



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

JUL 15 2008

THE ADMINISTRATOR

EPA-SAB-08-007

Dr. Deborah Swackhamer  
Chair, Science Advisory Board Panel for the Review of EPA's  
2007 Report on the Environment  
Science Advisory Board  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Washington, D.C. 20460-0001

**SUBJECT:** SAB Advisory on EPA's Draft *Report on the Environment 2007: Science Report*

Dear Dr. Swackhamer:

I thank you and the members of your Science Advisory Board panel for your comments on the U.S. Environmental Protection Agency's Draft *Report on the Environment 2007: Science Report*. EPA appreciates the enormous effort and expertise brought to bear in this review by the Panel for the Review of EPA's 2007 Report on the Environment. The broad scope of the report and the uniqueness of the undertaking for the Agency made the review particularly challenging, and we commend the Panel for its cogent and thoughtful recommendations for improving the current and future reports.

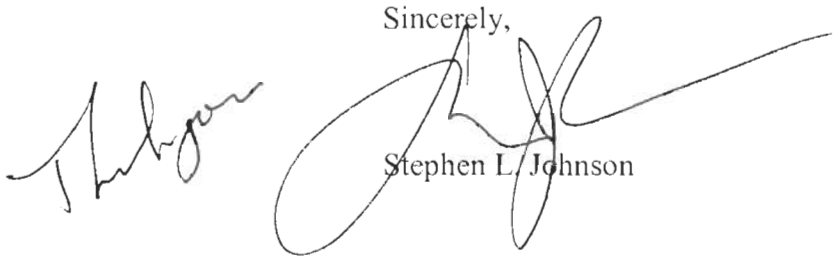
EPA is pleased with the Panel's overall findings: that the ROE is a valuable collection of data, trends, and impact indicators; that it has incorporated many of the SAB's recommendations from the 2004 review to improve its organization and scope; that the formulation and scope of the questions are well-developed; that many of the key indicator data gaps and limitations have been identified; and that regional analyses have made the report more meaningful.

EPA is concerned, however, that the Panel has identified shortcomings in the document that "limit its usefulness in fulfilling its stated purposes of informing strategic planning and priority setting, because it contains little data interpretation and no conclusions supported by statistical analysis." Many of these shortcomings may have been addressed or will be addressed in the coming months and years, but others may have been the result of inadequate communication to the Panel of the intended purpose of the ROE. The intention of the report is to answer important questions about trends in the condition of human health and the environment using the highest-quality environmental data. The intention is not to document or analyze the interrelated causes and effects of these trends. In our opinion, this is best accomplished in more focused assessments.

Please see the enclosed responses to the overarching recommendations made by the Panel. In response to the Panel's recommendations, EPA made more than 80 revisions to the draft report and released it as *EPA's 2008 Report on the Environment* on May 20, in conjunction with the Agency's annual Science Forum. These revisions substantively improved the quality and utility of the report. Equally important, EPA will accommodate many more of the recommendations over the next year as part of the online presentation of the ROE. EPA intends to revise and update the indicators online annually. Recommendations that could not be accommodated in time for the spring release of the paper report (none of which affect its technical accuracy), as well as recommendations for future versions of the ROE, can and will be implemented before the next major paper copy release.

EPA also has requested that SAB form a standing advisory committee to provide consultation on how best to implement many of the changes planned for the online and future paper editions of the ROE in response to the Panel's recommendations.

Sincerely,

A handwritten signature in black ink, appearing to read 'Stephen L. Johnson', is written over the typed name. The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Stephen L. Johnson

Enclosure

cc: Thomas Armitage, DFO  
Report on the Environment Review Panel

**Responses to Overarching Findings and Recommendations Pertaining  
to All Chapters – SAB Advisory on EPA’s Draft *Report on the  
Environment 2007: Science Report***

**“The scientific underpinnings of the final Report should be strengthened to make it a ‘science report,’ as indicated by its title, rather than simply a data report...An alternative would be to remove ‘science’ from the title of the final 2007 Report so it is characterized as a status and trends report.”**

EPA has chosen the alternative proposed by the Panel to eliminate the subtitle – the report is now titled simply, *EPA’s Report on the Environment 2008*. While determining the details of the role that the ROE will play in informing planning and decision-making remains a work in progress, EPA believes that the likely role will be in drawing attention to *important environmental trends* that warrant more detailed study and to *important gaps in indicators* that EPA should consider filling. This role would require that indicators be relevant, technically sound, objective, and transparent, but not necessarily scientifically comprehensive. The science needed to support decisions as to how and whether to regulate air, water, wastes, and chemicals used in commerce is more properly contained in other assessments. This issue is particularly important because it affects the details of EPA’s potential responses to recommendations about indicator criteria, conceptual models, and uncertainty.

**“The final Report should contain a greater degree of integrated discussion across the indicators and chapters ... A conceptual framework that illustrates the connectedness between the media chapters and the human health and ecological condition chapters should be added to the introduction of the final 2007 report. In addition we recommend that a final synthesis chapter be added to future reports. The synthesis chapter should fully integrate the entire report and discuss health and ecosystem status, trends and effects from a holistic perspective.”**

EPA agrees that it would be helpful to have a conceptual framework that draws connections between the indicators in the media, human health, and ecological condition chapters, and that helps to better communicate the role that each indicator plays in answering the question(s) in the ROE. However, a detailed analysis of cause-and-effect interconnections among indicators is neither possible nor desirable, given the intended role of the ROE in informing Agency planning and decision-making. On the other hand, EPA produces highly detailed analyses of cause and effect in its assessments and rulemakings. These assessments are referenced when appropriate in the ROE.

Instead, EPA has introduced a formal conceptual model with a corresponding graphic in Chapter 1 of the 2008 Report. Briefly, the ROE questions are intended to cover the entire scope of EPA’s concerns about trends in the environment and human health. Available indicators provide partial answers to those questions, and the differences are characterized as gaps. The current approach results in “mile-deep, inch-wide” answers to some questions, and “mile-wide, inch-deep” answers to others, which presents a significant challenge to synthesis.

Expanding and enriching the conceptual model would help to solve this problem. Although the ROE was neither designed nor intended to ever be fully integrated or holistic in the sense that it connects all environmental causes and effects, a synthesis chapter that would integrate the entire report and discuss health and ecosystem status, trends, and effects from a holistic perspective would be an important and useful addition to the ROE. EPA did not include a synthesis chapter in the 2008 report, but will seek the advice of the SAB advisory committee to expand or revise the conceptual model and to include a synthesis chapter in future versions of the report.

**“The Panel ... recommends that EPA incorporate into future Reports on the Environment an approach to statistical analysis and reporting across all indicators.”**

EPA agrees that an approach to statistical analysis and reporting should be part of the results presentation for each indicator and will begin to include such estimates in revisions to the indicators in the on-line version of the ROE over the coming two years. EPA recognized the importance of uncertainty as it began to prepare the draft ROE, but soon determined that because quantitative uncertainty estimates were available for so few of the indicators, new estimates could not be constructed and adequately peer reviewed in the current version of the report. EPA has contracted a pilot study of seven of the indicators in the ROE and has determined that it is possible to conduct the appropriate statistical analyses to produce clear conclusions and statements of significance for the status and trends for most, but not all, of the indicators in the ROE. When there are insufficient data available for robust quantitative analyses, EPA will report such statistical limitations.

**“All questions in the final 2007 Report should address status and trends.”**

At the recommendation of the Panel, EPA has revised the questions to explicitly include status as well as trends. SAB also asked about the conceptual framework needed to develop further questions. As noted above, EPA will seek the advice of the SAB advisory committee on revising or expanding the conceptual model over the next two years and then determine whether the revised or expanded model suggests the need for revised or additional questions.

**“The Report on the Environment can be strengthened by adjusting the criteria to include additional indicators that inform the stated questions. In addition, the Panel recommends that for each indicator in the final 2007 Report, EPA provide a clear description of why the indicator is important, what it tells, and the documented relationship between the indicator and human health and ecological condition.”**

It is important that the criteria ensure that indicators are accurate, objective, and transparent. EPA agrees that adjusting criteria to attain comparable, representative data at the regional scale, if done thoughtfully, could bring additional indicators to bear in answering the nationally relevant questions in the report. EPA will work with the SAB advisory committee in determining how best to go about adjusting the criteria to include more case studies and regional indicators that also include valuable and relevant information.

The current indicator presentations are intended to explain why each indicator is important and what it tells, and EPA has improved many of these explanations in response to the Panel's comments. Each write-up also documents, in a *qualitative* way, the relationship between the indicator, human health, and ecological condition – including links to appropriate detailed studies and assessments. However, it is not the intended purpose of the report, nor in most cases is it possible, to *quantitatively* link national or regional trends in one indicator to that of another. As noted above, EPA produces highly detailed analyses of cause and effect in its assessments and rulemakings. Reference is made in the ROE to such documents where quantitative linkages have been made.

**“Discussion of the indicator gaps, limitations, and challenges should be clarified in the final Report.”**

EPA has revised the introduction to the report and added a glossary to ensure that the distinction is clear between gaps (no adequate indicator) and limitations (shortcomings of adequate indicators). As recommended by the Panel, EPA will explore the utility, both in terms of analysis and communication, of categorizing limitations by type and will consider including this information in the online version of the ROE. EPA agrees with the Panel's recommendations that the discussion of data gaps and limitations should be strengthened by including the following: 1) A discussion of the need for a transparent set of indicator metrics that can be well-justified, 2) additional information, at the end of each chapter, on emerging issues, and 3) further justification of limitations associated with the intervals of time used to establish trends. EPA will consider the Panel's recommendation to identify some of the more prominent available data sets that were excluded and the reasons for their exclusion as part of the metadata for each indicator and will be revising or adding appropriate indicators to the online version of the report beginning in FY2009.

The panel also asked if monitoring programs will continue to provide these data in the future. EPA expects that the ROE process of identifying important environmental trend data and gaps in that data will provide strong support in EPA's strategic planning for working both internally and with its federal partners to maintain data flows and fill data gaps.

**“The Panel recommends that, in future Reports on the Environment, indicator data be presented by relevant geographic units such as ecoregions, airsheds, and watersheds.”**

EPA will take this recommendation under advisement, but notes that indicators are reported by EPA region in the ROE wherever possible, because the regions are where EPA's policies and programs are implemented. EPA does recognize that air, water, land cover, and ecosystems are not organized along EPA regional or state boundaries, however, and will explore ways to analyze and present indicators in ways that take more indicator-relevant geographic units into account. EPA will seek the advice of the SAB advisory panel on how best to do this and will begin revising indicators to reflect more indicator-relevant geographic units online as appropriate beginning in FY2010.

**“More regional indicators and case studies with long-term, well-supported data sets could be used in future Reports on the Environment to illustrate trends when national data sets are not available ... Regional data are not a substitute for national or even representative of national data.”**

EPA agrees that more regional indicators would help to illustrate trends where national data are not available, as well as reporting on trends that are only regional in scope, and will consider carefully the criteria that the Panel suggested. The flexibility of the online presentation of the ROE will facilitate the incorporation and presentation of additional regional indicators over the coming years.

EPA agrees that case studies may be useful, but using them and selecting them presents many challenges. The fact that a trend is seen in one or a few well-studied locations may raise a concern or point to a local success story, but it may say little to inform national or regional policy as to whether the trend is widespread. However, EPA will seek the advice of the SAB advisory committee on the utility and appropriate use of case studies in the online version of the report.



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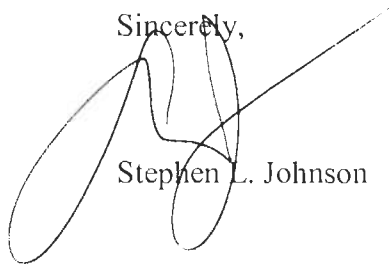
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