Institute for Mineral Resources

Questions and Answers

Q: What is the Institute for Mineral Resources (IMR)?

A: Science Foundation Arizona has brought together a consortium of researchers, educators, industry partners and other stakeholders from multiple disciplines to create the Institute for Mineral Resources. Based at the University of Arizona, the Institute's mandate is to contribute to addressing regional, national and global issues related to responsible discovery, production and sustainable development of mineral resources.

In addition, the Institute is focused on internationally competitive R&D innovations in mining technologies related to exploration, production, process efficiency, safety, and health and builds upon the important work already made by mining companies and academia.

Q: What is sustainable resource development?

A: Sustainable development is defined by the 1987 World Commission on Environment and Development as "the development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Q: Why is Arizona the best place to develop this Institute for Mineral Resources?

A: Arizona has a unique geological and academic environment that creates a distinctive setting for the Institute for Mineral Resources, a global center for the full spectrum of mineral resource development and policy challenges. Arizona has one of the richest endowments of copper and related commodities in the world. Total mineral production in the state for 2007 had a value of $7.38 billion and production in rural counties is a major source of economic development. Mining is a technology-intensive industry, the research and development potential of the Institute for Mineral Resources will give Arizona a significant competitive advantage.
Q: What impact does mining and the Institute for Mineral Resources play in the Arizona economy?

A: The Institute for Mineral Resources will operate as a cutting edge collaborator among strategic research groups, academic and industry partners, and other stakeholders from multiple disciplines. This collaboration has the potential to transform the mining industry. With the SFaz grant of $8.7 million, the additional leverage of $8.8 million from 15 industry partners, and the participation of all three universities, the investment will help Arizona retain and expand its dominance as the nation's number one producer of non-fuel minerals. The copper produced in Arizona is vital for the nation's infrastructure as well as for new technologies including alternative and renewable energy technologies of the 21st century. This includes wind turbines, hybrid cars and solar photovoltaics.

Q: What parts of Arizona will be immediately involved and affected by the Institute for Mineral Resources?

A: The work done at the Institute for Mineral Resources ultimately will involve and benefit the entire state. However, the initial impact will be in Maricopa, Pima, Gila, Graham, Greenlee, Pinal, Cochise, Yavapai, Coconino and Navajo counties.

Q: What academic/research institutes are participating?

A: The Science Foundation Arizona research partners include the University of Arizona (UA) Department of Mining and Geological Engineering, UA's Department of Geosciences, and College of Public Health. Other academic participants include Northern Arizona University, Arizona State University, Eastern Arizona College with further outreach to include additional community colleges in the state.

Q: What industry partners are participating?

A: Freeport McMoRan Copper and Gold, Newmont Mining, Resolution Copper Mining, Caterpillar, Xstrata, ASARCO, Peabody Energy, BHPBilliton, Anglo American, Barrick Gold, Lowell Exploration, Rosemont Copper, Quadra Mining, Bronco Creek Exploration, Mineral Zone, Animas Resources and Riverside Resources.
Q: What are some of the immediate educational benefits related to the Institute for Mineral Resources and why is this important?

A: Over the past several years there has been a workforce shortage of engineers, hydrologists, geoscientists, and skilled trades such as electronic technicians and diesel mechanics. Skilled workers are the backbone of a knowledge-based economy. They are the brain pipeline we have to build in Arizona.

The Institute of Mineral Resources industry partners, such as Freeport and Resolution Copper, are demonstrating a commitment to developing an educated workforce for the mining industry by supporting K-12 STEM (Science, Technology, Engineering and Math) initiatives throughout the state. IMR includes a “Two Plus Two” education pathway that will help local community colleges attract prospective engineering students to enroll in a two-year technology-based curriculum and then encourages them to complete a mining engineering degree at an Arizona state university.

Q: How will the Institute for Mineral Resources be funded?

A: The Institute will be funded by a SFAz grant of $8.7 million and matched with the additional support of $8.8 million from 15 industry partners. Additional sources of funding are anticipated.

Q: Why should the Institute for Mineral Resources be created now?

A: It is critical to advance the understanding and ongoing research of mineral resource distribution, safety, environmental and production technologies that can ensure sustainable and competitive manufacturing processes. The Institute for Mineral Resources will be a leading global center for this necessary work. With SFAz, 15 industry partners, and the participation of all three universities, the investment will help Arizona retain and expand its dominance as the nation’s number one producer of non-fuel minerals and do so as a sustainable technology leader.
Q: How will price fluctuations in mineral prices impact this type of state capacity building effort?

A: Large mineral deposits such as those existing in many Arizona mining districts can have productive lives of a century or more. While it is true that commodities prices are dependent upon demand and very sensitive to changes in the global economy and that pricing fluctuations in copper and other minerals could have short-term impacts for workers employed by the state, industry and the academic community, Arizona must plan for the long term. Well-trained students in technology-intensive fields are important in the mining industry and also key to many knowledge-sector industries.

Q: Who is responsible for ensuring that the goals and objectives of the initiative are being met?

A: Science Foundation Arizona, as an expert science and technology neutral third party, is tasked with ongoing measuring and monitoring of the initiative benchmarks and success deliverables. Science Foundation's staff includes science and engineering PhD's who continually consult, monitor and report on the program's progress. The industry partners too have a vested stake in the initiative and will be involved in helping ensure the program's goals are met.

Q: Who is the lead researcher heading the initiative?

A: The principal investigator leading the project is Dr. Mary Poulton. Dr. Poulton is a professor and department head at the University of Arizona Department of Mining and Geographical Engineering.

For more information on Dr. Poulton visit http://www.mge.arizona.edu/faculty_staff/poulton.php
San Xavier Mining Laboratory

The Henry G. "Hank" Grundstedt San Xavier Mining Laboratory (SXML) is a multi-use university underground mining laboratory. It is used as a training and research resource by universities, federal and state agencies as well as commercial organizations. Tours and community activities are conducted to educate the general public on the importance of minerals and mining to our economy.

The San Xavier Mining Laboratory is located approximately 23 miles south of Tucson, Arizona. The facility is part of what once was part of the largest underground mine in the area. Founded in 1880 by the San Xavier Mining and Smelting Company, the mine produced silver, lead, zinc, and copper.

Beginning in 1958, the mine workings surrounding the Number 6 Shaft were leased to the University of Arizona, College of Mines, for educational purposes. In 1975, the Anamax Mining Company, then owner of the mine, donated the Number 6 Shaft and related workings to the University of Arizona. The grant included two patented lode claims totaling 35 acres. In 2007, we three adjacent mining claims were donated. The total land holding at the laboratory is nearly 90 total acres.

The facility has been featured in a number of TV shows and commercials including a *Sesame Street* episode, one of the first Chicken McNuggets commercials and more recently the Laboratory was used to film the Discovery Channel series *Faces of the Earth* and KAET’s documentary *Under Arizona*.

The primary mission of the SXML is to serve as a training and research facility. To that end, every Saturday during the academic year students in mining engineering learn the basics of working safely in an underground mine. The goal is to instill a safety culture that the students will take with them after they graduate. In addition to learning the basics of working safely in an underground mine, the San Xavier Mining Laboratory is used to facilitate training in several classes in mining engineering. For example, the Mining Health and Safety class uses the facility to conduct a complete mine rescue and recovery exercise.

The laboratory is supported by external funds. The largest contributor of user’s fees is the Laborer’s International Union of North America (LUINA). LUINA conducts initial underground miner training for tunnel miners throughout the United States. There are numerous tunnels and underground construction projects being constructed in the U.S. at any one time and there is a constant need for trained underground tunnel miners. The San Xavier Mining Laboratory is where the “Sandhogs”, now famous from the History Channel, receive much of their initial training.

The San Xavier Mining Laboratory is a unique research facility. It is one of only two or three underground facilities where research can be conducted without disrupting production. It is the only research facility to have an operating hoist, a decline for access of rubber tired vehicles and legacy rail haulage access. It is the only research facility in the U.S. with multiple levels to conduct research. As a result, the facility has been used for several unique projects critical to national defense, geosciences, mine safety and miner rescue.