

Unit 5- Lesson 1- Economic Minerals

- in the various resources in use today, almost all once existed as rock, thus Materials we use everyday were a part of the ground.
- mineral deposit - a volume of rock enriched in one or more minerals. In this sense a mineral refers to a useful material, this is different from the way we defined a mineral earlier the year.
- Some mins are used as they are found and require no further processing. Ex: gemstones, sand, gravel, and salt (halite). Most mins must be processed before they are used. Ex: iron and aluminum only exist in mineral compounds and must be processed to extract the metal from the **metallic ore**.

Reference: Pages 52 - 55

- There are costs in extraction, manpower, and energy. These vary, determining if a mineral deposit is economically viable also varies. So, the higher the concentration of the substance, the more economical it is to mine.

ore - mineral deposit where one or more valuable substances can be extracted economically.

- Economics control if a deposit is profitable to mine. Different minerals require different concentrations to be profitable. These include: demand for the substance and the cost of extraction.

- An example of an economic mineral is Gold.
- Gold prices vary on a daily basis. When gold prices are high, old abandoned mines re-open, when the price drops, gold mines close. The cost of labor is currently so high that few gold mines can operate profitably, but in third world countries, labor costs are lower, gold mines that have ore concentrations well below those found in N.A can operate with a profit.
- NL contains a variety of ore minerals and many mines have developed in the past and present.
- For Example:
Advocate Mines and Nugget Pond, in Baie Verte.
IOCC and Wabush Mines in Labrador.

Mineral Resources can be divided into two groups:

1) **Metallic Mineral Resources**

- Resources in which metals such as copper, iron, gold, uranium and zinc can be recovered by smelting and other chemical processes.

Mineral	Element	Use
Bauxite	Al	Airplanes and Pop cans
Chalcopyrite	Cu	Electrical wiring and Water Pipes
Hematite Magnetite	Fe	Steel and Nails
Galena	Pb	Weights
Pentlandite	Ni	Money

2) Non-Metallic Mineral Resources

- Resources that are used for their physical and chemical properties rather than for the elements they contain.

Mineral	Use
Halite	Table and Road Salt
Calcite	Cement
Gypsum	Plaster and gyproc
Quartz	Glass
Graphite	Pencil Lead and Lubricants
Diamond	Gemstone (Jewelry) and Cutting Tools

Economic Minerals

Mineral	Mineral Group	Element Extracted	Location
Hematite, Magnetite	Oxides	Iron	Lab. City & Bell Island
Chalcopyrite	Sulfides	Copper	Baie Verte
Galena	Sulfides	Lead	Buchans
Corundum	Oxides	Aluminum	Southern Labrador
Sphalerite	Sulfides	Zinc	Baie Verte
Diamond Graphite	Native Minerals	Carbon	Africa Russia
Gold	Native Minerals	Gold	Nugget Pond & Hope Brook
Silver	Native Minerals	Silver	Nugget Pond
Pentlandite	Sulfides	Nickel	Voisey Bay Ontario
Cassiterite	Oxides	Tin	Brazil

Sample Problem

What is the main mineral used in making plaster?

- (A) barite
- (B) graphite
- (C) gypsum
- (D) pyrite

In which location of NL would an ore deposit containing nickel, copper, and cobalt be found?

- (A) Baie Verte
- (B) Labrador City
- (C) Buchans
- (D) Voisey's Bay

Which best describes an ore mineral?

- (A) composed entirely of iron
- (B) contains many different varieties of useful elements
- (C) contains useful elements that can be profitably mined
- (D) large deposit