

BOOK REVIEW

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Review of: *Fire Debris Analysis*

REFERENCE: Stauffer E, Dolan JA, Newman R. Fire debris analysis. Burlington, MA: Academic Press, 2008, 634 pp.

The authors have produced what is by far the most comprehensive text on the subject of fire debris analysis ever written. Any criminalist who wants to learn how to conduct a proper fire debris analysis should read this book. Upon completion, the reader will know how the task is performed. Experienced criminalists, who already know fire debris analysis, will appreciate the depth of understanding conveyed by this book, and all of the subtle nuances that it covers.

After a brief introduction that covers fire debris analysis in broad strokes, a detailed history of fire debris analysis is presented. Any good science book will contain a history of the development of the field, so that readers can come to their understanding in the same way the field came to its understanding.

The next chapter is a review of basic organic chemistry. While it may be a necessary part of the book, readers who need the information in this chapter are unlikely to be able to grasp many of the concepts that follow. There is far more detail than necessary or far less detail than necessary, depending on the reader's level of education and experience.

The next chapter, on the chemistry and physics of fire and liquid fuels, provides the reader with significant and necessary information to help them understand what happens to the ignitable liquid before it gets to the laboratory. The next two chapters on detection of ignitable liquid residues at fire scenes and sample collection

describe the interaction of investigators with the evidence, again, prior to its receipt at the laboratory.

The next chapter on flammable and combustible liquids provides a detailed description of the petroleum industry, and the attempts of the forensic science community to classify the products on the market. The next four chapters are the heart of the book, describing gas chromatography-mass spectrometry, interpretation of data obtained from neat liquids, extraction of liquid residues from fire debris, and interpretation of ignitable liquid residues extracted from fire debris. The contrast between the analysis of neat liquids and ignitable liquid residues helps the reader understand that fire debris analysis is not a trivial discipline. The authors make the point at several places in the book that the interpretation is a subjective exercise, in that it requires considerable training and experience to make a proper interpretation of a highly contaminated residue.

The authors next cover other analytical techniques for ignitable liquid residue detection and other possible examinations of fire debris, including the analysis of vegetable oil residues, vehicle fluids, and incendiary mixtures. The book closes with chapters on certification, standardization, and accreditation. As active participants in all three aspects of the forensic science quality triangle, the authors are in an excellent position to comment on the mechanisms and the utility of these important quality assurance activities.

Stauffer, Dolan, and Newman are three masters of the art and science of fire debris analysis, and they have produced a masterful piece of work.

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