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## Inventors

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# Parallel In Situ Screening for Optimizing Remediation Strategies for Saturated Contaminated Sites

In situ bioremediation holds great promise as a safe and cost-effective strategy for cleanup of contaminated sediments and groundwater. The design of bioremediation systems requires site-specific characterization of the types of microorganisms present, what their potential metabolic capabilities are, and to what extent these degradative functions are expressed. Measuring these factors is important for selecting the proper bioremediation strategy and for optimizing remedial design, but current laboratory methods cannot reproduce conditions in the field, and field pilot tests are expensive and risk impacting monitoring wells.

To overcome these difficulties, Professor Rolf Halden of the Biodesign Institute of Arizona State University has designed a novel downhole device that permits conducting mutually-exclusive experiments and feasibility studies in the same place at the same time. The device contains multiple flow-through column microcosms that are packed with site sediment and can be amended to mimic biostimulation and bioaugmentation as well as chemical treatment approaches.

Upon retrieval, the information can be used to assess the effectiveness of each of the treatment strategies tested. In this way the remediation process can be optimized and costs minimized without compromising the technology deployment well for future use as a compliance monitoring location, if so desired.

### Potential Applications

- Environmental remediation including subsurface, groundwater, and surface water environments
- Environmental risk assessment Bioprospecting Biomedical settings (after miniaturization)
- Bioprospecting
- Biomedical settings (after miniaturization)

### Benefits and Advantages

- Allows conducting concurrent but mutually exclusive experiments and feasibility studies
- Determines the fastest and most economical mode of remediation for various saturated contaminated sites

For more information about the inventor(s) and their research, please see [Dr. Halden's directory webpage](#)[Dr. Halden's laboratory webpage](#)

