

# **Regulatory Guidance for Permeable Reactive Barriers Designed to Remediate Chlorinated Solvents**

**2<sup>nd</sup> Edition  
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Permeable Reactive Barriers Work Team

## **EXECUTIVE SUMMARY**

The Permeable Reactive Barriers Team of the ITRC is composed of seven state regulatory agencies (New Jersey, Colorado, Florida, Massachusetts, Washington, New York, Nevada, and California) with participation from stakeholders, federal agencies, and members of the Remediation Technology Development Forum (RTDF). The Permeable Reactive Barriers Team has prepared this document to provide regulatory guidance for the implementation of permeable reactive barrier technology. The document is intended to serve as a regulatory guide for stakeholders, regulators, and technology implementors at sites where a permeable reactive barrier is being considered as a remedial alternative. The team has identified regulatory issues and recommended regulatory guidance for permeable reactive barriers wherever possible.

Because this is an evolving technology, this document is intended as a guide and should be updated periodically. Current research should always be reviewed when considering the guidelines outlined in this document. Users of this document are encouraged to study the references included in the document for further background and technical information on this technology. Recommended design guidance is contained in the reference “Design Guidance for Application of Permeable Barriers to Remediate Dissolved Chlorinated Solvents,” prepared for the Air Force Armstrong Laboratory/Environics Directorate by Battelle, February 1997. The Permeable Reactive Barriers Team participated in the development of this document.

This document focuses on treating chlorinated solvents using a funnel-and-gate application, but much of the guidance provided may also be applicable to continuous permeable reactive barrier applications. In addition, there are numerous variations in media, contaminants treated, and system designs that are not covered in this document. Portions of the guidance may have some relevance to alternative systems depending upon the application. The document also addresses site characterization, bench-scale testing, modeling, and waste disposal as they pertain to permeable reactive barrier applications. Sections on permitting, monitoring, maintenance and closure criteria, stakeholder concerns, and variances are also included to address potential regulatory and technical issues during project development.

Members of the team developed the draft document. Technical and regulatory issues were discussed during conference calls and breakout sessions at ITRC meetings, and consensus was reached whenever possible. The document was distributed for peer review, and comments were received from representatives of state and federal agencies, public stakeholders, industry, consultants, and vendors. Comments were discussed, evaluated, and incorporated into the document as appropriate. This document is now under review by ITRC state agencies to determine the degree of concurrence on the technical and regulatory guidelines contained within.

The 2<sup>nd</sup> edition updates the version of this document released in December 1997.