



UNITED STATES GOVERNMENT  
**M E M O R A N D U M**

**DIRECTORATE FOR MATHEMATICAL AND PHYSICAL SCIENCES**

**Date:** June 11, 2010  
**From:** Assistant Director, MPS  
**Subject:** **Response to the Division of Chemistry Committee of Visitors Report**  
**To:** MPS Advisory Committee

Please find attached the MPS response to the Committee of Visitors (COV) report from the 3-5 May 2010 COV review of the Division of Chemistry. The review was thorough and insightful, and the findings will be very helpful to me and to the Division of Chemistry in fulfilling our responsibilities to the scientific community and to the nation.

The Division of Chemistry drafted the attached response, and I concur with its content. I therefore adopt it as the official response of the MPS Directorate. I hope the full MPS Advisory Committee finds this COV review and the MPS response useful and acceptable.

H. Edward Seidel  
Assistant Director

Attachment: Response to Division of Chemistry COV Report of 2010

## **Division of Chemistry Response to the FY 2010 Committee of Visitors Recommendations**

The 2010 Chemistry Committee of Visitors (COV) commended the NSF Division of Chemistry (CHE) for its performance in funding the best research and education in the chemical sciences and creating an outstanding portfolio. The COV noted CHE's leadership through workshops at the frontiers of the chemical sciences and also on the issue of broadening participation. Further, the COV commended CHE for their skillful handling of the unique opportunities and challenges offered by the *American Recovery and Reinvestment Act* of 2009.

Within the report the COV made eight specific recommendations, highlighting them for consideration by the MPSAC, by the Mathematical and Physical Sciences Directorate (MPS), and CHE. This response focuses on these items, provides some initial feedback, and indicates what actions are planned to address the specific recommendations made by the committee. This response will be updated annually and the cumulative response will be provided to the 2013 COV.

The Division of Chemistry is very grateful to the members of the 2010 Committee of Visitors for their thoughtful work and insightful report. The Division especially acknowledges Cynthia Burrows for her leadership and commitment through this extraordinary year.

CHE thanks MPS for their advice and participation, particularly Morris Aizenman for serving as the COV monitor and Ed Seidel for engaging the CHE COV throughout the process.

### **Specific Recommendations and the CHE Response**

- *The COV recommends that CHE senior staff members continue to stress the importance of investing in Chemistry as a core discipline by highlighting major accomplishments resulting from CHE investments. The previous support of a half-time science writer for press releases was viewed positively, and this, or a related mechanism, should be explored.*

CHE agrees that publicizing the outcomes of NSF investments is essential and the Division is committed to finding ways to effectively achieve this goal. CHE and MPS have been developing a staffing plan. The first CHE priority is to increase the number of Program Directors, but we agree that a skilled science writer would be an asset to the Division. In the meantime, CHE staff will continue to work with the NSF Office of Legislative and Public Affairs to publicize the successes of CHE-supported projects.

- *The COV recommends that the IIA research project budget continue to grow at a rate that ensures a high level of productivity from the best laboratories across the U. S. The Division should encourage the growth of Centers as funds become available without compromising the IIA budget. The Division Director should be commended for his efforts*

The Division will continue its best efforts to articulate the exciting opportunities in chemistry research for individual investigators and small teams and to support Grand Challenge research through centers. The balance of investments will continue to be carefully monitored. The Division is committed to outreach to the CHE PI community and continues to discuss new ways to be more effective, including events at major meetings.

- *The COV recommends that CHE place a priority on growing the size of the average IIA toward \$200K per year (from the current \$144), despite the fact that this might lead to a lower success rate initially. Like other members of the community, the COV members are encouraged by the efforts to double the NSF budget in the next 10 years, and it is hoped that this growth will permit increased grant sizes without decreasing the number of individual grants in the portfolio.*

CHE agrees that increasing the award size is a high priority, assuming increasing budgets. As an immediate first step, CHE staff will develop models under various scenarios of Divisional budgets, proposal pressure and award sizes to understand the potential impacts on the CHE portfolio and the community. CHE will report on this first step in the 2011 update.

- *The COV recommends that the success rate of applications be monitored across different career stages for PIs to ensure that we do not lose more seasoned, yet highly productive and innovative investigators from the long-term pipeline.*

CHE agrees that it should pursue this element of the Strategic Directions Document. CHE staff will examine the research projects portfolio by PI career stage and report our analyses in the 2011 update.

- *The COV recommends that CHE explore additional mechanisms for review that might increase the efficacy of the process and increase the scientific value of the reviews. Ideas might include (1) use of cyberconferencing and panels outside of Washington to lower costs and relieve travel time for reviewers, (2) inform ad hoc reviewers that their reviews will be read by a panel, (3) develop a more robust database for searching, assigning and tracking reviewers, including opt-in/opt-out responses similar to journals, and (4) hire more program officers! The COV noted that NIH has undergone substantial changes to their application and review processes over the past two years as a result of a system wide study. Some of the lessons learned at other agencies might be useful to NSF staff in this regard.*

These are all interesting suggestions that could improve the efficacy of the review process. CHE has been using telepanels and cyberconferencing in some situations and

will look for opportunities to increase their use. CHE staff will explore the idea of regional panels. There are NSF-wide groups looking at several of the broader reviewer questions, including new tools to identify reviewers and to manage the review process. CHE staff has been and will continue to be actively involved in these efforts. CHE will continue communicating with other federal funding agencies who have recently experimented with various review initiatives to learn the benefits (and unexpected pitfalls) of each approach.

- *The COV recommends that CHE continue to educate the community through the current mechanisms, but also explore other ways in which PIs and reviewers can be informed about best practices in terms of Broader Impacts. It is important for NSF to work to clarify the intent and meaning of the criterion. Ideas might include (1) sending the Broader Impacts web link shown above to reviewers, or (2) developing a voluntary on-line tutorial for PIs and reviewers. In addition, program officers should continue to work together to form a consensus for those borderline applications where intellectual merit and broader impacts appear to be valued differently by the reviewers. POs need to be clear in documenting declinations about how the reviews of the two merit criteria led to the decision that was made.*

The Division will seriously consider these suggestions as we further work with the community to encourage more consistent evaluation of the broader impacts of a proposal.

Program Directors strive to interpret, balance and integrate different, sometimes contradictory, reviewer comments on both Intellectual Merit and Broader Impacts. This is a longstanding challenge and the focus of much of our staff training and programmatic discussions. CHE Program Directors will continue their efforts to clearly articulate key decision factors in the review analyses and in their communications with the PIs.

- *The COV recommends that a study by CHE to assess the proposal use of and reviewer evaluation of broader impacts be implemented in order to provide feedback on this challenging problem. Such a project was initiated by CHE already, but the company conducting the study folded and conclusions could not be reached.*

This is a critical issue for all of NSF. The National Science Board has recognized this and is taking a leadership role. At the May 4-5 Board Meeting (concurrent with the CHE COV), the Board approved the charge and work plan for a Task Force on Merit Review that has been explicitly asked to address this point. CHE will seek opportunities to partner with the Board and other NSF groups to address reviewer evaluations of broader impacts.

- *The COV recommends that the division (1) reassess and update the Strategic Directions document periodically, (2) evaluate and refine the new interdisciplinary programs as needed, and (3) continue to educate the community about the new programs, for example, by broader distribution of the new brochures that describe the realignment.*

The COV was briefed on issues of Conflicts of Interests and each COV member completed an NSF Conflicts of Interests form (NSF 1230-P). This allowed the COV to complete one of their charges: to examine proposals, reviews and internal documentation and to comment on the integrity and efficacy of processes used to solicit, review, recommend, and document proposal actions. Where COV members identified conflicts-of-interest or the *appearance* of conflicts-of-interest, they disclosed them to their fellow COV members, did not access the electronic files related to particular proposals or actions, and left the room during discussions of that proposal or action. Access to the electronic file was blocked for all identified conflicts-of-interest.

The Division of Chemistry believes that the COV and its chair, Dr. Cynthia Burrows of the University of Utah, conducted their review and discussions with the highest standards of integrity and professionalism. The Division staff detected no situations in which conflicts-of-interest were not handled properly. The Division is pleased with the quality and thoroughness of the COV report, its findings, and its recommendations.

CHE agrees that FY 2011 is an opportune time to update *Strategic Directions: 2008-2012* and will seek input from the staff, the new Division Director, the MPS Advisory Committee and members of the CHE community. One critical aspect of the updated Strategic Directions Document will be a framework for evaluating the new programmatic structure. CHE acknowledges that the new programmatic structure may need changes and adjustments; some programs have already made minor revisions in their program descriptions and we expect this evolution to continue. Several programs have held (or are planning to hold) workshops and PI meetings that will also serve to better articulate the program goals, activities and boundaries. Programs near disciplinary boundaries are exploring methods to best support science at the new interfaces, including creating new positions that bridge divisional boundaries.

**Note Added 28 June 2010**

In the Chemistry Education Program Review, page 76 Section A.2.4 the statement is made “REU: A uniform # of reviewers is recommended not just 2 (and preferably more than 3).”

The Division of Chemistry notes that at least three reviews were obtained for all REU site proposals and were used in the decision process leading to either an award or a declination. Because of a database error, reviews from some panelists were not properly displayed in eJacket during the COV. This database error has been corrected, and all reviews are now available in eJacket.



# National Science Foundation

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## Memorandum

**To: Assistant Director, MPS**

**From: Acting Deputy Division Director, CHE**

**Date: June 28, 2010**

**Re: Diversity and Conflict-of-Interest Report for the Division of Chemistry COV FY 2010**

The Division of Chemistry held its triennial COV on 3-5 May, 2010. The COV was composed of 34 members of the chemistry research and education community. These individuals were chosen for their scientific expertise and their breadth of understanding of issues impacting research and education in chemistry. The COV membership represented a variety of perspectives and was balanced across the various subdisciplines supported through CHE's programs. Inclusiveness in the COV membership is illustrated by the committee's geographic, institutional and demographic diversity, as shown below:

### *Institutional Type*

Industry			1
FFRDC/Government			5
International			1
Academic Institution			27
Ph.D	24	Public	18
PUI	3	Private	9

### *Geographic Location*

Northeast	6
East/MidAtlantic	7
South/Southeast	4
Midwest	7
Southwest/Rockies	3
West/Northwest	6
International	1

### *Demographics*

Female	15
Male	19
URM	7

Member of MPS Advisory Committee	2
No CHE Support in Five Years	14

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