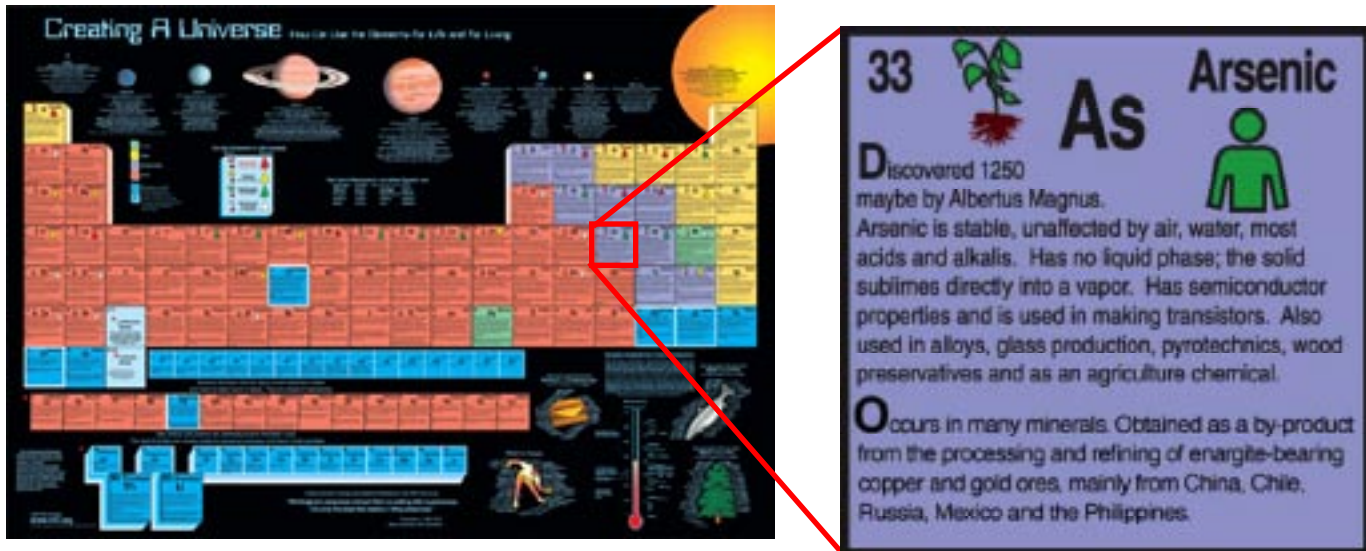


MII UPDATE

Mineral Information Institute UPDATE 18 – Winter 1999-2000

First Look at the “NEW” Teacher Helper Packet–

Creating A Universe – How We Use the Elements for Life and for Living with a new look at the “Table of Elements.” Just a part of the 60,000 packets being distributed this year.



So much information, it is 54” by 37” — *twice the size* of a normal poster,

“Global Science: Energy, Resources, Environment” 5th Edition – Available in January 2000



“Global Science . . . is the best of the three (Global Science, Holt Environmental Science, Addison-Wesley Environmental Science), and is the only one I can recommend.”

William J. Bennetta, The
Textbook Letter, Nov.-Dec. 1996

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Mineral Information Institute, 501 Violet Street, Golden, CO 80401

www.mii.org, (303) 277-9190

President's Letter from Nelson Fugate



MII On The Move

The majority of classroom teachers are doing an excellent job in the classroom, and students are doing an amazing job of learning. Teachers are experts at taking the information that is available to them and creating knowledge in the minds of their students. And that's part of the problem.

Teachers can only teach with the materials they have. When they don't have information about the importance of mining, and about the connection between every day living and the use of our natural resources, or the amazing successes behind our environmental efforts, how can teachers be expected to present their students with this information. When the information a teacher has is biased or inaccurate, how are they going to know if they don't have better sources to help them teach.

This is MII's job, and we get results. At MII, we believe quality education comes about by providing quality programs directly to teachers who ask for help, teachers who will actually use those materials in the classroom.

Classroom education is textbook driven. And textbooks seem to run out of space before they get to the issues and information that some of us believe is important. Too often, someone else, someone with a negative attitude about mining and natural resource development, has prepared those teaching materials. It is their attitude (sometimes hidden, sometimes not) which is presented in classrooms throughout the country.

Teachers and students deserve better. When textbook publishers fail to acknowledge truly important information, or worse, when they present biased, inaccurate, or out-of-date materials disguised as education, everyone suffers.

MII has never had a problem with teachers asking to receive information — the problem has been having the funds to meet the overwhelming demand from teachers. MII currently has more than 28,000 active teachers who have asked for and continue to receive classroom materials about the importance of mining and the wise development and use of our natural resources. We expect to have 8,500 new teachers asking us for help this year.

Teachers must have more and better information about the importance of our industry.

Literally! MII has moved its office to the foothills of Golden, Colorado. Our new operations include an attached warehouse, complete with a shipping and loading dock. The convenience and efficiency has the staff humming to themselves.

Be sure to note our new numbers: 501 Violet Street, Golden, CO 80401-6714; (303) 277-9190; fax (303) 277-9198; e-mail mii@mii.org; and web site www.mii.org.

The office move coincided with Jackie Evanger's retirement. After 15 years with MII, Jackie decided it was time to stay home and "muck out" her house. New on board is Jackie Beasley Dorr. With 20 years background in the mining industry, Jackie #2 will pick up where Jackie #1 left off.



Jackie Evanger



Jackie Dorr
jdorr@mii.org

MII Welcomes New Directors

Mr. Arnold has more than 25 years of experience in the mining industry in the areas of mineral processing, permitting, plan operations, and project management.

Jim earned an M.S. in Engineering Management from the University of Missouri-Rolla and a B.S. in Metallurgical Engineering from the University of Idaho.

Jim serves as the President and CEO of Knights Piésold and Co.



James R. Arnold, P.E.
Knight Piésold LLC.

MII Recognized by Industry and Government Leaders

From the BLM —

MII received the Bureau of Land Management Solid Minerals Group's first National Solid Minerals Excellence in Education Award. This prestigious award recognizes the Institute's exceptional work as a national not-for-profit organization dedicated to educating youth about the science of minerals and other natural resources and about the importance of minerals in our everyday lives.

In presenting the award, Brenda Aird, group manager for the BLM Solid Minerals Group in Washington D.C., said, "In recognition of MII's contributions, the Bureau of Land Management Solid Minerals Group is pleased to present the Excellence in Education Award to the Mineral Information Institute."



From the American Mining Hall of Fame —

The 1999 Industrial Partnership Award will be presented to MII at the 17th American Mining Hall of Fame Annual Awards Banquet, sponsored by the Mining Foundation of the Southwest. "It is the aim of these awards to provide students with a non-biased, balanced view of the development and utilization of the earth's mineral and energy resources," stated the Foundation when announcing the award. The award recognizes MII for outstanding service to the minerals and energy professions through the development of balanced education curricula and materials for use in K-12 classrooms. The Mining Foundation of the Southwest was incorporated in 1993 by combining the Mining Club of the Southwest and the Mining Club of the Southwest Foundation.

Thank You – Tom Morgan & the SW Michigan Sand and Gravel Association

After more than 20 years of operation, Tom Morgan shut down his sand and gravel operation north of Brighton, Michigan. That led to the dissolution of another organization, the Southern Michigan Sand and Gravel Association.

The association had long represented the small independent producers in the area, but as the small operators were acquired by larger companies, the association shrank to three members. Tom Morgan was president. Mark St. Charles, representing Natural

Aggregates Corp. of Milford, was secretary/treasurer, and Jack Weber, of Weber Sand & Gravel of Lake Orion, was the vice president.

To disband the association according to law, Tom Morgan chose the Mineral Information Institute to receive one-third of the association's assets. That amounted to \$7,598.35. It represents the largest contribution the Institute has received from the stone and aggregates industry.

(New Directors, continued)

Ms. Wray graduated from West Virginia University with a MS in Geology and earned her BA in Geology from Wellesley College. She spent 18 years as a geologist with Amoco Production Co. Laura is now with the Senior Geologist for the Colorado Geological Survey in Denver, Colorado.



Laura L. Wray,
Colorado Geological Survey

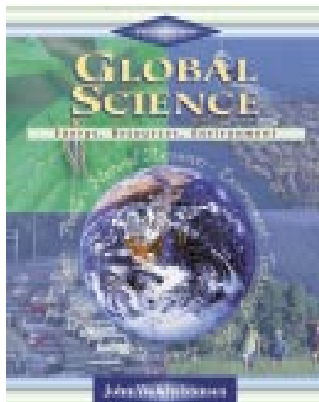
Ms. Landefeld graduated from Harvard University and has been working in the mining business for 20 years as a consulting metals exploration geologist. Leslie is the Director of Investor Relations for PolyMet Mining Corp. (POM on the Vancouver Stock Exchange) of Golden, Colorado.



Leslie Ann Landefeld,
PolyMet Mining Corporation

Global Science — 5th Edition

The new 5th Edition of *Global Science: Energy, Resources, Environment* has been completed and copies of the 700-plus page textbook will be available in January.



MII has been involved with the author John Christensen and the publisher, Kendall/Hunt, since the creation of the high school environmental science textbook in 1980.

The two and one-half year revision involved more than 1,000 man-hours of staff time and an unknown amount of time volunteered by Directors and other

interested individuals to aid in the editing and revision of the manuscript. Tom Johnson of the National Mining Association helped provide extensive research and copy suggestions to help improve energy sections of the text.

The role of MII is to supplement the resources of the publisher and author, so that shortcuts are not taken in the research and collaboration with experts, and to help the content of the text to be as thoroughly researched and as accurate and balanced as possible.

It is this philosophy that aligned MII with the author and publisher of *Global Science* 20 years ago. While other high school science texts are being accused of providing soft science or advocacy education, *Global Science* is being recognized as a fair, accurate, and balanced presentation of the issues facing our society.

The George C. Marshall Institute in Washington D.C. sponsored a national study conducted by the Independent Commission on Environmental Education. Project Director Dr. Kathleen deBettencourt said,

“Many high school environmental science textbooks have serious flaws. Some provide superficial coverage of science . . . We liked Global Science — it took a scientific approach and not a policy approach. It took a more serious look at energy and minerals and our future.”

National Education Project — Periodic Table

MII’s new **Teacher Helper** packet is titled *Creating A Universe — How We Use the Elements for Life and for Living*. It includes a very large (54” by 39”) Periodic Table created by MII, the **American Geological Society’s** new poster, *Metals Empower Us*, 12 pages of consolidated activities from **Women In Mining**, MII’s nutrition poster *Elements Comprising the Human Body*, and teacher tips on how to use the new poster in the classroom.

The *Creating A Universe* poster emphasizes the various ways we use the different elements and where they are mined or produced. A key concept of the poster emphasizes the need for the elements in everything that surrounds us, including those elements often thought to be extremely toxic to living things.

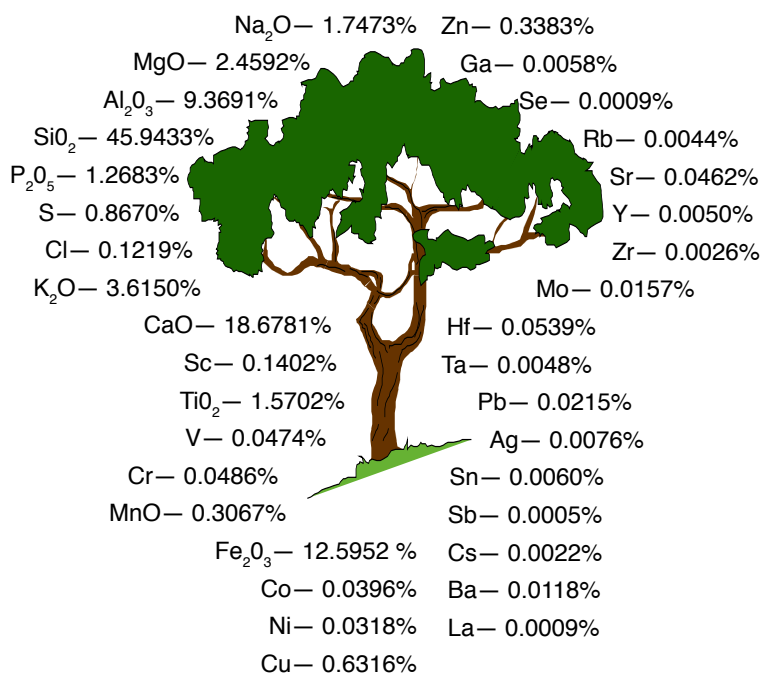
The 40,000 packets are expected to be gone by the end of the school year and no fewer than 8,500 teachers will receive MII packets for the first time. The 28,000 teachers currently using MII programs will automatically receive the new *Teacher Helper* packet.

Hazen Research Laboratories of Golden helped present this concept by providing analysis of a fish, a tree, and cheeseburger .

Highlighted at the bottom of the poster is the basic principle in biology stated by Paracelsus in the 16th Century:

“all things are poisonous and yet there is nothing that is poisonous; it is only the dose that makes a thing poisonous.”

1493 - 1541 Paracelsus,
Swiss physician and alchemist



Electronic Distribution is Working – Try It Yourself

Since start-up last November www.mii.org has had . . .

Timeframe	General Statistics	
	Oct. 1999	11/98 to 10/99
No. of Hits - Entire Site	70,000	502,477
No. of Users	7,000	47,260
Avg. Hits per Day	2,398	1,391
Packets Downloaded	1,500	12,184
Avg. User Session Length	7:08	3:42 to 9:22
Most Active Day	March 12 - 3,421 hits	
Least Active Day	December 31 - 32 hits	

In July, The Smithsonian Institution provided mineral photographs for use in our **Homework Help for Students** page on the web site, allowing students from throughout the country and around the world to download quality mineral photographs for use in their school reports. We are proud and very appreciative that The Smithsonian Institution recognized MII in such a manner.

The most downloaded file has been the *Teachers Helper* packet, **A Study of the Earth**. People must like what they see because the second most downloaded file is a humongous 10 mb file containing all three of MII's *Teacher Helper* packets. It generally takes more than 15 minutes to download this size file over normal phone lines. Try it out at www.mii.org/pdfs/all.exe.

The most popular single lesson downloaded last month was the 6-page light bulb study (www.mii.org/pdfs/everyltbulb.pdf).



“ long-termed financial security & stability — the future of mineral education”

“The Future of Mineral Education” planned giving program for MII is under way. Research has shown that one of the biggest reasons people do not include non-profits in their

wills is that they never consider the possibility. Additionally, the “gatekeepers” – the financial advisers people rely on – can make the difference in encouraging people to leave bequests to nonprofits.

The term “planned giving” refers to charitable gifts that require some planning before they are made. Planned gifts are popular because they can provide valuable tax benefits and/or income for life.

The most popular graphic downloaded . . .

- October: Toothpaste (www.mii.org/pdfs/toothpaste.pdf)
- Sept.: Resources Used to Build Your Classroom (www.mii.org/pdfs/classroom.pdf)
- August: Is It Animal, Vegetable or Mineral? (www.mii.org/pdfs/anminveg.pdf)

An example of the variety of inquiries MII receives comes from a youngster in Maryland. He writes, “ My name is Jacob Hamby. I am in the first grade. I am studying rocks. Do you have any interesting pictures or activities you could send to me? Thank you, Jacob.”



We replied, “Dear Jacob, Thank you for writing us about rocks and activities for your class. We have good news for you! MII has a web site on the Internet that is a great place to get activities and picture of rocks for [free](http://www.mii.org). Have your parents help you log onto www.mii.org and check out the pages of information that can be found at the ‘Homework Help For Students’ page. Have fun visiting our web site, and good luck with your class project.”

MII established an “endowment” to build financial strength and stability and enable the organization to continue providing free to teachers, accurate and balanced science-based mineral and natural resources education materials for K-12 classrooms at no cost to the teacher or the school.

“The Future of Mineral Education” planned giving program will enable MII to secure financial stability and security in the long-term through tax incentives for the participants. For more information on the MII Endowment and other planned giving opportunities, call, write, or e-mail (windholz@mii.org) MII and request brochure, “The Future of Mineral Education.”

Brag About Your Reclamation Successes on www.mii.org

Together let's show the public that there are more than just a couple dozen successful reclamation sites. At <http://www.mii.org/recl.html>, let us help you brag about what your company has done to improve the environment!

We are creating this new section on our web site to present positive and environmentally responsible stories that mining companies can be proud of, and the public should know about. Included with each story are color photographs that help bring the results of successful reclamation to life. A limestone quarry becomes a golf course and retirement community. A coal mine becomes a wildlife habitat that helps

restore a dwindling elk population. These and other exciting accomplishments will do much to further the public awareness of our mineral resources and the environmentally responsible companies that produce them. But we need your story, too!

Visit your company's reclaimed site and talk to the environmental manager. Gather details such as the duration of mining activity, the remediation required at the end of mining, and the methods used to complete the reclamation. Examples of current site use such as hiking trails, city parks, or wildlife habitat should also be highlighted. Send us your story, along with color photographs.



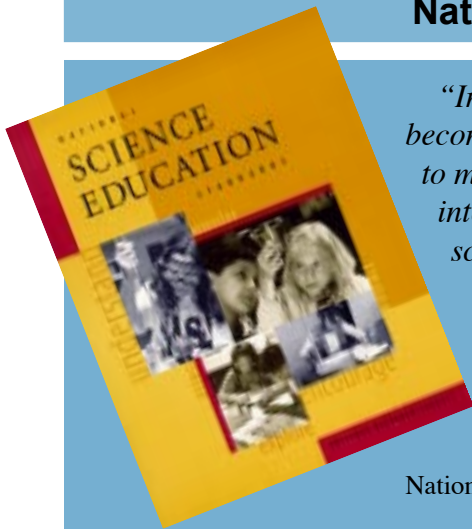
Urad Site near Empire, Colorado – *Where a tailings pond returned to a meadow.*

Send us your brochures, pamphlets, and stories. Together let's show the public that there are more than a couple dozen successful mine reclamation sites.



Black Diamond Golf Course in Lecanto, Florida is in stark contrast to the rugged nature of the unreclaimed portion of the limestone quarry.

National Science Education Standards



“In a world filled with the products of scientific inquiry, scientific literacy has become a necessity for everyone. Everyone needs to use scientific information to make choices that arise every day. Everyone needs to be able to engage intelligently in public discourse and debate important issues that involve science and technology.

Scientific literacy also is of increasing importance in the workplace. More and more jobs demand advanced skills, requiring that people be able to learn, reason, think creatively, make decisions, and solve problems. An understanding of science and the processes of science contributes in an essential way to these skills.” -----taken from An Overview / National Science Education Standards /National Research Counsel

Do MII’s educational materials meet the new national science standards for content?

Absolutely.

All activities, lesson plans and posters in all *Teacher Helper* education packets have been correlated to the seven different content standards for the three different grade level groupings established by the National Science Education Standards.

MII’s programs do an excellent job of helping teachers teach to these new standards, from kindergarten through high school. This is why so many teachers are asking to receive MII’s resource education packets, and why 60,000 packets will be mailed this year.

The Standard for content, what is actually taught in the classroom, is only one of six different standards established in the NSE to achieve the goal of scientific literacy. MII programs are also being used in a variety of ways to help meet these additional standards. The other standards are:

- Science Teaching Standards
- Standards for Professional Development for Teachers of Science
- Assessment in Science Education
- Science Education Program Standards
- Science Education System Standards

MII has met the challenge and teachers and curriculum specialists throughout the country are beginning to use MII materials for teacher in-service training programs and school district and statewide teacher conferences.

Your materials are supportive of the National Science Standards .My students were fascinated.

- Marilyn Olsen, Everett, Washington

Your materials directly address Maryland State learning outcomes in social studies.

– Helen Thompson, Owings, Maryland

I use your materials because they match district curriculum standards.

– Barbara Steel, Burbank, California

The skills in this unit are correlated with our district and state standards.

– Anthony Ware, Anderson, South Carolina

Almost everything is in the 5th grade science curriculum standards.

– Holly Leatherman, Lexington, North Carolina

Your stuff is good mix of literature and science, and work in math.

– Dan Stangby, Durango, Colorado



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Lineage of the MII Baby

The MII Baby was created in the mid-1980s by Ted Mullings of Leadville, Colorado, for a special MII program.

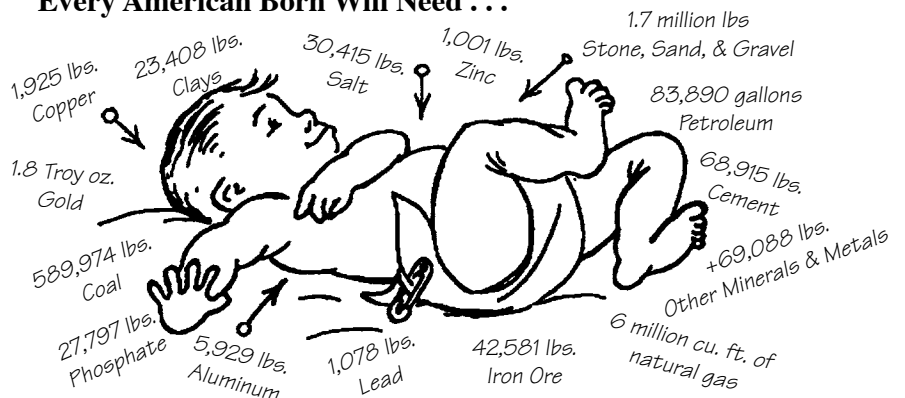
To annually update the MII Baby, consumption statistics are derived primarily from the USGS Commodity Reports, with a little massaging and further research by Leslie Coleman of the NMA. This is where the US Annual Mineral Use Per Person statistic is created.

For 1998, that use was 47,338 pounds of newly mined minerals and metals for every one of the 270 million people in the United States.

To update the MII Baby, these annual numbers are multiplied by the average life span for newborns in the US. In 1997, average life expectancy (at birth) in the US was 76.5 years, up 4 years since 1996. We guess-timated the 1998

US life expectancy to be 77 years. Therefore, 77 years x 47,338 lbs = 3,645,026 pounds of minerals in a lifetime. You can always download the most current MII Baby from our web home page, www.mii.org

Every American Born Will Need . . .



3³/₄ million pounds of minerals, metals, and fuels in a lifetime