

A test to determine remaining GAC adsorptive capacity for geosmin and MIB

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Abstract

Granular activated carbon (GAC) is commonly used in drinking water treatment plants for taste and odor control. In parts of the world where T&O events occur only periodically, it is difficult to estimate the remaining service life of existing GAC since its performance cannot be monitored in real time. This study explores a method previously reported by Gillogly et al. (Jour. AWWA, 91:8) to address this problem. The method, while promising, has not been widely evaluated to date.

The method uses minicolumns that are packed with partially spent GAC collected from full-scale operating GAC beds to evaluate the GAC's removal capacity of geosmin and 2-methylisoborneol (MIB). Results of the minicolumn tests were compared to those of pilot-scale tests with core samples from 9 GACs at four water treatment plants (to date). The minicolumns have so far shown close agreement (within 10%) with the performance of the pilot-scale columns, which in turn are predicted to match the performance of the full-scale contactors. Research is ongoing to expand the database with more waters and GAC types (five more treatment plants are scheduled), with results from these additional plants/GACs to be presented at the conference. A full-scale comparison between in-service GAC contactors vs. pilot-scale vs. minicolumns is also planned to be completed in time for presentation.

The presentation will also discuss results from experiments to optimize the minicolumn testing conditions, such as GAC column diameter, temperature control, and other variables that may be expected to affect the accuracy of the results.

The long-term goal of this work is to be able to present utilities with a reasonably simple and affordable tool to determine the present-day adsorptive capacity of an existing GAC contactor to remove geosmin and MIB, should a T&O event occur.