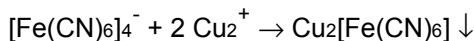


Applications of Hydrogen Peroxide

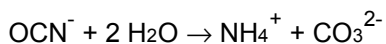
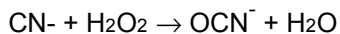
Hydrogen Peroxide for Cyanide Removing Process

Hydrogen peroxide is known to be the preferred chemical when it comes to the detoxification of mining eluents containing cyanides. But also wastewaters from hardening shops, steel mills, coking plants, plating shops and plants producing organic compounds can successfully be treated with hydrogen peroxide.

Besides free cyanide also different weak metal cyanide complexes can be destroyed. The strongest metal cyanide complexes, those of iron and cobalt, are generally too stable to undergo oxidation by hydrogen peroxide alone. Those complexes, e.g. ferrocyanide, are normally removed by precipitation with iron or copper ions:



Hydrogen peroxide reacts with cyanide in a single step, without forming toxic intermediates or side products. The detoxification reaction leads directly to cyanate, which shows far lower toxicity to fish than cyanide. The cyanate will slowly hydrolyze to ammonium carbonate. The basic equations are:



Concentrated cyanide streams do not require dilution before detoxification with hydrogen peroxide, and high temperatures can be used to accelerate the reaction. Also, hydrogen peroxide detoxification can proceed at lower, more efficient pH values compared to the detoxification with hypochlorite. Besides savings in chemicals, the use of peroxide minimizes salt built-up. The $\text{H}_2\text{O}_2/\text{CN}^-$ reaction can be operated manually or completely automated by using potentiometric monitoring. This technology enables the treatment to be carried out in a batch or continuous mode. The reaction of hydrogen peroxide can be catalyzed with Activator CN or with copper ions. The latter is usually used for the detoxification of mining effluents.

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