

Regulatory Negotiations: Case Study for the Remedy Development and Selections to Treat Large Complex Groundwater Plumes

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Background/Objectives. This study presents the remedial selection approaches and regulatory negotiation process for three large groundwater plumes initiated through RCRA corrective measure studies / implementation plans. The groundwater contaminant plumes are up to 2,000 feet long with primary constituents consisting of carbon tetrachloride, tetrachloroethylene, chlorofluorocarbons, 1,2-dichloroethane, and organic lead and their breakdown products. The remediation of the site is being conducted under a RCRA corrective action consent agreement under the lead oversight of the California Department of Toxic Substance Control (DTSC).

Approach/Activities. The EPA RCRA Facilities Investigation Remedy Selection Track (FIRST) principles were used as guidance for regulatory negotiations, although the Site is not a designated RCRA FIRST facility. One of the key objectives during regulator negotiations was to present an accurate and usable conceptual site model (CSM). The CSM was used as the basis to evaluate data gaps, exposure pathways, and the selection of groundwater plume remedies that were protective of human health and the environment. DTSC, having recognized the commitment of the site owner to perform the remediation, wanted key items to be addressed: (a) top management decision makers would participate in developing and committing to site remedies; (b) the contaminant source areas needed to be clearly identified; (c) reasonable remedial timeframes needed to be established; (d) data needed to be presented to show that contaminants were not, and would not, adversely impact adjacent surface water. To address the agency's concerns, data gaps and groundwater remedies were developed as a team effort through multiple teleconference presentations and day-long interactive meetings attended by both the agency and site owner decision makers. Additionally, an aggressive timeline was established to conduct various technical studies that included a monitored natural attenuation evaluation, a plume stability evaluation, modeling to estimate groundwater to surface water discharge over time, modeling to estimate timeframes to meet corrective action objectives relative to the level of remedial effort, and field pilot studies.

Results/Lessons Learned. The success of the regulatory negotiations was based on an interactive approach. Using and refining the CSM was a key tool to convey exposure pathways and to build understanding of the objectives for investigations, studies, and remedy selection phases. To maintain momentum through the remedy selection process, it was important for the site owner to establish aggressive investigation and evaluation milestone deadlines and for the agencies to commit to quickly review the work and provide comments. Regulator and team negotiations were enhanced by using team meetings and presentations attended by the site owner and DTSC decision makers, which resulted in a better understanding of the issues that could be addressed in real-time. By engaging in proactive interactive regulatory negotiations, the remedy selection process for complex groundwater plumes was completed in less than a year, with the corrective measures study deemed technically complete by DTSC. Additionally, through robust regulatory negotiations, more focused groundwater remedies were selected.