



Monitoring phenol degrading *Candida* and bacterial pathogens in sewage treatment plant

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ABSTRACT

The fate and seasonal variation of several microbial pathogens (MPs), including *Salmonella* spp. (SS), *Escherichia coli* O157:H7 (EC), *Listeria monocytogenes* (LM), *Staphylococcus aureus* (SA), biomarker bacteria, and *Candida* spp. (CS) were investigated in a municipal sewage treatment plant (MSTP) located in Zagazig City, Egypt, employing an anaerobic/anoxic/oxic (A/A/O) process to monitor their incidences in both influent and effluent throughout the seasons of 2011. Enhancing the activity of *Candida* populations and the bacterial biodegradation activities in the anaerobic–anoxic–oxic process is an axial pathway for the removal of phenol. In summer season, phenol degradation in MSTP was about 85% which was higher than that in winter season (60%). The chemical treatments routinely used in MSTP can effectively reduce 70% of MPs in wastewater in summer and more than 80% in winter. The concentrations of microbial populations in the effluent were much higher in summer and spring than in winter and autumn, which was closely related to degradation of phenol. Therefore, this study may raise a particular concern regarding the removal of MP and phenol from wastewater in summer seasons.

Keywords: Bacterial pathogens; Phenol; *Candida*; Sewage treatment plant; A/A/O

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