Case Study (OP3)
Problem – Light Cycle Oil (LCO) and Gas Oil Spill around storage tanks.

Goals

- ✓ To reduce the TPH and in the soil.
- ✓ To clean the soil per State of Texas standards
  TPH - less than 50ppm
- ✓ To complete project within 6 months

Site Location and Description – Refining Facility of major oil company
The facility had a spill in the areas surrounding two tanks (A and B), the spill contained light cycle oil (LCO) and gas oil.

Contaminants Treated - Gas oil and light cycle oil fuel and oil

Geology - Caliche and Sandy Soil

Starting Levels - TPH levels ranged from 26 to over 1,300 ppm. 13 samples were collected in the treated area. 5 samples from around Tank A and 8 samples from around Tank B in randomly selected points.

Cleanup Standards – per the State of Texas (TCEQ)
TPH (total petroleum hydrocarbons) - less than 50 ppm.

Treatment Method - in situ
The product was applied around Tank B, and in an open area between Tanks A and B. During the treatment free gas oil was found in the area between the tanks. As a result, treatment around Tank A was temporarily suspended in order to discuss and review treatment options.

Some of the area around Tank B was not accessible due to maintenance. The decision was made to come back after the maintenance work was finished and to complete the treatment of Tanks A and B.

Further treatment involved an additional application around Tank A, and in the areas under the pipe chase to the south of Tanks A and B. Once again, free gas oil was noted during the treatment phase.

Oppenheimer Products used

- ❖ **Piranha**

Project Results

Five months after the start of the project samples were collected and analyzed. A visual inspection of the entire treatment area was also conducted. No free hydrocarbons were noted in any of the areas surrounding either Tank A or Tank B.

While there continues to be detectable concentrations of TPH in the soil, none of the applicable Tier 1 ranges for aromatic and aliphatic hydrocarbons were exceeded.

This met the initial criteria set by the project manager and The State of Texas (TCEQ). The project was deemed to have been successfully completed, and no further treatment of the soil was recommended.

Completed Time Frame – 180 days

Results Achieved

- ✓ **99.9% reduction** in diesel fuel and oil in the soil.
- ✓ **Achieved** State of Texas requirements **TPH - less than 50ppm**
- ✓ **Finished 20% ahead** of schedule.
- ✓ **Eliminated** cradle to grave liability.