CS05: Chlorinated Pesticides

In Situ Oxidation at Golf Course

SITE

Former Golf Course, Miami, FL

OBJECTIVE

A customized ISCO treatment plan using EN Rx Reagent was designed to reach GCTLs at the contaminated golf course water feature. The strategy would be adjusted after each event based on sampling data.

BACKGROUND

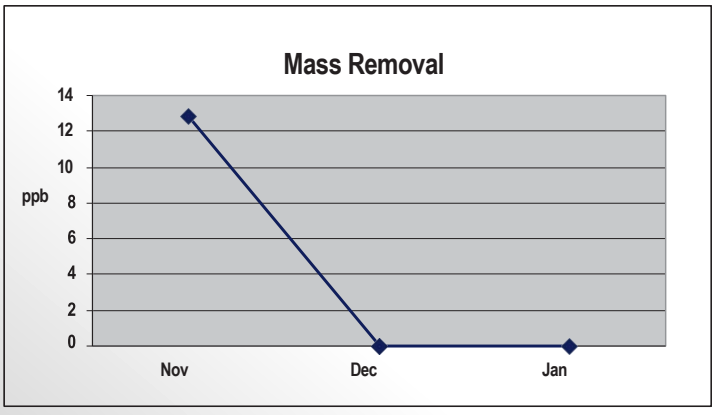
- Residual concentrations of chlorinated pesticides (Aldrin, Dieldrin, DDD, DDT) were identified in soils and water in a pond that previously served as a golf course water hazard.
- Aldrin, Dieldrin, DDD, and DDT are chlorinated pesticides that were commonly used to control insects.
- Groundwater was present at approximately 5 feet below the ground surface.
- Contaminated soils were removed and land-filled creating a 3,700,000-gallon water pond.
- No impact has been detected in deeper aquifers.

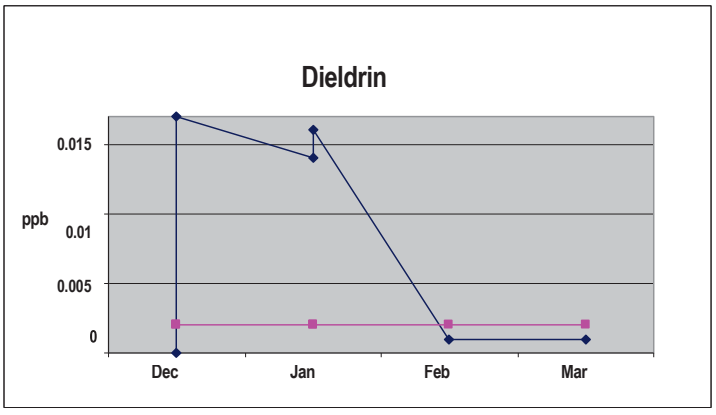
REMEDIATION ACTIVITIES

- Prior to oxidant application, excavation of the existing pond occurred with the intent to remove the bulk of soils laden with OCP.
- The table below shows sampling post excavation, pre oxidation.
- Proprietary oxidant reagents were applied in the pond in three (3) applications over a two-month period.
  - Event 1- Statistically designed treatment at 200 mg/L
  - Event 2 - Statistically designed treatment at 200 mg/L
  - Event 3 - Statistically designed treatment at 200 mg/L
- Required quantities of treatment chemicals decreased with each application. Recirculation caused erosion of the banks, filling the pond.

SAMPLING DATA

The following tables illustrate concentration reductions with each application. Blue = OCP concentrations. Pink = Florida GCTL (0.002 ug/L).





EPA METHOD 8081 - ORGANOCHLORINE PESTICIDES	[All data in ug/L]													
-	Baseline/ Event 1		1 Month Post		Event 2		Event 3		2 Weeks Post		1 Month Post		2 Months Post	
Aldrin	0.307		0	U	0	U	0	U	0	U	0	U	0	U
Chlordane gamma	2.992		0	U	0	U	0	U	0	U	0	U	0	U
Chlordane alpha	4.346		0	U	0	U	0	U	0	U	0	U	0	U
4,4'-DDE	3.739		0	U	0	U	0	U	0	U	0	U	0	U
Dieldrin	1.399		0	U	0.017		0.014		0.016		0	U	0	U
4,4'-DDD	0.314		0	U	0	U	0	U	0	U	0	U	0	U
4,4'-DDT	1.014		0	U	0	U	0	U	0	U	0	U	0	U
Endrin Ketone	0.633		0	U	0	U	0	U	0	U	0	U	0	U
TOTAL OCPS (ug/L)	12.867		0	U	0.017		0.014		0.016		0	U	0	U

SUMMARY

The treatment using EN Rx Reagent successfully remediated the remaining organochlorine pesticides. Dramatic reductions were observed after just one treatment event, and subsequent events were used to target the remaining dieldrin. The methodical events were utilized to efficiently clean up the site, which eventually led to site closure. The EN Rx Reagent has proven itself to be powerfully effective when it comes to addressing pesticide sites with a range of compounds.

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