

# Screening of Field Sample Reactivity using Chemical Reactivity Probes

SERDP ER-2621



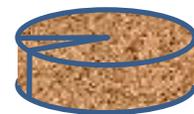
Screening of field sample reactivity is an important new tool for assessing remediation performance.

As part of SERDP ER-2621 we are developing chemical reactivity probes (CRPs) to assay chemical reduction.

In the following video, core samples are treated with resazurin, a redox-sensitive dye, to assess reduction rate ~5 years after creation of a ZVI soil mixing zone.



50  $\mu$ M  
Resazurin



50  $\mu$ M  
Resazurin



4 minutes

Reduce dye  
is red



ZVI mixing  
zone

Outside mixing  
zone



10 seconds

ZVI mixing  
zone

Outside mixing  
zone



20 seconds

ZVI mixing  
zone

Outside mixing  
zone



30 seconds

ZVI mixing  
zone

Outside mixing  
zone



40 seconds

ZVI mixing  
zone

Outside mixing  
zone



50 seconds

ZVI mixing  
zone

Outside mixing  
zone



60 seconds

ZVI mixing  
zone

Outside mixing  
zone



70 seconds

ZVI mixing  
zone

Outside mixing  
zone



80 seconds

ZVI mixing  
zone

Outside mixing  
zone



90 seconds

ZVI mixing  
zone

Outside mixing  
zone



100 seconds

ZVI mixing  
zone

Outside mixing  
zone



110 seconds

ZVI mixing  
zone

Outside mixing  
zone



120 seconds

ZVI mixing  
zone

Outside mixing  
zone



130 seconds

ZVI mixing  
zone

Outside mixing  
zone



140 seconds

ZVI mixing  
zone

Outside mixing  
zone



150 seconds

ZVI mixing  
zone

Outside mixing  
zone



160 seconds

ZVI mixing  
zone

Outside mixing  
zone



170 seconds

ZVI mixing  
zone

Outside mixing  
zone



180 seconds

ZVI mixing  
zone

Outside mixing  
zone



190 seconds

ZVI mixing  
zone

Outside mixing  
zone



200 seconds

ZVI mixing  
zone

Outside mixing  
zone



210 seconds

ZVI mixing  
zone

Outside mixing  
zone



220 seconds

ZVI mixing  
zone

Outside mixing  
zone



230 seconds

ZVI mixing  
zone

Outside mixing  
zone



240 seconds

Reduction of the dye shows that the ZVI mixing zone still has the capacity to reduce contaminants present in the subsurface



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