

ENVIRONMENTAL FRACTURING APPLICATIONS



FRACTURE-ENHANCED BIOREMEDIATION OF AMINES

... the first ever combined use of horizontal drilling and soil fracturing conducted at a contaminated site in Canada is an example of how the FRAC RITE™ approach to site remediation can save time and money.

PROBLEM

Subsurface amine contamination from sour gas processing operations at a former gas plant. Amines are present in clay till soils to a depth of four metres.

OBJECTIVES

- to assess the performance of a horizontal, fractured well for enhancing in situ bioventing of amine contaminants.

FIELD PROGRAM

A total of 12 fractures were induced at two metre intervals along a horizontal borehole located in the zone of contamination. A surfactant and a phosphate nutrient were incorporated into the fractures to enhance the in-place biodegradation of amine contaminants using bioventing technology. All subsurface fractures were mapped using surface mounted tiltmeters.

TECHNICAL EVALUATION

Elevated levels of CO₂ (13% by volume) and a decrease in oxygen in the subsurface indicated vigorous, aerobic biodegradation of amines. Fracturing accelerated the rate of biodegradation by creating permeable pathways for the delivery of air and nutrients to the contamination.

Below: Horizontal drilling through clay till in preparation for soil fracturing.

