

# Pengelolaan limbah cair dengan pendekatan konsep eko-efisiensi (analisis hubungan antara penerapan program cleaner production di area produksi dengan kinerja IPAL di PT XYZ) = Management of the liquid waste through approach of the eco efficiency concept (analysis of correlation between the applications of cleaner production program on production area and WWTP performance in PT XYZ)

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## Abstrak

### <b>ABSTRAK</b><br>

Pertumbuhan usaha, peningkatan kepedulian terhadap lingkungan, serta kenaikan biaya produksi merupakan tantangan sekaligus kesempatan bagi PT XYZ, yang memproduksi sabun, kosmetik, dan bahan pembersih rumah tangga. Perusahaan ini sudah menerapkan konsep eko-efisiensi melalui perbaikan IPAL, namun kualitas air limbahnya belum memenuhi standar baku mutu, sehingga dilanjutkan dengan program cleaner production di area produksi. Penelitian ini bertujuan menganalisis hubungan antara penerapan program cleaner production di area produksi dengan kinerja IPAL, menghitung keuntungan ekonomi, dan rasio ekoefisiensi, dengan mengikutsertakan karyawan. Penelitian dilakukan dengan pendekatan kuantitatif serta mix method. Hasil analisis menunjukkan korelasi positif dan signifikan antara keberhasilan program cleaner production di area produksi dengan penurunan COD outlet IPAL, dari 458,70 mg/l menjadi 153,22 mg/l. Tingkat pengetahuan, sikap, dan perilaku pekerja sangat baik; biaya pengolahan air limbah di PT XYZ menurun 21%; dan rasio eko-efisiensi penggunaan air naik dari 0,55 menjadi 0,56. Hal ini memperlihatkan bahwa program cleaner production memberikan manfaat ekonomi dan lingkungan

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Growth in the business, increase of the environmental awareness, as well as increase in the production costs are become a challenge and an opportunity for PT XYZ, that produces soap, cosmetics, and household products. The company has already implemented the eco-efficiency concept through improvement of WWTP, however quality of the waste water effluent did not meet the quality standards applied yet, so that proceeded with implementing the cleaner production program in production area. A proper application of the ecoefficiency concept should get an appropriate quality of the waste water and also decrease in the production costs. This study was conducted to analyze correlation between implementation of the cleaner production program on production area and performance of the WWTP and also to calculate the economic benefits and ratio of the eco-efficiency, with involvement of the employee definitely. The study

was using a quantitative approach and the mix methods. Result of the analysis shows positive and significant correlation between successfully of the cleaner production program by decreasing COD of IPAL outlet from 458.70 mg/l to 153.22 mg/l. The level of knowledge, attitude, and behavior of workers related to the program was very good; cost of waste water treatment in PT XYZ decreased by 21%; and increased eco-efficiency ratio of water from 0.55 to 0.56. Thus, implementing the cleaner production program will provide economic and environmental benefits to the company