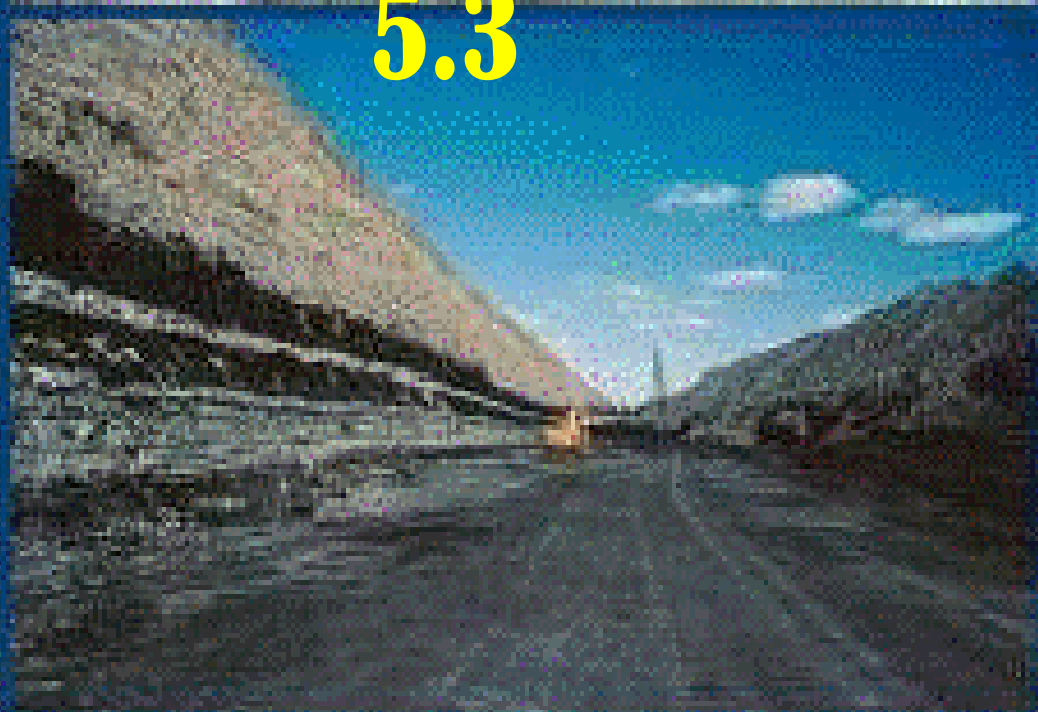




Mineral Resources

5.3



I. Metallic Mineral Resources

- Metals are obtained from Earth materials called metallic mineral resources
- A mineral resource is a deposit of useful minerals

A. Ores

- Deposits in which minerals exist in large enough amounts to be mined at a profit are called ores



Various preliminary and intermediate stages of ore crushing leading to rotating mills in the plant

B. Economic Effects

How is a mineral deposit considered an ore?

1. Mineral must be in demand
2. Enough must be present to make it worth removing
3. Must be fairly easy to separate the mineral from the materials in which it is found

C. Refining Ore

- The process of extracting an ore involves two operations
 1. Concentrating
 2. Refining
- Concentrating – after the metallic ore is mined from Earth's crust, it is crushed and the waste rock is removed
 - This waste rock is called *gangue*



FACT

The consumption of minerals in the United States has been calculated to be 18,000 pounds per person annually.

This includes metals such as steel, iron, aluminum, copper, and zinc, as well as nonmetals such as salt, cement, sand and stone.

II. Nonmetallic Mineral Resources

- Any mineral resources not used as fuels or as sources of metals are nonmetallic mineral resources
- Nonmetallic mineral resources can be divided into two different groups
 1. Industrial minerals
 2. Building materials

A. Industrial Minerals

- Many useful chemicals are obtained from industrial minerals
 - fertilizers for farms and gardens
 - salt used for food, melting ice and to soften water comes from halite



- Other industrial minerals are used because of their characteristic physical properties
 - abrasives are made from deposits of corundum and garnet
 - they are able to scratch most other materials they come in contact with
 - small particles of garnet are glued onto heavy paper to make abrasive sandpaper

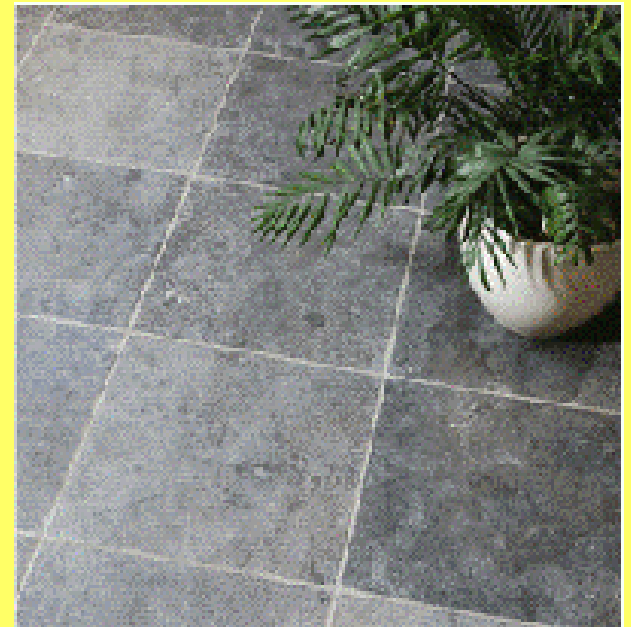


B. Building Materials

- The most important nonmetallic mineral resource is aggregate
 - aggregate is crushed stone and can be mixed with cement and water to form concrete



- Limestone is used as paving stone and part of concrete mixture



- Gypsum forms when seawater evaporates and is used in the production of plaster and wallboard

GYPSUM WALLBOARD



- Rock is used as building stone and to sculpt statues
 - granite, limestone, or sandstone



III. Recycling Mineral Resources

- Recycling is using old materials to make new ones
- Recycling has many advantages
 1. Reduces the demand for new mineral resources
 2. Recycling process often uses less energy than it takes to obtain new material
 3. Some supplies may become limited in the future
 4. Recycling can be profitable