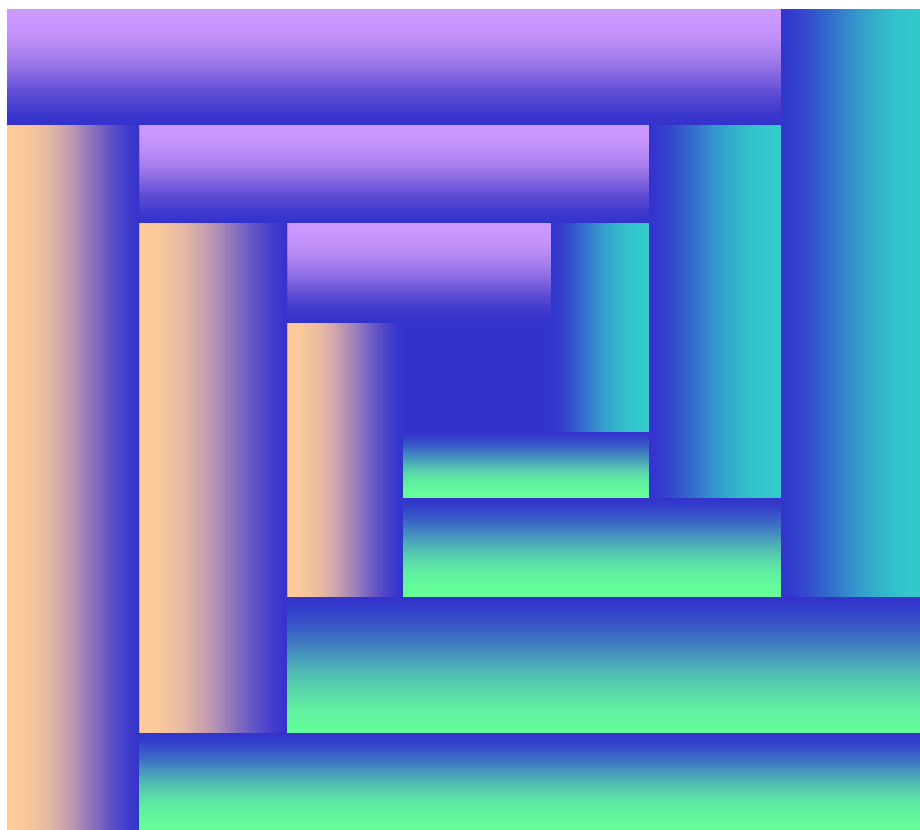




EPA SCIENCE ADVISORY BOARD FY 2001 ANNUAL STAFF REPORT

Expanding Expertise and Experience



Cover Art: *Spiral* by Stephanie Sanzone

Expanding Expertise and Experience

EPA Science Advisory Board's FY 2001 Annual Staff Report

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Editors

U.S. Environmental Protection Agency
EPA Science Advisory Board

This report is a summary of activities of the U.S. Environmental Protection Agency's Science Advisory Board Staff for Fiscal Year 2001, with projections for Fiscal Year 2002. This report has not been reviewed by the Board or the Agency, and should not be construed as representing the views of either organization.

FOREWORD: EXPANDING EXPERTISE AND EXPERIENCE

Social scientists tell us that organizations, like the EPA Science Advisory Board (SAB), are subject to certain "laws" that govern their growth and development. These organizational laws are akin to the biological laws that impact the growth and development of the organisms that are the subject of study by biological scientists. In both cases, the entities under study (organisms/organizations) require inputs (food/resources) in order to generate outputs (movement/products). They encounter planned and unplanned experiences from which (if they are to survive) they learn, grow, and adapt. And the most successful of them incorporate new assets/products to meet the challenges of the changing environment in which they live.

In FY 2001, the SAB organization certainly did a lot and learned a lot. In addition to generating an impressive, but prosaic, box score of 67 meetings held and 28 reports transmitted to the Administrator, the Board learned a lot from expanding its expertise and its experiences. Some of the learning was planned; e.g., the Strategic Planning Retreat of the Executive Committee. Some of it was serendipitous; e.g., demonstrators at the November meeting of the Dioxin Reassessment Review Subcommittee. Some of it was pleasant; e.g., the retrospective look at the SAB through letters of testimony submitted to mark the retirement of Dr. Mort Lippmann following his roughly two decades of service. Some of it was less pleasant; i.e., being the subject of a year-long investigation by the General Accounting Office is not the unalloyed joy that some have cracked it up to be.

The experience of new leadership at the Agency and new leadership at the Board has enabled us to look at the SAB with fresh eyes. Reaching out to incorporate new types of expertise is broadening the Board's vision. By expanding its experience and expertise, the SAB is better-prepared to respond to the challenges that now present themselves to the Agency, the Board, and the environment in this first year of the 21st century.

Donald G. Barnes, PhD
SAB Staff Director

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DEDICATION TO DR. MORTON LIPPMANN

In FY01, Dr. Morton Lippmann, Professor at the Nelson Institute of Environmental Medicine, a part of the Medical Center of New York University, completed nearly two decades of service as a Member of the EPA Science Advisory Board*. In a career that covered the Board's nascent, adolescent, and maturation phases, Dr. Lippmann served with distinction on CASAC, IHEC, and EC, including terms as Chair of each. Throughout, he demonstrated uncommon capacity, availability, and commitment to the SAB's cause of enhancing the production and use of science at EPA. He will be remembered, missed, and -- we can only hope -- emulated by others who will follow in his steps.

*Guidelines for Terms of Service on the SAB, adopted with Dr. Lippmann's support, make it unlikely that any future SAB Member will have a record of continuous service in excess of 10 years.

1.0 INTRODUCTION

This report is intended to reveal the EPA Science Advisory Board to a wide audience, to those both inside and outside the Agency. The intent is for each reader to gain a broader perspective of the SAB, its activities, and its impact. More specifically, the purpose of this Annual Report of the EPA Science Advisory Board Staff is three fold: a) To provide a succinct introduction to the SAB; b) To provide a summary of the SAB's activities for FY 2001; and c) To offer a near-term projection of future activities.

1.1 SAB FORMATION, AUTHORITY AND FUNCTION

The SAB was established by Congress in 1978 by the Environmental Research, Development, and Demonstration Authorization Act (ERDDAA) (42 U.S.C. 4365). Since that time, the SAB has operated as an EPA Staff Office, reporting directly to the Administrator. Composed of non-Federal government experts, the SAB provides the Administrator with outside, independent advice on scientific, engineering, economics, and social sciences issues that impact the technical basis for EPA positions, including regulations, research plans, and the like. Generally, the SAB does not address policy aspects of problems confronting the Agency, since such matters are the jurisdiction and responsibility of the EPA Administrator.

In the context of the Agency's peer review policy, the SAB is EPA's most high-profile, public peer review mechanism. As a result, the most notable, most controversial issues often end up on the SAB's agenda.

The Agency's expressed intention is to base its positions on a solid scientific foundation. Over the past 24 years, the SAB has assumed

growing importance and stature in this effort. It is now formal practice that many major scientific issues associated with environmental problems are reviewed by the SAB. For example, the Clean Air Act Amendments of 1977 (CAAA) require that technical aspects of decisions related to all National Ambient Air Quality Standards be reviewed by the Clean Air Scientific Advisory Committee (CASAC), which is administratively housed within the SAB.

The SAB conducts its business in public view and benefits from public input during its deliberations. Through these public proceedings, Agency positions are subjected to critical examination by leading experts in various fields in order to test their technical merits. At the same time, the SAB recognizes that EPA is often forced to take a policy action to reduce an emerging environmental risk before all of the rigors of scientific proof are met. To delay action until the evidence is irrefutable might result in irreversible ecological and health consequences. In such cases, the Agency makes certain assumptions and extrapolations from what is known in order to reach a rational science policy position regarding the need for regulatory action. In such cases, the SAB serves as a council of peers

to evaluate the soundness of the technical basis of the science policy position adopted by the Agency.

In 1997 the Board declared its mission to be “making a positive difference in the production and use of science at EPA”. Therefore, in addition to generating high-quality peer reviews, the Board’s activities also include providing counsel early in the Agency’s product development process, advice on needed research, unsolicited advice on technical topics that the Board feels should be brought to the Administrator’s attention, and forums/workshops/seminars for broadening and

leavening the Agency’s thinking.

1.2 SAB ORGANIZATION AND MEMBERSHIP

The Agency has continually and successfully recruited top technical talent to fill its leadership positions. Those scientists and engineers who have led the SAB (and predecessor organizations) for the past 24 years are listed in Figure 1. Appendix C3 contains a list of the distinguished scientists, engineers, and economists who served as Chairs of the SAB Committees in FY 2001.

Figure 1. SAB Leadership Over the Past Two Decades

Executive Committee Chairs

&	2001-Present	Dr. William Glaze University of North Carolina
&	2001- 2001	Dr. Morton Lippmann (Interim Chair) New York University
&	1997-2001	*Dr. Joan Daisey Lawrence Berkeley National Laboratory
&	1993-1997	Dr. Genevieve Matanoski Johns Hopkins University
&	1988-1993	Dr. Raymond Loehr University of Texas-Austin
&	1983-1988	Dr. Norton Nelson New York University
&	1981-1983	Dr. Earnest Gloyna University of Texas-Austin

- & 1979-1981 Dr. John Cantlon
Michigan State University
- & 1974-1978 Dr. Emil Mrak
University of California

*deceased February, 2001

SAB Staff Office Directors

- & 1988- Present Dr. Donald G. Barnes
- & 1981-1988 Dr. Terry Yosie
- & 1978-1981 Dr. Richard Dowd
- & 1975-1977 Dr. Thomas Bath

The Executive Committee (EC) serves as the focal point to coordinate the activities of the Board's 10 standing committees. The organization of the SAB is depicted on Appendix A1. The EC regularly meets to act on Agency requests for reviews, to hear briefings on pertinent issues, to initiate actions/ reviews by the Board which it feels are appropriate, and to approve final reports prior to transmittal to the Administrator. Reports from the separately chartered CASAC and the Council are submitted directly to the Administrator, without need for prior Executive Committee review or approval. The charters for SAB, CASAC, and Council are found in Appendix A2.

Five Committees have historically conducted most of the EPA Science Advisory Board reviews:

- (a) Clean Air Scientific Advisory Committee (CASAC):
Mandated by the 1977 Clean Air Act Amendments
- (b) Ecological Processes and Effects Committee (EPEC)
- (c) Environmental Engineering Committee (EEC)
- (d) Environmental Health Committee (EHC)
- (e) Radiation Advisory Committee (RAC)

Between 1986 and 1990, five additional committees were added:

- (a) Integrated Human Exposure Committee

(IHEC): Mandated by the Superfund Amendments and Reauthorization Act in FY 1986

(b) Research Strategies Advisory Committee (RSAC): Requested by the Administrator in response to the Board's Future Risk report in FY 1988

(c) Drinking Water Committee (DWC): Evolved from the EHC in FY 1990.

(d) Advisory Council on Clean Air Compliance Analysis (Council): Mandated by the 1990 Clean Air Act Amendments

(e) Environmental Economics Advisory Committee (EEAC): Requested by the Administrator in response to the Board's *Reducing Risk* report in FY 1990

The Board supplements the activities of these Committees by establishing a variety of ad hoc Subcommittees as needed.

The Members of the SAB constitute a distinguished body of scientists, engineers, and economists and other social scientists who are recognized, non-federal experts in their respective fields. These individuals are drawn from academia, industry, state government, and environmental communities throughout the United States and, in some limited cases, other countries. As needed, the SAB also accesses experts via the route of Federal Expert and Invited Expert. These categories are described in greater detail in Appendix C5, "Types of Affiliation with the SAB."

The number of Members is flexible. In FY 2001, SAB consisted of 112 members appointed by the Administrator for two-year terms, renewable twice. Service as Committee Chair can lead to as much as an

additional four years of continuous service. A formal guideline on Membership service was adopted by the Executive Committee in FY 1993 and has been followed by the Administrator in making appointments (see Appendix C4).

More than 300 technical experts, invited by the Staff Director, serve on an "as needed" basis as Consultants to the Board on various issues where their expertise is relevant. The number of Consultants is flexible, and their one-year terms can be renewed indefinitely. Consultants are required to meet the same standards of technical expertise as do the Members. In FY 2001, the SAB utilized the services of 68 Consultants.

Appendices C6 and C7 contain a list of the FY 2001 SAB Members and Consultants (M/C), respectively. The M/Cs serve as Special Government Employees (SGEs) and are subject to all relevant Federal requirements, including compliance with the conflict of interest statutes (18 U.S.C. Section 202-209).

The activities of the 400 M/Cs are supported by the SAB Staff which, during FY 2001, consisted of 22 people: a Staff Director, Deputy Staff Director, Special Assistant, two Team Leaders (Committee Operations Staff (who also serves as a Designated Federal Officer (DFO)), and the Committee Evaluation and Support Staff); six scientists/engineers who serve as DFOs, three administrative staff, five support staff, one detailee, one intern, and a National Older Workers Career Center Office Assistant (see Appendix C8 for Staff Biographies and Staff Transitions).

The SAB Staff works with the Agency to identify potential issues for SAB attention, focuses questions for review, works with the Board to identify and enlist appropriate

Members and Consultants, interfaces between the Board and the Agency as well as with the public, coordinates logistics for reviews, and produces drafts of minutes and reports for submission to the Administrator.

1.3 SAB ACTIVITIES

As shown in Table I, the SAB's budget in FY 2001 totaled more than \$2.7 million. Table II and Table III show that these resources enabled the Board to conduct 59 meetings and to issue 20 reports (see Appendices B1 - B4). The increase in total costs over the years reflects an increase in the number of Board Members, increases in Federal pay and allowances, and general increases in the cost of airline travel, hotel and meeting accommodations.

The types of projects, as well as the range of subject matter, undertaken by the SAB continue to grow. The Board takes on activities at the request of Congress, the Administrator, and EPA's various program offices, as well as on its own initiative. In general, the trend over time has been for more SAB reviews, addressing more varied subjects, requested by a wider range of individuals and organizations.

SAB reports most often present the findings of peer reviews of nearly-completed Agency projects and contain considerable detail about the findings and recommendations of the Board. An SAB report is generally structured as a response to a formal Charge to the Board. The Charge is a set of specific questions, negotiated by the Agency and the SAB, that guide, but do not constrain, the review.

1.4 SAB PRODUCTS

Tables I, II and III display the SAB's operating expenses, meeting activity, report production, and staffing for the past five fiscal years (1997-2001).

In recent years the SAB has worked with the Agency to produce more timely advice that is focused at the front-end of the Agency's involvement with an issue. First, the Board can conduct the "Consultation" as a means of conferring, as a group of knowledgeable individuals, in public session with the Agency on a technical matter, before the Agency has begun substantive work on that issue. The goal is to leaven EPA's thinking by brainstorming a variety of approaches to the problem very early in the development process. There is no attempt or intent to express an SAB consensus or to generate a formal SAB position. The Board, via a brief letter, simply notifies the Administrator that a Consultation has taken place.

Second, the Board may conduct an "Advisory" as a means of providing, via a formal SAB consensus report, critical input on technical issues during the Agency's position development process. In most instances, the topic of the Advisory will later be the subject of an SAB report, once the Agency has completed its work.

Third, most "Reports" are full-fledged peer reviews of essentially completed Agency products. "Letter" reports are similar in origin, content, and purpose to full reports. They are simply shorter; thereby generally resulting in more rapid advice to the Agency. Periodically the SAB will issue the results of a de novo other-than-peer-review project as an SAB report; cf "Toward Integrated Environmental Decision Making" in FY2000.

Fourth, the "Commentary" is a short communication that provides unsolicited SAB

advice about a technical issue the Board feels should be drawn to the Administrator's attention.

Fifth, the "Workshop" denotes SAB Workshop seminars.

Appendix B2 details meeting activity and report preparation by Committee during FY01.

1.5 CONTENT OF THIS REPORT

This Report consists of four principal

sections, plus appendices supplementing the discussion in the main sections. Following this Introduction (Section 1), Section 2 summarizes the Board's highlights of the year; Section 3 focuses on SAB Committee activities during FY 2001; and Section 4 provides insights on the Board's plans for the future.

The Appendices contain important information, such as organizational charts, membership lists, abstracts of SAB reports, and summaries of SAB seminars.

Figure 2. SAB's Estimated Expenses (\$K) for Fiscal Year 2001

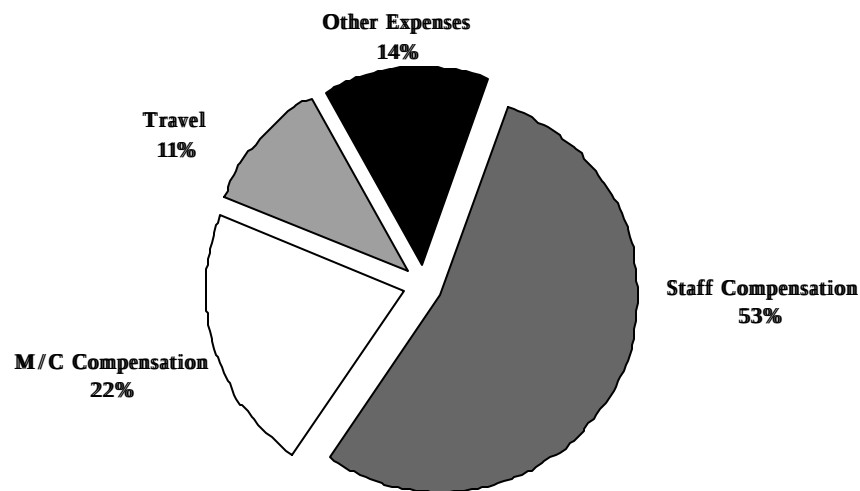


Table I

Budget Totals for Fiscal Years 1997 - 2001*
(In thousands of dollars)

Fiscal Year	Staff Compensation	M/C Compensation	Total	Travel	Other Expenses	Total
1997	1,170	555	1,725	282	212	2,219
1998	1,250	600	1,850	285	281	2,416
1999	1,318	630	1,948	308	298	2,554
2000	1,488	603	2,091	290	312	2,693
2001*	1,505	615	2,120	310	365	2,795

*Estimated

Figure 3. SAB Activities for Fiscal Year 2001

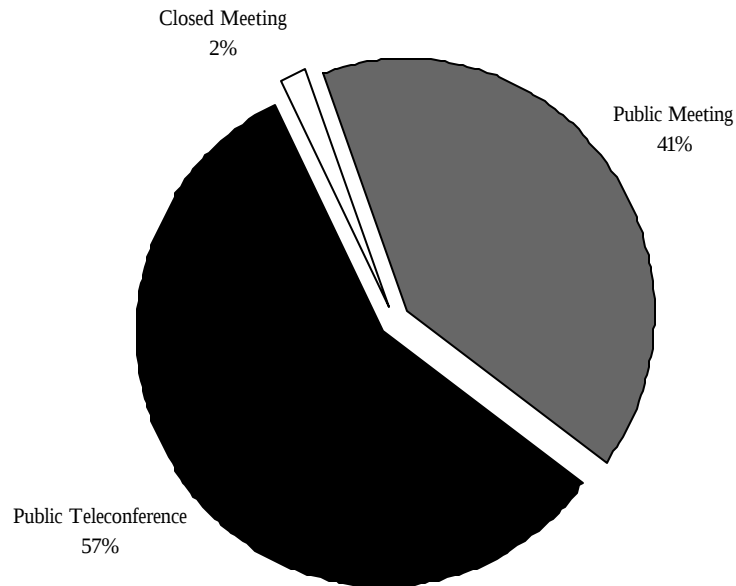


Table II

SAB Activities for Fiscal Years 1997 - 2001

Fiscal Year	Public Meeting	Public Teleconference	Closed Meeting	Total
1997	34	21(38%)	1	56
1998	42	8(16%)	1	51
1999	33	14(29%)	1	48
2000	32	22(40%)	1	55
2001	24	34(58%)	1	59

Figure 4. Committee Reports for Fiscal Years 1997 - 2001

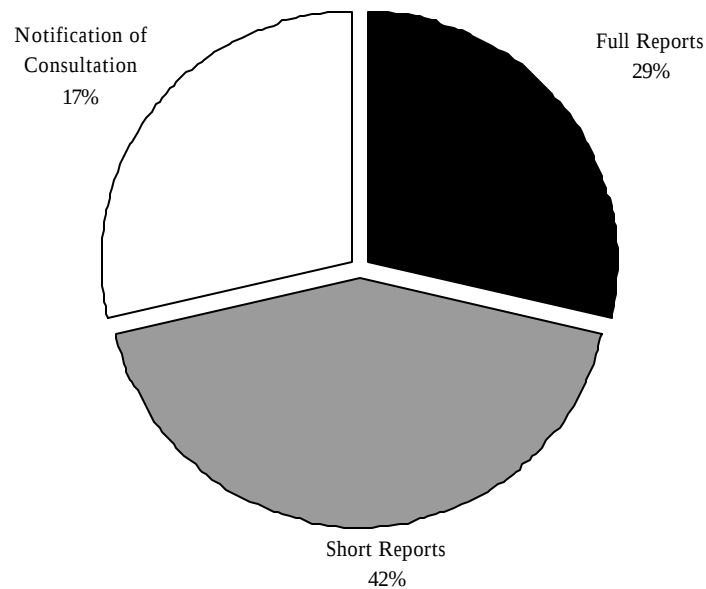


Table III
Committee Reports and Staffing for Fiscal Years 1997 - 2001

Fiscal Years	Committee Reports				Staffing	
	Full Reports	Short Reports	Total	Notifications of Consultations	Members	Federal Staff (Full Time Equivalents, FTEs)
1997	11	18	29	2	97	17.6
1998	11	10	21	9	102	19.7
1999	19	21	40	8	105	19.7
2000	17	20	37	8	104	18.8
2001	8	12	20	8	112	18.8

2.0 MAJOR HIGHLIGHTS OF THE YEAR: “EXPANDING EXPERTISE AND EXPERIENCE”

Fiscal Year 2001 will likely be remembered in the nation's history for the attacks on New York City and Washington, D.C. by terrorists. But for those who focus their attention on what the SAB did during the year, they will be struck by the variety of innovations, individuals, and process changes introduced during the year that significantly expanded the Board's expertise and experience. These changes resulted, in part, from creativity and a desire to "make a good operation even better" and, in part, from the publication of a year-long investigation by the General Accounting Office (GAO) into the SAB's process and procedures for insuring that a) SAB panels are populated by individuals who do not have conflicts-of-interests, b) SAB panels are balanced in terms of the biases that individuals inevitably bring to the table, and c) the public is adequately informed and participating in the panel selection process.

2.1 EXPANDING EXPERTISE

This past year the SAB expanded its involvement with the social sciences community. The Board continued the second year of sponsorship of a series of seminars under the broad title of "Human Dimensions of Environmental Protection". Dr. Angela Nugent of the SAB Staff, working with Dr. Roger Kasperon of the SAB Executive Committee, brought five top-notch speakers to the Agency, with targeted messages for the 30-50 Agency attendees, including in each case a high-level manager who reacted to the presentation. (See Section B7 for more details.)

Considerable progress has been made in enlisting Members from the social sciences discipline of economics. Starting from having no economists on the Board in 1990, the SAB Membership now includes 20 economists whose skills are directed at environmental problems primarily, but not exclusively, through the work of two economics-focused Committees that did not exist 11 years ago; i.e., the Advisory Council on Clean Air Compliance Analysis and the Environmental Economics Advisory Committee.

In recent years, the Agency has increased its efforts to address public health issues, particularly those dealing with children. As a consequence, the Board has expanded its expertise in the area of health and medicine. In FY 2001 the SAB counted 11 MDs in its cadre of 112 Members, of whom 30% were pediatricians.

Further, in response to the GAO report, the Board is instituting a series of steps that "cast a wider and finer net" as it forms its panels. The goal is to further ensure balance-of-bias (BOB) on a panel *in toto* and an absence of conflict-of-interest (COI) by any individual member. The approach is to make the panel selection process more open to view and input by the public. For example, when forming a special panel to address a particular issue (e.g., assessing the benefits of reducing the levels of arsenic in drinking water), the Staff now issues a notice in the Federal Register to solicit names of qualified candidates to be considered for service on the Board. This process complements the more traditional approaches of seeking input from the Agency and interested and affected parties. The result of this WIDECast effort is winnowed down to a NARROWCAST from which the panelists will be selected. The Staff will be mounting short

biosketches of the NARROWCAST group on the SAB Website and soliciting public input about COI concerns they might have about any individuals or BOB concerns about the panel *in toto*.

In addition, the Staff is exploring ways to improve and expand its current procedures for gathering/sharing/evaluating information about candidates. For example, the Staff is developing procedures to insure that future SAB panels will be marked by more uniform and informative introductions by panel members. The Office of the General Counsel (OGC) has been particularly helpful to the Staff in re-examining the processes by which COI issues are addressed and documented.

While not without significant cost, these administrative steps should address many of the concerns raised by GAO.

2.2 EXPANDING EXPERIENCE

2.2.1 THE EXPERIENCE OF A NEW CHAIR

In November, 2000, Dr. William Glaze of the University of North Carolina at Chapel Hill was appointed by the EPA Administrator as the Chair of the SAB Executive Committee. Dr. Glaze had previous SAB experience as Member, then Chair, of the Drinking Water Committee and, by virtue of that office, as Member of the Executive Committee in the 1990s. Since assuming his new position, Dr. Glaze has pushed the SAB to re-examine itself and its operations, with an eye toward being more responsive to its customer (the Administrator), more experimental in carrying out its work, and more reflective in defining its

mission. All of these new experiences promise an SAB that will be even more effective in helping the Agency to meet its challenges.

2.2.2 THE EXPERIENCE OF A NEW STRATEGIC PLANNING RETREAT

On April 9-11, 2001, members of the SAB Executive Committee held a Strategic Planning Retreat at the College of Preachers in Washington, D.C. The agenda addressed five key questions: (a) How can the Board be most effective?; (b) What should be the Board's work?; (c) How can the membership process work so the SAB is most effective?; (d) How can the Board improve the quality of its work?; and (e) How should the Board evaluate success?

To help frame the discussions, SAB Staff conducted interviews with eleven clients and stakeholders and compiled the information in a background document. In the interviews, staff asked: (a) Where has the Board made a positive difference in the production and use of science at EPA and what are the reasons why you believe it to have been successful? ; (b) What do/did you need from the Board? Are you getting it/did you get it?; (c)What do you do with the Board's product?; (d) What has been lacking from our products in the past?; (e) What is your view of how the Board operates in practice?; and (f) What new issues are on the horizon that you think the Board should address? On the first day of the retreat, EC Members also interacted with a panel of clients, stakeholders, old and new EC Members on these issues. The panel included: Dr. Peter DeFur (Virginia Commonwealth University); Dr. Carl Mazza (EPA's Office of Air and

Radiation); Mr. Jim Solyst (American Chemistry Council); Dr. Larry Reiter (EPA, Office of Research and Development); Dr. Mort Lippmann (SAB); and Dr. Roger Kasperson (SAB).

At the retreat, EC members made the following strategic decisions:

1. They reaffirmed the vision in the 1997 SAB Strategic Plan ("Making a positive difference in the production and use of science at EPA") and committed themselves to consider changes in operations that may make the Board more effective.
2. They decided to be more active in developing strategies to achieve that vision. This activity was to include:
 - a. A commitment to work with Agency leadership to identify strategic areas where the Board's advice will be important.
 - b. A commitment to select and manage the portfolio of SAB projects so that the Board can deliver advice in strategic areas and also maintain and improve peer review of Agency projects.
 - c. Exploration of new options for organizing the Board and ways to make Board operations more effective and responsive to customer needs.

Members also identified potential self-initiated projects for the Board in the following areas:

- a. Developing an Interagency Research Agenda Derived from a Systematic Consideration of Key Data Gaps in a Variety Related Fields of Environmental Sciences;
- b. Industrial Ecology;
- c. New "Reducing Risk Project;"

- d. Energy, Environment and Policy;
- e. Global/Transboundary Science and Technology Issues;
- f. Precautionary Principle

The Executive Committee also charged a subgroup, chaired by Dr. Roger Kasperson, to make recommendations regarding the role of behavioral, economic and social sciences in SAB structure and function, including examples of how this would work.

2.2.3 THE EXPERIENCE OF A MORE INVOLVED EXECUTIVE COMMITTEE

Stemming from steps taken at the Strategic Planning Retreat, the EC has become more actively involved in shaping the activities and direction of the Board. In addition to the direct outputs of the Retreat, the EC has demonstrated this activity in a number of different ways. For example, the EC now reviews more of the reports from its Committees through conference calls (34 such meetings in FY 2001) than at face-to-face meetings (25 such meetings in FY 2001). This process results in quicker final action by the EC than would otherwise be the case. Also, the EC has been more involved in discussing FY 2002 projects than it has in previous years, both through reviewing the Agency's requests and in developing more formalized descriptions of proposed self-initiated projects. The EC is pursuing this matter through meetings between the EC Chair and the Agency's Deputy Administrator and a meeting between the EC Chair and the Agency's Science Policy Council. Finally, the EC has established a Policies and Procedures Subcommittee (PPS) to review and advise the SAB Staff in developing and implementing responses to the GAO report.

2.2.4 THE EXPERIENCE WITH A NEW ADMINISTRATOR AND DEPUTY ADMINISTRATOR

Shortly after becoming Administrator of EPA, Governor Christine Todd Whitman met with the SAB Executive Committee to begin charting a course that will align the Board with the needs of the new Administration. In separate meetings with Deputy Administrator Linda Fisher, Dr. Glaze has explored an agenda of new approaches -- experiences -- by which the Board's expertise can be focused on the most important environmental challenges facing the Agency.

The Board was able to respond quickly and successfully to a particular request from the Governor to review the Agency's benefit assessment of the controversial arsenic drinking water rule.

2.2.5 THE EXPERIENCE OF NEW APPROACHES FOR GIVING ADVICE

Historically, the SAB has provided its advice to the Administrator via written reports that summarize deliberations featured at public meetings. While this work continues to form the bulk of SAB activity, the Board has branched out in recent years to consider additional avenues for providing advice. In FY 2001 the SAB introduced a new "product line" by issuing its first report of a jointly-sponsored workshop, "Understanding Public Values and Attitudes Related to Ecological Risk Management: An SAB Workshop Report", (EPA-SAB-EC-WKSP-01-001) that summarized the discussion at a workshop held on May 23-24, 2001. The event focused on how researchers

using analytical methods, tools, and approaches from the social sciences could assist decision makers by improving understanding of public values and attitudes related to specific threats to ecological resources, such as Tampa Bay Estuary, the focus of the workshop.

FY 2001 also saw a continuation in the Board being asked to provide input to Congress. This advice came by the way of participation in formal hearings, as well as a briefing for Congressional Staff:

- a. House Science Committee Hearing on HR 64 that would establish a position of Deputy Administrator of Science at EPA:

- 1) Dr. Raymond C. Loehr, testifying on behalf of the NRC
- 2) Dr. William Glaze, providing an SAB perspective.

- b. House Science Committee: Hearing on Science and Technology Budget Request for FY 2002 at EPA, October 3, 2000:

- 1) Dr. Philip Hopke, providing a summary of the Board's Advisory on the USEPA's Draft Case Study Analysis of the Residual Risk of Secondary Lead Smelters, EPA-SAB-EC-ADV-00-005
- 2) Dr. Morton Lippmann, providing a comparison of the risks from hazardous air pollutants and criteria air pollutants.

- c. American Chemical Society (ACS)/Society for Risk Analysis (SRA): Briefing for Congressional Staff on H.R. 64 -- Dr. Raymond C. Loehr.

- d. ACS/SRA Briefing for Congressional Staff on the General Accounting Office's (GAO) report on the SAB.

e. Dr. Donald Barnes provided OSAB's response as part of a panel of folks from GAO, Natural Resources Defense Council (NRDC), and American Chemistry Council (ACC).

2.2.6 THE EXPERIENCE OF NEW INTERACTIONS WITH INTEREST GROUPS

In FY 2001 the SAB reviewed a number of controversial issues; e.g., dioxin reassessment and benefits of arsenic reduction. In the dioxin case, members of the public demonstrated graphically, but quietly, at the public meeting to express concerns about the make-up of the panel. These actions supplemented concerns raised in letters to the Administrator, Congress, and the SAB Staff Director. As a result, OSAB initiated a series of meetings with individuals from industry and the NGO community to explore these concerns. In the arsenic case, elements of the NGO community were active and direct in providing input to the panel selection process. While this input did not have a direct bearing on the process, its presence further encouraged OSAB to expand its process for seeking and acting on suggestions from members of the public (See 2.2.5 above.)

2.2.7 THE EXPERIENCE WITH DIFFERENT OFFICES IN THE AGENCY

Stemming in part from receipt of the GAO report, OSAB has been in greater contact with the Office of the General Counsel (OGC) who provide advice to Agency offices on matters such as the Federal Advisory Committee Act (FACA) and ethical issues. A close working relationship is developing between OSAB Staff and OGC staff, principally Ken Wernick (ethics) and Marilyn Kuray (FACA), both of whom joined the Agency in FY 2001. With their assistance, OSAB is developing procedures to document more carefully decisions on conflict-of-interest and to address nettlesome issues, such as the Emolument Clause of the U.S. Constitution.

For the first time, in FY 2001 operational contacts have been established with the Office of the Inspector General (OIG). The OIG may be of assistance in evaluating the adequacy of the OSAB response to the GAO report. On a separate track, OIG has conferred twice with the SAB (RSAC), seeking input/assistance in a major project they have envisioned to analyze the impact of science on decision-making at EPA. If OIG goes forward with their plan, the SAB may serve a continuing advisory role.

3.0 FY 2001 COMMITTEE ACTIVITIES

The main activity of the SAB are the projects undertaken by its various Committees. In the face of more requests than current resources can address, the Board has had to be selective about its choice of projects. In selecting projects, the SAB has generally been guided by criteria that were originally generated in a “self study” retreat in 1989 and updated at a Strategic Planning Retreat of the Executive Committee in 1997. Provided below is a list of the SAB criteria.

1. General Criterion

- a. Provides an opportunity to make a difference in Agency Operations.

2. Client-related Criteria

- a. Supports major regulatory or risk management initiatives.
- b. Serves leadership interest such as those of the EPA Administrator or Congress.
- c. Support strategic themes of current interest.

3. Science-driven Criteria

- a. Involves scientific approaches that are new to the Agency.
- b. Deal with areas of substantial uncertainty.

4. Problem-driven Criteria

- a. Involves major environmental risks.
- b. Relates to emerging environmental issues.
- c. Exhibits long-term outlook.

5. Organizational-related Criteria

- a. Serves as a model for future Agency methods.
- b. Requires the commitment of substantial resources to scientific or technological development.
- c. Transcends organizational boundaries, within or outside EPA (includes international boundaries).
- d. Strengthens the Agency’s basic capability.

3.1 EXECUTIVE COMMITTEE (EC)

EC Members

Chair: Dr. William Glaze, University of North Carolina at Chapel Hill

Dr. Henry Anderson
Wisconsin Department of Health & Family Services
Dr. Trudy Cameron
University of California-Los Angeles
Dr. Kenneth Cummins
Humboldt State University
Dr. Linda Greer
Natural Resources Defense Council
Dr. Philip Hopke
Clarkson University
Dr. Hilary Inyang
University of North Carolina-Charlotte
Dr. Janet Johnson
Shepherd Miller, Inc.
Dr. Roger Kasperperson
Stockholm Environment Institute

Dr. Morton Lippmann
New York University Medical Center
Dr. Raymond Loehr
University of Texas -Austin
Dr. M. Granger Morgan
Carnegie Mellon University
Dr. William Smith
Yale University
Dr. Robert Stavins
Harvard University
Dr. R. Rhodes Trussell
Montgomery Watson Harza Engineering
Dr. Mark Utell
University of Rochester Medical Center
Dr. Terry Young
Environmental Defense

Liaison from Other FACA Committees

Board of Scientific Counselors

Dr. Gerald Schnoor
University of Iowa

FIFRA Scientific Advisory Panel

Dr. Ronald Kendall
Texas Tech University

Children's Health Protection Advisory Committee

Dr. Joel Bender
Monsanto Company

3.1.1 BACKGROUND

The EC coordinates the work of 10 standing Committees and numerous ad hoc subcommittees. The EC had 4 active subcommittees during the year.

(a) Benefits and Costs of Arsenic Reduction Subcommittee

Chair: Dr. Maureen Cropper
The World Bank

(b) Dioxin Reassessment Review Subcommittee

Chair: Dr. Morton Lippmann

New York University

(c) National Air Toxics Assessment (NATA)
Subcommittee

Chair: Dr. Mitchell Small
Carnegie Mellon University

(d) Scientific and Technological Achievement
Awards (STAA) Subcommittee

Chair: Dr. H. C. Ward
Rice University

With a Membership consisting of a Chair, the Chairs of the 10 standing Committees, and four At-large Members, this FACA-chartered institution is the nerve center of SAB activity, reviewing reports from the standing Committees (with the exception of reports from the separately chartered CASAC and Council), discussing proposals from standing Committees, and directing the work of ad hoc subcommittees that address complex issues calling for multi-disciplinary expertise.

3.1.2 ACTIVITIES

In FY 2001, the EC met four times in face-to-face FACA meetings, plus one non-FACA Strategic Planning Retreat. In addition, the EC conducted four publicly accessible conference calls to review formally reports from SAB committees and subcommittees.

The EC's four subcommittees introduced in the previous subsection collectively met face-to-face four times and five times by publicly accessible conference call. In addition, the subcommittees conducted another five non-FACA conference calls to work on aspects of reports that were later reviewed in public session. In these activities, the EC

utilized the services of 30 Consultants.

In addition, the EC authorized the continuation of SAB lecture series, "Science and the Human Side of Environmental Protection" (see Appendix B7), held at the Agency. The second year program consisted of the following noted speakers:

(a) Dr. Larry Susskind, Ford Professor of Urban and Environmental Planning and Head, Environmental Policy Group at the Massachusetts Institute of Technology (MIT) and Director, MIT-Harvard Public Disputes Program

"Who Says So? The Uses and Organization of Environmental Policy Studies"
September 22, 2000

(b) Dr. Roger Kasperson, Executive Director of the Stockholm Environment Institute
"Human Vulnerability to Global Environmental Change"
December 6, 2000

(c) Dr. Caron Chess, Director of the Center for Environmental Communications at Rutgers University
"Evaluating Public Participation; Feedback for Mid-Course Corrections"
February 22, 2001

(d) Dr. Ortwin Renn, Director of the Center of Technology Assessment, in Baden Wurttemberg, Germany and Chair of Environmental Sociology at the University of Stuttgart.
"Analytic-deliberative Processes in Risk Management; Opportunities, Problems, and Practical Experiences"

from a Risk-Management Perspective."
March 13, 2001

- (e) Dr. Robin Gregory, senior researcher at Decision Research (Eugene, Oregon) and Associate Director of the Eco-Risk Research Unit, University of British Columbia, Vancouver.
"Decision Aiding, Not Consensus: Using Structured Decision Processes to Link Consultation and Analysis"
April 4, 2001

Finally, the EC also sponsored a workshop in conjunction with Agency program offices on *Understanding Public Values and Attitudes Related to Ecological Risk Management* (see Appendix B4 for details). A workshop activity from FY 2001 on Science and Stakeholder Involvement was completed through one publicly accessible conference call to discuss a report that summarized the lessons learned through the workshop experience.

3.1.3 PRODUCTS

The EC's efforts resulted in the following advice being sent to the Administrator in FY 2001:

- (a) Dioxin Reassessment: An SAB Review of the Office of Research and

Development's Reassessment of Dioxin (EPA-SAB-EC-01-006)

- (b) Scientific and Technological Achievement Awards (STAA): Recommendations on the FY 2000 Nominations: An SAB Report (EPA-SAB-EC-01-007)

- (c) Arsenic Rule Benefits Analysis: An SAB Review (EPA-SAB-EC-01-008)

In addition to these three reports, the EC generated one Commentary in FY 2001:

- (a) Improving Science-Based Environmental Stakeholder Processes: An SAB Commentary (EPA-SAB-EC-COM-01-006)

The EC also conducted one Consultation during FY 2001:

- (a) Notification of a Consultation on the Agency's Plans for a Cumulative Risk Framework (EPA-SAB-EC-CON-01-004)

Appendix B4 contains abstracts of these documents; complete documents are available on the SAB Website, <http://www.epa.gov/sab>.

3.2 ADVISORY COUNCIL ON CLEAN AIR COMPLIANCE ANALYSIS (COUNCIL)

COUNCIL Members

Chair: Dr. Trudy Cameron, *University of California*

Ms. Lauraine Chestnut
Stratus Consulting Inc.

Dr. Maureen L. Cropper
The World Bank

Dr. Don Fullerton
University of Texas

Dr. Lawrence Goulder
Stanford University

Dr. Jane Hall
California State University

Dr. James Hammit
Harvard University

Dr. Charles Kolstad
University of California

Dr. Lester B. Lave
Carnegie Mellon University

Dr. Paul Liroy
UMDNJ-Robert Wood Johnson Medical School

Dr. Paulette Middleton
RAND Environment, Inc.

Dr. V. Kerry Smith
North Carolina State University

3.2.1 BACKGROUND

The Council has its origin in the requirements of Section 812 of the Clean Air Act Amendments of 1990. That section mandated that a Council be established to provide independent advice on technical and economic aspects of analyses and reports that the Agency prepares concerning the impacts of the Clean Air Act on public health, the economy, and the environment of the United States; i.e., overall costs and benefits.

3.2.2 ACTIVITIES

In FY 2001, the Agency asked the Council to review its draft analytical blueprint for the second prospective analysis of the costs and benefits of implementation of the

Clean Air Act, projected over the period 2000-2020. A special panel of the Council, which included members of its Health and Ecological Effects Subcommittee (HEES) and its Air Quality Modeling Subcommittee (AQMS), provided the Administrator with advice to strengthen the proposed analysis.

The Council conducted one meeting and two publicly accessible teleconferences in FY 2001. The AQMS and HEES each conducted one publicly accessible teleconference.

The Committee used 13 Consultants in FY 2001.

3.2.3 PRODUCTS

The Council generated the following Advisory in FY 2001:

- (a) Review of the Draft Analytical Plan for EPA's Second Prospective Analysis - Benefits and Costs of the Clean Air Act 1990- 2020 (EPA-SAB-COUNCIL-ADV-01-004)

Appendix B4 contains abstracts of these documents; complete documents are available on the SAB Website, <http://www.epa.gov/sab>.

3.3 CLEAN AIR SCIENTIFIC ADVISORY COMMITTEE (CASAC)

CASAC Members

Chair: Dr. Philip Hopke, Clarkson University

Dr. John Elston
New Jersey Department of Environmental Protection and Energy

Dr. Frederick Miller
Chemical Industry Institute of Toxicology

Dr. Arthur Upton
UMDNJ-Robert Wood Johnson Medical School

Dr. Sverre Vedal
University of British Columbia

Dr. Barbara Zielinska
Desert Research Institute

3.3.1 BACKGROUND

The CASAC is a separately chartered Federal advisory committee that is administratively housed within the offices of the SAB. As an independent advisory committee, the Committee reports directly to the EPA Administrator. The Chair of CASAC serves as a Member of the SAB Executive Committee, and the Members of CASAC are also Members of the SAB.

The CASAC has a statutorily mandated responsibility (under the 1977 and 1990 Clean Air Act Amendments) to review and offer scientific and technical advice to the Administrator on the air quality criteria and regulatory documents which form the basis for

the national ambient air quality standards (NAAQS). NAAQS have been established for lead, particulate matter (PM), ozone and other photochemical oxidants (O₃), carbon monoxide (CO), nitrogen oxides (NO_x), and sulfur oxides (SO_x). The CASAC process includes a peer review of the Office of Research and Development's Air Quality Criteria Document (CD) for a given NAAQS, followed by peer review of the Office of Air and Radiation's Staff Paper (SP) for that NAAQS. The CD contains all the relevant scientific and technical information on the pollutant, while the SP is the bridge between the science in the CD and the policy decision that has to be made by the EPA Administrator. When asked by EPA, the Committee also reviews the scientific and technical issues in the regulatory proposal for a NAAQS prior to its promulgation. The

Committee also offers research recommendations for individual NAAQS pollutants on a periodic basis, often in conjunction with a review of the Agency's Strategic Research Plan for that pollutant.

3.3.2 ACTIVITIES

The CASAC met four times during FY 2001 – two face-to-face meetings, one publicly accessible conference call, and one face-to-face meeting of the CASAC Subcommittee on Particle Monitoring. A total of 19 Consultants participated in CASAC activities during the year.

More detailed information on CASAC NAAQS-specific activities are found in Appendix B3.

3.3.3 PRODUCTS

The CASAC issued the following reports during FY 2001

- (a) Review of EPA's Health Assessment Document for Diesel Exhaust (EPA-SAB-CASAC-01-003)
- (b) Review of the EPA Air Quality Criteria for Particular Matter (EPA-SAB-CASAC-LTR-01-001)
- (c) Commentary on Exploring Opportunities for Accommodating Emerging Technologies for Continuous Monitoring in Routine Air Monitoring Networks (EPA-SAB-CASAC-COM-01-003)
- (d) Consultation on the Agency's Preliminary Staff Paper and Risk Assessment Scoping Plan for Particulate Matter (EPA-SAB-CASAC-CON-01-005)

Appendix B4 contains abstracts of these documents; complete documents are available on the SAB Website, <http://www.epa.gov/sab>.

3.4 DRINKING WATER COMMITTEE (DWC)

DWC Members

Chair: Dr. R. Rhodes Trussell, Montgomery Watson Harza Engineering

Dr. David Baker
Heidelberg College

Dr. Richard Bull
MoBull Consulting

Dr. Mary Davis
West Virginia University

Dr. Ricardo DeLeon
Metropolitan Water District of Southern California

Dr. Yvonne Dragan
Ohio State University

Dr. John Evans
Harvard University

Dr. Sidney Green
Howard University

Dr. Barbara Harper
Yakama Indian Nation

Dr. Lee D. McMullen
Des Moines Water Works

Dr. Christine Moe
Emory University

Dr. Philip Singer
University of North Carolina

Dr. Gary Toranzos
University of Puerto Rico

3.4.1 BACKGROUND

The DWC provides independent advice and peer reviews to EPA's Administrator on the technical aspects of problems and issues associated with the drinking water program, including the research that supports the program. Consequently, the primary clients for the Committee are EPA's Office of Water (OW) and the Office of Research and Development (ORD).

The importance of SAB interactions with the Agency was reinforced in the Safe Drinking Water Act Amendments which requires Agency consultation with the SAB on many Drinking Water actions.

3.4.2 ACTIVITIES

The DWC conducted two face-to-face meetings during the year. Topics discussed during the meetings included:

- (a) Contaminant Candidate List Research Plan
- (b) Proposed Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) and Stage 2 Disinfection/ Disinfectant Byproduct Rule (S2DBPR)
- (c) Proposed Arsenic Drinking Water Standard

The DWC used one consultant in FY 2001.

3.4.3 PRODUCTS

These efforts resulted in the following advice being sent to the EPA Administrator during the year:

(a) EPA Arsenic Proposed Drinking Water (EPA-SAB-DWC-01-001)

(b) Revised Microbial Risk Assessment

Framework: An EPA Science Advisory Board Notification of a Consultation (EPA-SAB-DWC-CON-01-008)

Appendix B4 contains abstracts of these documents; complete documents are available on the Sab Website, <http://www.epa.gov/sab>.

3.5 ECOLOGICAL PROCESSES AND EFFECTS COMMITTEE (EPEC)

EPEC Members

Chair: Terry Young, Environmental Defense

Dr. Miguel Acevedo University of North Texas Dr. Steven Bartell Cadmus Group Dr. Gregory Biddinger Exxon Mobil Dr. Kenneth Cummins Humboldt State University Dr. Virginia Dale Oak Ridge National Laboratory Dr. Ivan Fernandez University of Maine	Dr. Cynthia Gilmour Academy of Natural Sciences Dr. Lawrence Master Association for Biodiversity Information Dr. Paul Montagna University of Texas Dr. Charles Pittinger Procter & Gamble, Co.¹ Dr. Frieda Taub University of Washington
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¹ Joined SoBran, Inc. during this year

3.5.1 BACKGROUND

The EPEC is the primary committee responsible for reviews and advice relating to ecological issues, including environmental monitoring and assessment, ecological risk assessment, and ecological criteria. Traditionally, the Committee has sought to elevate the Agency's attention to non-

chemical stressors (e.g., habitat issues, physical alterations of ecosystems, and introduced species) and to raise the visibility of ecological risks in an Agency often preoccupied with human health concerns.

3.5.2 ACTIVITIES

Report of the EPA Science Advisory Board Staff

The EPEC held two face-to-face meetings and two teleconference meetings in FY 2001. The topics addressed at the meetings include the following:

- (a) Review of the STAR Water and Watersheds Program
- (b) Review of draft guidance, "Planning for Ecological Risk Assessment: Developing Management Objectives"
- (c) Review of the Southeastern Ecological Framework
- (d) Framework for Reporting on Ecological Condition

A total of two consultants were involved in these

activities

3.5.3 PRODUCTS

The Committee's final report is scheduled for release in Spring 2002, will discuss six ecological attributes and include case examples to illustrate potential applications of the reporting framework for EPA programs and projects.

3.6 ENVIRONMENTAL ECONOMICS ADVISORY COMMITTEE (EEAC)

EEAC Members

Chair: Dr. Robert Stavins, Harvard University

Dr. Dallas Burtraw
Resources for the Future

Dr. Lawrence Goulder
Stanford University

Dr. Michael Hanemann
University of California

Dr. Gloria Hefland
University of Michigan

Dr. Dale Jorgenson
Harvard University

Dr. Paul Joskow
Massachusetts Institute of Technology

Dr. Catherine Kling
Iowa State University

Dr. Richard Norgaard
University of California-Berkeley

Dr. Richard Revesz,
New York University

Dr. Jason Shogren
University of Wyoming

Dr. Hilary Sigman
Rutgers University

3.6.1 BACKGROUND

The EEAC provides advice to the Administrator on cross-cutting guidance for EPA's office that conduct analyses of economics, cost, and benefits of environmental regulations. The Committee also advises the Agency on its economic research efforts. On occasion, the Committee provides independent advice and peer reviews to EPA's Administrator on the technical aspects of specific economic analyses that are used in the development of regulations or other Agency initiatives. All parts of the Agency are potentially clients for the Committee.

3.6.2 ACTIVITIES

The EEAC held one face-to-face meeting in FY2001. Topics during the meeting included:

- (a) Discussion of Premature Mortality Valuation (PMV) Issues
- b) EPA's Plans for Implementing Executive Order 13141 Environmental Review of Trade Agreements
A total of two consultants were involved in these activities.

3.6.3 PRODUCTS

The Committee issued a Notification of Consultation

- (a) Trade and the Environment, An EPA Science Advisory Board Notification of a Consultation
(EPA-SAB-EEAC-CON-01-003)

3.7 ENVIRONMENTAL ENGINEERING COMMITTEE (EEC)

EEC Members

Chair: Dr. Hilary Inyang, University of North Carolina-Charlotte

Dr. H. Barry Dellinger
Louisiana State University
Dr. Terry Foecke
Waste Reduction Institute
Dr. Domenico Grasso
Smith College
Dr. Michael Kavanaugh
Malcolm Pirnie Inc.
Dr. Byung Kim
Ford Motor Company

Dr. John Maney
Environmental Measurements Assessment
Dr. Michael McFarland
Utah State University
Dr. Thomas Theis
Clarkson University
Dr. Valerie Thomas
Princeton University

3.7.1. BACKGROUND

The EEC is one of the original five SAB committees. The interests/responsibilities of this interdisciplinary Committee, anchored by the presence and leadership of environmental engineers, have grown to include such cross-Agency issues as industrial ecology, technology diffusion, and implementation of the Quality System.

3.7.2 ACTIVITIES

The EEC and its Subcommittees conducted two face-to-face meetings and 13 publicly accessible conference calls. The EEC used 13 consultants in FY 2001.

3.7.3 PRODUCTS

The EEC's work resulted in the following advice being submitted to the Administrator:

(a) Monitored Natural Attenuation: USEPA

Research Program – An EPA Science Advisory Board Review
(EPA-SAB-EEC-01-004)

(b) EPA Science Advisory Board (SAB) Commentary Resulting from a Workshop on the Diffusion and Adoption of Innovations in Environmental Protection
(EPA-SAB-EEC-COM-01-001)

(c) Measures of Environmental Technology Performance: a Commentary by the EPA Science Advisory Board
(EPA-SAB-EEC-COM-01-005)

(d) Notification of a Consultation on Environmental Systems Management Research
(EPA-SAB-EEC-CON-01-006)

Appendix B5 contains abstracts of these documents; complete documents are available on the SAB Website, <http://www.epa.gov/sab>.

3.8 ENVIRONMENTAL HEALTH COMMITTEE (EHC)

EHC Members

Chair: Dr. Mark Utell, University of Rochester Medical Center

Dr. Cynthia Bearer
Case Western Reserve University

Dr. John Doull
University of Kansas Medical Center

Dr. Paul Foster
Chemical Industry Institute of Toxicology

Dr. David Hoel
University of South Carolina

Dr. Abby Li
Monsanto Life Sciences

Dr. George Lambert
UMDNJ-Robert Wood Johnson University

Dr. Grace Lemasters
University of Cincinnati

Dr. Ulrike Luderer
University of California-Irvine

Dr. Roy Shore
New York University

3.8.1 BACKGROUND

The EHC, one of the original five SAB Committees, now shares responsibilities for the review of health effects-related issues with several Committees of the Board (DWC, IHEC, RAC, and CASAC). Over the past several years, the principal focus for the EHC has been on issues related to development and use of guidelines for health risk assessments, rather than the review of agent-specific assessments which had previously been a major activity.

3.8.2 ACTIVITIES

The EHC, in conjunction with the IHEC, conducted 1 face-to-face

meeting during FY 2001. The Joint Committees reviewed the Office of Radiation and Indoor Air's (ORIA) draft methodology to generate an "order-of-magnitude" screening-level ranking and selection of key air toxics indoors. 1 Consultant was used for this review.

3.8.3 PRODUCTS

The report for the above referenced meeting is in preparation.

3.9 INTEGRATED HUMAN EXPOSURE COMMITTEE (IHEC)

IHEC Members

Chair: Dr. Henry Anderson, Wisconsin Department of Health & Family Services

Dr. Annette Guiseppi-Elie

DuPont Engineering

Dr. Robert Harley

University of California

Dr. Michael Jayjock

Rohm and Haas Co.

Dr. Lovell Jones

University of Texas

Dr. Michael Lebowitz

University of Arizona

Dr. Randy Maddalena

Lawrence Berkeley National Laboratory

Dr. Rebecca Parkin

The George Washington University

Dr. Barbara Petersen

Novigen Sciences, Inc.

Dr. Jed M. Waldman

California Department of Health Services

Dr. David Wallinga

Institute for Agriculture and Trade Policy

Dr. Charles Weschler

UMDNJ-Robert Wood Johnson Medical School

3.9.1 OVERVIEW

In 1996, the Executive Committee established the Integrated Human Exposure Committee (IHEC) in growing recognition of the need for the Agency -- and the Board -- to consider risk factors, including exposure, in a more holistic fashion. The IHEC was essentially a re-naming of the Indoor Air Quality Committee (IAQC) that was formed in response to a Congressional determination (Superfund Act of 1986) that the actual exposure, including indoor air, of the human population to various environmental agents is a key factor in determining the nature and extent of possible health risks.

3.9.2 ACTIVITIES

The IHEC, in conjunction with the EHC, conducted 1 face-to-face meeting during FY 2001. The Joint Committees reviewed the Office of Radiation and Indoor Air's (ORIA) draft methodology to generate an "order-of-magnitude" screening-level ranking and selection of key air toxics indoors. One Consultant was used for this review.

3.9.3 PRODUCTS

The report for the above referenced meeting is in preparation.

3.10 RADIATION ADVISORY COMMITTEE

RAC Members

Chair: Dr. Janet Johnson, Shepherd Miller, Inc.

Dr. Lynn Anspaugh

University of Utah

Dr. Vicki Bier¹

University of Wisconsin

Dr. Bruce Boecker

Lovelace Respiratory Research Institute

Dr. Gilles Bussod

Consultant

Dr. Thomas F. Gesell

Idaho State University

Dr. Richard Hornung

University of Cincinnati

Dr. Jill Lipoti

New Jersey Department of Environmental
Protection

Dr. John Poston

Texas A&M University

Dr. Genevieve Roessler

Consultant

3.10.1 BACKGROUND

The RAC is one of the original SAB Committees. Throughout its history, the RAC has had the Office of Radiation and Indoor Air as a principal customer. Over the years, the emphasis given to radiation issues at the Agency has slackened. At the same time, there has been an increase in the attention that the Agency gives to inter-agency aspects of radiation protection. As a consequence, EPA is actively involved in a number of joint projects with other significant players in the radiation field; e.g., the Nuclear Regulatory Commission, the Department of Energy, and the Department of Defense. The products of several of these inter-agency efforts have been jointly brought to the RAC for critical, independent peer review.

3.10.2 ACTIVITIES

In FY 2001, the RAC conducted 1 face-to-face meeting. The Committee involved 5 Consultants in their work during the course of the year.

This meeting addressed the following issues:

- (a) The Interagency Steering Committee on Radiation Standards' (ISCORS) draft guidance document for sewage treatment plant operators on dealing with radioactive material in sewage sludge.
- (b) Planning for review of the Multi-Agency Radiological Laboratory Protocols (MARLAP) review

3.10.3 PRODUCTS

Three reports were submitted to the EPA Administrator in FY 2001:

- (a) Advisory on EPA's Proposed Approach for Evaluating Occurrence and Risks of Technologically Enhanced Naturally Occurring Radioactive Material (TENORM)
(EPA-SAB-RAC-ADV-01-001)
- (b) Advisory on ORIA's Use and Adaptation of The GENII Version 2 Environmental

Radiation Dosimetry System
(EPA-SAB-RAC-ADV-01-002)

- (c) Advisory on the Interagency Steering Committee on Radiation Standards' (ISCORS) Proposed Sewage Sludge Dose Modeling Scenarios
(EPA-SAB-RAC-ADV-01-003)

Appendix B5 contains abstracts of these documents; complete documents are available on the SAB website, <http://www.epa.gov/sab>.

3.11 RESEARCH STRATEGIES ADVISORY COMMITTEE (RSAC)

RSAC Members

Dr. Raymond Loehr, University of Texas

Dr. William Adams
Kennecott Utah Copper Corp.
Dr. Richard Bull
MoBull Consulting
Dr. Philip Hopke
Clarkson University
Dr. Alan Maki
EXXON Mobil
Dr. Genevieve Matanoski
Johns Hopkins University
Dr. Maria Morandi
University of Texas

Dr. Ishwar Murarka
ISH, Inc.
Dr. William Seeker
General Electric Energy & Env Research Corp.
Dr. William Smith
Yale University
Dr. Mark Utell
University of Rochester Medical Center
Dr. James E. Watson
University of North Carolina
Dr. Lauren Zeise

3.11.1 BACKGROUND

The RSAC advises the Agency and Congress on the overall EPA Science and Technology (S&T) Budget, as well as the Agency's overarching science programs and

policies (e.g., STAR program, peer review policy, etc.). Each spring RSAC conducts its review of the President's budget request for the following fiscal year and testifies before the House Committee on Science and Technology's Subcommittee on Energy and the Environment. RSAC also provides advice to EPA as requested.

An important RSAC role is to be a "Dutch Uncle" and "spokesperson" for long-term science at EPA. Being both a regulatory and science Agency, RSAC helps the Agency find ways to use science for its immediate and intermediate needs and also helps it maintain a long-term science program by providing advice and reminders about the need to stay the course on key areas of science.

All natural science SAB Committees are represented on RSAC. Generally, RSAC members serve or have served on other SAB Committees and tend to be more senior than the members of other SAB committees. This experience insures that the Committee is familiar with EPA operations, its science needs, and how "Big" science is budgeted and conducted.

3.11.2 ACTIVITIES

The RSAC conducted 5 face-to-face meetings and 1 teleconference meeting during the year. There were no Consultants involved in these efforts.

Among the issues addressed at these meetings were the following:

- (a) EPA's Peer Review Process
- (b) Research Partnerships
- (c) Performance Aspects of Multi-Year Plans
- (d) The President's FY 2002 Science and

Technology Budget for EPA (e) National Program Directors

In May, Dr. Randall Seeker, RSAC Member, testified before the Subcommittee on Environment, Technology, and Standards of the House Science Committee on the RSAC's review of the President's Budget Request for Science and Technology at USEPA.

3.11.3 PRODUCTS

The RSAC efforts resulted in 2 full reports, 1 commentary and 3 consultations being submitted to the EPA Administrator in FY 2001:

- (a) FY 2002 Presidential Science and Technology Budget Request for the Environmental Protection Agency: An SAB Report (EPA-SAB-RSAC-01-005)
- (b) Implementation of the Environmental Protection Agency's Peer Review Program: An SAB Evaluation of Three Reviews (EPA-SAB-RSAC-01-009)
- (c) Commentary on National Program Directors in ORD for Managing Large Crosscutting Programs (EPA-SAB-RSAC-COM-01-002)
- (d) Consultation on Office of Research and Development's National Program Director Program (EPA-SAB-RSAC-CON-01-001)
- (e) Consultation on Multi-year Planning and Performance Metrics for Science at EPA (EPA-SAB-RSAC-CON-01-002)
- (f) Office of Inspector General's Pilot Project to

Improve the Use of Science for
Decisions: An EPA Science
Advisory Board Notification of
Consultation
(EPA-SAB-RSAC-CON-01-007)

Appendix B4 contains abstracts of these
documents; complete documents are available
on the SAB website, <http://www.epa.gov/sab>.

4.0 PROJECTIONS FOR THE FUTURE

Much of FY 2002 will revolve around the SAB's reaction to the GAO report. The SAB Staff is working with a subcommittee of the Executive Committee [the Policies and Procedures Subcommittee (PPS)] on a first draft of operating procedures that are being put into place. These steps are outlined on the SAB website (www.epa.gov/SAB) and include but are not limited to the following:

- a. A more public -- and more extensive -- solicitation of names of candidates for membership on SAB panels and committees.
- b. A more open and public process for getting input on potential members before final selections are made.
- c. A more thorough examination, consideration, and documentation of possible COI issues.
- d. A more uniform and informative process for informing SAB panels and the public about backgrounds of SAB panel members.

Some of these steps have already been introduced in FY 2001. It is clear from this experience that these procedures -- coupled with greater scrutiny by the SAB EC (cf., its PPS subcommittee) and the public -- will be an added, but necessary, burden for the Staff. This added administrative load is projected to reduce the output of the SAB by as much as 30%.

At the same time, there is the promise that FY 2002 will see more systematic, high-level engagement in the setting of SAB's agenda. For example, the EC believes that the current process

can be improved, reflecting a growing concern that the right projects might not be coming to the SAB, per se, and that the Board's agenda lacks a compelling, integrating strategic structure. The Agency's Science Policy Council (SPC) is understanding of the problem. They share the concern that increased administrative burdens amplify the need to insure that limited resources of the Board are focused on the most important issues. The intent is to have a session with Dr. Glaze early in the year in order to anticipate future SAB projects and the kinds of expertise needed to address those future projects.

Following up on discussions at the Strategic Planning Retreat in FY 2001, Dr. Glaze intends to explore possible options for a structure of the Board that will more closely align with the needs of the Agency and will deliver advice in a more timely manner. Options include, but are not limited to, the following:

- a. Developing "clusters" of related activities, rather than relying solely on static committees.
- b. Conducting more *ad hoc* panels (some of which may have an on-going function; cf., Environmental Models Subcommittee), and
- c. Initiating more self-initiated activities that move the Agency beyond current realm of thinking.

On the Staff front, FY 2002 will see hardware changes (e.g., acquisition of laptops for DFO use) and software changes (e.g., further refinement of the Lotus Notes-based People DataBase). For the benefit of the M/Cs and the public, as well as the Staff, the much-used and

increasingly crowded SAB website will be redesigned to provide more information in a more accessible arrangement. This change will be the second major redesign of the SAB website since its introduction in 1995, and bespeaks of the growth in the utilization and effectiveness of this maturing technology. In addition, plans are underway to capitalize on "meeting-at-a-distance" options presented by the Internet and associated advances in software capability. The intent is to reduce the rigors and expense of travel on already weary M/Cs, without sacrificing the quality transfer of technical information. In addition, we seek to

minimize the inevitable reduction in benefits of social interaction and to maximize the extent of public participation.

The Staff has also targeted improvement of files management and completion of its Quality Management Plan for FY 2002.

APPENDIX A

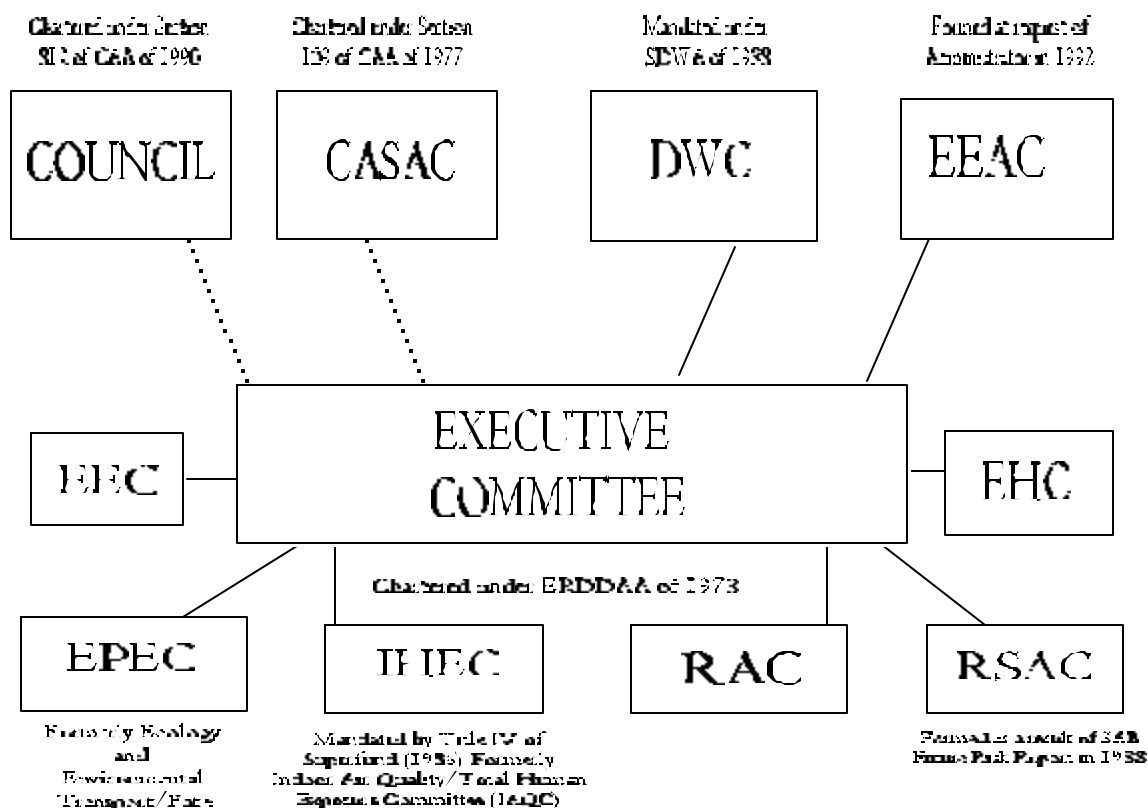
SAB'S STRUCTURE & AUTHORITIES

- A1. Organizational Chart
- A2. Introduction to Charters
 - A2.1 EPA Science Advisory Board Charter
 - A2.2 Clean Air Scientific Advisory Committee Charter
 - A2.3 Advisory Council on Clean Air Compliance Analysis Charter

A1

ORGANIZATIONAL CHART

U.S. Environmental Protection Agency Science Advisory Board



All Committees (except COUNCIL and CASAC which report directly) report to the Administrator through the Executive Committee.

COUNCIL—Policy Council on Clean Air Compliance Analysis; CASAC—Clean Air Scientific Advisory Committee;
DWC—Drinking Water Committee; EEAC—Environmental Economics Advisory Committee; EEC—Environmental Engineering Committee;
EHC—Environmental Health Committee; EPEC—Ecology, Environment, and Effects Committee; IHIEC—Integrated Human Exposure Committee;
IAC—Indoor Air Quality Committee; RAC—Research and Statistics Committee; RSAC—Research and Statistics Advisory Committee

A2

INTRODUCTION TO CHARTERS

The EPA Science Advisory Board was formally chartered in 1978 by the Environmental Research, Development, and Demonstration Authorization Act (ERDDAA). The Board is a Federal Advisory Committee and must comply with the Federal Advisory Committee Act (FACA). The SAB is a Congressionally mandated and a FACA-chartered advisory committee, currently consisting of 10 Committees (Appendix B), coordinated by an Executive Committee.

The Charter requires formation of an Executive Committee and inclusion of the Clean Air Scientific Advisory Committee (CASAC) and the Advisory Council on Clean Air Compliance Analysis (COUNCIL) (Appendix A). Otherwise, the Board may organize itself as needed to meet its responsibilities. It must comply with FACA (5 U.S.C.) and related regulations. The charters must be renewed every two years, announce its meetings in the Federal Register, and provide opportunities for public comment on issues before the Board. CASAC and COUNCIL are independently chartered FACA committees. As such, they report directly to the Administrator. However, they are administratively housed within the SAB and their Chairs participate as fully integrated members of the SAB Executive Committee.

An advisory committee charter is intended to provide a description of a committee's mission, goals, and objectives. It also provides a basis for evaluating a committee's progress and its effectiveness. The advisory committee charter must contain the following information:

- (1) The committee's official designation;
- (2) The objectives and the scope of the committee's activity
- (3) The period of time necessary to carry out the committee's purpose(s)
- (4) The agency or official to whom the committee reports
- (5) The agency responsible for providing the necessary support to the committee
- (6) A description of the duties for which the committee is responsible and specification of the authority for any non-advisory functions
- (7) The established annual operation costs to operate the committee in dollars and person years
- (8) The estimated number and frequency of committee meetings
- (9) The planned termination date, if less than 2 years from the date of establishment of the committee
- (10) The name of the individual and/or organization responsible for fulfilling the provisions of section 6(b) of FACA, which requires a report to the Congress one year after a Presidential advisory committee provides public recommendations to the President; and

- (11) The date the committee charter is filed.

A2.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY CHARTER

EPA SCIENCE ADVISORY BOARD

1. Committee's Official Designation (Title):

EPA Science Advisory Board

2. Authority:

This charter renews the EPA Science Advisory Board (SAB) in accordance with the provisions of the Federal Advisory Committee Act (FACA), 5 U.S.C. App § 9 (c). SAB is in the public interest and supports EPA in performing its duties and responsibilities. The former EPA Science Advisory Board, administratively established by the Administrator of EPA on January 11, 1974, was terminated in 1978 when the Congress created the statutorily mandated EPA Science Advisory Board by the Environmental Research, Development, and Demonstration Authorization Act (ERDDAA) of 1978, 42 U.S.C. 4365. The EPA Science Advisory Board charter was renewed October 31, 1979; November 19, 1981; November 3, 1983; October 25, 1985; November 6, 1987; November 8, 1989, November 8, 1991, November 8, 1993, November 8, 1995, and November 7, 1997.

3. Objectives and Scope of Activities:

The objective of the Board is to provide independent advice and peer review to EPA's Administrator on the scientific and technical aspects of environmental problems and issues. While the Board reports to the Administrator, it may also be requested to provide advice to U. S. Senate Committees and Subcommittees and U.S. House Committees and Subcommittees, as appropriate. The Board will review scientific issues, provide independent scientific and technical advice on EPA's major programs, and perform special assignments as requested by Agency officials and as required by the Environmental Research, Development, and Demonstration Authorization Act of 1978, the Clean Air Act Amendments of 1977, and the Clean Air Act Amendments of 1990.

The major objectives are to review and provide EPA advice and recommendations on:

- a. The adequacy and scientific basis of any proposed criteria document, standard, limitation, or regulation under the Clean Air Act, the Federal Water Pollution Control Act, the Clean Water Act, the Resource Conservation and Recovery Act, the Toxic Substances Control Act, the Safe Drinking Water Act, the Comprehensive Environmental Response, Compensation, and Liability Act, or any other authority of the Administrator
- b. The scientific and technical adequacy of Agency programs, guidelines, documents, methodologies, protocols, and tests
- c. New or revised scientific criteria or standards for protection of human health and the environment
- d. Matters as required under the Clean Air Act, as amended in 1977 and 1990, through the Clean Air Scientific Advisory Committee and the Advisory Council on Clean Air Compliance Analysis
- e. New information needs and the quality of Agency plans and programs for research, development and demonstration
- f. The relative importance of various natural and anthropogenic pollution sources

As appropriate, the SAB consults and coordinates with:

- a. The Scientific Advisory Panel established by the Administrator pursuant to section 21 (b) of the Federal Insecticide, Fungicide and Rodenticide Act, as amended; and other Agency FACA Committees; and
- b. Other Federal advisory groups, as appropriate, to conduct the business of the Board

4. Description of Committees Duties:

The duties of the SAB are solely advisory in nature.

5. Official(s) to Whom the Committee Reports:

The Committee will report with its advice and recommendations to the Administrator of the Environmental Protection Agency.

6. Agency Responsible for Providing the Necessary Support:

EPA will be responsible for financial and administrative support. Within EPA, this support will be provided by the Office of the Administrator.

7. Estimated Annual Operating Costs and Work Years:

The estimated annual operating cost of the SAB is \$2,143,900 which includes 16.70 work-years of support.

8. Estimated Number and Frequency of Meetings:

There will be approximately fifty (50) meetings of SAB's standing committees and specialized subcommittees each year. Meetings may occur approximately four (4) to five (5) times a month, or as needed and approved by the Designated Federal Officer (DFO). EPA may pay travel and per diem expenses when determined necessary and appropriate. A full-time or permanent part-time employee of EPA will be appointed as the (DFO). The DFO or a designee will be present at all meetings and each meeting will be conducted in accordance with an agenda approved in advance by the DFO. The DFO is authorized to adjourn any meeting when he or she determines it in the public interest to do so. Among other things, FACA requires open meetings and an opportunity for interested persons to file comments before or after such meetings, or to make statements to the extent that time permits.

9. Duration and Termination:

The SAB will be needed on a continuing basis. This charter will be effective until November 8, 2001, at which time it may be renewed for another two-year period.

10. Member Composition:

The SAB's Executive Committee will be composed of approximately seventeen (17) members, who are the chairs of SAB's standing committees, chairs from the separately chartered Advisory Council on Clean Air Compliance Analysis, the Clean Air Act Scientific Advisory Committee, and at-large members. Most members will serve as Special Government Employees. Members will be selected from among, but are not limited to; independent scientists, engineers, and economists to provide a range of expertise required to assess the scientific and technical aspects of environmental issues.

11. Subgroups:

EPA may form SAB subcommittees or workgroups for any purpose consistent with this charter. Such subcommittees or workgroups may not work independently of the chartered committee. Subcommittees or workgroups have no authority to make decisions on behalf of the chartered committee nor can they report directly to the Agency.

____ November 2, 1999
Agency Approval Date

____ November 8, 1999

A2.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY CHARTER

CLEAN AIR SCIENTIFIC ADVISORY COMMITTEE

1. **Committee's Official Designation (Title):**

Clean Air Scientific Advisory Committee

2. **Authority:**

This charter renews the Clean Air Scientific Advisory Committee (CASAC) in accordance with the provisions of the Federal Advisory Committee Act (FACA), 5 U.S.C. App.2 § 9 (c). CASAC is in the public interest and supports EPA in performing its duties and responsibilities. EPA was specifically directed by law on August 7, 1977 under § 109 of the Clean Air Act, as amended [ACT], 42 U.S.C. 7409) to establish this committee. The charter has been renewed every two years, with the last renewal on August 6, 1999.

3. **Objectives and Scope of Activities:**

CASAC will provide advice, information and recommendations on the scientific and technical aspects of issues related to the criteria for air quality standards, research related to air quality, source of air pollution, and the strategies to attain and maintain air quality standards and to prevent significant deterioration of air quality.

The major objectives are to:

- a. Not later than January 1, 1980, and at five year intervals thereafter, complete a review of the criteria published under § 108 of the Clean Air Act and the national primary and secondary ambient air quality standards and recommend to the Administrator any new national ambient air quality standards or revision of existing criteria and standards as may be appropriate

- b. Advise the Administrator of areas where additional knowledge is required concerning the adequacy and basis of existing, new, or revised national ambient air quality standards
- c. Describe the research efforts necessary to provide the required information
- d. Advise the Administrator on the relative contribution to air pollution concentrations of natural as well as anthropogenic activity
- e) Advise the Administrator of any adverse public health, welfare, social, economic, or energy effects which may result from various strategies for attainment and maintenance of such national ambient air quality standards

4. Description of Committees Duties:

The duties of CASAC are solely advisory in nature.

5. Official(s) to Whom the Committee Reports:

The Committee will submit advice and recommendations and report to the EPA Administrator.

6. Agency Responsible for Providing the Necessary Support:

EPA will be responsible for financial and administrative support. Within EPA, this support will be provided by the EPA Science Advisory Board, Office of the Administrator.

7. Estimated Annual Operating Costs and Work Years:

The estimated annual operating cost of the CASAC is \$396,372 which includes 1.9 work-years of support.

8. Estimated Number and Frequency of Meetings:

The committee expects to meet approximately three (3) to six (6) times a year. Meetings may occur approximately once every two (2) to four (4) months or as needed and approved by the Designated Federal Officer (DFO). EPA may pay travel and per diem expenses when determined necessary and appropriate. A full-time or permanent part-time employee of EPA will be appointed as the (DFO). The DFO or a designee will be present at all meetings and each meeting will be conducted in accordance with an agenda approved in advance by the DFO. The DFO is authorized to adjourn any meeting when he or she determines it is in the public interest to do so. As required by FACA, CASAC will hold open meetings unless the Administrator determines that a meeting or a portion of a meeting may be closed to the public in accordance with subsection (c) of section 552b of title 5, United States Code. Interested

persons are permitted to attend meetings, appear before the committee, or file comments with CASAC.

9. Duration and Termination:

CASAC will be needed on a continuing basis. This charter will be in effect for two years from the date it is filed with Congress. After this two-year period, the charter may be renewed in accordance with Section 14 of FACA (5 U.S.C. App.2 § 14).

10. Member Composition:

CASAC will be composed of seven (7) members. The Administrator will appoint a Chairperson and six members including at least one member of the National Academy of Sciences, one physician, and one person representing State air pollution control agencies. Members shall be persons who have demonstrated high levels of competence, knowledge, and expertise in the scientific/technical fields relevant to air pollution and air quality issues. Most members will serve as Special Government Employees (SGE).

11. Subgroups:

CASAC, on its own initiative or at EPA's request, may form subcommittees or workgroups for any purpose consistent with this charter. Such subcommittees or workgroups may not work independently of the chartered committee. Subcommittees or workgroups have no authority to make decisions on behalf of the chartered committee nor can they report directly to the Agency.

August 3, 2001
Agency Approval Date

August 17, 2001
Date Filed with Congress

A2.3

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY CHARTER

ADVISORY COUNCIL ON CLEAN AIR COMPLIANCE ANALYSIS

1. **Committee's Official Designation (Title):**

Advisory Council on Clean Air Compliance Analysis

2. **Authority:**

This charter renews the Advisory Council on Clean Air Compliance Analysis (Council) in accordance with the provisions of the Federal Advisory Committee Act (FACA), 5 U.S.C. App. § 9 (c). The Council is in the public interest and supports the Environmental Protection Agency (EPA) in performing its duties and responsibilities. The Council was specifically directed under § 812 of the Clean Air Act, as amended on November 15, 1990 (42 U.S.C. 7401 *et seq.*).

3. **Objectives and Scope of Activities:**

The Council will provide advice, information and recommendations on technical and economic aspects of analyses and reports which EPA prepares concerning the impacts of the Clean Air Act (CAA) on the public health, economy, and environment of the United States.

The major objectives required of the Council by the Clean Air Act Amendments of November 15, 1990 are:

- a. Review data to be used for any analysis required under section 812 and make recommendations on its use.
- b. Review the methodology used to analyze such data and make recommendations on the use of such methodology.
- c. Prior to the issuance of a report to Congress required under Section 812, review the findings of the report and make recommendations concerning the validity and utility of such findings.

At EPA's request, the Council will:

- d. Review other reports and studies prepared by EPA relating to the benefits and costs of the CAA.
- e. Provide advice on areas where additional knowledge is necessary to fully evaluate the impacts of the CAA and the research efforts necessary to provide such information.

4. Description of Committees Duties:

The duties of the Council are solely advisory in nature.

5. Official(s) to Whom the Committee Reports:

The Committee will report to, and provide advice and recommendations to, the Administrator of the Environmental Protection Agency.

6. Agency Responsible for Providing the Necessary Support:

EPA will be responsible for financial and administrative support. Within EPA, this support will be provided by the EPA Science Advisory Board (SAB).

7. Estimated Annual Operating Costs and Work Years:

The estimated annual operating cost of the Council is \$199,000 which includes 1.7 work-years of support.

8. Estimated Number and Frequency of Meetings:

The Council expects to meet approximately two (2) to four (4) times a year. Meetings will likely occur approximately once every three (3) to six (6) months, or as needed and approved by the Designated Federal Officer (DFO). EPA may pay travel and per diem expenses as determined necessary and appropriate by the DFO. A full-time or permanent part-time EPA employee will be appointed as DFO. The DFO or a designee will be present at all meetings, and each meeting will

be conducted in accordance with an agenda approved in advance by the DFO. The DFO is authorized to adjourn any meeting when he or she determines it in the public interest to do so. Among other things, FACA requires open meetings and an opportunity for interested persons to file comments before or after such meetings, or to make statements to the extent that time permits.

9. Duration and Termination:

The Council will be needed on a continuing basis, and may be renewed upon the expiration of each successive two year period following the date of enactment of the CAA (as amended on November 15, 1990), as authorized in accordance with § 14 of FACA.

10. Member Composition:

The Council will be composed of at least 9 members. Most members will serve as Special Government Employees (SGE), subject to conflict-of-interest restrictions. Members will be selected from among, but are not limited to, recognized experts from the fields of health and environmental effects of air pollution, economics analysis, environmental sciences.

11. Subgroups:

EPA may form Council subcommittees or workgroups for any purpose consistent with this charter. Such subcommittees or workgroups may not work independently of the chartered committee. Subcommittees or workgroups have no authority to make decisions on behalf of the chartered committee nor can they report directly to the Agency.

November 6, 2000
Agency Approval Date

November 27, 2000
Date Filed with Congress

APPENDIX B

SAB ACTIVITIES & PRODUCTS

- B1. SAB FACA Meetings for FY 2001
- B2. SAB Activities for Fiscal Years 1997 - 2001
- B3. SAB FY 2001 Products
- B4. Abstracts of SAB Reports, Advisories and Commentaries
- B5. Time-to-Completion
- B6. Accessing SAB Reports and Notification of SAB Meetings
- B7. Abstracts of the SAB Lecture Series - "Science & the Human Side of Environmental Protection"

B1

SAB MEETINGS FOR FY 2001

Glossary of Acronyms for the EPA Science Advisory Board

CASAC	Clean Air Scientific Advisory Committee
COUNCIL	Advisory Council on Clean Air Compliance Analysis
AQMS	Air Quality Modeling Subcommittee
HEES	Health and Ecological Effects Subcommittee
DWC	Drinking Water Committee
EC	Executive Committee
EEAC	Environmental Economics Advisory Committee
EEC	Environmental Engineering Committee
EHC	Environmental Health Committee
EPEC	Ecological Processes and Effects Committee
IHEC	Integrated Human Exposure Committee
IRP	Integrated Risk Project
RAC	Radiation Advisory Committee
RROS	Risk Reduction Options Subcommittee
RSAC	Research Strategies Advisory Committee

*Note: **F** indicates teleconferences; all other meetings are face to face.
All meetings were held in Washington, DC unless otherwise noted.*

First Quarter

October 12-13	CASAC	Diesel Health Assessment II
F October 25	EEC	Natural Attenuation
F October 27	RSAC	Budget Preparation & Peer Review Implementation
November 1-2	EC	Review Meeting & Science and Stakeholder Involvement
November 1-2	EC Subcomm.	Dioxin
December 5-7	EEC	Committee Planning
December 12-13	RSAC	ORD Strategic Plan 2000, Peer Review Implementation & Committee Planning
December 12-14	RAC	MARLAP Planning & ISCORS Draft Sewage Sludge Modeling Report

<u>Second Quarter</u>	<u>Committee</u>	<u>Topic(s)</u>
F January 10	EEC	Industrial Ecology, Environmental Systems Management Research & Contaminated Sediments
January 22	CASAC	Particle Monitoring Program
F January 23	EC Subcommittee	2,3,7,8 -Tetracholorodibenzo-p-Dioxin
F February 1	EC	Review Meeting
February 5-6	EC	Review Meeting
F February 21	EC Subcommittee	NATA
F March 1	EEC	Industrial Ecology & Environmental Systems Management Research
March 6-7	RSAC	Peer Review Policy Implementation, Science Plan, Strategic Plan 2000, Budget Review Preparation & Performance Metrics
F March 7	EEC	Risk Reduction Options & Committee Planning
March 20-21	EC Subcommittee	NATA
F March 22	EC Subcommittee	Science and Stakeholder Involvement
March 21-23	EEC	Industrial Ecology & Environmental Systems Management Research
<u>Third Quarter</u>	<u>Committee</u>	<u>Topic(s)</u>
F April 3	EPEC	STAR Waters and Watersheds
April 9-11	EC	SAB Strategic Retreat (Non-FACA)
F April 18	EEC	Industrial Ecology & Environmental Systems Management Research
April 20	EPEC	STAR Waters and Watersheds
F April 23	EC Subcommittee	2,3,7,8-Tetrachlorodibenzo-p-Dioxin (Non-FACA)
F April 24	EC Subcommittee	NATA (Non-FACA)
May 1-2	RSAC	Budget Review
F May 2	EEC	Briefings and Updates on Subcommittee Activities
F May 14	CASAC	Fine Particle Report from the CASAC Technical Subcommittee on Fine Particle Monitoring & Committee Planning
F May 14	EC Subcommittee	NATA (Non-FACA)
May 15	EC	Review Meeting (2,3,7,8-

			Tetrachlorodibenzo-p-Dioxin & RSAC Budget Review)
F May 22	EEC Subcommittee	Industrial Ecology	
F May 23	EC	Review Meeting (ISCORS Sewage Sludge, GENII Version 2.0 & Science and Stakeholder Involvement Workshop)	
May 23-24	EC Subcommittee	Understanding Public Values and Attitudes Related to Ecological Risk Management (Non-FACA)	
F May 25	EC Subcommittee	NATA (Non-FACA)	
May 25	EEAC	The Benefits of Premature Morality Risk Reduction, Trade and Environment & BEN Model	
F June 1	EPEC	STAR Waters and Watersheds	
June 11-12	EC Subcommittee	Scientific and Technological Achievement Awards (STAA)	
June 12-13	DWC	Candidate Contaminant List (CCL) Research Plan & Microbial Risk Assessment Paradigm	
F June 13	EC Subcommittee	NATA	
F June 22	COUNCIL	Section 812 Study - Planning Meeting	
F June 25	COUNCIL / HEES	Section 812 Study	
F June 26	EEC	Surface Impoundments	
June 26-27	RSAC	Science Plan & Strategic Plan 2000	
<u>Fourth Quarter</u>	<u>Committee</u>	<u>Topic(s)</u>	
F July 2	COUNCIL / AQMS	Section 812 Study of the CAAA 1990 Planning Meeting	
July 9-10	COUNCIL	Review of Analytic Blueprint for the Clean Air Act (CAA) 812 Section 812 Drafts Costs and Benefits Report to Congress	
F July 10	EEC Subcommittee	Industrial Ecology	
F July 11	EEC	Review Meeting	
July 17-18	EC	Review Meeting & Cumulative Risk Assessment Framework	
July 18-20	EPEC	Ecological Management Objectives & Southeastern Ecological Framework	
F July 19	EEC	Surface Impoundment	
July 19-20	IHEC/EHC	Indoor Air Toxics Ranking	
July 19-20	EC Subcommittee	Arsenic Benefits Rule	

July 23-24	CASAC	Particulate Matter (PM) Criteria Document & PM Staff Paper
F July 31	EC Subcommittee	NATA (Non-FACA)
F August 9	COUNCIL	Section 812 Study
F August 14	EC Subcommittee	Arsenic Benefits Rule
F August 27	EC	Review Meeting (Arsenic Benefits Rule, STAA Commentary & Peer Review Program)
F August 27	EEC	Surface Impoundments
F August 29	EC Subcommittee	NATA
August 29	RSAC	Characteristics of Science used in Agency Rulemaking
F September 5	EEC	Industrial Ecology & Risk Reduction Options
F September 17	EC	Review Meeting (NATA Assessment, Eco Mgmt. Objectives, STAR Watersheds & Indoor Air Toxics)
F September 17	EEC	Surface Impoundments
F September 25	DWC	Stage II Disinfection/Disinfectant By-Product Rule Proposal
F September 26	DWC	Long-Term Enhanced Surface Water Treatment Rule Proposal

B2**SAB ACTIVITIES BY COMMITTEE FOR FISCAL YEARS 1997 - 2001**

Committee	Fiscal Year	Committee Activities ¹			Number of Reports ²		
		Meetings Total	Teleconferences		Full	Short	Total
EC	1997	3	3	6	0	4	4
	1998	3	5	8	0	0	0
	1999	3	6	9	0	0	0
	2000	3	7	10	0	4	4
	2001	4	4	8	0	1	1
EC/ad hoc Subcomm.	1997	17	10	27	2	0	2
	1998	8	0	8	2	0	2
	1999	9	1	10	6	4	10
	2000	7	2	9	8	4	12
	2001	4	6	10	3	1	4
COUNCIL	1997	1	6	7	0	3	3
	1998	3	0	3	0	2	2
	1999	4	2	6	0	3	3
	2000	0	2	2	0	3	3
	2001	1	4	5	0	1	1

SAB ACTIVITIES BY COMMITTEE FOR FISCAL YEARS 1997 - 2001
(CONTINUED)

Committee	Fiscal Year	Committee Activities ¹			Number of Reports ²		
		Meetings Total	Teleconferences		Full	Short	Total
CASAC	1997	1	0	1	0	1	1
	1998	3	0	3	0	1	1
	1999	3	1	4	1	8	9
	2000	4	3	7	1	4	5
	2001	3	1	4	1	2	3
DWC	1997	1	1	2	1	1	2
	1998	2	0	2	0	1	1
	1999	2	0	2	1	1	2
	2000	3	0	3	0	3	3
	2001	1	2	3	1	0	1
EPEC	1997	2	0	2	2	5	7
	1998	2	1	3	2	1	3
	1999	2	1	3	1	0	1
	2000	2	0	2	2	0	2
	2001	2	2	4	0	0	0
EEAC	1997	0	0	0	0	0	0
	1998	2	0	2	0	1	1
	1999	2	1	3	1	1	2
	2000	2	0	2	1	1	2
	2001	1	0	1	0	0	0

SAB ACTIVITIES BY COMMITTEE FOR FISCAL YEARS 1997- 2001
(CONTINUED)

Committee	Fiscal Year	Committee Activities ¹			Number of Reports ²		
		Meetings Total	Teleconferences		Full	Short	Total
EEC	1997	3	0	3	3	1	4
	1998	6	0	6	4	1	5
	1999	4	1	5	1	5	6
	2000	4	8	12	1	2	3
	2001	2	14	16	1	2	3
EHC	1997	1	0	1	2	1	3
	1998	3	0	3	1	0	1
	1999	0	0	0	4	0	4
	2000	1	0	1	0	1	1
	2001	.5	0	.5	0	0	0
IHEC	1997	2	0	2	0	1	1
	1998	2	0	2	1	1	2
	1999	1	0	1	1	3	4
	2000	1	0	1	1	0	1
	2001	.5	0	.5	0	0	0

SAB ACTIVITIES BY COMMITTEE FOR FISCAL YEARS 1997 - 2001
(CONTINUED)

Committee	Fiscal Year	Committee Activities ¹			Number of Reports ²		
		Meetings Total	Teleconferences		Full	Short	Total
RAC	1997	4	1	5	1	0	1
	1998	6	2	8	0	1	1
	1999	2	1	3	2	4	6
	2000	2	1	3	1	0	1
	2001	1	0	1	0	3	3
RSAC	1997	0	0	0	0	0	0
	1998	3	0	3	1	1	2
	1999	2	0	2	1	0	1
	2000	2	1	3	2	0	2
	2001	5	1	6	2	1	3

EC	Executive Committee
COUNCIL	Advisory Council on Clean Air Compliance Analysis
CASAC	Clean Air Scientific Advisory Committee
DWC	Drinking Water Committee
EEAC	Environmental Economics Advisory Committee
EEC	Environmental Engineering Committee
EHC	Environmental Health Committee
EPEC	Ecological Processes and Effects Committee
IHEC	Integrated Human Exposure Committee
RAC	Radiation Advisory Committee
RSAC	Research Strategies Advisory Committee

¹ Indicates face-to-face meetings and public teleconferences requiring notice in the Federal Register.

² Reports are entered as Full Reports or Short Reports (which includes Letter Reports, Commentaries, and Advisories).

B3**SAB FY 2001 PRODUCTS**

FULL REPORTS	
EPA-SAB-DWC-01-001	EPA Arsenic Proposed Drinking Water Regulation: A EPA Science Advisory Board Review of Certain Elements of the Proposal
EPA-SAB-01-002	EPA Science Advisory Board FY 2000 Annual Report: Making Science Real
EPA-SAB-CASAC-01-003	Review of EPA's Health Assessment Document for Diesel Exhaust (EPA 600/8-90-057E)
EPA-SAB-EEC-01-004	Monitored Natural Attenuation: USEPA Research Program--An EPA Science Advisory Board Review
EPA-SAB-RSAC-01-005	FY 2002 Presidential Science and Technology Budget Request for the Environmental Protection Agency
EPA-SAB-EC-01-006	Dioxin Reassessment - An SAB Review of the Office of Research and Development's Reassessment of Dioxin
EPA-SAB-EC-01-007	Recommendations on the FY2000 Scientific and Technological Achievement Award (STAA) Nominations: An SAB Report
EPA-SAB-EC-01-008	Arsenic Rule Benefits Analysis: An EPA Science Advisory Board Review
EPA-SAB-RSAC-01-009	Implementation of the EPA's Peer Review Program: An SAB Evaluation of Three Reviews

SAB FY 2001 PRODUCTS (CONTINUED)

LETTER REPORT	
EPA-SAB-CASAC-LTR-01-001	Review of the Air Quality Criteria Document for Particulate Matter (Second External Review Draft) EPA 600/P-99/002bB: An EPA Science Advisory Board Report
ADVISORIES	
EPA-SAB-RAC-ADV-01-001	TENORM: Evaluating Occurrence and Risks - An SAB Advisory
EPA-SAB-RAC-ADV-01-002	GENII Version II Environmental Radiation Dosimetry System: An SAB Advisory
EPA-SAB-RAC-ADV-01-003	Radionuclides in Sewage Sludge: An SAB Advisory
EPA-SAB-COUNCIL-ADV-01-004	Review of the Draft Analytical Plan for EPA's Second Prospective Analysis - Benefits and Costs of the Clean Air Act, 1990-2020: An Advisory by the Advisory Council on Clean Air Compliance Analysis
COMMENTARIES	
EPA-SAB-EEC-COM-01-001	Commentary Resulting from a Workshop on the Diffusion and Adoption of Innovations in Environmental Protection
EPA-SAB-RSAC-COM-01-002	Commentary on National Program Directors in ORD for Managing Large Crosscutting Programs
EPA-SAB-CASAC-COM-01-003	Exploring Opportunities for Accommodating Emerging Technologies for Continuous Monitoring in Routine Air Monitoring Networks - A Commentary Stemming from a CASAC/Agency Workshop
EPA-SAB-EC-COM-01-004	Recommendations to Improve Visibility of the Scientific and Technological Achievement Awards (STAA) Program: An SAB Commentary

SAB FY 2001 PRODUCTS (CONTINUED)

COMMENTARIES (continued)	
EPA-SAB-EEC-COM-01-005	Measures of Environmental Technology Performance: A Commentary by the EPA Science Advisory Board
EPA-SAB-EC-COM-01-006	Improved Science-Based Environmental Stakeholder Processes
WORKSHOP REPORT	
EPA-SAB-EC-WKSP-01-001	Understanding Public Values and Attitudes Related to Ecological Risk Management: An SAB Workshop Report of an EPA/SAB Workshop
CONSULTATIONS	
EPA-SAB-RSAC-CON-01-001	Consultation on Office of Research and Development's National Program Director Program
EPA-SAB-RSAC-CON-01-002	Consultation on Multi-year Planning and Performance Metrics for Science at EPA
EPA-SAB-EEAC-CON-01-003	Trade and the Environment, An EPA Science Advisory Board Notification of a Consultation
EPA-SAB-EC-CON-01-004	Consultation on the Agency's Plans for a Cumulative Risk Framework
EPA-SAB-CASAC-CON-01-005	Consultation on the Agency's Preliminary Staff Paper and Risk Assessment Scoping Plan for Particular Matter
EPA-SAB-EEC-CON-01-006	Consultation on Environmental Systems Management Research
EPA-SAB-RSAC-CON-01-007	Notification of a Consultation on the Office of the Inspector General's Pilot Project to Improve the Use of Science for Decisions
EPA-SAB-DWC-CON-01-008	Revised Microbial Risk Assessment Framework: An SAB Notification of a Consultation

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ABSTRACTS OF SAB REPORTS, ADVISORIES, COMMENTARIES AND WORKSHOP REPORTS

FULL REPORTS

EPA Arsenic Proposed Drinking Water Regulation: A EPA Science Advisory Board Review of Certain Elements of the Proposal EPA-SAB-DWC-01-001

The EPA Science Advisory Board (SAB) met from June 5 - 7, 2000 and again on August 8, 2000 to consider components of the Agency's proposal for a new Maximum Contaminant Level (MCL) for arsenic in drinking water. The review was conducted by a panel (referred to in this report as the Panel) composed of the twelve members of the SAB's Drinking Water Committee (DWC) to which was added five consultants who provided expertise to supplement that possessed by the DWC members. The current MCL for arsenic is 50 mg/L, and the proposed rule would lower that to 5 mg/L. The proposal also requests comments on alternatives of 3, 10 and 20 mg/L.

This report has two parts. The basic report provides the majority opinion supported by most of the Panel members and consultants. The second is a minority report prepared after the Panel attempted but was unable to agree on a single document that would provide a combined message giving both the majority and minority views.

The major source document on arsenic's health effects used by the Panel was the 1999 National Research Council's report on arsenic in drinking water (NRC, 1999). The Panel agreed with the major conclusions in the 1999 NRC document, but it did go beyond the NRC conclusions in a few instances where new information provided additional insight since the NRC review was completed. The SAB Panel agreed that:

- a) the existing national arsenic standard for drinking water (50 mg/L) is too high and should be decreased;
- b) setting a specific standard involves factors beyond just science issues, therefore, it is not appropriate for the science advisors to determine such levels;
- c) data from the ecological study conducted in Taiwan, though not ideal for risk assessment, are the best available at this time for determining arsenic's carcinogenic dose-response;
- d) the Agency should conduct a formal risk assessment that considers additional epidemiology studies and population factors to the extent practicable, in order to improve the validity of the U.S. assessment of arsenic risk from drinking water;

- e) there is not now sufficient evidence for the Agency to abandon the linear-at-low-dose model, although most data suggest that mechanisms that have been associated with arsenic are indeed sublinear.

The report includes Attachments in which dissenting views are given by a consultant and a member of the review Panel and comments entered into the official record by one member of the SAB Executive Committee for a member of the public who served on the NRC Subcommittee.

In general, the Panel concluded that:

- a) determining the forms of arsenic responsible for producing adverse effects has become more complex since the publication of the NRC report thus focusing on total arsenic makes sense and that determining the relative importance of food versus drinking water sources of arsenic is even more difficult than in the past;
- b) that EPA appears to have taken the modeling activity in the NRC report as being prescriptive despite the clearly stated NRC intention that their efforts were illustrative and that conducting a formal risk assessment with information on important factors not yet considered will be important as will the results of well-designed epidemiology studies that measure exposure for individuals in the study population;
- c) the contribution of lung cancer to overall risk is about the same as that of arsenic's bladder cancer risks;
- d) that model selection for risk estimation influences the risk level obtained significantly as does that the comparison population used in epidemiology studies;
- e) that issuance of a health advisory to mothers who might use arsenic containing drinking water to mix formula for their young infants was a policy decision for EPA and that if the choice is to go forward, there are a number of considerations that will be important to obtaining the positive result from the advisory that EPA intends;
- f) that the Agency cost of compliance estimates appear low and might be higher if disposal options assumed in the Agency analysis are not correct;
- g) the technologies identified as best available technologies (BAT) have not been implemented or optimized for arsenic removal at treatment plant scale and the outcome of their optimization for arsenic removal is not clear;
- h) that the technological and risk uncertainties could give EPA a reason to consider using an adaptive management approach to arsenic regulation in drinking water;
- i) that the cost of implementing the rule might make it difficult for small communities to make overall risk tradeoffs to maximize public health activities having implications both for the risk assessment in the U.S. (i.e., sensitive subpopulations) and for the risk management decision as well (i.e., in terms of overall use of resources to maximize public health gains).

The minority view referred to above opposed a number of the reports provisions because of a belief that if the advice were to be followed EPA actions would not protect children as expeditiously as possible.

**EPA Science Advisory Board FY2000 Annual Staff Report
EPA-SAB-01-002**

The EPA Science Advisory Board Staff's annual report captures the SAB's activities for FY 2000.

**Review of EPA's Health Assessment Document for
Diesel Exhaust (EPA 600/8-90-057E)
EPA-SAB-CASAC-01-003**

The Clean Air Scientific Advisory Committee (CASAC) of the EPA Science Advisory Board reviewed the July 2000 draft document, *Health Assessment Document for Diesel Exhaust* (EPA 600/8-90/057E). This review followed reviews of previous drafts in 1995, 1998, and 1999. The Committee found the July 2000 draft, pending key revisions agreed upon at the meeting (summarized below) and numerous minor editorial changes, to be an adequate summary of current knowledge concerning the health effects of diesel engine emissions.

The Panel approved of the general framework of the document. Two of the key issues raised at the last review were satisfactorily addressed in accordance with the Committee's guidance. First, the revision eliminated the use of a different health effect, immunological responses, as a basis for adjusting the reference concentration (RfC) for non-cancer effects based on lung pathology. Second, the revision changed the descriptive characterization of cancer hazard from long term environmental exposures from "highly likely" to "likely".

It was agreed that two approaches would be taken to characterizing the level of long-term environmental exposure considered acceptably free from significant non-cancer health risk. An RfC would be derived as before, but including a factor for uncertainty in interspecies extrapolation and resulting in a value of approximately 5 $\mu\text{g}/\text{m}^3$. It was agreed that linkages between risks from diesel particulate matter (DPM) and ambient PM would also be discussed, concluding that an annual NAAQS for $\text{PM}_{2.5}$ would be considered adequately protective for ambient DPM.

The inclusion of a range of cancer risk values to provide a perspective on the possible range of lung cancer risk from environmental exposures was debated. There were concerns that inclusion of the range could be perceived as inconsistent with the decision not to adopt a unit risk value for cancer, and for the likely misuse of the values despite Agency disclaimers. It was agreed that the range would be included, but accompanied by clear caveats and disclaimers concerning the uncertainty of risk, the use of the risk perspective values, and the fact that the possible lower end of the risk range includes zero.

With mixed recommendations from its consultants, the Committee reached unanimous closure on the document, pending assurances that the above key revisions would be made and attention would be given to incorporating numerous more minor changes suggested in the individual Panelist's comments.

**Monitored Natural Attenuation: USEPA Research Program-
An EPA Science Advisory Board Review
EPA-SAB-EEC-01-004**

MNA is a knowledge-based remedy where a proper engineering analysis informs the understanding, monitoring, predicting, and documenting of the natural processes. The EPA Science Advisory Board reviewed the Environmental Protection Agency's research program for monitored natural attenuation (MNA) of contaminants in groundwater, soils, and sediments; evaluated ORD's research in terms of its scientific quality and its effectiveness and utility for promoting sound decisions about the use of MNA as a remedy at specific sites; and assessed the applicability and limitations of the EPA's guidance as expressed in the 1998 *Technical Protocol* on MNA. In its review, the Subcommittee made extensive use of the recent *Natural Attenuation for Groundwater Remediation (2000)* published by National Academy Press.

MNA is widely used for the remediation of contaminated sites. Scrupulous attention to site-specific studies is required to document that processes that destroy or immobilize contaminants are well understood and sufficiently documented to ensure an acceptable remedy.

Specifically, the Subcommittee found that the Agency's present research program is well-established and scientifically sound. EPA research has contributed substantially to an improved understanding of MNA and its applications. However, a great deal remains unknown and the EPA's present research program is incommensurate with support of the widespread application of this remedy. Significant additional focused research is needed to support the evaluation of MNA for application to chlorinated solvents, fuel additives, inorganic compounds, and contaminated sediments or to soils and sediments.

The Subcommittee's report provides recommendations to strengthen the science base through the EPA research program on chlorinated solvents, fuel additives, inorganics, and sediments. The improvement in the science basis should lead to improvement of frameworks and guidance.

**FY 2002 Presidential Science and Technology Budget
Request for the Environmental Protection Agency
EPA-SAB-RSAC-01-005**

The Research Strategies Advisory Committee (RSAC) of the EPA Science Advisory Board (SAB) met May 1 and 2, 2001 to review the Science and Technology portion of the FY 2002 Presidential Budget Request for the U.S. Environmental Protection Agency (EPA). The S&T component of the total Agency budget has remained approximately 9% for more than a decade. RSAC notes that the current and future environmental and health problems have become increasingly complex and multi-media. RSAC recommends, therefore, that the Agency and Congress consider increasing the S&T share of the total Agency budget by a modest but important additional 1% per year for the next three years from its current level of 9% of the total Agency budget to 12% of the Agency's budget in FY '04. The Presidential Science and Technology (S&T) budget request is similar to the level requested in the last

three years, and it is \$39 million less than last year's enacted budget due to the EPA policy of not requesting Congressional add-ons (earmarks). RSAC strongly recommends that if Congress adds specific projects and programs for EPA, Congress also appropriate the funds needed for the successful completion of those projects and programs as was done in the current fiscal year appropriations. RSAC commends ORD on the development and implementation of its planning structure for research. The use of National Program Directors to serve as a focus for coordination and developing strategy for addressing major issues has been very effective and RSAC endorses continuation of this approach. RSAC recommends that the criteria used for the classification of research activities as "core" or "problem-driven" should be clearly stated and applied consistently. RSAC strongly recommends that the Agency be vigilant in defining and maintaining core research needed to achieve a balanced S&T research program. RSAC notes that nearly 50% of the ORD workforce is over the age of 50, and to remain vital, the Agency must assemble the next generation of its scientists and engineers. An important approach to accomplishing this is the post-doctoral program, but it appears that this approach may be limited by the FTE ceiling imposed on ORD. RSAC recommends that EPA explore possibilities to have the ORD FTE limits not apply to the number of post-doctoral fellows who can be hired under this program. RSAC recognizes that there is more science being conducted at EPA than is identified in the S&T budget. RSAC recommends that EPA continue with its Science Inventory efforts which catalogue science projects and products, so as to capture and identify the extent of science being done at EPA and expand the planning process to include development of an overall science planning process for the Agency that uses the Science Inventory as a reference. This inventory that should be updated at least annually, with appropriate adjustments to multiyear plans, would make the Agency's direction in its research program much more understandable.

**Dioxin Reassessment - An SAB Review of the Office of
Research and Development's Reassessment of Dioxin
EPA-SAB-EC-01-006**

The SAB Dioxin Reassessment Review Subcommittee (DRRS) (of the SAB Executive Committee) met on November 1 and 2, 2000 to review revised sections of the EPA draft document *Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds* (in addition, the DRRS met via public teleconference on January 23 and on April 23, 2001, to discuss several issues that needed further resolution).

The DRRS concluded that EPA Staff provided a careful, thorough review of the voluminous literature and it commended EPA for their efforts. The report addresses each of the specific charge questions, provides suggestions for final revisions to the reassessment document, and points out uncertainties that limit EPA's ability to communicate the magnitude of the health risks associated with dioxin and related compounds. The Subcommittee believes that additional research is unlikely to bridge many of the important data gaps in the foreseeable future, and recommends that the Agency proceed expeditiously to complete and release its Risk Assessment, taking appropriate note of the findings and recommendations of this DRRS report and other public comments.

Consistent with basic environmental policy, and recognizing the very long biological and environmental persistence of dioxins, the Subcommittee believes that it is important that EPA continue to try to limit emissions (and human exposure) to this class of chemicals. It is also critical for EPA to

**Recommendations on the FY2000 Scientific and Technological
Achievement Award (STAA) Nominations: An SAB Report
EPA-SAB-EC-01-007**

This report represents the conclusions and recommendations of the U.S. Environmental Protection Agency's EPA Science Advisory Board regarding the FY2000 EPA Scientific and Technological Achievement Awards (STAA) Program. The STAA Program is an Agency-wide competition to promote and recognize scientific and technological achievements by EPA employees, fostering a greater exposure of EPA research to the public. The Program was initiated in 1980 and is managed by the Office of Research and Development (ORD).

The Agency submitted for review 126 nominations from the first nine of the eleven award categories this year (Control Systems & Technology, Ecology & Ecosystem Risk Assessment, Health Effects & Health Risk Assessment, Monitoring & Measurement Methods, Transport & Fate, Review Articles, Risk Management and Policy Formulation, Integrated Risk Management, Environmental Trends for Drivers of Future Risk, Social Science Research, and Environmental Education). Of these, the Subcommittee recommended 42 nominations (33 percent of the nominations) for awards, and also recommended that 21 additional nominations be recognized with Honorable Mention. The authors whose papers were recommended for awards this year represent the Office of Air and Radiation (OAR), the Office of Prevention, Pesticides, and Toxic Substances (OPPTS), the Office of Solid Waste and Emergency Response (OSWER), the Office of Policy, Economics, and Innovation (OPEI), Region VIII, and 15 research laboratories and centers within the Office of Research and Development.

The Subcommittee encouraged the Agency to continue support for the STAA program as a mechanism for recognizing and promoting high quality research in support of the Agency's mission. The Subcommittee also strongly encouraged that EPA broadly acknowledge the results of the award competition.

**Arsenic Rule Benefits Analysis: An EPA Science Advisory Board Review
EPA-SAB-EC-01-008**

On July 19-20 and again in an August 14 meeting, the Arsenic Rule Benefits Review Panel (ARBRP), a sub-committee of the EPA Science Advisory Board Executive Committee, reviewed the report *Arsenic in Drinking Water Rule Economic Analysis*. EPA asked the SAB to provide advice on how it should address: (a) the latency of arsenic's cancer risks, (b) health endpoints other than bladder and lung cancer that are poorly understood, (c) total benefits and costs and incremental benefits and costs, and (d) uncertainties in the analysis. It also asked if it should evaluate reduction/elimination of exposure as a separate benefits category, in addition to or in conjunction with mortality and morbidity reduction.

The Panel's report concluded that: (1) In regard to latency, the appropriate concept is the cessation-lag between a reduction in exposure and a reduction in risk. The length of the cessation-lag determines the number of cancer cases avoided each year after a policy is implemented. In the report, the Panel suggested ways in which the length of the cessation-lag could be estimated and noted that the

assumption of a zero cessation-lag should be identified as yielding as upper bound to cancer cases avoided by the regulation. (2) It

appears to be possible to quantify additional health endpoints including, mortality from ischemic heart disease, diabetes mellitus, and skin cancer, and that the evidence is strong relating arsenic to these endpoints. Although the strength of evidence is lower, the Panel recommends serious consideration be given to quantification of benefits from reductions in prostate cancer, nephritis and nephrosis, hypertension, hypertensive heart disease and non-malignant respiratory disease. (3) There are no data to permit EPA to consider exposure reduction as a separate category of benefits in a benefit cost analysis for arsenic. (4) In the primary analysis, benefits and costs should be calculated on a water supply system basis, with the results summarized in a format that breaks them down by system size. Benefits associated with different maximum contaminant levels should be presented in terms of cases of morbidity and mortality avoided as well as in monetary terms, and the age distribution of cases avoided should be presented whenever possible. (5) In the analysis of model uncertainty it is appropriate to rely on sensitivity analysis; the assumptions underlying each sensitivity analysis should be clearly spelled out when presenting results. For parameters for which it is possible to specify a probability distribution, a Monte Carlo analysis is desirable.

The Panel also made a number of recommendations for improving the computation of benefits and costs and for the presentation of results of the analyses by the Agency.

**Implementation on the EPA's Peer Review Program Review:
An SAB Evaluation of Three Reviews
EPA-SAB-RSAC-01-009**

The Research Strategies Advisory Committee (RSAC) of the EPA Science Advisory Board (SAB) met June 25 and 26, 2001 to review examples that indicated the implementation of EPA's peer review program. The committee was asked to address timeliness of the reviews, whether they make a difference, to what extent the review comments are responded to and acted upon, and whether the RSAC has additional comments or guidance for the Agency to improve the effectiveness of the peer review process.

Based on its evaluation of the three examples and detailed discussion with EPA staff and participants, the RSAC found that peer review is being extensively conducted by the Agency and is clearly making a difference in those examples that were examined. For the three examples examined, the RSAC found no obvious examples of lack of independence in the reviewers. An area of potential improvement is the need to develop a uniform process for collecting, documenting and archiving information on responses to peer review comments. The RSAC observed that while this was not the focus of this review, there are important products which are not being peer reviewed. Among the recommendations made, the RSAC recommended that the Agency develop an ongoing in-depth analysis to more fully examine trends in the use of peer review at EPA, evaluate the impacts of the peer review on decision making and explore additional opportunities for improving the benefits of the peer review process over time at the Agency.

LETTER REPORT

**Review of the Air Quality Criteria for Particulate Matter
(Second External Review Draft) EPA 600/P-99/002bB:
An EPA Science Advisory Board Report
EPA-SAB-CASAC-LTR-01-001**

The Clean Air Scientific Advisory Committee (CASAC) reviewed the March 2001 draft document, *Air Quality Criteria for Particulate Matter - Second External Review Draft*. This was the second CASAC review of the draft Criteria Document (CD) for particulate matter (PM) in the current cycle for reviewing the National Ambient Air Quality Standards (NAAQS) for PM. CASAC review of this document is required by section 109 of the Clean Air Act.

The Committee was impressed with the revised version of the Draft Criteria Document as compared to the version that it reviewed in December 1999. It is clear that the comments provided by the Committee on the prior draft were seriously considered and efforts made to address the issues and concerns that were raised. A large body of new literature has been published in the intervening time and the staff has clearly made a substantial effort to incorporate as much of it as appropriate. The CASAC felt that this version of the Draft represented a significant step toward achieving an acceptable summary of the available science. The Committee was unanimous in its view that the document was not yet ready for closure, but it was its opinion that appropriate modifications to the present document should permit closure.

ADVISORIES

**TENORM: Evaluating Occurrence and Risks: An SAB Advisory
EPA-SAB-RAC-ADV-01-001**

On April 25 - 27, 2000 the Radiation Advisory Committee (RAC) of the EPA Science Advisory Board (SAB) reviewed three issue papers which describe Office of Radiation and Indoor Air's (ORIA's) approach to Technologically Enhanced Naturally Occurring Radioactive Material (TENORM). Issue Paper #1 describes ORIA's general approach to TENORM; Issue Paper #2 provides a proposed outline for a specific source, uranium mining; and Issue Paper #3 presents the proposed risk assessment methodology. ORIA requested advice on the adequacy of its proposed approach, the application of the approach to uranium mining, as described in Issue Paper #2, and its risk assessment methodology.

The RAC had difficulty responding to the questions posed by ORIA because the intent behind the TENORM effort was not clear. With that reservation, the RAC agrees with ORIA's general approach. However, the RAC recommends that ORIA provide a clear mission statement for the TENORM program and define the types of materials to be included in its TENORM assessments, i.e., wastes only or wastes and products. The RAC supports a broader interpretation of ORIA's mission and recommends that it include products as well as wastes in TENORM assessments. Specific issues of concern include the

lack of peer-reviewed publications regarding use of the PRESTO-EPA models for risk assessment, differentiation between variability and uncertainty in the analyses, lack of inclusion of a recreational scenario in the risk assessment, and potential interactions between hazardous materials and radionuclides that may be present in TENORM sources.

GENII Version 2 Environmental Radiation Dosimetry System: An SAB Advisory EPA-SAB-RAC-ADV-01-002

At the request of the EPA's Office of Radiation and Indoor Air (ORIA), the Radiation Advisory Committee (RAC) of the EPA Science Advisory Board (SAB) reviewed the GENII v.2 computer code developed by Pacific Northwest National Laboratory (PNNL) to perform dose and risk assessments of environmental releases of radionuclides. The code builds a conceptual site model linking modules through the FRAMES platform. The RAC found the GENII v.2 code to include appropriate modules and concluded that FRAMES provides a reasonable and flexible platform. However, the RAC recommended adding newer models to the GENII v.2 code, specifically for air dispersion and ground and surface water transport of radionuclides as well as models capable of handling emergency conditions. The RAC was concerned about the potential for non-transparent and unrealistically conservative (i.e., higher than more realistic assumptions might produce) risk estimates.

The RAC commended ORIA for including the capability of providing stochastic estimates of risk through the Sensitivity/Uncertainty Multimedia Modeling Module (SUM³) driver but questioned its ability to investigate the degree of conservatism in the code, identify the importance of input parameters, and provide useful measures of uncertainty.

In general, the RAC found the GENII v.2 code to be a useful addition to the dose and risk assessment toolbox. The RAC suggested several strategies for making the code more user friendly, including improvement in the documentation and User's Guide as well as providing training for potential users. The RAC encouraged ORIA to develop a vision and an attendant mission statement for FRAMES and GENII v.2 as a basis for evaluating these tools.

Radionuclides in Sewage Sludge: An SAB Advisory EPA-SAB-RAC-ADV-01-003

On December 12-14, 2000, the Radionuclides in Sewage Sludge Subcommittee (RSSS) of the Radiation Advisory Committee (RAC) reviewed the dose modeling report of the Interagency Steering Committee on Radiation Standards, Sewage Sludge Subcommittee (ISSS). This included advice on dose modeling methodology, model selection, scenarios, approaches to obtaining modeling parameters and distributions, and approaches for uncertainty.

The RSSS accepted the ISSS's decision to use the model RESRAD, but supported the use of other radiation dose models for bench marking RESRAD's application to sewage sludge dose modeling. The RSSS also accepted ISSS's use of radiation dose quantities, rather than risk, to express the impact of

radionuclides in sewage sludge. The RSSS recommended that the revised dose coefficients published in ICRP 72 be used if feasible or, at a minimum, the possible effects of age on dose be considered. While commending the ISSS for identifying a range of plausible radiation exposure scenarios, the RSSS identified several exposure pathways that were not considered and recommended that regulatory requirements concerning sludge disposition be integrated into the modeling effort to prevent use of unrealistic scenarios or parameters. The RSSS recommended that the selection of parameters and their distributions, as well as the sensitivity and uncertainty analyses, be better described and that a two-dimensional uncertainty analysis, addressing both variability and uncertainty, be considered. The RSSS made recommendations beyond the charge to consider exposure to liquid effluent from POTWs, and to use SI units. The RSSS made a general recommendation to update FGR-11 to reflect values in ICRP Publication 72.

**Review of the Draft Analytical Plan for EPA's Second
Prospective Analysis-Benefits and Costs of the Clean Air Act, 1990-2020:
An Advisory by the Advisory Council on Clean Air Compliance Analysis
EPA-SAB-COUNCIL-ADV-01-004**

In this Advisory, the U.S. EPA Science Advisory Board's Advisory Council on Clean Air Compliance Analysis reviews the Agency's draft analytical plan for the second prospective analysis of the costs and benefits of implementing the Clean Air Act for the period 2000 to 2020. The Agency has undertaken this analysis as mandated by Section 812 of the Clean Air Act Amendments of 1990.

The Advisory comments on how to improve the Agency's process for developing 812 analyses. These analyses are models for federal assessments of costs and benefits. The Advisory identifies areas for key methodological enhancements in the analysis, including: a) the treatment of benefits to ecosystem services, especially non-market services (beyond just commercially exploited natural resources); b) assessment of the social costs of compliance (costs that go beyond just the direct compliance costs to regulated entities); c) evaluation of the benefits and costs of regulating hazardous air pollutants; and d) further disaggregation of benefits and costs.

The Advisory provides advice on how the Agency might disaggregate costs and benefits to best inform policy decisions. The Panel applauds the Agency's efforts to incorporate uncertainty analyses with respect to both benefits and costs and suggests approaches for conducting uncertainty analyses. Finally, the Advisory identifies important areas in the analysis that could benefit from research, including credible methods to quantify and monetize the effects of marginal changes in air pollution on ecosystem processes.

COMMENTARIES**Commentary Resulting from a Workshop on the Diffusion and
Adoption of Innovations in Environmental Protection
EPA-SAB-EEC-COM-01-001**

This Commentary reflects advice developed at an SAB Consultative Workshop held on June 28, 2000, by the Environmental Engineering Committee's Subcommittee on the Diffusion and Adoption of Innovations in Environmental Protection. The purpose of the workshop was to provide specific advice to the Office of Water and Office of Pollution Prevention and Toxics to identify how the use of data, theories, and research methods derived from the study of the social process of diffusion and adoption of innovations may improve the adoption of innovative approaches to environmental protection: a) within EPA; b) by state, tribal, and local government partners; and c) by corporate and non-governmental organization partners in environmental protection.

The Commentary goes beyond the specific advice provided to those program areas to address more generally: a) the different frameworks and approaches available for understanding the diffusion process at EPA; b) the principal barriers to diffusion and adoption of innovations; and c) how EPA can effectively measure the success of its diffusion and dissemination efforts.

The Commentary states that the Agency would benefit substantially from a modest research and demonstration effort aimed at utilizing current knowledge in the social sciences concerning strategies and techniques of diffusing innovations.

**Commentary on National Program Directors in ORD
for Managing Large Crosscutting Programs
EPA-SAB-RSAC-COM-01-002**

The Research Strategies Advisory Committee (RSAC) of the EPA Science Advisory Board (SAB) met on March 7, 2001 to conduct a consultation on the topic of the National Program Directors (NPDs) in the Office of Research and Development (ORD). Based on this discussion, the RSAC decided to prepare a commentary to provide our assessment and advice regarding the National Program Directors in ORD. RSAC found that the management structure utilizing National Program Directors with a lead executive, while fairly new, is well organized and efficient. The committee noted that there were differences in the functioning of the National Program Directors among different programs, and it thinks that this flexibility and tailoring of NPD activities is a good attribute that ORD should continue to cultivate. RSAC recommends that the Agency establish a set of defined criteria and standards to implement a transparent process to decide when a National Program Director is needed and when one is not necessary. RSAC recommends that additional staff support be provided for the NPDs and be adequate for their assigned tasks and it recommends that ORD allocate limited budget authority to the NPDs consistent with the management needs of the particular program. Overall, the committee strongly endorses the continuing use of National Program Directors and for strengthening some aspects of this management structure.

**Exploring Opportunities for Accommodating Emerging Technologies
for Continuous Monitoring in Routine Air Monitoring Networks:
A Commentary Stemming from a CASAC/Agency Workshop
EPA-SAB-CASAC-COM-01-003**

The Subcommittee on Particle Monitoring of the Clean Air Scientific Advisory Committee (CASAC) held a public workshop to explore opportunities for accommodating emerging technologies into routine air monitoring networks. The workshop was convened to provide states and associations of states, vendors and manufacturers of monitoring equipment, and EPA staff with an opportunity to share information and discuss emerging technologies and the implications of considering continuous monitoring in EPA's regulatory monitoring program.

As a result of discussions at the workshop, the Subcommittee concluded that EPA should move aggressively forward to bring continuous monitoring into the regulatory monitoring program. The CASAC endorsed the Subcommittee recommendations, including:

- (1) Perform a statistical analysis following a Data Quality Objectives (DQO) type process to ascertain what level of precision will be required in the continuous monitors to yield the same information on area-wide average concentrations as a minimum Federal Reference Sample (FRM) PM_{2.5} sampler network;
- (2) Develop an approach to empower and encourage states or associations of states to qualify continuous samples on a local to regional basis;
- (3) Involve the states/local agencies in the determination of the cost savings for various options while ensuring that the data quality is appropriate for making critical management decisions;
- (4) Whenever possible, site the continuous monitor/FRM pairs at speciation sites;
- (5) Ensure that the outcome of these analyses can be appropriately applied to future monitoring needs.
- (6) Make full use of the results of the ongoing supersite activities as they become available.

**Recommendations to Improve Visibility of the Scientific and
Technological Achievement Awards (STAA) Program: An SAB Commentary
EPA-SAB-EC-COM-01-004**

This Commentary represents the observations and recommendations of the U.S. Environmental Protection Agency's Science Advisory Board regarding improving the effectiveness and visibility of the Agency's Scientific and Technological Achievement Awards (STAA) Program. The STAA Program is an

Agency-wide competition to promote and recognize scientific and technological achievements by EPA employees, fostering a greater exposure of EPA research to the public. The Program was initiated in 1980 and is managed by the Office of Research and Development (ORD).

The Subcommittee has offered a number of observations and recommendations are offered to improve visibility, to improve the overall process, and to encourage the Agency to continue support for the STAA program as a mechanism for recognizing and promoting high quality research in support of the Agency's mission. Recommendations are made in the areas of a) the general quality of the work being done; b) strengths and weaknesses of the program; c) improvements in the way EPA advertises success; and d) the importance of strong leadership.

**Measures of Environmental Technology Performance:
A Commentary by the EPA Science Advisory Board
EPA-SAB-EEC-COM-01-005**

The Agency has an important role in evaluating and describing the performance of environmental technologies, especially for emerging technologies. The Environmental Engineering Committee of the EPA Science Advisory Board recommends that the Environmental Protection Agency consider improving the information conveyed in its technology evaluation reports. The Agency should employ a broader and more comprehensive suite of measures that describe technology performance under a variety of realistic and likely circumstances.

In preparing this commentary, the Committee has used the expertise of individual members and consultants; experience gained reviewing EPA's Technology Innovation Strategy (EPA-SAB-EEC-95-013), Verification Strategies for EnTICE (EPA-SAB-EEC-016), and the Superfund Innovative Technology Evaluation (SITE) Program (EPA-SAB-EEC-97-005); presentations by EPA staff and managers of other relevant national programs; and collegial discussion.

The Committee finds that, within the limits the Agency has set for itself, EPA generally conducts technology evaluations with skill and credibility. Yet, significant improvement is still possible. Technology performance needs to be defined by all key variables, so that decision-makers are fully informed. The Agency can take several actions to assure this, including requiring use of a systematic planning process in performance testing, identifying all key variables that affect performance, determining the ruggedness of a technology with respect to these variables, and requiring that evaluation reports convey information valuable to decision-makers by having stakeholder involvement and peer reviews.

**Improved Science-Based Environmental Stakeholder Processes
EPA-SAB-EC-COM-01-006**

This Commentary is based on a series of workshops and deliberations conducted by the Executive Committee on EPA's Science Advisory Board with the objective of addressing two questions. How well

is scientific and technical knowledge being developed and used in group stakeholder processes? What strategies might allow such knowledge to be better developed and used in these processes in support of high-quality science-based environmental decisions?

The Executive Committee finds that properly conducted, stakeholder processes of the types considered can be valuable in supporting high-quality science-based decisions. They are most useful when they are employed to define or frame a problem; to obtain feedback in order to better inform decision-makers about proposed alternative courses of action; or to develop and elaborate a range of options and/or criteria for good decision-making that a decision-maker might employ.

The report makes seven specific findings and then recommends that the Administrator would be well advised to take the following two actions: a) develop brief guidance, related to the Board's findings, on the appropriate use of stakeholder processes and b) direct the Office of Research and Development, in collaboration with the Program in Decision, Risk and Management Science at the National Science Foundation, to undertake an extramural research program designed to develop improved methods and tools for the use and evaluation of science-based environmental stakeholder processes.

WORKSHOP REPORT

Understanding Public Values and Attitudes Related to Ecological Risk Management: An SAB Workshop Report of an EPA/SAB Workshop EPA-SAB-EC-WKSP-01-001

On May 23 and 24, 2001, EPA and the EPA Science Advisory Board co-sponsored a public Workshop on "Understanding Public Values and Attitudes Related to Ecological Risk Management." The workshop was not an advisory committee meeting, organized with the purpose of providing advice to the Agency. Instead, it was a public meeting designed to demonstrate how researchers using different kinds of analytical methods, tools and approaches from the social sciences can mutually inform each other and risk managers in understanding: (a) public values and attitudes related to specific threats to ecological resources, such as Tampa Bay Estuary, a water body threatened with nitrogen deposition and (b) the significance of those values to decision makers.

The workshop was chaired by Dr. Baruch Fischhoff of Carnegie Mellon University. Dr. Milton Russell, of the University of Tennessee described how the workshop was linked to the EPA Science Advisory Board's report, *Toward Integrated Environmental Decision -Making* and how it was designed to address persistent problems that risk managers face in protecting ecological resources. The Senior Scientist from Tampa Bay Estuary Program, Ms. Holly Greening, characterized the risk assessment and risk management problems facing the Bay. Four researchers from different social science traditions then presented research strategies to aid managers in understanding the values and attitudes of people interested in and affected by the bay, and specifically by the problem of air deposition of nitrogen to the bay. Presenters were:

Dr. Terry Daniel, Department of Psychology, University of Arizona, Tucson, Arizona; Dr. Robin

Gregory, Decision Research, North Vancouver, B.C., Canada; Dr. Willett Kempton, College of Marine Studies, University of Delaware, Newark, Delaware; and Dr. James Opaluch, Department of Environmental and Natural Resource Economics, University of Rhode Island, Kingston, Rhode Island.

A managers' panel on the second day then addressed the question of the opportunities and issues presented by the research proposals described. The panel consisted of managers from local and state governments and from EPA headquarters and EPA's Region 4, the region for Tampa Bay.

The chair of the workshop has prepared a "Sense of the Meeting Summary" which identifies the different themes, issues and action items discussed during the panel and audience discussions. The summary organizes points in the following areas: environmental science; social, economic and behavioral sciences; policy makers; stakeholders; research development and research needs.

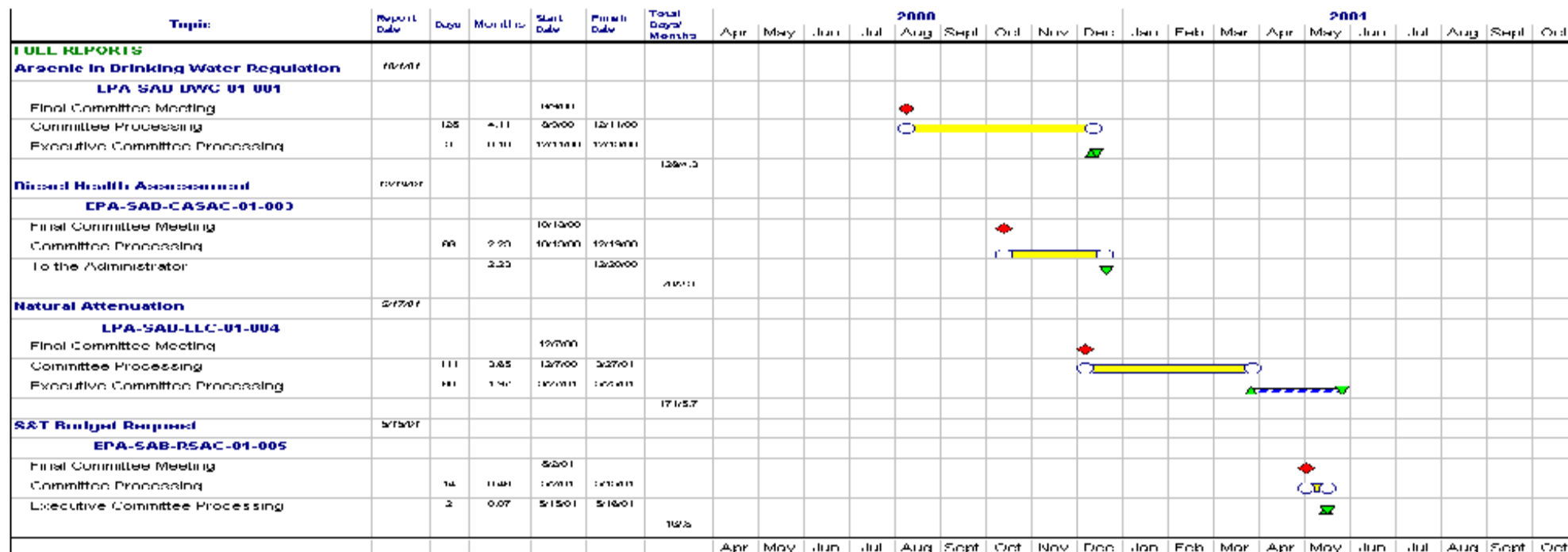
The Workshop was co-sponsored by EPA's Office of Air and Radiation; the National Center for Environmental Economics in the Office of Policy, Economics and Innovation; the Office of Research and Development, the Office of Water; and the Office of the EPA Science Advisory Board. One hundred and eleven people participated in the workshop in the course of the two-day event.

B5**TIME- TO- COMPLETION**

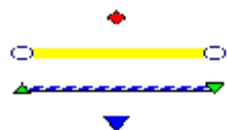
The EPA Science Advisory Board's goal is to provide a written report to the Administrator within 4 months after the end of the last substantive public meeting (deliberative session, not editing session). As seen in Figure 5, the target of 4 months was met in 14 of 19 (roughly 75%) of the cases. This record comes close, but misses the Government Performance Review Act (GPRA) goal of 80% or better of the reports being completed within 4 months of the meeting. However, the record is somewhat better than what appears on the surface. That is, in many cases draft reports were available to the Agency and the public on the SAB Website within 4 months and, in most cases, the remainder of the time was devoted to working out details of the report. There is still room for improvement through learning lessons from the reports that were so long in the Committee and Executive Committee processing queue.

Note: The reports not included in the table below were internal reviews.

FIGURE 5
TIME-TO-COMPLETION



Legend



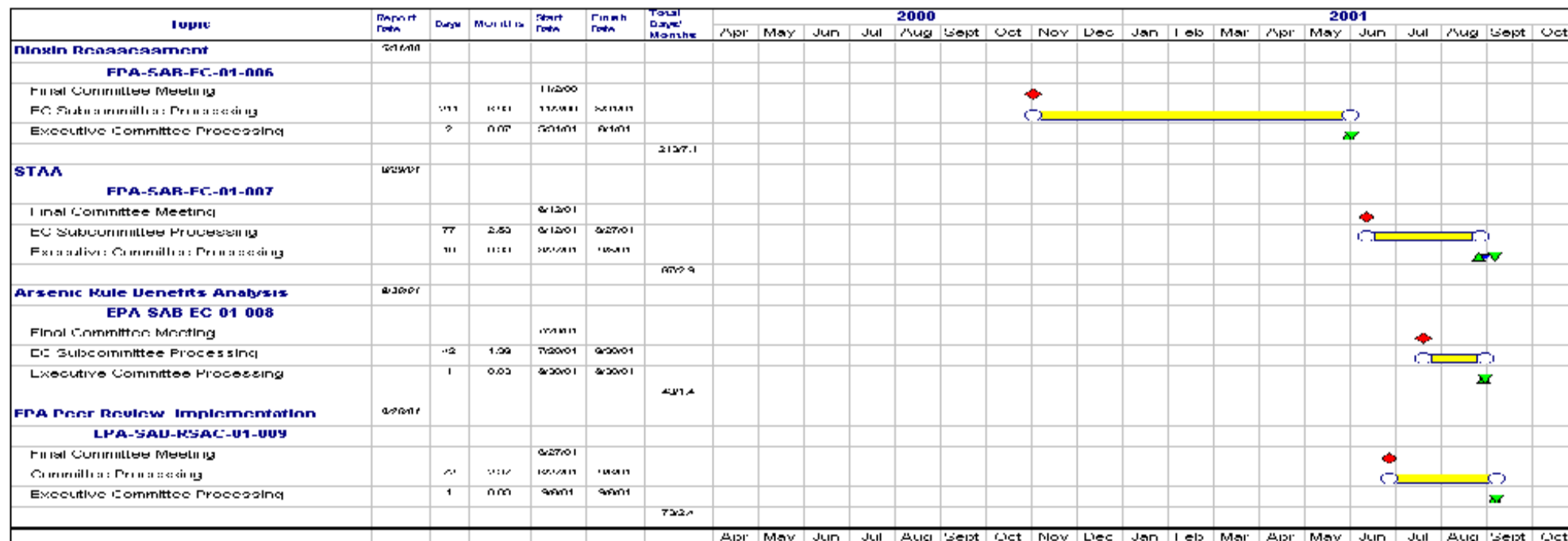
Final Committee Meeting

Committee Processing

Executive Committee Processing

To the Administrator

TIME-TO-COMPLETION



Legend

The diagram shows a horizontal beam of length \$L\$. A yellow rectangular area above the beam represents a uniformly distributed load (UDL) of intensity \$w\$. A blue triangular area below the beam represents a triangular load, with its peak at the right end. The total load for the UDL is \$wL\$, and the total load for the triangular load is \$\frac{1}{2}wL\$.

Final Committee Meeting

Committee Processing

Executive Committee Processing

To the: Administrator

FIGURE 5 (CONT'D)
TIME-TO-COMPLETION

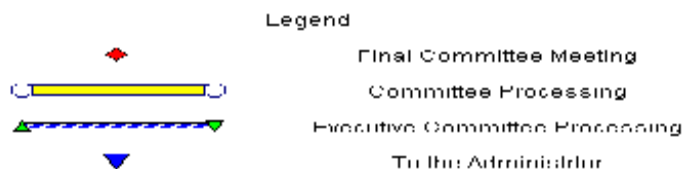
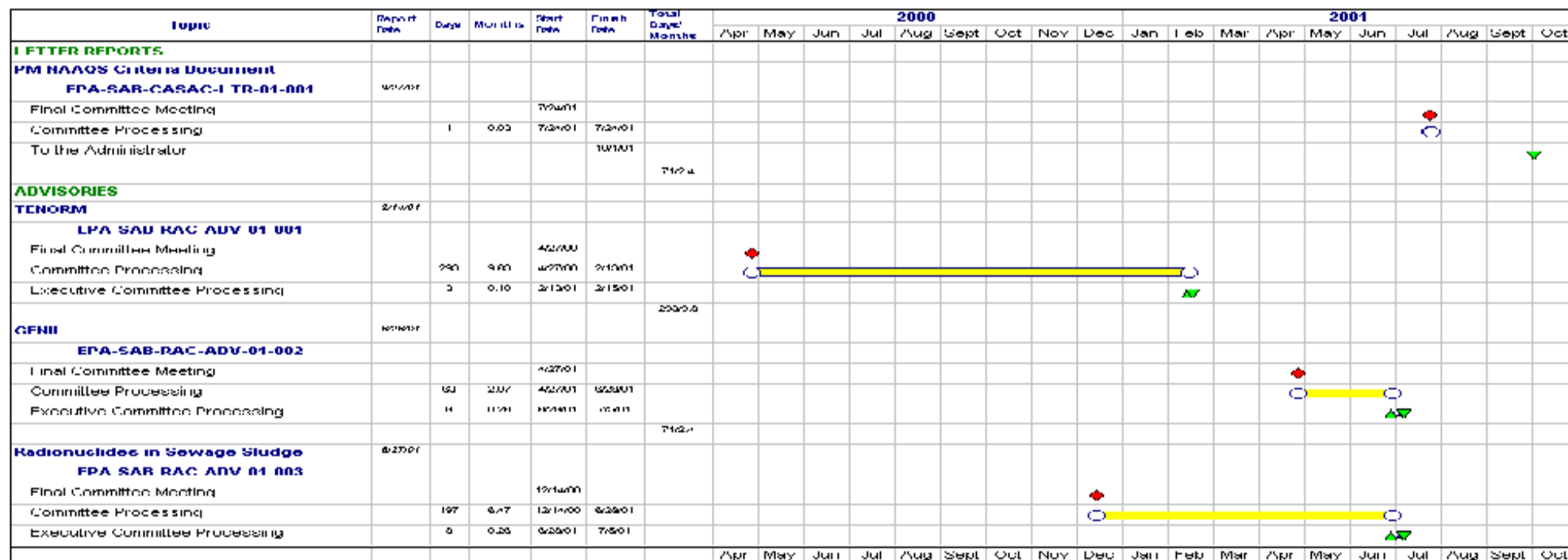
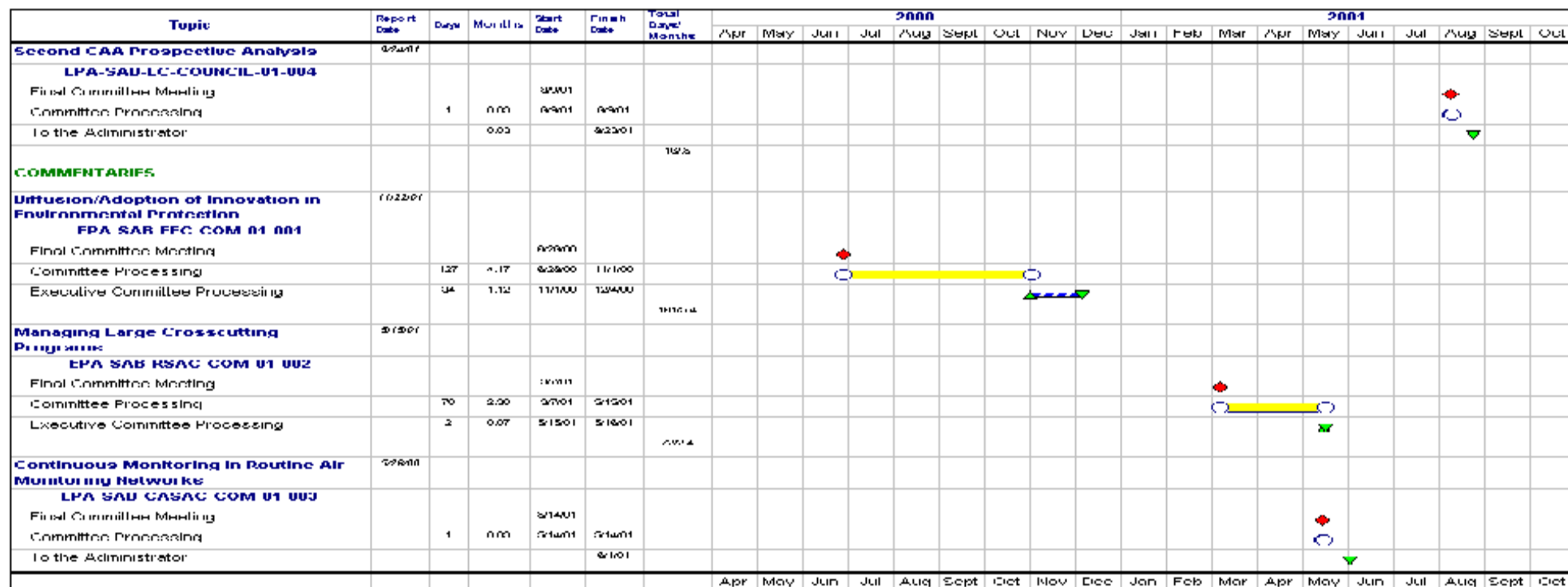
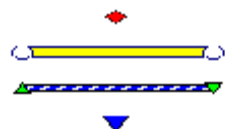


FIGURE 5 (CONT'D)
TIME-TO-COMPLETION



Legend



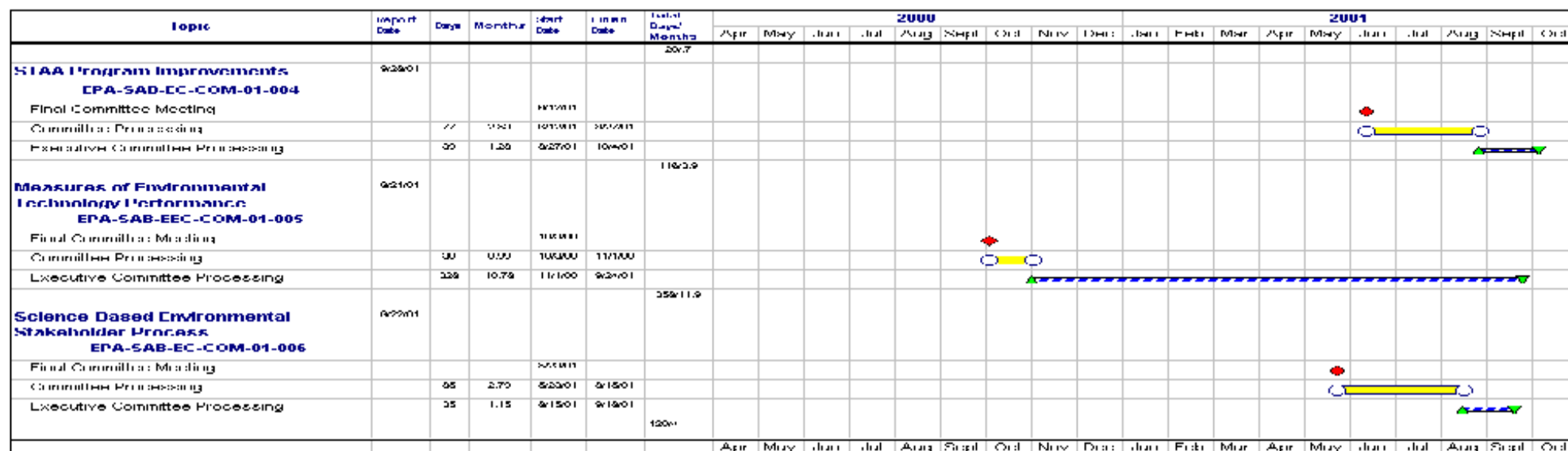
Final Committee Meeting

Committee Processing

Executive Committee Processing

To the Administrator

TIME-TO-COMPLETION



Legend

The diagram shows a horizontal beam of length 10m. A uniformly distributed load (UDL) of 10 kN/m is applied downwards over the entire length of the beam. A triangular load is applied downwards, starting at 0 kN/m at the left end and increasing linearly to 10 kN/m at the right end. The beam is supported by a pin support at the left end and a roller support at the right end.

Final Committee Meeting

Committee Processing

Executive Committee Processing

To the Administrator

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ABSTRACTS OF THE **SAB** LECTURE SERIES

“SCIENCE & THE HUMAN SIDE OF ENVIRONMENTAL PROTECTION”

The FY02 SAB Lecture Series included noted social scientists--three from outside the United States. Their substantive and environmental-oriented presentations are summarized below.

Dr. Larry Susskind

Ford Professor of Urban and Environmental Planning and Head, Environmental Policy Group at the Massachusetts Institute of Technology (MIT) and Director, MIT-Harvard Public Disputes Program

“Who Says So?” The Uses and Organization of Environmental Policy Studies”

On Friday, September 22, 2000, the SAB began the second year of its lecture series, "Science and the Human Side of Environmental Protection." Dr. Larry Susskind spoke on the topic of his forthcoming book to be published by Island Press, currently in draft under the title, "Who Says So?" The Uses and Organization of Environmental Policy Studies." Twenty-five people from eight Headquarters Offices and five regions participated in the session.

Dr. Susskind started his presentation by describing how his experiences at the not-for-profit Consensus Building Institute mediating multi-party and multi-issue disputes at the local, regional, national and international levels (see <http://www.cbi-web.org/> for more information) had interested him in developing protocols for science-intensive policy disputes. He was particularly curious about disputes marked by a "clash of interests" and by a "need to be grounded in deep understandings of systems natural and social...where scientific and technical analysis needed to be brought into the conversation."

His research was sparked by the observation that opposing interests generally discredited research and information developed to help address a problem when they lacked capacity to create or influence that research or information. He undertook his research project to identify characteristics of policy studies that had success in influencing policy makers. He led a team that conducted case studies of six policy studies at the federal level that were identified as especially important by leaders in policy circles in Washington. His study analyzes the origins, organization, implementation, and utilization of the following policy studies:

1. Regulating Pesticides in Food: The Delany Paradox by the Board on Agriculture of the National Research Council of the National Academy of Sciences
2. Costs and Benefits of Reducing Lead in Gasoline by the US EPA's Office of Policy Analysis

3. Complex Cleanup: The Environmental Legacy of Nuclear Weapons Production by the Office of Technology Assessment
4. Reducing Risk: Setting Priorities and Strategies for Environmental Protection by the EPA Science Advisory Board of the EPA
5. New Farm and Forest Products: Responses to the Challenges and Opportunities Facing American Agriculture by the Task Force on New Farm and Forest Products
6. Alternatives for Management of Late-Successional Forests of the Pacific Northwest by the Scientific Panel on Late Forest Ecosystems.

Dr. Susskind noted that these successful studies did not follow the conventional approach taken by most policy analyses. They were remarkable instead for the following features: (1) they defined the policy problem in a helpful way to stakeholders; (2) they described a full range of policy responses, not just the sponsor's understanding of current authorities; (3) they helped overcome Agency resistance to change; (4) they provided important opportunities to engage stakeholders; (5) they provided information that enhanced the legitimacy of a particular action but did not prescribe the action; and (6) they addressed resource priorities. He concluded that the studies did not isolate analysts from policy makers and stakeholders; instead analysts interacted with policy makers and decision makers throughout the process of development.

Dr. Susskind focused most of his presentation on the key phase in designing policy studies when stakeholders and decision makers initially engage the science and analysis. He recommended a course of action for sponsoring Agencies to pursue. He suggested that sponsoring Agencies engage professional "neutrals" to identify "categories" of stakeholders with interests in the policy issue and work with groups within those "categories" to identify participants. He described a process where these "neutrals" would work with stakeholders to develop a map of the conflict which would plot categories of stakeholders and their interests. The "neutral" would gain the sponsor's understanding of this "map" and then develop a process for engaging the issues and involving the stakeholders. He acknowledged that this approach expands on EPA's current use of "facilitators and mediators" and makes use of EPA's existing roster of "neutrals" available on the web.

Dr. Albert McGartland, Director of the National Center for Environmental Economics, had been previously invited to open the discussion with observations and questions. He noted that his first-hand knowledge of two of the cases gave him an appreciation of the accuracy and careful documentation of the case studies. Although Dr. Susskind had joked that the "keys" to effective policy studies might seem self-evident, Dr. McGartland compared them to the "7 Habits of Highly Effective People," behaviors often overlooked or forgotten.

In terms of policy recommendations, he noted that the Agency had recently invested in building its internal capacity for policy analysis by authorizing hiring of economists in his office. He noted that but there may be justification for a broader investment in other kinds of internal Agency policy capacity and that this topic may be an issue for the Agency's Science Policy Council and Regulatory Policy Council. He suggested that Dr. Susskind might consider how specific kinds of "drivers" for policy analysis (such as the legislative and congressional drivers requiring economics analysis) influence the kinds of policy analyses that do and do not get done. He also noted that the "reality base" supporting

policy work may have an impact on how effective analyses are in influencing decisions. He observed that the Administrator preferred to cite cases avoided by a given environmental option, rather than refer to levels above or below a safe range as suggested by Reference Doses (RfDs) for non-cancer health effects. He concluded that Dr. Susskind's presentation framed economic analysis within the context of political economy and underscored the importance of designing policy studies appropriately to address institutional and stakeholder needs.

Dr. Susskind responded that his study includes a chapter on selecting methods for policy analyses. He observed that adopting multiple methods is often very helpful; his document contrasts different approaches and discusses how choices might be made among them.

Questions then came from the general audience. A question from Region 7 concerned how analytical processes can rebound from situations where missing information or missing stakeholders have been identified. Dr. Susskind responded that ongoing interactions with stakeholders would allow for a "neutral's" reconvening a stakeholder group to advise on how to factor in new information. Similarly, where there is a contention that a stakeholder has been omitted from the process, the "mediator" would ask the individual to differentiate their concerns from the categories already identified on the "map" initially identifying stakeholders, and to make their case that their interest is sufficiently distinct from groups currently engaged to the general stakeholder group. In response to another question from region about the length of time involved in conducting high-quality policy studies, Dr. Susskind responded that it is important to be explicit at the start about the time-frame involved in a process and to build in steps for organizational and public learning about the results of the study into the process.

Then followed a discussion of the importance of having a customer truly interested in the results of a study and poised to act on the results.

The next topic addressed the relationship between the analytic aspects of policy work and the deliberative process - should they be distinct or interwoven. Dr. Susskind advocated that conversations need to happen throughout the process. Problem identification requires stakeholders and the choice of analytical approaches depend on the risk management options. He suggested that "radically wrong results" were more likely to happen if stakeholders were not in the room, than if they were there.

A headquarters participant then raised the issue of stakeholder identification at the federal level. EPA wrestles with different "mental models" of what this term may mean. One model includes all interested and affected parties, basically everyone, since everyone has an interest in the environment. Another model is limited to only the Congress, Office of Management and Budget and the Agency. Finally, the third model limits itself to lobbyists or Trade Associations. Dr. Susskind responded that this question arises because since the 1960's American society has adopted many different kinds of consultative processes, but hasn't spelled out how these processes are to work - either singly or together. He suggested that three different models were in play: (1) a "public hearing model" where "everyone can have a say;" (2) the official, representative-democratic, electoral model, with acknowledged rules and accountability; and (3) the consultative model, which currently involves ad hoc convening of legitimate stakeholders. He suggested that his current study suggests some protocols for providing structure for this third model. A question then followed about how this third model could engage "diffuse" interests like housewives and consumers, who typically do not organize themselves

well. Dr. Susskind suggested that mechanisms were available to address their needs. Neutrals could identify existing organizations that met certain criteria for representing these “diffuse” groups; they could cause a new group to be created to represent them; or they could adopt the device of a “stand-in” to act as a guardian of the group’s interest

Conversation then turned to the usefulness of the Federal Advisory Committee Act (FACA) as a tool for generating the kinds of effective advice described in Dr. Susskind’s manuscript. Dr. Susskind suggested that it is possible, but awkward, to implement the kinds of processes he recommends within the FACA framework. He suggested that, given a choice, he would prefer a substitute for FACA, where Agencies would develop explicit guidance that would implement the processes he described in his book. He suggested that policy studies would be more effective if they were generated by committees that were driven by stakeholders’ interests, rather than by committee members’ credentials.

Final points in the discussion reiterated the importance of impartial peer review to effective policy studies and the importance of sponsoring Agencies remaining engaged as stakeholders throughout the process of developing policy studies.

The SAB plans to host lectures on the social sciences on a periodic basis to highlight how the social sciences can help solve actual environmental problems. If you have suggestions for future speakers or topics, please contact Angela Nugent (202-564-4562 or nugent.angela@epa.gov).

Dr. Roger Kasperson
Executive Director of the Stockholm Environment Institute
“Human Vulnerability to Global Environmental Change”

On Wednesday, December 6, 2000, the SAB hosted the second lecture this fall in its series, "Science and the Human Side of Environmental Protection." Dr. Roger Kasperson spoke on the topic of his current research, "Human Vulnerability to Global Environmental Change." Twenty-seven people from eight Headquarters Offices and two regions participated in the session.

Dr. Kasperson began the lecture by highlighting the importance of vulnerability and fragility on the international environmental agenda in the year 2000. The recent Intergovernmental Panel on Climate Change (IPCC) focused on vulnerability and called for future assessments to address the vulnerability of specific places. Similarly, environmental justice programs have a strong orientation to differential exposure and vulnerability and call for a more comprehensive approach to risk assessment. Emerging work on place-based risks, food security, and fresh water will all likely involve consideration of vulnerability.

To frame his presentation, he offered a concept of vulnerability that fit into a model of the "Integrated Risk Assessment of Regional Environmental Change." Vulnerability included both human and ecosystem receptors' reactions to environmental changes resulting from human driving forces and natural variability. Conditions of vulnerability plus environmental change together determine impacts. He stated that populations don't begin from the same starting points; poor health, diet deficiencies, and access to public health differ and help to determine differential impacts. To be meaningful, risk assessments will need to and are going to give more attention to vulnerability and fragility.

The lecture then turned to the current state of academic science on the subject of vulnerability, one of the topics addressed at a conference at Airlie House in the Spring of this year. In general, Dr. Kasperson said that when researchers took an overview of the suite of tools available for understanding vulnerability, "the cupboard wasn't bare, but it was in considerable disarray." There were non-cumulative research results, different conceptual models and definitions of variability, and a significant lack of conceptual integration, due to separate efforts in different social sciences, separation of social science efforts from ecological efforts, intermittent funding, and the difficulty dealing with the complex nature of the problem. The problem of vulnerability requires sensitivity to context and place, as well as attention to multiple stressors and interactions at multiple scales of time, space, and social scales. The topic requires new method to define and measure coping potential and adaptive capacity. And finally, the topic is politically sensitive; researchers must be careful not to conduct, or appear to conduct, advocate research.

Dr. Kasperson demonstrated the difficulties in coming to agreement about the basic understanding of vulnerability. In terms of definitions, the IPCC sees vulnerability as a combination of sensitivity (the degree to which a system will respond to a change in climatic conditions) and adaptability (the degree to which adjustments are possible in practices, processes or structures of systems). Other organizations and researchers had different definitions. Some models of vulnerability focused on how a series of stressor events work as a process to change the baseline of vulnerability of a receptor. Others,

like the model analyzing causal structure of hunger (Millman and Kates, 1989 and Downing, 1989b), focused on identifying the complex interactions within each of three elements of a framework and then among the three elements, which are: (1) causes of stress (e.g., natural events, economic performance, social status, poverty, wages, access to health services); (2) domains (national, community, household, and individual); and (3) consequences (e.g., economic, political and social instability, economic and social marginalization, economic impacts, morbidity and mortality). Finally, he described a Marxist model that viewed socio-economic factors as determinants of vulnerability, and thus risk impacts.

The challenge at the Airlie House meeting was to identify practical opportunities for researchers on vulnerability and “impact assessors” to work together in the short term, despite the current lack of conceptual integration, as well as to devise a longer-term strategy for research in vulnerability.

Dr. Kasperson offered several examples of efforts to analyze vulnerability in ways useful to impact assessors. At Clark University, a team applied the “Hazards Causal Model,” which incorporated vulnerability analysis addressing resistance and resilience factors, to the problem of flood impacts in the town of Revere, Massachusetts. Through the use of Geographic Information System (GIS) tools, the group, led by George Clarke, then at Clark and now Regional Social Scientist in EPA Region 5, mapped demographic and social data, along with information on flood events, and FEMA insurance rate maps of coastal flood zones. The result is an analysis showing significant factors contributing to vulnerability in flood events that the Clark team believes will help managers in Revere deal with those emergencies. (Note: If you would like a copy of this research, please contact George Clarke by email at clarke.george@epa.gov.)

A second example was design of a risk model incorporating vulnerability considerations for understanding impacts of introducing developmental activities (transportation and dams) in the Mekong River Basin. This model included attention to “hot spots,” high risk ecological areas and high risk social groups, and resulted in an information system to assist managers in thinking through how to manage potential damages associated with new developmental activities.

Dr. Kasperson closed with a summary of the research strategies discussed at Airlie House to strengthen vulnerability analysis. These included: (1) analysis of vulnerability relationships across scales; (2) studying natural experiments for knowledge about vulnerability; (3) conducting case studies with goal of developing a common conceptual framework that would make sense of available data; and (4) developing a set of case studies that focus on best practices. A group is working at Clark and the Stockholm Environment Institute, coordinated by Harvard, to conduct a literature review with an eye to increasing conceptual integration. A priority at Airlie House was to develop a White Paper on what researchers in area of vulnerability should do in the short term to help impact assessors.

Ms. Ann Goode, Director of the Office of Civil Rights, had been previously invited to open the discussion with observations and questions. She began by noting that the presentation “bumps right up” on issues raised by Title 6 Complaints dealing with “adverse disparate impacts.” Issues raised by communities involve considerations of economic disadvantages, access to health care, and multiple stressors – issues that are not the “traditional” risk issues EPA has addressed.

Her work on these issues has led her to conclude that it is difficult to get good data on traditional risk impacts. She finds that meaningful data on race and social and economic status is difficult to get aggregated at the right level to be meaningful in an analysis that would be responsive to concerns about vulnerability.

In her view, the notion of vulnerability expands the risk paradigm, and changes how we look at risk and even harder to get information useful for a vulnerability analysis. She asked how it can be done – to take Title 6, environmental justice, and similar concerns related to sustainability-- and work them through in a thoughtful way.

Questions then came from the general audience. The first question came from Region 5 and concerned the difficulty of conducting vulnerability analyses that were satisfactory at different scales. Medical literature provides information about individuals; aggregating that information at higher scales seems necessary to understand health vulnerability but enormously complex. Dr. Kasperson responded that the question was a key one and difficult. It would need to be worked out case-by-case in individual communities.

Another question concerned the legal and policy basis for incorporating assessments of differential exposure and resilience into risk assessment. The questioner accepted the relevance of vulnerability analyses for environmental justice, planning, and multimedia projects, but asked about the place of such an analysis in media programs. Would it change the paradigm of providing equal protection? How would it relate to equity? Several participants responded. One mentioned that Office of Water's efforts to protect the most sensitive sub population or the Office of Air's policy to protect the highly exposed individual provided a basis for vulnerability analysis. Dr. Kasperson responded that he would like to learn more about how vulnerability could be factored into media programs. He emphasized the importance of looking at vulnerability to truly understanding risk impacts. He offered the examples of Turkey and California in responding to earthquakes of similar severity. Just looking at exposures would seriously underestimate environmental risks.

A comment about environmental justice followed. One participant commented that although Title 6 complainants don't have a framework for vulnerability, their questions arise from an "innate" sense of vulnerability. They find it difficult to communicate that they have a significant disparity, because they don't know what "significant" means, for lack of a framework.

A participant from Region 8 asked whether vulnerability analysis could strengthen the social and economic analyses conducted as part of Environmental Impact Statements (EIS) conducted under the National Environmental Protection Act. Dr. Kasperson responded that vulnerability assessments could potentially have broader impacts than the EIS. They could be logically linked, but he didn't know about the practice or how that would work.

The final discussion touched on a range of applications and research issues. In response to a question about whether to emphasize resilience or recovery in vulnerability analysis, Dr. Kasperson spoke about the importance of addressing long-term effects of an environmental stress, but emphasized the ethical imperative involved in increasing resiliency to reduce impacts. There was a brief discussion of the potential of vulnerability assessment for the Agency's Global Change Research program, and Dr.

Kasperson spoke about the opportunity to demonstrate improvements to impact assessments in specific places through the integration of vulnerability concerns. The final question concerned the identification of factors enhancing resistance and whether the factor set included “civic capacity.” Dr. Kasperson responded that social capital was an intriguing idea to add to the set of factors underlying resilience and would be especially important for community-based analysis. At present, he thought it was a “long jump”; the factors were not yet well conceptualized for use with vulnerability assessments.

The SAB plans to host lectures on the social sciences on a periodic basis to highlight how the social sciences can help solve actual environmental problems. If you have suggestions for future speakers or topics, please contact Angela Nugent (202-564-4562 or nugent.angela@epa.gov).

Dr. Caron Chess
Director of the Center for Environmental Communications at Rutgers University
“Evaluating Public Participation; Feedback for Mid-Course Corrections”

On Thursday, February 22, the SAB hosted the third lecture in the second year of its series, “Science and the Human Side of Environmental Protection.” Dr. Caron Chess spoke on the topic, “Evaluating Public Participation; Feedback for Mid-Course Corrections.” Forty-eight people from 7 Headquarters Offices, an ORD laboratory, 6 regions, and two not-for-profit groups, guests of a regional office, participated.

Dr. Chess opened her talk with a reference to the long history of evaluation (to Genesis!) and the short list of “systematic knowledge about what works in public participation,” despite recent advances represented by the major meta-data project recently completed by Resources for the Future.

Dr. Chess focused her talk on “formative evaluation,” which provides feedback for mid-course corrections. She identified key social science questions as: (1) why evaluate; (2) when to evaluate; (3) what to evaluate; and (4) who defines goals. To explore those questions she examined case studies of three efforts to conduct formative evaluations. First, she described the Department of Energy’s (DOE) efforts to improve the functioning of its Advisory Boards. DOE conducted a major study, designed to improve not only the advice-giving process but also such outcomes as DOE’s site decisions. DOE defined success before starting the study, involved participants in designing what to evaluate, and establishing consensus goals. The project was a multi-year study with both qualitative and quantitative aspects and received peer review before completion.

The second example was “less robust:” a watershed management effort in Raritan, New Jersey, that requested that an evaluation be designed and conducted in the first year of the project. The purpose was to evaluate the processes and outcomes of meetings. Participants developed questions collaboratively and now conduct all phases of evaluation. Findings addressed satisfaction with meeting structure, participation and facilitation, concerns not voiced at meetings, and perceptions of progress. The relatively small scale of this evaluation corresponded to the relatively small scale of the activity being studied. Dr. Chess discussed the tradeoffs involved in participants’ managing the evaluation process themselves. She suggested that the possible loss of objectivity was balanced by greater “salience” of the design of the evaluation and enhanced likelihood that the results would be used to improve processes.

The third example involved pre-testing of environmental indicators developed by the New Jersey Department of Environmental Protection. The purpose of the pre-test was to enhance the perceived effectiveness of the indicators outside the agency, improve current indicators, and develop a process for developing other indicators. Dr. Chess reported that the pre-test assessed understanding, credibility, “affective response,” and perceptions of usefulness. The pre-test revealed people’s needs for information to be put into context by geographic area and environmental problem and resulted in a brochure addressing public concerns.

Dr. Chess concluded her talk by stressing that “formative evaluation” before and during public participation efforts was very useful now as agencies are conducting more--and learning more about--public participation processes. She suggested that environmental programs had much to learn from the experience of welfare, education, and other social programs that had used evaluation to improve their efforts. Their experience suggests that a principal barrier to evaluation is the reluctance of Agencies to use results as a basis for change in programs. She suggested that evaluations of public participation processes may face a double hurdle. Not only do evaluations in general have difficulty making an impact on programs, but critics of public participation processes also specifically argue that Agencies are reluctant to use information from public participation processes to change decisions.

She suggested that the next steps for Agencies were to pilot evaluation efforts, create databases of public participation efforts, develop how-to guides for evaluation, along with templates and software to encourage good practices, and to conduct research on how to evaluate public participation.

Mr. Stephen Johnson, Principal Deputy Assistant Administrator for the Office of Pollution Prevention and Toxic Substances opened the discussion with some intentionally provocative comments and questions. He posed that EPA might be considered “master of the universe” because it operates in a fish bowl, conducts public participation efforts that range from Advisory Committees to task forces to public meetings to interagency teams. It invests contract dollars in doing many of these efforts very well and documents the processes. He asked a series of questions: (1) whether all public participation processes should be evaluated—or were many of them self correcting?; (2) how formative evaluation would work in a regulatory agency, where information was subject to FOIA?; (3) what could EPA’s definition of success be for an evaluation?; and (4) were there different evaluations appropriate for scientific vs. regulatory issues?

A discussion then followed as a regional participant suggested that EPA’s public participation efforts were “OK” on site-specific questions, but not perhaps on national-scale issues. Dr. Chess inquired whether the Agency felt it had good information about how well its public participation processes are doing. She noted that she was aware only of recent high-quality evaluative work that the Superfund program had completed. Mr. Johnson responded that the Agency indeed had gone to great length to evaluate and document processes in the pesticide program that would merit a case study. On the other hand, there were no formal evaluations of some long-standing advisory committees.

A staff person from the Office of General Counsel mentioned that evaluation efforts faced significant legal impediments from the Paperwork Reduction Act and possible FACA requirements. She also suggested that the Agency should not consider public participation efforts as “self-correcting.” Critical comments usually come from people already engaged and knowledgeable about participatory processes and more rarely from minorities and low income critics. Participants from both Headquarters and Regional offices noted the need for improvements in methods for evaluating public participation that involves minorities and native Americans

The leader of the Agency’s public participation workgroup, Patricia Bonner, observed that the Agency does not currently have a central repository of findings regarding public participation and evaluation of public participation efforts. The successful efforts of Superfund, noted by Dr. Chess, are not shared across the Agency. A regional participant seconded this thought, arguing that EPA needs to

“put steam behind” infrastructure support to encourage inter-program coordination, especially in areas of evaluation and risk communication. Far from the Agency being a “master of the universe,” he finds EPA staff don’t share information, don’t build on each other’s experience, and don’t draw on relevant literature.

A commenter from the Superfund program suggested that the Agency might be exemplary in Peter Senge’s term, in its “participatory openness,” but that it fails in “reflective openness,” i.e., taking what has been heard at public meetings and factoring it into decision making.

Dr. Chess suggested that without conscious evaluation, participants’ evaluations of their public participation efforts are “like Rorschach tests”—everyone reacts with individual impressions, there is no agreement on standards, and standards are necessary for organizational learning. She suggested that there was a practical balance to be struck between the “impressionistic Rorschach approach” and a costly, time-intensive evaluation effort that was greater than the environmental protection program being evaluated. She contended that staff arguments to improve public participation processes could best be made if those arguments were based on data obtained through evaluations

Mr. Johnson concluded the discussion with an appreciation for the challenges Dr. Chess presented and an acknowledgment that without evaluations, EPA processes are not “self-correcting.” He acknowledged the tools, questions, and models she presented to improve how EPA evaluates public participation processes in mid-course. He noted that public participation processes were very high on Administrator Whitman’s agenda because they had the promise to improve environmental outcomes.

Dr. Chess made available slides from her talk, a recent article related to the topic, “Evaluating Environmental Public Participation: Methodological Questions,” *Journal of Environmental Planning and Management*, 43(6), 769-784, 2000, and the brochure *Communicating with the Public; Ten Questions Environmental Managers Should Ask*. Please contact Angela Nugent (202-564-4562 or nugent.angela@epa.gov) for copies. The SAB plans to host lectures on the social sciences on a periodic basis to highlight how the social sciences can help solve actual environmental problems. If you have suggestions for future speakers or topics, please contact Dr. Nugent.

Dr. Ortwin Renn
Director of the Center of Technology Assessment;
Chair of Environmental Sociology at the University of Stuttgart
"Analytic-deliberative Processes in Risk Management; Opportunities,
Problems, and Practical Experiences from a Risk-Management Perspective."

On Tuesday, March 13, 2001, the SAB hosted the fourth lecture in the second year of its series, "Science and the Human Side of Environmental Protection." Dr. Ortwin Renn, Director of the Center of Technology Assessment, a public foundation in Baden Wurttemberg devoted to the study of the societal impacts of technological and social change, spoke on the topic of his research "Analytic-deliberative Processes in Risk Management; Opportunities, Problems, and Practical Experiences from a Risk-Management Perspective." Twenty-six people from 7 Headquarters Offices and three regions, and guests from Germany participated.

Dr. Renn began his presentations with some definitions: of "deliberation" and of the challenges deliberation faces in risk management. He linked interest in deliberation in Germany to Understanding Risk, the 1996 report of the National Academy of Sciences, which he characterized as having international impact. "Deliberation" refers to a style of reaching a common agreement or conclusion where there is a mutual exchange of arguments and reflections among equals; all participants have equal rights and duties; there is consensus on rules for verifying or falsifying claims; and a transparent procedure of balancing pros and cons. In risk management, he suggested that deliberation encounters three challenges: (1) complexity in causal relationships, where there are multiple causes, and multiple effects, and where it is hard to relate a particular endpoint to a cause; (2) uncertainty, due to a variety of causes (variation among individual targets, errors in measurement and inference, stochastic relationships, and arbitrariness about system boundaries and ignorance about system effects); and (3) ambiguity in interpreting results, because "meanings" imposed on data sets can differ depending on values and perspectives.

He suggested that discourse about risk would be most successful if appropriate types of discourse were matched to the three different types of challenges. (Success was defined in both subjective and objective terms: where participants felt the process was effective, where participants learned something they didn't know, and where the outcomes led to improved results.) Where the challenge is complexity, cognitive-analytic discourse among "professional knowledge carriers" was most appropriate. People in general "want to know what the experts say" and can accept good assessments of complex problems (such as the effects of electro-magnetic fields or whether dioxin is causing cancer). He argued that "common sense" and oversimplification were bad tools for resolving complexity.

In contrast, when the issue is uncertainty, "evaluative-reflective" discourse between those who pay for the risk costs and those who pay for the risk abatement costs was most appropriate. If the issue is the balance to be struck between over-regulation and under-regulation, a negotiated process was most appropriate. Such a process might lead to negotiating intermediate risk management instruments, such as "precautionary" tools like "confinement" of a possible stressor, until it is clearly established as a bad or "not-so-bad" risk.

Finally, where ambiguity is the issue, "participatory discourse" involving the major stakeholders and affected citizens is the appropriate mode. Often such cases involve broad issues of legitimacy and different values that need to be worked through.

He provided specific examples of where different models of dialogue (e.g., negotiated rulemaking, citizen advisory groups, public panels or juries) could be used most effectively. He contrasted these different models and types of dialogues in a diagram showing "the risk management escalator." If all three types of challenges are involved in a risk issue, he proposed that the best approach would be a hybrid model that would carefully adapt, plan, and sequence different types of dialogue. He called such an approach "the Cooperative Discourse Model." He acknowledged that it was expensive, time consuming, and often frustrating, and then detailed how it could be effective.

Dr. Renn described the application of the Cooperative Discourse Model to the siting of a solid-waste management plan for Baden Wurttemberg. He described: (1) how stakeholders developed "value trees" to generate lists of concerns and options for addressing the problem; (2) how the group Delphi process was used to provide expert judgment on the concerns and options; and (3) how randomly selected citizens were organized into panels to identify which risk management plan to adopt. The effort resulted in innovative solutions never imagined by experts and a broad sense in the community that the process and proposed outcome was legitimate and appropriate. Dr. Renn pointed out that this example seemed like a textbook case for his model, but that the local government and administration did not embrace the outcome. The link between deliberation and risk management needed to be extended to implementation.

Mr. Paul Cough, Director of the Office of International Environmental Policy in the Office of International Activities, who had been asked to begin the discussion with his comments, began the conversation with several questions about the relationship of Dr. Renn's work to the standard distinctions made for risk assessment, risk management, and risk communication. He also asked how Dr. Renn understood the "standing" of different groups to participate in different types of dialogue. He wondered how the Cooperative Discourse Model might be applied to problems at different scales (e.g., local vs. national or international scales) or to issues such as genetically modified organisms (GM)s or mercury.

Dr. Renn replied with an acknowledgment that different political traditions have different attitudes towards risk management. In Germany or France, it was acceptable for a risk manager to select experts, while in New Jersey stakeholders question authority in selecting experts. In the United States, the risk manager's tradition was to "listen to everyone, make everyone comfortable, and then make your own decision." He suggested that such a tradition resulted in a loss of trust. What was needed, in his view, was to find the balance between "giving people the illusion that whatever they come up with will be considered" and "structuring things overmuch."

The Cooperative Discourse Model, he believed, could be applied on more than local and regional scales. Dr. Renn reported that the national strategy for labeling GMOs in Germany was developed based on application of the model. He thought that the model could be useful internationally to deal with complexities, uncertainties, and ambiguities associated with climate change.

Other EPA staff then joined the conversation. Several were curious about the sources of funding

for applications of the Cooperative Discourse Model. Dr. Renn informed the group that funding came from private foundations, the German Environmental Protection Agency, the European National program, the German National Science Foundation, and stakeholders who were parties to the risk management issues.

Dr. Renn was asked several questions about applications of his approach. He informed the group that he has used this approach at the neighborhood level, applying a "stepped-down version, depending on the level of complexity in the issue." He also talked about how his model related to representative government and how he has managed to integrate the decision outcomes arising from application of the Cooperative Discourse Model with the formal political process in Germany. He stated that he attempted to educate interest groups to use citizens' panels for risk management purposes, not for their strategic political ends. He acknowledged that the processes he described result in recommendations, not decisions. Decision-makers are the responsible Agencies or parliaments, which have the legal power to make decisions. He emphasized that with growth of the European Union and international trade, there was increased pressure on German decision-makers to open up the previously-accepted "club atmosphere" for making risk management decisions. He suggested that there was interest in making processes more open and transparent, and "room and funds for experimentation."

Dr. Renn made available slides from his talk and welcomed queries about his approach through email, at the following address: ortwin.renn@ta-akademie.de. He also provided a copy of a recent paper related to his presentation (The Challenge of Integrating Deliberation and Expertise: The Participation and Discourse in Risk Management, Accepted Contribution to the 2000 Risk Symposium volume, Risk and Governance, edited by T.L. McDaniels and M. Small). Please contact Angela Nugent (202-564-4562 or nugent.angela@epa.gov) for copies. The SAB plans to host lectures on the social sciences on a periodic basis to highlight how the social sciences can help solve actual environmental problems. If you have suggestions for future speakers or topics, please contact Dr. Nugent.

Dr. Robin Gregory
Senior Researcher at Decision Research (Eugene, Oregon);
Associate Director of the Eco-Risk Research Unit at the
University of British Columbia
“Decision Aiding, Not Consensus: Using Structured Decision Processes to
Link Consultation and Analysis”

On April 4, 2001, the SAB hosted the fifth lecture in the second year of its series, “Science and the Human Side of Environmental Protection.” The presenter was Dr. Robin Gregory, senior researcher at Decision Research (Eugene, Oregon), a nonprofit institute that does research and consulting in risk management, environmental policy analysis, and decision-making processes of individuals, groups, and society, spoke on the topic “Decision Aiding, Not Consensus: Using Structured Decision Processes to Link Consultation and Analysis.” Sixteen people from six Headquarters Offices and one region participated.

Dr. Gregory introduced his presentation as an introduction to how decision science can help structure “smart choices” about environmental and health risks. He linked his work to the many calls for increased consultation and analysis in risk management (e.g., National Academy of Science Report, Understanding Risk and Canadian Roundtable on the Environment) and described it as an effort to improve the knowledge base for successful consultations. In his presentation, he outlined components of a structured, value-focused process for understanding and evaluating environmental choices; described key methodological approaches and policy implications; and presented examples of structured decision processes in the United States and Canada.

The first part of his talk defined terms and drew distinctions. A “structured decision process” addresses basic questions: (1) what are the decisions to be made?; (2) what matters?; (3) what are the alternatives?; (4) what are the impacts of the alternatives?; and (5) what alternatives can stakeholders support? The purpose of such a process is to aid decision-making, rather than to achieve consensus and resolve disputes. The “decision-aiding approach” focuses on identifying important objectives or values for participants, seeks insight for the decision-maker, and provides “judgmental heuristics” (i.e., decision-making help).

One of Dr. Gregory’s key assumptions was that preferences of participants are “constructed” and dependent on context and timing, and not fixed. In Dr. Gregory’s view, analysts are “architects,” who help participants learn about an issue and build their preferences, not “archeologists,” as in the contingent valuation approach, where analysts discover preexisting preferences.

Dr. Gregory described the key steps involved in implementing the structured, decision-aiding approach: (1) identify stakeholders and determine whose voice counts; (2) distinguish between “means” and “ends” objectives; (3) select attributes, i.e., measures of success in addressing objectives; (4) present alternatives to enhance evaluability; (5) clarify uncertainty; (6) conduct tradeoff analysis; and (7) learn through the process. He provided details about tools and methods for each step and compared the structured approach to convention risk management processes.

He then briefly described three examples where the structured decision-aiding approach was used: (1) a small group consultation on the Alouette River, British Columbia; (2) work with the Tillamook Bay National Estuary Program, Oregon, to develop scientific and public input into the Comprehensive Conservation and Management Plan; and (3) decision pathways survey for the Ontario Ministry of Natural Resources, where a decision-pathway survey was used to assess alternatives for managing unwanted forest vegetation.

Dr. Gregory concluded his presentation by summarizing the goals for the decision aiding approach. It aims to represent values as faithfully as possible; represent a full range of reasonable alternatives; gain insight, not a “right number” or a “right choice;” lead to more open, more accountable public decision processes; and account for the “big picture” that includes the cognitive and affective dimensions, local and national concerns, and short and long-run considerations.

Ms. Elaine Davies, Acting Director, Office of Emergency and Remedial Response in the Office of Solid Waste and Emergency Response, who had been asked to begin the discussion with her comments, started the conversation with several observations and questions. She noted that public involvement approaches that focused on building consensus often did not maximize the generation of creative solutions to environmental problems. She noted that the approach Dr. Gregory had described was appealing and practical and might have applications at the local, regional and national scale

She asked about the approach used to pick people to participate in the decision-aiding consultation groups. Dr. Gregory responded that he usually oriented choice of participants around interests related to the problem and also identified individuals from the general communities, local scientists, and persons who were a link to local governments.

Ms. Davies inquired whether results from decision-aiding consultations had been used by the Office of Management and Budget (OMB) and found to be useful. Dr. Gregory responded that, to his knowledge, OMB had not been presented with the results from a constructed preference process, but that such information might be useful because it would present a range of alternatives and meaningful information about related preferences.

Dr. Gregory and Ms. Davies then discussed several other issues. The decision-aiding consultation process might prove effective in solving hazardous waste problems, because it can be used to generate creative alternatives to traditional approaches. Dr. Gregory described how he often begins a group process by posing “straw” alternatives to begin discussion and then working with the group to combine alternatives and develop new ones.

The broader group then joined the discussion. Staff from OAR asked about how different methods or tools were introduced into the group process. Dr. Gregory responded that the first questions to ask were “what kinds of things matter” and then “what are the attributes” or measures of the objectives sought. He’d often facilitate group discussions, write up the major points and reflect findings to the group. The decision tools available (e.g., influence diagrams, mental models) can be used to “ferret out” information and help dialogue. He emphasized that the process of defining specific measures for objectives was needed for different parties to understand each other and to identify alternatives not yet considered.

Staff from OPPTS asked how findings gained in small groups translate to decisions made by larger groups. Dr. Gregory responded that decision-aiding consultations with small groups can inform a decision maker about the values of a larger group. He often keeps a community informed about the results of small group work through newspaper articles and town meetings or relies on individual members of the small group to communicate results to their own interest group or the larger audience. He concluded by acknowledging the difficulty of informing and involving the broad public in risk-related decisions in a meaningful way as a major challenge of representative government.

Dr. Gregory provided copies of his slides and a recent article “Using Stakeholder Values to Make Smarter Environmental Decisions” from *Environment*, 2000. Please contact Angela Nugent (202-564-4562 or nugent.angela@epa.gov) for copies. The SAB plans to host lectures on the social sciences on a periodic basis to highlight how the social sciences can help solve actual environmental problems. If you have suggestions for future speakers or topics, please contact Dr. Nugent.

APPENDIX C

SAB PEOPLE

- C1. Staff Organization Chart
- C2. Staff Committee Alignment
- C3. SAB Committee Chairs
- C4. Guidelines for Service on the SAB
- C5. Types of Affiliation with the SAB
- C6. SAB Members for FY 2001
- C7. SAB Consultations for FY 2001
- C8. Staff Biographical Sketches & Staff Transitions

SAB STAFF ORGANIZATION CHART

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graph TD
    JohnS[John S. Dwyer III  
Deputy Staff Director] --> AngelaN[Angela Nugent  
Special Assistant Staff Director]
    JohnS --> DonaldG[Donald G. Barnes  
Staff Director]
    DonaldG --> DanaP[Dana Peterson  
Program Specialist]
    DonaldG --> LauraF[Laura Feltz  
Office Assistant]
    DonaldG --> RobertJ[Mr. Robert Jack  
Team Leader  
Communications Staff]
    DonaldG --> PatriciaT[Patricia Thomas  
Team Leader  
Commuter Education and Program Staff]
    PatriciaT --> CarolynJ[Carolyn Johnson  
Project Coordinator]
    PatriciaT --> RickA[Rick A. Anderson  
Management Analyst]
    PatriciaT --> PatriciaT2[Patricia Tilson-Bellows  
Information Management Specialist]
    RobertJ --> KJack[K. Jack Kousminek  
Designated Federal Officer]
    RobertJ --> KarenV[Karen Vanden  
Designated Federal Officer]
    RobertJ --> MeadeM[Meade Melina-Mezger  
Designated Federal Officer]
    RobertJ --> ThomasW[Thomas Will  
Designated Federal Officer]
    RobertJ --> StevenP[Steven Penning  
Designated Federal Officer]
    RobertJ --> StephanieS[Stephanie Sarzine  
Designated Federal Officer]
    RobertJ --> KathleenW[Kathleen White  
Designated Federal Officer]
    RobertJ --> PennyC[Penny Clark  
Management Assistant]
    RobertJ --> WandaF[Wanda Feltz  
Management Assistant]
    RobertJ --> PhyllisF[Phyllis Feltz  
Management Assistant]
    RobertJ --> MaryH[Mary Helton  
Management Assistant]
    RobertJ --> JasonJ[Jason Jochen  
Student Intern]
  
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The organizational chart for the U.S. Coast Guard Auxiliary is structured as follows:

- John S. Dwyer III**, Deputy Staff Director, oversees:
 - Angela Nugent**, Special Assistant Staff Director
 - Donald G. Barnes**, Staff Director, who oversees:
 - Dana Peterson**, Program Specialist
 - Laura Feltz**, Office Assistant
 - Mr. Robert Jack**, Team Leader, Communications Staff
 - Patricia Thomas**, Team Leader, Commuter Education and Program Staff
 - Carolyn Johnson**, Project Coordinator
 - Rick A. Anderson**, Management Analyst
 - Patricia Tilson-Bellows**, Information Management Specialist
- Mr. Robert Jack**, Team Leader, Communications Staff, oversees a column of six Designated Federal Officers (DFOs):
 - K. Jack Kousminek**
 - Karen Vanden**
 - Meade Melina-Mezger**
 - Thomas Will**
 - Steven Penning**
 - Stephanie Sarzine**
- Angela Nugent**, Special Assistant Staff Director, oversees a column of six Management Assistants:
 - Kathleen White**
 - Penny Clark**
 - Wanda Feltz**
 - Phyllis Feltz**
 - Mary Helton**
 - Jason Jochen**, Student Intern

*Took a position in the Office of Solid Waste and Emergency Response, November 2000

C2

FY 2001 STAFF COMMITTEE ALIGNMENT

Committee	Chair	Designated Federal Officer	Management Assistant (unless otherwise noted)
Executive Committee	Dr. William Glaze	Dr. Donald G. Barnes	Ms. Diana Pozun (Program Specialist)
Advisory Council on Clean Air Compliance Analysis	Dr. Trudy Cameron	Dr. Angela Nugent	Ms. Diana Pozun (Program Specialist) Ms. Rhonda Fortson
Clean Air Scientific Advisory Committee	Dr. Phil Hopke	Mr. A. Robert Flaak	Ms. Diana Pozun (Program Specialist) Ms. Rhonda Fortson
Drinking Water Committee	Dr. Rhodes Trussell	Mr. Thomas Miller	Ms. Wanda Fields
Ecological Processes and Effects Committee	Dr. Terry Young	Ms. Stephanie Sanzone	Ms. Mary Winston
Environmental Economics Advisory Committee	Dr. Robert Stavins	Mr. Thomas Miller	Ms. Wanda Fields
Environmental Engineering Committee	Dr. Hilary Inyang	Ms. Kathleen Conway	Ms. Mary Winston
Environmental Health Committee	Dr. Mark Utell	Mr. Samuel Rondberg Ms. Karen Martin	Ms. Dorothy Clark
Integrated Human Exposure Committee	Dr. Henry Anderson	Mr. Samuel Rondberg Ms. Karen Martin	Ms. Dorothy Clark
Radiation Advisory Committee	Dr. Janet Johnson	Mr. Samuel Rondberg Ms. Melanie Medina-Metzger	Ms. Dorothy Clark
Research Strategies Advisory Committee	Dr. Raymond Loehr	Dr. John R. Fowle III	Ms. Wanda Fields

C3

SAB COMMITTEE CHAIRS

Executive Committee (EC)

Dr. William Glaze

Director, Carolina Environmental Program

Professor, Environmental Sciences & Engineering, University of North Carolina, Chapel Hill

Editor, Environmental Sciences & Technology

Member, American Chemical Society

Advisory Council on Clean Air Compliance Analysis (Council)

Dr. Trudy Cameron

Raymond F. Mikesell Professor of Environmental and Resource Economics, University of Oregon

Professor, University of California, Los Angeles (on leave)

Member, Econometric Society

Member, American Economic Association

Member, American Statistical Association

Member, Association of Environmental Resource Economists

Member, American Agricultural Economics Association

Member, International Society for Ecological Economics

Clean Air Scientific Advisory Committee (CASAC)

Dr. Philip Hopke

Robert A. Plane Professor, Clarkson University

Vice President Elect, American Association for Aerosol Research

Member, American Chemical Society

Member, American Institute of Chemical Engineers

Member, American Physical Society

Member, Air & Waste Management Association

Member, American Association for the Advancement of Science

Member, International Chemometrics Society

Member, Gesellschaft für Aerosolforschung

Plenary Member, Health Physics Society

Member, International Society of Exposure Assessment

Member, International Society of Indoor Air Quality and Climate

Editor-in-Chief, Aerosol Science and Technology

Associate Editor, Chemometrics and Intelligent Laboratory Systems

Member, Editorial Board, Atmospheric Environment

Drinking Water Committee (DWC)***Dr. Rhodes Trussell***

Senior Vice President, MWH, Inc.

Member National Academy of Engineers

Member of Peer Committee for Civil Engineering Section

Member Search Committee for Civil Engineering Section

Member Water Science and Technology Board, National Research Council

Diplomant American Academy of Environmental Engineers

Member, American Association for the Advancement of Science

Registered Civil Engineer and Corrosion Engineer, State of California

Member, Sigma Xi

Member, American Society of Civil Engineers

Member, American Institute of Chemical Engineers

Member, American Water Works Association

Member, International Water Association

Chair, Committee on Disinfection

Member, Scientific and Technical Council

Member, Programme Committee for Melbourne Conference 2002

Member, American Chemical Society

Member, Magazine Advisory Board

Member, National Association of Corrosion Engineers

Ecological Processes and Effects Committee (EPEC)***Dr. Terry Young***

Senior Consulting Scientist, Environmental Defense Fund, Oakland, CA

Member, Advisory Committee to the University California Salinity/Drainage Program

Expert Testimony for EDF before U.S. House of Representatives Subcommittees, California State Water Resources Control Board, and California Regional Water Quality Control Board

Environmental Economics Advisory Committee (EEAC)***Dr. Robert Stavins***

Albert Pratt Professor of Business and Government, and Faculty Chair, Environment and Natural Resources Program, John F. Kennedy School of Government, Harvard University

University Fellow, Resources for the Future

Director, Environmental Economics Program at Harvard University

Member, EPA Clean Air Act Advisory Committee

Lead Author, Intergovernmental Panel on Climate Change

Member, Board of Directors, Association of Environmental and Resource Economists

Member, Board of Directors, Robert and Renée Belfer Center for Science and International Affairs

Member, Executive Committee, Harvard University Committee on Environment

Member, Board of Academic Advisors, AEI-Brookings Joint Center for Regulatory Studies

Member Editorial Council, The Journal of Environmental Economics and Management

Member, Board of Editors, Resource and Energy Economics

Member, Advisory Board, Environmental Economics Abstracts

Member, Editorial Board, Economic Issues

Contributing Editor, Environment

Environmental Engineering Committee (EEC)**Dr. Hilary Inyang**

Duke Energy Endowed Distinguished Professor, Professor of Earth Sciences and Director,
Geoenvironmental and Energy Systems Research Laboratory (GESRL), University of North
Carolina, Charlotte

Member, Effluent Guidelines Committee, National Advisory Council on Environmental Policy and
Technology

Fellow, Geological Society of London

Honorary Theme Editor, United Nations Encyclopedia of Life Support Systems, Section of
Environmental Monitoring

Associate Editor, Journal of Environmental Engineering (American Society of Civil Engineers), Waste
Management Journal (Elsevier Science Publishers), International Journal of Surface Mining,
Reclamation and the Environment (A.A. Balkema Publishers)

Editorial Board Member, Waste Management and Research (Academic Press); Journal of Infrastructure
Systems (ASCE); Journal of Environmental Systems (Baywood Publishers); Journal of Soil
Contamination; Transactions of the Nigerian Society for Biological Conservation; Environmental
Monitoring and Assessment (Kluwer Academic Publishers); and Resources Conservation and
Recycling (Elsevier Science Publishers)

1996 Young Investigator, National Research Council

1992/93 Eisenhower-Jennings Randolph Awardee of the World Affairs
Council/International Public Works Federation

1991 American Association for the Advancement of Science (AAAS)/USEPA Environmental Science and
Engineering Fellow

1996-99 DuPont Young Professor

Environmental Health Committee (EHC)**Dr. Mark Utell**

Professor of Medicine and Environmental Medicine, University of Rochester
School of Medicine, Rochester, NY

Director, Pulmonary/Critical Care and Occupational Medicine Divisions,
University of Rochester Medical Center

Associate Chair, Department of Environmental Medicine, University of
Rochester Medical Center

Diplomate of the American Board of Internal Medicine,

Diplomate of the American Board of Internal Medicine, Pulmonary Diseases
Sub-specialty

Fellow, American Association for the Advancement of Science

Fellow, American College of Chest Physicians

Fellow, American College of Physicians

Chair, Research Committee, Health Effects Institute

Member, Research Strategies Advisory Committee, EPA

Editorial Board: Journal of Aerosol Medicine Inhalation Toxicology,
Environmental Health Perspectives and Journal of Environmental Medicine

Integrated Human Exposure Committee (IHEC)**Dr. Henry Anderson**

Chief Medical Officer and State Environmental and Occupational Health
Epidemiologist, Wisconsin Division of Public Health
Adjunct Professor, Dept of Preventive Medicine, Univ Wisconsin Medical School
Certified in Preventive Medicine, American Board of Preventative Medicine
Certified Specialist in Occupational and Environmental Medicine, American
Board of Preventative Medicine
Fellow, American College of Epidemiology
Fellow, American Association for Advancement of Science
Member, American Public Health Association
Member, American College of Epidemiology
Member, American Medical Association
Member, American Occupational and Environmental Medicine Association
Member, Past President, Council of State and Territorial Epidemiologists
Member, International Society of Environmental Epidemiology
Member, Collegium Ramazzini
Member, Association of State and Territorial Health Officials (ASTHO) Environmental Health Policy
Committee
Member, National Center for Environmental Health, CDC, Advisory Committee to the Director
Member, White House Advisory Board on Radiation and Worker Health
Member, Editorial Board, Cancer Prevention International
Associate Editor, American Journal of Industrial Medicine
Co-Editor, Wisconsin Medical Journal Public Health Column

Radiation Advisory Committee (RAC)**Dr. Janet Johnson**

Senior Technical Advisor, Shepherd Miller, Inc.
Affiliate Faculty, Department of Environmental Health, Colorado State University
Board of Directors, Health Physics Society
President, Radon Section, Health Physics Society
Member, Colorado Radiation Advisory Committee
Member, American Academy of Health Physics
Member, American Industrial Hygiene Association
Member, American Academy of Industrial Hygiene

Research Strategies Advisory Committee (RSAC)

Dr. Raymond Loehr

Hussein M. Alharthy Centennial Chair, Environmental and Water Resources Engineering Program -

University of Texas at Austin

Member, National Academy of Science

Member, National Academy of Engineering

Member, National Research Council Committee

Vice President, American Academy of Environmental Engineers

C4

GUIDELINES FOR SERVICE ON THE EPA SCIENCE ADVISORY BOARD

Background

The EPA Science Advisory Board (SAB) was established in 1974 by the Administrator. In 1978 the SAB received a Congressional mandate to serve as an independent source of scientific and engineering advice to the EPA Administrator.

The SAB consists of approximately 100 Members, who are appointed by the Administrator. These members serve on specific standing committees. The Chairs of the Committees also serve as members of the Executive Committee, which oversees all of the activities of the Board.

In many of its activities, the members of the Board are supplemented by Consultants, who are appointed by the SAB Staff Director after conferring with the Chair of the Committee on which the consultant is to serve. Also, on occasion, Panels will be supplemented by "liaison members" from other governmental agencies. These people are invited by the Staff Director to participate in an ad hoc manner in order to bring their particular expertise to bear on a matter before the Board.

Both the Executive Committee and the permanent Committees may choose to conduct issue-specific business through Subcommittees that are chaired by SAB members. Reports from Subcommittees are reviewed by the respective permanent Committees. The Executive Committee reviews all reports, independent of their origin, prior to formal transmission to the Administrator. The sole exceptions are reports from the Clean Air Scientific Advisory Committee and the Advisory Council on Clean Air Compliance Analysis, which are separately chartered Federal Advisory Committees operating within the SAB structure.

Criteria for Selection of Members and Consultants

The SAB is chartered as a Federal Advisory Committee, subject to the rules and regulations of the Federal Advisory Committee Act (FACA) (Public Law 92-463). The charter provides guidance and restrictions on selection of SAB members. The four most significant of which are:

- a) Members must be qualified by education, training and experience to evaluate scientific and technical information on matters referred to the Board.
- b) The composition of Board committees, subcommittees and panels must be "balanced", representing a range of legitimate technical opinion on the matter.
- c) No member of the Board may be a full-time government employee.
- d) Members are subject to conflict-of-interest regulations.

The scientific and technical quality and the credibility of those selected is a paramount consideration. Secondary factors considered include the geographic, ethnic, gender, and academic/private sector balance of committees. Other factors that contribute to, but do not determine, the selection include demonstrated ability to work well in a committee process, write well, and complete assignments punctually.

Nominations for membership/consultantship on the Board are accepted at any time. On a biannual basis, the SAB Staff Office publishes a notice in the Federal Register formally soliciting the names of candidates for SAB activities.

Terms of Appointment

Members serve at the pleasure and by appointment of the Administrator. In order to provide suitable terms of service and to insure the infusion of new talent, the following guidelines are generally followed:

Members are generally appointed in October for two-year terms which may be renewed for two additional consecutive terms. Chairs of the standing committees are also appointed for two-year terms which may be renewed for one additional term. If a member is appointed as Chair, this term of service (2-4 years) is added to whatever term of service he/she may accrue as a member. For example,

<u>Years as member</u>	<u>Followed by years as Chair</u>	<u>Followed by year as member</u>	<u>Total years</u>
2	0	0	2
2	2 or 4	0 or 2	4-6
4	2 or 4	0	6-8
6	2 or 4	0	8-10

Reappointment as a member is possible after a two-year hiatus from the SAB, during which time the individual may be called upon to serve as a consultant for a specific issue.

Consultants are appointed to provide the necessary expertise for specific issues. Their terms of appointment are for one year, beginning at any time, and are renewable annually. Their formal appointments may be continued beyond completion of a given project so that their expertise can be quickly assessed in future with a minimum of paperwork.

In general, interagency liaisons participate for the term of issue resolution only.

Member and Consultant Selection Process

Members are appointed by the Administrator based on nominations forwarded by the SAB Staff Director and the Chair of the Executive Committee. These nominations, in turn, are based on recommendations made by the Designated Federal Official (DFO—the member of the SAB Staff with principal responsibility for servicing standing Committees) and the Chairs of the standing Committees. The DFO has the responsibility for developing a list of candidates, utilizing all credible sources, including members of the

SAB, other DFOs, EPA staff, staff at the National Academy of Sciences\National Research Council, trade groups, environmental groups, professional organizations, scientific societies, regulated industries, and the informed public.

On occasion, an ad hoc Membership Subcommittee of the Executive Committee has been established to assist in the selection process. This group is consulted about possible names and used as a "sounding board" when decisions are being made about appointments. The Membership Subcommittee's principal role is to maintain the integrity of the process and to probe the extent to which objective selection criteria and procedures are being followed. They also raise questions about adherence to the Statement of Intent on Women and Minorities, adopted by the Executive Committee in 1990, which was designed to increase the representation of these groups on the Board.

Consultants are appointed by the Staff Director following a similar procedure.

Panel Selection Process

In general, once the Board and the Agency have agreed upon a topic for SAB review, the subject is assigned to one of the standing Committees. The Committee Chair and the DFO have primary responsibility for forming a review Panel (the full Committee or a Subcommittee, as the case may be). The Panel will contain some or all members of the Committee. In many instances, consultants may also be added to the Panel in order to obtain specialized expertise on the particular issue under discussion.

A key aspect in the Panel selection process is the "charge", the mutually agreed upon description of what the Agency would like the review to accomplish and/or what the SAB expects to focus upon. The most helpful charge is one that prescribes specific areas/questions that need attention and/or answers. At a minimum, the elements of the charge should be sufficiently precise that the SAB can determine what additional consultant expertise is needed to conduct the most helpful review.

Often the DFO begins by soliciting ideas about potential members from the Agency staff who are intimately acquainted with the issue and will therefore are often aware of the most informed people. A conscious effort is made to avoid selecting individuals who have had a substantive hand in the development of the document to be reviewed. At the same time, experience has shown the utility of having some representation from individuals/groups who may have been involved in prior reviews of the issue or the document. The goal is to minimize the appearance or practice of an individual's reviewing his/her own work, while at the same time, maintaining an historical link to earlier deliberations surrounding the document/issue. Once the Agency staff has suggested nominees and provided background information on the individuals, their direct role in the panel selection process is complete. Agency staff, the requesting office, and others may be consulted at a later stage for information about nominees received from other sources.

The goal is to gather a balanced group of experts who can provide an independent assessment of the technical matters before the Board. Discrete inquiries about the nominees are made with a number of different sources. This might include, for example, making inquiries with editors of newsletters, professional colleagues, and experts who are on "the other side" of the issue. As time and resources permit and controversy demands, names of nominees will be investigated via computer search of their publications and pronouncements in public meetings.

Frequently, a determining factor for selection is the availability of the individual to participate in the public review. In the case of multiple-meeting reviews, the SAB may enlist the assistance of a particularly skilled consultant who cannot attend all meetings, but who is willing to do additional homework and/or participate via conference call.

In some cases, the Panel Chair consults with key members of the Panel for their advice before completing the empaneling process. The final selections for consultants are compiled by the DFO in conjunction with the Chair of the Panel and are submitted to the SAB Staff Director for discussion and appointment.

Conflict-of-Interest and Public Disclosure

The intent of FACA is to construct a panel of knowledgeable individuals who are free of conflicts-of-interest. In this regard, each Panel member must complete a confidential financial information form that is reviewed by the Deputy Ethics Officer, Donald Barnes, to determine whether there are any obvious conflicts-of-interest.

Legal conflict-of-interests generally arise in connection with “particular party matters” (A particular matter is any activity in which an employee participates in an official capacity, where he or other persons have a financial interest, if the direct activity --particular matter-- will have a direct and predictable effect on his own or that person’s financial interests.) In general, the SAB (in contrast with the FIFRA Scientific Advisory Panel (SAP)) does not get involved in “particular party matters,” hence, legal conflicts-of-interest are rare on the SAB. However, technical conflicts-of-interest can arise, particularly for participants from academic institutions, in connection with Committee recommendations for additional research studies. In most such cases, the DFO’s work with the Committee members to apply for waivers from the conflict-of-interest concerns on this matter. The requests for waivers are evaluated on a case-by-case basis by EPA’s Office of General Counsel. (The Agency generally determines that the benefits to the country derived from these experts’ recommendations for additional research, outweigh any technical conflict-of-interest that might be involved.)

However, the Board is also concerned about “apparent conflicts-of-interest.” Consequently, Members and Consultants to the Panel are generally selected from the “broad middle” spectrum of opinion on the technical issue under discussion. Experience has shown that achieving balance through equal representation of extreme views reduces the chance of achieving a workable consensus--proor con--that the Agency needs to move forward.

The “public disclosure” (see Attached) process (a standard part of all SAB Committee meetings) is a mechanism aimed resolving the apparent conflicts-of-interest issues. This procedure involves an oral statement (sometimes Board members supplement this with a written document) that lays out the individual’s connection with the issue under discussion; e.g., his/her area of expertise, length of experience with the issue, sources of research grants, previous appearance in public forms where he/she might have expressed an opinion, etc. This recitation of prior and/or continuing contacts on the issue assists the public, the Agency, and fellow Panel members understand the background from which particular individual’s comments spring, so that those comments can be evaluated accordingly.

Conclusion

These Guidelines are intended to assist the SAB in adhering to the mandates and spirit of the Federal Advisory Committee Act. By following these Guidelines the Board should be well-positioned to provide technically-sound, independent, balanced advice to the Agency. At the same time, they provide assurance that there will be adequate participation by and renewal with well-qualified experts from the various communities served by the Board.

Prepared: Oct 14, 1991

Revised: Nov 26, 1991

Revised: Oct. 12, 1994

Revised: Nov 12, 1996

ATTACHMENT

ATTACHMENT TO APPENDIX C4

GUIDELINES FOR PUBLIC DISCLOSURE AT SAB MEETINGS

Background

Conflict-of-interest (COI) statutes and regulations are aimed at preventing individuals from (knowingly or unknowingly) bringing inappropriate influence to bear on Agency decisions which might affect the financial interests of those individuals. The SAB contributes to the decision-making process of the Agency by evaluating the technical underpinnings upon which rules and regulations are built. SAB Members and consultants (M/Cs) carry out their duties as Special Government Employees (SGE's) and are subject to the COI regulations.

Therefore, in order to protect the integrity of the advisory process itself and the reputations of those involved, procedures have been established to prevent actual COI and minimize the possibility of perceived COI. These procedures include the following:

- a) Having M/C's file, at the time of appointment, OGE Form 450, Confidential Statement of Employment and Financial Interest. This form is a legal requirement and is maintained by the Agency as a confidential document.
- b) Providing M/C's with written material; e.g. copies of the Effect of Special Government Employee Status on Applicability of Criminal Conflict of Interest Statutes and Other Ethics Related Provisions, the Standard of Ethical Conduct Synopsis and Ethics Advisories 97-01 and 96-18.
- c) Delivering briefings to M/C's on COI issues on a regular basis.

The following is a description of an additional voluntary¹ procedure that is designed to allow both fellow M/Cs and the observing public to learn more about the backgrounds that M/C's bring to a discussion of a particular issue. In this way, all parties will gain a broader understanding of "where people are coming from" and provide additional insights to help observers and participants evaluate comments made during the discussion.

Procedure

When an agenda item is introduced that has the potential for COI—actual or perceived—the Designated Federal Official (DFO) will ask each M/C on the panel to speak for the record on his/her background, experience, and interests that relate to the issue at hand. The following items are examples of the type of material that is appropriate to mention in such a disclosure:

- a) Research conducted on the matter.

¹ Note: The disclosure procedure is voluntary, and members/consultants are not obligated to reveal information contained in their Form 450 that would otherwise remain confidential.

- b) Previous pronouncements made on the matter.
- c) Interests of employer in the matter.
- d) A general description of any other financial interests in the matter: e.g., having investments that might be directly affected by the matter.
- e) Other links: e.g., research grants from parties--including EPA--that would be affected by the matter.

The DFO will also publicly refer to any waivers from the COI regulations which have been granted for the purposes of the meeting.

The DFO will assure that the minutes of the meeting reflect that fact such disclosures were made and, if possible, the nature of the disclosures. In addition, the minutes should describe any situations in which, in the opinion of the DFO, an actual or perceived COI existed and how the issue was resolved.

C5

TYPES OF AFFILIATION WITH THE SAB

1. SAB Members

SAB members are technically qualified individuals who are appointed to the Board by the Deputy Administrator for two-year terms. Members participate fully in their review committees, which are generally conducted in a collegial, consensus-building style. Their names appear as members on relevant rosters and generated reports.

Note that SAB reports are formally endorsed by SAB members by action of the Executive Committee.

2. SAB Consultants

SAB Consultants are technically qualified individuals who are appointed to the Board by the SAB Staff Director for one-year terms. Generally, Consultants are appointed in order to augment the expertise for a particular review and/or for mutual exploration of future membership on the Board. Consultants participate fully in their review panels and committees, which are generally conducted in a collegial, consensus-building style. Their names appear as Consultants on relevant rosters and generated reports.

3. Federal Experts

The SAB charter precludes Federal employees from being members of the Board. However, in some instances, certain Federal experts have technical knowledge and expertise that can add significant value of the work of the SAB.

In order to access that expertise for the benefit of the Board and the Administrator, the SAB staff will work with the Office of the General Counsel to identify appropriate mechanisms for assessing the potential for conflicts of interest.

The SAB Staff Director can invite Federal experts who do not have a real or apparent conflict-of-interest (either personally or through their agencies) to service on an SAB committee for the duration of a particular the review/study. Federal experts participate fully on the committees, which are generally conducted in a collegial, consensus-building style. Their names appear as Federal experts on relevant rosters and generated reports.

4. Invited Expert Resource

In some situations, there are individuals (both Federal employees and non-Federal employees) who have expertise and/or knowledge of data that bears on an SAB review but who also have real or perceived COIs that would preclude their participation as Members or Consultants. These people can attend the SAB meeting as Invited Expert Resources. The SAB pays travel expenses, if needed.

For example, the person could be the author of a key study of PCBs when the EHC is reviewing the Agency's reference dose for PCBs. The SAB would fund the travel expenses for the person. This person could be either Federal or non-Federal employee. The intent is to have a source real-time, authoritative feedback available during the SAB discussion of the issue. The person would not be asked to serve as a consultant in this case, due to a professional conflict-of-interest; i.e., he would be placed in the position of reviewing his own work.

Another example would be a researcher who has access to some important data, alternative analysis, etc. at another agency, but that is germane to the SAB review. The person would not be asked to serve as a consultant in this case because of a real or apparent conflict-of-interest; e.g., works for an organization (private or Federal) that would be so directly impacted by the Agency's position as to cause a M/C from such an organization to ask for a recusal.

Invited Expert Resources have limited participation in SAB reviews. They are available to answer questions of the SAB committee panel, provide invited presentations, and enlighten the discussion with pertinent pieces of information. Their names are listed as Invited Expert Resources on rosters and reports, with an explanatory footnote recording their presence and role at the meeting. They are not a part of the Board's consensus/decision about the report. The intent is to indicate that such experts were available during the meeting, but that they were not a party to the judgment.

C6**SAB MEMBERS for FY 2001**

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Henry Anderson (EC, IHEC)
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David Baker (DWC)
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Robert Stavins (EC, EEAC)
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C7**FY 2001 MEMBER TRANSITIONS**

Among the notable SAB Members who have completed their service and significant roles, we should highlight:

a. Dr. Mort Lippmann, oft-referred to as "dean of the SAB", having served longer on the Board than anyone else.

b. Dr. Hilary Inyang, the retiring Chair of the Environmental Engineering Committee, who brought fresh perspectives and imaginative approaches to many problems -- demonstrating on more than one occasion that "Engineers have never met a problem that they didn't like".

c. Dr. Mark Utell, the retiring Chair of the Environmental Health Committee, who demonstrated that just because your committee has a light load does not mean that the Chair has a light load; cf., Cancer Guidelines reviews, Data from the Testing of Human Subjects, and Chloroform Risk Assessment.

In addition, the following Members have also completed their terms of service with the SAB as of September 30, 2001. These men and women contributed significantly to help the SAB pursue its goals; i.e., making a difference in the production and use of science at EPA. We extend to them our gratitude for their efforts.

Dr. Miguel Acevedo (EPEC)
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Dr. Terry Foecke (EEC)
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Dr. Barbara Petersen (IHEC)
Novigen Sciences, Inc.

Dr. Cynthia Bearer (EHC)
Case Western Reserve University

Dr. Michael Jayjock (IHEC)
Rohm and Haas Co.

Dr. John Poston (RAC)
Texas A&M University

Dr. John Doull (EHC)
University of Kansas

Dr. Dale Jorgenson (EEAC)
Harvard University

Dr. Leslie Real (EPEC)
Emory University

Dr. Yvonne Dragan (DWC)
Ohio State University

Dr. Michael Lebowitz (IHEC)
University of Arizona

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Dr. Ishwar Murarka (RSAC)
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Dr. Arthur Upon (CASAC)
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C8**SAB CONSULTANTS**

(*indicates Consultants used in FY 2001)

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Commonwealth University
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John C. Bailar (EHC)

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Chicago, IL

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Scott Barrett (EEAC)
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Judy Bean (DWC)
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Michael Beck (EHC)
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Barbara Bedford (EPEC)
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Procter & Gamble

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Nicolas Bloom (EHC)
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Toxcon
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Harry Boston (EPEC)
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Anne Bostrom (RAC)
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Dorothy Bowers (EEC)
Merck & Company, Inc.
Whitehouse Station, NJ

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Cambridge, MA

Herbert L. Windom (EPEC)
Skidaway Institute of
Oceanography
Savannah, GA

William Winner (EPEC)
Oregon State University
Corvallis, OR

SAB CONSULTANTS (cont'd)

George Wolff (CASAC)*
General Motors Corporation
Detroit, MI

Ronald Wood (CASAC)
New York University Medical
Center
New York, NY

James Woods (IHEC)
HP-Woods Research Institute
Herndon, VA

Steven Wright (EC)
University of Michigan
Ann Arbor, MI

Ronald Wyzga (EHC)*
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Institute
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Marylynn Yates (DWC)
University of California
Riverside, CA

Terry Yosie (EC)
Chemical Manufacturers
Association
Arlington, VA

Timothy Zacharewski (EHC)
Michigan State University
East Lansing, MI

Joy Zedler (EPEC)
University of Wisconsin
Madison, WI

Melvin Zeldin (CASAC)*
Environmental Consultant
Sparks, NV

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BIOGRAPHICAL SKETCHES
OF
THE EPA SCIENCE ADVISORY BOARD STAFF

DR. DONALD G. BARNES
STAFF DIRECTOR
DESIGNATED FEDERAL OFFICER,
EXECUTIVE COMMITTEE

Dr. Donald G. Barnes assumed his position as Staff Director in 1988. Since arriving, he has overseen a 25% growth in the Committees of the Board and a 50% increase in the membership of the Board. During his tenure the Board has completed four major de novo reports [Future Risk (1988), Reducing Risk (1990), Beyond the Horizon (1995), and Integrated Decisionmaking (1999)] and two self-studies (1989 and 1994), in addition to more than 300 reports to the Administrator.

Dr. Barnes is active in Agency-wide issues associated with science and risk assessment. For example, he serves on the Administrator's Science Policy Council and on the Steering committee for the Council.

Dr. Barnes came to the SAB following ten years' service as Senior Science Advisor to the Assistant Administrator for Pesticides and Toxic Substances. In that role he became involved with a number of controversial issues; e.g., pesticide re-registrations, the implementation of Section 5 of TSCA, and "dioxin", for which he received two EPA Gold Medals for Superior Service.

He has been active in the area of risk assessment for nearly two decades as practitioner, reviewer and instructor. For example, he participated in the White House's Office of Science and Technology Policy-led effort to produce a consensus view of cancer in the Federal government; i.e., Cancer Principles. He has been active in the writing of a number of the Agency's risk assessment guide-lines; e.g., for cancer and for mixtures. In a tangential activity he has worked with the government of Bulgaria to inculcate risk-based decision making in their emerging environmental protection program, both at the ministry and regional levels. He is on the editorial staff of a peer-review journal and serves as a reviewer for a second risk-related journal.

Prior to coming to EPA, Dr. Barnes was Associate Professor and Science Division Chair at St. Andrews Presbyterian College in North Carolina. His formal education includes a BA (chemistry) from the College of Wooster, a PhD (physical chemistry, with a minor in physics) from the Institute of Molecular Biophysics at Florida State University, and subsequent graduate courses in several health-related areas; i.e., pharmacology, toxicology, immunology and epidemiology.

His real world education continues to be provided by Dr. Karen K. Barnes, their two sons (and wives), and three grandsons.

DR. JOHN R. “JACK” FOWLE III
DEPUTY STAFF DIRECTOR
DESIGNATED FEDERAL OFFICER,
RESEARCH STRATEGIES ADVISORY COMMITTEE

Dr. Jack Fowle joined the staff as Deputy Director in September 1995. In addition to duties with the SAB staff, Dr. Fowle is interested in the use of science to inform policy and works with the Agency's Science Policy Council, cochairing efforts to implement EPA's Risk Characterization Policy. He is also a member of the Agency's Risk Assessment Forum(RAF), and he chairs the Public Policy Committee for the Society for Risk Analysis.

Dr. Fowle was detailed from EPA to the U.S. Senate as Senator Daniel Patrick Moynihan's Science Advisor from January 1992 until December 1994. While focusing on environmental legislation, he provided advice to the Senator and to the Senate Committee on Environment and Public Works on a wide range of issues. He was the principal staff person working on Senator Moynihan's risk bills in the 102nd and 103rd Congresses.

Before joining Senator Moynihan's staff, Dr. Fowle spent three years in Research Triangle Park, NC as Associate Director of EPA's Health Effects Research Laboratory. He planned and managed EPA's Drinking Water Health Research Program, and coordinated EPA's R&D work efforts with the World Health Organization.

Dr. Fowle first came to EPA in 1979 when he joined ORD's Carcinogen Assessment Group, and has served in a variety of other capacities since then. He managed the development of EPA's initial Biotechnology Research Program in 1983 and 1984 and was subsequently detailed to Congressman Gore's Investigation and Oversight Subcommittee, Committee on Science and Technology, as a Science Advisor on Biotechnology issues. He directed the Environmental Health Research staff of the Office of Health Research in ORD at EPA headquarters from 1985 to 1987, and was Health Advisor to EPA's Assistant Administrator for Research & Development in 1988 and 1989, and in 1995.

Dr. Fowle received both his baccalaureate and doctoral degrees in genetics from George Washington University in Washington, DC.

Dr. Fowle, a resident of Washington, DC, is an amateur musician. As a member of the BOOGAG (“Bunch of Old Guys and Gals”) bicycle riding club puts in 40 to 60 miles each weekend climbing the hills of western Maryland, northern Virginia and southern Pennsylvania. “It's not a ride unless you climb over 1800 feet.”

DR. ANGELA NUGENT
SPECIAL ASSISTANT TO THE STAFF DIRECTOR;
DESIGNATED FEDERAL OFFICER,
ADVISORY COUNCIL ON CLEAN AIR COMPLIANCE ANALYSIS

Dr. Angela Nugent is a historian who has found work at EPA as interesting as combing the archives for the history of public health, science and technology. Angela serves as the Designated Federal Officer (DFO) for the Council and its two subcommittees, the Health and Ecological Effects Subcommittee and the Air Quality Monitoring Subcommittee. She also has managed several SAB Workshops (SAB/EPA Workshop on the Benefits of Reductions in Exposure to Hazardous Air Pollutants: Developing Best Estimates of Dose-Response Functions; Diffusion and Adoption of Innovations in Environmental Protection; and Workshops on Science and Stakeholder Involvement). She serves as Special Assistant to the Staff Director.

Prior to joining the SAB, Angela was a coordinator for the inter-agency Clean Water Action Plan in EPA's Office of Water. From 1995 to 1998, she was Deputy Director of the Office of Sustainable Ecosystems and Communities in EPA's Policy Office, and from 1992-1995 headed the Science Policy Staff in the same office. She has worked in the Office of Air and Radiation on peer review and air toxics issues, in the Office of Pesticide Programs on reregistration issues, and in the Office of Toxic Substances on biotechnology and new chemical regulation. Prior to joining EPA in 1985, Angela was employed by Arthur Andersen & Associates as a Management Information Consultant. She was an Assistant Professor of the History of Public Health and Medicine at the University of Maryland and a post-doctoral fellow at the Johns Hopkins School of Medicine. She holds a Ph.D. (1982) and M.A. (1976) from Brown University, where her research focused on the history of industrial toxicology. She received a B.S.F.S. degree from Georgetown University's School of Foreign Service in 1974.

Angela is married to Bruce Odessey, a writer-editor for the U.S. Information Agency. She enjoys most of all spending time with him and their four-year old daughter, Rachel. Together, they like to dance, sing, travel, and read.

MR. A. ROBERT FLAAK
TEAM LEADER, COMMITTEE OPERATIONS STAFF;
DESIGNATED FEDERAL OFFICER,
CLEAN AIR SCIENTIFIC ADVISORY COMMITTEE

Mr. A. Robert Flaak serves as the Team Leader of the Committee Operations Staff of the Board and as Designated Federal Officer (DFO) for the Clean Air Scientific Advisory Committee (CASAC). Mr. Flaak was first associated with the EPA Science Advisory Board (SAB) in 1978 when he became the DFO for the Clean Air Scientific Advisory Committee (CASAC) when the committee was first chartered. Since then he has been the DFO for the following SAB committees: CASAC (1978-1979; 1984-1991; 1995-present); Indoor Air Quality/Total Human Exposure Committee (now the Integrated Human Exposure Committee) (1986-1993); Drinking Water Committee (1991-1993; 1995); ad hoc Industrial Excess Landfill (IEL) Panel (1992-95); Environmental Futures Committee (1993-1995); Research Strategies Advisory Committee (1995-1998), and a host of SAB subcommittees and working groups involved with issues such as global climate, biotechnology, and reducing risk.

In addition to his duties with the Board, Mr. Flaak has continued his part-time detail to the Agency's Science Policy Council as a member of the Agency's Peer Review Advisory Group, providing oversight to EPA on the implementation of its peer review policy. As part of that peer review process oversight, the Agency is preparing to publish the 2nd Edition of EPA's Peer Review Handbook which was coauthored by Mr. Flaak. Since 1988, Mr. Flaak has assisted the General Services Administration (GSA) in the development and presentation of its National training course on Federal Advisory Committee Act (FACA) Management. During the past year he has worked with GSA on the revision of the regulations on Federal Advisory Committee Management.

Mr. Flaak's academic training is in biological oceanography. He graduated from the City College of New York (BS, Zoology); the University of Delaware's Graduate College of Marine Studies (MS, Marine Studies); and Central Michigan University (MA, Public Administration).

DR. K. JACK KOOYOOMJIAN
DESIGNATED FEDERAL OFFICER
SCIENTIFIC AND TECHNOLOGICAL ACHIEVEMENT AWARDS (STAA)
COMMITTEE; MODELING (NATA) AND
OTHER SAB EC AD HOC ACTIVITIES

Dr. K. Jack Kooyoomjian joined the EPA Science Advisory Board (SAB) in July, 1988 as Designated Federal Officer (DFO) of the Environmental Engineering Committee (EEC). In 1993, he became DFO to the Radiation Advisory Committee (RAC), and in January of 1994, he also served concurrently as DFO of the Advisory Council on Clean Air Compliance Analysis (Council) through March of 1999. He currently is DFO for the STAA Committee and various Ad Hoc Panels of the SAB's Executive Committee (e.g., NATA Review Panel, RSAC Peer Review Committee, UST/RCRA Benefits, Costs and Impacts Review Panel). He brings to his work at the SAB over 34 years of engineering and professional experience with environmental issues, including over 27 years of diverse experience within EPA Headquarters.

Prior to joining the SAB, Jack worked in the mid- to-late 1970's in the Office of Solid Waste (OSW), contributing to the passage of the Resource Conservation and Recovery Act (RCRA) legislation, and in the Office of Water's Effluent Guidelines program dealing with industrial waste discharges. From 1979 through 1988, Jack was involved with the Superfund's Emergency Response program and developed the multi-media hazardous substance reportable quantity regulations, oil and hazardous substance pollution prevention regulations, oil spill reporting requirements, as well as the oil and dispersant testing and registration program under the National Contingency Plan.

Dr. Kooyoomjian received a BS (Mechanical Engineering) from the University of Massachusetts, and a MS (Management Science) and a Ph.D. (Environmental Engineering, with a minor in Economics) from Rensselaer Polytechnic Institute. His academic career included his induction into a number of honorary societies: e.g., Sigma Xi (research), Chi-Epsilon (civil engineering), Omicron Delta Epsilon (economics). His professional activities include membership in the Water Pollution Control Federation (WPCF) [now known as the Water Environment Federation (WEF)]. He is also very active in the Federal Water Quality Association (FWQA), the local member association of WEF, where he has served in numerous capacities, including President, and "Ambassador-at-Large." He is currently Chairman of the Government Affairs Committee of the FWQA. He is listed in "Who's Who in Science and Engineering," and "Who's Who in the Eastern United States." In 1997, he was selected as Chairman of the Organizing Committee of the Greater Metropolitan Washington Area Section (GMWAS) of the Armenian Engineers and Scientists of America (AESA).

Closer to home, which he shares with his wife (Gerry) of 27 years, and Melissa (22), one of their three daughters, Dr. Kooyoomjian is involved in numerous civic activities which focus on development, land-use and environmental issues in his area. He also has received the EPA Public Service Recognition Award in 1988 and 1992 and several County Recognition Awards, and in 1995 a Virginia State Planning Association award for his civic involvement. In addition to his civic activities, since 1996 he has been serving on the Board of Directors of the Prince William County Service Authority.

MS. KAREN L. MARTIN
DESIGNATED FEDERAL OFFICER
INTEGRATED HUMAN EXPOSURE COMMITTEE;
ENVIRONMENTAL HEALTH COMMITTEE

Ms. Karen L. Martin, joined the EPA Science Advisory Board (SAB) in September 1998 as a Intern with Environmental Protection Agency Intern Program (EIP). The EIP program is a component of the Environmental Protection Agency's commitment to diversity action plans and work force development strategies which will have long term positive impacts on the Agency and the environment. This Internship which ended October 1, 2000, allowed Ms. Martin to participate in a intensive two-year program of rotational assignments combined with career development training. During Ms. Martin's stint with the SAB, she assisted the Designated Federal Officer (DFO) for the Integrated Human Exposure Committee and the Environmental Health Committee. Other assignments included assisting other DFO's with meeting planning, meeting minutes and report preparation.

Prior to joining the SAB, Ms. Martin worked as a Public Health Sanitarian with the Adams County Health Department in West Union, OH. In this position she worked to promote environmental health and the control of sanitation through enforcement of federal, state and local laws and regulations. She also worked closely with other state and local agencies, public officials and the general public to improve environmental health in Adams County.

Ms. Martin pursued undergraduate (B.S. in Biology, 1992) and graduate studies (M.S. in Environmental Health, 1994) at Mississippi Valley State University.

MS. MELANIE MEDINA-METZGER
DESIGNATED FEDERAL OFFICER,
RADIATION ADVISORY COMMITTEE;
ENVIRONMENTAL MODELS SUBCOMMITTEE

Ms. Melanie Medina-Metzger has been detailed to the EPA Science Advisory Board since February 2000. Also housed in the Office of Administrator (OA) is Melanie's home office, the Office of Cooperative Environmental Management (OCEM). There she worked as the Designated Federal Officer (DFO) for the Good Neighbor Environmental Board, a committee created by the Enterprise for the Americas Initiative Act of 1992 to provide advice to the President and Congress on environmental issues affecting the U.S.–Mexico border area. At OCEM Melanie also completed service as the DFO for EPA's Title VI Implementation Advisory Committee, which reviewed one aspect of "environmental justice"-- the application of Title VI of the Civil Rights Act of 1964 to environmental protection activities linked to federal funding.

Prior to her service at OA Melanie worked for seven years at the Office of Policy, Planning and Evaluation (OPPE). Activities have included managing extramural alternative compliance activities in the Photoimaging industrial sector and performing regulatory review of EPA's farmworker worker protection standards, the Clean Water Act with special emphasis on ocean/coastal protection and conservation. On a special assignment, Melanie joined an EPA group which provided technical assistance to the Chilean Environmental Agency, Consejo Nacional del Medio Ambiente (CONAMA) on the development of cleaner production strategies and policies in the area of pollution prevention.

Melanie joined the Agency in 1991 as an EPA Management Intern and has experience in the full range of EPA's technical and programmatic functions. Her experience includes postings to the Office of International Activities, the Water Management Division (Region IV – Atlanta), the Office of Strategic Planning and Environmental Data in OPPE, and the Office of Wastewater Enforcement and Compliance.

Ms. Medina- Metzger earned her Masters in Science in Environmental Science (MSES) from Indiana University's School of Public and Environmental Affairs (SPEA) and her Bachelors of Science, from the University of Puerto Rico.

Melanie is married and lives in Falls Church, Virginia. She enjoys cross stitching, embroidery, sewing, reading and ikebana (Japanese flower arranging).

MR. TOM MILLER
DESIGNATED FEDERAL OFFICER,
DRINKING WATER COMMITTEE;
ENVIRONMENTAL ECONOMICS ADVISORY COMMITTEE

Mr. Tom Miller joined the EPA Science Advisory Board (SAB) in June, 1996 as Designated Federal Officer (DFO) for the Drinking Water Committee (DWC) and the Environmental Economics Advisory Committee (EEAC). Tom has worked at the Environmental Protection Agency in regulatory (pesticides, toxic substances), budget, and planning activities (research and development programs) since 1974.

Mr. Miller received a BS (Wildlife Management) in 1972 and an MS (Wildlife Management) in 1975, both from West Virginia University. For his Master's research, Mr. Miller conducted a radio-telemetry study of black bear habitat utilization in the Monongahela National Forest of West Virginia. In 1993, Tom received a Masters of Public Policy from the University of Maryland School of Public Affairs. Tom's major professional interest is the study of the ways that science and policy development interact to identify and implement appropriate approaches to environmental management, and the role of citizens in decisions leading to the selection of management approaches.

Tom is married and is the father of one daughter, Stephanie, and one son, Christopher, (who is University Sophomore). Tom is involved with leadership positions in his church, and he enjoys flyfishing, backpacking, woodworking, and baseball.

MR. SAMUEL RONDBERG
DESIGNATED FEDERAL OFFICER,
ENVIRONMENTAL HEALTH COMMITTEE;
INTEGRATED HUMAN EXPOSURE COMMITTEE

Mr. Samuel Rondberg retired from the Senior Executive Service (SES) in August, 1988 and re-entered federal service in November 1988, when he joined the SAB staff. During his previous full and fruitful career at EPA, he served as an Office Director and Associate Office Director in EPA's Office of Research Development (ORD) and the Office of Information Resources Management (OIRM).

Before joining EPA in 1974, Mr. Rondberg held research management, analytical, and policy formulation positions with the Department of Transportation and the Veterans Administration's Department of Medicine and Surgery. He also served in the US Army for two years, with the rank of Captain. Most of his federal career has been devoted to advancing the use of analytic methodologies to address public policy issues, and to improving the management of federal research activities. At EPA, he has directed particular efforts to the complex problems and issues engendered by operating a research program within the context of a regulatory agency--coordination between legal and scientific "cultures"; maintaining a stable long-term program in the face of urgent and frequently changing needs for short-term support; and maintaining an adequate resource base in the face of competition from regulatory programs struggling to meet court or Congressionally mandated deadlines.

Mr. Rondberg pursued undergraduate (AB, 1959) and graduate studies at Washington University, where he also served as a Teaching Assistant in the Graduate School of Arts and Sciences and as a Public Health Service Fellow and Research Associate in the Medical School. In 1967, he was awarded a National Institute of Public Administration Fellowship in Systematic Analysis at Stanford University and completed a special interdisciplinary curriculum in the Schools of Engineering, Graduate Business, and the Departments of Economics and Computer Science.

Mr. Rondberg has authored publications in clinical psychology, research management, and the applications of electronic systems and telemetry to urban transportation.

Sam's wife (Ruth) of 36 years is a Rehabilitation Counselor; they have one daughter, who completed a Master's degree in Social Work. Sam attempts to find time to pursue interests in modern history, the impacts of technology on society and culture, amateur radio, marine aquaria keeping, and antique posters and advertising graphics as a reflection of our social history.

MS. STEPHANIE SANZONE
DESIGNATED FEDERAL OFFICER,
ECOLOGICAL PROCESSES AND EFFECTS COMMITTEE

Ms. Stephanie Sanzone has been a Designated Federal Officer at the EPA Science Advisory Board for 9 years, working primarily with the Ecological Processes and Effects Committee. Ms. Sanzone received a B.A. in Biology, with a minor in chemistry, from the University of Virginia, and a M.S. in Marine Science from the University of South Carolina. Prior to coming to SAB, she spent 4 years with EPA's National Estuary Program, a program which assists states and local communities to manage and protect bays and estuaries based on sound science. Ms. Sanzone has also worked to bring science to the legislative process, serving as legislative staff at both the state and federal levels. Her professional interests include ecological sciences, the role of science and risk assessment in policy making, and making science and scientists intelligible to lay audiences (e.g., policy makers, managers and the public).

MS. KATHLEEN WHITE
DESIGNATED FEDERAL OFFICER,
ENVIRONMENTAL ENGINEERING COMMITTEE

Ms. Kathleen White received her BS and MS from Tufts University where she studied biology, public health, and sanitary engineering. Between degrees she wrote for the Hartford Courant. Her work as sanitary engineer -- first for the Massachusetts Department of Public Health and later for U. S. Environmental Protection Agency's Region 1 -- involved inspecting and trouble shooting problems with water supplies, landfills, and wastewater treatment plants. She also reviewed plans, assisted with outbreak investigations, proposed and provided training. During this time she chaired the Boston Section of the Society of Women Engineers.

Ms. Conway left field work in New England for paper work at EPA Headquarters in Washington, D.C. Her subsequent service as acting Director for two divisions in the Office of Health Research led to her selection, in 1982, as a participant in the President's Executive Exchange Program. During her exchange year she worked with an occupational health and safety unit at IBM. After returning to EPA, she joined the EPA Science Advisory Board staff as Deputy Director.

MS. DOROTHY MAXINE CLARK
MANAGEMENT ASSISTANT

Ms. Dorothy Clark is the Management Assistant who assists Samuel Rondberg with the Environmental Health Committee, Integrated Human Exposure Committee and Radiation Advisory Committee, with Jack Fowle the Research Strategies Advisory Committee and Robert Flaak, the Clean Air Scientific Advisory Committee. Dorothy joined the EPA Science Advisory Board (SAB) March 17, 1980, as a secretary for the Environmental Engineering Committee, High Level Radioactive Level Subcommittee and several other Subcommittees and standing Committees. During her tenure at EPA, Dorothy has worked for several SAB Committees. She enjoys working with committee members and getting along with all levels of staff.

Last but not least, in Dorothy's spare time she enjoys reading, shopping, and most of all watching the Washington Redskins play football.

MS. WANDA R. FIELDS
MANAGEMENT ASSISTANT

Ms. Wanda R. Fields is the Management Assistant who assists Mr. Thomas Miller with the Environmental Economics Advisory Committee and the Drinking Water Committee as well as Dr. John R. Fowle with the Research Strategies Advisory Committee. Wanda joined the EPA Science Advisory Board in the spring of 1997 as a secretary for the Ecological Processes and Effects Committee and the Integrated Risk Project Steering Committee where she assisted Ms. Stephanie Sanzone. In 1998, her title changed to management assistant. Prior to joining us she was a secretary with the Office of Water for nine years here at the Environmental Protection Agency. During her tour with the Office of Water, she took a tremendous amount of computer and administrative training. In 1997 she graduated with honors from a career enhancement program that was offered by EPA. She is currently attending classes at the United States Department of Agriculture to receive a certification in financial management. She hopes to one day obtain a career in finance as a Budget Analyst. She came to EPA in 1988 after leaving the Office of Personnel Management where her government career began.

MS. RHONDA S. FORTSON
MANAGEMENT ASSISTANT

Ms. Rhonda S. Fortson joined the EPA Science Advisory Board (SAB) in 2001. She is the Management Assistant for Mr. A. Robert Flaak on the Clean Air Scientific Advisory Committee (CASAC) and Dr. Angela Nugent on the Advisory Council on Clean Air Compliance Analysis (COUNCIL). Prior to coming to the SAB she was a secretary for 9 years in the Environmental Protection Agency's Region 4 laboratory in Athens, GA. Before joining EPA she held various positions with the Department of Navy.

A native of Virginia, Rhonda was glad to return with her family to her home town this year. She enjoys spending time with her family, working on family genealogy and reading.

MS. DIANA L. POZUN
PROGRAM SPECIALIST

Ms. Diana L. Pozun joined the EPA Science Advisory Board as a Staff Secretary in August, 1991. She was assigned to the Environmental Engineering Committee and various subcommittees. In June of 1993 she switched committee responsibilities to be the Staff Secretary for the Radiation Advisory Committee. In May 1998 her title was changed to Management Assistant. Diana was promoted to Program Specialist in November 2000 to work for Donald Barnes who is the Director of SAB, Jack Fowle Deputy Director and Angela Nugent Special Assistant. She comes to us from the private sector, where she was Executive Secretary in the Big Six accounting firm of Ernst & Whinney in their tax department in Washington, D.C. for about eight years. In that position, she was involved in all aspects of the proposal process and maintained State and Local tracking systems, mailing lists, travel arrangements and word processing support. Prior to that, she worked for the National League of Cities in Washington, D.C. for four years, where she maintained client files, worked on guidebooks and various case studies and helped coordinate several national conferences among other duties. Diana has a broad range of experience with various D.C. area firms. She lives in Mt. Airy, Maryland with her seventeen year old daughter, Megan.

M S. MARY L. WINSTON
MANAGEMENT ANALYST

Ms. Mary L. Winston joined the EPA Science Advisory Board (SAB) in 1988. Prior to joining us she worked in the Test Rules and Development Branch here at the Environmental Protection Agency. Mary came to the Environmental Protection Agency after leaving the U.S. Coast Guard where she worked for 14 years as a secretary. In May of 1998 her title changed from secretary to Management Assistant. Before the reorganization she worked with Samuel Rondberg on the Environmental Health Committee and with Thomas Miller on the Drinking Water Committee. Mary now assists Kathleen Conway with the Environmental Engineering Committee (EEC), also Stephanie Sanzone with the Ecological Processes and Effects Committee (EPEC), and A. Robert Flaak with the Scientific & Technological Achievement Award (STAA) Nominations.

Mary resides in Maryland where she enjoys quilt making, reading and knitting.

MS. BETTY B. FORTUNE
OFFICE ASSISTANT

Ms. Betty B. Fortune joined the EPA Science Advisory Board in September 1993. Her job title is Office Assistant in the Director's Office. She works closely with the Director, Program Specialist and the Executive Committee. During her years with SAB, and several administrative changes, she has worked for the entire staff and with other SAB committees. Betty came to SAB after completing a long tenure with the District of Columbia Public Schools (DCPS). She was the administrative assistant at Hardy Middle School during the final years of her employment in DCPS. She had always worked in the field of Education and has many pleasant memories of her work years with staff, parents, and students. She has received many plaques, awards, and certificates. She is a member of the Senior Choir at her church which performs excerpts from the Messiah during the Christmas season. She lives in Washington, D.C. and her family consists of two children and four grand-children which she greatly enjoys.

MS. PATRICIA L. THOMAS
TEAM LEADER
COMMITTEE EVALUATION AND SUPPORT STAFF

Ms. Patricia Thomas joined the EPA Science Advisory Board in May 1994 as a Management Analyst. Pat came to SAB from the Office of Research and Development where she held several positions. Her EPA career started with the Office of Research and Development (ORD) in 1972, where she started as the secretary to the Assistant Administrator for Research and Development, and ended as a Management Analyst in ORD's Office of Health Research. Prior to coming to EPA, Pat worked 4 years with the Department of Health, Education, and Welfare. Pat has 33 years of government service and has received numerous outstanding awards while at EPA, including a Bronze Medal.

Pat has been the Team Leader of the Committee Evaluation and Support Staff (CESS) since 1996. The CESS is the administrative arm of the SAB, responsible for budget, personnel, payroll, web development, and reports management, including the monthly Happenings newsletter, and the SAB Annual Report. While with the SAB she devised several systems to assist the SAB staff in tracking information on SAB Members and Consultants. In addition, she created a system that tracks the budget for the ten SAB FACA committees. She is referred to in SAB as the "keeper of the truth."

She spends most of her leisure time traveling.

MS. CAROLYN L. OSBORNE
PROJECT COORDINATOR

Ms. Carolyn Osborne joined the EPA Science Advisory Board (SAB) in 1973 as a Clerk typist and has held several positions since then. She was assigned to the Clean Air Scientific Advisory Committee and various subcommittees working closely with the Executive Secretary as a Staff Secretary. Her government career started at the Department of Health, Education, and Welfare and also with the Food and Drug Administration in 1969. Ms. Osborne is currently the Project Coordinator at the SAB's Committee Evaluation and Support Staff where she is responsible for the budgeting, personnel and administrative matters for more than 450 members and consultants. During Carolyn's tenure at the EPA, she has enjoyed working with the SAB staff, members and consultants and is often referred to as the "SAB Historian."

In Carolyn's past time she enjoys singing in the church choir, reading, traveling and spending time with her family.

MS. VICKIE J. RICHARDSON
MANAGEMENT ANALYST

Ms. Vickie J. Richardson joined the EPA Science Advisory Board in May 1994 as an Administrative Clerk to the Committee Evaluation Support Staff (CESS). She has since been promoted to Management Analyst where she performs multifaceted administrative and technical tasks for the Board. You may be familiar with some her works, Happenings newsletter and the SAB Annual Staff Report. She began her federal career in 1993 with the Department of Defense working for the Air Force Base Conversion Agency, a department that was responsible for closing sparsely populated military facilities throughout the United States. Outside the workplace Vickie believes in giving back to the community. She volunteers in Everybody Wins an organization that provides mentoring and tutoring opportunities to underprivileged children in depressed areas in the District of Columbia.

Ms. Richardson received a B.A. in Speech Communications with a minor in Political Science from Old Dominion University, and a M.A. in Public Administration from the George Washington University.

She resides in Maryland where she enjoys reading fictional materials to escape the realities of life.

MS. PRISCILLA Y. TILLERY-GADSON
INFORMATION MANAGEMENT SPECIALIST

Ms. Priscilla Y. Tillery-Gadson joined the EPA Science Advisory Board (SAB) as the Staff Secretary to the Director in March 1993. She participated in and completed the EPA's Goalsetters Reaching for Opportunities (GRO) Program in 1996. In August 1998, she was reassigned and promoted as a Program Specialist, and in May 2000, she has since been reassigned as an Information Management Specialist on the Committee Evaluation and Support Staff (CESS) providing administrative and technical support to the Director, Deputy Director, and the Team Leader for CESS.

Ms. Tillery-Gadson came to us from EPA's Office of Research and Development (ORD), Office of Health Research (OHR) where she held several positions as Secretary for about 15¹/₂ years. She served as OHR International Travel Coordinator and ORD's Headquarters Black Employment Program (BEP) Representative. She also provided updates to the budgetary data in the Office of Research and Development Information System (ORDIS). Prior to working with ORD, she worked with the EPA Office of Pesticides Program (OPP), Registration Division, Insecticide-Rodenticide Branch as a Clerk-Typist and Pesticide Products Clerk for about four years and 10 months. She compiled historical and statistical data for answering inquiries containing scientific data from registrants who applied for registration of their pesticide products.

Prior to coming to EPA, she worked for the U.S. Department of Agriculture for about 1-year under a school/work program. As you can see, Ms. Tillery-Gadson brings a broad range of work experience to SAB, especially the ability to work as a team with her co-workers. She has 30 years of government services, and resides in the Maryland suburbs with her husband and her 28-year-old daughter. She receives a joy in doing for others and has a special love for children.

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FY 2001 STAFF TRANSITIONS

Every year is marked by notable transitions. On the Staff side, we acknowledge the contribution of Melanie Medina-Metzger, who was on detail to OSAB as DFO for the Radiation Advisory Committee from January, 2000 through January, 2001. Melanie returned to her home office -- the Office of Cooperative Environmental Management (OCEM) -- before moving with her husband, in late FY01, to take on an assignment with the Office of International Affairs in Quito, Ecuador(!)

Also in January 2001, Ms. Karen L. Martin left the OSAB to work with the Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response, Community Involvement and Outreach Center, as a Biologist. Some of her duties include risk assessment and advocating and strengthening early and meaningful community participation during Superfund cleanups.

Jason Hotten served effectively as a summer intern until his departure in mid-August.

On the entry side, OSAB welcomed Rhonda Fortson to the Staff in the late spring. She transferred in from EPA's Region 4 office in Atlanta and has made rapid and telling contributions on several fronts already.