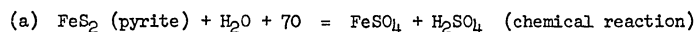
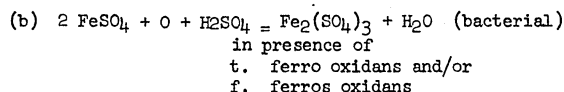


mine water is a combination of chemical, electrochemical, and bacterial oxidation.

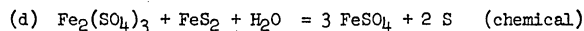
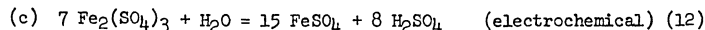
The possible mechanisms are as follows:



This is probably the initial step in the production of acid and the rate at which it proceeds is variable and depends on such factors as pyrite properties and composition, temperature, and pH of the water.



This second step involves the bacterial oxidation by an iron oxidizing bacterium.



in presence of t. thiooxidan

It is quite likely that the reaction mechanisms are more complicated than stated above. It is likely that additional intermediate reaction products such as SO_2 and H_2S occur depending on reaction conditions. Nonetheless the overall reaction as stated involves, initially, the oxidation of pyrite to soluble ferrous sulfate and sulfuric acid. That little "free" sulfuric acid is found is probably due to the reactions between other soluble mineral species and H_2SO_4 .

B. Source of Mine Drainage--Alkaline Water:- The problems associated with mine drainage are not restricted to acidic mine water. Alkaline water may also be discharged from mines and may be of such composition as to contain high quantities of iron which can be undesirable. Alkaline mine water results from the following reactions: (1) the dissolution of soluble iron bearing minerals, such as siderite, in slightly acid water.