METHANE CONTROL

Rapid depletion of shallow coal deposits that are relatively free of explosive methane gas is forcing us to extract an ever-increasing quantity of coal from deeper, generally much gassier, deposits. Hazardous conditions created by methane in these deeper mines have increasingly hampered productivity and coal recovery and adversely affected production costs.

To combat this undesirable trend, we must acquire a better understanding of (1) the conditions controlling methane's occurrence and volume, and the rate at which it moves through coal beds, (2) the manner in which beds may be degasified before and during mining operations, and (3) ways in which the gas might be collected and used instead of being wasted to the atmosphere. To gain the requisite knowledge, expansion of current studies in methane drainage is planned.

Techniques that show promise are: the interpretation of geologic structures as a basis for predicting occurrence of excessive amounts of methane, injection of water into coal beds to help force methane out of them, and drainage of methane through holes drilled into the coal seam. These and other, as yet unexplored, methane-control techniques are to be further developed and their economic practicality demonstrated.

Through such research and development efforts, effective methods can be devised to reduce hazards to those working in deep coal mines. In addition, it should be possible to reduce methane-caused work stoppages by 50 percent, and to permit a good part of the methane now wasted to the atmosphere to be collected and used either as a fuel or for producing a high-quality lamp black. Aside from reducing workman hazards, dollar benefits realized through application of the knowledge in research could be expected to start accruing significantly in 1972. By 1982 these benefits could reach an estimated $220 million per year.

ALUMINUM

The versatility of aluminum and its alloys has led to extremely rapid growth in production and consumption of aluminum in recent years. Growth is projected to continue, at least through 1980, at a rate of 6 to 8 percent per year.

Nearly 90 percent of the aluminum produced in the United States is made from imported bauxite. Avoidance of constraints that may be imposed on the production and use of aluminum, due to expected increased cost of bauxite or possible periods of national emergency, requires development of methods for recovery of aluminum from alternate source materials.

The producing industry has examined the question of alternate source materials to the limit allowed by corporate decisions based on immediacy of return on research dollars invested. The long-range value of an aluminum industry based on domestic feed, however, is of such wide national importance that a supplemental Government research effort is clearly justified.

The Department of the Interior's Bureau of Mines is continuing a program to develop economic processes for recovery of alumina (the intermediate, oxide, material used for producing aluminum by standard technology) from either clay or anorthosite. Both of these materials are in ample domestic supply. Concurrently, new and scientific approaches are being investigated to determine the feasibility of producing aluminum either directly from ore or from intermediate materials other than the oxide.

COPPER

An adequate domestic copper supply is essential in the national interest to offset drains from a growing economy and from interruption of foreign supply, as typified by reduction of imports from the Congo during the recent political strife there.

The effects of wild fluctuations in world copper price, between 31 and 90 cents during the last 3 years, was minimized by the stability of domestically produced copper, which held a relatively uniform price between 32 and 36 cents. To serve as a basis for continued stability, the domestic copper producing industry will require advances in technology to enable economic mining and extraction from ever-decreasing grades of ore. Needed are improvements in mass-mining and materials-handling techniques and in traditional concentration and reduction methods, or the evolvement of entirely new processing systems.