

**ENVIRONMENTAL INNOVATIONS**  
**INOTEC**

an environmental biotechnology company providing site customized treatment systems to efficiently and economically remove metals and inorganics from water

## New Electrobiochemical Reactor for Removal of Selenium, Arsenic, and Nitrate

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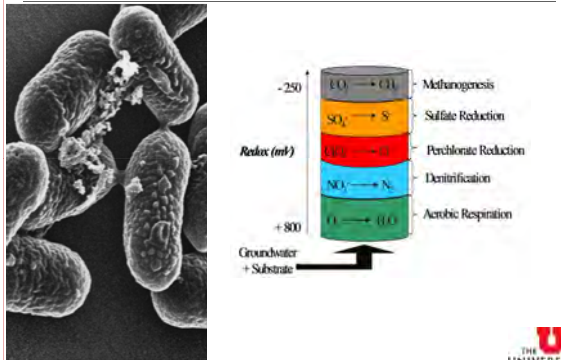
### Problem



- 100's of trillions of gallons of metal and inorganic contaminated water require treatment.

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### Metal / Inorganic Removal



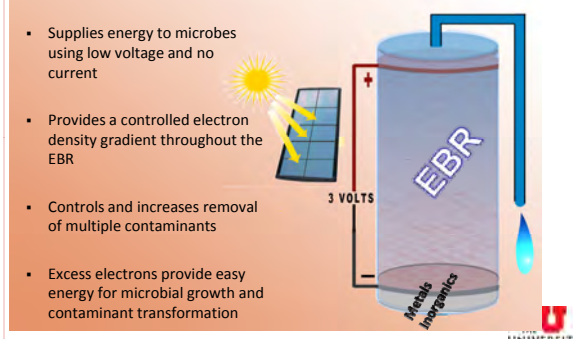
Redox (mV)

- 250:  $CO_2 \rightarrow CH_4$  - Methanogenesis
- $SO_4 \rightarrow S$  - Sulfate Reduction
- $ClO_3 \rightarrow Cl$  - Perchlorate Reduction
- $NO_3 \rightarrow N_2$  - Denitrification
- +800:  $O_2 \rightarrow H_2O$  - Aerobic Respiration

Groundwater + Substrate

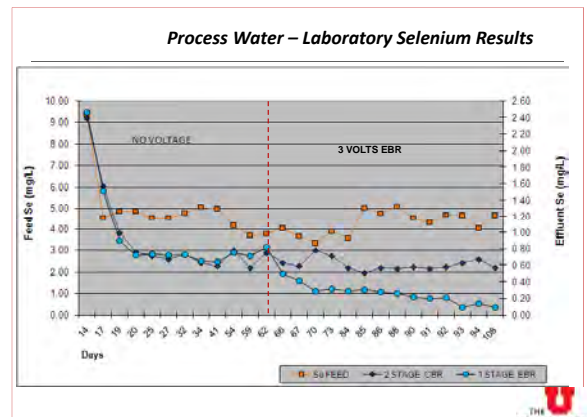
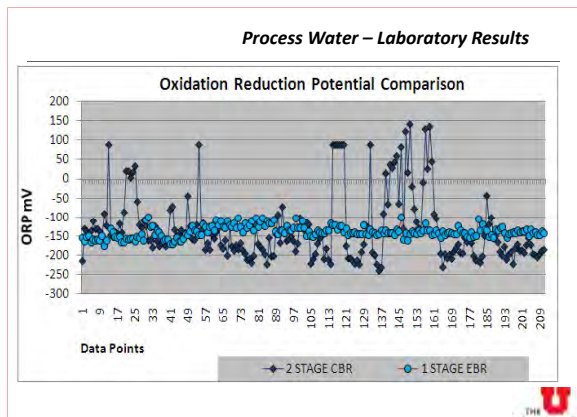
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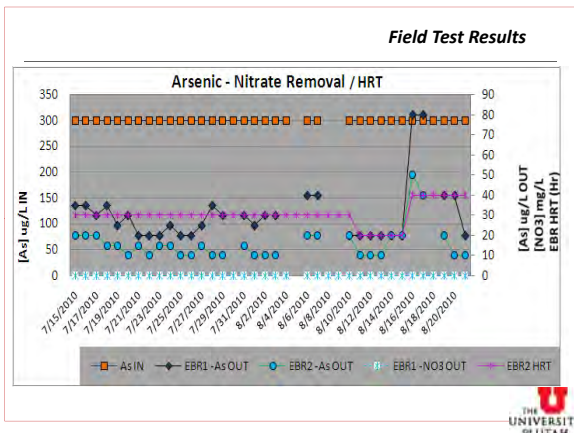
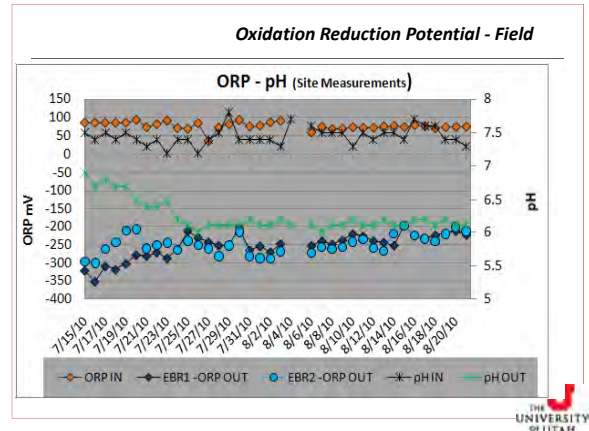
### Patented Electrobiochemical Reactor



- Supplies energy to microbes using low voltage and no current
- Provides a controlled electron density gradient throughout the EBR
- Controls and increases removal of multiple contaminants
- Excess electrons provide easy energy for microbial growth and contaminant transformation

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**EBR Advantages**

- 2 to 9 times faster contaminant removal
- More cost effective
  - ≥40% lower capital costs
  - ≥50% less operational costs
    - Reduces expensive nutrient amounts
    - No water heating required
- ≥ 50% more effective treatment of complex contaminants
- Can remove multiple contaminants in a single EBR
- Low energy requirements

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