

# Teachers' Winter 2009 Update

## Mineral Resources Education Program of British Columbia

WINTER 2009

ROCKS,  
MINERALS,  
MINING &  
GEOSCIENCE  
IN THE  
CLASSROOM



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### All the Best in 2009!

Welcome back to school! We hope that you have enjoyed time with family and friends during the holidays, and have rested up and recharged your batteries for the year ahead. Although we are all impacted by the shrinking world economy, your work with young people continues. In these times, the importance of education is magnified, and MREPBC is pleased to continue to offer support for you and your students. We certainly wish you all the best in this new year.



### MINERAL EXPLORATION ROUNDUP 2009

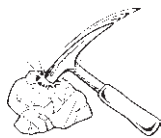
WESTIN BAYSHORE, VANCOUVER - JANUARY 26 - 29

*Mineral Exploration Roundup* is western Canada's premier mineral exploration conference, held annually in Vancouver since 1984. *Roundup 2009* marks the sixth year that MREPBC will be working with the conference host, the *Association for Mineral Exploration BC (AME BC)*, to integrate teachers and students into this event. It is a great place to see the multi-disciplinary nature of the minerals industry and how many different professional and technical careers are involved. As welcome guests of AME BC, teachers and students attend for FREE. MREPBC will present special programs for invited elementary classes and will host a teacher workshop for the *PDAC Mining Matters' Discovering Diamonds* resource unit, as well as coordinate all teacher and secondary student participation throughout the week.

#### TEACHERS AND SECONDARY STUDENTS

Teachers are invited to attend *Roundup* for their own professional development on any one of the conference days. Each day will feature one or more technical sessions on different topics. Monday, January 26<sup>th</sup> features a session on sustainability. Tuesday's sessions highlight new ideas in geoscience and new BC discoveries. Wednesday's sessions focus on discoveries across Canada and around the world. Finally, Thursday, January 30<sup>th</sup> features sessions on new exploration techniques and a look at the future of mineral commodities. For more information visit: [http://www.amebc.ca/docs/ru\\_2009brochure\\_web.pdf](http://www.amebc.ca/docs/ru_2009brochure_web.pdf).

Secondary science, socials and career education teachers are also encouraged to bring their students to *Roundup 2009*, either in small groups or as an entire class. The Core Shack, Prospectors' Tent and hundreds of exhibits demonstrate how broad-based (e.g. natural sciences, engineering, business, law, etc.) and technical this sector is, and how many different people work these inter-related fields.



To facilitate students' visits MREPBC will help cover costs

*ROUNDUP, continued Page 7*



#### ROUNDUP ROCKHOUNDS - JAN. 27<sup>TH</sup>

Five elementary classes from Lord Roberts and Florence Nightingale schools in Vancouver and Inman Elementary in Burnaby are our invited guests this year. These students have been working on geoscience and mining units this fall. Their class projects will be on display at *Roundup* all week. They will be engaged in hands-on learning throughout the day and will meet and interact with exploration geologists and the people who work with them.



#### WHAT'S INSIDE?

Workshops, Conferences and Events .....	2
MREPBC Resources and Workshops .....	3
Resources for Teachers and Students .....	4-5
Workshops and Field Trips for Students .....	6
Involve Your Students! .....	7
News .....	7
Registration and Orders .....	8



To express interest in attending the following workshops, conferences and special events, please complete the registration form on Page 8. The MREPBC is pleased to provide limited TOC support where indicated. **TOC**

### KEG 2009 COMMUNITY LECTURE SERIES, JANUARY - APRIL 2009

Hosted by the Kamloops Exploration Group (KEG), this *free* lecture series is designed to improve the general public's understanding of Earth Sciences and mineral exploration. The lectures are presented two or three times a month at 7:00 pm, at the Forsters Convention Centre at the Best Western Towne Lodge in Kamloops. They are a great opportunity to meet with local geologists and find answers to your questions about rocks, minerals, and fossils. The first lecture is January 8<sup>th</sup>. For more information visit: [www.keg.bc.ca](http://www.keg.bc.ca).



### GRADE 5 MINING AND DISCOVERING DIAMONDS WORKSHOPS, KAMLOOPS - FEBRUARY 20

MREPBC is offering two inservice workshops at the KTTA conference in Kamloops in February. A half-day workshop for our flagship resource unit, the *Grade 5 Integrated Resource Unit on Mining*, will be offered for intermediate teachers. A half-day, hands-on workshop for senior secondary science and Geography 12 teachers for a *NEW* resource unit, *Discovering Diamonds*, will also be presented. Information on these comprehensive resource units is on Page 3. Registration information will be sent by the KTTA to its members in mid-January.

### K-3 KIDS AND ROCKS, GRADE 5 MINING AND DISCOVERING DIAMONDS WORKSHOPS, PG - MARCH 6



MREPBC is offering three inservice workshops at the North Central Zone Conference in Prince George. Primary teachers are invited to attend the half-day, hands-on workshop for the *K-3 Integrated Resource Unit: Kids and Rocks*. Intermediate teachers are invited to participate in the *Grade 5 Integrated Resource Unit on Mining*. Senior secondary science and Geography 12 teachers can acquire a host of new lessons and activities for their courses in the new *Discovering Diamonds* workshop. Information on these comprehensive resource units is on Page 3. Registration is online at: [www.bctf.ca/northcentralzone](http://www.bctf.ca/northcentralzone).

### KEG CONFERENCE, KAMLOOPS - APRIL 7-8 **TOC**

The Kamloops Exploration Group will be holding its annual conference at Forsters Convention Centre in Kamloops. KEG encourages teachers to become more aware of the minerals industry through their conference and have again offered to waive the registration fee. MREPBC will provide TOC support for a limited number of teachers to attend. To register through the MREPBC, see Page 8. For more details on the conference as they are posted visit: [www.keg.bc.ca](http://www.keg.bc.ca).



**Registration deadline: March 31.**



### BC GEM SHOW: ROCKS TO RICHES, ABBOTSFORD - APRIL 17-19

This annual show at the Central Fraser Valley Fairgrounds features dealer and club displays with rocks, minerals and gems from across BC, as well as a children's creative workshop. Admittance to the show on Friday, April 17<sup>th</sup> is *free* for students accompanied by a teacher and chaperoning adults. For more information and to book your class visit on "Student's Day" visit: [www.lapidary.bc.ca/gemshow.html](http://www.lapidary.bc.ca/gemshow.html).

### EDGEO WORKSHOP, UBC - APRIL 17

This all-day workshop for teachers held at the Earth and Ocean Sciences building at UBC will focus on an introduction to minerals and rocks, plate tectonics, volcanoes and earthquakes. Registration fee (\$50) includes many resources such as a set of rocks and minerals, a fossil set, *Vancouver City on the Edge* (book), a variety of posters and a resource CD. To register, contact Erica Williams: [ewilliams@sd43.bc.ca](mailto:ewilliams@sd43.bc.ca).



### MINERALS NORTH 2009, FORT ST. JAMES - APRIL 21-23 **TOC**

This conference brings the minerals industry together with a broad spectrum of people in northern BC communities. The theme this year is *Exploration to Reclamation*. *Minerals North* offers teachers a great venue to meet people and learn about mining and exploration projects, and to get more information on the impacts and benefits of mining. The organizers of *Minerals North* will again waive the conference registration fee for local teachers to attend on **April 22**. MREPBC will provide TOC support for a limited number of teachers to attend. For more details on the conference itinerary as they are posted, visit: [www.mineralsnorth.ca](http://www.mineralsnorth.ca). **Registration deadline: April 16.**



# MREPBC Resource Units and Workshops

WINTER 2009

MREPBC resource units are available to teachers only through half-day (3.5-4 hours) workshops presented by MREPBC's teacher-partners. Workshops can be held anywhere in BC on a Pro-D day, during a PSA or other conference, or after school. Registration is open to teachers, teacher-librarians, TOCs and student teachers; participants must be teaching the grade level or subject intended for the resource unit. There is a non-refundable \$50.00 registration fee (per teacher), but no charge for resource kit materials, which represent a \$250-\$350 value - they are FREE!!

For more information or to book a workshop: Phone Robert Jackman at 604-681-4321 ext. 108.

## ***K-3 INTEGRATED RESOURCE UNIT: KIDS AND ROCKS***

This teacher-written, comprehensive resource unit uses a topic of real fascination to most children – rocks – to build literacy skills, address topics in the social studies, and to integrate math and fine arts. It is a marvellous language arts unit which validates a child's natural curiosity about the world around them, and introduces them to basic concepts of Earth Science, knowledge that is so crucial to being an informed citizen in our world today.



Topic 1 - Introduction to Rocks

Topic 4 - Mining and Community in BC

Topic 7 - Geography

Topic 2 - Introduction to Minerals

Topic 5 - Three Types of Rocks

Topic 8 - Safety

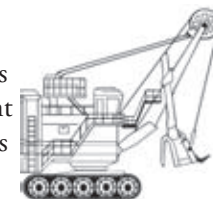
Topic 3 - The Importance of Rocks and Minerals

Topic 6 - History and Mining in BC

The kit includes: an instructional binder with Blackline Masters; colour photos of the mining process; B&W photos from a historical mining community; a support package with several posters; *What's a Mine?* and *I am an Exploration Geologist* (colouring books), *It Comes From a Mine*, *Gold Fever Trail*, *Rocks & Soils*, *Let's Go Rock Collecting*, *A Field Guide to the Identification of Pebbles*, *Mining Community: Elkford*, BC books and *Elkford* activity book; plus four rocks, one mineral, and a streak plate; and one video on DVD. Plus *Mining in BC* bookmarks and more!

## ***GRADE 5 INTEGRATED RESOURCE UNIT ON MINING***

Intermediate students enjoy their first opportunity to learn about mineral resources and the mining process. This unit uses mining as the theme for learning across the curriculum. Students examine mining in the past, present and future, learning about mining communities, the discovery and recovery of ore deposits, the uses of metals in modern society, mining careers, and mining and the environment.



### ***Section I: Mining in the Past***

Topic A - Novel Study: *Pit Pony*

Topic B - A Field Trip to Britannia

### ***Section II: Mining in the Present***

Topic C Mining - What's In It For Me

Topic D - From Hard Rock to Heavy Metal

Topic E - Mapping The Mines

Topic F - Trucks 'n Tools

Topic G - Here's a Career!

Topic H - From Mine To You

Topic I - Environmentally Involved

### ***Section III: Mining in the Future***

Topic J - Mines of Tomorrow

### ***Section IV: Integration***

Topic K - Integration Webs

The kit includes: an instructional binder with teacher information; Blackline Masters and student activities; two sets of B&W historical slides from Britannia on DVD; colour photo cards; a support package with several posters and mineral information pamphlets; *Pit Pony*, *Mining Explained*, *A Field Guide to the Identification of Pebbles*, *Mineral Mania!* and *What's a Mine?* and *I am an Exploration Geologist* (colouring books); hand samples of seven different rocks, five ore minerals, and five streak plates; and eleven videos on two DVDs. Plus *Mining in BC* bookmarks and more!

## ***DISCOVERING DIAMONDS - NEW FROM PDAC MINING MATTERS!***

A new comprehensive resource unit written by geophysicist and teacher Stella Heenan for the *PDAC Mining Matters* program in Ontario. The resource uses *diamonds* as an integrating theme through which to study a variety of concepts in senior level Earth Sciences 11, Geology 12 and Geography 12 courses, including the rock cycle, plate tectonics, surface processes, environmental impacts and reclamation, geologic time, et al. It is an excellent vehicle to help students learn about Canada's diamond bearing deposits (NWT, ON), diamond formation, and the modern technology being applied to the discovery, extraction, and processing of diamonds.



Topic 1 The Earth's Interior

Topic 3 Surficial Processes and the Rock Cycle

Topic 5 Diamond Mining in Canada and the Mining Sequence

Topic 2 Tectonic Processes

Topic 4 The Science of Exploration

The kit includes: a 264 page instructional binder with teacher information; Blackline Masters and student activities; four CDs (*Diavik: Constructing a Legacy*; *Discovering Diamonds Presentation*; *The Ekati Story*; and *Discovering Diamonds Resource CD*); *Canada's Northern Diamonds* (book); a kimberlite sample; and a small vial of indicator minerals.

# Resources for Teachers and Students

## EXPLORE GEOSCIENCE CDS

The *Geological Society of America (GSA)* has an extensive collection of resources available for K-12 teachers, including many downloadable lessons and links to lesson plans on their Web site: <http://www.geosociety.org/educate/resources.htm>. The *Explore Geoscience* series of CDs are comprehensive resources on a variety of topics: plate tectonics, minerals, geologic time, caves and karst, tsunamis, etc. Particularly unique is the GSA resource on *Forensic Geology*, with its intriguing lessons and activities that show how geological materials help solve crime. Each CD is rated for grade level, and may be ordered for \$10US at: [www.geosociety.org/education/cds.htm](http://www.geosociety.org/education/cds.htm).



## SUSTAINING THE FUTURE

*Highland Valley Copper (HVC)* has produced a new DVD about their mine near Logan Lake, BC,



one of the largest open pit operations in North America. *Sustaining the Future* addresses many aspects of this world-class operation: the open pit mining process, mill operations, markets for HVC's copper and molybdenum, reclamation at the mine and important on-site recycling programs, economic and other contributions to nearby communities, and its diverse and highly-skilled workforce. Offering excellent video footage and current information, you may order a **free** DVD on Page 8.

## JE SUIS UN GÉOLOGUE D'EXPLORATION

Enseignez-vous un programme sur les roches? Le MREPBC, en association avec l'AME BC, a développé un cahier d'activités et de coloriage pour aider l'instruction et l'exploration de l'emploi d'un géologue. Le cahier d'activités raconte l'histoire de trois géologues - George, Sophie, et Fred - qui quittent leurs maisons pour aller vers un camp de minage. Le cahier inclut les exercices en la création et utilisation des cartes, classement des minéraux, et vocabulaire.



Translation en Français par Suzanne Wernli-Roy à John Field Elementary en Hazelton, *Je suis un géologue d'exploration* and the English version, *I am an Exploration Geologist*, may be downloaded: [www.bcminerals.ca/pdf/JeSuisGeodEx.pdf](http://www.bcminerals.ca/pdf/JeSuisGeodEx.pdf) or [www.bcminerals.ca/pdf/lamExGeo.pdf](http://www.bcminerals.ca/pdf/lamExGeo.pdf).

## FREE MREPBC COLOURING BOOK, POSTER AND BOOKMARKS

Don't forget to order your **free** MREPBC-developed materials: *I am an Exploration Geologist* colouring book, *Mining in BC* poster and bookmarks (2008) to complement your mining or geology unit. Supplementary resources and activities for the *Mining in BC* poster are available in PDF at: [www.bcminerals.ca/files/teacher\\_resources/000244.php](http://www.bcminerals.ca/files/teacher_resources/000244.php). See Page 8 to order.

## EARTH SCIENCE CAREERS

Another important Canadian initiative created under the banner of the *International Year of Planet Earth* is a new Web site which introduces the enormous variety of *careers in Earth Science*. Interested students can find a wealth of information navigating around the site to question areas such as *Where Can I Learn? What Can I Be?* and *What Is It Like?* The site identifies dozens of Earth Science careers as varied as aerial photograph interpreter, geochronologist, and waste water laboratory technician who work in sectors as varied as energy education, the environment, mineral exploration and mining. Personal profiles of Earth scientists from across Canada give insight into the real work they do. Take a look at: <http://www.earthsciencescanada.com/careers/>.



## WHY EARTH SCIENCES?

From Dr. Alan W. Morgan, regarding the International Year of Planet Earth in *What on Earth*, Winter 2007

*Earth scientists contribute a lot more to the well-being of humanity and our survival on this planet than almost everyone realizes. If it were not for Earth scientists our urbanized societies simply would not survive. Imagine a world without cities — indeed, virtually no houses — (no aggregates or building stones), or a world without transport other than animals (no fuel supplies or metals for vehicles). Imagine a world where humans would live in total ignorance of volcanoes, earthquakes, tsunamis, landslides and other natural hazards. Imagine a world where you would eat only food that you and your neighbours could grow with implements that are made from wood; a world where practically all water supplies would be from rivers. Imagine a world without computers or any type of electronics, likely no entertainment except for wandering minstrels and local storytellers and where you would be unable to travel more than 50 miles a day. The post medieval world that we are familiar with is a world that Earth scientists have explored and understood over the past two centuries.*

## HOT RUBBLE

*Hot Rubble* is an Australian Web site for young people that introduces engineering careers in the minerals industry. There are profiles, videos, blogs, photos - all artfully designed to encourage further exploration of the site. Future engineers will find this entertaining and informative. Visit: <http://www.hot-rubble.com/>.



# Resources for Teachers and Students

## SUPPORT FOR SUSTAINABLE RESOURCES 11 AND 12

All of BC's resource sectors' outreach programs provided guidance on the development of two new courses, *Sustainable Resources 11 and 12*, which were implemented this past fall. Much like the industries they address, they are truly multi-disciplinary courses which integrate science, technology, resource management, social issues, economics and careers. Grade 11 is a survey course which explores the many facets of BC's resource industries: agriculture, fisheries, forestry, mining and energy. Grade 12 allows students to investigate in more detail one of these industries.



Three secondary level MREPBC resource units (listed below) have been assessed and included on the BC Ministry of Education's list of recommended resources for their value in addressing the mining curriculum in both courses. The instructional binders for each resource are now available to download as PDFs from our Web site. (See links below.) A package of supportive print materials and AV resources may be ordered from MREPBC for \$25.00. The experiment materials for the *Science of Mining Unit* may be ordered from MREPBC for \$50.00.

### SCIENCE OF MINING: A RESOURCE UNIT

Mineral resource development requires expertise in all fields of science. This unit consists of lab activities that mimic the mining process. It introduces rocks and minerals as nonrenewable resources, environmental assessments and impacts at mine sites, the value of minerals in daily life, and the techniques involved in ore extraction, processing, and refining.

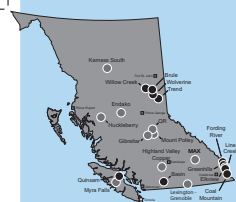


<http://www.bcminerals.ca/pdf/ScienceofMining.pdf>

### SOCIAL STUDIES 10/11 MINING IN BC

Complex issues such as mining are better understood when examined from all angles and discussed. This unit increases students' knowledge of the minerals industry in BC and reviews the process of mine development. The heart of the unit is a fictional case study of a mine following the Environmental Assessment Act in BC. Once students have gained a basic overview, they are divided into groups that take on the role of a stake holder in the development of the proposed mine. Group research and evaluations are compared in discussion and consensus is sought once all groups have provided input.

[http://www.bcminerals.ca/files/mrepbc\\_resource\\_units/000030.php](http://www.bcminerals.ca/files/mrepbc_resource_units/000030.php)



### CAREERS IN THE MINERALS INDUSTRY

<http://www.bcminerals.ca/pdf/CareersFolio.pdf>.

This MREPBC produced video addresses career opportunities in the industry. It shows people in a wide variety of occupations that are involved in all aspects of mine development and operation, in corporate head offices, and in the mining supply and service sectors. The companion binder provides additional information on careers, training and earnings. A supplementary teacher-written unit *Investigating Careers in the Minerals Industry* may also be downloaded from the Web site at: <http://www.bcminerals.ca/pdf/InvestigatingCareers.pdf>.



### JOIN THE GEOLOGICAL ASSOCIATION OF CANADA!



The *Geological Association of Canada* (GAC) is offering memberships to teachers at the low cost of \$10. This includes access to online versions of their newsletter *Geolog* and their magazine *Geoscience Canada*. GAC members also get discounts on all GAC publications and a lower registration fee for the annual conference, which is held in different cities across the country each year. The details and application form for teacher memberships can be found at: <http://www.gac.ca/aboutgac/join.php>.

### HOW IT'S MADE

*How It's Made* is a great program on the *Discovery Channel* that looks at the materials and processes involved in making different things from paint to axes. It is no surprise that most of the items they feature are made from mineral resources. For example, Season 9 Episode 10 shows how scalpels, oil paints, ice axes and bobby helmets are made. All program videos may be viewed on the *Discovery Channel* Web site: <http://www.discoverychannel.ca/shows/showdetails.aspx?sid=342>. Direct your students here for their research or, if you have the equipment, project the videos in your classroom when you are doing a unit on mining.



WORKSHOPS, CONFERENCES, ETC. continued from Page 2

### K-3 KIDS AND ROCKS AND DISCOVERING DIAMONDS WORKSHOPS, CRANBROOK - APRIL 24

MREPBC is offering two workshops at the regional conference in Cranbrook. Primary teachers are invited to attend the half-day, hands-on workshop for the *K-3 Integrated Resource Unit: Kids and Rocks*. Senior secondary science and Geography 12 teachers are invited to the half-day workshop for the new *Discovering Diamonds* resource unit which offers a host of new lessons and activities for those courses. Information on these comprehensive resource units is on Page 3. Conference registration information will be forthcoming from the CDTA in early 2009.



# Workshops and Field Trips for Students

Field trips and workshops provide hands-on learning that enhances curriculum you cover in class. Outside learning is crucial to mineral education, whether it be to support Earth Science or mining units. Hands-on workshops that come to your classroom, like *Yukon Dan* and *Science in Motion* (below), are another terrific way to engage your students!

## **YUKON DAN: GOLD PANNING IN THE CLASSROOM**

Yukon Dan Moore is a world-class gold panner who for the last 16 years has presented a one-of-a-kind, hands-on workshop in classrooms around BC and across Canada. Now based in the Lower Mainland, Yukon Dan comes equipped with two portable, gravel-lined "streams" for panning and a marvelous display of panning equipment and real gold nuggets to examine.



Dan's workshops are 75-85 minutes long, and can handle up to 30 students. Students rotate through three work stations: panning for gold, heavy mineral examination and magnetic mineral separation, and a mining word search (secondary) or gold panner colouring sheet (elementary).

Appropriate for *all grade levels*, Dan's presentations support science and social studies learning outcomes related to Earth Science, geology, natural resources, the history of BC, and the history of Canada. The cost is \$150 per session (for up to 30 students only).



For more information and to book a workshop, visit [www.yukondan.com](http://www.yukondan.com) or phone or email Dan at (604) 948-4941 or [gold@yukondan.com](mailto:gold@yukondan.com).

## **SCIENCE IN MOTION: HANDS-ON CLASSROOM WORKSHOPS**

Ms. Cheryl Sandvoss and Trudy Pacholko, the creators and presenters of *Science in Motion*, are an energetic team based in Prince George who have developed a series of six, hands-on science workshops for K-7 students. High-interest topics to choose from include Rocks and Minerals, Dinosaurs (K-3), Weather, Simple Machines, Forensic Science and Insects. *Science in Motion* brings all the materials required (e.g. rock and mineral samples, microscopes, fingerprinting powder, etc.) to engage your students and build their enthusiasm for exploring science.

Each workshop is 90 minutes long and includes a group introduction, breakout groups at 3 to 9 'Investigation Stations' for hands-on time, and a group summary. Introductory and follow-up worksheets are also provided.



*Science in Motion* programs are available weekdays, from September to June. The cost is \$150 per workshop in the Prince George area. Additional travel costs will be applied for travel outside of city limits.

Find out more about *Science in Motion* at: <http://scienceinmotion.ca/index.html>. To book a workshop phone either Cheryl 250-962-6174 or Trudy 250-962-2472 or email: [scienceinmotion@shaw.ca](mailto:scienceinmotion@shaw.ca).

## Field Trip Destinations

### **MREPBC WORKSHOP TRAVEL SUBSIDIES**

Subsidies of \$100-\$200 are available to teachers for field trips to geoscience or mining destinations and in-class workshops. The subsidy is applicable for *Yukon Dan* workshops and select *Science in Motion* workshops. Download the application form at: [www.bcminerals.ca/pdf/FieldTripSubsidy2008-2009.pdf](http://www.bcminerals.ca/pdf/FieldTripSubsidy2008-2009.pdf).



### **BC MUSEUM OF MINING AND EPCOR WATER TREATMENT CENTRE**

The BC Museum of Mining is offering tours of the museum along with visits to the new EPCOR Discovery Centre and water treatment plant built to treat acid rock drainage coming from the historical Britannia Mine. To find out more about this tour or to book your class, visit: <http://www.bcmuseumofmining.org/education-ebcor.html> or phone Rory at the BCMM (1-800-896-4044 ext. 226).



### **PACIFIC MUSEUM OF THE EARTH, UBC**

Located in the Earth and Ocean Sciences department at UBC, this is a great place to enhance your unit on rocks and minerals. Visits are *free* and are suitable for K-12. Contact: Mackenzie Parker: 604-822-6992. Web site: [www.eos.ubc.ca/resources/museum/index.html](http://www.eos.ubc.ca/resources/museum/index.html).



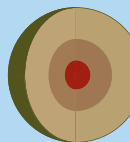
### **SFU EARTH SCIENCES LAB**

Located at Simon Fraser University, Burnaby, BC. Open Monday and Friday only. Visits to the lab are *free*. Contact: Ms. Robbie Dunlop at [rdunlop@sfu.ca](mailto:rdunlop@sfu.ca).



### **EARTH'S CRUST & ROCKS 101**

H.R. MacMillan Space Centre & Vancouver Museum, Vancouver, BC. *Earth's Crust* is a 45-minute planetarium show that answers geologic questions about the Earth. *Rocks 101* is a 1-hour hands-on workshop on rock identification and the geological history of the Lower Mainland. For information call 604-738-7827 ext. 241 or visit: [www.hrmacmillanspacecentre.com/education.htm](http://www.hrmacmillanspacecentre.com/education.htm).



### **COURTENAY DISTRICT MUSEUM AND PALEONTOLOGY CENTRE**

Offers school groups year-round guided tours of the museum and the Puntledge River Elasmobranch (Late Cretaceous marine reptile) site to collect fossils. Contact: 250-334-0686 or visit: [www.courtenaymuseum.ca](http://www.courtenaymuseum.ca).



## MINING CLASS OF THE YEAR POSTER CONTEST

Just a reminder that the MREPBC is still calling for entries to our **BC Mining Class of the Year 2009** poster contest for elementary students. The theme for this year's competition is *It Comes From a Mine*. If you are teaching a mining unit, this is a great way to engage your students in more in-depth learning and open their eyes to the reason we have mined for thousands of years.



Fourteen prizes will be awarded! One *grand prize* for the winning class and 13 draw prizes for entering classes and teachers. Download contest guidelines and sources of information for the contest at: [www.bcminerals.ca/pdf/BCMCYr2009.pdf](http://www.bcminerals.ca/pdf/BCMCYr2009.pdf). **Entry Deadline: Feb. 2. Submission Deadline: Apr. 10.**

## THE WHERE CHALLENGE: STUDENT CONTEST

What on Earth is your stuff made of? And WHERE on Earth does it come from? Those are the questions behind a Canada-wide contest for children (ages 10-14) run as part of Canada's celebration of the *International Year of Planet Earth*. Enter as a group or individual. All you have to do is tell a story about any object in your home or school, one or more non-renewable Earth resources needed to make that object and WHERE on Earth those resources come from. Poems, essays, plays, musical compositions, home movies or any form that can be submitted digitally are welcome. There are thousands of dollars in prizes for both individuals and classes. For entry forms and information visit: [www.earthsciencescanada.com](http://www.earthsciencescanada.com). **Deadline: Feb. 28.**



## BC MINING WEEK COMMUNITY FAIR - MAY 13

To celebrate *BC Mining Week 2009* geoscience, mining organizations and exploration companies will work together to host a one day community fair in the courtyard at the Vancouver Art Gallery on Wednesday, May 13. MREPBC will arrange a variety of hands-on activities, including geologic mapping, gold panning, a treasure hunt, fossil making, and others, for visiting student groups to participate in during their visit. This special fair is a great learning opportunity for students who are learning about geology, mineral resources and mining in the classroom.



MREPBC will coordinate the participation of ten classes to attend this is *free* event and will cover the cost of transit and travel (within a limited area). To have your class attend, please fill out the registration information on Page 8.

## EARTH SCIENCE JOKE OF THE DAY

Why did the geologist wash off the outcrop?  
He wanted to wipe the slate clean.



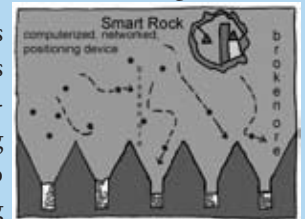
## NEW UNDERGROUND POSITIONING SYSTEM

GPS (Global Positioning System), which relies on orbiting satellites to pinpoint receiver locations on Earth, is commonly used in open pit mines to monitor trucks, shovels and other mobile equipment on site. However, GPS does not work underground.



Laurentian University researcher Greg Baiden and Penguin Automated Systems Inc. are developing an *Underground Positioning System* (UPS) with a range of some 2 km through rock and accuracy better than 3%. The system uses very low frequency (VLF) and relies on a network of *satellites* placed to surround an orebody or underground workings. The system has been developed in block cave mining research.

The concept behind the work is based on creating synthetic rocks (Smart Rocks™) with embedded networking and positioning systems that can be injected into the mine workings. Positioning of each synthetic rock requires using large scale VLF transmission systems embedded in the mine acting like satellites. Each synthetic rock keeps track of time-of-flight from each satellite at a known position. The position and time-of-flight information is then used to triangulate the synthetic rock position.

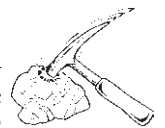


Cross-section through block cave mining

Mine trials are planned for 2009. This new UPS has tremendous potential for finding trapped miners, for equipment mechanisation and mine wide asset management. To find out more visit: <http://www.penguinasi.com/>.

## ROUNDUP, continued from Page 1

of travel to the Westin Bayshore, will provide a *Roundup* Treasure Hunt booklet to help explore the convention exhibits, and will work with AME BC to have *guides-on-call*, post-secondary mining and geoscience students, to accompany our teacher and student guests.



## DISCOVERING DIAMONDS WORKSHOP - JANUARY 29<sup>TH</sup>

Secondary science and geography teachers are invited to a full day at *Roundup* for a combination instructional workshop and conference exploration on Thursday, January 29<sup>th</sup>. MREPBC teacher-partners Kathy McDonald, Devon Ross and Aliisa Sarte will present a hands-on workshop for *Discovering Diamonds*, a new resource from *PDAC Mining Matters* which uses *diamonds* as a theme for addressing a host of geoscience topics. More information on this comprehensive resource unit can be found on Page 3. You may register for this workshop on Page 8.

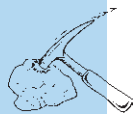


# Registration

# Materials for Order

## MINERAL EXPLORATION ROUNDUP 2009

- I will attend the *Roundup 2009* for my own professional development (Select one day below.)
- I will bring secondary students (names attached) to attend *Roundup 2009* (Select one day below.)
  - Mon. (Jan. 26)  Tues. (Jan. 27)  Wed. (Jan. 28)  Thurs. (Jan. 29)
- I will attend *Discovering Diamonds* workshop (Thurs. Jan. 29).
  - \$50 registration fee (payable to MREPBC) is in the mail.



Please complete the contact information below and return to the MREPBC via fax. You will be contacted with additional details regarding teacher and student programs. **Deadline: January 16.**

## KEG CONFERENCE - APRIL 2009

I would like to attend the *KEG* conference in Kamloops on:

- Tuesday, April 7    or     Wednesday, April 8
- I require a TOC (My principal's and superintendent's contact information is attached.)

Complete and fax the contact information form below. **Deadline: March 31**

## MINERALS NORTH - APRIL 2009

I would like to attend the *Minerals North 2009* conference in Fort St. James on:  Wednesday, April 22, 2009

- I require a TOC (My principal's and superintendent's contact information is attached.)

Complete and fax the contact information form below. **Deadline: April 16**

## MINING WEEK COMMUNITY FAIR - MAY 2009

- I would like to bring my class (#\_\_\_\_\_ students) to the *BC Mining Week 2009 Community Fair* on May 13<sup>th</sup>. We will travel by  transit  parent vehicles  bus  other \_\_\_\_\_ MREPBC will contact you to discuss the time when your class can attend and the amount of support that MREPBC can provide for transportation.



## FREE RESOURCES

Don't forget to order your *free* MREPBC-developed materials: *I am an Exploration Geologist* colouring book, *Mining in BC* poster and *Mining in BC* bookmarks.

Download supplementary resources and activities for your classroom, or a PDF version of the *Mining in BC* poster at: [www.bcminerals.ca/files/teacher\\_resources/000244.php](http://www.bcminerals.ca/files/teacher_resources/000244.php).



Please send me:

- Mining in BC* poster
- Mining in BC* bookmarks \_\_\_\_\_ copies
- I am an Exploration Geologist* colouring book
  - Please send a single copy free of charge.



You may pick up additional copies from the MREPBC office at no charge. You may order additional copies for the cost of postage (approx .50 per copy)

- Minerals of Canada* poster (appropriate for all)
- Northern BC Geological Landscapes Highway Map* (appropriate for Grade 7 and up)
- From Northern Lights to Urban Trails* poster (appropriate for all)
- Sustaining The Future* DVD (new from Highland Valley Copper; appropriate for Grade 5 and up)



### SAVE PAPER! RECEIVE TEACHERS' UPDATE BY EMAIL



This newsletter is posted on our Web site. You can help us reduce paper consumption and mailing costs by opting to receive the electronic version instead.

Please email your request to be notified by email of future Teachers' Updates posted on [www.bcminerals.ca](http://www.bcminerals.ca) to: [rjackman@bcminerals.ca](mailto:rjackman@bcminerals.ca).

Send the completed **Contact Information** below with payment (if applicable) to:  
 Mineral Resources Education Program of BC, 900 - 808 West Hastings Street, Vancouver, BC V6C 2X4  
 Tel: 604-681-4321 ext 108/115 Fax: 604-681-5305

### Registration/Contact Information

Name: \_\_\_\_\_ Email: \_\_\_\_\_

School Name and Address: \_\_\_\_\_

Postal Code: \_\_\_\_\_

Grade Level: \_\_\_\_\_ Subjects Taught: \_\_\_\_\_

School Phone: \_\_\_\_\_ School Fax: \_\_\_\_\_

Home Address: \_\_\_\_\_

Postal Code: \_\_\_\_\_

Home Phone: \_\_\_\_\_ Home Fax: \_\_\_\_\_