

Fire Debris and Explosives Analysis Subcommittee Position Statement on E1618-14

ASTM E1618-14 *Standard Test Method for Ignitable Liquid Residues in Extracts from Fire Debris Samples by Gas Chromatography-Mass Spectrometry* is the current standard for the analysis and reporting of fire debris analysis. The Fire Debris and Explosives Analysis Subcommittee performed an evaluation of E1618 to determine its suitability, in its current format, as a potential OSAC Registry document.

Although this document has served its purpose well, the expectations of the criminal justice community, and specifically of the OSAC process, require a significantly higher level of detail in standardized methods. E1618 represents the past 30 years of forensic practice but does not address the concerns that will dominate the future of forensic science.

This OSAC subcommittee has identified four areas in which to concentrate efforts for improvement. These four areas will be addressed individually, potentially as four separate documents. These areas are:

1. Instrumental Analysis of ignitable liquids (IL) and ignitable liquid residues (ILR) by gas chromatography-mass spectrometry (GC-MS). Specific areas to be addressed include:
 - a. Development of QA/QC measures for GC-MS instrumentation in the context of ignitable liquid analysis
 - b. Refinement of criteria for instrument performance
 - c. Development of appropriate QC test mixtures/test compounds based upon both analytes of interest and sample preparation/extraction techniques
2. Ignitable Liquid Classification. Specific areas to be addressed include:
 - a. Consideration as a standalone document to be used during interpretation
 - b. Provision for better definition of and distinction between ignitable liquid classes
 - c. Improvement in the classification of IL mixtures
 - d. Refinement and revision of examples of products of each IL class
3. Interpretation of GC-MS data for IL/ILR. Specific areas to be addressed include:
 - a. Refinement of Extracted Ion Profiling (EIP) and requirements for single compound identification
 - b. Enhanced identification criteria for all classes
 - c. Inclusion of measures to address the interpretation of potential IL mixtures
4. Report Writing. Specific areas to be addressed include:
 - a. Enhancing verbiage to be clear and unbiased
 - b. Defining and normalizing report terminology

If you have implemented improvements in any of these areas, please contact us with specific details at E1618.PathForward@gmail.com.