

## Mineral Education and Research Initiative (MERIT) – Funding for Applied Research in Mineral Resources and Material Flows Analyses

Following the recommendations of two new National Research Council reports<sup>1</sup>, we propose that \$20 million per year be added to the appropriation for the U.S. Geological Survey's Mineral Resources Program to fund a competitive grants program for universities and other qualified organizations involved in applied research in mineral resources and material flows analysis and accounting. Such a program was recommended initially by NRC in 1996 and would address mineral resource issues of direct interest to federal, state, and local governments as well as the private sector. Goals of the program are to (1) support research and training in mineral resource science and material flows analysis issues, (2) increase cooperation among government agencies, academia, and the private sector in applied mineral deposits research and information development, and (3) help maintain in U.S. universities and the USGS the mineral resource expertise to meet future national needs.

Each year nearly 25 tons of mineral materials<sup>2</sup> are mined for each person in the U.S. These commodities – ranging from metals to fertilizers to construction materials – contribute directly to about \$500 billion of U.S. GDP and are fundamental to sustaining a fast-evolving modern civilization. Investment by business and government agencies in training and research related to mineral resources and material flows has declined. Globalization of mineral resources makes the U.S. economy more sensitive to international economic trends and politics that can affect supply and become national security issues. Experts on mineral resources and information are needed in the USGS, other agencies and non-federal organizations to plan for future needs and assure stable mineral supplies as well as to integrate material flows data with other economic, social, and environmental data for sound public policy making.

Mining increasingly requires attention to sustainability of supply and decreased environmental and ecologic impact. Finding new mineral deposits requires increasingly sophisticated application of advanced geologic theory and related geophysical and geochemical techniques. Furthermore, economically and socially responsible production of mineral deposits requires application of good science, founded on good information and data, to the many environmental, economic and social conditions involved in the development of mineral resources. Exploration, development, and reclamation of new mineral deposits require scientists and engineers trained in a broad spectrum of disciplines. Continuing education of scientists and engineers already at work in mining and related industries, as well as in minerals-related public policy, land-use, and regulatory agencies, will require innovative approaches to the timing and locations of course work and applied research and information development.

The requested funding would be used to establish the Mineral Education and Research Initiative (MERIT) Program with two components: one focused on mineral resources geo-science issues and contributing to the MRP's core competence in "mineral deposit research and minerals-related environmental research,"<sup>3</sup> and another focused on material flows analysis and accounting issues and interfacing with the MRP's Mineral Information Team. Within each component, three-quarters of the funding would be dedicated to competitive, peer-reviewed grants that would enable broad-based applied research on mineral resources and material flows issues. University, state government, and private sector expertise complement USGS and other Federal programs by providing specific technical knowledge, emerging high-tech approaches, and innovative methods, all of which generate data and information for future decision making on minerals policy, at a reasonable cost, with appropriate cost-sharing, and with additional partnerships. The remaining one-quarter of the total funding, and requiring a 1:1 match, would support university fellowships and training, and assist with acquiring needed research and teaching infrastructure. Universities serve a key role by providing trained and educated scientists to the USGS, BLM, USFS, EPA, and DOE, and enabling U.S. industry to maintain domestic sustainability and remain globally competitive. Each of the two components of the program would be overseen by separate advisory boards including federal, university, state, and private sector representatives.

John H. Dilles  
 Professor of Geology  
 Department of Geosciences  
 Oregon State University  
 Corvallis OR 97331-5506  
 (541)-737-1245 (ph)  
 (541)-737-1200 (fax)  
 dillesj@geo.oregonstate.edu

Mark D. Barton  
 Professor of Geology and Director,  
 Center for Mineral Resources  
 Department of Geosciences  
 University of Arizona  
 Tucson, Arizona 85721 USA  
 (520)-621-8529 (office)  
 (520)-621-2672 (fax)  
 barton@geo.arizona.edu

R. Larry Grayson Professor &  
 Chair Department of Mining  
 Engineering  
 University of Missouri-Rolla  
 226 McNutt Hall  
 Rolla, Mo. 65401  
 (573)-341-4753 (ph)  
 (573)-341-6934 (fax)  
 graysonl@umr.edu

<sup>1</sup> *Materials Count: The Case for Material Flows Analysis*, National Academies Press, 2003, Washington, . "Executive Summary"  
 p. 5. "The committee recommends that a national-level effort be initiated to identify and fill significant data gaps that presently impede the development of effective material flows accounts."  
 p. 6, "The committee recommends that relevant government agencies support research related to material flows accounting."  
 p. 6, "The committee recommends that the present material flows data activities of the federal government, including those in the U.S. Geological Survey, U.S. Environmental Protection Agency, and Departments of Commerce and Agriculture, be maintained at least at their current levels of activity."  
 p. 8, "Accordingly, the committee recommends that an independent organization, comprised of interdisciplinary experts, be created and funded through a formal process."

*Future Challenges for the U.S. Geological Survey's Mineral Resources Program*: National Academies Press, 2003, Washington, 120 p.

p. 117-118. "Another method to gain needed expertise is to implement an external grants program (NRC, 1996), which would allow the program to buy the talents of university, government, and industry researchers. The committee realizes that it will be difficult to implement an external grants program without new funding."

p. 15. "The committee urges the MRP to devote substantial efforts to recruiting and retaining staff for new program areas and also to look to interagency and university employee exchanges and an external grants program to gain the necessary expertise."

<sup>2</sup> Per NRC – MRP report, 2003, "Minerals are defined as all non-fuel mineral resources, including industrial minerals such as aggregates."

<sup>3</sup> *ibid*, NRC – MRP report 2003, p. 8 of Executive Summary.

