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Abundance and Composition of Bacterial Communities in Water Main Biofilms from Full-scale Drinking Water Distribution Systems in the USA and Norway

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There is evidence that biofilms in drinking water distribution systems may increase corrosion of infrastructure, prolong the survival of waterborne pathogens, and negatively impact water quality. Despite their potential significance, the composition of such biofilms and their influence on tap water microbial communities is poorly understood, primarily due to the difficulty of accessing buried water mains and elevated water towers to sample resident biofilms.

This presentation will cover the results from the sampling and analysis of water and biofilm samples from full-scale water distribution systems in the United States, where chloramines were used as the residual disinfectant, and in Norway, where little or no disinfectant residual was present.

Quantitative PCR was used to assess the abundance of all bacteria and specific species of interest including opportunistic pathogens while sequencing of the V3 region of the 16S rRNA gene was used to investigate bacterial community composition. The effects of water chemistry on bacterial communities and links between the biofilm and suspended populations will be explored.