

*A Guide for  
Commercial  
Kitchen Fires*

*Prevention and Investigation*

*A Collaboration of Experts*

*Phil Ackland*

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## About the Author and Special Contributors

### **Phil Ackland**

Phil Ackland has been in the commercial kitchen field for nearly 45 years. He is a principle member of the NFPA 96 Committee. He has written numerous articles and a series of books on the subjects of installing, inspecting and servicing commercial kitchen exhaust and extinguishing systems (referenced in the 2011, NFPA 96 and NPFA 921). His company, Phil Ackland and Associates offers training to Fire and Building inspectors, investigators, and the insurance profession. His company provides a variety of qualified experts for consultation and technical support services to fire investigators and attorneys on kitchen system related insurance liability claims. He has assisted a number of authorities having jurisdiction develop and implement Certification Programs for inspectors and exhaust cleaners.



### **Don Stewart**

Don Stewart is a kitchen fire suppression systems expert with over 30 years of experience. His area of expertise is in the design and installation of Class II kitchen suppression systems. Over the last 10 years he has consulted to authorities having jurisdiction, insurance companies and fire protection companies on the design, installation, maintenance and compliance to manufacturers' guidelines on both wet and dry chemical kitchen fire suppression systems.

He conducts fire investigations and provides litigation support testimony to fire incidents in commercial kitchen fire suppression systems.

He is factory trained and certified by many fire suppression manufacturers including Ansul, Chemetron, FSI, General, Kidde, Range Guard and System Master. Don Stewart is a licensed sprinkler contractor in the state of Michigan; and holds engineered, pre-engineered and fire extinguisher licenses in the state of Illinois.



### **Kirk Hankins, IAAI-CFI, MIFireE**

Kirk Hankins is the Regional Manager and Senior Investigator with Fire Consulting and Case Review International, Inc. He has conducted numerous fire and explosion investigations during his 30 plus year career in both law enforcement and the private investigation field.

He has degrees from the University of Missouri, Columbia College and is a graduate of the FBI/US Army Ordnance, Hazardous Devices School. Mr. Hankins has been court qualified as an "expert" in fire and explosive investigations.

He is a Past President and Life member of the International Association of Arson Investigators. He Chairs the IAAI Certified Fire Investigators Committee and steering committee for the IAAI distance learning platform, CFITrainer.net®.

He is a member of ASTM, E30 Committee on Forensic Science, IFE and NFPA. He is a member of the NFPA Technical Correlating Committee on Professional Qualifications. He is the IAAI representative to the Pro Board.



**Mark Finck**

Mark Finck is a professional with extensive experience in all aspects of cooking equipment development, performance, application, and efficiencies. Comprehensive background in Quick Service Restaurants (QSR) kitchen operations, food chemistry, manufacturing and agency codes.

He is a Subject Matter Expert (SME) in Ventilation, Commercial Ovens and Flame Broilers. Adept at optimizing global equipment specifications generating significant cost savings and promoting innovative solutions in complex environments.

Mark Finck has thirty years in the commercial kitchen industry and is a designer, installer and consultant to numerous kitchen appliance manufacturers, holding seven patents for equipment now in common usage. He spent twelve years, first as Food Services Engineer, then as Senior Manager of Equipment Research and Development for a world-wide restaurant chain. He currently sits on the NFPA #96 (User), ASHRAE TC-510 Cooking Ventilation, and ASTM Standards co-author of test methods for food service equipment.

In the position as Phil Ackland’s senior technical expert on appliances, Mark is extremely conversant with industry codes and compliance issues.



**Lee DeVito**

This manual would not be as deep or as comprehensive if it had not been for the meticulous and precise efforts of A. Elwood Willey, Lee DeVito and the staff of FIREPRO® Incorporated. Their voluntary contribution to this project provides a new level of insight and comprehension that will serve fellow investigators now and in the future. Mr. DeVito, is a registered Professional Fire Protection Engineer who has worked in the fire protection industry since 1973. He is a principal member of the NFPA 96 technical committee and has investigated commercial kitchen fire incidents and provided litigation support on those incidents.



**Lemuel L. (Speedy) Laster**

Speedy Laster joined Phil Ackland and Associates LLC in 2007 as an Instructor; training individuals for commercial kitchen exhaust cleaning. In November 2008, Mr. Laster received his credentials from Mr. Ackland to teach the Fire Inspectors Course and has now taught this course across America and around the Pacific Rim. Mr. Laster has consulted with several national restaurant chains regarding changes and or modifications to their Commercial Kitchen Ventilation systems to improve fire safety. He also provides hands-on inspection services.

In 2010, he assisted with completing the Instructors Training Program and the accompanying manual; to bring a more personal feel to the class. Speedy delivers the material (breaking it down into laymen’s terms) so it is easy to comprehend.



### **Mike Schlatman**

Mike Schlatman is the President of Fire Consulting and Case Review International Inc. in Shawnee Mission, Kansas. He is also the former President of Consolidated Forensic Investigations Inc. and of Independent Insurance Investigations, Inc. He has numerous years of experience in insurance investigations including fire, fraud and related claims.

Having earned his Master's degree in Criminal Justice from St. Louis University, he has taught extensively in the investigation field. As a former Police Homicide/Arson Detective, he has served in the municipalities of St. Louis County.

He became a Director of the International Association of Arson Investigators in April of 1996. The IAAI is a worldwide association of approximately 8,600 members in 37 countries. He was elected as 2nd Vice President of the IAAI in May 2002 and 1st Vice President in April 2003, going on to serve as President of that association in 2004-2005.

He served as a Consultant for the Johnson County District Attorney's Office and the Wyandotte County District Attorney's Office in fire related cases. He has also consulted for the Kansas Attorney's General Office and the Linn County Prosecuting Attorney's Office in Missouri.



### **Vyto Babrauskas, Ph. D**

Vyto was a long-time researcher at NIST where he developed the two primary tools for measuring heat release rate of fires—the Cone Calorimeter and the large-scale furniture calorimeter. He was awarded the first-ever Ph.D. degree in fire protection engineering, from the University of California, Berkeley, and also holds degrees in physics and structural engineering. He is the author of some 300 articles and reports and three reference books. His Ignition Handbook is the standard science reference work for fire investigators; he is currently working on a new book on Electrical Fires and Explosions. Since 1993 his firm Fire Science and Technology Inc. has specialized in lending fire science support to fire investigations and litigations, in addition to doing contract research for manufacturers, research institutes, and governmental bodies.



### **Stephen Bradbury**

Stephen started working in the food service industry in 1974. After attending college, he joined Russell Food Equipment Ltd. as a service technician in 1978. For the past 30 plus years he has specialized in inspecting and servicing of fans, water wash ventilators and fire suppression systems. He is a registered fire protection technician in the province of British Columbia. In 2001 he completed his gas fitter apprenticeship and holds a class "B" ticket. He has been factory trained and certified by several commercial cooking equipment manufacturers including Quest, Lincoln, Merco, E-Flow and Savory.

He has been factory trained and certified by Quest CleanAir Ventilator Ltd. Also Kidde and Ansul kitchen fire suppression systems.

Stephen has also been working with and assisting Phil Ackland and Associates with expert testimony for over 25 years.



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## Peer Reviewers and Contributors

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## Peer Reviewers

We offer special thanks the following individuals for providing valuable peer review time and talent:

- Arroyo, Joe , President, Fire Extinguisher and Supply, Inc.
- Besal, Barney, Technical Expert, Besal Services Inc.
- Canova, Brian, CFEI, O'Neill Associates
- Cave, Todd, Assistant Chief, Prevention Division, Saanich Fire Department
- Cheers, K. David, CFEI, Field Operations Manager/Fire Consultant, Jack Ward Fire Consultants
- Cushing, David, Boston Fire Department
- Eddy, James R., CFI, Fire Chief Ret., Chief Fire Analyst, New England Fire Cause & Origin, Inc.
- Fetrow, Jack, CFI,CFEI,CVFI, Senior Fire and Explosion Investigator, Northern Territory Manger, Donan Engineering Co., Inc.
- Fisher, Don, President/CEO, Fisher Nickel
- Foster, David L., Senior Technical Coordinator, Risk Decision Services, Insurance Services, Inc.
- Goff, Herb, P.E., C.F.E.I., Chief Operations Officer, Donan Engineering Co., Inc.
- Heggie, Kevin, Mr. Fire Safety of Clarksville
- Hellan, Captain Mark, (ret. Phoenix Fire Department), President, Mark S. Hellan Fire & Explosion Investigations INC.
- Hopson, Gary G., CSP, CFPS, ARM, Senior Consultant, Global Risk Consultants

- Icove, David J., Ph.D., P.E., Adjunct Assistant Professor, University of Tennessee, Department of Electrical and Computer Engineering
- Lentini, John, CFI, Fire Investigator, Applied Technical Services
- Létourneau, Claude Y., P. Eng., IAAI-CFI, Director Fire & Explosion Division, PYROTECH BEI
- Levin, Steven, Regional Risk Control Consultant, CNA Insurance
- Klingenmaier, Bill, Manager, Technical Services, TYCO Fire Protection Products
- Kramarczyk, Jay F., M.S., P.E., C.F.E.I., Forensic Fire Protection/Mechanical Engineer, Phoenix Investigations & Engineering
- Kular, Paul S., J.D., Attorney at Law
- McConnaughey, Jefferson C., J.D., Member, Cozen O'Connor
- McDonnell, Paul A., Attorney, Singleton Urquhart LLP
- Neuens, Chad, Attorney, Neuens and Associates, St Paul/Travelers Insurance
- Owens, Forrest, Assistant Chief, Fire Prevention Officer, Central Saanich Fire Department
- Parikh, Jay, Code Consultant, Compliance Solutions International Inc.
- Ray, Shaun, Director of Engineering, Metal-Fab Inc.
- Ringwelski, Brian A., M.S., P.E., Fire Protection Engineer
- Roberts, Jim, Technical Expert, DPW Services
- Schreiber, Richard, P.E., Mechanical Engineer, Intertek APTECH
- Smith, Dennis W., Senior Fire Expert, Kodiak Fire & Safety Consulting
- Sneckenberg, William J., Senior attorney, Sneckenberg, Thompson & Brody, LLP
- Stigers, Mark K., Assistant Chief, Middletown Fire Protection District
- Swierczyna, Rich, Fisher Nickel
- Tracey, Sean A., P.Eng., MSFPE, MIFireE, Canadian Regional Director NFPA
- Trellis, Javier, Ph.D., Senior Engineer, Hughes Associates
- Wilson, Rory, Technical Expert, DPW Services

## **Other Contributors**

### **Individuals**

Larry Hinkley, Paul Ivison, John LeBow, Robert Niemeier, Doc Reisman, Shahar Dadon Private Investigator Israel, Dick Stubbs, Laurie K. Szumla, Greg Thompson, Brian Werth, Craig West.

### **Companies**

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This publication is intended to inform readers on the specific subject of fire inspection and investigations in commercial kitchens. It is the result of research, experience, and observations and it has been peer reviewed to ensure it is authoritative and technically sound. It is sold with the understanding that neither the publisher nor the authors are providing engineering, legal or other professional services beyond the scope of this work. If engineering, legal or other professional assistance is required, then the services of a professional should be sought.

It is the authors' intent to make this work as comprehensive and accurate as possible. However, there may be some errors or omissions. Some of the information presented may be subjective interpretations of information gathered; other information is time dependent and subject to change. Although attempts have been made to ensure that the basis for this publication is accurate, the authors do not guarantee the accuracy of the information presented. The users of this publication should form their own opinions.

This text should be used as a general guide only and not as an ultimate authority on the subject. Specific guidelines presented may not be appropriate for a particular fire scenario or assignment. It is the responsibility of the investigator or analyst to determine what information to apply in a specific matter. This text contains information only current to the date of publishing.

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We have attempted to apply known scientific fire investigative principles wherever possible. However, because this field is rapidly evolving there will be areas that will mature after publication.

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## How to Use This Manual

For Reference purposes, the Table of Contents was created to provide quick access to areas of particular interest. Additionally, there is an extensive Appendix Section.

- **Codes and Standards:** There are two primary Code (Standard) writing bodies in the United States. The International Code Council (ICC) and the National Fire Protection Association 96 (NFPA 96). Both of these bodies upgrade their documents regularly.
- To assist in understanding the various code bodies (NFPA, ICC, IMC, IFC), we will differentiate them in the manual. For example:  
*NFPA 96, Section 4.1.8: All interior surfaces of the exhaust system shall be accessible for cleaning and inspection purposes.*
- **Forms:** Throughout the book there are a number of forms, templates and other written items that are free of charge. Download them at [www.philackland.com/articles-forms/](http://www.philackland.com/articles-forms/)
- **Links:** Throughout the manual you will find URL links to take you to webpages for greater information or insight on that particular subject. We tried to put the links in the most logical locations and for them to direct the reader to the specific point being covered, but cannot take responsibility for other peoples website. (i.e. [www.CFITrainer.net](http://www.CFITrainer.net))

**To our overseas customers:** Where you read of government agencies and codes and standards development bodies such as ICC, NFPA 96, EPA, OSHA or WHMIS, please consult your local jurisdictions.

## Introduction

This manual is a collaborative effort to simplify many of the issues that surround inspection of, and investigation into fires in commercial kitchens. One of the primary purposes is to lay down a fundamental understanding of scientific and investigative methodologies involved in commercial kitchen fires.

To ensure that the material within is balanced and objective, we have had the manual peer-reviewed by a number of special experts in the fields of fire investigation; and the various components of commercial kitchens. We have also researched a number of respected documents, journals and articles; applying many of these scientific principles of investigative methodology to the subject of commercial kitchen fires.

It is specifically written for building and fire inspectors, fire investigators, analysts, engineers, special experts and attorneys to provide them with fundamental knowledge of the performance of cooking appliances, the kitchen exhaust and fire-extinguishing systems. Certain sections will be of greater importance to different individuals or fields. Within a specific topic we have presented lists of recommended elements or activities. It is up to the reader to consider and apply those which he or she determines to be appropriate for a given fire scenario or assignment. Any redundancies will, hopefully, ensure that several points of view and interests are covered for the various professions.

### Fire Prevention

Greater fire safety is achieved when both fire and building departments are involved in the initial design and construction or major renovation of a kitchen exhaust system. Each department brings different points of view to the table. This will ensure that all aspects of construction, installation and upkeep are considered.

Beyond construction and installation, these systems require continuous maintenance. The manual covers basic servicing and cleaning requirements. There are checklists of what tradespeople should be providing and the qualifications they should possess.

### Fire Investigation

Details of fires in commercial kitchens can be complex. A fire investigator needs to have a clear understanding of the commercial kitchen environment (appliances, fire-extinguishing systems, and exhaust systems).

The initial task of a fire investigator or analyst is to gather the acts using an accepted methodology. As much of the evidence in a commercial kitchen fire is surprisingly fragile, it is essential that evidence is gathered while “fresh” and available.

Measurements and observations of, often obscure, components can be critical to creating an acceptable scientific hypothesis. If a case matures to the litigation phase several primary factors are involved in winning over a judge/or jury. The investigator's aim is to accumulate and evaluate evidence and draw correct inferences. This manual provides a number of recommendations to ensure unique and critical evidence is preserved and presented in a useful manner.

### **Insurance and Legal Profession**

The insurance and legal profession will benefit from an understanding of these systems as well as the 'standards of care' various trades should be applying within their area of expertise. The manual will assist in understanding levels of expectations and responsibilities of installers and maintenance personnel.

## **Continuing Education**

In an effort to promote fire safety and greater understanding of the hazards involved with commercial kitchen systems Phil Ackland and Associates LLC, is proud to cooperate with the International Association of Arson Investigators in promoting CFITrainer.net. Participating in this online facility will aid fire inspectors and investigators in understanding many of the aspects of what it takes to reach a professional level of job performance as a fire investigator.

### **CFITrainer.net®**

The International Association of Arson Investigators (IAAI) distance learning site – CFITrainer.net® is designed to provide fire investigators with high quality training and information regarding the investigation of fires and explosions. The programs provided on the site are all based on the requirements on NFPA 1033, Standard for Professional Qualifications for Fire Investigator and NFPA 921, Guide for Fire & Explosion Investigations.

CFITrainer.net® provides both new and experienced fire investigators with a unique opportunity to obtain up to date continuing education related to the profession. It is a cost effective way to build your training and education portfolio and prepare you to your job in this ever changing world.

There are several programs, or modules, available on CFITrainer.net® that will assist readers to better understand the fire investigation process discussed in this book. They include:

- The Scientific Method for Fire and Explosion Investigation
- Fire Investigator Scene Safety
- Documenting the Event
- Introduction to Evidence
- Physical Evidence at the Fire Scene
- Evidence Examination: What Happens at the Lab?
- Fundamentals of Interviewing
- Writing the Initial Origin and Cause Report

These and other modules may be accessed at [www.CFITrainer.net](http://www.CFITrainer.net)®.

If you are new to the IAAI distance learning program you will be asked to register to become a user. After completing the free registration and selecting a user LOGON and PASSWORD you will then be able to select any of the modules that are of interest. Modules may be watched online at your convince and may be reviewed as many times as desired once they are completed. All if the modules on CFITrainer.net® have required reading materials as well as reference materials that are readily available or accessed on line. On completion of a CFITrainer.net® module you have the option to take an end of program test and receive a certificate of completion for the program. As a registered user you may also download a transcript that lists all CFITrainer.net® programs that you have completed.