

Whittling Away Chemical Research Funding

Editor's Prerogative
Industrial and Engineering Chemistry Division Newsletter
Nancy B. Jackson
Summer 1999

Each speaker gave an increasingly dismal view of the funding of chemical research. I was attending my first meeting of the Board of Chemical Sciences and Technology, the National Research Council board which looks at chemical issues. We were getting reports from various agencies who support chemical research and from science policy organizations. This included OSTP – Office of Science and Technology Policy – with the White House's point of view. We listened to representatives from the Department of Energy, Basic Energy Sciences, the National Science Foundation and the National Institute of Standards and Technology from the Department of Commerce. It was difficult not to get increasingly depressed as each speaker discussed budgets that did not grow even with the pace of inflation, suggested strategies for funding new science and young scientists with stagnating budgets, and generally expressed frustration with how little chemistry was included in many of the new initiatives. Then the guy from NIH had his turn. "Oh-my!-What-do-we-do-with-all-this-money?" was how I summed up his talk. And to his agency's credit, they not only recognized the need for fundamental science in order to advance medicine, but they were willing to contribute financially to fundamental scientific research.

I've been thinking a lot about the public funding of scientific research lately. I guess it would be hard not to, since I work at a national laboratory which has threatened to lay off even more workers this year due to downsizing of federal support of science and technology research. My entire career has been dominated by the need to raise money for research. In fact, it is something in which, to a certain extent, I have specialized. We (meaning those who survive on government support for research) are told that our legislators see scientists and their requests for funds as just one more entitlement group, like veterans or social security recipients. Science, from Capitol Hill, is not seen as an investment in the future, but as an expenditure in the budget which needs to be balanced between constituent demands and budgetary constraints. Our scientific organizations, ACS, Council for Chemical Research, AAAS, Materials Research Society, etc., have responded, appropriately in my opinion, by raising the "constituent demand" part of the equation. The question I have is, how important is federal investment in long term research to the economic well being of our society which is now virtually a global community? Do we really need to dominate science to dominate economically? The Japanese certainly mastered economic achievement for many years without exceptional scientific achievement.

I suspect that federal research has already been neglected long enough in the fast changing world of science and technology that the U.S. has begun to lag in places. The President's Council of Advisors on Science and Technology (PCAST) in recently advising the President to support a Nanotechnology Initiative in 2001 wrote "Nanotechnology is the first economically important revolution in science and technology since World War II that the U.S. has not entered with a commanding lead." (C&EN, Vol. 78, No. 1, Jan. 3, 2000) Will this kind of neglect to our science and technology have a long term effect on our country?

Closer to home, what is the prospect for chemical research and what will be the long term effect of allowing chemical research funding to whittle away? The National Science Foundation National Science Board wrote a report on the need for government support for environmental research and almost never mentioned chemistry. Unthinkable to us chemical types. Biology, toxicology, epidemiology, these were all more important than chemistry. NSF also saw very little

money made available to the chemistry programs from the large information technology initiative. Except at the very top schools, availability of research funding has had an effect on chemical education. At a recent NRC Chemical Sciences Roundtable workshop on graduate education in chemistry, it was discussed whether the increasing length of time required to earn a PhD in chemistry was driven by the funding pressures on the supervising professor.

Will this lack of funding effect “the man on the street”? There does not appear to be much of a need for producing more chemical professional PhD’s. The chemical industry appears to be rationalizing and cutting back on research support much the way the petroleum industry did a decade earlier. Maybe the chemical industry, particularly chemical commodities, is a mature industry, and not ripe for easy profits from research developments. In my field, catalysis, I see better support for chemical research in Europe, but maybe the grass just looks greener.

Besides entitlement, what are the reasons for legislators to support scientific, particularly chemical, research funding? Chemistry is the underpinning for understanding medicine, environmental issues, carbon management, microelectronics production and other crucial topics. For any of these issues to be addressed with innovative solutions a depth and breadth of chemical research must be maintained. Some of these issues, like alternative energy and environmental issues may be more in the general interest of our society, rather than specifically addressing industrially or economic needs. Regardless, the investment in chemical research will aid almost every segment of the economy. In the future, “the man on the street” will be profoundly affected by the quantity and quality of chemical research we are capable of doing today.