Innovative In-Situ Remediation Approaches for Treating PFAS

Bruce Tunnicliffe, Vertex Environmental Inc.

While new standards are being published in Canada for per- and polyfluoroalkyl substances (PFAS), including perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), there unfortunately is no consensus as to the most effective remediation approach for these "forever chemicals". There will be a strong focus on PFAS remediation in 2023 as more standards (and more stringent standards) continue to be developed across Canada, North America and the world.

The purpose of this talk is to summarize the current state of PFAS remediation and introduce an innovative, new method for in-situ treatment of PFAS.

Currently the most demonstrated PFAS treatment technologies rely on non-destructive means that remove PFAS from water via adsorption media. Pragmatic in-situ treatment options currently include sequestration, but the proper selection and application methods of adsorbent materials for immobilization of PFAS in groundwater plumes may be key in the near-term for full-scale, widespread, in-situ PFAS plume treatment.

This presentation will review and present data from multiple studies (bench and field) where adsorbent materials have been utilized to treat PFAS contamination in groundwater. Furthermore, this presentation will discuss the significant efforts being made to optimize and apply these existing adsorptive technologies to enhance their reliability, lifespan, and overall effectiveness in treating PFAS contaminated groundwater plumes. Various in-situ amendment materials will be reviewed, including activated carbon and clay-based materials. Throughout the presentation, recommendations and insights will be offered into the potential for future effective in-situ PFAS treatment methods.

Bruce Tunnicliffe

Mr. Tunnicliffe is President of Vertex Environmental Inc., is an Environmental Engineer, and has 25 years of experience designing and implementing remediation programs for chlorinated solvents, petroleum hydrocarbons and emerging contaminants such as PFAS/PFOA. Mr. Tunnicliffe holds a Master's degree from the University of Waterloo where he studied chemical oxidation in fractured bedrock.