

**Comments from Members of the Chartered SAB on the SAB Draft Report:  
SAB Recommendations for EPA’s FY 2016 Scientific and Technological  
Achievement Awards (9/2/2016)**

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## **Comments from Lead Reviewers**

### **Comments from Dr. Sylvie Brouder**

Q1) Charge questions adequately addressed?

Yes, the charge to the SAB was to evaluate nominations in accordance with the EPA criteria for award level. As for 2015, the presentation of how the review was conducted in 2016 is clear and includes specific statements regarding nominations that were not considered because they were redundant with another nomination or did not meet eligibility criteria. It is implied that the eligibility criteria are clearly spelled out for those submitting applications and, thus, the error resides with the nominator/nominee. The described process is in keeping with that of many evaluation committees tasked with reviewing large numbers of nominations (a subset of individuals serve as primary reviewers and present the nomination to the larger committee).

Q2) Technical errors or omissions / issues not adequately addressed?

Because there are no recommendations for improving the STAA nomination and administration procedures included within this report (will be done at a later date), the potential for omissions, lack of clarity, etc. is much reduced. However, in looking at the award distribution, I wonder if there is a need to address the low number of nominations for level 1 (0 Awards in FY 2016; 1 award in FY 2014 and 2015) in recent years (FY 2013 – 2016) as compared to the preceding years (4 years with 5 Level I awards in each year). We make reassuring statements that the quality of science is, indeed, very high, and EPA should not be concerned but the metrics could be interpreted as suggesting otherwise. Have the criteria changed in such a way that they are more restrictive, less attainable or have we changed how we evaluate these awards? This may be beyond the scope of this committee to address and/or perhaps this issue was previously addressed or will be addressed in the context of the recommendations that are forthcoming.

Q3) Draft report clear and logical?

Yes, the report is logically constructed and the narrative is easy to follow.

Q4) Conclusions drawn / recommendations provided supported by body of draft report?

See comment above regarding the trends in Level I and, perhaps, II awards. I assume the subsequent recommendations on the process may shed some light on this trend and look forward to seeing the report.

### **Comments from Dr. Kristina Mena**

#### **1) Were the charge questions to the committee adequately addressed?**

For this charge, a new SAB 2016-2018 Scientific and Technological Achievement Awards (STAA) Committee was formed. This SAB STAA Committee was asked to recommend awards for the STAA Program after reviewing 75 nominations. The SAB STAA Committee draft report does provide recommended awards based on award level and topic category. Yes, the charge to the SAB was adequately addressed.

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

There are clarity issues related to the award levels that could be addressed; however, the cover letter of the draft report states that SAB STAA Committee recommendations will be presented in another document so perhaps they will be described in that report. It is also mentioned that EPA has made some modifications to the award process based on past SAB recommendations. What are these? Perhaps those should be included in the report containing the recommendations.

The issues that may warrant recommended changes to the award process primarily relate to the award level definitions:

How clear and objective are the award level definitions/criteria? The award level rubric is vague. Given the same award level criteria, would it be expected that a different group of reviewers would make similar recommendations, particularly when there are a large number of nominations? Is the number of award level categories appropriate? The criteria associated with each award level seem so close that having three levels almost seems too many (should there be two and an Honorable Mention?) Is the primary difference between Level I and Level II awards the requirement of “national significance” for Level I? What does that mean and how is that determined/measured? Would it be different for different disciplines of research? The difference between Level II and Level I awards seems subjective and/or seems to potentially foster comparisons of nominations with the wording for Level II stating “similar to, but to a lesser degree.” How would this work if initial reviews are conducted by only two people? Also, how much does the quality of nominations in a particular year influence award decisions, and is that acceptable? For Level III awards, what does “unusually notable” mean? Since Honorable Mention is related to showing a “promising area of research”, how did a reviewer’s own area of research influence the award selection outcome for this category?

When considering the reviewers, how were nominations assigned? What were some reasons some reviewers were asked to recuse themselves? How did the initial nomination review by two reviewers inform the full Committee discussion? Perhaps these issues to the review process should be discussed in this report.

Last year, there was a point made about the submission of review articles in terms of their appropriateness for STAA award considerations. How was this handled this year? Overall, there isn’t enough information in the report to understand how conclusions (i.e., awards) were made. Perhaps another column in Appendix A denoting why that nomination received that particular award level would be useful.

## **3) Is the draft report clear and logical?**

The SAB STAA Committee draft report is well written. If deemed necessary for documentation purposes and clarity for future reviews for awards, more detail describing the award review process would be helpful. Specifically, how nominations were assigned to reviewers and how their opinions impacted the full Committee is not explained. Also, how different interpretations

of the award level criteria and how that may relate to a particular research area is not described.

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

The draft report does not provide detail that would support the conclusions (in this case, award selections). For this type of report, however, it may be considered inappropriate or unnecessary to share more information about the review process for this year's award selections. Although including commentary about review deliberations for specific nominations would be inappropriate, more detail about the two-step review process would inform future committees and award selection processes. Also, a brief notation in Appendix A for each awarded paper denoting why that level was awarded may be helpful.

**Comments from other SAB Members**

**Comments from Dr. Joseph Arvai**

**1. Were the charge questions adequately addressed?**

Yes.

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

Not to my knowledge.

**3. Is the draft report clear and logical?**

Yes.

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

Yes.

However, one thing that was not clear to me was whether EPA/ORD encourages more submissions from areas that seem to be underrepresented. For example, I was quite surprised to see only one nomination on the topics of Energy and the Environment, and Homeland Security, respectively.

Perhaps one recommendation from this report might be to encourage a broad range of groups within EPA to submit nominations for STA awards.

### **Comments from Dr. Joel Ducoste**

1) Were the charge questions to the committee adequately addressed?

Yes

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

No

3) Is the draft report clear and logical?

No

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

Yes

### **Comments from Dr. Francine Laden**

1) Were the charge questions to the committee adequately addressed?

The committee clearly presented the numbers and categories of nominations for the 2016 Scientific and Technological Achievement Awards. They provided appropriate information on why 2 of the nominees were excluded and listed the awardees in each category. It is stated in the report, that due to confidentiality reasons, justification for each award could not be provided.

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

The draft report had no technical errors. As stated above, information on why each awardee was chosen could not be included due to confidentiality concerns.

3) Is the draft report clear and logical?

Yes, the draft report is clear and logical.

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

Since no information could be provided on why each individual awardee was selected it is difficult to judge if the recommendations are appropriate. However, the body of the draft report clearly explains the process, the criteria, and the omission of further explanation.

### **Comments from Dr. Robert Mace**

As requested, I've organized my comments according to four quality review questions. In

summary. I found that the report adequately addressed the quality review questions.

1. Were the charge questions to the committee adequately addressed?

I found the charge questions to be adequately addressed.

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

No; however, I recommend removing the blank row in the table on page A-7 since it could be interpreted as an omission.

3. Is the draft report clear and logical?

Yes.

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

Yes.

### **Comments from Dr. Sue Marty**

1) Were the charge questions to the committee adequately addressed?

- Yes, the committee adequately addressed the charge questions. The conclusions of the review committee are clearly and consistently expressed in the Letter to the Administrator.

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

- There are a few typographical errors in the report (e.g., in nominations #125 and #236, respectively, Michael Hornung's and Ann Wolverton's names are indexed incorrectly). These are minor errors that can be easily corrected in the final version with an additional review of authors' names.

3) Is the draft report clear and logical?

- Yes, the draft report clearly summarizes the results of the STAA Committee deliberations and how these results compare with previous years. The report also identifies each paper and its designation for an STAA award (Level II, III or Honorable Mention). It might be helpful to identify the nomination category for each individual nomination in Appendix A, but this is not critical.

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

- Yes. The STAA Committee reached consensus decisions on the award levels for each nomination. The conclusions drawn by the reviewers seem reasonable. In my area of expertise (toxicity and human health effects), the Level II Awards seemed justified as the work addressed critical issues of import to EPA. In one nomination, the Estrogen Receptor Expert System was developed for *in silico* identification of low affinity compounds that interact with the estrogen receptor, a critical need for the Endocrine Disruptor Screening Program, where 10,000 chemicals must be screened for potential endocrine activity. The nomination on “Diesel Exhaust Modulates Ozone-induced lung function decrements in healthy human volunteers” describes a ‘greater than additive’ effect on lung function for two common air pollutants, ozone and diesel exhaust. In the third nomination, the authors evaluated the bioavailability of relevant soil contaminant, arsenic, by evaluating *in vitro* bioaccessibility in 31 (model development) and 40 (final model development) soil types; results were confirmed with mouse, monkey, and swine assays for relative bioavailability. Level III and Honorable Mention awards also were interesting, but apparently less impactful.

### **Comments from Dr. James Opaluch**

1) Were the charge questions to the committee adequately addressed?

Yes

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

None that I could see.

3) Is the draft report clear and logical?

Yes

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

Yes.

We have had an ongoing discussion over the past several STAA reports regarding the reductions in the number of awards in recent years, especially the Level I awards. Looking at Table 2 in the report, the number of Level I awardees ranged from 3 to 5 per year during 2006-12, for an average of over 4 per year. Since 2013 there have only been 2 awards in total over four years, for an average of 0.5 Level I awardees per year.

This might reflect the quality of nominees, or perhaps the expectations of the SAB committee have changed, either of which might be appropriate. If the former, ever tightening budgets might imply that it is rational for EPA to place less effort on advancing science, versus meeting the mandates of their mission. If the latter, it is possibly that our criteria were too lax in prior years. However, it might make sense to have a small subcommittee look at historic submissions to ask

whether quality of nominations has declines, or whether we are applying higher standards. This seems like a fairly modest task of a couple of committee members looking at several of the Level I award winners from 2006-12 and asking whether they would be judged to justify Level I awards today.

### **Comments from Mr. Richard L. Poirot**

The committee's done an excellent job reviewing and evaluating the many impressive publications by EPA authors nominated for 2016 STAA Awards. The draft SAB report is written clearly and concisely, and the recommended awards and levels appear to be logically reasoned and consistent with EPA STAA Criteria and Guidelines. I have no suggestions for changes to the report content or any of the recommended STAA awards.

I do have one minor (& picky) comment that relates only indirectly to the draft SAB report and to the publications recommended for awards. Specifically, I think **the Agency should be more clear and consistent in defining the eligibility criteria for STAA nominations, and in conveying this information to the public.** The draft report indicates "ORD screened the nominations for conformance with EPA's *STAA Nomination Procedures and Guidelines*. The Guidelines describe the award levels, eligibility criteria, and the award criteria." I'm not sure I was able to find a current (2016) version of this document – but think one should be clearly posted each year and accessible outside EPA.

On what I think is the most recent EPA web page describing the STAA awards, eligibility and award criteria and providing links to the 2014 and 2015 winners, is the statement: "To be eligible, the nominated research must be published in a peer-reviewed journal, initiate or revise a scientific principle or procedure, and be recognized as a major achievement within its field of study." <https://www.epa.gov/research/scientific-and-technological-achievement-award-staa>

A pair of publications (nomination 206) recommended for a level II 2016 STAA award are:  
(1) Analysis of Hydraulic Fracturing Fluid Data from the FracFocus Chemical Disclosure Registry 1.0. U.S. EPA Report EPA/601/R-14/003, and  
(2) Review of Well Operator Files for Hydraulically Fractured Oil and Gas Production Wells: Well Design and Construction. U.S. EPA Report EPA/601/R-14/001.

While these aren't "journal papers", I think these publications clearly represent outstanding, timely and relevant research work and are entirely consistent with the award criteria for level II STAA awards. Their comprehensive nature and length (168 pages and 92 pages respectively) makes them unsuitable for "journal publication", although they have been subject to extensive external peer review (likely as rigorous or more so than many of the journals provide).

I found links to recent EPA documents entitled "Scientific and Technological Achievement Awards [YEAR] Nomination Procedures And Guidelines" for each year 2009 through 2013: [https://archive.epa.gov/ncer/staa/archive/web/html/2009\\_nomination\\_procedures.html](https://archive.epa.gov/ncer/staa/archive/web/html/2009_nomination_procedures.html) [Change "2009" to a subsequent year to access another year's document). For the years 2009, 2011, 2012 and 2013 the eligibility criteria are defined with identical language (except for the

publication cutoff dates): “The nominated publication(s) must have been published in a high-quality **peer-reviewed journal** (includes on-line journals and appropriately cited on-line preprints that are publicly available on or before January 1, 2009) or a suitable book.” (with **peer-reviewed journal** emphasized in bold in each year’s document).

In the 2010 version of these procedures & guidelines, the eligibility criteria were expanded: “The nominated publication(s) must have been published in a high-quality **peer-reviewed journal** (includes on-line journals and appropriately cited on-line preprints that are publicly available on or before January 1, 2010), a suitable book, or be published by EPA as a project/research report (includes on-line publications).” The 2016 nominated hydraulic fracturing reports fall into this latter EPA research report category – which so far as I can tell was only mentioned in the 2010 STAA nomination procedures and guidelines document (and not before or since). ([https://archive.epa.gov/ncer/staa/archive/web/html/2010\\_nomination\\_procedures.html](https://archive.epa.gov/ncer/staa/archive/web/html/2010_nomination_procedures.html))

To be clear, I’m not suggesting that these kinds of important EPA project/research reports should not be eligible for awards (I definitely think they should be). Just saying that the Agency could more clearly and consistently state the eligibility requirements – which language that makes it clear that eligibility is not explicitly limited to journal publications. Perhaps a phrase like “published in the peer-reviewed scientific literature” would be sufficient to include peer-reviewed EPA research publications – or just include the more direct inclusive language from the 2010 guidelines.

### **Comments from Dr. Gina Solomon**

1) *Were the charge questions to the committee adequately addressed?*

Yes, the charge itself is straightforward and it was addressed in the brief report.

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

Not that I noted

3) *Is the draft report clear and logical?*

Yes, it is very clear and logical

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

In general, yes. However it is notable that the committee declined to recommend any Level 1 awards. The committee mentions this briefly in the letter to the Administrator on lines 31-32, but the report itself does not say anything about this, and does not further elaborate on this important issue. It would be good to include a bit more text in the section on Award Recommendations (p. 4) explaining the zero Level 1 awards. A sentence or two should be sufficient.

### **Comments from Dr. Charles Werth**

1) Were the charge questions to the committee adequately addressed?

Yes, they were adequately addressed.

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

Not that I noticed.

3) Is the draft report clear and logical?

Yes, it is clear.

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

The process followed to determine award levels is well described. The rationale that is behind placing publications in one award category or another is not apparent from the information provided. Perhaps the sensitive nature of the discussions prevents this from being made public. Upon reviewing the awards, I did wonder if quantitative statistics were used to help determine award levels, such as total number of times a paper is cited, trend in the number of times a paper is cited per year, impact factor of journal, number of times paper was downloaded/viewed, and number of times paper is cited by the popular media. While none of these metrics represent an absolute benchmark for decision making, they provide insights into the quality and impact of the work.

### **Comments from Dr. Robyn Wilson**

1. Were the charge questions to the committee adequately addressed?

The committee adequately addressed their charge to consider the nominations and make award recommendations. This task was completed, although the process by which the task was completed is unclear.

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

No

3. Is the draft report clear and logical?

The draft report is clear, but the logic behind the recommendations is not provided.

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

It is difficult to assess if the recommendations are supported given there is no summary of why particular papers/products were recommended for awards or not.