**TECHNOLOGY NOTE**

**What’s Mined Is Yours**

In 1918, when industries across the United States were growing at an amazing rate, a record 177 million tons of coal were produced from mines in Pennsylvania. The demand for this country’s mineral resources has been increasing ever since. Although new technology has made our lives easier, our needs have taken a serious toll on the environment.

**A Mining Nation**

About 10,000 years ago, residents of what is now Michigan dug underground for copper. Today, in northern Michigan and several other states, tons of copper ore are extracted from large underground reserves. Fertilizer companies produce phosphate ore from large surface mines in Florida. Uranium is produced throughout the Rocky Mountain states. Wyoming recently produced 171 million tons of coal to become number one in coal production. Only recently have we begun to understand how much environmental damage these activities have caused.

In a typical mining operation, huge bulldozers clear away layers of soil, destroying vegetation and drastically altering the landscape. Streams may be diverted, causing droughts in some areas and floods in others. Nearby residences may become infested with snakes and other pests that are fleeing from the disturbance.

The long-term effects are even more serious. When the discarded soil from a mine is exposed to air and rainfall, chemical reactions occur. As a result, acidic moisture seeps into the ground and pollutes nearby waterways. Years later, plants and animals may still be unable to live in the area because of the changed conditions.

In Pennsylvania, 1,700 streams have been polluted by the acids and other waste products from mines. Many mining sites in that state have undergone reclamation, the process of returning the terrain and plants at a site to their initial condition. Even so, about 200,000 acres remain unreclaimed. In every state, centuries of mining have left the environment scarred. National parks alone contain more than 4,000 abandoned mining sites in 45 states.

**Taking Responsibility**

Most mining companies take environmental issues very seriously. New techniques and a better understanding of natural processes have made returning land to its original condition more efficient than ever. For instance, recent studies have focused on the roles of grasses, native trees, and even earthworms in reclamation.
TECHNOLOGY NOTE

What’s Mined Is Yours continued

Unfortunately, reclamation is very expensive. Depending on the location, returning land to its original state may cost as much as $20,000 per acre. As environmental laws become tougher on mining companies, fewer of them are able to make a profit. Many go out of business. In the last 20 years, over 800 coal-mining companies have shut down in Pennsylvania alone. As a result, thousands of people have lost their jobs, and local economies have suffered greatly.

No Easy Answers

Ironically, some workers who lost their jobs in the mines have found work with reclamation companies. Others have had to move away, seeking new types of work in other locations. Hopefully, the economic problems in former mining areas will improve with time.

Our concern for the environment is great, but so is our need for mineral resources. As our population grows larger, we will need more of the metal ores, fossil fuels, and other products that the mining industry provides. Fortunately, reclamation efforts are constantly improving. In addition, efforts to recycle and reuse the resources that we already have are increasing across the country. Nonetheless, it will always be difficult to find a compromise between our great need for mineral resources and the environmental damage we cause by getting those resources.

Think About It

The next time you look at a parking lot, think about how much metal was used to build all of these cars and trucks. Almost all of that metal was refined from underground ores. If you wanted to put all of the metal in a parking lot back in the ground, how big of a hole would you have to dig?

Extension: Find out the top three mineral resources that your state produces. What part of the state do they come from? How are the minerals extracted from the ground and how are they used?