



Contribution ID: 815

Type: **Poster + 3 Minute Pitch**

Mitigation of arsenic mass poisoning

Tuesday, 15 May 2018 16:52 (2 minutes)

Arsenic is one among the most hazardous contaminants present in drinking water sources. Recent increases in agricultural growth and extensive use of fertilisers in India and Bangladesh have led to the release of naturally occurring arsenic from the rocks and earth's crust, creating a major public health issue in these countries. A novel technology has been recently developed that uses naturally abundant laterite soil to filter arsenic, and now provides filtered water to more than 5000 people. To upscale this technology and enable it to realise its full potential requires an understanding of how the filter lifetime depends on the operating regime e.g., the required flow rate, contaminant concentration and filter size). In this poster we show the mathematical model we have been developing that characterises the arsenic removal that avoids the need for time-consuming experiments. The model is reduced to a system that can be described by a single dimensionless parameter, the filter rating, which characterises the entire filter behaviour. The resulting model enables efficient parameter sweeps to be performed that predict how the lifetime of a filter in a specified role, such as a family home, school or community filter.

References

Acceptance of Terms and Conditions

[Click here to agree](#)

Primary authors: GRIFFITHS, Ian (University of Oxford); Dr MONDAL, Sourav (University of Oxford); Dr MONDAL, Raka (University of Oxford); Prof. DE, Sirshendu (IIT Kharagpur)

Presenter: GRIFFITHS, Ian (University of Oxford)

Session Classification: Parallel 5-B

Track Classification: MS 2.26: Modeling, simulation and validation of filtration problems