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[Lab. of Public Health]

Evaluation of mutagenic Activity of Ozonated and Ozonated-Chlorinated Humic Substances.

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SOS chromotest was used to determine the mutagenic activity by ozonation and ozonation-chlorination of humic substances. By ozonation only, mutagenic activity decreased gradually with the progress of ozonation. Also, by ozonation-chlorination, mutagenic activity decreased compared with chlorination only. But, the mutagenic activity could not be eliminated completely by combination of preozonation and chlorination. We tried to eliminate this mutagenic activity by granular activated carbon (GAC) treatment, but it was not effective.

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Behavior of Mutagenic Aldehydes formed by Preozonation in Postchlorination.

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p-Hydroxybenzaldehyde, one of components of humic substances, were chlorinated after preozonation. Mutagenic aldehydes, such as formaldehyde, acetaldehyde, glyoxal, glyoxylic acid and methylglyoxal were detected in residual water layer after ether extraction. With the elevation of added chlorine dose, glyoxal, glyoxylic acid and methylglyoxal decreased, but formaldehyde and acetaldehyde increased.

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[Lab. of Public Health]

Behavior of Glyoxal during Granular Activated Carbon Treatment.

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Glyoxal, which was the strong mutagen formed by ozonation of humic substances, was treated with granular activated carbon (GAC) and the behavior of glyoxal was investigated. Glyoxal itself was adsorbed well on GAC at pH 5-7. But, glyoxal increased by GAC treatment of ozonated humic substances when the ozone dose was insufficient to decolorize the humic substances. The precursors of glyoxal may exist among other ozonated products which may be changed to glyoxal on GAC.