

Bromate removal from water using granular activated carbon in a batch recycle

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ABSTRACT

The treatment of water polluted with bromate ions using GAC (granular activated carbon) was studied. As bromate ion is not a natural component of water, but it may be formed during the disinfection processes of drinking water, the level of bromate concentration according to WHO regulation in drinking water must be below 10 µg/l, and in view of this very low permissible concentration and the practical limitation of bromate available treatment processes, the adsorption of bromate in a GAC bed reactor and the effect of different parameters on the rate of bromate removal such as initial bromate concentration, solution flow rate, column contact time and temperature were investigated. It was found that the rate of bromate removal is increased by increasing the column contact time and temperature but decreased by increasing initial bromate concentration and solution flow rate. The removal of bromate from water using a granular activated carbon bed reactor was found to be an efficient technique for the removal of bromate ions, as high removal rate up to 95% was achieved. The present data suggest the use of flow rates in operating continuous reactors in order to obtain a high degree of bromate removal.

Keywords: Bromate; Adsorption; Desalination; Drinking water
