



Daramend® Reagent for Rapid Treatment of Organochlorine Pesticides Below Remedial Objective

Project

Site: Confidential former agricultural site in Florida
COCs: Dieldrin

Summary

In November 2004, a 2,600-ton in situ pilot-scale technology validation project was conducted using PeroxyChem's Daramend® reagent to remove organochlorine pesticides from impacted soils at a former agricultural site in Florida. The treatment area consisted of two treatment plots identified as North and South, each containing a 1-foot layer of soil with elevated concentrations of dieldrin.

The remedial goal was met in a 2-3 week period and subsequent field monitoring showed that soil dieldrin concentrations decreased by 67% in that period at a total project cost of approximately \$12.50/yd³.

Challenge

Results from the site characterization sampling indicated an average initial soil dieldrin concentration of 45.9 µg/kg in the treatment plots. The remedial objective was to treat the dieldrin to below 15 µg/kg.

Solution

Two successive Daramend treatments consisting of sequential anoxic and oxic conditions were applied. These conditions were generated through the application of Daramend amendments (0.5 % by weight), which were applied to the soil surface and incorporated to a depth of 1 foot with a tractor-driven deep rotary tiller or disc (**Figure 1**). After amendment incorporation, water was applied to bring the soil moisture content up to 90% of the soil water-holding capacity (**Figure 2**). These steps were repeated for the second treatment cycle. Each cycle consisted of an eight day anoxic phase, followed by a two day oxic phase.



Figure 1: In-place application of Daramend Reagent



Figure 2: Irrigation to meet optimal soil moisture.



Results

The soil dieldrin decreased from an average of 45.9 µg/kg to 15.1 µg/kg in two treatment cycles, which comprises a removal rate of 67% (**Figure 3**). A third treatment cycle was able to reduce the concentration by 85 to 90%.

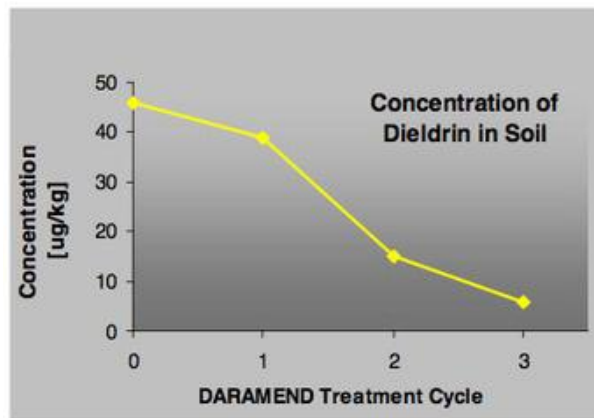


Figure 3: Rapid, Cost-Efficient and Effective Daramend treatment of dieldrin-impacted soil

Cost

The remedial objective was reached within a 2-3 week period at a total project cost of approximately \$12.50/yd³.