

**Preliminary Comments from Members of the Chartered SAB and BOSC on
Draft Report Implementation of ORD Strategic Research Plans: A Joint
Report (09/17/12 Draft) of the SAB and ORD BOSC**

List of comments received

Comments from Dr. David Allen	2
Comments from Dr. Ingrid Burke	3
Comments from Dr. Terry Daniel	4
Comments from Dr. Costel Denson	6
Comments from Dr. Michael Dourson	7
Comments from Dr. Elaine Faustman	8
Comments from Dr. Bernd Kahn	10
Comments from Dr. Barbara Harper	11
Comments from Dr. Amanda Rodewald	13
Comments from Dr. Gina Solomon	14
Comments from Dr. Rosemarie Szostak	15
Comments from Dr. John Tharakan	16
Comments from Dr. John Vena	17

Comments from Dr. David Allen

I note here that I reviewed the materials and found them very well done. I would support approval, subject to the Chair handling any edits suggested by the Board. I do note the following minor edits:

Administrator letter, page 2, line 7: Change “for better communicate” to “to better communicate”
Page 14, line 38: Delete “ORD’s expertise”

Comments from Dr. Ingrid Burke

Overall, the report is clear and thorough, taking each charge question and giving it a well-considered response. That said, because there were a lot of charge questions, with much duplication across the strategic areas, there was a good deal of repetition, and I think we could do a little more to pull out the big themes for the General Findings and for the Letter to the Administrator. I'll describe my thinking briefly below, but none of this is critical.

Letter: The letter was clear, with a good summary of issues in the report. That said, the summary comments were a little disparate. I think they could be combined to be harder hitting. It's easy to lose them. I recommend that we turn the last several paragraphs into something that says that there are 6 themes that cross all the charge questions:

- 1. more social, behavioral, and decision-science research;
- 2. better articulation of how sustainability relates to the individual program;
- then the whole list in the "there is a need" paragraph. That paragraph *almost* accomplishes the pithy overview that it seeks to hit, but not quite, ringing a familiar speech bell but not quite making it possible for the reader to retain content. I think these elements would work better separated into individual themes that are enumerated below the others (I think this gives us 6 themes....), even in bullet form:
 - o 3. more research on ecological risk
 - o 4. more on nonchemical stressors (we could be more to the point here)
 - o 5. better communication, and
 - o 6. roadmaps

This "there is a need" paragraph also has a grammatical error in it, and I don't know what "co-benefit" means.

I am not as fond of the "One Environment" touchstone as this letter suggests we are. We might want to talk about that in the group.

General Findings and Recommendations:

This section was good, but perhaps too constrained to the charge questions. I very much liked the section on innovation; the idea of innovation with respect to organizational structure and function is very compelling. The "theme" section I recommend above for the Letter could go here in a bit longer form.

Individual Sections:

All very good --- but again, lots of redundancy due to the structure of the charge questions. The language is so similar about recommending more work in social, behavioral, and decision sciences that one simply feels the need to skip the section by the time you get to the 4th or 5th paragraph of recommendations that say the same thing (I count 6 total). Given the number of times that we've recommended this recently, despite how much I wholeheartedly support it, the recommendation written this much makes me roll my eyes. Some suggestions:

- Really pull this out in the Letter to the Administrator, even more. SAY that 6 separate groups of scientists reviewing the Plans recommended this, and it is a key theme of our review.
- Possibly consider taking it out of the individual sections, or streamlining, shortening, and referring to earlier sections of the report.

Comments from Dr. Terry Daniel

The SAB-BOSC review is clear and responds effectively to the charge questions provided. The executive summary highlights the key points from the review and the letter to the Administrator further sharpens the recommendations in the review.

The review correctly supports the overall direction of the ORD transformation while offering constructive criticism and recommendations for key items that still need attention. The basic construction of the report, review of the overall ORD program followed by separate reviews of the individual research program areas, is appropriate and effective. As a standalone report, the review could be strengthened by finishing with a very short overall “conclusion,” perhaps with an emphasis on looking forward to how the transformed program will improve EPA’s ability to protect human health and the environment in a more complex and rapidly changing world.

The overview document, *Science for a Sustainable Future*, presents a clear and convincing rationale for ORD’s transition from the traditional risk approach (especially the single threat in single medium version thereof) to a multi-threat, multi-media, multi-disciplinary sustainability approach. Clearly stating this rationale is very important as resistance (or at least misunderstanding) can be expected among current EPA scientists and practitioners (perhaps even within ORD) as well as among other agencies and industries who interact with EPA as well as the general public and their political representatives. In this context, each of the individual STRAPs should explicitly reinforce the overall rationale and translate it to their specific research goals and methods, consistent with the SAB-BOSC recommendation (in the cover letter) for the STRAPs to “define the concept of sustainability as it relates to each ORD research program.” Where possible it might also be worthwhile to point out how “legacy” risk assessment and specific-threat mitigation objectives will still be addressed effectively within the context of the broader sustainability-based approach. This is especially important for the SHC program, which has been strongly organized around sustainability to the point of sometimes sounding “entirely new,” and for the HHRA, which has for understandable reasons retained much of the traditional risk approach.

A common (and well-founded) suggestion across the separate program plans has been for greater emphasis on documenting near-term products and/or identifiable “milestones” for projects with longer time horizons. This is important for accountability which is in turn important for maintaining support for the entire ORD program, especially in an era of shrinking budgets and increasing competition among the many goals and problems that seek attention. Clearly specified, measurable accomplishments on at least an annual basis are also essential for tracking progress and for encouraging and guiding effective adaptations to changing conditions.

The frequently cited need for greater involvement of social, behavioral and decision sciences in all programs is appropriately reinforced. However, wherever possible it is now time to make more specific suggestions about the type of SBD science that would be useful. The suggested workshop (page 7) is an excellent idea that should be extended to assure that specific social science data, methods and conceptual frameworks are identified and mapped to the various needs of ORD and the Agency.

Some specific items

P 14 L 38

Note also that demographic, regional migration patterns and other social changes (including responses to threats and to protection/management programs and outcomes) may also be very important components of the energy/climate/environment dynamic.

P 14 L 10

How to promote safer, sustainability-promoting use of chemicals throughout the lifecycle is another important question, and modifying human behavior in this regard may be one of the biggest and most available levers for solving many energy-based environmental problems.

P 15 L 10

Adding something like “how to promote safer, sustainability-promoting use of chemicals throughout their lifecycle;” would help to encourage the CSS program from being overly restricted to “technical” solutions.

P 20 L 14

Does the emphasis at the close of this paragraph on "risk assessment" run counter to the declared ORD shift toward sustainability? Indeed, the HHRA STRAP and the SAB-BOSC comments on it seem to remain more bedded in the traditional risk paradigm than do the plans for the other programs. There are certainly good reasons for retaining the risk emphasis in many parts of the HHRA program, especially given continuing legacy responsibilities. However, the SAB-BOSC review should more strongly encourage the HHRA program to take every opportunity to extend its research more into cumulative threats in multiple media and point out the special need for this program to articulate clearly where it fits in the ORD transition to a sustainability approach.

P 37 L 38

All of the concerns raised here about the community (and decision) typology are pertinent. Another key issue is the interface between community typologies and associated ecosystems/ecosystems services and their protection. The SHC needs community and decision typologies that can be linked effectively to ecosystem structures, functions and conditions (which must at the same time be characterized in way that allows linkage back to the target social systems) and that will facilitate identification and articulation of problems in a way that brings their solutions clearly into the province of EPA/ORD/SHC. There are certainly many existing community typologies, but few will be well suited to the special needs of the SHC program.

P 39 L 19

Some specific examples would be helpful here, such as the Agricultural Extension Service, FEMA, US Forest Service and many Public Health programs.

P 41 L 31

Is there more to be added here? This sentence/paragraph seems a bit naked as it is.

Comments from Dr. Costel Denson

General Comments. Overall, the report is well written and contains many constructive recommendations. A few specific comments follow.

In the letter to the Administrator, there is a statement, “one leg of the sustainability stool”. Is the foundation for this laid in the body of the report, vis-à-vis the other legs of the stool, and what are they? Where is this discussed in the report?

In the section on **General Findings and Recommendations**, the idea of incorporating a risk portfolio analysis in balancing immediate program needs and emerging issues is an excellent one. This recommendation is superb.

In the section on **Recommendations for the HSRP program**, it is not clear how the STAR fellowship program would work to bring in social scientists more easily (long lead time). How would the American Academy of Arts and Sciences program serve to bring in social scientists more easily? Perhaps a sentence or two of explanation would be helpful.

Comments from Dr. Michael Dourson

Nice letter and report. I have nothing of substance to add. However, page 27 at the start of line 15 has a typo: "the" instead of "he."

Comments from Dr. Elaine Faustman

1. Was the charge adequately addressed?

The joint report of the Science Advisory Board and ORD Board of Scientific Councilors was very responsive to the multiple charge questions and multiple levels of program specific review. The overall letter to Administrator Jackson was laudatory in recognizing the “remarkable progress” that the Agency has made towards integrated trans disciplinary research that was developed under the new sustainability framing.

Specific responses overall to the charge questions and responses under the specific program reviews highlight not only this progress but all recognize remaining challenges such as prioritization and further integration of activities across the programs. A request for increased details on the implementation plan was consistently identified for further action across programs.

Excellent points were made in the document that emphasize the need for “big picture” thinking during the integration, not only when the metrics for innovation are developed but also in prioritizing projects within and across the programs. Remembering the big roadblocks that exist rather than getting lost in the development of new “widgets” is needed but also may only come with larger scale innovation projects and development of metrics that reward the projects that attack the larger challenges. (pages 8 thru 10).

One item that did not make it into the letter to Administrator Jackson was the recognition that the Agency has to balance opportunistic activities versus strategic focus activities and this meant that the discussion of the individual program reviews emphasized the need to have such flexibility built into the strategic action and implementation plans, especially during the time of budget challenges. Do we need to add such recognition to the letter to the Administrator?

2. Are there any technical errors or omissions in the report or issues that are not adequately dealt with in the draft report?

This reviewer felt that there were not any major errors or omissions in the report however several items for clarification and emphasis were noted.

- a. Move forward the comment on defining sustainability from lines 18 and 19, page 5 to the letter to Administrator Jackson. I would suggest adding this to line 41, page 1 as follows. “A request to more clearly define sustainability as including a goal of protecting human and ecological health would further this integration.”
- b. The comments on page 16, lines 17 to 22 need further modification. This reviewer would suggest removing these lines and adding the following: “The SAB and the BOSC encouraged EPA to obtain information on ranges of human health exposure levels to ensure that highly exposed populations are not ignored and that the levels of

toxicological assessment from in vitro high-throughput assays can be put within a risk assessment context.”

- c. The section on Human Health Risk Assessment discusses the principle from food toxicology of Thresholds of Toxicological Concern on page 23 lines 10 to 14 to set screening levels however EPA does set screening levels using PTV and this is specifically discussed on pages 24 and 25 when the document describes the EPA approaches using the Provisional Toxicity Values. This reviewer would not support the use of Thresholds of Toxicology Concern and as placed seems strangely out of context with the rest of the document. EPA has a well-used approach for generating screening values that is undergoing a current update. I would be supportive of these plans by the EPA and the emphasis on TTC seems un-necessary.

3. Is the draft report clear and logical?

The report is very clear and logical. Please see a few suggestions for clarification and emphasis in the adjacent comments.

4. Are the conclusions drawn or recommendations provided supported by the body of the draft report?

This reviewer supports the conclusions that the committee presents but requests that clarifications listed below are added/considered.

- A. The tone of the letter to Administrator Jackson uses phrases such as “remarkable progress”, “important achievements”, and “crystalize” to describe the progress made during this first year of re-organization. This emphasis should be better reflected in the wording in each of the program sections at the start of the review. Currently, very weak notes of praise are given with many qualifications. For example, “While the high level goals for this program area are exciting, it was not always evident....” (lines 19 to 21, page 12). Why not give some credit then in the next sentence provide the suggestions for change. It is this reviewer’s opinion that USEPA made a phenomenal response to these change requirements in a year.
- B. In several places the program specific review comments list references that appear to be rather informal and of uncertain peer reviewed status. For example the student thesis work by Waden, 2011 and the informal report Sarewitz and Thernstrom, 2012. Please clarify.
- C. Minor suggestion: Note typo in the citation for Sarewitz et al 2012 page 44.
- D. Minor suggestion: Reword statement line 35, page 7 by dropping the phrase “..and probably sufficient for now.”

Comments from Dr. Bernd Kahn

The Report is well written. I have only the following suggested corrections:

Letter, p.,1.25: Delete 'and' before 'Chemical Safety',

1.26: insert semi-colon after 'Assessment'.

1.37: I do not see any 'implementing a new vision for ORD research' in the Homeland Security program restructuring.

1.42: Move 'define' in front of 'more clearly'.

p.2, 1.5-11: Delete 5 of 6 'there is a need' by replacing, on 1.6, the word 'several' by 'the following'.

Table of Contents and the Acronym pages should be labeled with numerals 1 and 2, not I and ii.

p.6, 1.31: See comment for letter, 1.37.

p. 7, 1.39-47: The emphasis here and on p.8, 1.11-15 on application of social sciences is appropriate, but frequent subsequent citations of the need for social science personnel and research – p.12, 1.30; p.13, 1.19;p.24, 1.30; p.28, 1.26; p.34, 1.45; p.35, 1.3; p.36, 1.8; p.36, 1.35; p.41, 1.26, for example – suggest special pleading and should be reduced.

p. 8 1. 41 to p.9, 1.2: Clarify this sentence.

p.9, 1.30: Insert citations here; also on p.36, 1.27; insert examples on p.38, 1.25, and insert Charge in Appendix A.

p.19, 1.19: Replace '3.3.1' with '3.2.1'.

p.28, 1.2: Is 'synthetic' the correct word here?

p.41, 1.38: Delete comma after 'and'.

p.43, 1.16: Insert comma after 'Gregory, R.'

p.44, 1.27: Insert space after '2012e'.

Comments from Dr. Barbara Harper

Page 35, line 9-11 Duplicate. Also see first word line 11 - below.

Page 38, line 25. Examples: Barriers within EPA - different staff with different goals; media-specific regulations that are not holistic or that may not span protecting human health, the environment, and welfare or well-being. Or that allow integration and consideration of welfare but do not require it.

Barriers in the community - lack of technical expertise, lack of data, lack of professional staff whose job it is to engage with EPA on sustainability planning, lack of integration of that part-time staff person with other programs, pressing problems (budgets and potholes) that make sustainability planning a luxury that only the largest cities can afford.

General barriers - definitions, measures, and metrics. For example, when does a community know it has reached a sustainability threshold? Does removal of stressors make a community sustainable? What elements must be addressed simultaneously (human, economic, built, natural, cultural, etc.)? What is the relation between sustainable and green? What metrics are needed and does the community have to fund the data collection. What policies are most effective for communities, and are there model policies available on an EPA portal or dashboard? Are there model processes for making 'strong' political decisions?

Page 39, line 14. Collecting data costs money. Fixing problems costs even more. Need to be sure communities are not left simply with more understanding about an unsustainable problem they can't fix, such as crumbling infrastructure.

Page 39, line 19. How would EPA catch up on community history? Maybe a checklist of typical information a community can collect (cheaply) would help in the Durham pilot.

Page 49, line 18, after the word site "as a pilot project"

Comments from Dr. Cecil Lue-Hing

General comments

The SAB/BOSC Panel has conducted a very good review of the Strategic Research Plan Implementation Program. Some deficiencies were identified and appropriate recommendations made to improve the Plan.

Specific Comments

Letter to the Administrator

The letter clearly expresses the Panel's satisfaction with the progress made by the Agency in implementation of the Strategic Plan, and presents a selected summary of the recommendations contained in the body of the report.

A typo. Exists at line 7, page 2 – need for better, should be need **to** better

General Findings and Recommendations/Charge Questions

The content of this section is well laid out, with each of the charge questions followed by a response and the appropriate recommendations.

Program Specific Recommendations

The program specific recommendations are well formulated and clearly respond to the deficiencies identified by the Panel.

Homeland Security Program - Section

The write-up and recommendations of this section are consistent with the discussions, deliberations and conclusions of the Homeland Security Sub-Panel of which this writer was a member.

Comments from Dr. Amanda Rodewald

The letter to the Administrator was well-written and clearly articulated the key points in the report.

Page 7, lines 27-29: The wording of this recommendation, “highlight examples of successful integration particularly if the key elements of integration are emphasized,” was unclear to me. The word “if” seems to be the source of my confusion. Is the intent to highlight the ways in which the key elements of integration are emphasized in the examples of successful integration?

Page 14, recommendations for ACE program. It seems that the need for senior leadership (i.e., “This additional systems-level focus on energy will require senior leadership (e.g., from a Deputy National Program Director for Energy) that would provide necessary systems science expertise and ensure that the connections between energy research projects are drawn and made explicit.”) is an important actionable item that should be included in the recommendations.

Page 19, recommendations for CSS program. Do we want to explicitly recommend “Development of more holistic ecosystems-based approaches to ensure more integrated, “one environment” safety assessments”?

Page 36, line 11: typo: “below” not “blow”

Page 38, lines 24-25. Drop the sentence that requests additional examples. Perhaps evaluating outcomes on short time scales (near term), failing to consider the full range of desired attributes/values of sustainability, and inadequate access to data and other information are among those “other” problems.

Comments from Dr. Gina Solomon

- 1) I am worried that the wording might be interpreted as a bit stronger than we intend in the various places where we say: “The HHRA and SHC programs are also making progress but have more challenges to meet...”. Perhaps instead we could say: “The HHRA and SHC programs have also made very good progress but could benefit from further refinement of their vision...”. This language appears on lines 39 et seq of the cover letter, and again in the general findings, p. 4, line 33 et seq.
- 2) P. 16, lines 17-20 – I am concerned about how this could be interpreted and what is intended by this sentence. EPA has an ethics policy document on human exposure studies. Are we proposing that be changed in some way? I’m fine with the rest of this section, but recommend deleting this sentence.
- 3) P. 18, lines 29-30 – This sentence takes the Tox 21 report language out of context. I suggest a revision to: “Adverse outcomes may result either when the capacity of these homeostatic control systems is exceeded or when the host is unable to adapt due to underlying nutritional, genetic, disease, or life-stage status.” (Cite NAS Tox 21 report, page 7)
- 4) P. 19, lines 38-39 – Delete the word “normal”. Defining a ‘normal’ range in the clinical sense doesn’t account for lifestage and biological range of vulnerabilities.
- 5) P. 21, lines 31-33 – Is this really true? I’m not sure we can justify this statement. I recommend deleting the last half of the sentence after the word “considerations”.
- 6) P. 22, line 42 – I don’t think we can assert that the data from high throughput assays “have the promise of high-quality”, since that has yet to be determined. I recommend deleting that and say “have the promise of abundant data at reasonable cost.”
- 7) P. 24, lines 14-16 – these are a repeat of lines above. Typo.
- 8) P. 27, line 19 – Suggest change to “EPA staff can sometimes face difficult decisions about whether to implement conflicting or cumbersome recommendations by peer reviewers.”
- 9) P. 27, line 37-38 – Suggest changes to “...has created a strain on the budget and led to delays. Recent mandates may impair...”
- 10) P. 28, lines 41-42 – Suggest change to “ORD might consider involving an independent referee....”

Comments from Dr. Rosemarie Szostak

The two references on page 17 for Brazil and Nigeria are:

Strategic orientation towards sustainable innovation: A case study in a Brazilian university
Löbler, M.L., da Silva, B.G., Pozzobon, D.M., Gomes, C.M. 2012 *Journal of Technology Management and Innovation* 7 (2) , pp. 196-206

Indigenous innovations for climate change adaptation in the Niger Delta region of Nigeria
Nzeadibe, T.C., Egbule, C.L., Chukwuone, N.A., Agwu, A.E., Agu, V.C. 2012 *Environment, Development and Sustainability* , pp. 1-14 Article in Press

Except for a typo (he instead of the) on line 15 on page 27, the report looks good.

Comments from Dr. John Tharakan

Have reviewed the draft with specific focus on the SSWR sub-group of which I was part:

Page 6, line 13: edit sentence: "What are the cultural, institutional and technical barriers to determining such signals? ORD should undertake evaluative case studies to identify barriers in the past and to focus on identifying and conducting research related to emerging/important issues."

line 31: insert ORD staff

page 8, line 29 However, it is important that EPA make sure that all proposed innovation activities are tied to agency mission.

page 9: I do not have any citations on Brazil and Nigeria - hopefully you received some from others in the group; citations inserted from India fit well into the report and provide input on various models of how governments and institutions support innovation.

page 10, section 2.6.2 - insert a recommendation that ORD should solicit and support innovation from the communities impacted.

For the SSWR section, I think it reads well and provides an accurate reflection of the BOSC/SAB discussions in the SSWR sub-group and of the recommendations developed.

Comments from Dr. John Vena

The report reads really well! Great job.

A few minor points;

Section 3.1.5 Add recommendation to improve timeline see page 13 lines 1-2?

Page 19 line 19 Section number typo?