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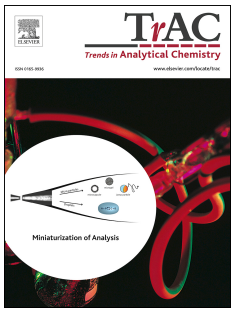

Recent trends in the use of liquid fuel taggants and their analysis

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Recent trends in the use of liquid fuel taggants and their analysis

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ABSTRACT

Today, the chemical labeling of various products (so-called tagging) is of great importance. It assists in the prevention and/or detection of diverse forms of counterfeiting. Bearing in mind, the large scale of their use and the importance for local and worldwide economies, mineral oils are protected against possible counterfeiting by spiking them with overt (visible) and/or covert (invisible) compounds. Due to the wide variety of available products and the different possible purposes for tagging, many chemical substances are used on a daily basis. The need to better protect consumers and products has stimulated interest in designing new labeling substances that offer the desired properties.

In this article, an overview of the most popular labeling compounds is provided along with the characteristics of their basic physico-chemical properties, chemical structures as well as information about the available analytical methods that can be used for their qualitative and quantitative analysis.

KEYWORDS

tagging substances, fuel, Euromarker, overt, covert

ABBREVIATIONS

artificial neural networks (ANN), attenuated total reflection Fourier transform infrared spectroscopy (ATR-FTIR), diode array detector (DAD), flame ionization detector (FID), gas chromatography (GC), hierarchical clustering analysis (HCA), high performance liquid chromatography (HPLC), infra-red (IR), liquid chromatography (LC), linear discriminant analysis (LDA), mass spctrometry (MS), nuclear magnetic resonance (NMR), near-infrared (NIR), partial least squares discriminant analysis (PLS-DA), principal component analysis (PCA), soft independent modeling of class analogy (SIMCA), solid phase extraction (SPE),