Daramend® Reagent for Treatment of Soil Impacted by Chlorinated Herbicides

Project

Site: Confidential Client - Ontario, Canada
COCs: Metolachlor, Atrizine, and Dinoseb

Summary

This project was the second of three pilot scale projects within a research and development program designed to validate certain Daramend® reagent applications for chlorinated herbicide impacted soil.

Challenge

Treatment of 250 tons of soil impacted by chlorinated herbicides; including Metolachlor, Atrazine, and Dinoseb. Metolachor was of particular interest since it is one of the most common herbicides used during corn production in North America. Although Metolachlor is known to be photodegradable at normal field application rates, its persistence in subsurface soils, particularly when an accidental release results in relatively high concentrations in soil, has become an environmental issue at numerous manufacturing and warehousing facilities throughout North America.

Solution

A treatment cell was divided into three separate areas which included a 230-ton main treatment cell and two 10-ton treatment cells. One contained heavily impacted soil, and the other contained soil similar to the main treatment area for use as an untreated control. The principal contaminant driving remediation was Metolachlor, which had an initial concentration of 67mg/kg, 170mg/kg, and 37mg/kg in the main treatment cell, the heavily impacted treatment cell, and the control cell, respectively.

Results

Following 10 months of treatment the mean concentration of Metolachlor was reduced to <1mg/kg in the main treatment cell and 11mg/kg in the heavily impacted treatment cell. Concentration remained unchanged in the control cell.

Cost

The estimated treatment cost for the full scale application of Daramend reagent at this site, which would have involved the treatment of <1,000 tons of similarly contaminated material, was approximately US$112/ton. Costs associated with full scale treatment at this site are slightly higher than most due primarily to the small volume of material requiring treatment.