# Design of Gravel-Sand Filter for Arsenic Removal: A Case Study of Muzaffargarh District in Pakistan.

Arsenic decontamination of drinking water has grabbed significant attention due to arsenic's serious effects on health. A novel gravel-sand filter (GSF) holding zero-valent iron plates was designed and constructed in Muzaffargarh district (Pakistan) for arsenic removal from drinking water with lower iron concentration (0.3 ppm). The GSF efficiently removed arsenic up to 99.99% with long-term stability. The GSF provides 800 liters of arsenic-free drinking water in 39 hours with a rate of 2.5 L/h. A tentative mechanism for arsenic removal is evaluated and described on the basis of oxidation-coagulation-adsorption processes. Chemical composition of underground water is also analyzed and discussed. This GSF design will open a new avenue for arsenic removal and can be extended to other parts of the world.