**Rapid In-Pipe Destruction of Disinfection Byproducts through Electrochemical Oxidation**

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The application of chlorination for the disinfection of drinking water has been a major factor for the improvement of public health since the twentieth century. However, during disinfection disinfection byproducts (DBPs) are formed by the reaction of chlorine with the natural organic content in water (DOC). The most abundant groups of DBPs are trihalomethanes (THMs) and haloacetic acids (HAAs) which are regulated by the EPA. Standard water treatment practices to lower DBP levels mostly aim to minimize the content of organics in the water before the disinfection step. This practice cannot fully prevent the formation of DBPs, so there is potential for post-disinfection removal of these components to meet increasingly strict regulatory requirements. Electrochemical oxidation (EO) applies electric current between electrodes to degrade contaminants. This can happen either through direct oxidation on the surface of the electrodes or by indirect oxidation involving oxidative radical species in the bulk solution. While EO has shown efficacy in eliminating water contaminants, its applicability to DBPs remains unexplored, particularly within service pipes.

We conducted batch EO testing of specific DBPs under variable operating conditions, manipulating factors like current density and electrolyte concentration. Thus, degradation kinetics of THMs, HAAs and haloacetonitriles (HANs) under EO were determined. For the THMs, first order reaction constants of 9.51 x10-3 min-1 to 28.01 x10-3 min-1 have been determined with half-lives of the compounds between 25 and 72 minutes. Further studies will include the application of the determined operating conditions to a flow-through reactor, capable of testing interactions with different piping materials.