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1: [Toxicology](#). 2006 Feb 15;219(1-3):106-12. Epub 2005 Dec 20.

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Genotoxic potential of by-products in drinking water in relation to water disinfection: survey of pre-ozonated and post-chlorinated drinking water by Ames-test.

[Sujbert L](#), [Racz G](#), [Szende B](#), [G.](#)

Department of Public Health, Semmelweis University, P.O. Box 579, Budapest H-1445, Hungary.

Mutagenic potential of drinking water samples derived from ranneywells was studied. 100-100 l of untreated (rough) and ozone-treated as well as chlorinated-disinfected water were dropped on and adsorbed by macroreticular resin columns (Serdolit PAD-III and Amberlite XAD-2). The adsorbed material was desorbed by methanol and dichloromethane. After elimination of the solvents by vacuum distillation the adsorbed material was dissolved in dimethylsulfoxide. The mutagenic activity was tested in the Ames-Salmonella/rat liver microsome system. The tester strains were TA-98 and TA-100. The material adsorbed to Serdolit PAD-III from rough and also disinfected water did not induce mutagenicity in case of the TA-98 tester strain, irrespective of activation by liver microsomes. However, the material adsorbed to Amberlite XAD-2 exerted mutagenic effect on the TA-98 tester strain, with and without liver microsome activation, both in case of rough and disinfected water. The TA-100 tester strain showed mutation after, but not without activation, when treated with the material adsorbed by either Serdolit PAD-III or Amberlite XAD-2, in case of rough water. Material derived from disinfected water and adsorbed to Serdolit PAD-III, caused mutation of the TA tester strain also only after activation. The material derived from disinfected water and adsorbed to Amberlite XAD-2 proved to be mutagenic to the TA-100 tester strain both without and after activation. Mutagenic activity was exerted by the amount of concentrates derived from 0.28 to 0.83 l of rough and 0.83-2.5l of disinfected water. The mutagenic activity of drinking water raises the possibility of carcinogenic effect, too. Search for alternative methods of water disinfection may be recommended.

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