

The treatment of an acid mine drainage by limestone was reported by Braley, 1951. (35) The costs of limestone were reported to be \$3.60/short ton of sulphuric acid neutralized, compared with \$10.20 for hydrated lime and \$20.16 for soda ash (sodium carbonate). The limestone tests were conducted in a wooden flume containing about 5 tons of 1 x 2 in limestone and the contact time was varied between 10 minutes and 60 minutes. Under these conditions, about half of the acid present in the acid mine drainage was neutralized. In a further experiment, 1,500 lb of 1 x 2 in limestone was mechanically agitated with the acid mine drainage and this test also was considered to be unsuccessful, since the reaction time required to neutralize one pound of acid increased from 4 hours at the first run to 28 hours at the thirty-eighth run. Braley concluded that, "although acid mine drainage can be chemically treated with lime or other alkalis to neutralize the acid, such a method is not practical or feasible because of the economic and other difficulties involved."

In a report on the treatment of acid mine drainage in the Witwatersrand, F. C. Johnson, 1951 (36) stated that lime was the preferred reagent since the low activity of limestone required that an excess be used, and the inadequate mixing facilities of the inbye treatment plants led to the loss of much of the reagent used. Limestone was stated to have the further disadvantage that it did not remove ferrous salts from the solution. The treatment of plating and other acid wastes in beds of calcite grit was reported by Lukas in 1955. The pH value was raised sufficiently to permit the discharge of the wastes to public sewers. The feed rate to the calcite beds was 26 U.S. gal/min sq ft and the costs were stated to be 17 cents/1,000 U.S. gal.

A study of the mechanism of the interaction at the interface of ferric oxide hydrates, calcium sulphate, and calcium carbonate in the limestone neutralization of mine drainage was reported by Ohyama, 1957. (47) Brant, 1960 (39) reported that