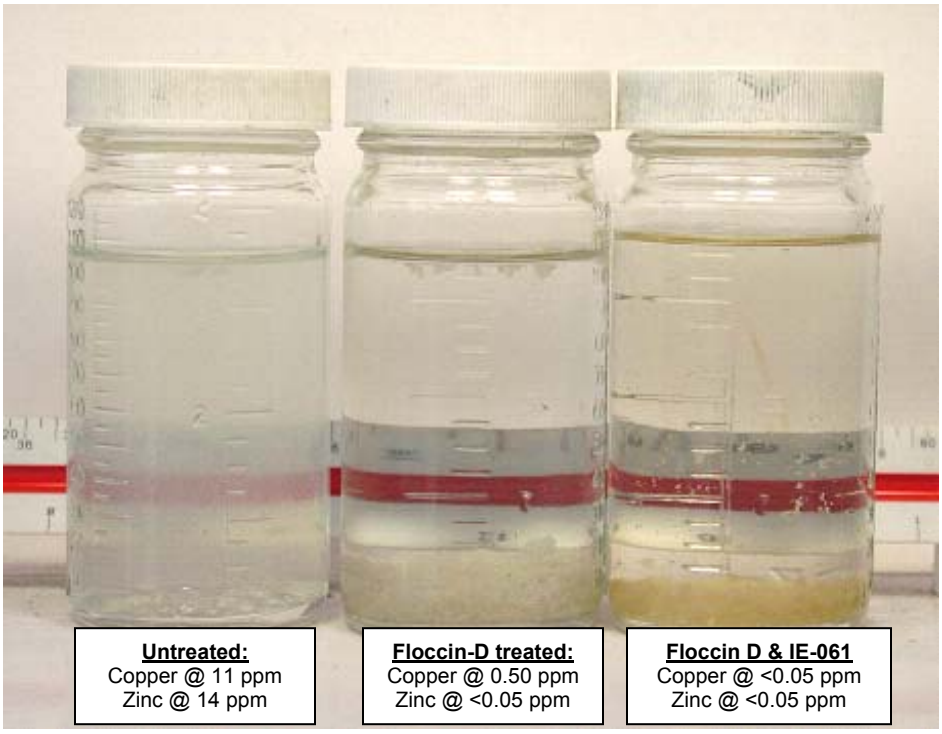
Ammunitions Manufacturing

An ammunition manufacturing facility was having problems removing copper and zinc from their 900 gpm wastewater system. The process used lime to raise the pH from 1.5 to 10, sodium carbamate for a metal precipitant, and an anionic flocculant to increase the flock size and get the solids to settle in the clarifier. Current chemical costs are estimated at $225,000/year with a significant amount of sludge addition from the lime, thereby adding to the operational costs due to the sludge being a hazardous waste.

Integrated Engineers, Inc. tested the wastewater and found that adding caustic to a pH of 10.0 and Floccin D worked as well as the current chemistry. The Floccin D dosage was 0.35 grams in 800 ml (280 ppm). The third sample shown below is with 160 ppm of IE-061. The test results are shown below:



In addition, by switching from lime to caustic the reduction in solids generation would be a significant cost reduction. At peak flow the amount of lime required (17.3 lbs./1,000 gallons) generates 7,450 pounds of 100% dry solids. In a normally dry cake the solids are 30%, therefore they were generating nearly 25,000 lbs. of sludge per day that was hazardous and expensive to dispose of in a landfill. Based on a disposal cost of $35/ton, the cost reduction due to the lime addition to the sludge would be $450 per day ($160,000/year).

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