telemetry Monitoring Technologies

Air Monitoring and Assessment of Impacts from Pesticide Drift



Science to Outcomes Initiative

- ORD/Region 3 collaborative effort
- Objectives
 - Identify examples of how ORD research/science has led to Regional outcomes
 - Short-term: Changes in abilities, knowledge, attitudes or skills followed by changes in client behavior and action (e.g., use of research in decision making)
 - Intermediate: Measurable changes in environmental contaminants, stressors, or exposures
 - Long-Term: Measurable long-term improvements in ecosystem protection and/or human health
 - Expand Region/ORD collaboration to foster opportunities for additional successful applications of ORD science



*Sustainability Through Science: Moving
from Assessment
to Outcome-Based Collaborative Action*

ORD and Regions
Partnerships
for Continuing Success



Region 3: The Mid-Atlantic Region

THE OPPORTUNITY

- There's an opportunity for the Regions to help ORD demonstrate that research is resulting in environmental benefits (e.g. PART)
- There's an opportunity to more effectively deliver ORD science & expertise to the Regions for use in program decisions

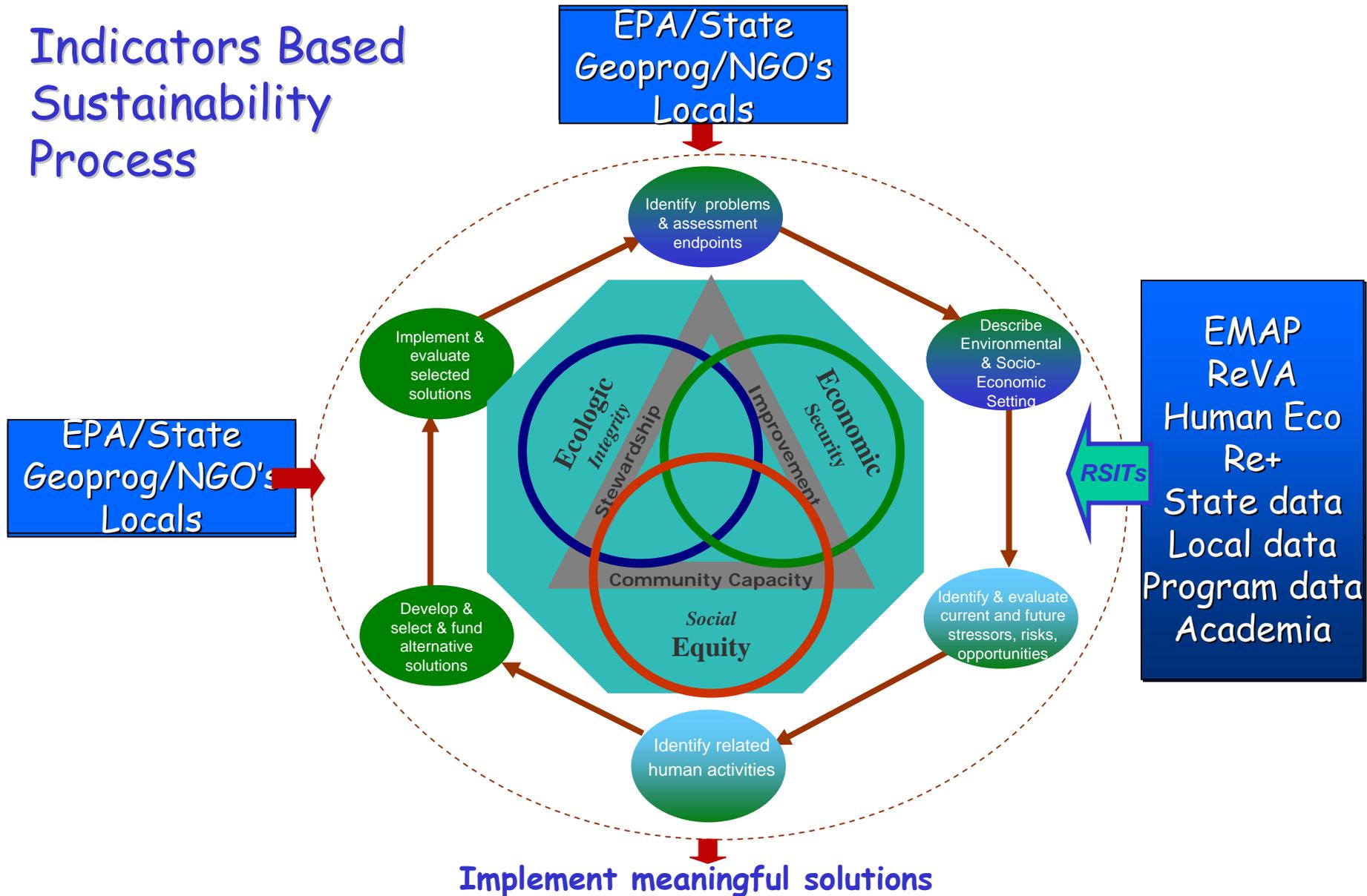


Desired Outcomes from Today

- Reinforce the vision to enhance ORD/Regional collaboration to more effectively link research to environmental outcomes
- Demonstrate that documentation of existing science to outcomes is feasible



Indicators Based Sustainability Process



Key Messages

- ORD and Regions working together can ensure that ORD science leads to successful environmental outcomes.

science → assessment → action → environmental outcomes

Fundamentally we need:

- Committed Scientists that want to make a difference
- Managers that want to make decisions with more information
- Facilitators to join the two and make the partnership work



ORD Science Results in Restoration of Georges Creek, MD

Region III: MAIA/EMAP Streams Example

-  ORD developed a stream benthic IBI, fish IBI and monitoring design
-  ORD produced a suite of peer-reviewed articles and technical reports
-  MAIA and ORD developed the Highlands Streams Report
-  MAIA worked with Maryland to adapt these into a state program – MD Biological Stream Survey (MBSS)
-  MD uses MBSS to develop 305b report, 303d list, and TMDLs for impaired streams
-  MD developed the Unified Watershed Assessment (UWA) based on the MAIA approach 58 watersheds were identified that require restoration
-  MD is making funding decisions based upon the UWA. They established Watershed Restoration Action Strategies (WRASs) for the 58 watersheds and allocated funds from many sources to get the watersheds restored (EPA 319 funds, NOAA Coastal Zone Management funds, EPA Watershed grant initiative funds, and other smaller funding sources)
-  George's Creek (large watershed) - restoration activities completed in sub-watersheds include: AMD reduction, Rosgen stream restoration, riparian buffer plantings, cattle exclusions, and watering troughs
-  (hypothetical) WQ and biology in George's Creek improved by 20% and George's Creek meets all designated uses (note: restoration just completed and lag time after restoration is completed ranges from 2 years to 10 years before results can be observed)



ORD Landscape Science Results in Protection of 90,000 Acres of Ecologically Sensitive Lands in Maryland

Region III: MAIA/EMAP Landscapes Example

-  ORD developed a landscape ecology approach, models, and landscape indicators
-  ORD produced a suite of peer-reviewed articles and technical reports
-  MAIA and ORD developed the Landscape Atlas
-  MAIA worked with Maryland to adapt these into a state program – Maryland Green Infrastructure Program
-  MD uses the Green Infrastructure Program to prioritize parcels for acquisition for conservation purposes through several programs: GreenPrint, Program Open Space, Rural Legacy Program and MD Agricultural Lands Preservation Foundation
-  In FY2001 MD allocated \$145M over 5 years to acquire green infrastructure land and easements
-  Dec 2003 Governor Ehrlich signs a Land Conservation Policy which is based upon Green Infrastructure and other MAIA-based programs
-  GreenPrint alone has acquired and protected 90,000 acres of highly vulnerable, ecologically significant lands



ORD Science Results in Lower DDT Levels in Lake Michigan Herring Gull Eggs

Region V Lake Michigan Mass Balance Model

-  ORD developed a mass balance model for major contaminants in Lake Michigan (PCBs, Dioxin, Legacy Pesticides (DDT, etc), Current Pesticides (atrazine) and Mercury)
-  ORD produced a suite of peer-reviewed articles and technical reports
-  Region V with support from ORD established a Lakewide Management Plan
-  Region V incorporated the model results into the Binational Toxics Strategy
-  Region V initiated efforts to replace older wood burning stoves with more efficient ones with much lower PAHs releases
-  Region V initiated work with the iron and steel industry to reduce mercury emissions from switches and scrap
-  In collaboration with the pesticide industry, Region V is examining the effect of current pesticides that degrade slowly in water and may build up over time
-  Monitoring results have demonstrated decrease levels of DDT in the atmosphere and in herring gull eggs in the Great Lakes watershed.



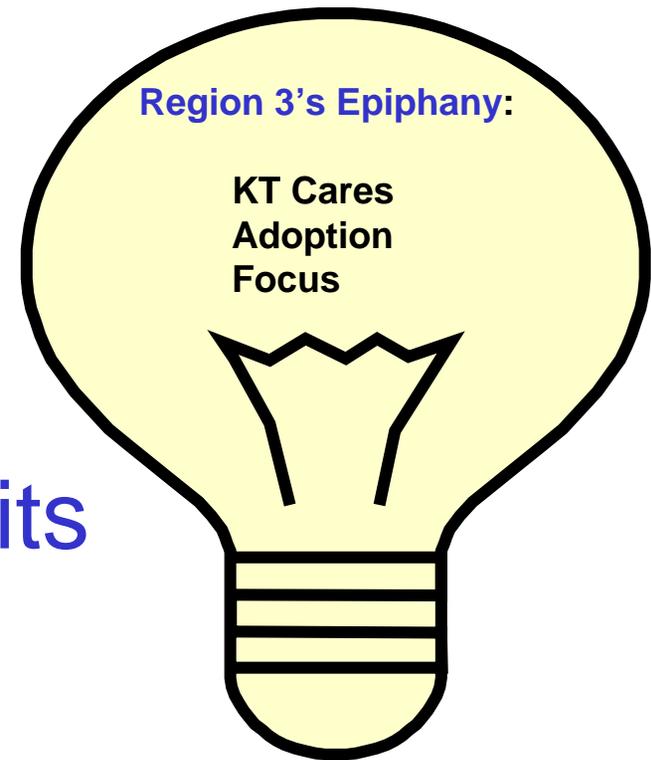
R3 Experience: Our Keys to Effectively Linking ORD Research to Regional Environmental Outcomes

- Regional Senior management are committed
- The Region strategically invests FTE and budget
- A Regional Division Director is designated as lead
- A Branch level organization exists and works to institutionalize the tech-transfer process within the Region, as well with states/tribes, local governments, NGO's, industry and other stakeholders
- ORD is an active partner with the Region



The Teichman Experience

- 9 Months
- Shared Vision
- Real Passion
- Action...Regional Visits
- Commitment
- Data R1,3,9....
- Even Better Future



Final Thoughts:

- Continue 45 day implementation
- Continue 14 Regional needs
- Improve and institutionalize Regional participation in the planning process
- Flexibility to address short term and higher resolution needs
- Access to scientists
- Regional/ORD partners (RS&T)
- Data and info improvement..beyond ORD..... monitoring, LU/LC
- Outcomes
- Keep Kevin



ATTACHMENT J1

**Statement of William P. Gulledge
On behalf of the American Chemistry Council
Nanotechnology Panel
Before the U.S. Environmental Protection Agency
Science Advisory Board
March 2, 2006**

Good morning. My name is Bill Gulledge. I am Manager of the American Chemistry Council Nanotechnology Panel and am pleased to offer comments today on behalf of Panel. Panel members consist of companies that are engaged in the manufacture, distribution, and/or use of chemicals and have a business interest in the products of nanotechnology. Panel member companies are strongly committed to the responsible development of nanotechnology, product stewardship, and sustainable development. The Panel commends the SAB for convening this meeting to elicit views on research priorities that reflect the Agency's mission to protect human health and the environment. We appreciate this opportunity to share our strong view that it is critically important that federal research related to the environmental, safety, and health implications of nanotechnology be commensurate with the growing development and future of nanotechnology. EPA, other federal agencies, and publicly funded projects must be coordinated and strategically targeted to achieve the maximum impact in the shortest period of time.

The Panel strongly supports the views articulated by the SAB at its December 2004 Workshop, *Nanotechnology, Biotechnology, and Information Technology: Implications for Future Science at EPA*. In its June 2005 report on the Workshop, the SAB "urged the Agency to develop a new science vision for human health and environmental protection that incorporates the latest scientific and technological advancements. Developments and emerging applications in Nanotechnology, Biotechnology and Information Technology over the past decade have been dramatic, and will continue into the foreseeable future. Advancements within and between these and other technologies will revolutionize industrial production and economic expansion, as well as the environmental sciences."

Importantly, the SAB recognized in its Workshop deliberations that the use of new technologies demand “new ideas in reviewing EPA projects, programs, planning documents, and the science budget.” The Panel wholeheartedly concurs, and urges the SAB to embrace this key finding and to review EPA’s projects, programs, and planning documents in order to focus on EHS nanotechnology research that is strategically targeted and coordinated to achieve the Agency’s mission to protect human health and the environment. The SAB is uniquely well positioned to recommend that EPA’s future research priorities, which is the sole topic of today’s meeting, fully reflect the SAB’s urging in its Workshop report for EPA to create and embrace a new science vision that efficiently deploys a flat or declining EPA science budget.

To that end, we wish to bring to the SAB’s attention a letter sent to Members of the House and Senate Appropriates Committee on February 14, 2006 and signed by large and small companies, non-governmental organizations, and other entities engaged in various aspects of nanotechnology research and development¹ calling for increased federal funding for nanotechnology research. The letter notes: “Although the National Nanotechnology Initiative (NNI) has an annual budget of more than \$1 billion, health and environmental implications research currently accounts for less than 4% of that amount (\$38.5 million for FY06).” The letter also notes: “Federal research is essential to providing the underlying methods and tools critical to developing a fundamental understanding of the risk potential of nanomaterials and nanotechnologies- methods and tools that all producers and users can then use.” This statement is entirely consistent with several of the key findings and cross-cutting recommendations emerging from the SAB Workshop.

The Panel also offered to EPA very similar recommendations in the context of comments recently submitted to the Nanotechnology Workgroup of the EPA Science Policy Council

¹ See attached letter dated February 14, 2006 addressed to members of the House and Senate Appropriations Committees

on its *Nanotechnology White Paper External Review Draft* (Draft White Paper).² In its comments, the Panel urged EPA to prioritize its research needs to ensure that limited research dollars are deployed wisely; a sentiment fully grounded in the SAB's urging EPA to develop a "new science vision" for human health and environmental protection that incorporates the latest scientific and technological advancements. Additionally, the challenges identified by the SAB to developing nanotechnology, including encouraging public discussion, life cycle assessment, and standards and measurements (protocols for research) are among priorities that the Panel assessed with Environmental Defense in the "Joint Statement of Principals" – a shared view upon which to base a governmental program for addressing potential risks of nanoscale materials.

The Panel believes that EPA should reprioritize its nanotechnology research priorities. Specifically, the Panel urged EPA in its comments on the Draft White Paper to focus research efforts in the following order: chemical identification and characterization; metrology; exposure, fate, and effects; risk assessment; work place practices/best manufacturing practices; and green manufacturing/end use applications. These priorities provide a logical structure to maximize the consistency, timeliness, and value of the information generated by the research.

In conclusion, the Panel urges the SAB to continue to develop recommendations to EPA for future research priorities that reflect the growing development and future of nanotechnology and the importance of EHS nanotechnology research that is strategically targeted and coordinated to achieve the maximum impact within the shortest period of time.

Thank you for the opportunity to make this statement. I would happy to answer any questions.

² See attached comments dated January 31, 2006 in response to 70 Fed. Reg. 75812

BEFORE THE UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

COMMENTS OF THE NANOTECHNOLOGY PANEL
OF THE AMERICAN CHEMISTRY COUNCIL
ON THE NANOTECHNOLOGY WHITE PAPER EXTERNAL REVIEW DRAFT

Notice of Availability of the
Nanotechnology White Paper
External Review Draft
70 Fed. Reg. 75812 (Dec. 21, 2005)

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EPA-HQ-ORD-2005-0504; FRL-8011-9

William P. Gulledge
Manager, Nanotechnology Panel

Karyn M. Schmidt, Esquire
Assistant General Counsel

Paul Ziegler
Chair, Nanotechnology Panel

Dell E. Perelman, Esquire
General Counsel

Of Counsel:
Lynn L. Bergeson, Esquire
Bergeson & Campbell, P.C.
1203 Nineteenth Street, N.W.
Suite 300
Washington, D.C. 20036-2401

AMERICAN CHEMISTRY COUNCIL
1300 Wilson Boulevard
Arlington, VA 22209

January 31, 2006

EXECUTIVE SUMMARY

The Nanotechnology Panel (Panel) of the American Chemistry Council submits these comments on the United States Environmental Protection Agency's (EPA) December 21, 2005, *Federal Register* notice announcing the availability of and seeking comment on the *Nanotechnology White Paper External Review Draft* (Draft White Paper) prepared by the Nanotechnology Workgroup of EPA's Science Policy Council. 70 Fed. Reg. 75812. The Panel consists of companies that are engaged in the manufacture, distribution, and/or use of chemicals and have a business interest in the products of nanotechnology.

The Panel compliments EPA on the Draft White Paper. It is well written, comprehensive, and useful. As described more fully in these comments, the Panel supports the key recommendations set forth in the document and urges EPA to prioritize them along the lines suggested. Specifically, the Panel believes that the occasion of the issuance of the Nanotechnology White Paper offers EPA a tremendous opportunity to present these recommendations in a cogent and compelling, priority-based order that reflects a logical and science-based approach to the responsible development of nanotechnology. The Panel proposes the following revised order: collaboration; cross-agency workgroups; coordination; research; overarching risk assessment needs; training; pollution prevention and environmental stewardship.

The Panel also believes that within the research recommendations, EPA should reprioritize its recommendations. Specifically, the Panel urges EPA to prioritize its research needs in the following order: chemical identification and characterization; metrology; exposure, fate, and effects; risk assessment; work place practices/best manufacturing practices; and green manufacturing/end use applications.

The Panel also notes a number of specific comments and accordingly urges applicable changes and/or corrections.

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INTRODUCTION

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I. THE NANOTECHNOLOGY PANEL AND ITS COMMITMENT TO THE RESPONSIBLE DEVELOPMENT OF NANOTECHNOLOGY

The Panel was formed in 2004 to foster the responsible development and application of nanotechnology, to coordinate nanotechnology environmental, health, and safety research initiatives undertaken by member companies and other organizations, and to facilitate the exchange of information among member companies and other domestic and international organizations on issues related to applications and products of nanotechnology. The Panel supports nanotechnology products and applications consistent with the Responsible Care[®] Program to ensure that the commercialization of nanoscale materials proceeds in a way that protects workers, the public, and the environment.

¹ Panel member companies include: Air Products and Chemicals, Inc., Arkema Inc., BASF Corporation, Bayer Corporation, Ciba Specialty Chemicals Corporation, Degussa Corporation, Dow, DuPont, Elementis Specialties, PPG Industries, Inc., Procter & Gamble, Rohm and Haas Company, Sasol North America, Inc., and Southern Clay Products, Inc.

The Panel recognizes that nanotechnology applications offer significant societal and sustainable development advancements, many of which could provide direct environmental benefits. Nanotechnology products offer, for example, the potential for improved energy production, environmental remediation, and pollution prevention, among many other benefits that could greatly enhance the quality of life. The Panel shares EPA's goal, however, of identifying nanotechnology's potential risks to ensure protection of human health and the environment, and believes that the responsible development will help assure the public that nanomaterials are being developed in a way that identifies and minimizes potential risks to human health and the environment.

In this regard, the Panel and Environmental Defense (ED) issued a Joint Statement of Principles² that reflects the parties' shared view of several core principles on which a governmental program for addressing potential risks of nanoscale materials should be premised. As many of the principles the Panel and ED jointly embrace are pertinent to the issues addressed in the Draft White Paper, we restate them below:

- Some applications of nanomaterials are expected to offer significant societal and sustainable development benefits.
- The timely and responsible development and regulation of nanomaterials in an open and transparent process will best assure that nanomaterials are being developed in a way that identifies and minimizes potential risks to human health and the environment.

² A copy of the Joint Statement of Principles is found at Attachment 1.

- A multi-stakeholder dialogue that includes all interested parties, including small businesses, labor, community organizations, and consumer advocates, as well as large businesses and environmental organizations, will best assure the development of an effective program for nanoscale materials.
- A significant increase in government investment in research on the health and environmental implications of nanotechnology is essential.
- The development of an international effort to standardize testing protocols, hazard and exposure assessment approaches, and nomenclature and terminology is an important step to maximize resources and minimize inconsistent regulation of nanomaterials.
- Elements of safe and responsible development of nanotechnology should include appropriate protective measures while more is learned about potential human health or environmental hazards.
- A government program should address intentionally produced nanoscale materials produced in or imported into the U.S. and characterize hazard and exposure sufficiently to assess any risks of these materials. It should also assess the appropriateness of or need for modification of existing regulatory frameworks.

II. PANEL COMMENTS ON THE EXTERNAL REVIEW DRAFT WHITE PAPER

The Panel compliments EPA on the Draft White Paper. It is well written, comprehensive, and useful. As described more fully in these comments, the Panel supports the key recommendations set forth in the document and urges EPA to prioritize them along the lines suggested. The Panel also notes a number of specific comments.

A. General Comments

The Panel appreciates that EPA included representatives from all EPA program offices in preparing the Draft White Paper and believes that as a result, the document better reflects the full range of potential environmental applications that nanotechnology offers. The Panel also believes that the Draft White Paper does a good job of outlining many of the issues pertaining to nanotechnology, and strikes an appropriate balance between expressing concerns regarding potential hazard and risk and also acknowledging the technological, environmental, and societal benefits nanotechnology offers.

The Panel also commends EPA for its leadership in this area and for undertaking the preparation of the Draft White Paper. The Panel is aware of the many competing priorities vying for limited EPA resources and time, and appreciates EPA's deployment of resources on the important topic of nanotechnology.

The Panel offers two overarching comments with regard to EPA's key recommendations. First, the recommendations do not appear to be set forth in any particular order. For example, pollution prevention and environmental stewardship is the first recommendation in Section 6.0 (Recommendations), which could give rise to the inference that this is EPA's first priority. Panel member companies are deeply committed to pollution prevention and product stewardship. Nonetheless, the Panel believes that this recommendation, and others identified by EPA, must be informed by and can only proceed based on a clearer, knowledge-based understanding of basic concepts such as chemical identification, risk

characterization, and related topics. This, in turn, can only arise from more global collaboration and domestic agency cooperation on nanotechnology-related issues that would need to be much further along than they now are. The Panel thus urges EPA to prioritize the recommendations along the following lines: collaboration; cross-agency workgroups; coordination; research; overarching risk assessment needs; training; and pollution prevention and environmental stewardship.

Second, the Panel believes that the research recommendations should be prioritized according to the following order: chemical identification and characterization; metrology; exposure, fate, and effects; risk assessment; work place practices/best manufacturing practices; and green manufacturing/end use applications. The Panel also supports continuing work on environmental fate and exposure and the development of models that can be used to generate rapidly information in the absence of experimental data.

The Panel believes that EPA's commitment to the responsible development of nanotechnology can best be fulfilled by leveraging, to an even greater extent, interaction with other federal, state, and international agencies. The Panel firmly believes that other federal agencies, including the National Institute for Occupational Safety and Health (NIOSH), the Food and Drug Administration (FDA), state agencies, and international agencies, such as the Organization for Economic Cooperation and Development (OECD), have much to offer and must be an integral part of the global development of nanotechnology to ensure that limited resources are deployed effectively, research priorities are addressed first, and regulatory frameworks evolve in a way that maximizes international harmonization.

B. Specific Comments

The Panel offers the following specific comments on the Draft White Paper. For clarity, the Panel notes the specific section, page number, and line number of the reference in the Draft White Paper, followed by the Panel's comment.

- **1.2 Nanotechnology Defined, page 4, line 26** -- The Panel concurs with EPA that the “definition of nanotechnology does not include unintentionally produced nanomaterials, nano-sized particles, or materials that occur naturally in the environment.” The Panel believes that the National Nanotechnology Initiative (NNI) definition of nanotechnology should be used, which excludes unintentionally produced nanomaterials.
- **1.3 Why Nanotechnology Is Important to EPA, page 9, line 11, and page 10, line 2** -- EPA notes here that nanomaterials have promising environmental applications, and points to nano-sized cerium oxide developed to decrease diesel emissions. Elsewhere in the document, however, on page 57, EPA describes one study involving a cerium additive that has shown cerium “to significantly alter the physicochemistry of diesel exhaust emissions resulting in increased levels of air toxic chemicals such as benzene, 1,3-butadiene, and acetaldehyde.” The Panel urges EPA to harmonize these sections of the draft document.

In the same section at page 10, line 2, EPA states “Inhaled nanoparticles may become lodged in the lung, and the high durability and reactivity of some nanomaterials raises issues of their fate in the environment.” The Panel submits that it may be more accurate to state that “Some inhaled nanoparticles may become...” It is by no means clear that all nanomaterials have the potential to become lodged in the lung.

- **1.4 What EPA is Doing with Respect to Nanotechnology, page 10, line 28** -- EPA notes that it is “initiating the development of a voluntary pilot program for the evaluation of nanomaterials and reviewing of nanomaterial new chemical submissions in the Office of Pollution Prevention and Toxics.” The Panel supports the development of a voluntary program along the lines the National Pollution Prevention and Toxics Advisory Committee (NPPTAC) outlined in its November 2005 *Overview of Issues Document*. The Panel urges EPA to take whatever steps are necessary to move forward the development of the voluntary program, and renews its commitment to assist EPA in this regard.

- **1.5.2 Efforts of Other Stakeholders, page 12, line 12** -- The Panel appreciates reference to its efforts, but asks that EPA revise the reference to state the Panel's correct name, which is the American Chemistry Council Nanotechnology Panel, not "committee."
- **4.3.8 Interactions Between Nanomaterials and Organic or Inorganic Contaminants: Effects and the Potential for Practical Applications, page 41, line 4** -- EPA states in the Draft White Paper that "Nanoscale materials are typically more reactive than larger particles of the same material. This is true especially for metals and certain metal oxides." The Panel is not aware of data that support this statement or that suggest that nano-sized metals and metal oxides are more reactive relative to their bulk-sized counterparts. The Panel believes this is erroneous and thus suggests that this statement be deleted.
- **4.3.9 Applicability of Current Environmental Fate and Transport Models to Nanomaterials, page 42, line 18** -- EPA notes that "the most useful modeling tools for exposure assessment of nanomaterials are likely to be found not in the area of environmental fate of specific organic compounds (more precisely, prediction of their transport and transformation), rather in fields in which the focus is on media-oriented pollution issues: air pollution, water quality, ground water contamination, etc. A survey of such tools should be made and their potential utility for nanomaterials assessed." The Panel concurs that such a survey would be very useful and urges EPA to undertake its preparation.
- **4.5.3.1 Occupational Exposure, page 45, line 15 through page 46, line 3** -- The Panel concurs with EPA's reliance upon Luther (2004) that the risk of particle release during production is low due to the fact that most production processes take place in closed systems. Similarly, the Panel concurs that release and exposure to nanomaterials is expected to be low once they have been incorporated into a formulation and linked to a matrix.
- **4.5.3.2 Release and General Population Exposure, page 46, lines 14 and 24** -- EPA notes that "[g]eneral population exposure may occur from environmental releases from the production and use of nanomaterials and direct use of products containing nanomaterials" (line 14). This statement should be qualified along the lines set forth in the section immediately above it. Namely, EPA should note that exposure to nanomaterials from releases from production are expected to be low and thus contribute marginally, if at all, to the total exposures from chemicals to the general public. Taken out of context, this passage could be the cause of unnecessary concern.

Similarly, the Panel does not believe that EPA needs to include the last sentence in this section relating to natural disasters and terrorist attacks (line 24). Naturally, disasters of this nature will of course heighten the probability of releases of materials into the environment. Because these events are always theoretically possible, the inclusion of this sentence in the document adds little and may be the source of unnecessary concern.

- **4.6.2 Adequacy of Current Toxicological Database, page 52, line 12 --** EPA states “[t]he Agency’s databases on the health effects of particulate matter (PM), asbestos, silica, or other toxicological databases of similar or larger sized particles of identical chemical composition (US EPA, 2004; US EPA, 1986; US EPA 1996) should be evaluated for their potential use in conducting toxicological assessments of intentionally produced nanomaterials. The toxicology chapter of the recent *Air Quality Criteria for Particulate Matter* document cites hundreds of references describing the health effects of ambient air particulate matter including ultrafine ambient air (PM_{0.1}), silica, carbon, and titanium dioxide particles (US EPA 2004). However, it is important to note that ambient air ultrafine particles are distinct from intentionally produced nanomaterials since they are not purposely engineered and represent a physicochemical and dynamic complex mixture of particles derived from a variety of natural and combustion sources.”

The Panel agrees that EPA’s databases on the health effects of particulate matter should be evaluated for their potential use in conducting toxicological assessments of nanomaterials. The Panel also urges EPA, however, to take care in extrapolating these data to engineered nanoparticles. In many cases, the Panel believes that such extrapolation may not be scientifically justifiable.

III. PANEL COMMENTS ON KEY RECOMMENDATIONS

As noted above, the Panel concurs with EPA’s key recommendations as set forth in Section 6.0 of the Draft White Paper, and as summarized on page 2. The Panel believes, however, that the recommendations should be presented in priority order and to prioritize them along the lines suggested above. Specifically, the Panel urges EPA to present the recommendations in the following revised order: collaboration; cross-agency workgroups; coordination; research; overarching risk assessment needs; training; and pollution prevention and

environmental stewardship. The Panel offers specific comment on each of the key recommendations below in the order in which they are presented in the Draft White Paper.

- **Pollution Prevention, Stewardship, and Sustainability** -- The Panel encourages EPA to continue its efforts to identify and use nanotechnology in ways that provide benefits to the environment, including remediation of contamination. The Panel supports efforts to work with other stakeholders, (*i.e.*, NGOs, SMEs, academia, etc.) to identify ways to achieve success that are effective and consistent with ACC Panel members' commitment to Responsible Care®, product stewardship, and sustainability.

- **Research** -- The Panel agrees with the recommendation that EPA focus on the research topics specifically enumerated in the Draft White Paper. EPA is well positioned to make a key contribution in facilitating stakeholder collaboration to achieve common goals and finding a balance between the desire for any information on nanotechnology and the scientific information needed to make scientifically sound risk assessments. EPA is positioned to take a leadership role in the identification and characterization of nano-sized materials and in using terminology appropriately. EPA notes that the identification and characterization of chemical substances and materials is an “important first step in assessing their risk.” The Panel concurs. Not only is this step important, it is critical to making progress in the development of the science and its application to the risk assessment of nanomaterials. EPA is mindful of the importance of working with domestic (*e.g.*, ASTM, ANSI, NNI) and international (*e.g.*, OECD, BIAC, ISO) initiatives in this regard, and in participating in these groups. The Panel appreciates that EPA is seeking input from many different entities. At an appropriate time, the Panel believes it would be helpful for EPA to clarify how it views terminology from a regulatory perspective.

The Panel supports continuing work on environmental fate and exposure and the development of models that can be used to generate rapidly information in the absence of experimental data. The Panel recommends, that EPA prioritize its research according to the following order: chemical identification and characterization; metrology; exposure, fate, and effects; risk assessment; work place practices/best manufacturing practices; and green manufacturing/end use applications.

- **Risk Assessment** -- The Panel supports EPA's conclusion that existing risk assessment procedures are sound and can form the basis for the assessment of nanomaterials. The Panel also agrees that selecting

materials for case studies will help all stakeholders, and the Panel is willing to work on this with EPA. EPA states in the Draft White Paper that “EPA generally follows the risk assessment paradigm described by the National Academy of Sciences (NAS) (NAS/NRC, 1983 1994). The overall risk assessment approach used by EPA for conventional chemicals is thought to be generally applicable to nanomaterials.” The Panel supports the use of the NAS risk assessment paradigm of nanomaterials, and sees no basis or need for a risk assessment approach that is unique to nanomaterials.

- **Collaboration and Leadership** -- The Panel commends EPA for the leadership it has shown thus far in the nanotechnology area, and encourages EPA to continue its efforts. The Panel looks forward to working with EPA as it has recently through its participation in public meetings and the NPPTAC Interim Ad Hoc Work Group on Nanoscale Materials. The Panel also encourages EPA to help the many stakeholders holding a diversity of views to find a balance between the desire to know as much as can be known about nanomaterials, and to develop a knowledge base that is not so onerous in scope that development of these materials, and the societal benefits they will bring, will be stifled. In addition, the Panel urges EPA to collaborate closely with other federal agencies, to share work product and results, and to ensure consistency as much as possible given the diversity of laws and regulations that pertain to nanomaterials. Many companies are regulated under these other laws and by the agencies that administer them. These companies, which include members of the Panel, may be useful in assisting EPA in developing information and contacts to support and facilitate the development of these collaborations.

- **Cross-Agency Workgroup** -- The Panel supports the convening of a cross-agency group to foster information sharing, and supports encouraging other agencies to assume a leadership role in topic areas where those agencies have particular strengths. EPA recommends that various EPA offices take the lead on certain activities and collaborations. It is admirable that EPA is showing this high level of commitment to nanotechnology. The Panel believes, however, that EPA’s commitment to nanotechnology may be maximized by leveraging the commitment of other federal agencies with which the burden should be shared and that have much to contribute. For example, some nanomaterials have been proposed to be used as drug delivery systems as was noted in the Draft White Paper. If these nanomaterials are under evaluation at the FDA, it is likely that some of the information that is required to assess the performance of these delivery systems will also be useful to EPA in assessing these nanomaterials in other areas. Another example is the work being done by NIOSH and the Occupational Safety and Health Administration (OSHA) regarding workplace safety. The Panel suggests

that the cross-agency group share information and share responsibilities. The Panel also supports EPA working globally with other international agencies and/or groups to coordinate research to leverage efficiently and avoid duplication.

- **Training** -- The Panel supports EPA activities that increase the knowledge of its staff regarding nanotechnology. A high level of knowledge will support sound decision-making. Further, the Panel requests that EPA publicly identify, when possible, the training received by EPA staff. The Panel also requests that if EPA provides internal training that, when possible, the same training is offered to interested stakeholders. A model for the external training could be the Sustainable Futures program. All stakeholders could benefit from additional training. Additionally, such sessions could also serve as opportunities for stakeholders to meet and share information. The Panel includes companies that employ scientists, engineers, and other experts in nanotechnology who could provide training to EPA staff on targeted topics to expand EPA's knowledge base, enhance its understanding of this fast-changing emerging technology and provide general assistance to EPA.

CONCLUSION

For all the reasons discussed above, the Panel urges EPA to consider the comments and suggestions offered by the Panel in preparing the Nanotechnology White Paper in final, and thanks EPA for this opportunity to comment.

Attachment

Attachment 1

Environmental Defense and American Chemistry Council Nanotechnology Panel

Joint Statement of Principles

Nanotechnology applications promise significant societal and sustainable development advancements, many that could provide direct environmental benefits. Nanotechnology products offer, for example, the potential for improved energy production, environmental remediation, and solar power production, among many other benefits. But it is also important to identify and better understand nanotechnology's potential risks up front to ensure protection of health and the environment, particularly in light of initial studies demonstrating that some nanomaterials have hazardous properties.

The U.S. Environmental Protection Agency's May 10, 2005, *Federal Register* notice announces the scheduling of a public meeting and seeks information on a potential "voluntary pilot program" on nanoscale materials. Without taking a joint position on the merits of such a program, Environmental Defense and the American Chemistry Council's Nanotechnology Panel agree on several fundamental principles on which a governmental program for addressing potential risks of nanoscale materials should be premised.

We believe:

- Some applications of nanomaterials are expected to offer significant societal and sustainable development benefits.
- The timely and responsible development and regulation of nanomaterials in an open and transparent process will best assure that nanomaterials are being developed in a way that identifies and minimizes potential risks to human health and the environment.
- A multi-stakeholder dialogue that includes all interested parties, including small businesses, labor, community organizations, and consumer advocates, as well as large businesses and environmental organizations, will best assure the development of an effective program for nanoscale materials.
- A significant increase in government investment in research on the health and environmental implications of nanotechnology is essential.
- The development of an international effort to standardize testing protocols, hazard and exposure assessment approaches, and nomenclature and terminology is an important step to maximize resources and minimize inconsistent regulation of nanomaterials.

- Elements of safe and responsible development of nanotechnology should include appropriate protective measures while more is learned about potential human health or environmental hazards.
- A government program should address intentionally produced nanoscale materials produced in or imported into the U.S. and characterize hazard and exposure sufficiently to assess any risks of these materials. It should also assess the appropriateness of or need for modification of existing regulatory frameworks.

ATTACHMENT M

--- FIFRA SAP Update ---

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ATTACHMENT K

Web Link for EPA FY 2009 Budget

<http://www.epa.gov/ocfopage/budget/2009/2009cj.htm>

ATTACHMENT L

--- EPA ORD Program Project Sheets ---

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ATTACHMENT N

--- Compiled and lightly edited SAB comments on 2007 Research Budget ---

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