SECTION 3

Mining Regulations and Mine Reclamation

With an increase in U.S. energy requirements, particularly the demand for coal to fuel power plants that produce electricity, the scale of surface mining has grown. So, too, have the potential environmental effects of mining. For example, surface coal mining requires the removal of enormous amounts of soil and rock to reach near-surface coal seams.

Because of the potential environmental impacts of mining on such a large scale, mining has become one of the most heavily regulated industries in the United States. Mining companies now spend large amounts of money to preserve the environment. Reclaiming the land, or returning land to its original condition after mining is completed, is part of every surface coal mining operation. Before mining, companies develop a plan to reclaim the land. Even before mining is complete, this plan is put into action. With environmental preservation now a clear goal of mining companies, future generations of Americans will not have to view scars in the Earth, such as the one shown in **Figure 14.**

Objectives

- Describe seven important potential environmental consequences of mining.
- Name four federal laws that relate to mining and reclaiming mined land.
- Define the term *reclamation*.
- Describe two ways in which state governments regulate mining.

Key Terms

subsidence
reclamation

The Environmental Impacts of Mining

There are many potential environmental impacts of mining. In the United States, the federal and state governments and mining companies are spending billions of dollars to clean up abandoned mines. Much of this legacy has been left to U.S. citizens from a time when there was little regulation of mining and mineral processing.

Figure 14 ▶ At 215 m deep and 1.6 km in circumference, the "Big Hole" at the Kimberley Mine in South Africa is the largest hand-dug excavation in the world. By the time the mine closed in 1914, 22.5 million tons of rock had yielded almost 3,000 kg of diamonds.

Air and Noise Pollution Surface mining can cause both air pollution and noise pollution. At surface coal mines, removing, loading, hauling, and dumping soil and overburden produce dust. Wind that blows across unreclaimed soil and overburden storage areas also adds dust to the air. Loading, hauling, and unloading ore produce dust emissions at open-pit mines. Dust is also generated in open-pit mines when the ore is blasted apart with explosives.

Noise is created by the equipment that is used in a mine as well as by blasting. Whereas equipment noise may be a nuisance, blasting can cause physical damage to structures that are located near the mine.

Because of air and noise pollution, most surface mines are not located near urban populations. More important, regulations in the U.S. forbid mining operations to allow dust or noise to exit the area that is being mined.

Water Contamination Water resources can be negatively impacted by mining. Water that seeps into mines or through piles of excess rock can pick up or dissolve toxic substances like arsenic. These contaminants can wash into streams, where they can harm or kill aquatic life.

Coal or minerals that contain a lot of sulfur can cause a similar problem. When these materials react with oxygen and water, they form a dilute sulfuric acid. This acid can dissolve toxic minerals that remain in mines and excess rock. The contaminated water that results from this process is known as *acid mine drainage,* or AMD, which is shown in **Figure 15.** Mining regulation in the U.S. requires companies to dispose of acid-producing rock in such a way that water is not contaminated.

Figure 15 ▶ Copper mines have polluted the Queen River in Tasmania with acid mine drainage. This photo shows the river flowing past residential housing.

Displacement of Wildlife Removing soil from a surface mine site strips away all plant life. With their natural habitat removed, animals will leave the area. In addition, when mining is completed and the soil is returned to the mine site, different plants and animals may establish themselves, which creates an entirely new ecosystem. However, a good development plan to reclaim a mine site can ensure that the displacement of wildlife is merely temporary.

Dredging can negatively affect aquatic ecosystems and physically change the bottoms of rivers. Dredging disturbs river bottoms and destroys aquatic plant life in the dredged portion of the river. The disturbance of a riverbed can cause muddy sediments to contaminate a river for up to 10 km.

Erosion and Sedimentation Excess rock from mines is sometimes dumped into large piles called *dumps*. Running water erodes unprotected dumps and transports sediments into nearby streams. These sediments may choke streams and damage water quality and aquatic life.

Soil Degradation Soil at a mine site is removed from the uppermost layer downward. When this soil is stored for later reuse, care must be taken to ensure that the upper soil layers are not buried beneath soil layers that were originally below them. In this way, the soil layers that are richest in important nutrients are not covered. If soil is not removed and stored in separate layers, the soil may be nutrient poor when it is reclaimed.

Minerals that contain sulfur may be found in deeper soil layers. If these minerals are exposed to water and oxygen in the atmosphere, chemical reactions result in the release of acid, which then acidifies the soil. When mining is completed and the soil is returned to the mine site, it may be difficult for plants to establish themselves if soil is acidified.

Subsidence The sinking of regions of the ground with little or no horizontal movement is called **subsidence** (suhb SIED'ns). Subsidence occurs when pillars that have been left standing in mines collapse or the mine roof or floor fails.

The locations of many abandoned mines are unknown. Buildings, houses, roads, bridges, underground pipelines, and utilities that are built over these mines could be damaged if the ground below them subsides. In November and December 2000, underground limestone mines that were several hundred years old collapsed in Edinburgh, Scotland. The collapse caused property damage and forced people to evacuate their homes. **Figure 16** shows the potential effects of mine subsidence.

MATH PRACTICE

Volume Soil and overburden must be removed to reach a coal seam that is 10 m below Earth's surface. The exposed seam will be one km in length and 50 m wide. What is the total volume of soil and overburden that will have to be moved and stored? If the coal seam is 5 m thick, what is the volume of coal that will be removed? (Hint: The answers should be in m^3.) What is the ratio of overburden to coal?

Figure 16 ▶ A hole created by the subsidence of a gold mine has swallowed this house in New Zealand.

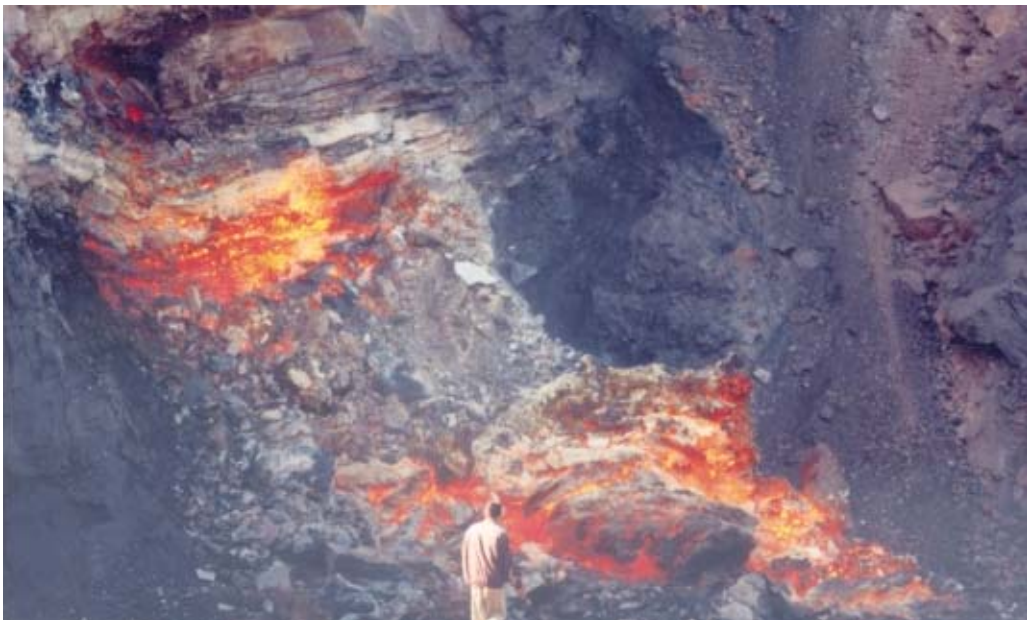


Figure 17 ▶ This photo shows a coal seam that is on fire in a surface coal mine in China.

Ecofact

Bats and Mines Over the past century, human disturbance of traditional bat roosting sites, such as caves and trees, has caused bats to move into abandoned mines. At present, 30 of the 45 species of bats in the United States live in mines. Some of the largest populations of endangered bat species now live in abandoned mines.

Underground Mine Fires Fires that start in underground coal seams are one of the most serious environmental consequences of coal mining. Lightning, forest fires, and burning trash can all cause coal-seam fires. In addition, fires can start by themselves when minerals in the coal that contain sulfur are exposed to oxygen. These fires are hard to put out and are often left to burn themselves out, which may take decades or even centuries. For example, a fire that has been burning through an underground coal seam in an Australian mountain is estimated to be 2,000 years old! Underground fires that burn their way to the surface release smoke and gases that can cause respiratory problems. A fire in a coal seam is shown in **Figure 17.**

Mining Regulation and Reclamation

Mines on land in the United States are regulated by federal and state laws. To ensure that contaminants from mines do not threaten water quality, mining companies must comply with regulations of the Clean Water Act and the Safe Drinking Water Act. The release of hazardous substances into the air, soil, and water by mining is regulated by the Comprehensive Response Compensation and Liability Act. In addition, all mining operations must comply with the Endangered Species Act. This act ensures that mining activities will not affect threatened or endangered species and their habitats.

Reclamation The process of returning land to its original or better condition after mining is completed is called **reclamation.** The Surface Mining Control and Reclamation Act of 1977 (SMCRA) created a program for the regulation of surface coal mining on public and private land. The act set standards that would minimize the surface effects of coal mining on the environment. SMCRA also established a fund that is administered by the federal government and is used to reclaim land and water resources that have been adversely affected by past coal-mining activities.

State Regulation of Mining States have created programs to regulate mining on state and private lands. Mining companies must obtain permits from state environmental agencies before mining a site. These permits specify certain standards for mine design and reclamation. In addition, some states have bond forfeiture programs. In a bond forfeiture program, a mining company must post funds, called a *bond*, before a mining project begins. If the company does not mine and reclaim a site according to the standards required by its permits, the company must give these funds to the state. The state then uses the funds to reclaim the site. A reclaimed surface coal mine is shown in **Figure 18.**

State agencies are also responsible for inspecting mines to ensure compliance with environmental regulations. Agencies issue violations to companies that do not comply with environmental regulations and assess fines for noncompliance. In addition, states such as Pennsylvania have begun large projects to reclaim abandoned mine lands. Acid mine drainage, mine fires, mine subsidence, and hazards related to open shafts and abandoned mining structures are all problems that these projects will attempt to correct.

Connection to History

Jihlava Jihlava is an ancient town in the Czech Republic. In the 1200s, silver was discovered in Jihlava. The rush that followed brought miners, merchants, and traders from all over Europe. As a result, Jihlava became very prosperous. In addition to creating municipal laws, the town passed its own mining laws. Jihlava's mining laws served as an example for other mining towns in central Europe.

Figure 18 ▶ Reclamation often includes seeding, planting, and irrigating to return the land to its original state.

SECTION 3 Review

1. **List** seven potential environmental impacts of mining.
2. **Name** four federal laws that regulate mining activities in the United States.
3. **Define** the term *reclamation*.
4. **Describe** two ways in which state governments regulate mining.

CRITICAL THINKING

5. **Making Decisions** Give examples of environmental concerns that would be taken into account by a mining company when it created a reclamation plan for a mine site.
6. **Making Decisions** Read about how topsoil is removed and stored for later reclamation under the heading "Soil Degradation." How can this process be implemented to keep soils from degrading?

READING SKILLS

CHAPTER 16 Highlights

1 Mineral and Mineral Resources

Key Terms

mineral, 411
ore mineral, 412

Main Ideas

- A mineral is a naturally occurring, usually inorganic solid that has a characteristic chemical composition, an orderly physical structure, and a characteristic set of physical properties.
- Minerals that are valuable and economical to extract are known as *ore minerals*.
- Ore minerals may form from the cooling of magma, the circulation of hot-water solutions through rocks, and the evaporation of water that contains salts.
- Metals are important economically because of their electrical and thermal conductivity, durability, and heat and corrosion resistance.

2 Mineral Exploration and Mining

subsurface mining, 416
surface mining, 417
placer deposit, 419
smelting, 420

- Mining companies conduct mineral exploration to identify areas where there is a high likelihood of finding valuable mineral resources in quantities worth mining.
- Room-and-pillar mining, longwall mining, and solution mining are subsurface mining methods.
- Open-pit mining, surface coal mining, quarrying, and solar evaporation are surface-mining methods.
- Minerals are concentrated by wind and water into surface deposits called *placer deposits*.
- Smelting is the process in which ore is melted at high temperatures to separate impurities from the molten metal.

3 Mining Regulations and Mine Reclamation

subsidence, 423
reclamation, 424

- Some of the environmental consequences of mining may include air and noise pollution, water contamination, displacement of wildlife, erosion and sedimentation, soil degradation, subsidence, and underground mine fires.
- The U.S. government has enacted legislation that regulates mining and attempts to minimize the impact of mining on the environment.
- Federal and state agencies issue permits to mining companies, issue violations and assess penalties when mining companies do not comply with standards set by their permits, and ensure that abandoned mine lands are reclaimed.

CHAPTER 16 Review

Using Key Terms

Use each of the following terms in a separate sentence.

1. *mineral*
2. *placer deposit*
3. *smelting*
4. *subsidence*
5. *reclamation*

For each pair of terms, explain how the meanings of the terms differ.

6. *element* and *mineral*
7. *ore mineral* and *gangue mineral*
8. *placer deposit* and *dredging*
9. *subsurface mining* and *surface mining*

STUDY TIP

Using Terms Work together with a study partner. Learn the definitions of both the boldfaced and italicized words that appear in this chapter. When both you and your partner feel confident in having learned the meanings of these terms, take out a piece of paper. On this paper, you and your partner will each write a one-page essay in which you use as many of these terms as possible. When you both are finished, exchange essays and review them for accuracy.

Understanding Key Ideas

10. Which of the following statements does *not* correctly describe a mineral?
    a. A mineral is a naturally occurring substance.
    b. A mineral is an organic substance.
    c. A mineral is a solid substance.
    d. A mineral has a characteristic chemical composition.
11. Gold, silver, and copper are
    a. nonmetallic minerals.
    b. native elements.
    c. compounds.
    d. gangue minerals.
12. Ore deposits form from
    a. the cooling of magma.
    b. the evaporation of water that contains salts.
    c. the circulation of hot-water solutions in rocks.
    d. All of the above
13. Which of the following economically important elements is *not* a metal?
    a. zinc
    b. titanium
    c. copper
    d. sulfur
14. Which of the following methods is *not* a subsurface mining method?
    a. quarrying
    b. solution mining
    c. longwall mining
    d. room-and-pillar mining
15. Which of the following mining methods would most likely be used to mine salt?
    a. solution mining
    b. open-pit mining
    c. solar evaporation
    d. both (a) and (c)
16. Dredging would *not* be used to mine
    a. diamonds.
    b. coal.
    c. heavy minerals.
    d. gold.
17. Which of the following elements causes soil to become acidified?
    a. potassium
    b. nitrogen
    c. sulfur
    d. phosphorous
18. Which of the following pieces of federal legislation established a program for regulating coal mining on public and private lands?
    a. the Comprehensive Response and Liability Act
    b. the Clean Air Act
    c. the Clean Water Act
    d. the Surface Mining Control and Reclamation Act of 1977

CHAPTER 16 Review

Short Answer

19. What is the difference between native elements and compounds?

20. Describe the solar evaporation process.

21. What are the surface and subsurface methods by which coal is commonly mined?

22. Explain why undersea mining has been largely unsuccessful to date.

23. Describe how reclaimed soil may become degraded.

24. Explain the purpose of a state bond forfeiture program.

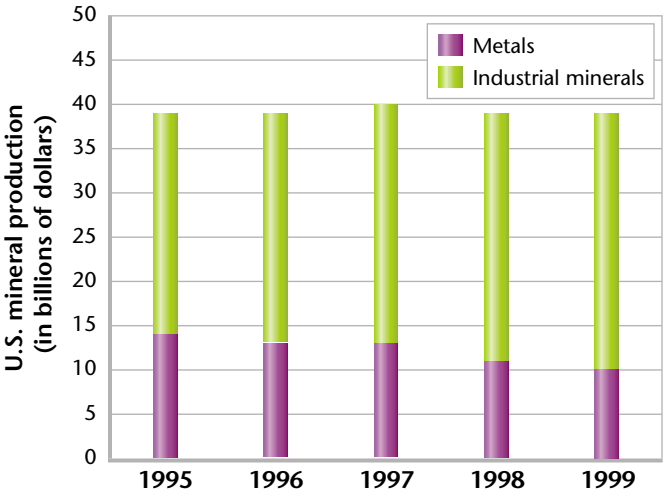
Interpreting Graphics

The graph below shows total U.S. mineral production from 1995 to 1999. Use the graph to answer questions 25–26.

25. In 1995, metals accounted for $14 billion of the $39 billion total U.S. production of minerals. Metals accounted for what percentage of total U.S. production of minerals?

26. In 1999, metals accounted for only $10 billion of the $39 billion total U.S. production of minerals. Metals accounted for what percentage of total U.S. production of minerals?

Changes in U.S. Mineral Production 1995–1999



Source: U.S. Geological Survey.

Concept Mapping

27. Use the following terms to create a concept map: *subsurface mining, surface mining, room-and-pillar mining, longwall mining, solution mining, open-pit mining, surface coal mining, and quarrying.*

Critical Thinking

28. Analyzing Relationships Read about the technological changes in the mining industry that are discussed in the introduction to Section 2. What method or methods of mining seem well suited for automation, particularly robotics? READING SKILLS

29. Making Decisions Mining companies use computer models to show them where high- and low-grade ores are located in the deposit that they are mining. If the price of the ore mineral that a company is mining suddenly increases, how would computer modeling help the company economically exploit the mineral deposit to take advantage of the increase in price?

Cross-Disciplinary Connection

30. Social Studies Fifteen to 20 miles southwest of Santa Fe, New Mexico, are a series of low hills known as Los Cerrillos. Native Americans mined the blue-green gemstone turquoise from narrow veins in rock from these hills for almost 1,000 years, beginning in about the year 875. Research Native American mining at Los Cerrillos, New Mexico. Write a short report about your findings. WRITING SKILLS

Portfolio Project

31. Debate A mining company has applied for permits to establish a surface mine on land that is located near a stretch of river in which an endangered species of fish lives. Assume that the ore to be mined is rare and has important new applications in cancer treatment. Weighing both sides of the argument, would you issue the permits? Make your case for or against issuing the mining permits in a debate with your classmates.

MATH SKILLS

32. Making Calculations Some low-grade gold ores that have been mined economically average about 0.1 oz of gold per ton of ore. Five tons of rock must be removed to obtain one ton of ore. How many tons of rock must be mined to obtain 1 oz of gold? How many pounds of ore must be processed to obtain 1 oz of gold?

WRITING SKILLS

33. Communicating Main Ideas One of the main ideas of this chapter is that the human need for minerals requires mining companies to continually find new deposits of minerals that can be extracted inexpensively. Extraction must be done in such a way that the environment is not severely affected. Using surface coal mining or open-pit mining as an example, explain why it is difficult to mine large ore deposits without affecting the environment.

34. Writing Persuasively A mining company is applying for permits to establish an open-pit mine near your home. Do research to determine what impact, if any, the operation will have on your quality of life, the environment, and the economics of your community. Summarize your findings in a concise one-page paper.

35. Outlining Topics You are an exploration geologist who works for a mining company. You are searching for a new deposit of an ore mineral. Outline the steps you would take to find a deposit and to determine whether that deposit would be economical to mine.

READING FOLLOW-UP

Now that you have read the chapter, take a moment to review your answers to the **Reading Warm-Up** questions in your ***EcoLog.*** If necessary, revise your answers.

STANDARDIZED TEST PREP

Read the passage below, and then answer the questions that follow.

One of the only two rocks in which diamonds have been found is called *kimberlite*. Kimberlite is an uncommon kind of rock that forms cylindrical subsurface bodies called *kimberlite pipes*. Kimberlite pipes look very much like the vents that bring lava to the surface in volcanoes. Diamonds form deep in the Earth's crust under enormous temperatures and pressures. Diamonds are believed to be carried to the surface in kimberlite pipes in very rapid, explosive events. However, not all kimberlite pipes contain diamonds.

Kimberlite is a soft, black, blue, or green rock that weathers rapidly when it reaches Earth's surface. Because kimberlite decomposes rapidly, it does not form rock outcrops. Instead, it forms circular depressions several feet below the surface of the ground. These depressions may be covered with a bluish kimberlite soil called *blue ground*. Iron-stained soils may also cover depressions. These soils are referred to as *yellow ground*.

1. Which of the following statements about kimberlite is *not* true?
- **a.** Diamonds are found in kimberlite.
- **b.** All kimberlite contains diamonds.
- **c.** Kimberlite weathers rapidly at Earth's surface.
- **d.** Kimberlite is an uncommon kind of rock.

2. If you were an exploration geologist searching for a deposit of diamonds, which of the following would *not* be a good surface indicator of the existence of a kimberlite pipe?
- **a.** a circular depression
- **b.** a bluish soil that fills a depression
- **c.** an iron-stained soil that fills a depression
- **d.** a large rock outcrop

CHAPTER 16

Skills Practice Lab: OBSERVATION

Objectives

- **Extract** copper from copper carbonate in much the same way that copper is extracted from malachite ore.
- USING SCIENTIFIC METHODS **Hypothesize** how this process can be applied to extract other metallic elements from ores.

Materials

Bunsen burner
copper (cupric) carbonate
funnel
iron filings
sulfuric acid, dilute
test-tube holder
test-tube rack
test tubes, 13 mm x 100 mm (2)
water

Extraction of Copper from Its Ore

Most metals are combined with other elements in the Earth's crust. A material in the crust that is a profitable source of an element is called an *ore*. Malachite (MAL uh KIET) is the basic carbonate of copper. The green corrosion that forms on copper because of weathering has the same composition that malachite does. The reactions of malachite are similar to those of copper carbonate.

In this investigation, you will extract copper from copper carbonate using heat and dilute sulfuric acid. The process you will be using will be similar to the process in which copper is extracted from malachite ore.

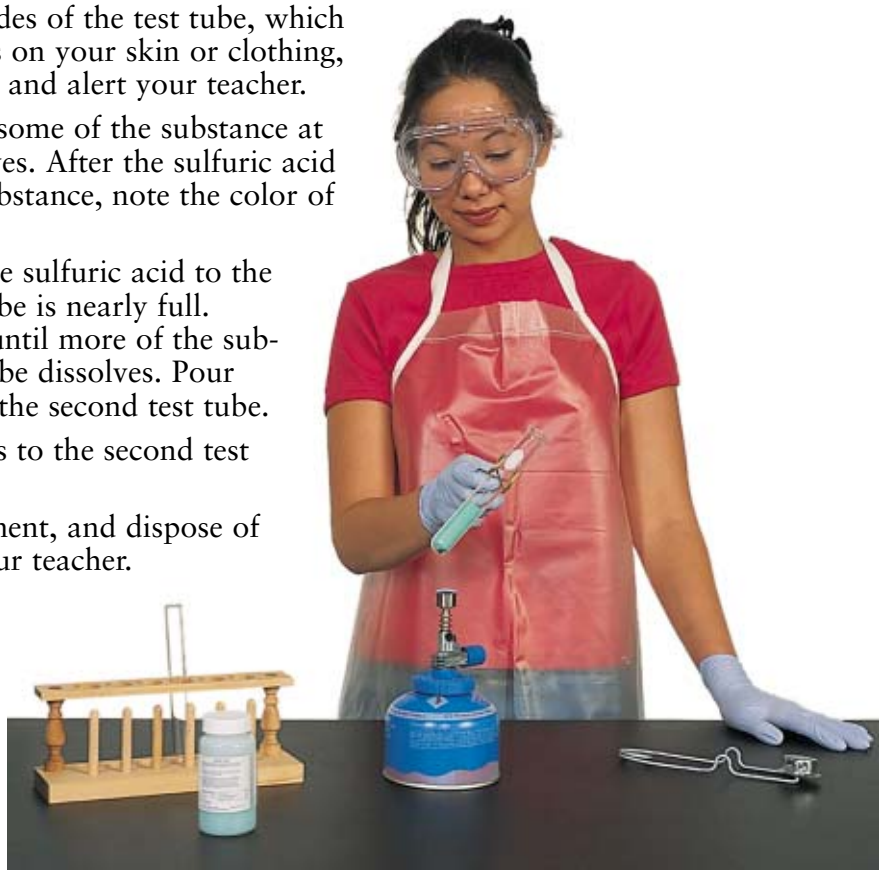
Procedure

1. CAUTION: Wear your laboratory apron, gloves, and safety goggles throughout the investigation. Fill one of the test tubes about one-fourth full of copper carbonate. Record the color of the copper carbonate.
2. Light the Bunsen burner, and adjust the flame.
3. Heat the copper carbonate by holding the tube over the flame with a test-tube holder, as shown in the figure on the next page. CAUTION: When heating a test tube, point it away from yourself and other students. To prevent the test tube from breaking, heat it slowly by gently moving the test tube over the flame. As you heat the copper carbonate, observe any changes in color.
4. Continue heating the tube over the flame for 5 min.
5. Allow the test tube to cool. Observe any change in the volume of the material in the test tube. Then, place the test tube in the test-tube rack. Insert a funnel in the test tube, and add

Copper Ore Malachite is a carbonate of copper that commonly forms in copper deposits. It is sometimes used as an ore of copper.

dilute sulfuric acid until the test tube is three-fourths full. CAUTION: Avoid touching the sides of the test tube, which may be hot. If any of the acid gets on your skin or clothing, rinse immediately with cool water and alert your teacher.

6. Allow the test tube to stand until some of the substance at the bottom of the test tube dissolves. After the sulfuric acid has dissolved some of the solid substance, note the color of the solution.
7. Use a second test tube to add more sulfuric acid to the first test tube until the first test tube is nearly full. Allow the first test tube to stand until more of the substance at the bottom of the test tube dissolves. Pour this solution (copper sulfate) into the second test tube.
8. Add a small number of iron filings to the second test tube. Observe what happens.
9. Clean all of the laboratory equipment, and dispose of the sulfuric acid as directed by your teacher.



▶ **Step 3** To heat the copper carbonate, hold the tube over the flame with a test-tube holder. Point the test tube away from yourself and other students.

Analysis

1. **Explaining Events** Disregarding any condensed water on the test-tube walls, what do you call the substance formed in the first test tube? Explain any change in the volume of the new substance relative to the volume of the copper carbonate.
2. **Explaining Events** When the iron filings were added to the second test tube, what indicated that a chemical reaction was taking place? Explain any change to the iron filings. Explain any change in the solution.

Conclusions

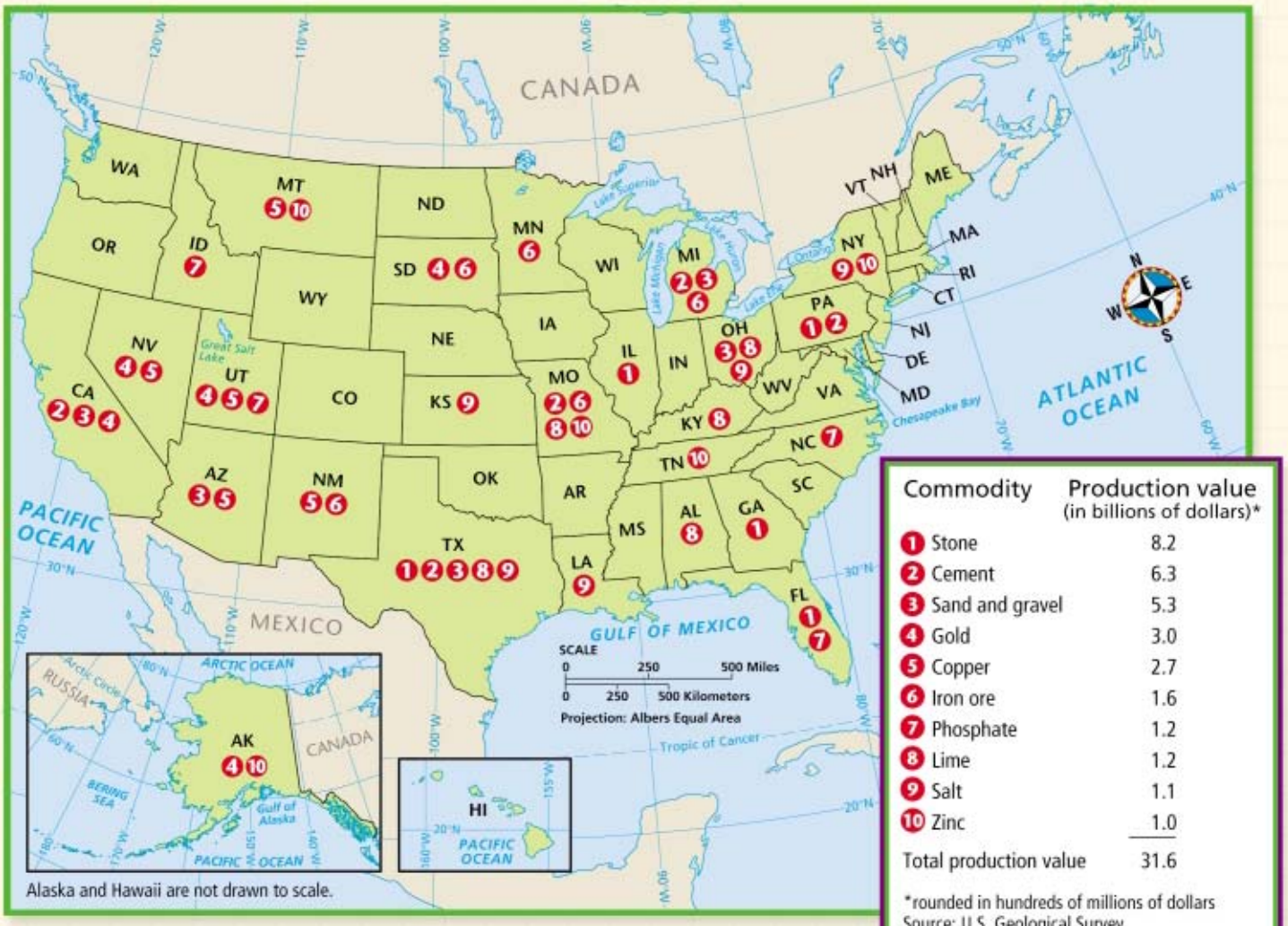
3. **Drawing Conclusions** Why was sulfuric acid used to extract copper from copper carbonate?

Extension

1. **Analyzing Data** Suppose that a certain deposit of copper ore contains a minimum of 1 percent copper by mass and that copper sells for $0.30 per kilogram. Approximately how much could you spend to mine and process the copper from 100 kg of copper ore and remain profitable?
2. **Making Comparisons** How is the process used in this experiment similar to the cyanide heap-leaching process used to extract gold from low-grade ore?

MAPS in action

MINERAL PRODUCTION IN THE UNITED STATES



Commodity	Production value (in billions of dollars)*
1 Stone	8.2
2 Cement	6.3
3 Sand and gravel	5.3
4 Gold	3.0
5 Copper	2.7
6 Iron ore	1.6
7 Phosphate	1.2
8 Lime	1.2
9 Salt	1.1
10 Zinc	1.0
Total production value	31.6

*rounded in hundreds of millions of dollars
Source: U.S. Geological Survey.

MAP SKILLS

In 1999, the top 10 mineral commodities produced in the United States had a total value of about $31.6 billion. Over half of this production value came from the top three commodities: stone, cement, and sand and gravel. The map above shows the distribution of the production of these commodities by state. Use the map above to answer the following questions.

1. **Using a Key** Find your state on the map of mineral production. Which of the top 10 mineral commodities, if any, were produced in your state in 1999?
2. **Evaluating Data** Gold, copper, iron ore, and zinc are metals in the top 10 mineral commodities produced in 1999. What percentage of total 1999 production value do these metals represent? Which states were the producers of these metals in 1999?
3. **Evaluating Data** Stone, sand, and gravel are collectively known as *aggregates*. What percentage of total 1999 production value do aggregates represent? Which states were the major producers of aggregates in 1999?
4. **Using a Key** Which states produced salt in 1999?

COLTAN AND THE WAR IN THE CONGO

If you purchase a mobile phone, pager, or laptop computer, you may not be aware of the connection between these devices and politics in central Africa. Each of these products requires tantalum in its manufacture. Tantalum is a heat-resistant metal that can hold a high electric charge. Tantalum is ideal for the production of capacitors, which are used to regulate voltage in many of the electronics products in use today.

The main ore of tantalum is columbite-tantalite, which is often shortened to coltan. Eighty percent of the world's coltan reserves are found in the mountains of the eastern part of the Democratic Republic of the Congo (DRC). From the DRC, coltan makes its way into the world market, much of it illegally.

The 1996 Civil War

In 1996, hostilities between ethnic peoples caused civil war to break out in the DRC. Two years later, neighbors Rwanda and Uganda entered the conflict and backed two Congolese rebel movements. Shortly thereafter, Angola, Namibia, and Zimbabwe lent their support to the government of the DRC. Today, the Rwandan- and Ugandan-backed rebels have primary control of the coltan ore in the eastern DRC.

The war in the DRC is as much an economic war as an ethnic war. The price of coltan has reached prices as high as $400 per kilogram. Forces from neighboring Rwanda, Uganda, and Burundi have been accused of smuggling coltan out of the DRC and making enormous profits. This money is being used to help finance the continuing war efforts of these countries.

The Consequences of Civil War

Since 1998, almost 2.5 million people have died in the fighting in the DRC. Government and rebel forces have attacked, killed, and tortured innocent civilians to maintain their rule. Almost half of the population of the DRC lacks safe drinking water. Access to health care is limited, and an estimated 2 million people suffer from HIV/AIDS.

Meanwhile, coltan mining has moved into coltan-rich national parks and reserves. Wildlife is being lost at an alarming rate as miners kill animals for food and elephants for ivory.

▶ Cell phones are just one of the electronic products in common use today that require tantalum in their production.

▶ Columbite-tantalite miners in the Democratic Republic of the Congo can earn from $10 to $50 a week, whereas the average Congolese worker earns around $10 a month.

What Do You Think?

Many electronics companies have stopped buying columbite-tantalite ore from central African countries. What effect, if any, do you think this action will have on present conditions in the DRC?