

# Cyclodextrin nanosponges in the removal of organic matter to produce water for power generation

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## **Abstract**

The water treatment processes employed by coal-fired power stations do not completely remove most of the natural organics (volatile component) from the feed water used for power generation. Currently, polyaluminium chloride, polyelectrolyte and ion exchange resins are used to treat water at power stations. The effectiveness of water-insoluble cyclodextrin (CD) polymers in the removal of natural organics (volatile component), dissolved organic carbon (DOC) and total organic carbon (TOC) from water collected at a specific power plant is reported. Results obtained from this study show that, despite the usage of the treatment processes, natural organic species emanating from raw water still persist throughout the stages of the water treatment process. The polymers on the other hand demonstrated the ability to remove dissolved organic carbon (DOC) from raw water by as much as 84%, whilst TOC removal was relatively low.

**Keywords:** organic pollutants, dissolved organic carbon (DOC), total organic carbon (TOC), cyclodextrin polymers, coagulants, ion-exchange resin