

# FIREPOINT



IAAI JOURNAL



# **Firepoint**

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## EDITORIAL

*There is a widespread belief amongst fire investigators that the determination of fire cause can best be achieved by co-operation between all involved; this year's IAAI Annual conference in Toronto again highlights the "Team Approach." It is heartening to see the system strengthening in Queensland (see Terry Casey's report). As Terry notes, "the best investigation can only be achieved by pooling the resources available across the industry." It is distressing to see the system unravelling in NSW (see Ross Blowers' report).*

*The FIU in NSW was a cornerstone of team effort in the state. It no longer is. It is a vital responsibility of all our members to try and improve co-operation, and to make the "team approach" work. I believe the NSW Association should take strong moves to try and rectify the breakdown in communications which has occurred.*

*Wal Stern*

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# QUEENSLAND NEWS

## PRESIDENT'S REPORT 1996

*(Terry Casey presents his report for the year gone by).*

The Queensland Association of Fire investigators (QAFI) came back off the ropes early in 1996, somewhat groggy after the effort input into the bid preparation and disappointment at not being granted the 1998 International Conference. I believe this situation led to a low level of activity associated with a low level of enthusiasm very early in the year, however, the lows in the early part of the year gave way to the highs of the success associated with "Operation Bright Spark".

I have already personally thanked those members of the association, and the association sponsors, for their efforts to make this activity so successful.

Following a major success, and the effort associated with it, those involved with "Operation Bright Spark" looked for a second wind, as they were confronted with their own personal workloads, which had accumulated during June and July. As a result, the

year drew to a fairly quiet close. However, the program committee was at work over the Xmas/New Year break, putting together an interesting and highly practical program of activities for 1997.

### Luncheons/Breakfast Meetings

At our bi-monthly meeting, the following guest speakers prompted some rethinking and broadening of the perception of those who are actively involved in fire investigation. Guest speakers included:

- Tony Gates; Assistant Commissioner- Operations; NSW Department of Bush Fire Services

Tony's talk generated a very active question time which probed the areas of who is responsible for fire prevention, and those aspects which need to be addressed to help minimise the devastation of bush fires.

- Tom Dawson; OIC - Fire Investigation Unit, Queensland Fire Service

Tom presented a pre-production showing of

"Operation Bright Spark" - the video.

- Phil Koperberg; Commissioner - NSW Department of Bush Fire Services

Phil spoke on his direction of the fire fighting activities associated with the severe bush fires which had surrounded Sydney. He concentrated on the aspect of the cost to the community, and the input the insurance industry may make in reducing this cost.

- Charles Foley; Technical Manager, Zurich Australian Insurance Ltd - Business Insurance Division

Charles spoke on the successful implementation of ignition teams, in the area of fire investigation. He highlighted the advantages of having predetermined, cooperative teams of professionals whose skills can be brought to bear quickly and effectively following a fire incident.



## Changing Attitudes

The major achievement of the QAFI during 1996 has been the cementing of the developing relationships between the various agencies involved in the investigation of fire in Queensland. The developing atmosphere of co-operation and information sharing has been the result of several factors, including:

1. Personal commitment to the realisation that the best investigation of a fire incidence can only be achieved by pooling the resources available across the industry.

2. The realisation within the extraordinary meeting of the Electrical Regulatory Authorities Co-ordinating Committee in March, 1996, that the insurance industry was a key player in providing information with respect to the occurrences of electrical appliance fires.

3. The formal recognition by the Mines and Energy Department of the need to allocate resources, through the electrical inspection section, to the investigation of the electrical aspects of fire investigation and via the membership of our committee.

4. The continuing development of the fire scene examiners course within the Queensland Fire Services, and the inclusion of specialist guest lectures to this course

has provided the beginnings of a strong communication link between field officers and personnel from other agencies involved in fire investigation.

5. The recognition and support, by interstate bodies, of the unique environment of co-operation that has been developed within Queensland.

6. The high level of involvement of insurance company representatives and insurance lawyers in the association.

It is my understanding that these aspects of development within our chapter are unique within the International Association.

### **The International Association.**

Having raised the International Association, it is of significance that the Presidents of at least three of the Australian Chapters view the international aspect of the IAAI as questionable.

It would be in the best interest of the Australasian members of the Association for us to work towards strengthening the Inter-chapter activities within Australasia. While distance may well prove a problem, the Israeli Chapter has also experienced the North American focus of the International Association and hence, may be interested in

participating in key activities in our region.

A substantial development, that would strengthen regional links, is the opening up of the Australasian Conference, currently held on alternate years in NSW or New Zealand, so that the conference is rotated amongst all Australasian Chapters.

While I share the frustration of some of the membership with respect to the North American focus, it is clearly in the best interest of the members themselves, and to the Chapters, to maintain an association with IAAI.

IAAI offers a valuable source of reference material, and the experience of fire investigators, who can provide valuable data to assist in the investigation of local fires. I believe this aspect of the IAAI has been neglected, and suggest that local members will be very pleasantly surprised when they investigate the wealth of information that is available.

### **"Firepoint"**

I understand the pressures of time, but it is a disappointment that "Firepoint", now our regional journal, carries so little local content. Regularly the Editor has had to resort to reprints of articles from the International Journal, to provide content.

However, I remain convinced that locally resourced material may well be far more relevant to our region than some of the American written articles. I have listened to criticism of the quality of the "Firepoint" content, but as it is the joint journal of the Australian Chapters, it is our joint responsibility.

*(Editor's Note: I'd love to include more good, relevant local articles. Just supply them! This issue includes mainly local content. The next issue is scheduled to do so too. If I get articles deemed to be of sufficient merit from local sources, they will certainly be given preference).*

#### Code of Ethics.

Following an article by a South Australian Police Officer, I was goaded into examining the Code of Ethics of the International Association, and found that the code, while part of our constitutions, may not be entirely appropriate.

Those of you who read my letter to the Editor will understand the thrust of my concerns. However, I feel it is fully appropriate for the association to review the principles upon which it is based, and the standpoint of ethics from which those involved in fire investigation operate. It is to that end, that I

would encourage continued debate, to develop an appropriate code of ethics or practice, which will promote excellence in fire investigations.

#### Closure.

I thank you for your contributions during 1996, and with the success of "Operation Bright Spark", a lively program for our members for 1997 and the benefits of a growing regional identity, I look forward to even better things for 1997.

### Operation Bright Spark - The Video

An insert with this issue invites you to purchase a copy of this recent video.

The video shows a laundry fire, and seeks to show that correctly maintained and designed electrical appliances rarely cause fires, but that incorrect use of appliances (e.g. leaving appliances on for lengthy periods unattended) or poor maintenance (e.g. allowing dirt to accumulate) can lead to a fire.

Also shown are some compliance tests used to test electrical appliances. They include checking operating temperatures with thermocouples over an

extended period, noting the effect of high voltages in different areas, checking the effect of a glow wire at 850°C to see how long a plastic material will continue to burn, and whether it drops down molten matter. A similar test with a needle flame, as well as tests to check whether arcing can or will occur across a given surface, are also shown.

The possible causes of electrical fires: tracking, overloading, short circuits and overheating are summarised.

The post-fire investigation of electrical appliances and wiring is also demonstrated and discussed.

In a separate section, the video follows the development of smoke and fire as it spreads throughout a house, and the indicators available for investigators after the event.

It also shows a cooking oil fire and discusses the effect of sprinklers on a fire.

The video continually emphasises the benefits of closer working relationships between the police, fire brigade, electrical inspectors and insurance and independent investigators.

*Members wishing to purchase a copy of the video can do so by completing and forwarding the enclosed insert.*

# VICTORIAN NEWS

## MEMBERSHIP

The committee welcomes the following new members to the Victorian Chapter:

Paul Stephenson  
Chris Challis  
Colin Booth  
Darryn Gellie

Our membership continues to grow, but the Committee still needs feedback from old and new members on ideas for presentations that will ensure that the membership keeps on growing by providing the services the membership wants.

## VICTORIAN CHAPTER GOLF DAY

On Wednesday 30th April the Chapter Golf Day was held at Yarra Bend Public Golf Course. The weather was kind to us which resulted in a very enjoyable round and BBQ lunch. Playing in teams the honours went to Colin Brockwell, Darren Dean and Wayne Dean from the 30 members who played. Congratulations also to the minor result winners.

A special thanks to Noel De Sair, Commercial Union

Insurance for the golf umbrellas. Thanks must also be extended to both Fred McCoach and Alex Conway for their assistance.

## METROPOLITAN FIRE BRIGADE TOWARDS 2000

On Tuesday 6th May the Chapter presented a breakfast meeting at the RACV Club, Queen Street, Melbourne. Guest speaker Mr. Brian Parry, President of the Metropolitan Fire Brigades Board delivered a very informative and entertaining presentation on the future direction of the MFB. This function was well supported with 40 attendees participating.

## PROGRAM OF EVENTS 1997

The next event on the Chapter calendar is the Annual General meeting in July 1997. Details are not finalised as yet and will be forwarded to you when available. It is important that nominations for positions be returned on time. Anyone interested in taking on a position can contact any of the committee for details.

## THE INTERNET AT WORK.

An enquiry on the Internet to the Special Interest Group at the Oklahoma State University came from a fire investigator who simply asked:

"Anyone run across a 'soap bomb'? We had a call last night. Mail box blown off post. Low yield. Found a 'blown' plastic soda bottle, covered with soap powder and slime. Looked like reaction produced rapid gas release".

Within quite a short time responses were received, which included the following:

1. "I've seen lots of dry ice bombs. Place the dry ice in a bit of water in a 2 litre pop bottle. Very unpredictable, but very powerful. A lad in Denver lost a finger when one went off too quickly. Perhaps the slime was part of the prank."

2. "It sounds like a dry ice bomb, but it could also have been an acid bomb using muriatic (hydrochloric) acid and aluminium foil in a bottle. This bomb works faster, and produces more damage than the dry ice explosion."

# NEW SOUTH WALES NEWS

## NSW PRESIDENT'S REPORT

*(From NSW AFI President,  
Ross Blowers).*

Welcome to the Second Edition of "Firepoint" for 1997. The "Firepoint" Journal is constantly providing excellent information and feedback for its Members nationally. The informative articles drawn from many and varied quarters can only assist all IAAI Members throughout Australia to maintain and increase their knowledge and professionalism.

Information supplied by our sister Chapters throughout Australia serves to reinforce the strong relationships which exist and provide an avenue to increase our awareness of issues which are relevant.

A serious matter of great importance to all NSW members involved in the field of fire investigation is the recent changes adopted by the NSW Fire Brigades concerning the disclosure of information. For over ten years, the NSW Fire Brigades Fire Investigation Unit has been a corner stone for the collection of vital information.

That information has served the Insurance Industry and General Practitioners in the field of Fire Investigation extremely well.

Unfortunately, that conduit has been restricted. The restriction will ultimately inhibit the expeditious handling of fire claims by the insurance industry causing undo delay and trauma to persons already in a state of shock and anxiety.

Contact with the Insurance Council of Australia concerning the new protocol has met with the following response. The information noted below relates only to NSW.

"The ICA has had a meeting with Officers of the NSW Fire Brigades on the subject of Brigades' Fire Investigation Unit Officers dealing with private insurance investigators. As a result of the review of work practices within the Unit, it has been determined that in order to maintain probity, the current policy of the provision of verbal information and the source of written reports has been revised.

The information which in the past was provided to private investigators included detailed fire call information and letters of opinion. Following discussions, the NSW Fire Brigades has had with the NSW Police Service, a number of steps have been taken to ensure that information is provided to insurance investigators in the most appropriate manner.

A new instruction will be published in the Brigades "In Orders" to advise the procedures to be adopted by Brigades' Members when supplying detailed fire incident information.

The following will be the only permitted protocol for responding to inquiries direct to the Department requesting fire incident details:

\* All requests for information must be in writing.

\* The writer, if an agent, must provide a letter of appointment from the owner or insurer of the premises involved.

\* Letters of opinion will no longer be provided.



The information provided by the Brigades will be restricted to the probable point of ignition and the supposed cause of the fire.

The only other avenue by which the Brigades' official information on fires may be accessed would be via applications under the Freedom of Information Act."

The ICA has been informed that the new procedure commenced from 5 April, 1997.

Given the new protocol in place, I would strongly advise that contact with the Brigade only be conducted under the guidelines stated.

If any Members of the NSW AFI or other State Chapters would like to comment, I am confident the "Firepoint" Editor (Wal Stern), would welcome your input.

On a brighter note, please mark your diaries for Thursday July 24, 1997 for the NSW AFI annual seminar which will be held at the Gazebo Hotel, Parramatta. The theme of this year's seminar is "Arson Fraud - The Practical and Legal Issues".

Your Executive is striving to include several of the topics and issues raised in our survey concerning content of

seminars. We hope we have risen to the challenge.

At the close of the seminar, the NSW AFI will be holding an Annual General Meeting where members may vote for the election of Officers.

After the meeting, a dinner will held and we hope to have an extremely interesting and topical speaker.

On behalf of the NSW AFI Executive, I wish you well in your endeavours.

### *In The Next Issue*

Articles scheduled for the next issue of "Firepoint" include one by Robert Cameron, Partner, Abbott Tout Solicitors, on "High Court Decision Delivered: CIC Insurance Limited v bankstown Football Club Limited, and another by Richard Kocsis, Psychologist, on "Spatial Analysis of Australian Serial Arsonists".

The Editor seeks cases studies and articles of interest to our membership.

## **NOTICE OF A.G.M.**

The Annual General Meeting of the Association of Fire Investigators (NSW Branch) (IAAI Chapter No. 47)

will take place at 6 pm, on Thursday, July 24, 1997, at the Gazebo Hotel, Parramatta. All members are invited to attend.

Nominations for positions on the Committee for the year ahead are now invited, and should be submitted to the Secretary prior to the Meeting.

## ELECTRICAL APPLIANCE FIRES

by Tony Cafe

*(Tony Cafe is the head of his own Sydney company, T.C. Forensic, and an experienced fire cause and origin investigator. He has a B.Appl.Sc. in Applied Chemistry, and M. Appl. Sc., from the University of technology, Sydney, carried out in the area of fire accelerant analysis).*

Whilst most electrical appliance manufacturers need convincing that their products can cause fires, the experience of most fire investigators is that electrical appliances frequently do cause fires. One of the most common reasons for appliance fires is through misuse by the owner, however in my experience another common reason is component fatigue. Design faults are also a common fire

cause and this is reflected in recent years by the significant number of recall notices issued for television sets, heaters and cooling fans.

The aim of this article is to outline some of the ways in which fires can originate from electrical appliances and to outline the evidence which the investigator should look for at the scene. There have been very few articles published in the fire investigation literature dealing with appliance fires and apart from a recent article by Terry Casey there has virtually been nothing published here in Australia. Maybe some of our highly qualified electrical engineers should put pen to paper for "Firepoint" and share some of their expertise.

Identifying whether an electrical appliance had

caused a fire requires firstly a thorough interview with the persons who were last at the premises before the fire. The most important questions which should be asked are what appliances were supplied with power before the fire and most importantly were there any recent problems or incidents with these appliances. These questions when asked soon after the occupants have learnt of the fire will often yield little information of value because they are still in a state of shock. However once they have settled down and begun to ask themselves what could have caused the fire, their mind will begin to sift through the days and weeks before the fire and some useful information could come to light.

When examining the fire scene, the most reliable physical indicators of an

electrical appliance fire cause are that the burn patterns indicate the area of origin being near the appliance, the appliance itself suffers severe fire damage and arc damage is found on the conductors either inside or near the appliance.

Two of the major causes of appliance fires is moisture contacting the electrics or that a readily combustible material had come into close contact with a heat emitting part of an appliance.

Appliances such as dishwashers, washing machines, hot water heaters and outdoor appliances have a high probability of a fire caused by moisture whilst heat emitting appliances such as heaters, transformers and clothes dryers have a high probability of a fire caused by ignition of a nearby combustible material. Appliances which draw a large amount of current for an extended period of time such as heaters and air conditioners have a high

probability of a fire being caused by a hot connection or an overloaded circuit. A fire hazard associated with heavy appliances such as freezers or refrigerators is a short circuit at the power cord caused by some recent moving which left the appliance sitting on top of the cord.

The following notes on appliance fires should be viewed as a general guide because the design of appliances are being continually improved to reduce the fire risks so that some of the faults discussed may not be relevant to current models. For example, refrigerators once employed electrical heating elements around door seals to prevent icing up; however they now utilise reticulated waste heat which not only reduces the fire risk but is also much more energy efficient.

Air conditioners which are continuously operating in a dusty environment can cause

fires because the dust can settle over electrical components such as capacitors and cause tracking faults. The top plastic surface of the capacitor can also break down thermally leading to a tracking fault.

Clothes dryers have a large element running around either the rear or the front of the drying drum and any combustible material which comes into contact with the element can ignite and cause a fire. The element is surrounded by non combustible materials but combustible materials can reach the element in certain circumstances and cause a fire. If the lint filter is not cleaned on a regular basis then lint can blow back into the interior of the dryer cabinet, settle across the base and eventually reach the element and ignite.

Clothes dryers have a flexible bearing which the drying drum rests upon and the bearing is a composite of

PVC and other synthetics or cotton. If this bearing comes out of position it can contact the element and ignite. Because PVC retards fire spread, these flexible bearings can smoulder for very long periods before they ignite the clothes inside the drum and the fire is discovered. This can lead to a fire originating from a clothes dryer many hours after the dryer has been disconnected from power.

**Dishwashers.** As previously mentioned, the major causes of fires from dishwashers is moisture contacting the conductors. The controllers for most dishwashers is at the top of the front door and moisture can reach this area if the interior of the front door leaks. The plastic components on the interior of the door which releases the detergent or the finishing agents can become brittle over time and then crack and start to leak. When the door is opened to a horizontal position, the water inside the

door can reach the controller at the top of the door and cause a fire.

Another fire cause is that the wiring loom which passes through the base of the door becomes stressed over time due to the door opening and closing and the insulation breaks down resulting in a short circuit.

Dishwashers can also cause fires if a combustible material contacts the element during the drying cycle. Combustible materials such as plastic cups and plates or a towel accidentally left inside the machine can ignite.

**Fax Machines.** The older generation of fax machines generate a lot of heat on standby mainly because they have a thermal print head. If the fax machine is covered with a combustible material and the heat from the print head cannot dissipate, then a fire can occur.

**Hot water heaters.** The main cause of fires from hot water heaters is moisture contacting the electrics. Because of corrosion, heaters can leak from several areas such as around the elements or from the water inlets and outlets. In many instances the polyurethane insulation which is blown into the heater jacket during manufacture is found very close to the electrics and provides a nearby readily combustible material which can smoulder for hours and then burst into flames. The presence of polyurethane in close proximity to the electrics should be of some concern to the authorities particularly when these heaters are installed inside a house.

**Heaters** are one of the greatest causes of fires although it should be pointed out that electrical heaters are one of the safest forms of heating. Heaters use large currents and so the fire risks

associated with large currents apply.

Electric heaters which are fan forced can cause a fire if some combustible material such as plastic wrap is sucked into the heater. The element can become detached through rough handling and later ignite the plastic casing. If the inlet air is partially restricted and the over-temperature sensor is not affected by the restriction, then the element can overheat and ignite the plastic casing.

The fire risks associated with radiant heaters occur when a combustible material is left too close to the heater or the heater falls over and ignites the floor coverings.

Television sets and computer monitors. There have been several recalls for television sets and computer monitors in recent years mainly because of soldering defects and faults in the transformers. These soldering

defects are called dry joints and are caused by the solder failing to run correctly during manufacture, which leaves a high resistance pathway which progressively worsens with use. Dry joints are a major problem for the electronics industry.

Television sets are manufactured using fire rated plastics which do not easily ignite. However because so many different plastics are used in the manufacture of a television set and their fire ratings vary, it is still possible for electrical faults to cause a television set to catch on fire.

Electric Chip Cookers are normally found in food outlets but there are smaller models which can be used in the home. The temperature of the cooking oil is normally controlled by at least one thermostat however if this thermostat fails then the oil can over-heat and ignite. The evidence which indicates that the oil has overheated and caused the fire is a charred or

blackened residue found in the cooking vat.

The failure of the thermostat can be due to a number of different reasons. One of the most common is that the capillary line which connects the temperature probe in the vat to the thermostat has broken, either through corrosion or through over vigorous cleaning of the vat prior to the fire. Manufacturers could reduce the risk of fire by designing their appliances so that they failed safe in the event of the capillary breaking. This could be achieved by cutting off the power to the cooking elements when the pressure is lost in the thermostat.

#### Refrigerators & Freezers.

As previously mentioned, freezers and refrigerators can cause fires if they have been left sitting on their power leads. For this reason it is important to ask occupants if they had recently moved these appliances. Also previously mentioned was the



fire hazard associated with the door seal elements. If water does penetrate the door seal then a short circuit can be created which results in a hot spot which can ignite the plastic door seal. Evidence of hot spots in the element can sometimes be detected by the occupant before the fire because the unusual odours produced by the pyrolysing door seal inside the refrigerator causes them to believe that some food had been going off.

One of the major causes of moisture problems with refrigerators is that the drain tube from the freezer becomes blocked. If the tube is blocked and the freezer goes into the defrosting cycle, then the water can run out the front of the refrigerator and reach the electrics underneath the refrigerator and cause a fire.

Modern refrigerators use waste heat to evaporate the defrost water on a tray mounted above the motor.

Older refrigerators sometimes have a plastic tray embedded with elements to evaporate the defrost water. If the drain valve becomes blocked, then this tray can over-heat and over a long period of time can start to crack and expose the elements. When the blockage clears, water fills the tray and then a short circuit and fire can occur because of the exposed elements.

#### Water Jugs and Urns.

Failure of the safety cut out device on water jugs and urns is the most common reason for them to cause fires. Another problem is that the electrics are normally located under the water reservoir and so any leaks can allow water to reach the electrics and cause a fire.

#### Power Boards and

Extension Cords. The larger the current travelling through a power board or extension cord, the greater the risk of fire, because of poor connections or due to

thermal breakdown of the insulation. Extension leads exposed to moisture at a point well away from the power point can cause a fire back at the power point. If extension leads are exposed to an outdoor environment, rain water can track back along the lead and reach the power point and cause a fire.

Lights emit heat which can ignite some nearby combustible material and lead to a fire. High wattage incandescent lights can generate significant heat which damages the socket and associated wiring causing a short circuit and possibly a fire. The ballast in fluorescent lights can overheat due to internal short circuiting and ignite combustible ceiling materials. Quartz halogen lights have a filament which is very hot and if the globe is not installed horizontally or if there is grease present, then the globe can break and the hot filament can ignite combustible materials stored below the light. Down lights

also generate significant heat and if the top of the down light is covered by insulation, the insulation can ignite. Down lights installed in bathrooms are susceptible to moisture accumulating at the terminals which can lead to short circuits.

**Microwaves.** A recent fire hazard associated with wheat bags heated in microwaves was reported in "Firepoint". Microwaves emit radiation which will excite water molecules and if there is no moisture available then other less volatile molecules will absorb the radiation and start to heat. Therefore any material which has dried out can over-heat and ignite in a microwave. Any metal objects inside a microwave can also cause severe sparking which could lead to a fire.

**Cooling Fans.** There have been several recalls of cooling fans in recent years, one which involved a hazard associated with a capacitor which overheated and caused

the plastic casing near the capacitor to ignite. Problems with fan motors are common, however fires originating from motors are rare because the motors are well ventilated and the heat developing from a fault is readily dissipated.

**Sinkerators** do not normally present a fire hazard because many are equipped with overload devices which cut the power off if the motor becomes seized. However the power for most sinkerators is supplied from a power point installed under the sink and these power points are susceptible to moisture particularly if there is a leak at the back of the sink.

**Stoves and Ovens** are normally made of non-combustible materials which significantly reduces the fire hazard. If however a combustible material such as a towel or some cooking oil is left on the stove or in the oven and there is a fault with

a controller, then a fire can occur.

**Electric blankets** continually emit heat and do not have any over-temperature sensors. If the heat cannot escape because the bed is too well insulated, then the bedding material can ignite. Another fire hazard associated with electric blankets is that when the bed is made, the leg of the bed could be placed onto the power lead or the controller, causing a short circuit and eventually a fire.

**Water Bed Heaters** rely on good thermal conductivity between the heater and the water bed to prevent them from overheating. If an insulating material such as a sheet is placed between the heater and the bed, then the sheet can ignite.

# FRAUD FIRE

(from "Arson Auditing" by Robert Kramer, the Director of the IAAI Fraud Fire Committee.)

## Financial Red Flags

As used here, "red flags" refers to indicators that a business was experiencing financial difficulty. The mere presence of one or more of these "red flags" is not conclusive proof of a financial motive for arson.

- Decreasing Revenue
- Increasing Costs
  - Labor or Material
  - Selling, General & Admin.
  - Overhead
- New Technology
  - Makes current equipment inefficient
  - Increased Competition
  - New competitors
  - New products
- Decreased Research & Development Expenditures
- Poor Financial Position in the Industry
- Ratio analysis
- Costly Lease or Rental Agreements
- Unprofitable Contracts
- Failure to record Depreciation
- Excessive Spoilage
- Double Payment of Bills
- Co-mingling of Company Personal Funds & Expenses
- Numerous Bank Accounts
- Inter-account transfers may indicate kiting
- Low or Overdraft Cash Balance
- Poor/Negative Cash Flow
- Frequent NSF ("Bounced") Checks
- Large/Frequent Currency Transactions
- Increasing Accounts Receivable
  - Need to age them
  - May be uncollectible
- A/R confirmations may indicate problems
- Pledged Assets
- Hypothetical Assets
- Liens on Assets
- Over-Insured Assets
- New or Increased Insurance
- Factored Accounts Receivable
- Increased Borrowing
- Large/Numerous Overdue Accounts Payable
- Inability to Pay Current Debts
  - Utilities
  - Payroll
  - Taxes
  - Suppliers
- Delinquent Loan Payments
- Inventory Levels
  - Obsolete items
  - Slow moving items removed prior to fire
  - Overstocked due to overproduction
- Exaggerated on proof of loss- Valuation affects balance sheet (net worth) and income statement (net income)
- Loans To/From Officers and Employees
- Credit Limits Imposed By Lenders
- Credit Limits Imposed By Suppliers
- Frequent Purchases on C.O.D. Basis
- Bills Paid By Certified Check, Money Order, or Cashier Check
- Delinquent Tax Depositions/Payments
- Income taxes
- Payroll withholding
- Sales taxes
- Property taxes
- Other taxes
- Overstatement of Asset Values on Insurance Claim
- Subsequent Sale or Auction of Assets Claimed as Lost
- Excessive Business Interruption Insurance
- Litigation Against Business or Owners
- Bankruptcy Proceedings
  - Owner Business
  - Affiliated Business
- Frequent or Unusual Intercompany Transactions with Affiliated Business
- Guarantor or Co-Maker or a Note with a Loan in Default
- Two or More Sets of Accounting Books Maintained
- False or Altered Documents and Records
- Photocopied vs. Original Source Documents
- Weak Internal Controls
- Expired or Revoked Business Licenses
- Large, Unexplained Differences Between Book & Taxable Income
- Prior Year Financial Losses
- Prior Insurance Loss Claims
- Frequent Resale of Real Property
  - Less than arms length
  - Alleged renovations
  - Increased alleged sales price
- Increased insurance coverage
- Purchase/Sale of Over or Undervalued Assets
- Duplicate Sales Invoices
  - Obtain additional A/R factoring
  - Overstate revenues to obtain financing
- Removal or Disposal of Key Assets Prior to the Fire
- Owner Converting Personal Assets to Business Cash
  - e.g., Sale of personal vehicle to raise cash to make the payroll
- Owner Withdraws Cash or Liquid Assets Prior to the Fire
- Owner Exploring Other Business Opportunities
- Locations Before the Fire

# An Introduction to the Facts and Fictions of Criminal Profiling

by **Richard Kocsis** B. Psych. (Hons), M.Crim.

## *Abstract*

*This article represents a basic introduction to the forensic technique of criminal profiling. It explains the objectives of criminal profiling, its principle components, development, varying conceptual approaches and clarifies many of the myths surrounding it. Finally, recommended avenues whereby investigators may obtain criminal profiles are outlined.*

Criminal profiling is a forensic technique of interpreting behavioural patterns within a crime to construct a list of characteristics, or 'profile', of the probable offender. This profile then allows an investigation to focus its resources upon suspects who match the characteristics of the profile, and exclude those

who do not. Alternatively, if no suspects have been identified, a criminal profile acts as an indication of the avenue where possible suspects may be identified.

Criminal profiling differs from 'common' offender profiles. Common offender profiles represent a compilation of typical offender demographics derived from actuarial data of similar crimes. Although criminal profiles may draw upon this same actuarial data, they seek to interpret patterns and identify characteristics of the individual offender.

This difference has sometimes lead to an over expectation in the information a criminal profile can provide. Although criminal profiles analyse individual offenders, they are incapable of establishing the exact identity of the offender.

A criminal profile can only provide an indication of the offenders probable characteristics. However, these characteristics are far from a random compilation and convey specific information that will be beneficial to an investigation. A criminal profile will typically include:

- Demographic information;
- Legal history;
- Vocational background;
- Family characteristics;
- Habits and social interests;
- Education & approximate IQ;
- Approximate location of residence;
- Vehicle (if any)
- Personality characteristics

Therefore, it is important to realise that criminal profiles do not represent a panacea to solving crimes and are not substitutes to a good

investigation. A case has yet to occur which has been solved exclusively upon the merits of a criminal profile (Ressler & Schachtman, 1992). Investigators should view criminal profiles as only another deductive tool, similar to fingerprinting or identikits, which will assist in the overall investigative process.

Criminal profiling is commonly found to be most beneficial, and therefore usually employed within certain investigative circumstance. These circumstances are typically the presence of any of the following:

- No prior relationship between the victim and offender;
- Behavioural aspect's indicative of ritualism and or sadism;
- Behavioural aspect's indicative of mental disorder within the offender;

Due to these criteria, criminal profiling has mistakenly

become associated exclusively with the investigation of serial murder. However, criminal profiling has been shown to be also applicable in more conventional crimes such as rape (Hazelwood & Burgess, 1995) arson (Kocsis, 1996a; Jeffers, 1991), robbery (Slahor, 1991) and burglary (Canter, 1994; Kocsis, 1996b).

A common myth surrounding criminal profiling is that it is a radical new technique (Ault & Reese). To the contrary, the concept of analysing behaviours to derive an impression of the individual is actually very old. The earliest record of a criminal profile accompanies the world's earliest and most infamous serial killer, the Whitechapel Murderer "Jack the Ripper". In 1888, the London CID contacted the psychiatrist Dr. Thomas Bond to describe the likely characteristics of the "Ripper" (Rumbelow, 1988). Although not within the domain of criminal

investigations, history next records two other infamous uses of the profiling technique. Sigmund Freud was commissioned in 1933 to construct a profile of the deceased American president Woodrow Wilson (Tuchman, 1967). During World War II, the American Office of Strategic Services commissioned the psychiatrist Dr. Walter Langer to construct a profile of Adolf Hitler (Langer, 1972). Possibly the most infamous cases of criminal profiling were those constructed by Dr. James Brussel in the 1955 'Mad Bomber of New York' investigation, and the 1962 'Boston Strangler' investigation (Brussel, 1968).

Akin to any discipline, the technique of criminal profiling has improved over time. In contemporary literature there currently exist three general schools of thought in criminal profiling (Wilson, Kocsis & Lincoln, 1997). The oldest



approach is '*Diagnostic Evaluations*'. This approach does not represent a unified discipline or follow any prescribed methodology. Rather, it represents the cumulative work of individual mental health professionals who are consulted by investigators to formulate a criminal profile. The construction of these profiles are based upon the individuals clinical experience and draws upon their knowledge of personality theory and mental disorder. The advantage of diagnostic evaluations is that they represent the most accessible avenue for investigators to obtain a criminal profile. Its disadvantage is that mental health professionals seldom have any regular experience in the construction of criminal profiles or criminal investigations. This lack of experience is subsequently observed in the profile's accuracy (Douglas & Olshaker, 1996; Dietz, 1985).

The second approach to criminal profiling is that of '*Criminal Investigative Analysis*', or in acronym 'CIA'. This approach was founded by the FBI Behavioural Sciences Unit. CIA was developed through the analysis of past crime scenes and the concurrent interviewing of the incarcerated offender. From this analysis, maxims were developed which link individual crime scene patterns with typical offender characteristics. These crime scene patterns are looked for in future offences and their corresponding offender characteristics are compiled into a criminal profile. The advantage of CIA is that it represents a highly utilitarian technique that caters to the specific requirements of investigators. Its disadvantage is that it is argued to hold no theoretical basis and therefore its credibility as a scientifically objective technique suffers (Canter, 1994).

The third approach to criminal profiling is that of '*Investigative Psychology*'. This approach was founded by the British psychologist David Canter. Investigative psychology uses psychological research methodology in formulating criminal profiling theories. These theories are then applied in future crimes to construct criminal profiles. The advantage of investigative psychology is that it formulates objective, scientific theories, which are specific to the production of criminal profiles. However, investigative psychology suffers from a number of disadvantages. First, as it represents the newest approach to criminal profiling, the amount of research literature and the availability of individuals familiar with its theories are limited. Second, many of its theories have yet to be tested and supported outside of Britain (Kocsis, 1996b). Finally, it is undetermined whether this

theoretical, and consequently technically incumbent approach necessarily has any added *practical* benefits beyond those profiles constructed through Diagnostic Evaluations or CIA (Wilson, Kocsis & Lincoln, 1997).

Within Australia there exist only two avenues whereby investigators may obtain criminal profiles. In 1995 the Australian Bureau of Criminal Intelligence established a behavioural science unit known as the Australian Violent Crime Analysis Centre (in acronym AVCAC). A component of this unit's function is the construction of criminal profiles primarily through the Criminal Investigative Analysis approach. As a formalised unit to provide this service, the AVCAC is the first recommended avenue for investigators to obtain a criminal profile. Following the AVCAC, the next available

source for criminal profiles are from individual consultants. As the knowledge required for profiling does not derive from any defined discipline, the level of expertise will vary between consultants.

It is recommended that the selection of a consultant be judged on two criteria. First, a comprehensive knowledge of all three criminal profiling techniques previously described. Such individuals are not exclusively within the disciplines of Psychology or Psychiatry, and may also be found in areas such as Anthropology or Criminology. The second criteria is experience within criminal investigations. This invariably equates to the consultant having a high level of exposure to police investigations. This experience with investigations should not be substituted or confused with experience administering psychotherapies, presentation of legal testimony or media

appearances. Possibly the simplest means to establish an individuals experience in criminal investigations is to determine their involvement and regard held by the police service.

In conclusion, criminal profiling represents a much misunderstood forensic technique. With a greater awareness of what criminal profiling is, and its capabilities to assist investigations, it is hoped that these misconceptions will be clarified. A subsequent article, "Spatial Analysis of Australian Arsonists," scheduled for the next edition of "Firepoint" introduces readers to the 'circle theory'. Utilising this technique, research has demonstrated an 82% accuracy rate in identifying the approximate location of a serial arsonist's residence dependent upon the offence locations.

### *About the Author*

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