



COPPER

BY: PAIGE, QUINN, ATHENA AND HAILEY

FIRST HERE ARE SOME INTERESTING FACTS ABOUT COPPER

- Copper is the oldest known metal, discovered over 1000 years ago.
- All gold contains some level of copper. This is because gold is a soft metal and copper is added to strengthen it.
- Copper was used to make the statue of liberty over 179 thousand pounds of copper was used.



OUR COPPER JOURNEY

- With our given amount of class time we were able to come up with this amazing copper PowerPoint. We contacted Diane Mitchell.
- First we contacted Taseko Mines. We emailed them but they did not respond.
- Diane Mitchell from Britannia Mines responded to us 2 days later. We asked if it was possible to do a skype call but our request was declined.
- Diane Mitchell is the Curator of Education & Collections at Britannia Mines Museum.

HERE IS THE FIRST EMAIL THAT WE SENT.

Date: March 9, 2016 at 1:48:52 PM PST

To: dmitchell@bcmm.ca

Subject: **Class Project**

Hello!

We are grade 9 students at Riverside Secondary School in Port Coquitlam. We are doing a science project on copper, and were wondering if you are willing to help us out and answer some questions about copper. We hope that you could contact us back to let us know if you are willing to help us out.

Thank you!

THE QUESTIONS THAT WE ASKED WERE...

- 1. What are a few main things that copper is used for?
- 2. How do you access the copper? (mining process)
- 3. Has the cost of copper increased or decreased over the last few years? Why?
- 4. What are the safety steps when handling copper?
- 5. Why did Britannia Mines close to be a museum?

HERE IS ALL OF THE ANSWER DIANE SENT

The answers were very long so we decided to write them out so you could view it better.

Diane Mitchell

To: Athena Malta

RE: Class Project

Hi

Here are your answers....

1. Copper is used for many different things. It is hard wearing, ductile and malleable (meaning it can be worked into shape easily) and a good conductor of electricity. Much of it is used in copper piping and wiring. For example the pipes in our houses or the wiring used in our electrical devices. Copper is also a good antimicrobial substance and so is used in healthcare. It also makes excellent alloys. Brass instruments for example contain copper as brass is an alloy of copper and zinc. Copper is used in many 'green technologies', such as hybrid cars.

2. Much copper today is found in the mineral chalcopyrite (copper sulphide). This is the principal ore of copper. It is a mineral often found associated with volcanic areas (or at least ancient volcanic regions). The chalcopyrite is mixed into the host rock and may only be present in tiny quantities, e.g. less than 1%. But this can still be enough to make it economic to mine. Generally the rock containing the ore is mined out and taken to a processing plant where it will be crushed and ground up to a consistency of sand. A common way to separate the chalcopyrite and the waste rock is to use a process called froth flotation. This mixes water and chemicals into the sand creating a slurry. Air bubbles are blown into it. The chalcopyrite has a property that makes it stick to the chemicals in the bubbles and it rises to the surface where it can be skimmed off. The waste rock instead sinks to the bottom.

3. Copper demand goes up and down, all depending on our global needs. For example during the World Wars, the demand went up as it was needed for artillery. Our modern reliance on electrical devices also caused a boost. However when technology finds alternative metals or materials, or when countries stockpile copper, then it can affect the cost to buy it. In the last few years, copper prices have dropped quite a lot as there has been a lot of surplus copper mined, but not enough demand for it to be used.

4. Copper is a safe metal and you can handle it safely

5. The Britannia Mine closed in 1974 for a few reasons. Partly it was becoming more expensive to mine as the miners were having to go further and deeper underground to access it. But there were also changing tax and provincial regulations that made it uneconomical to mine. The museum opened in 1975.

Good luck with your project.

Thanks
Diane

1. WHAT ARE A FEW MAIN THINGS THAT COPPER IS USED FOR?

- 1. Copper is used for many different things. It is hard wearing, ductile and malleable (meaning it can be worked into shape easily) and a good conductor of electricity. Much of it is used in copper piping and wiring. For example the pipes in our houses or the wiring used in our electrical devices. Copper is also a good antimicrobial substance and so is used in healthcare. It also makes excellent alloys. Brass instruments for example contain copper as brass is an alloy of copper and zinc. Copper is used in many 'green technologies', such as hybrid cars.

2. HOW DO YOU ACCESS THE COPPER? (MINING PROCESS)

- 2. Much copper today is found in the mineral chalcopyrite (copper sulphide). This is the principal ore of copper. It is a mineral often found associated with volcanic areas (or at least ancient volcanic regions). The chalcopyrite is mixed into the host rock and may only be present in tiny quantities, e.g. less than 1%. But this can still be enough to make it economic to mine. Generally the rock containing the ore is mined out and taken to a processing plant where it will be crushed and ground up to a consistency of sand. A common way to separate the chalcopyrite and the waste rock is to use a process called froth flotation. This mixes water and chemicals into the sand creating a slurry. Air bubbles are blown into it. The chalcopyrite has a property that makes it stick to the chemicals in the bubbles and it rises to the surface where it can be skimmed off. The waste rock instead sinks to the bottom.

3. HAS THE COST OF COPPER INCREASED OR DECREASED OVER THE LAST FEW YEARS? WHY?

- 3. Copper demand goes up and down, all depending on our global needs. For example during the World Wars, the demand went up as it was needed for artillery. Our modern reliance on electrical devices also caused a boost. However when technology finds alternative metals or materials, or when countries stockpile copper, then it can affect the cost to buy it. In the last few years, copper prices have dropped quite a lot as there has been a lot of surplus copper mined, but not enough demand for it to be used.



4. WHAT ARE THE SAFETY STEPS WHEN HANDLING COPPER?

- 4. Copper is a safe metal and you can handle it safely
- You would also use the common safety precautions like safety goggles, special tools, and head and face gear. You may also need to wear a body suit depending on what you're doing with the copper.

5. WHY DID BRITANNIA MINES CLOSE TO BE A MUSEUM?

- 5. The Britannia Mine closed in 1974 for a few reasons. Partly it was becoming more expensive to mine as the miners were having to go further and deeper underground to access it. But there were also changing tax and provincial regulations that made it uneconomical to mine. The museum opened in 1975.



THANKS FOR WATCHING OUR PRESENTATION!

- Here is the link to Britannia Mines website for more info: <http://www.britanniaminemuseum.ca>
- The answers to all of the questions were the exact words of Diane Mitchell. Here is her information if you have further questions:
- **EDUCATION & COLLECTIONS**
- Curator of Education & Collections
- Diane Mitchell
- P: 604-896-2233 #255
- dmitchell@bcmm.ca