

PRODUCTION OF ZERO-VALENT IRON NANOPARTICLES (nZVI) FOR IN-SITU GROUNDWATER REMEDIATION INCLUDING RECENT FIELD SCALE APPLICATION

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Nano Zero-Valent iron (nZVI) particles are successfully used for in-situ ground water remediation. NZVI presents a modern method of treatment of environment polluted by chlorinated hydrocarbons, heavy metals, hexavalent chromium, radionuclides and other contaminants. This remediation technology started to be used tentatively in USA several years ago and the treatment works already take place in the various sites at present. This technology is environmentally friendly and cost-effective compared to methods like pump&treat or venting. NanoFe is applied through small injection wells with minimal negative environmental impact. Due to the size of a few nanometers (average 50nm) and suitable surface stabilization of nZVI, the injected nanoparticles migrate through the rock environment, where they induce redox reactions with pollutants dissolved in the ground water.