EFFECTS OF PH AND TEMPERATURE ON THE GENOTOXICITY OF HALOGENATED DISINFECTION BY-PRODUCTS IN CHLORINATED WATER

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Abstract

Disinfection by-products (DBPs) are important environmental chemicals and the objective of this study was to assess the effects of pH, temperature and bromide concentration on the genotoxicity of DBPs in chlorinated water. Cells were exposed to humic acid samples and genotoxocity was assessed by chromosomal aberration assay using Chinese hamster lung (CHL) cells *in vitro*. A strong positive correlation between bromide concentration and the number of chromosomal aberrations formed was observed. Higher temperature values resulted in more chromosomal aberrations (14.6%) and a greater percentage of aberrant cells (24.6%) at pH 9 and, at higher bromide concentrations, more aberrations were formed at 25^{o}C than 5^{o}C for all pH values. There is some evidence that the number of aberrant cells is higher at 5^{o}C at pH 7 than pH 5 or 9, however there does not appear to be any appreciable change in genotoxicity over the pH range tested.