

Study of TNT red water treatment by ice crystallization

장효준, 김광주[†]

한밭대학교

(kjkim@hanbat.ac.kr[†])

Current activities in the mining, construction, explosives and defense related operations have led to the production of large amounts of energetic materials. 2,4,6-Trinitrotoluene (TNT) is one of the explosives used widely for these operations. The release of these compounds into the environment induces the risk of contaminating soil and groundwater. Therefore, this study aimed to develop the novel technique to treat the TNT wastewater, for this, continuous crystallization by the control of operating conditions such as injection amount of ice and saturated solution was studied. TNT wastewater organic concentration is 150ppm. To form ice crystal from the wastewater, the wastewater cooled below their saturation temperatures. After spontaneous nucleation, the scrapper blade is started to scrap off layer of ice crystals and uniform crystal suspension with ice crystal between (100~200 μ m) is obtained. When the amount of injection solution is 200ml, average crystal size is largest, crystal size distribution is very broad. On the other hand, when the amount of injection solution is 50ml, average crystal size is small, crystal size distribution is narrow.