

Management of hydrogen sulphide generation at a Kraft mill effluent plant

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Abstract

Communities surrounding an integrated Kraft mill noticed odours from the mill's effluent treatment plant. A project was therefore commissioned by the mill to proactively manage the odours from both the pulp-processing operations and the effluent treatment plant. This project formed part of a co-ordinated study that was implemented by the mill to limit emissions of the total reduced sulphur (TRS) components from the pulp mill operations. It was found that sulphate-reducing bacteria (SRB) converted the sulphates present in the effluent to hydrogen sulphide (H_2S) by dissimilatory respiration. The combined use of a nitrate-releasing biomodifier (Bulab[®] 9518) and an anthraquinone sulphate-reduction inhibitor (Busperse[®] 2432) was effective in reducing both SRB activity and H_2S levels. The average aqueous H_2S levels (40 mg/ℓ) were reduced to between 92% and 99%.

Keywords: biomodifiers, hydrogen sulphide, Kraft mill effluent plant, sulphate-reducing bacteria (SRB), anthraquinone, sulphate reduction inhibition, sodium nitrate