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## ***Best Practices for High Resolution Site Characterization of LNAPL and DNAPL***

Live Webinar via Zoom | February 26, 2026 | 10:00 AM-1:15 PM

### **Course Description**

This course will interest LSPs and environmental professionals seeking more effective tools for NAPL site characterization. Participants will learn how to apply and interpret laser-induced fluorescence (LIF) data to improve accuracy, reduce costs, and strengthen conceptual site models. The session will also cover selecting the right LIF technology, confirming results, and understanding the method's capabilities and limitations.

Releases of petroleum, chlorinated solvents, creosote, and coal tars are liquid phase contaminants commonly managed by consulting engineers and regulators. These “source term” light non-aqueous phase liquid (LNAPL) and dense non-aqueous phase liquid (DNAPL) substances are potent sources of dissolved phase contamination, making proper characterization of their subsurface architecture a keystone of remediation success. NAPL bodies typically distribute themselves in a highly heterogeneous fashion, forcing investigators to gather high density data sets to truly understand their architecture.

Laser-induced fluorescence (LIF) logs these NAPL continuously in the subsurface in real time, making it a highly cost-effective alternative to traditional soil sampling. Daily production rates of 250 to 450 feet/day are common, generating high-resolution characterization data of NAPL bodies in just days or weeks. This stands in stark contrast to traditional sampling and analysis that often involve multiple mobilizations and span years, not days.

While LIF offers tremendous benefits, it is critical that LSP's and environmental professionals understand LIF technology, what the LIF technology can and can't tell them about their site, and how to avoid applying LIF to sites with conditions that can't properly benefit from LIF.

Selection of the appropriate type of LIF technology best-suited to the site is key to optimizing detection of your site's particular NAPL and rejecting potential false positive responses that might be encountered.

During this course, Mr. St. Germain provide a brief summary of how each LIF system works, which LIF system to apply to which contaminant, what information LIF can provide, how to interpret that information, and attention to LIF's limitations. Proper confirmation techniques and data interpretation using multiple lines of evidence will be discussed in detail.

A Q&A session will follow the presentation.

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### **Course Agenda**

The course will be focused on the three families of NAPLs:

- **Part 1:** Applying LIF to LNAPLs (e.g., refined petroleum product release sites)
- **Part 2:** Applying LIF to multicomponent DNAPLs (e.g., tar / creosote sites)
- **Part 3:** Applying LIF to halogenated solvent DNAPL sites.

Each part will conclude with a brief case study.

- 10:00**      **Part 1: Applying LIF to LNAPLs (e.g., refined petroleum product sites)**
- History of LIF
  - NAPL heterogeneity and the benefits of high-resolution data
  - LNAPL chemistry
  - Overview of LIF system design and data structure
  - LNAPL fluorescence characteristics
  - Weathering and remediation product influence on LNAPL fluorescence
  - Successful LIF interpretation/utilization
  - Case Study: Applying LIF to a Site Containing Releases of Different LNAPLs
- 12:00**      **Break**
- 12:15**      **Part 2: Applying LIF to Heavy NAPLs**
- Why fluorescence of minerals and organics are a major obstacle
  - Why measuring UV fluorescence intensity alone fails spectacularly for heavy NAPLs due to energy transfer
  - Correcting for energy transfer
  - Leveraging fluorescence color and lifetimes to reject natural fluorescence
  - Interpreting heavy NAPL LIF logs
  - Successfully applying targeted confirmation sampling to inform the false fluorescence filtering process
  - Case Study: Successfully Filtering Creosote LIF Data at a Wood Treater Site with Virtually Intractable Natural Background Fluorescence

**12:40**

**Part 3: Applying LIF to Halogenated Solvent DNAPLs and Mono-aromatics**

- Why traditional LIF isn't suited for halogenated solvent DNAPLs and mono-aromatics
- Use of an indicator dye to render non-fluorescing NAPLs fluorescent
- Natural and anthropogenic interference
- Interpreting DyeLIF logs
- Confirmation sampling's crucial role in designing the fluorescence filtering process
- Case study: Delineating Remnant DNAPL at a 1960s Release of TCE at Cape Canaveral

**1:00**

**Questions & Answers**

**1:15**

**Wrap-Up and Webinar Adjourns**