

**REMEDICATION OF SOILS AND GROUND WATER USING COMBINED  
IN-SITU CHEMICAL OXIDATION AND LASER INDUCED FLUORESCENCE (LIF)  
TO PINPOINT CONTAMINANT SOURCES**

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When employing remedial technologies where contact between the contaminant and the amendment compound is critical, the ability to precisely locate the target pollutants as well as their distribution patterns in the soil matrix is vital. Field observations have shown that even when applying technologies that, in the laboratory, have demonstrated the successful destruction of contaminants, results of field applications have been dismal. In many cases, the problem was simply missing the mark. Recent field studies combining a proven ISCO technology (Cool-Ox™) with a Laser Induced Fluorescence (LIF) technology (TarGOST®) that has the ability to precisely locate the physical configuration of contaminants, has proven very promising at two large wood treating sites.

The sites, contaminated with creosote, petroleum hydrocarbons, pentachlorophenol and dioxins, showed significant reductions of these contaminants after application of this combined remedy. TarGOST® Investigation Points (TIPs™) collected before and twenty-four (24) hours after injection of the oxidation reagents, revealed that significant desorption of the contaminants from the soil matrix had occurred. This is the first step in the remedial phases associated with the application of this ISCO technology. Laboratory studies have repeatedly shown this oxidation process to be effective and a site closure containing the above listed contaminants has been achieved. The paper will provide a full explanation of the mechanics of the combined technologies (coined Lazer-Guided-Remedies™ (LGR™) by its developers) as well as longer-term data developed from current and other on-going projects. Current estimates project cost savings of tens of millions of dollars and drastic reductions in time when compared to processes and remedial designs presently employed for this work.

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