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**ELECTROCOAGULATION, AN INNOVATIVE TREATMENT
TECHNOLOGY FOR NATURAL ORGANIC MATTER REMOVAL**

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ABSTRACT: Natural organic matter (NOM) found in surface and ground water causes many problems in drinking water and drinking water treatment processes. High levels of NOM contribute to low ultraviolet transmittance (UVT) for ultraviolet disinfection and form disinfection byproducts when treated with chlorine. Electrocoagulation (EC) was tested for the removal of NOM from surface and ground water sources using iron and aluminum electrodes. EC treatment increased UVT from 19% to 86% in surface water samples treated with EC and from 20% to 85% in groundwater samples. Color and iron were also significantly reduced by the EC treatment. The testing was conducted using a 2 gallon per minute (gpm) laboratory scale EC system. The laboratory scale system was designed based on full scale systems that are scalable to 1000 gpm and larger. EC is an electrolytic treatment process that passes direct current electricity through a water stream releasing reactive metal ions and hydroxyl radicals. EC removes a wide range of pollutants including heavy metals, hydrocarbons and phosphorus in addition to NOM removal. The process eliminates chemical treatment and reduces total dissolved solids.. EC can be used to optimize existing drinking water treatment systems and produces water that can be disinfected with conventional methods including ultraviolet or chlorination.

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