

Effect of hydraulic conditions and disinfectants on biofilm in model distribution systems

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ABSTRACT

Adopting a traditional culture method and PCR–DGGE, this paper discusses the biofilm development on a polyethylene pipeline in model water distribution systems. When chlorine is absent, different hydraulic conditions had no effect on biofilm development. Biofilm HPCs developed up to a stable level in 7 days and maintained at 105 CFU/cm². The diversity of bacteria increased as time went on, and some kinds of bacteria changed greatly: *Sphingomonas* sp. tended to excrete extracellular polymers and *Mycobacterium* sp. had a highly hydrophobic surface, gradually taking the place of some other kinds. When chlorine is present, biofilm HPCs under shear stress 0.95 N/m² was about a quarter of that of 0.18 N/m². The diversity of the bacteria decreased relatively, and *Acinetobacter baumannii*, with a good drug-fast ability, became the dominant bacterium.

Keywords: Biofilm; HPCs; Microbial community; Hydraulic condition; Chlorine; PCR–DGGE

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