E-Waste Dust Sample SCCPs

The GCxGC system is comprised of the LECO quadrupole, liquid nitrogen-cooled thermal modulator in a 7890B GC. The high resolution mass spectrometer was a LECO Research GC-HR-4D research prototype. The LC-MS method and the mass spectrometer settings were as follows.

**Methods**

**Overview**

A prototype of a novel ion source for use in GCxGC-HR-TOFMS based on the Folded Flight Path® (FFP®) mass analyzers has been developed. The primary goal was to minimize the capabilities for analysis of short-chained chlorinated paraffins and other POPs.

**Introduction**

Commercial chlorinated paraffins are derived from the free radical chlorination of n-alkane molecules. These end products are categorized into three groups: Short-Chain Chlorinated Paraffins (SCCPs), C10 to C13; Medium-Chain Chlorinated Paraffins (MCCPs), C14 to C17; and Long-Chain Chlorinated Paraffins (LCCPs), C18 to C30.

**Ion Source**

A new, dual chamber ion source was developed to operate in any of three ionization modes (electron ionization, positive chemical ionization, and electron capture negative ionization) and a prototype of a novel ion source for use in GCxGC-HR-TOFMS based on the Folded Flight Path® (FFP®) mass analyzers has been developed. The preliminary results from evaluating its capabilities for analysis of short-chained chlorinated paraffins and other POPs are presented.

**E-Waste Dust Sample SCCPs**

The study focuses on short-chain chlorinated paraffins (SCCPs). Due to their high electron affinity, the analysis of chlorinated paraffins is typically performed by mass spectrometry with electron capture negative ionization (ECNI).

**Results**

The chromatographic patterns of multiple constituents within the chlorinated paraffin standards were characterized.

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