

## Visualization of transparent exopolymer particles (TEP) in various source waters

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### ABSTRACT

Transparent exopolymer particles (TEP) have been implicated as an important factor in the development of aquatic biofilm on membranes and other surfaces. We have recorded TEP and associated bacteria from four different kinds of source water (coastal seawater, freshwater lake, secondary treated wastewater and saline, high sulfide content groundwater from a deep well) as visualized by light and epifluorescent microscopy after dual-staining with Alcian Blue combined with SYBR Green. Significant concentrations of TEP were measured in all water sources. We illustrate some of the wide variety of morphological forms that these particles can assume and indicate obvious differences in the characteristics of TEP from different source waters. Visualization, together with measurement of TEP concentrations can serve as useful indicators of biofouling potential in feedwaters. These images should lead to a better appreciation of the impact of TEP in fouling of surfaces such as RO and UF membranes and the need to develop effective measures to minimize the levels of these particles in source waters.

*Keywords:* TEP images; Transparent exopolymer particles; Biofilm formation; Marine; freshwater; Treated wastewater; Saline well water

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