Contamination and Limitations in Fire Debris Analysis

A Scientific Sleuthing Review Bibliography

Aldridge, T.A. and Oates, M.
"Fractionation of Accelerants and Arson Residues by Solid Phase Extraction"
*J. Forensic Sci.* 1986, **31**(2) 666-686  April

Anonymous
"Avoid Cross Contamination"
*Fire Findings* 1993, **1**(3) 6 Fall

Askari, M.D.F.; Maskarinec, M.P.; Smith, S.M.; Beam, P.M. and Travis, C.C.
"Effectiveness of Purge-and-Trap for Measurement of Volatile Organic Compounds in Aged Soils"
*Anal. Chem.* 1996, **68**(19) 3431-3433  October

Bates, J.W.
"Variations in Headspace Vapor Compositions According to Accelerant Ammounts in Fire Accelerants Analysis by Gas Chromatography"

Bertsch, W.
"Volatile from Carpet: A Source of Frequent Misinterpretation in Arson Analysis"
*J. Chromatogr.* 1994, **674** 329-333

Bertsch, W.
"Analysis of Accelerants in Fire Debris - Data Interpretation"
*Forensic Sci. Rev.* 1997, **9**(1) 1-22  June

Bertsch, W. and Sellers, C.S.
"Limits in Arson Debris Analysis by Capillary Column Gas Chromatography/Mass Spectrometry"

Bhattacharya, A.; Sen Gupta, P.K. and Basu, A.
"Recovery and Detection of Petroleum Products (Petrol, Kerosene and Diesel) in Fire as Well as 'Bride Burning' Cases: Maximum Limitation of Time Lapse"
*J. Indian Acad. Forensic Sci.* 1987, **26**(2) 42-44  (publ. 1988)

Bryson, B.R.
"Open Minded"
*Nat. Fire Arson Rep.* 1983, **2**(3) 9  September/October

Buckleton, J.S.; Bettany, B.L. and Walsh, K.A.J.
"A Problem of Hydrocarbon Profile Modification by Charcoal"
*J. Forensic Sci.* 1989, **34**(2) 449-453  March
Chapin, B.
"Arson Notes"
*Newsl. Midwest Assoc. Forensic Sci.* 1984, **13**(3) 30-31 July

Chen, C.L.
"Gas Chromatography-Mass Spectrometry (GC-MS) in Separation and Identification of Lignin Low-Molecular Weight Fragments and Model Compounds"

Cherry, C.
"Arsonist's Shoes: Clue or Confusion?"

Clodfelter, R.W. and Hueske, E.E.
"A Comparison of Decomposition Products from Selected Burned Materials with Common Arson Accelerants"
*J. Forensic Sci.* 1977, **22**(1) 116-118 January

Cunningham, R.
"AGC-21 Product for a New Century"
*The Lamp* (Exxon) 1998, **80**(2) 4-7 Summer

Davidson, J.
"Subsurface MTBE Remediation"
Presented: 33rd ACS Western Regional Meeting Irvine, CA October 21-25, 1997 Paper # 103

Deelchand, J.-P.
"Planar Chromatographic Separation of Petroleum Residues and Coal-Derived Liquids"
*J. Chromatogr. A* 1998, **830**(2) 397-414

DeHaan, J.D. and Bonaris, K.
"Pyrolysis Products of Structure Fires"

DeHaan, J.D. and Greenfield, A.
Evaporation Rates of Volatile Hydrocarbon Accelerants"

Dietz, W.R.
"Interpretation Guidelines for 'Problem' Accelerant Chromatograms"
Dietz, W.R. and Mann, D.C.
"Contamination Problem Within Polyester Bags"

Dietz, W.R. and Mann, D.C.
"Evidence Contaminated by Polyester Bags"
_Scientific Sleuthing Rev._ 1988, _12_(3) 5-6 Summer

Ettre, L.S. and Kolb, B.
"Headspace-Gas Chromatography: The Influence of Sample Volume on Analytical Results"
_Chromatographia_ 1991, _32_(1/2) 5-12 July

Faix, O.; Meier, D. and Fortmann, I.
_Holz. als Roh und Werkst._ 1990, _48_( ) 281-285

Faix, O.; Meier, D. and Fortmann, I.
_Holz. als Roh und Werkst._ 1990, _48_(9) 351-354

Folkman, T.E.; Kuehl, A.M.; Groves, R.J. and Beveridge, A.D.
"Evaporation Rate of Gasoline from Shoes, Clothing, Wood and Carpet Materials and Kerosene from Shoes and Clothing"

Forensic Science Committee - IAAI
"Forensic Science Committee Position on Comparison Samples"
_Fire Arson Invest._ 1990, _41_(2) 50-51 December

Forensic Science Committee - IAAI
"Is Your Lab Giving You Proper Results?"
_Fire Arson Inv._ 1994, 39 December

Francis, J.; Matsumoto, T. and Hussain, T.
"MTBE Contamination in Groundwater: What Does This Mean for Petroleum-Contaminated Sites? Presented: 33rd ACS Western Regional Meeting Irvine, CA October 21-25, 1997 Paper # 107

Frontela, L.; Pozas, J.A. and Picabea, L.
"A Comparison of Extraction and Adsorption Methods for the Recovery of Accelerants from Arson Debris"
_Forensic Sci. Int._ 1995, _75_(1) 11-23
Fultz, M.L.
"The Effect of Sample Preparation on the Identification of Class 4 and Class 5 Petroleum Products"
Presented: 46th Annual Meeting AAFS San Antonio, TX February 14-19, 1994 Abstract # B84

"Gasoline Oxygenate Analysis in Environmental Samples by 2-D Gas Chromatography"
Presented: 33rd ACS Western Regional Meeting Irvine, CA October 21-25, 1997 Paper # 62

Ghirelli, R.; Amini, H.; Kerger, B.; Dodge, D. and Richter, R.
"MTBE Water Contamination: Key Considerations for Remediation, Risk Assessment, and Risk Management"
Presented: 33rd ACS Western Regional Meeting Irvine, CA October 21-25, 1997 Paper # 104

Gialamas, D.M.
"Is it Gasoline or Insecticide?"
Presented: CAC Fall Seminar San Diego, CA October 1993
The CAC News 1994, 16-20 Spring

Goldstein, H.M. and Bidanset, J.H.
"Post Fire Accelerant Residue Study - Hydrocarbon Patterns to be Expected in Arson Determination"
Presented: 36th Annual Meeting AAFS Anaheim, CA February 21-25, 1984 Abstract C38

Gororski, J.
"Low-Level Analyses of MTBE and Other Ether Fuel Oxygenates in Natural Waters"
Presented: 33rd ACS Western Regional Meeting Irvine, CA October 21-25, 1997 Paper # 65

Grosjean, D.; Grosjean, E. and Rassmussen, R.
"Ambient Concentrations of MTBE: A One-Year Study in Porto Alegre, Brazil"
Presented: 33rd ACS Western Regional Meeting Irvine, CA October 21-25, 1997 Paper # 61

Harmer, R.L.; Moss, R.D.; Noland, T.E. and Thaman, R.N.
"Liquid Burn Patterns on Linoleum"
Fire Arson Invest. 1983, 33(4) 3-4 June
Henderson, R.W.
"Impurities in Activated Charcoal"

Henderson, R.W.
"Fire Losses and Negative Samples"
*Nat. Fire Arson Rep.* 1992, 10(1/2) 14-15

Henderson, R.W.
"Aromatic Compounds and Fire Debris Analysis"
Abstract # B18

Hewitt, A.D.
"Biodegradation of Volatile Organic Compounds in Soil Samples"
*Amer. Environ. Lab.* 1997, 9(7) 1, 5-7 August

Higgins, M.
"Turpentine, Accelerant or Natural??"
*Fire Arson Invest.* 1987, 38(2) 10 December

Hindshaw, J.V.
"Headspace Sampling"
*LC-GC* 1990, 8(5) 362-368 May

Hirz, R.
"Gasoline Brand Identification and Individualization of Gasoline Lots"

Hirz, R. and Rizzi, A.M.
"Simulation of the Weathering of Gasolines Using Gas Chromatographic Retention Data"

Hirz, R. and Rizzi, A.M.
"Simulation of Concentration Changes in Complex Volatile Mixtures During Evaporation by Using Gas Chromatography"
*Chromatographia* 1991, 31(5/6) 224-232 March

Howard, J. and McKague, A.B.
"A Fire Investigation Involving Combustion of Carpet Material"
*J. Forensic Sci.* 1984, 29(3) 919-922 July
Huesemann, M.H.
"Field Desorption Mass Spectroscopy Monitoring of Changes in Hydrocarbon Type Composition During Petroleum Biodegradation"

Knappmeyer, K. and Yoshida, S.
"Detection of Extinguishing Agents"
Tieline 1997, 21(1/2) 21-28 Summer/Winter

"Microbial Degradation of Petroleum Hydrocarbons: Implications for Arson Residue Analysis"
J. Forensic Sci. 1992, 37(6) 1585-1599 November

Kostiainen, R.
"Effect of Operating Parameters in Purge-and-Trap GC-MS of Polar and Non-Polar Organic Compounds"
Chromatographia 1994, 38(11/12) 709-714 June

Kurz, M.E.; Jakacki, J. and McCaskey, B.
"Effects of Container Size and Volatility on Relative Detectability of Accelerants by Purge and Trap vs Heated Headspace Method"
Arson Anal. Newsl. 1984, 8(1) 1-14 January
Nat. Fire Arson Rep. 1984, 3(1) 8-10

Lentini, J.
"Incidental Accelerants"
Nat. Fire Arson Rep. 1983, 2(3) 8 September/October

Lentini, J.
"Avoiding Contamination"
Fire Arson Inv. 1985, 36(1) 21-22 September

Lentini, J.
"Differentiation of Asphalt and Smoke Condensates from Liquid Petroleum Distillates Using GC/MS"

Lentini, J. and Waters, L.V.
"Isolation of Accelerant-like Residues from Roof Shingles Using Headspace Concentration"
Arson Anal. Newsl. 1982, 6(3) 48-55 May

Lincoln, S.
"Charcoal Lighter Fluid Used as an Arson Accelerant"
Fire Arson Invest. 1991, 42(1) 46-47 September
Lorenzana-Jimenez, M.; Capella, S.; Labastida, C. Magos, G.A. and Amancio-Chassin, O.
"Thinner Composition Determined by Gas Chromatography"
*Contam. Ambiental.* 1988, 4(1) 65-71 (in Spanish)

Loscalzo, P.J.; DeForrest, P.R. and Chao, J.M.
"A Study to Determine the Limit of Detectability of Gasoline Vapor from Simulated Arson Residues"
*J. Forensic Sci.* 1980, 25(1) 162-167 January

Mann, D.C.
"Comparison of Automotive Gasolines Using Capillary Gas Chromatography II: Limitations of Automotive Gasoline Comparisons in Casework"
*J. Forensic Sci.* 1987, 32(3) 616-628 May

Mann, D.C. and Gresham, W.R.
"Microbial Degradation of Gasoline in Soil"
*J. Forensic Sci.* 1990, 35(4) 913-923 July

Midkiff Jr., C.R.
"Brand Identification and Comparison of Petroleum Products - A Complex Problem"
*Fire Arson Invest.* 1975, 26(2) 18-21 October-December

Midkiff Jr., C.R.
"Is It a Petroleum Product? How Do You Know?"
*J. Forensic Sci.* 1986, 31(1) 231-234 January

Midkiff Jr., C.R.
re: "Charcoal Lighter Fluid Used as an Arson Accelerant" (letter)
*Fire Arson Invest.* 1994, 44(4) 61-62 June

Mittelbach, M.
"Diesel Fuel Derived from Vegetable Oils, V[1]: Gas Chromatographic Determination of Free Glycerol in Transesterified Vegetable Oils"
*Chromatographia* 1993, 37(11/12) 623-626 December

Moorehead, W. and Dickan, T.
"Capillary Gas Chromatography Characterization and Classification of Some Hydrocarbon Solvents and Alkyl Glycol Ethers"
Presented: 86th Semi-annual Seminar, CAC San Pedro, CA Autumn, 1995
Abstract: *Science and Justice* 1996, 36(3) 203 July/September

Newman, R.
"New and Unusual Ignitable Liquids"
*Newsl. Southern Assoc. Forensic Sci.* 1995, 23(2) 27-31 September
Newman, R.T.; Dietz, W.R. and Lothridge, K.
"The Use of Activated Charcoal Strips for Fire Debris Extractions by Passive Diffusion. Part 1: The Effects of Time, Temperature, Strip Size, and Sample Concentration"
_J. Forensic Sci._ 1996, _41_(3) 361-370  May

Newman, R.; Gilbert, M. and Lothridge, K.
_GC-MS Guide to Ignitable Liquids_
New York, NY  CRC Press 1998  750pp

Newman, R.; Lothridge, K. and Dietz, W.R.
"The Effects of Time, Temperature, Strip Size and Concentration in the Use of Activated Charcoal Strips in Fire Debris Analysis"

Niu, J. and England, D.
"Feasibility Study for Remediation of MTBE-Impacted Groundwater"
Presented: 33rd ACS Western Regional Meeting  Irvine, CA  October 21-25, 1997  Paper # 64

Noedel, M.L. and Mann, D.C.
"Variations on Charcoal Strip Exposure for Adsorption/Elution Recovery of Flammable Liquids"
Presented: 44th Meeting AAFS  New Orleans, LA  February 17-22, 1992  Abstract # B28

Nowicki, J.F.
"Control Samples in Arson Analysis"
_Arson Anal. Newsl._ 1981, _5_(1) 1-5  January

Nowicki, J.F.
"An Accelerant Classification Scheme Based on Analysis by Gas Chromatography/Mass Spectrometry (GC-MS)"
_J. Forensic Sci._ 1990, _35_(5) 1064-1086  September

Nowicki, J.F.
"Determining the Source of Gasoline Samples from Fire Scenes by GC-MS Using Selected Ion Profiles"
Presented: 46th Annual Meeting  AAFS  San Antonio, TX  February 14-19, 1994  Abstract # B85
O'Donnell, J.F.
"Retesting of Accelerant Residue Samples"
*Fire Arson Invest.* 1992, 42(3) 10-14 March

O'Donnell, J.F.
"Interferences from Backgrounds in Accelerant Residue Analysis"
*Fire Arson Invest.* 1989, 39(4) 25-27 June

Pannuto, P.M. and Fultz, M.L.
"A Survey of Specialty Solvents Encountered in the Examination of Fire Debris"

Peterson, J.L. and Fabricant, E.
"Report No. 14 Arson Examination Laboratory Proficiency Testing Program"
The Forensic Sciences Foundation Rockville, MD 1976

"Analysis and Technology of Sulfite Turpentine. Part 1. Investigation of Sulfite Turpentine by Gas Chromatography and Mass Spectrometry"
*Chem. Tech. (Leipzig)* 1990, 42(1) 27-31 (in German)

Potts, M.
"Contaminant in KAPAK Bags"
*TIELINE* 88 1988, 13(1) 17-27

Rapley, P.
"Background Volatiles in Fire Debris"

Reeve, V.; Jeffery, J.; Weihs, D. and Jennings, W.
"Developments in Arson Analysis: A Comparison of Charcoal Adsorption and Direct Headspace Injection Techniques Using Fused Silica Capillary Gas Chromatography"
*J. Forensic Sci.* 1986, 31(2) 479-488 April

Sandercock, P.M.L.
"Technical Note: Chromatographic Profiles of Three Fuel Injector Cleaners"

Sandercock, P.M.L.
"Retention of Gasoline and Diesel Fuel Samples on Charcoal: Evaluation of Long Term Preservation of Petroleum Residues"
Scheibler, P.; Poelchen, W. and Schramek, C.H.J.
Analytical Comparison of 'Paraffin'-Labeled High Toxic Lamp Oils with Paraffinum Perliquidum (DAB 10)"

*Pharmazie* 1995, 50(7) 496-497 (in German)

Schmierbach, D. and Smith, C.G.
"Isolation and Identification of Isoparaffins in Arson Debris"
Presented: 44th Meeting AAFS New Orleans, LA February 17-22, 1992 Abstract # B23

Sheff, L. M. and Siegel, J.A.
"Three Dimensional Fluorescence and Capillary Gas Chromatography of Neat and Evaporated Gasoline Samples"

Sheff, L. M. and Siegel, J.A.
"Fluorescence of Petroleum Products V: Three-Dimensional Fluorescence Spectroscopy and Capillary Gas Chromatography of Neat and Evaporated Gasoline Samples"
*J. Forensic Sci.* 1994, 39(5) 1201-1214 September

Sliva, G. and Verrett, G.
"The Analysis of Background Volatiles and Creation of a Library of Retention Indices"

Small, J.L. and Milroy, S.
"Possible 'Accelerants' Found in Household Products"

Stackhouse, C.S.
"Will the Real Lamp Oil Please Stand Up?"

Stackhouse, C.C.
"Lacquer Thinners-Rare But Not Forgotten"

Stone, I.C. and Lomonte, J.N.
"False Positives in Analysis of Fire Debris"
*Fire Arson Inv.* 1984, 34(3) 36-40 March

Sturaro, A.; Parvoli, G. and Doretti, L.
"Artifacts Produced by Poropak Q Sorbent Tubes on Solvent Desorption"
Sumi, K. and Tsuchiya, Y.
"Combustion Products of Polymeric Materials Containing Nitrogen in their Chemical Structure"
*J. Fire Flammability* 1973, 4 15-22

Tindall, R. and Dietz, W.R.
"The Effects of Time, Temperature, Strip Size and Concentration in the Use of Activated Charcoal Strips in Fire Debris Analysis"

Tindall, R. and Dietz, W.R.
"Physical and Chemical Factors Influencing the Recovery of Accelerants from Activated Charcoal Strips"

Tindall, R. and Dietz, W.R.
"Effects of Elution Techniques on the Desorption of Activated Charcoal Strips in Fire Debris Analysis"
Presented: 46th Annual Meeting AAFS San Antonio, TX February 14-19, 1994 Abstract # B38

Tontarski, R.E. (letter to the editor)
"Charcoal Preparation"

Trimpe, M.A.
"Turpentine in Arson Analysis"

Trimpe, M.A.
"What the Arson Investigator Should Know About Turpentine"
*Fire Arson Invest.* 1993, 44(1) 53-55 September

Trimpe, M.A.
"Case Study" (Peak from melted plastic)
*Arson Anal. Newsl.* 1983, 7(5-6) 110-113 September/November
Tsaroom, S.; Elkayam, R.; Natanyan, S. and Frenkel, M.  
"Evaporation of Gasoline and Kerosene from Polyethylene Containers"  
*Fire Arson Inv.* 1990, 40(3) 21-23  March

Voorhees, K.J.  
"Analysis of Soot Produced from the Combustion of Polymeric Materials"  

Wade, M.J.  
"Forensic Geochemistry of Subsurface Gasoline Contamination - Whose Gasoline is it and When Was it Released?"  
Presented: ACS NERM  Saratoga Springs, NY  June 22-25, 1997  Abstract #69

Wade, M.J.  
"Forensic Geochemical Assessment of Co-mingling Subsurface Hydrocarbon Plumes at a Heavy Industry Property?"  
Presented: ACS NERM  Saratoga Springs, NY  June 22-25, 1997  Abstract #70

Wang, J.; Almirall, J.R. and Furton, K.G.  
"Variables Influencing the Recovery of the Ignitable Liquid Residues from Simulated Fire Debris Samples Using Solid-Phase Microextraction"  
Presented: 214th ACS National Meeting  Los Vegas, NV  September 7-11, 1997  ANAL #28

Wang, Z. and Fingas, M.  
"Differentiation of the Source of Spilled Oil and Monitoring of the Oil Weathering Process Using Gas Chromatography-Mass Spectrometry"  
*J. Chromatogr. A* 1995, 712(2) 321-343

Wang, Z. and Fingas, M.  
"Using Biomarker Compounds to Track the Source of Spilled Oil and to Monitor the Oil Weathering Process"  
*LC-GC Mag.* 1995, 13(12) 950-958  December

Washall, J.W. and Wampler, T.P.  
"Sources of Error in Purge-and-Trap Analysis of Volatile Organic Compounds"  
*Amer. Lab.* 1990, 22(18) 38-43  December

Wellman, D. and Jones, S.  
"Analysis of Samples for MTBE Content: Causes for Concern?"  
Presented: 33rd ACS Western Regional Meeting  Irvine, CA  October 21-25, 1997  Paper # 61

Williams, K.  
"Occurrence of MTBE in Orange County"  
Presented: 33rd ACS Western Regional Meeting  Irvine, CA  October 21-25, 1997  Paper # 162
Wineman, P.L. and Fultz, M.L.
"A GC/MS Procedure for Detecting-Petroleum Derived Accelerants in High Background Fire Debris Isolates"
Presented: IAFS Meeting Adelaide, Australia October 22-29, 1990 Abstract $ FE533

Wu, B.; Yang, M.; Liu, G.; Pan, X. and Han, S.
"Study on the Chemical Composition of Combustion Smoke from Polystyrene Plastic"

Yokoyama, S.
"Structural Analysis of Fossil Fuel Oil by Mass Spectrometry"
Nippon Enerugi Gakkaishi 1993, 72(3) 202-209 (in Japanese)

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