



AIR CONDITIONING & REFRIGERATION COMPONENTS, MISSOURI

THE CHALLENGE

A manufacturer of air conditioning & refrigeration components in the Midwest generates about 4000 gallon of wastewater daily. The waste stream is a combination of 3 lines - acid rinses, degreaser, and cyanide copper plating waste. The facility employs amine-borate chemistry in surface finishing. Cyanide is oxidized with alkaline hypochlorite and combined with other streams. The combined waste stream has a pH of about 2 and contains high level of chelating agents and metals. It was being treated with iron chemistry, caustic and polymer in a continuous setup.

The facility was experiencing frequent non-compliance with respect to copper and nickel and needed a new chemistry to consistently meet discharge requirements of 1 ppm for copper and nickel.

THE SOLUTION

The waste is currently treated without any pH adjustment. AQUASIL® AMX-5G5 is added to the waste stream followed by AMX-5M. Analytical data shown in Table 1 indicate that the treatment brings concentration of copper and nickel below the local discharge limits of 1 ppm.

Parameter	PSES Daily Max. (mg/L)	Before (mg/L)	After (mg/L)
Cadmium	0.26	0.037	< 0.004
Chromium	1.71	0.348	0.010
Copper	1.0	106	0.382
Lead	0.43	1.07	< 0.004
Nickel	1.0	123	0.121
Zinc	1.48	3.19	< 0.010
pH*	6.5 – 11.0	1.93	9.1

Furthermore, the treatment generates less sludge and enhances filter press operation. The filter cake, when subjected to TCLP test produced 6.40 mg/L for copper and 5.37 mg/L for nickel. Caustic has been reduced, only used to raise pH from 2 to 3, and ferric chloride and polymer were eliminated.

The facility has been consistently meeting its discharge requirements since the AQUASIL® treatment was implemented in 2001.

AQUASIL® treatment, in almost all cases, is a one-product system. In this

case, due to the amount and type of chelating agents and levels of metals present, it required two products added in sequence. The treatment produces a very clear treated effluent that meets municipal standards, and generates non-hazardous waste as defined by Resource Conservation and Recovery Act (RCRA).

The AQUASIL® treatment eliminated the need of all liquid chemicals and neutralization tank.

Great Chemistry At Work™