

To: MikeElliott  
From: John Raich <jraich@lamar.colostate.edu>  
Subject: Comments on Academic Program Review for the Department of Chemistry -  
Issues Report  
Cc: BobGaines, TomSneider  
Bcc:  
X-Attachments:

Mike:

Here are my comments on the Issues Report of the Academic Program Review Document. These comments are perhaps more appropriate for the next phase of the program review, the action plan.

John

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Academic Program Review - Responses to Issues

#### Question I. Department division structure

The Department response on p. 8 constitutes a reasonable approach. Interdisciplinary interaction between faculty both within the Department and with faculty outside the Department should encourage a looser divisional structure. The Department is implementing faculty recruitment across divisional boundaries. The next challenge will be to define focus areas for collaborations with other departments at CSU and to define and implement a recruitment plan that will maximize the potential for such collaborations.

A comment on the 3rd paragraph on p. 8: Both the College and OEO want to be as supportive as we can be to department recruiting efforts. What are the "delays in the process and lack of flexibility in procedures resulting from OEO regulations" that we need to work on? Some specifics would help us identify the roadblocks.

#### Question II. Faculty retention

See p. 3. The discussion also includes recruitment and the associated start-up funds. The Department points out that start-up needs for future Chemistry hires will likely exceed available resources in the Department and College and that continued efforts to provide additional central support will be crucial to future department faculty recruitment efforts.

Faculty salary issues are discussed on p. 4. Most CSU Chemistry faculty have excellent national visibility and are attractive targets for recruiting efforts from other universities. We lost a number of productive faculty to such recruitment efforts. We also retained a number of faculty due to fairly aggressive (but also costly) retention efforts. Retention early on is less costly than retention efforts once faculty have received an offer. Hence, we must try to remove as many reasons as possible for faculty to begin to look elsewhere.

The Department points out that it is facing diminishing resources and hence has reduced ability to effectively address its faculty salary problems. Diminished resources are a result of reduced indirect cost recoveries (see below), University and College reallocations, and the Provost's 10% position tax. Hence the Department will need substantial assistance from at least another round of the university equity and critical retention salary increase effort.

The long-term fiscal viability of the Department of Chemistry is of some concern to me. Given the expected rate of faculty turnover, the loss of senior faculty to retirements, the high cost of starting up new faculty, needed faculty retention efforts, the difficulties in recruiting graduate students, coupled with a gradual reduction of RI resources just when they are needed most, poses very difficult problems for the Department.

### Question III. Graduate/research program and external research support

The explanation provided for the decline in C&G expenditures and ICR is reasonable. It might be interesting to estimate \$ figures for the decline in Department C&G expenditures and ICR due to faculty losses and balance them with gains by current and new faculty. In that way, we might obtain a more accurate estimate of future ICR that the Department could use to estimate future budget resources. Here, I'd avoid the term "highly premature."

Many of the future funding opportunities for Chemistry faculty will be in cross-disciplinary areas. Chemistry faculty will have very significant opportunities to contribute to initiatives in chemical biology, specifically in genomics, proteomics, structural biology, etc. The Department of Chemistry, in its recruitment efforts is positioning itself to contribute in chemical biology/biological chemistry.

Another major Chemistry recruiting thrust is in the materials area. Hires in this area will position the Department to respond to multidisciplinary research questions that are at the forefront of national priorities, such as the area of nanoscale materials, phenomena, and devices. In these initiatives, Chemistry will need to count on core strengths in the other physical sciences and engineering. I am somewhat concerned about the lack of clearly defined cross disciplinary university emphasis areas that would provide focus for future collaborations between the physical sciences and engineering at Colorado State University (apart from information science and technology). With a nationally visible program in chemistry already in place, it would seem to make sense to capitalize on it when encouraging cross-disciplinary collaborations. I am also concerned about the possibility of continuing reallocations away from a very distinguished department unless that department is provided the opportunity to participate in new cross disciplinary initiatives.

In addition to external research funding, development and private fundraising provides another way to bring in resources that are not constrained by the TABOR restrictions. The Department has a distinguished and well-placed group of alumni and industry supporters. Efforts to enhance scholarship support from private donors have already paid off. I would encourage the Department to develop a more systematic approach to enlist the support of those alumni and industry partners to support its research and graduate programs. The assistance of Prof. Al Meyers, in particular, could prove to be invaluable in such an effort.

The competition for good graduate students in chemistry is indeed intense. The Department is putting in a very substantial effort to recruit the best possible students and is considered a leader on campus in that area because of its innovative approaches. However, other institutions have also become much more aggressive and can usually offer far better stipends.

The Department might explore the possibility of increased emphasis on a stand-alone masters program, particularly one oriented towards industrial employment. While such a program may not provide the pool of Ph.D. students needed to staff research programs, it would populate graduate courses and give visibility to the graduate program.

### Question IV. Library collection

See p. 10 for a statement of problems and issues. To what extent has the departmental library helped the Department to deal with the shortcomings of the main library?

### Question V. Undergraduate program and undergraduate enrollments

See p. 12. A good summary of issues pertinent to the undergraduate major and undergraduate courses. The recommendations seem reasonable. In particular, the Department points out the importance of undergraduate research participation for success of our graduates both in the job market and in further education in chemistry. Faculty involvement in undergraduate research is time consuming and expensive. The current ways of formally counting faculty workload at CSU provide inadequate incentives for such efforts.

I would like to see a more aggressive recruitment plan for undergraduate majors. Greater involvement in K-12 outreach activities would provide increased visibility in the state. Here, the Department's efforts to

involve undergraduates in K-12 activities are commendable. The Department might also look into the strategies employed by the Hughes Project to attract high ability biology students to CSU. More direct involvement by the Department in educating future K-12 chemistry teachers would pay off in the long run.

#### Question VI: Service courses

I commend the Chair and the faculty for its efforts to improve the image of the large introductory service courses. These courses draw more than an average number of student complaints. The Department's assessment of the complaints, not only from students but also from faculty advisors in other departments, is fairly accurate; many of the complaints are about shortcomings in personal attention given to students and a perceived lack of sympathy with student problems. The quality of the lecture and laboratory instruction is seldom questioned. Many of these problems can no doubt be solved by a department system of damage control that would allow the Department to deal with issues when they first come up. The Student Chemistry Advisory Council is an excellent idea.

#### Question VII: Faculty workload

See p. 1. The Department provides data from a survey of peer departments at other universities to demonstrate that teaching loads for research active faculty are reasonable in view of the competition for such faculty. Given the unusually high time demands on research active Chemistry faculty due to the supervision of graduate students and undergraduates with their research projects, the formal teaching (type A) workload in Chemistry is reasonable. I concur with the Department's assertion that the university receives good value for its investment in faculty salaries.

On p. 13, the Department suggests the appointment of individuals to coordinate portions of the instructional program, particularly the larger service courses and teaching laboratories. Given the desire to build both nationally competitive research programs and a quality teaching program, it makes sense to allow a limited number of faculty members to focus on teaching entirely or to conduct their research program on issues related to chemistry education. Dr. Steve Thompson, one of five University Distinguished Teaching Scholars, now has that role. The Department should develop plans for Dr. Thompson's eventual retirement.

#### Question VIII: Research experiences for undergraduates

See p. 12. This is covered under Question V.

#### Question IX: Space needs

See p. 6. Much of the current Chemistry research facilities are now 30 years old. I concur with the Department's assessment that those facilities are no longer state of the art and should be upgraded. As this is a health and life safety issue, a plan for the renovation of the Chemistry research laboratories deserves to be moved upward on the list of the University's physical development priorities.