



Subsidiary of SRI International



# PROCESS ECONOMICS PROGRAM

SRI CONSULTING  
Menlo Park, California

94025

## Abstract

### Process Economics Report 187B

#### SOIL REMEDIATION

(June 1999)

Although chemically contaminated sites were recognized as a major threat in the 1970s, concerted efforts to clean up the sites were not undertaken until the late 1980s. In the intervening decade, the many regulations implemented at the state level translated into a multifaceted, large-scale proliferation of equipment and cleanup technologies, with crude rule-of-thumb procedures developed from trial and error. In the 1990s, innovative technologies were developed to deal with petroleum product, industrial organic chemicals, and toxic metal contamination of soil to help speed the remediation process and reduce costs.

This report, the first of its kind focusing exclusively on soil remediation, reviews oxidation, reduction, and transformation of petroleum, organic, and heavy metal contaminants to benign products by *in situ* and *ex situ* thermal, physical, chemical, and biological remediation processes. Three emerging *ex situ* technologies—soil mound biooxidation, soil washing, and thermal desorption—are investigated in depth, including estimates of their economics and descriptions of variations of these technologies that have been deployed in the field.

In addition, technology and management trends for large-scale soil remediation projects are presented, along with U.S. and Western European legal and regulatory regimes, including brown-field initiatives, risk-based corrective action, regulation redesign, and trends for determining site cleanup levels.

The Report also reviews and summarizes market size, segmentation, and growth of the soil remediation business in the United States, Western Europe, and Japan.



**SRI consulting**



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Report No. 187B

## **SOIL REMEDIATION**

**Supplement B**

by **RONALD M. SMITH** and **TOM MCVEY**

**June 1999**

A private report by the  
**PROCESS ECONOMICS PROGRAM**

Menlo Park, California 94025



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