

Assessment of mutagenic potency of source water treated by ozone and adsorption processes

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摘要.

Abstract

This research utilized the Ames test to determine the mutagenicity of water treated by advanced processes, including ozonation and granular activated carbon (GAC). Raw water samples for this research included those obtained from the Pan Hsin waterworks as well as samples containing humic acids. Treated samples were collected from the pilot-scale advanced treatment plant. The Ames test was used to measure the mutagenicity of the water after each treatment process. For the Pan Hsin raw water samples treated with ozone or GAC, it was indicated that, regardless of whether samples were preozonated or not, they all showed a mutagenic potency less than 2 once the S9 enzyme was added. This level of mutagenicity is insignificant. The prepared humic acid samples, on the other hand, demonstrated a significant reduction in mutagenicity after the pre-ozonation process, indicating that preozonation can lower the degree of mutagenicity. Furthermore, the mutagenicity of the prepared humic acid samples gradually decreased after the advanced treatment process. However, when chlorine was added later to these samples, the mutagenicity increased again. This research shows that the use of O₃/GAC processes to treat water can successfully lower mutagenicity, indicating a great potential for applications in the treatment of drinking water