

**From:** John Petura [jpetura@aem-inc.com]  
**Sent:** Friday, August 29, 2003 1:53 PM  
**To:** Holland, Michael J.  
**Subject:** Subcommittee -Research Business Models review - research in remediation and waste management

Mr. Holland,

The OSTP subcommittee effort to "improve the performance and management of federally sponsored scientific and engineering research" review has just come to my attention through the 8/26 issue of Hazardous Waste/Superfund Week. p. 334. The article asks for feedback on (A) accountability; (B) inconsistencies of policies and practices among federal agencies; (C) inconsistencies of policies and practices among universities; (D) state and institutional requirements; (E) regulatory requirements; (F) research support; (G) multidisciplinary/collaborative research; (H) research infrastructure; (I) information technology; and (J) technology transfer optimization.

Before continuing, you need to know that I have no vested interest nor potential for financial gain in the subject initiative because my firm, Applied Environmental Management, Inc., has done none in the past, nor expects to do any work for the federal government in the foreseeable future. My interest is in **raising the bar** so that the American taxpayer gets a better bargain for \$\$ and efforts expended in the name of **scientific and engineering research** in the fields of **remediation and waste management**, in which I have invested my career (see below for thumbnail).

I applaud the objectives of this effort, but have one major criticism of the above feedback categories from the perspective of improving the quality and cost-effectiveness of the funds expended and efforts exerted in the name of engineering research. I offer this perspective as a practicing professional engineer who routinely reviews project work scopes, data quality, draft study summaries, technical manuscripts, and completed remediation reports, both at the research phase and after full scale implementation.

My criticism is this. In far too many cases [chapter and verse can be cited on numerous recent or current cases {without naming names}], the quality of the work performed fails to meet expectations, is excessive in cost, or covers ground that has already been trod because the **qualifications and experience** of the persons leading the effort are **deficient** with regard to their comprehension of the study design, the findings of the study, or the "big picture" applicability of the proposed remediation technology. Two subsets of this observation are "scientific defensibility" and "engineering feasibility". The former of these is generally discussed in the lay media as "good science". The latter rarely gets any press at all, because the definition and practice of engineering are not understood by the lay media.

For any review program of the Business Model to be complete, it needs to have a component that addresses the qualifications and experience of the basic or applied researchers who request grant funding for the proposed studies, including a review component that asks such questions as "Has this technology or a variation on a theme been studied before?", "Has a clear set of objectives been set to determine whether the technology performs successfully, not in a test tube or column study, but in real site settings?", and "Will the unit cost [\$/cubic yard or \$/ton or \$/acre] for application be determined based on consideration of all applicable capital and operating costs over the life of a project?" This last item relates to the term **feasibility**, as defined in the National Contingency Plan, which is supposed to be the oversight guideline for Superfund site remediation assessments.

As an example of my concern, I have been approached occasionally by the National Academy of Sciences to review research proposals on topics for which I have extensive knowledge and practical experience. Several of these were grant requests for over \$400,000, which were seriously flawed or deficient, and I was compelled to recommend against their implementation. Unfortunately, I am aware of other grants of like and large magnitude that have been provided to universities by state and federal agencies that continued to completion to develop and endorse proposed technologies that resulted in technology transfer reports that overstate the capabilities of the technologies and substantially understate the cost for its full scale application. This is not an infrequent occurrence, yet those in charge of such programs as the USEPA SITE program, as an example, do not have the expertise to recognize this continuing problem. Suffice it to say that there are dozens of published Technology Transfer reports on innovative remedial technologies in the archives of USEPA and elsewhere that have never been implemented in full scale because the technology is not performance or cost-effective when taken to the field for full scale application. The time frame of my observation spans from the late 1970s to the present, so the issue of my concern has been around for a long time, but it is rarely considered a significant criterion by reviewers in the research grant selection process,

not because of their intentions, but because they themselves lack the expertise to assess the value of a technology research proposal.

To not prolong my expression of concern, if you are not the person to whom to address this policy issue, or if there is no flexibility to include this major issue within the framework of the Business Model review. please advise me by return email, and I shall cease my involvement in this matter. If you would like further input on this topic, I can be contacted by phone or email as indicated below. I would appreciate a response from you under either circumstance.

As you do not "know me from Adam", I am graduate chemical engineer (B.S. 1968) and environmental engineer (M.S. 1973) and a practicing professional environmental engineer of 35 years, registered professional engineer (PE) in 9 states, engineering consulting firm founder (1988) and CEO, a Diplomate Environmental Engineer (DEE) in Hazardous Waste Management certified by the American Academy of Environmental Engineers (AAEE), and a Qualified Environmental Professional (QEP) certified by the Institute of Professional Environmental Practice (IPEP). My firm's forté is site remediation investigation and characterization, technology and scenario alternatives evaluation, and remedial construction oversight. I have authored and co-authored numerous peer-reviewed publications and continue to serve as a peer-reviewed for journals such as *Environmental Science and Technology*, and have testified as an expert witness on subjects relating to hazardous waste management issues. I am a past-president of the IPEP ([www.ipep.org](http://www.ipep.org)) Board of Trustees and have been on the Board for 7 years, and am the current president of the Council for Engineering and Scientific Specialty Boards ([www.cesb.org](http://www.cesb.org)), which is a national accrediting body for certification boards in engineering and related scientific disciplines. CESB members include the American Board of Certified Industrial Hygiene (CIH certification), the Board of Certified Safety Professionals (BCSP), the Institute of Certified Hazardous Materials Management (IHMM), American Board of Health Physics (ABHP), Board of Environmental, Health & Safety Auditor Certifications (BEAC), and others.

For more detail on my background, you may visit [www.aem-inc.com](http://www.aem-inc.com).

Respectfully submitted,

John C . Petura, P.E., DEE, QEP  
President  
Council of Engineering and Scientific Specialties Boards  
[www.cesb.org](http://www.cesb.org)

President  
Applied Environmental Management, Inc.  
16 Chester County Commons  
Malvern, PA 19355  
610-251-0450  
610-251-0711 fx  
[jpetura@aem-inc.com](mailto:jpetura@aem-inc.com)