

Electroplating Wastewater Treatment

The following discussion is based on data and information provided by one of the major electroplating companies prominent in the manufacturing and plating of hand tools. The issues of concern are shared by all electroplating companies currently active in the manufacturing and plating of hand tools. The topic of this discussion is focused on treatment of wastewater produced in the electroplating process. Specifically the wastewater generated from chrome and nickel plating operations.

Prior Treatment Method:

Chrome and nickel streams were segregated due to the characteristics of the streams. Chrome was being reduced from hexavalent to its trivalent state then combined with the nickel stream. The full stream was then precipitated via typical hydroxide precipitation methodology. Broad swings in the contaminate concentrations resulted in poor treatment and the facility was issued several Notice of Violations (NOVs) from the regulating authority.

Ecolotron Solution:

Ecolotron installed a new electrocoagulation reactor and reaction tank to conduct a pilot to determine the feasibility of the technology and process. Since Ecolotron's electrocoagulation system has the ability to treat a variety of wastewater over a broad pH range, the chrome and nickel streams no longer needed to be segregated. The streams were combined in a common equalization sump with pH control, pumped through the electrocoagulation reactor then returned to the existing tank for polymer addition prior to passing it to their existing clarifier.

Results:

The flow rate was increased from an average of fifty to an average of eighty gallons per minute with peak flow rates reaching 120 gallons per minute. Both chrome and nickel concentrations in the discharged water were lowered considerably, never exceeding the allowed discharge limits. Sludge volumes for offsite disposal were decreased by 60% greatly reducing the overall costs for managing wastewater streams. The regulating authority has issued a letter of commendation to the tool manufacturer congratulating them for their corrective action and improvement of effluent quality. Ongoing performance has resulted in expansion of Ecolotron's electrocoagulation solution into the company's other plating facilities and has been adopted as their new standard for wastewater treatment.