



Penn E&R, Inc. is a full-service engineering, environmental and construction consulting company. We provide expert consultation and responsive, turnkey service to deliver reliable, cost-effective solutions to a variety of industries, markets and valued private clients.

PROVIDING IN-SITU INJECTION SERVICES

There are many approaches to contaminated site remediation and the treatment of impacted soil, ground water and air. Formerly an often long, arduous and costly process, conventional *ex-situ* remediation methods, such as excavation, pump-and-treat systems, etc., are being replaced by innovative *in-situ* treatment solutions. Endorsed by regulatory and science-based agencies, including the United States Environmental Protection Agency and Interstate Technology Regulatory Council, solutions such as in-situ remedial injection technologies are proving to be more strategic, efficient and cost-effective.

Penn E&R is highly experienced in implementing cutting-edge in-situ injection services aimed at destroying chlorinated and non-chlorinated contaminants. Our remediation engineers, scientists and technicians have taken the time to adapt to industry changes and diversify their expertise by learning the advanced science behind the following in-situ injection services:

- In-Situ Chemical Oxidation – Involves the injection of specific chemicals into targeted locations in the subsurface. When the injected chemical and chlorinated solvent make contact, it produces a chemical reaction that destroys the contaminant, reducing toxicity to acceptable standards.
- In-Situ Bio-Injection – Involves the injection of cultured microorganisms into the subsurface for the purpose of biodegrading soil and ground water contaminants. In addition to the injection of microbes, a substrate is injected to provide a nutrient source. The microbes feed on the amendment, oftentimes emulsified vegetable oil, and through the transpiration process destroy the contaminant.

PROVIDING RELIABLE, COST-EFFECTIVE EXPERTISE



In-situ chemical oxidation



In-situ bio-injection remediation



In-situ bio-injection remediation



In-situ bio-injection remediation



In-situ chemical oxidation