

Diesel Fuel Fingerprinting

The Problem

The Internal Revenue Service (IRS) is developing a program to identify diesel fuel fraudulently adulterated with nontaxable material.

Automated pattern matching algorithms are needed to interpret assays of diesel samples.

The Approach

- Determine feasibility of diesel fuel pattern matching using gas chromatography
- Develop methods to identify distinguishing features in diesel fuel chromatograms
- Compare questioned fuel signatures to valid reference chromatograms

The Accomplishments

- Developed probabilistic pattern matching techniques to identify adulterants
- Demonstrated feasibility of approach in pilot studies
- Designed and analyzed nationwide studies to validate the approach

