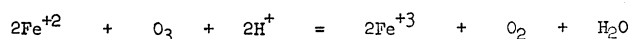


G. Ozone System:--The reaction of ferrous iron in acid solution with ozone is:



The reaction products are dependent on pH and iron concentration. Ozone is a powerful oxidizing agent, like KMnO_4 its principal function is to oxidize ferrous iron to ferric, consequently, ozone must be used in conjunction with a suitable neutralizing agent.

The application of ozone treatment to acid mine drainage has been studied by Rozelle, et al, 1965.(52) Results of initial work indicate that the rate of oxidation is independent of the iron concentration and temperature, but dependent on the rate of addition of ozone. It was also observed that ozone appears to have a "catalytic effect" on the oxidation of Fe^{+2} at low pH values. Work on actual mine water samples indicated that Mn^{+2} is also oxidized by ozone, thereby increasing the ozone demand. No cost data were given. The work is still in progress.

H. Bacteriological Oxidation System:--The oxidation of Fe^{+2} by the bacterium *ferrobacillus ferro-oxidans* was studied by Leathen.(6) Other iron oxidizing bacteria have also been observed.(8) Glover (31) has reported on an activated sludge process for Fe^{+2} oxidation. The process involves the following operations:

1. Flow balancing system.
2. Biochemical oxidation tanks.
3. Sedimentation tanks (sludge).
4. Active sludge recycle tanks.
5. Limestone, grit neutralization.
6. Iron sludge sedimentation.
7. Iron sludge filtration.