

# Remediation of a Vinyl Chloride Dissolved Phase Plume through the Combination of Elektrokinesis and In Situ Chemical Oxidation at the Santos Port Area, Brazil

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**Background/Objectives.** The site of interest was a former vinyl chloride tank storage area in the Port of Santos, Brazil, where a dissolved phase vinyl chloride plume was causing risk of inhalation in open and enclosed areas. The objective of the remediation was for the company, who explored the site, to deliver the site back to the port authority without any restriction of construction. Therefore the remedial goal was to clean up the site in order to have no restriction of construction at the area.

## **Approach/Activities.**

An area of approximately 2000 square meters was impacted with approximately 6,7 kg of VC and concentrations up to 17.700 ppb. The highest concentrations were found at 15 meters deep. The lithology is mainly marine clay with a very low hydraulic conductivity.

Initially Elektrokinesis was applied solely, for 12 months in order to concentrate the CV plume in an area of approximately 700 sq meters and at a maximum depth of 10 meters deep. With the “concentration” of the plume it was possible to inject persulfate and deliver with maximum contact to the contaminant.

**Results/Lessons Learned.** After 18 months of the combined remedial technologies the highest concentration of VC was of 677 ppbs and a total area of no more than 200 square meters.