



## Nanotechnology: the next revolution for wastewater treatment (TNT contaminate)

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### ABSTRACT

Trinitrotoluene (TNT), a nitroaromatic explosive, is encountered groundwater contaminant that can pose a human health risk, even at very low aqueous concentrations. In this study, a series of catalytic degradation of dissolved TNT have been investigated using iron nanocatalysts (zero valent and its oxide) and Fe<sub>2</sub>O<sub>3</sub> bentonite nanocomposite. The prepared nano catalysts were characterized via XRD, BET and TEM. The degradation of TNT by Fe-PILC, is almost complete after 30 min, whereas 65, 100 min on using the Fe-zero valent and Fe-oxide, respectively. These results indicate that the reaction rate is a strong function of the number of iron surface active sites, and therefore the Fe-catalysts an important reaction variable.

*Keywords:* Trinitrotoluene (TNT); Nanotechnology; Catalytic degradation wastewater; Fe<sub>2</sub>O<sub>3</sub> bentonite nanocomposite; Fe-zero valent; Fe-oxide; Iron nanocatalysts

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