

# ENVIRONMENTAL FRACTURING APPLICATIONS



## FRACTURE-EMPLACEMENT OF SLOW-RELEASE PEROXYGEN INTO SHALLOW SOILS

**... fracture –  
emplacement of  
an oxygen release  
compound was a  
non-disruptive  
and low-cost  
remedial solution  
to the owner’s  
active retail gas  
business  
operations.**

### PROBLEM

A retail gasoline service station site contains historical petroleum hydrocarbon impacts (BTEX) in shallow clay soils. A non-disruptive method of remediation was required that would be effective in clays and not interfere with owner’s business.

### OBJECTIVE

Provide a low-cost, passive method of treatment for soil and ground-water impacts.

### FIELD PROGRAM

A soil fracture network previously emplaced at the site was supplemented by fracture-emplacing 720 kg of EHC-O slow release calcium peroxide slurry at six borehole locations within the contaminant plume. Upwards of 2500 L of EHC-O slurry was distributed in clay soils at depths of 3 to 5 metres at each location and propagated radially a distance of 5 to 10 metres from each borehole.

### TECHNICAL EVALUATION

Hydraulic fracturing and emplacement of EHC-O amendment resulted in:

- two orders of magnitude increase in bulk hydraulic conductivity of clays
- increased oxygen in headspace from 17% to 85% and dissolved oxygen in groundwater from 0.7 mg/L to 41 mg/L in fracture and injection wells 3 months after injection.

**Emplacement of  
slow-release  
calcium peroxide  
slurry under  
hydraulic  
pressure into  
BTEX - impacted  
clay soils at an  
operational gas  
bar.**



**Frac Rite Environmental Ltd.**