

## A novel approach for treatment of a typical perfumery chemical wastewater for possible reuse

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### ABSTRACT

Heptaldehyde is a very important castor oil based perfumery chemical. This is produced by pyrolyzing castor methyl esters (CME). In this process large volumes of water are required and the wastewater produced is contaminated with heptaldehyde and other byproducts. The presence of heptaldehyde — a malodorous compound, causes serious problems to the nearby locality if the contaminated water is discharged without proper treatment. In the present investigation, a process was developed for the treatment of aldehyde contaminated perfumery chemicals wastewater. As the common coagulants such as alum, ferric chloride, alginic acid and chitosan either alone or in combination with powdered activated charcoal (PAC) as adsorbent did not have any desired effect, a novel pretreatment process was developed using sodium borohydride as reducing agent. This was followed by membrane processing. The process parameters for using both the reducing agent and PAC as adsorbent were optimized keeping in mind the removal of mal-odor of the wastewater samples. The pretreated water was first filtered using a micron filter and then processed through a reverse osmosis membrane. The final treated water was clear, odorless and the quality of the water was found to be suitable for reuse.

**Keywords:** Wastewater; Perfumery chemicals; Heptaldehyde; Sodium borohydride; Reducing agent; Powdered activated charcoal (PAC); Reverse osmosis (RO)

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