

BIOAUGMENTED ADSORBENTS FOR CLEANING WATER CONTAMINATED WITH CVOCS AND 1,4-DIOXANE

PROJECT OVERVIEW

Chlorinated volatile organic compounds (CVOCs) and 1,4-dioxane are persistent groundwater contaminants that are challenging to treat simultaneously. This project will demonstrate treatment of groundwater contaminated with CVOCs and 1,4-dioxane using a bioaugmented adsorption reactor system.

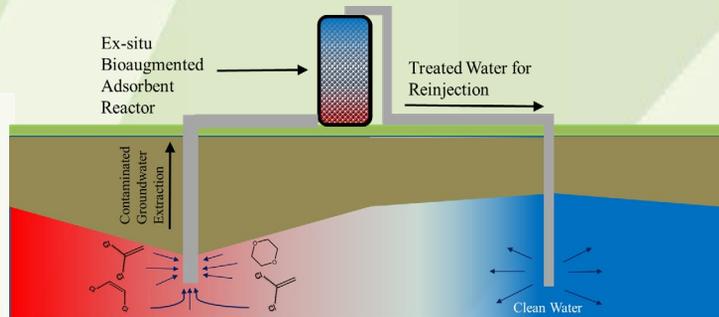
In the first phase, bench-scale column studies will be carried out under site-relevant conditions to inform the selection of adsorbent materials and microbes along with quantification of nutrients, substrates, and oxygen levels. In the second phase, a pilot-scale reactor will be built and the technology demonstrated in the field to treat CVOCs and 1,4-dioxane.

BENEFITS

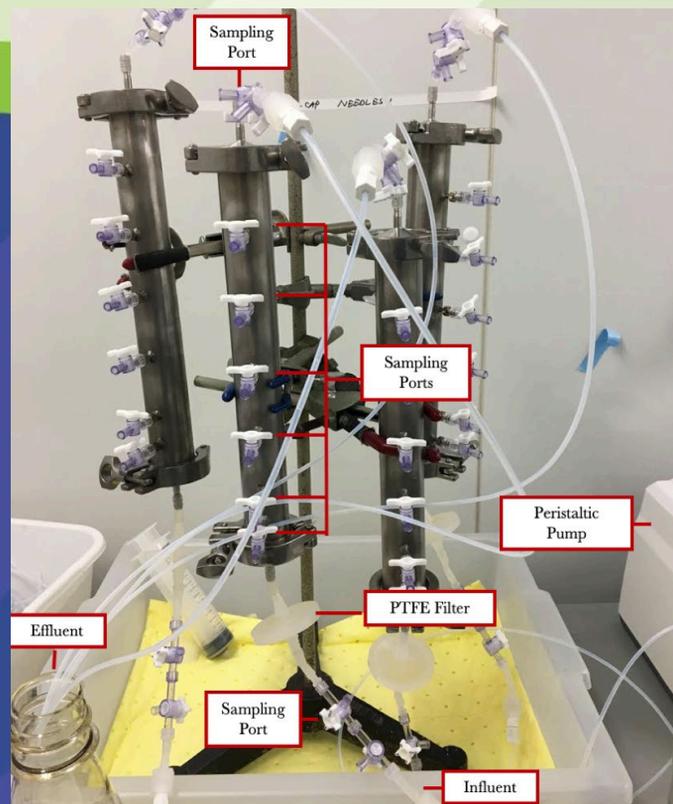
Upon successful demonstration, this approach could limit the cost associated with conventional treatments, such as advanced oxidation processes, which have high energy and/or chemical requirements. The stakeholders will achieve more efficient and sustainable removal of toxic water contaminants.

PATH FORWARD

This technology will be applicable anywhere that CVOCs and 1,4-dioxane occur as water pollutants. There are many such sites in the DoD portfolio. This work supports modernization and potential upgrades of existing ex-situ groundwater and wastewater treatment plants to reduce DoD's liabilities and expedite site cleanup and closure.



Bioaugmented adsorbent packed columns. Material selection ensured chemical and biological compatibility and representative sampling data. Sampling ports were fabricated to allow sampling along the length of the column. Multiple columns allow testing of various design and operational parameters in parallel treatability studies.



Naval Facilities Engineering and Expeditionary Warfare
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FOR FURTHER INFORMATION

National Defense Center for Energy and Environment
<http://www.denix.osd.mil/ndcee/home>

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https://www.navfac.navy.mil/navfac_worldwide/specialty_centers/exwc.html