



# In Situ Chemical Oxidation – Sharply Declining Learning Curve in Vermont

Thanks to ITRC's environmental tools and networking among ITRC experts, one project manager's quest for more information on in situ chemical oxidation inspired learning throughout the Hazardous Sites Management Section of the Vermont Agency of Natural Resources.

Lynda Provencher, a Vermont project manager, received a proposal to inject 10% to 15% hydrogen peroxide into the subsurface to initiate a reaction with contaminants in groundwater. Because she had limited experience with the in situ chemical oxidation (ISCO) technology, Lynda relied on ITRC guidance—Technical and Regulatory Guidance for In Situ Chemical Oxidation of Contaminated Soil and Groundwater (ISCO-2, 2nd Edition)—to get the information she needed to question the technical basis of this proposal. Lynda said, "The ITRC guidance gave me background information on ISCO, and it informed me of the questions to ask and the issues to be concerned about with this technology at this site." Lynda's concerns about this proposed ISCO deployment led to a third-party review, which confirmed her concerns and led her to reject that particular ISCO project. Lynda said, "The ITRC guidance was valuable because it started me on a process that ultimately led to a better decision—in this case, a decision to reject the proposal."

Although this ISCO proposal failed to gain regulatory approval, Vermont continued to receive other, better proposals for using chemical oxidation, prompting section staff to work together to pool information and contacts. Vermont's ITRC POC, Matt Moran, emailed other ITRC POCs to solicit their advice. Moran said:

The response was just superb. Especially helpful to me was finding out about some Indiana case studies that outlined safety hazards relevant to hydrogen peroxide. At the same time, ITRC offered online training on in situ chemical oxidation, and several section staff received this training. Our involvement with ITRC has certainly paid off. ITRC's documents and training and its ready cadre of experts willing to share information and resources have helped our project managers acquire the knowledge they needed to evaluate their chemical oxidation projects. ITRC guidance and training alerted us to some of the issues involved in deploying this technology and galvanized our section to seek even further to discover how best to appropriately regulate and permit this innovative technology.

Lynda Provencher continues to use ITRC resources—documents and training—to keep current on innovative technologies and approaches. "What did we ever do before ITRC?" was a rhetorical question she recently put to Michael Smith, a Vermont colleague and the training liaison on the ITRC Board of Advisors. Vermont's positive experience with ITRC's environmental tools inspired Matt and Michael to pass along news of the successes to the secretary of the Vermont Agency of Natural Resources. Matt said, "We included Lynda's comment along with a bunch of specific statistical information to support the benefits of Vermont's participation in ITRC."