In-Situ Soil Remediation System

The NOVA Award was presented to the MecTool Remediation System for innovation in the remediation of contaminated soils.

Most EPA-approved methods for treating soils contaminated by hazardous waste involve removing the soils for treatment or burial in an approved site. These methods risk secondary contamination during excavation and transport, and they are limited in the depth and production rate of treatment.

The MecTool Method overcomes these limitations by combining several treatment systems that are capable of thorough remediation of most forms of contaminants, in-situ (without requiring excavation), at depths many times greater than existing methods, and at high production rates. The MecTool System employs a drilling and mixing tool carried by a hollow drive shaft (Kelly Bar) powered by a crane-mounted drill platform capable of turning the interchangeable tools with up to 400,000 ft-lb of torque.

Tools, up to 14 feet in diameter, have cutting teeth on the leading edge of the blade to break up heavy soils and obstructions. The trailing edge of the blade carries a manifold and ports to inject liquid, gaseous, and semi-solid reagents into the soil mass at pressures up to 300 psi.

In use, MecTool drills into the contaminated soils, injecting and mixing reagents, such as chemical grouts, to a high degree of homogeneity that assures effective treatment. A large-diameter shroud seals the drill site and evacuates any off-gassing to a portable air-treatment unit. Tool rotation, reagent injection rate, vertical rate, and other parameters are fully instrumented and documented for quality assurance.

The MecTool system is capable of delivering advanced remediation agents to depths of 100 feet and can achieve highly uniform results at production rates much higher than conventional methods.

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