Remediation of 3-Nitro-1,2,4-Triazol-5-One (Nto Explosives) in Water

UA ID Technology #ua17-086

Invention:
The proposed technology is a pretreatment step that will aid in the degradation of aromatic compounds with nitro substituents (explosives, TNT, plasticizers, dinitroluene). It involves the injection of an inexpensive reducing agent that results in reduction of one or more of the contaminant’s nitro groups to amines rendering the contaminant more susceptible to conventional oxidation treatment by potassium permanganate (KMnO4). UA17-086 is a method to provide a more practical water treatment system using FE.

Background:
Presently, ISCO is limited in its ability to treat explosives such as TNT and DNAN. Treatment with ISCO practices is either slow, partially or completely ineffective at being able to mineralize some contaminants, especially when the contaminant in question is present at a high concentration.

Advantages:
• More cost effective than conventional methods
• Uses lower volumes of KMnO4 than conventional treatment method

Applications:
• Environmental remediation of abandoned munitions production and military installations
• Remediation of pharmaceutical or plasticizer spills or contamination
• Remediation at commercial explosive sites
• Remediation at mining and demolition locations

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