Removal of fluoride using bagasse activated carbon

Neeraj Chandraker\textsuperscript{a}, Raghwendra Singh Thakur\textsuperscript{a*}, Parmesh Kumar Chaudhari\textsuperscript{b}

\textsuperscript{a}Department of Chemical Engineering, School of Studies of Engineering and Technology, Gurughasidas University Bilaspur – 495009, Chhattisgarh, India, emails: chandraker.neeraj@gmail.com (N. Chandraker), raghurpr@gmail.com (R.S. Thakur)

\textsuperscript{b}Department of Chemical Engineering, National Institute of Technology Raipur, Raipur – 492001, India, email: pkchaudhari.che@nitrr.ac.in

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\textbf{A B S T R A C T}

Bagasse activated carbon (BAC) was prepared from sugarcane bagasse to remove fluoride from a high concentration, 10–50 mg/L, synthetic fluoride-containing water. The role of pH, temperature, adsorbent dose, initial concentration and contact time in defluoridation were assessed. Results showed that BAC reduced the fluoride concentration from 50 to 9.8 mg/L at 26°C, while the concentration of 10 mg/L was reduced to 0.8 mg/L which is within the safe fluoride concentration limit of 1.5 mg/L specified by the World Health Organization (WHO). Kinetic, isotherm and thermodynamic studies were performed to analyze the nature of the fluoride adsorption process over BAC.

\textit{Keywords:} Fluoride removal; Sugarcane bagasse; Activated carbon; Adsorption