

Study on TNT waste concentration gradient by continuous drum crystallization using decompressure

고정완, 김광주[†]
한밭대학교

(kjkim@hanbat.ac.kr[†])

TNT waste is composed of 2,4,6-trinitrotoluene (TNT), hexahydro-1,3,5-trinitro-1,3,5-triazazine (RDX), and octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX), because of the toxicity and possible carcinogenicity of TNT and RDX, these chemical substances need to be removed before TNT waste is discharged to the environment. Conventional wastewater treatment technologies have been mainly used for incineration. This study investigates a continuous drum ice crystallization process that consumes less energy than incineration. The ice from the crystallizer is transferred to a wash column, and the sweating process proceeds with changing the pressure of the decompressor used in the separation process to 200, 400, 600, 800, while maintaining the temperature at 20°C. As a result, as the pressure decreased from 800 mbar to 200 mbar, the separation rate became faster and more pure crystals could be obtained from 103 ppm to 63 ppm.