 **SCIENCE ADVISORY  
BOARD 1997 STRATEGIC  
PLAN**

**DEVELOPED DURING THE SAB'S  
NOVEMBER 1997 STRATEGIC  
PLANNING RETREAT IN  
WASHINGTON, DC**

## **NOTICE**

This report has been written as a part of the activities of the Science Advisory Board, a public advisory group providing extramural scientific information and advice to the Administrator and other officials of the Environmental Protection Agency. The Board is structured to provide balanced expert assessment of scientific matters related to problems faced by the Agency. This report has not been reviewed for approval by the Agency; and hence, the contents of this report do not necessarily represent the views and policies of the Environmental Protection Agency or other agencies in the Federal government. Mention of trade names or commercial products does not constitute a recommendation for use.

## **EPA SCIENCE ADVISORY BOARD STRATEGIC PLAN, 1997 EXECUTIVE SUMMARY**

The approaches to environmental protection at EPA are changing and to be most effective the SAB needs to change with them. Specifically, the SAB needs to spend much more of its total energies on providing strategic, forward looking advice, while maintaining and even improving the quality, utility, and timeliness of its activities focussed on Agency-requested peer review of EPA products.

EPA and environmental decision making in general have undergone rapid change in recent years, providing new opportunities for the SAB to enhance the quality of science in environmental decision making, or, in some cases, requiring that the SAB also change in order to continue being successful. The changes in EPA and environmental decision making which are particularly relevant to the SAB's mission include new less centralized decision making approaches, emerging scientific issues, crosscutting initiatives and programs, multiple avenues for peer review, an expanded EPA grants program and international dimensions of emerging environmental problems.

The SAB intends to make changes along several lines simultaneously:

- a) The SAB will improve general operations. This includes making several operational changes to improve timeliness, such as expedited report writing, greater attention to project selection, and a new "fast track" process for a few special cases. The Executive Committee will also institute new ways to ensure that the SAB is accepting the right projects for peer-review. In addition, the SAB will take concrete steps to improve communication with customers, other organizations and with new SAB members and Chairs.
- b) The SAB will redirect, develop or modify some specific SAB elements. This includes directing the Research Strategies Advisory committee to focus on the broad strategic aspects of research and science in the Agency; integrating economics expertise into the broader work of the Board; and a number of other specific activities.
- c) And finally, the SAB will begin some new initiatives to meet the challenge of the Agency's own changes in environmental decision making. The SAB will institute a process for selecting a few strategic projects each year. These will focus on broad issues such as the role of science in "next generation" approaches to environmental protection. The SAB will also develop or contribute to the development of workshops to address important, under-recognized scientific issues; explore a broader range of social science involvement in SAB activities; experiment with short summaries of its reports for non-technical audiences; and consider a focus on international environmental issues.

The Strategic plan will be used as a guide for SAB operations over the next several years. If successful, the plan will result in more timely, balanced, relevant and useful SAB products and, most importantly, enable the SAB to have a greater positive impact on how EPA does science and uses science in protecting the environment.

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# SCIENCE ADVISORY BOARD STRATEGIC PLAN, 1997

## I. INTRODUCTION: (Why Strategic Planning?)

In 1977, Congress established the EPA Science Advisory Board (SAB) and charged it to provide independent technical advice on environmental issues to the EPA Administrator and others (e.g., Congressional Committees) to help inform their decisions.

Since its founding, the Science Advisory Board's original structure and function have served it well: the Board is widely recognized for its success in advising the Environmental Protection Agency on science issues. However, environmental science and decision-making have changed profoundly in recent years and will change even more rapidly in the next few years. (See discussion of some of these changes in section IIC below.) The Board is developing a strategy to accomplish its mission in this new decision-making context.

*NEW DIRECTIONS IN EPA  
DEMAND NEW  
DIRECTIONS FOR THE  
SAB*

## II. STRATEGIC ISSUES (Where are we going?)

### A. Mission, Customers and Overarching Goal

The Science Advisory Board's mission is to provide independent, relevant advice on the scientific and technical dimensions of the Agency's actions to carry out its own mission of protecting human health and safeguarding the natural environment on which life depends.

The EPA Administrator is SAB's primary customer and is identified as such in its enabling legislation. The SAB also has a responsibility to respond to certain Congressional requests. Other customers include the EPA as a whole, the public, the scientific community, and the press.

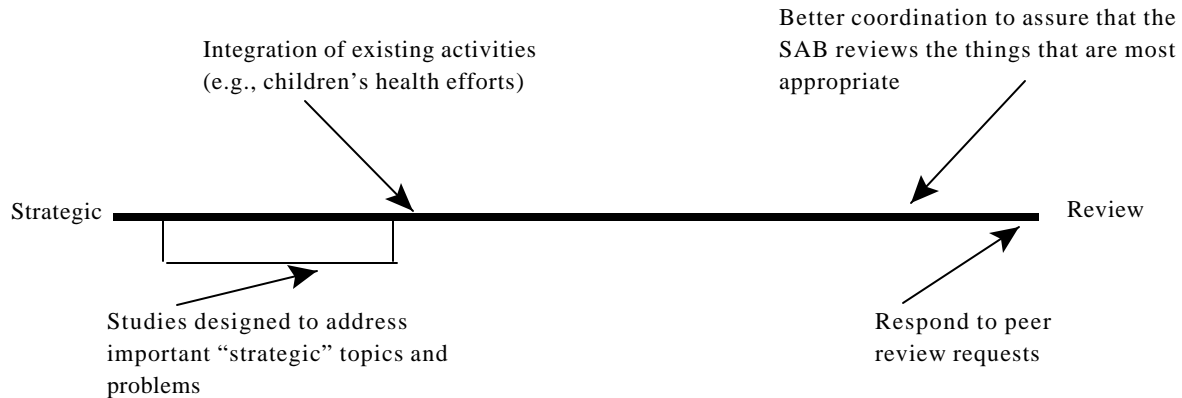
*TO BE SUCCESSFUL, THE SAB  
MUST NOT ONLY GIVE SOUND  
TECHNICAL ADVICE BUT ALSO  
MAKE A POSITIVE DIFFERENCE  
IN THE WAY SCIENCE IS  
DEVELOPED AND USED*

In the minds of the members of the Executive Committee, the overarching goal of the Board is to make a positive difference in the way the science underlying environmental decisions is commissioned, developed, and used in environmental decision-making. When the processes in environmental decision-making change, as they have in recent years, the SAB must also change in order to be able to continue to make that difference in the

EPA's use of science.

## B. New Directions for the SAB

To meet the changing needs of its customers and maintain a high level of success, the SAB needs to be significantly more strategic in its approach to providing scientific advice on



environmental issues. That is, the Board needs to provide more up-front planning and scoping (e.g., strategic) advice, as opposed to the "end of pipe" peer review. At the same time, it must maintain and improve the quality of advice and peer review on specific issues.

It is important for the SAB to maintain a mix of activities along the strategic-review continuum, ranging from responding to questions from the Agency as they appear; through co-ordination to assure that the SAB reviews the most appropriate documents and integration of existing activities on certain themes (e.g., children's health); to studies designed to address important strategic topics and problems. While the peer review of Agency products is a critically important activity, the SAB, and in particular the Executive Committee, should not be constrained to this single focus.

The SAB needs to devote about 20 to 30 percent of its efforts across the entire Board to the more strategic activities. The Executive Committee should be spending roughly half of its energies on strategic issues. The opportunities described in the next section provide important areas for strategic advice.

## C. Changes in EPA that Provide Opportunities for the SAB

EPA and environmental decision-making in general have undergone rapid change in recent years. The examples listed below are some of the changes that are particularly relevant to the SAB's operations and success. Most of these changes provide new opportunities for the SAB to enhance the quality of science in environmental decision-making or, in some cases, require that the SAB make some changes in order to continue being successful.

**1. New decision-making approaches in the Agency call for new SAB approaches as well.**

*THE SAB WILL PROVIDE NEW APPROACHES FOR TECHNICAL ADVICE TO RESPOND TO EPA'S NEW DECISION APPROACHES. SEE APPENDIX A, SECTION III.*

EPA has recently begun to develop and follow some new processes for decision making beyond the traditional “command and control” approach it used in the past. This includes Community Based Environmental Protection, Regulatory Negotiation, The Common Sense Initiative, Project XL, and others.

These new approaches often involve intensive participation by multiple stakeholders; in some of them EPA plays only a support role to stakeholders who hold decision-making authority. In such cases, the process for incorporating science may differ greatly from the traditional approach, raising some question as to just when or how science advice and review should be incorporated into the activity. Sometimes the science review comes only at the end; it therefore fails to allow for review of the way in which the science issues are formulated and may be too late for changes to be effectively incorporated.

The SAB has an opportunity to contribute to the quality of these decisions by exploring new avenues to improve the use of science in making them. For example, the SAB could contribute to the quality of such projects by providing much earlier generic advice on the scientific aspects of issues that are important to decision-making in these new contexts.

*THE SAB NEEDS TO SPEND MUCH MORE OF ITS TOTAL ENERGIES ON PROVIDING STRATEGIC FORWARD-LOOKING ADVICE. THE BOARD PLANS TO MAKE A SIGNIFICANT CHANGE IN THIS DIRECTION WHILE MAINTAINING AND EVEN IMPROVING THE QUALITY, UTILITY, AND TIMELINESS OF ITS ACTIVITIES FOCUSSED ON PEER REVIEW OF EPA PRODUCTS.*

**2. Emerging science and issues call for SAB facilitated interaction between the Agency and the scientific community.**

At times, certain areas of scientific knowledge grow so rapidly that it is hard for the heavily burdened EPA staff to keep up with them. Similarly, environmental issues may appear in the scientific literature long before the Agency has developed a program to monitor the situation. The SAB can help the Agency deal with these areas by acting as a catalyst to bring the Agency together with the experts in the emerging field. Some examples of such emerging areas are the use of burgeoning genomic information in risk assessment, and the roles that the physical and social sciences can play in environmental decision-making and environmental security.



**3. New Crosscutting Initiatives and Programs call for more up-front, strategic advice.**

EPA has begun several new cross program or cross Agency initiatives such as Children's Health and Environmental Measures (or Report Cards). In addition, there are new program offices (such as OPAA) with major responsibilities for planning, scoping, and coordinating Agency activities that might benefit from SAB advice. As these crosscutting initiatives begin, the SAB can provide valuable up-front strategic advice now, rather than wait for the end-of-pipe peer review of Agency public review drafts which have typified the Board's interaction with the Agency in the past.

**4. Multiple avenues for peer review and science advice permit more strategic activity by the SAB.**

The EPA peer review policy requires review of many more documents than the SAB could or should review. This has led EPA programs to find or establish new avenues for peer review. Documents that would have come to the SAB in the past may now be reviewed by one of these other means. The existence of these new avenues makes it possible for the SAB to shift some of its attention from review to more strategic advice.

**5. Expanded Grants Program calls for technical evaluation by the SAB.**

EPA has greatly expanded its grants program in the last few years. This has necessitated a major shift in the use of resources. Questions have been raised about the extent to which this shift has improved the production of science at EPA. An objective assessment of the success of the grants program in meeting the objectives of the Agency may be useful.

**6. International aspects of environmental problems suggest a need for greater interaction between technical advisory groups.**

International activity in environmental issues is growing. The SAB will explore avenues for increasing its involvement as described in Section III-5 of Appendix A.

**III. CHANGING DIRECTION (How do we get there?)**

To provide more generic, early advice on planning and scoping issues, while maintaining the ability to deliver high-quality peer review on specific Agency work products, the SAB needs to:

- a) improve SAB-wide operations,
- b) add or change specific SAB elements, and
- c) undertake new initiatives.

Specific plans in each of these categories are described in Appendix A.

#### **IV. DEFINING SUCCESS (How do we know when we get there?)**

- a) In the minds of the Executive Committee members, the most important aspect of success for the SAB is to make a difference in how EPA does science and how EPA uses science in protecting the environment. This includes providing advice on key and emerging research issues, using science appropriately in making decisions, and documenting the scientific basis for decisions accurately and clearly.
- b) An important interim measure of success is the extent to which SAB reports that clearly articulate sound scientific advice. In these reports, balanced committees accurately reflect their areas of consensus and the range of expert scientific thought, identifying uncertainties and the limitations of current knowledge.
- c) Timeliness is an important prerequisite for making a difference in the Agency. Without improved timeliness on the Board's part, the Agency will be reluctant to refer important time-sensitive issues to the Board.
- d) When successful, the SAB provides a forum in which all sides of a scientific issue can be heard and fosters intra and inter agency communication.
- e) Finally, an important measure of SAB success is the demand for its advice.

SAB SUCCESS DEPENDS ON TIMELINESS. SEE APPENDIX A, SECTION I
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#### **V. HOW THIS STRATEGY WILL BE USED**

This strategy is intended as a guide to the SAB for the next several years. The primary audience for the document is the SAB itself, although we believe that some of the Board's customers will also be interested in its content and underlying philosophy. The overall thrust of this Strategic Plan is captured in Figure 1 below.

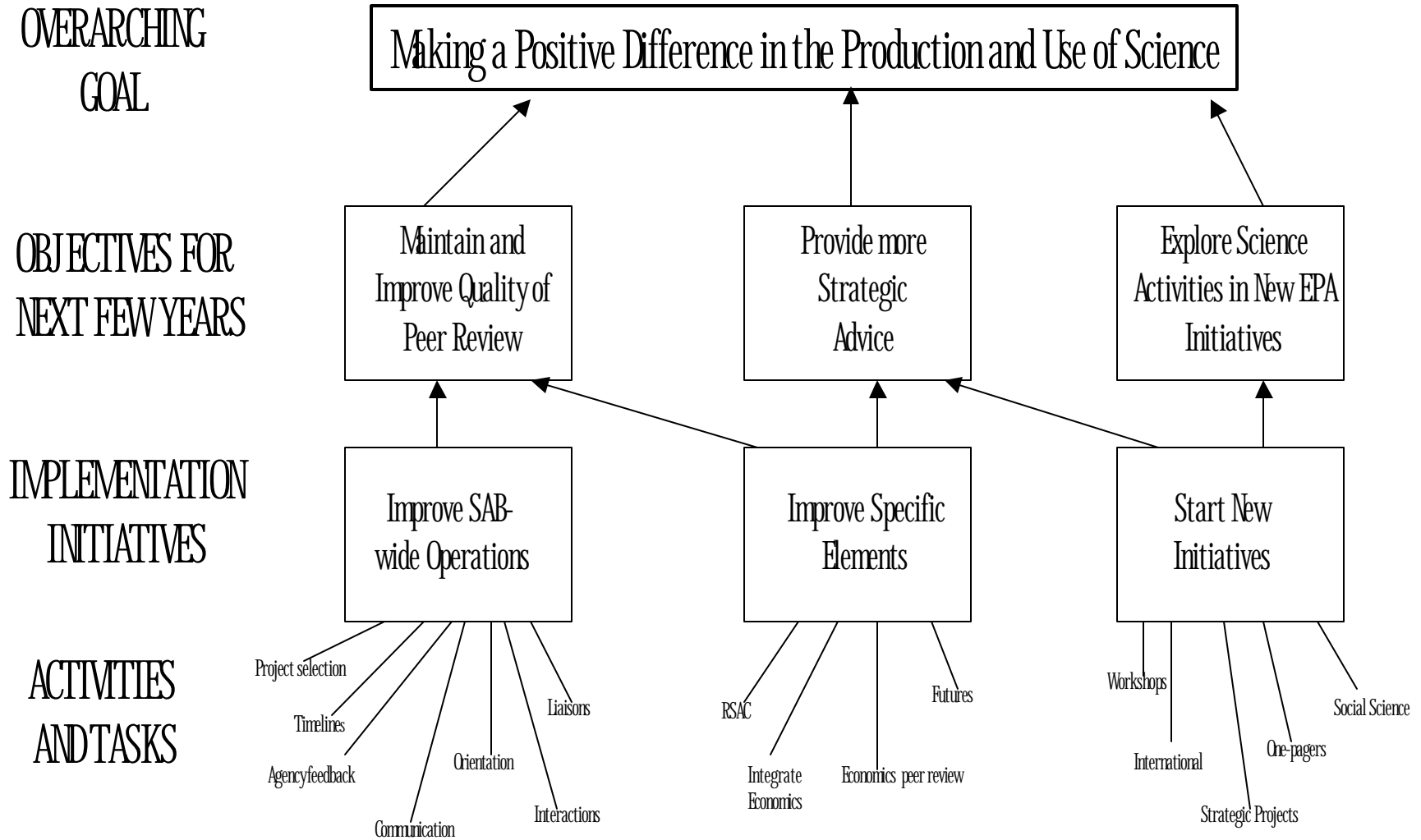
The strategy will be used to guide the Executive Committee, the standing committees and the staff in their day to day work, especially during the planning of new projects, and as a basis for self-evaluation in the short term. It will also be used in the orientation for new members and staff.

Although the document is intended to be a guide for the next few years, some elements in it should be relevant for much longer than that, while others will probably become obsolete much sooner. In particular, the various hierarchical levels shown in the figure vary in the length of time they are expected to impact the Board. The overarching goal of making a positive difference should last indefinitely. The principal objective should last for several years until the targeted changes in direction have become a part of normal operations. Finally, the implementation activities described in the

Appendix will be useful for various lengths of time until they are accomplished or replaced by new activities.

While the SAB intends this strategy as guidance to its own operations for the next several years, the Board does not intend to follow it rigidly. Rather, the SAB will implement these plans in a flexible way that will improve the extent to which the Board meets its overarching goal of making a positive difference in the way that science is developed and used, given the Agency environment of rapid change.

# Figure 1. SAB Strategic Plan



## APPENDIX A - PLANS FOR CHANGING DIRECTION

The SAB's Strategic Plan addresses activities in three areas:

- I. Improving SAB-wide operations,
- II. Improving specific SAB elements, and
- III. Beginning new initiatives.

Each of these areas is elaborated upon below.

### **I. IMPROVING SAB-WIDE OPERATIONS**

In order to provide more effective advice to the SAB customers and to allow for more strategic advice on important issues, the SAB needs to make changes in the way it does business. Some activities whose need and feasibility are apparent at this time are listed below. Others may be added in the future.

#### **1. Timeliness**

Timeliness is one of the most important aspects of quality to SAB customers. It is also an essential aspect of making a difference in environmental decision-making. Customers have demanded and the Board has recognized the necessity of improvement over past performance.

In the past, the SAB has set timeliness goals and introduced some changes (e.g. conference calls) to reduce the time it takes to complete a report. These changes have resulted in considerable improvement, but more improvement is needed. Therefore, the SAB will introduce some specific process changes to achieve the goal of producing most reports in two to four months after the last public standing committee meeting on the issue and within one month for a few special cases.

These changes cannot apply to extremely controversial or complex cases or to any case in which the Agency is unable to deliver the final review version of the product well ( i.e., at least four weeks) in advance of the standing committee meeting. However the Board will be clear about what is possible in any specific case.

- a) SAB committees will change the process for report writing by:
  - 1) Working with the Agency to agree on a more explicit charge.
  - 2) Working with the Agency to get materials to SAB members at least four weeks before the meeting. (This Agency action is a sine qua non of SAB timeliness.)

- 3) Having SAB members write more materials, positions, responses to charge questions etc. before the meeting.
  - 4) Having the SAB Committee complete a working draft before leaving the meeting.
  - 5) While continuing to strive for consensus, the SAB will avoid insisting on unanimity when further deliberation appears unlikely to improve the result.
- b) The SAB will develop a “fast track” process for special cases. In certain cases, committees may produce a report within one month of the last public meeting on an issue. Such accelerated action will only be possible in a minority of cases that pose clear-cut issues and will require some help from the Agency program requesting the review, such as final document delivery at least six weeks before the meeting. This will be a resource intensive effort, but is worthwhile to the extent that it improves timeliness in a way that is important to the Agency’s needs.
  - c) The SAB can also streamline the review by the Executive Committee in many cases. In the past, the use of Executive Committee conference calls in between face-to-face meetings has been helpful. In the future, the Executive Committee will also explore authorizing specific Executive Committee members to vet some more routine, low-controversy committee reports on behalf of the full Executive Committee.

## **2. Project Selection**

EPA produces many more scientific documents than the SAB can possibly review. Furthermore, the Agency has developed other mechanisms for peer review that do not involve the SAB. Therefore, while the SAB should review only a minority of the documents that require some kind of peer review, it is important that the SAB review the right documents in order to maximize the impact on EPA’s development and use of science. Various methods have been used in the past to allow selection of the most appropriate documents, but the success of these has been difficult to evaluate. Some new steps will be taken:

- a) SAB staff will prepare an analysis to compare the documents coming to SAB for review to the general universe of documents that might be peer reviewed.
- b) Using this analysis and the criteria for SAB review developed in 1989, the Executive Committee will update the criteria for SAB review and develop a process to select projects.
- c) On approximately a yearly basis Committee chairs will meet with relevant AA’s and associated staff to discuss criteria they are using to choose review tasks for the SAB

and what reviews they expect to be requesting from the SAB over the coming 18 months.

- d) The SAB Chair also will meet at least annually with the Deputy Administrator to discuss the Board's plans for the coming year.

### **3. Communications**

In recent years the SAB has done quite a bit to improve communications, especially by electronic means. However, there is room for more improvement in specific areas.

- a) The Executive Committee will appoint members as liaisons to each of the program offices of EPA, including non-media offices such as OPPE and OPAA.
- b) The SAB will institute oral briefings of the appropriate Agency official(s) after a report is completed, within the constraints of FACA.
- c) The Executive Committee will re-institute the kind of informal meetings that the Futures Subcommittee once held with officials from other agencies on topics of mutual interest.
- d) The SAB will develop short summaries for at least some of its reports, as described in Section C, below.

### **4. Agency Feed-back**

In order to remain effective, the SAB needs information on how and why its advice is or is not used in Agency decision-making. There is currently inadequate response from the Agency to reviews completed by the SAB. While written response is requested on all reviews, the Board received responses on only about 25% of its FY 97 reports as of November, 1997. The SAB will continue to request written responses, but it will also institute a new face-to-face process. Once a review has been approved by the Executive Committee, the standing committee that prepared the review will meet with relevant Agency officials to obtain oral feedback on the report and discuss how the advice was or is being incorporated into the reviewed documents. These discussions could occur at small meetings with the Chair, or in public meetings with the full committee. The Executive Committee will discuss the results of these encounters at its public meetings to determine if there are any systematic issues that need to be addressed.

### **5. Orientation of new members and new chairs.**

The SAB can improve its efficiency and effectiveness by providing more focused orientation of new members and chairs. As a first step, outgoing Committee Chairs will serve as mentors/advisors to the new Chairs who replace them. Further, the Executive Committee will supplement its recently

adopted "Expectations" document by developing additional written guidance for orientation of new members.

## **6. Interactions with other FACAs and other agencies.**

There are many other advisory groups at EPA, some of whom have a technical focus. SAB interaction with these groups might be beneficial to both the SAB and the other advisory groups and ultimately allow more efficient and effective provision of technical advice to the Agency.

Interactions with officials or advisory groups from inside or outside the Agency, such as those that occurred during the development of "Beyond the Horizon" could be similarly useful. This would include interaction with the National Research Council.

The Executive Committee will include opportunities for such interactions in its regular meetings.

## **II. IMPROVING SPECIFIC SAB ELEMENTS**

### **1. Redirect the Research Strategies Advisory Committee (RSAC).**

A number of questions have arisen in recent years about the proper function and purpose of RSAC. In particular, the RSAC role will need to be adapted somewhat to provide complimentary and not redundant activities to the recently established ORD Board of Scientific Counselors (BOSC). BOSC has responsibilities directly to the AA of ORD while RSAC has broad responsibilities for research strategies across the Agency. On some activities it may be appropriate for RSAC to work together with BOSC as necessary to accomplish RSAC's broad mandate.

RSAC should stress broad strategic review of research and how its results are used across the Agency. RSAC is well-positioned to look at cross-Agency science issues such as the implementation of the Administrators Peer Review Policy, effectiveness of the Grants program, the overall science research planning and budget of the Agency, and the integration of environmental science and technology ongoing inside and outside the Agency.

### **2. Develop approach to scientific peer review of cost/benefit and other economic analyses.**

The SAB can provide a useful service to EPA by facilitating the development of an approach to scientific peer review of cost-benefit analysis. The Executive Committee will begin this task by sponsoring a meeting with some of the scientists who have experience in this area.

### **3. Explore a new approach to environmental futures.**



The SAB has an opportunity to make a valuable contribution to the Agency in the area of Environmental Futures. Work should continue in this area both with the Agency and through SAB workshops. This recommendation holds for both “beyond the horizon” issues and the kind of 5-15 year planning needed for a research program. Since most of the people involved in “Beyond the Horizon” have now left the Board, some mechanism needs to be introduced to maintain SAB experience with futures thinking. A subcommittee of the Executive Committee will propose a new approach.

#### **4. Encourage integration of economics expertise into broader work of the Board.**

Past experience (on the Clean Air Council, for example) has shown the value of incorporating the expertise of non-economists into projects with an economic focus. Specifically, natural scientists involved with the Council’s review of the costs and benefits of the Clean Air Act have been quite helpful in identifying the appropriate scientific studies and interpreting their results for appropriate use by economists in cost-benefit analysis. The SAB will implement approaches to achieving this.

- a) The Executive Committee will encourage the Board’s various panels to include members of the Environmental Economics Advisory Committee on an ad hoc basis.
- b) The Environmental Economics Advisory Committee will have members as liaisons to other standing committees, who will use their expertise appropriately to improve the value of the advice rendered by these committees.

### **III. BEGINNING NEW INITIATIVES**

In order to change to a more strategic approach, the SAB needs to take on some new initiatives.

#### **1. Take on a limited number of strategic projects.**

The SAB will institute a process for selecting strategic projects such as the role of science in “next generation” environmental regulation and risk management; long term environmental impacts on development and reproduction; and quality of the global commons. A few of these projects will be SAB-wide efforts, while others will be taken on by individual standing committees.

The EC will develop guidance for the standing committees to help them nominate topics for SAB-wide strategic activities. The Executive Committee will collect the suggestions from the standing committees and pick one or two for immediate action and identify others as leading candidates for future action. The Executive Committee will also review and provide advice on strategic studies by individual standing committees.



## **2. Take on a catalytic role in conducting workshops on important scientific issues.**

In addition to generating advisories, commentaries, consultations, and reviews, the SAB will work with the Agency, professional societies, or others to insure that open workshops are conducted to address important scientific issues. Such workshops may involve outside experts in a rapidly developing field (e.g., impacts of genomic research on risk assessment), or bring together various groups inside and outside of EPA around a common issue (such as uncertainty in fate and transport modeling). An example of such a workshop is the recent ORD workshop (Models 2000) which was stimulated, in part, by SAB reports and commentaries on this field and the Board's call for action.

Although the SAB has occasionally held such workshops in the past (e.g., the Environmental Engineering Committee Leachability workshop in 1990 and the Clean Air Scientific Advisory Committee workshop on expert judgment in the early 1980's), the Board intends to make greater use of them in the future.

## **3. Explore a broader range of social science involvement in SAB activities**

Social sciences other than economics are playing an increasing role in environmental protection. Other scientific advisory groups, such as the National Science Foundation (NSF) have included social scientists in their activities on a regular basis. The Executive Committee will invite the NSF and other experts to discuss their experiences in this area. In addition, the EC will consider taking on projects that have important social science components and facilitate the use of social scientists in the work of standing committees.

## **4. Experiment with short summaries intended for a non-technical audience.**

In order to make the results of SAB reports more understandable to the multiple audiences that may need to understand them, the SAB will experiment with developing one or two page summaries for some of its reports, outlining the major points in clear, lay language.

## **5. Consider a focus on international issues.**

The Executive Committee will consider the usefulness of a committee focused on international issues. The Executive Committee will appoint an ad hoc Committee to meet with the Office of International Activities and others and make a recommendation on the means for providing this focus.

## **APPENDIX B - THE SAB STRATEGIC PLANNING RETREAT**

In November 1997, the new SAB Executive Committee (EC) held a three-day Strategic Planning Retreat to develop the Strategic Plan presented in this document. This Appendix contains the Agenda and Participants of that Retreat.

**SAB STRATEGIC PLANNING RETREAT**  
**College of Preachers**  
**3510 Woodley Road**  
**Washington, D.C.**

**AGENDA**

**NOVEMBER 18**

- 7:30 am        Breakfast
- 8:15 am        Opening Remarks by Joan Daisey, SAB Chair
- 8:30 am        Panel Discussion: Role of Science Advisors in a Regulatory Agency  
                  Bruce Smith  
                  Terry Yosie  
                  John Graham
- 9:30 am        Coffee
- 10:00 am       Remarks by Peter Robinson Chief of Staff to the Administrator
- 10:30 am       Panel Discussion: SAB and its Customers  
                  Peter Blair  
                  EPA Officials: Robert Perciasepe, Henry Longest
- 11:30         . Studies of Science at EPA  
                  Raymond Loehr (ROPE report)  
                  Costel Denson (BOSC)  
                  Mark Powell (RFF)
- 12:15 am       Highlights from results of members questionnaire - Donald Barnes SAB Director
- 12:30 pm       Lunch
- 1:30 pm        Plenary Discussions: SAB role and customers -- Issues
- 3:30 pm        Simultaneous Activities
- A. Drafting Group -- Options and recommendations for Issues
- B. Free time (possible Cathedral tour)
- 6:00            Dinner

**NOVEMBER 19**

- 8:00 am Breakfast
- 8:30 AM Plenary -- Closure on options for SAB role and customers
- 11:00 am Simultaneous Activities -- Small Group Discussions
- A. Structure and interactions with other Advisors
  - B. Proactive vs. Reactive advice
  - C. Mechanisms (and criteria) for handling requests
  - D. Customer Needs and Alignment (with EPA and Congressional staff)
- 12:30 pm Lunch
- 4:00 pm Plenary check-in for small group discussions
- 6:00 pm Dinner
- 7:00 pm Draft report reflecting AM decisions (drafting group)

**NOVEMBER 20**

- 8:00 am Breakfast
- 8:30 am Small groups - conclusions/next steps
- 10:00 am Coffee Break
- 10:15 Plenary discussion: small group reports and conclusions
- 12:00 noon Lunch
- 1:00 pm Plenary -- conclusions and next steps, content of report
- 3:00 pm Adjourn.

**PARTICIPANTS**  
**SAB STRATEGIC PLANNING RETREAT**  
**NOVEMBER 18-20, 1997**  
**COLLEGE OF PREACHERS, WASHINGTON D.C.**

**SAB MEMBERS, PAST MEMBERS, AND LIASIONS**

Dr. Joan M. Daisey (Chair)  
Lawrence Berkeley National Laboratory

Dr. Stephen Brown  
Risks of Radiation and Chemical Compounds

Dr. Richard J. Bull  
Battelle Pacific Northwest National Laboratory

Dr. Costel Denson  
University of Delaware

Dr. William Glaze  
University of North Carolina

Dr. Hilary Inyang  
University of Massachusetts

Dr. Morton Lippmann  
New York University Medical Center

Dr. Raymond Loehr  
University of Texas

Dr. Genevieve Matanoski  
The Johns Hopkins University

Dr. Granger Morgan  
Carnegie Mellon University

Dr. Ishwar Murarka  
Electric Power Research Institute

Dr. Emil Pfitzer  
Research Institute for Fragrance Materials

Dr. Randall Seeker  
Energy and Environmental Research Corp.

Dr. James E. Watson, Jr.  
University of North Carolina

**GUEST PARTICIPANTS IN BREAKOUT GROUPS**

Dr. Carl Mazza  
Office of Air and Radiation, EPA

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Chief of Staff to the Administrator, EPA

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Dr. John Graham  
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