

Communities which rely on small mines for their livelihood will be faced with possible dislocation of job opportunities.

Other environmental factors, of less immediate concern but of long-range importance, include more stringent land reclamation laws, and laws restricting the discharge of acid-mine water. Research in the latter area may forestall or eliminate future problems.

The nuclear challenge to coal for the electric utility market should encourage a search for greater diversification in markets for coal. Possibly the natural gravitation to more flexible forms—liquid and gaseous—is the best way to achieve this diversification.

The changing nature of the bituminous coal industry will make it increasingly more challenging during the next decade to maintain safe and healthful working conditions. Mines will be getting larger, equipment will be more powerful, coal will be mined faster, and a greater number of new employees will enter the labor force.

During World War II the ready availability of strippable coal reserves for contour mining made possible the necessary rapid increase in coal production at that time. However, at the present time there is little specific information available on the extent and location of strippable coal reserves in the United States. Filling this gap is an area of major importance to the national interest.

As a result of improved transportation techniques, the competitive position of this industry has improved. Transportation of coal by unit trains has reduced costs. Successful development of extra high voltage transmission methods has made it possible to construct power plants at or near mine sites with the result that power, not coal, is transported economically.

Increasing demand for bituminous coal will not create any long-range supply problems, although at times the industry will have difficulty adjusting to changing conditions. For example, premium grade coking coal may be in short supply; production of low-sulfur coal may not keep up with demand; delays may occur in meeting contract commitments for export coal; miners, especially equipment operators, and skilled craftsmen may have to be recruited and trained; and, coal mining equipment manufacturers may fall behind schedule. None of these conditions appears serious although at times they could prove embarrassing to the industry as well as the nation. If these situations do occur, part of the reason lies in the slow response of the industry to increasing demand and part rests with the long lead-time needed to develop new mines.

The sulfur content of the majority of United States lignite reserves is low (0.7 percent), which indicates its value for fuel generation. However, the high moisture content and low-thermal value militates against its transportation over great distances. Since most reserves are far from major urban areas, there is a need to develop methods for upgrading the material. The utilization of lignite also depends upon overcoming severe ash fouling tendencies. Potential applications of lignite exist in the Minnesota iron ore industry for (1) production of prereduced pellets, (2) use of leonardite as a pellet binder, and (3) partial reduction of non-magnetic taconite to the magnetic form.

Approximately 40 percent of the bituminous coal consumption went to industrial uses, including coal carbonized for coke and for coal chemicals. The eastern, or Appalachian region, contains the largest reserve of high-quality, high-rank coals in the United States, and, in fact, in the world. While all the bituminous coals of the region have coking properties, not all are considered coking coals because some have ash and sulfur contents that exceed the normally accepted limits established for coking coals. In the midwest and western regions of the United States there are some reserves of coal suitable for coking purposes. In general these are not very large and the coal is often blended with higher-rank coals. There is a need to develop methods for wider use of such lower rank coals for coke production.

BORON

At present all of the United States supply and 70 percent of the world supply come from bedded deposits and lake brines in California. Reserves are abundant and seen as adequate to meet foreseeable demands. However, a significant factor in boron economics is the virtual world-wide monopoly held by a single foreign-based company.

Future world trade patterns may change somewhat and favor increased imports to the United States of certain mineral forms for special applications. Over the long-term, such competition will tend to stabilize or reduce prices rather than greatly affect production and consumption growth rates.