

## عنوان مقاله:

The Comprehensive Concept of Urea Thermal Hydrolysis in Industrial Urea Wastewater Treatment

## محل انتشار:

ششمین کنگره بین المللی مهندسی شیمی (سال: 1388)

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## خلاصه مقاله:

This paper gives a comprehensive study on urea wastewater treatment by co-current and counter-current configurations of thermal hydrolysis reactors. A model is developed for the two configurations of urea thermal hydrolysis reactors of industrial urea plants. In the proposed model the urea hydrolysis reactors are divided into several continuously stirred tank reactors (CSTRs). The extended electrolytic UNIQUAC equation is used to describe nonideality of liquid phase of  $\text{NH}_3\text{--CO}_2\text{--H}_2\text{O}$ –urea system under high temperature. The model incorporates reaction rates of urea hydrolysis and takes into account the effects of solution non-ideality and back-mixing on the urea thermal hydrolyser performance. The model provides temperature and concentrations distribution of different components in the liquid and vapor phases along the urea thermal hydrolyser. Comparison of two types of hydrolysis reactors shows counter-current mode of hydrolyser isn't better than co-current mode under each operation condition; but, to achieve the new environmental standards and complete treatment, application of counter-current hydrolyser is necessary. Sensitivity analysis was carried out to assess the effect of the various operating parameters on the two types of hydrolysis reactors performances.

## کلمات کلیدی:

Urea wastewater; wastewater treatment; urea hydrolysis; Co-current mode; Counter-current mode

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/77425>

