

The studies on catalytic wet peroxide oxidation process to remove 1,4-Dioxane

김돌선, 김태한¹, 이영경¹, 조미정², 레넥투안², 이동근^{1,*}
경상대학교 BK핵심환경; ¹경상대학교 화학공학과;
²경상대학교 환경보전학과
(d-lee@gnu.ac.kr*)

1,4-Dioxane causes liver damage and kidney failure, has been known to be carcinogenic to animals, and is a potential carcinogen for humans and, hence, is classified as a hazardous waste and a priority pollutant. 1,4-Dioxane has a highly symmetric chemical structure, and is known to be extremely refractory against biological decomposition. Accordingly conventional biological wastewater treatment method such as activated sludge method is not appropriate for the successful treatment of 1,4-dioxane.

Cu wire catalyst was highly reactive toward catalytic wet peroxide oxidation of the highly refractory 1,4-dioxane. Complete removal of 1,4-dioxane could be achieved with the catalyst. 1,4-Dioxane was primarily transformed into intermediates of Ethylene glycol diformate, oxalic acid, formic acid, formaldehyde and acetaldehyde they were formed in a sequential procedure. The Cu wire catalyst was also highly stable against deactivation during the reaction.