

Mineral Resource

Mining News

Arizona Copper Activity

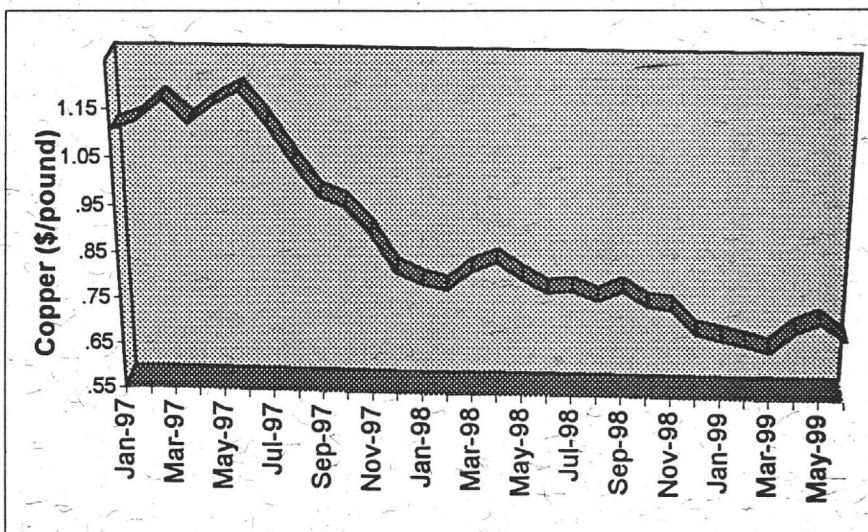
Copper prices (see chart), depressed primarily by increased South American production and decreased Asian demand, have significantly impacted the Arizona copper industry. Companies have reacted by cutting operations of their higher cost facilities, postponing development of deposits, and merging with other companies to reduce costs. The following list is a short summary of recent events.

- February, 1998 - BHP closes its sulfide operation at Pinto Valley, laying off 447 miners, about 75 percent of the work force. The sulfide operation produced 151 million pounds of copper in fiscal year 1997.
- June, 1998 - Arimetco files Chapter 11 bankruptcy, putting Johnson Camp, Zonia, and Emerald Isle up for public auction.
- June, 1999 - BHP closes the San Manuel underground mine and smelter, eliminating 2,200 jobs. The mine and smelter will be placed on care and maintenance by the end of August. San Manuel was the largest underground operation in the United States and one of the largest underground copper mines in the world. San Manuel produced over 250 million pounds of copper annually.
- June, 1999 - Summo Minerals releases Johnson Camp to Nord Resources for shares of stock. Summo purchased the open-pit, heap leach SX-EW operation from bankrupt Arimetco last year.
- June, 1999 - Asarco announces a 55-million-pound per year cutback of its 252 million pounds of annual production at Mission, laying off 150 workers. Mis-

sion, Arizona's largest silver producer, consists of an underground mine and two pits, Mission and the smaller San Xavier North.

- June, 1999 - Phelps Dodge announces closure of the Metcalf concentrator at Morenci with an anticipated reduction in production of 130 million pounds. A total of 250 miners will be laid off at Morenci; 1,650 will be laid off at Phelps Dodge's operations worldwide.
- July, 1999 - Cyprus Amax Minerals Company and Asarco Incorporated announced plans for a merger of equals to form Asarco Cyprus Incorporated. The merger would make Asarco Cyprus the largest privately-held copper producer, second only in size to Codelco, the Chilean government-owned copper company. Asarco Cyprus would also be the world's largest producer of molybdenum. The new company would have its corporate headquarters in New York and its operations headquarters in Tempe.

Since the closures and cut-backs the copper price has improved from the low 60s to the mid-70s cents per pound. Although it is projected that the closures will reduce copper production in Arizona by 396 million pounds per year, future demand for copper is expected to be strong.



New Limestone Plant at Superior

Omya Inc. held a ground-breaking ceremony on June 4 for their calcium carbonate processing plant being built in the new industrial park at Superior.

The 100,000 ton-per-year plant will use feed from a company-owned mine in California and their Queen Creek Limestone mine near Superior. Two-thirds of the plant's capacity will be food-additive grades of calcium carbonate. The remaining production will be fine-ground calcium carbonate for filler applications.

Dedication and plant start-up are scheduled for May, 2000. Capacity of the \$30 million plant may be doubled in 3 years if needed.

Copperstone

Asia Minerals has abandoned plans to conduct a feasibility study at Copperstone gold mine in La Paz County due to Royal Oak's going into receivership in March of this year.

Asia Minerals has announced a desire to buy back its shares of interest in Copperstone's underground resources reported at 827,400 tons at 0.55 opt. Asia Minerals reports the property owner is Arctic Precious Metals.

Brucite Mine and Mill Startup

Applied Chemical Magnesia (ACM) announced the near completion of a 30,000 ton-per-year brucite milling facility in Bullhead City. In conjunction, the company has also received approval of their Plan of Operation for underground mine production of brucite at their RMC Claims (White Horse Group) near Oatman.

Brucite is used as a filler in fire-retardant polymer systems, for acid neutralization, for odor control, in heavy metals precipitation, in industrial and municipal sludge volume reduction, and as a pH buffer.

Muscovite Mica Mine Planned

AZCO Mining Inc. announced a successful drill confirmation of a 20-year plus resource of mica mineralization at their Black Canyon project at the Mica Mule mine in Yavapai County. The company is developing a pilot grinding facility in Glendale, where they hope to process 10,000 ton per year.

Aggregate Demand High

The US Geological Survey, in their publication *Natural Aggregates—Foundation of America's Future*, predicts the aggregate industry is headed for tremendous growth over the next 20 years. Production of crushed stone and construction sand and gravel is the highest ever recorded in the United States. The USGS anticipates that by 2020 production of crushed stone, which is expected to increase by more than 20 percent, will be about 1.6 billion metric tons. Production of sand and gravel will be just under 1.1 billion metric tons, an increase of 14 percent.

Current production of crushed stone breaks down as follows: limestone and dolomite, 71.2 percent; granite, 15.6 percent; gabbro, basalt and diabase, 7 percent; sandstone, marble, slate, volcanic cinders, and others, 6.2 percent.

The USGS emphasize the central role aggregates play in creating products and infrastructure that underpin America's economy and growth. Aggregates are used in everything from concrete and asphalt to agriculture, medicine and household products. The uses of aggregates, as well as demand, is expected to expand tremendously in the next 20 years.

Pioneer's Expansion Continues

Pioneer International Limited announced in May that it had purchased the concrete and aggregate operations of Phoenix Redi-Mix, Inc. located in Phoenix at a total cost of approximately \$50 million. This purchase came only a few months after the acquisition of a quarry and two concrete plants in the Prescott area from Yavapai Materials that followed the 1997 purchase of 4 concrete plants and 2 sand and gravel plants in the Phoenix area from Cashway Concrete and Materials.

The most recent purchase will increase Pioneer's market share to the fourth largest aggregate producer and the second largest concrete producer in the rapidly growing Phoenix market.

Pioneer is the second largest sand and gravel producer in the world. They operate 600 concrete plants and 120 quarries in 16 countries.



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Museum News

Foundation Website

The Arizona Mineral and Mining Museum Foundation (AMMMF), a Museum support organization, is developing a new website. In addition to providing information on the Foundation's activities, publications, and volunteer efforts, the site features a virtual museum tour of the Foundation's collection and a fieldtrip to Bisbee. In each of these virtual tours, viewers can interactively pan and zoom around images using a mouse and keyboard. In the virtual museum tour visitors can spin in a 360-degree circle from one of three locations in the gallery.

Specimens will be added to the site in the future, allowing visitors to rotate and view the mineral from any angle. Eventually, a visual database of the Foundation collection will be linked to create an on-line way of studying the minerals.

The principal webmaster for the AMMMF website, Harvey Jong, notes that this site uses the latest interactive Internet technologies and is best viewed with Explorer 4.0 or higher. Also, the browser's graphics, Java and Javascript settings should be enabled. For a look at what has already been done, and a preview of things-to-come, go to: www.azminfun.com.

Earth Science Week

The second annual Earth Science Week (ESW) will be celebrated October 10 - 16. Earth Science Week, begun as a commemoration of the 50th anniversary of the American Geological Institute, is celebrated in all 50 states and in 4 foreign countries.

This year ESW in Arizona is co-ordinated statewide through volunteers from the American Institute of Professional Geologists. A sample of the events planned are: (1) family/Earth Science Day at the Museum on October 16 from 10 a.m. to 4 p.m., (2) ASU's Earth Science Day on October 16 from 9 a.m. to 3 p.m., with displays (see an Arizona woolly mammoth) and hands-on activities at the Robert S. Dietz Museum of Geology, F-wing, Physical Science Building, (3) open house and dedication of the Riparian Preserve at Water Ranch (a recharge project) in Gilbert at the corner of Greenfield and Guadalupe on October 9 from 10 a.m. to 2 p.m., and (4) tour of Glendale's Pyramid Peak Water Treatment Plant - call 623-930-2582 for reservations.

A complete statewide list of events will be posted on the national AGI website at www.earthsciweek.org, on the Arizona Geological Survey website at www.azgs.state.az.us, and on the Mineral Museum Foundation website at www.azminfun.com. If you would like to sponsor an event or learn more about ESW, contact the State Co-ordinators Dawn Garcia at 520-544-3150 or Larry Fellows at 520-770-3500.

Doug Sawyer, Director (left), visited the minerals division of the Smithsonian Institute in May to view the museum's industrial mineral displays. Pictured with Doug at the entrance to the recently renovated Geology and Mineral Exhibit are Carolyn Margolis, Chief, Exhibit Design and Development, Smithsonian Institute, Barbara Draughon, Development Officer, Smithsonian, and "Gus" Edwards, Vice President, National Stone Association.



Museum Brochure

The eagerly-awaited, long-anticipated Museum brochure became a reality this summer when the Museum's dazzling, new brochure became available. The brochure was done in a new process called dryography that lays down the ink dry, with a resulting resolution that is twice that of the wet process. The stunning photographs of world-acclaimed mineral photographer Jeff Scovil make the brochure a work of art. Be sure to pick up your brochure the next time you visit the Museum.

Earth Science Publications Released

Circular 82, *Arizona Gem Shows - 1999/2000*, and Circular 83, *Earth Science Clubs - 1999/2000*, have been released by the Department and are now available from the Arizona Mining and Mineral Museum. The circulars are \$.25 if mailed or free at the Department office.

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