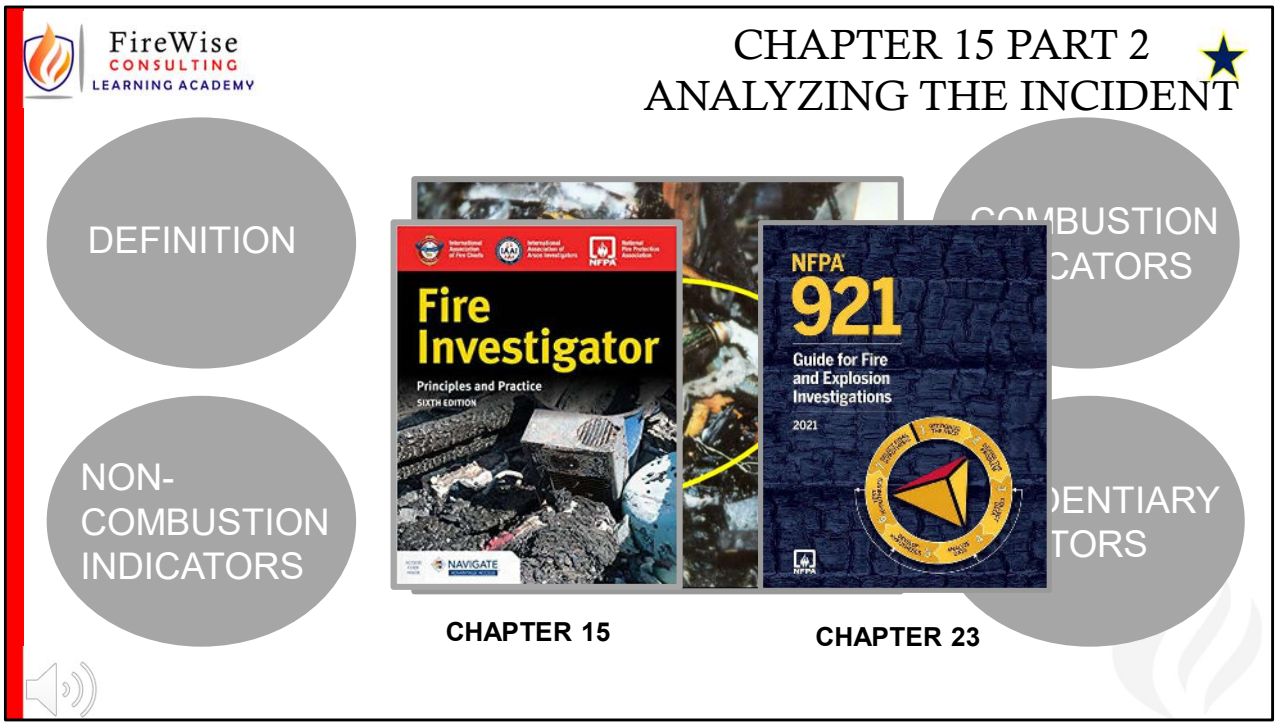


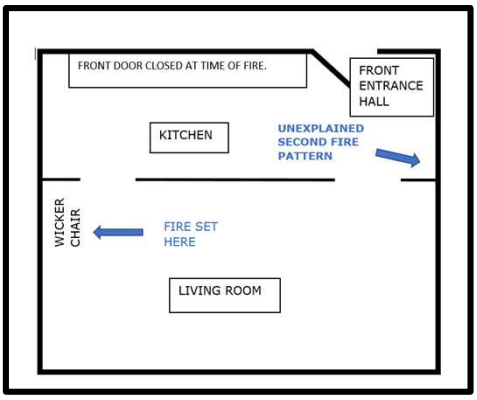
Welcome to **Part 2 of Chapter 15 Analyzing the Incident, in which we will cover** Incendiary Fires. If you are following us in NFPA 921 we are presenting Chapter 23.

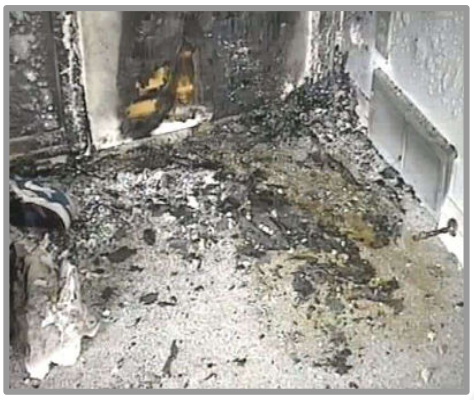
In this chapter we will present a case history and discuss:
The definition of an incendiary fire.
The combustion related indicators that a fire is incendiary.
The incendiary fire indicators that are not specifically related to combustion.
And
Evidentiary factors to be analyzed after a fire has been classified as incendiary.

CASE HISTORY

A team of fire investigators were making a fire investigation video to demonstrate the steps involved in the fire investigation process. To make the fire as real as possible they took great care in cleaning, decorating and furnishing the house as can be seen in these photos. The fire was set in the plastic garbage can near the wicker chair in the corner of the living room to simulate a smokers material fire. The fire was allowed to grow to the fully developed stage in the living room but was extinguished prior to developing in other parts of the structure. After extinguishment investigators were surprised to find a distinct and separate burn pattern in the entrance hall near the front door.

CASE HISTORY





After looking at the scene many experienced fire investigators concluded that there were two separate fires. We know, however, that there was only one fire and the second pattern remains unexplained. Many possibilities were put forward including fire travel through the cold air return which can be scene in the photo, radiant heat from the living room, flying brands due to air currents developed by the fire, liquid accelerants that may have been present without the fire teams knowledge and a longer burn time due to structural protection from initial attack. Whatever the reason, it clearly demonstrates the need for the investigator to keep an open mind. Simply having a second burn pattern should not be identified as a deliberately set fire without corroborating evidence.

INCENDIARY FIRE

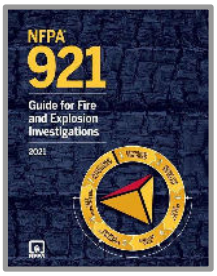
DEFINITION

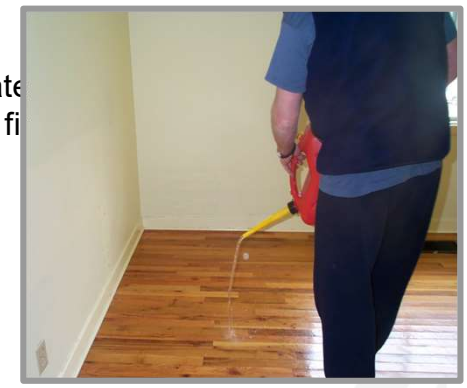
ACCIDENTAL OR INCENDIARY?

An incendiary fire is a fire that has been deliberate
to cause a fire to occur in an area where the fi

1. WAS IT **DELIBERATE**?

2. WAS THERE **INTENT**?





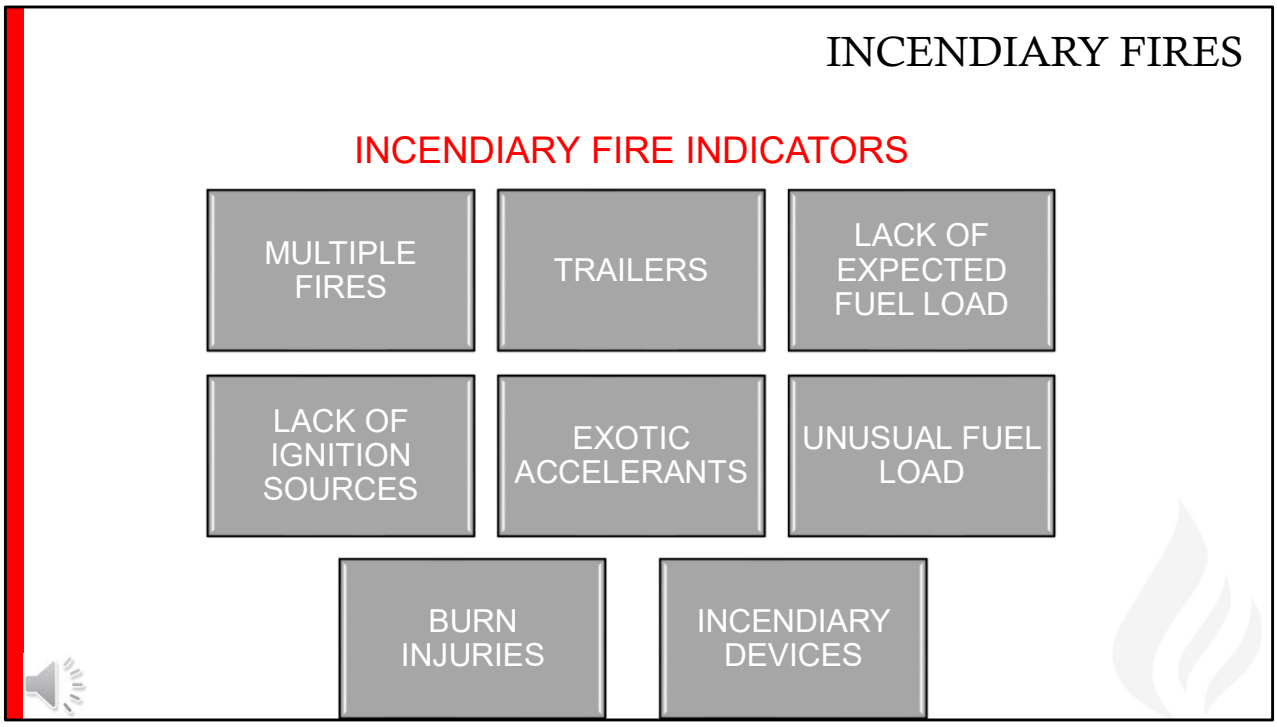
NFPA 921 defines an incendiary fire as a fire that is deliberately set with the intent to cause a fire to occur in an area where the fire should not be.

Two important points in choosing between an accidental or incendiary fire cause classification are;

1. Was the fire deliberately set?

And

2. Would a reasonable person know a fire should not be ignited in that location?



The presence of combustion related incendiary fire indicators such as;

Multiple fires, trailers, lack of expected fuel load, lack of ignition sources, exotic accelerants, unusual fuel load or configuration, burn injuries, or incendiary devices should be examined and studied to determine if they support an incendiary fire hypothesis.

INCENDIARY FIRES

MULTIPLE FIRES

TWO OR MORE POINTS OF ORIGIN

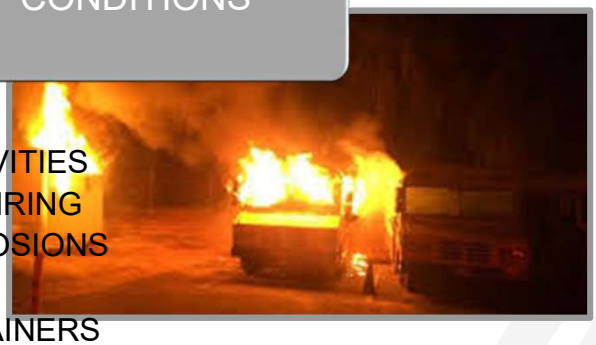
PHYSICALLY SEPARATED

NON-RELATED

SAME EVENT

NO EVIDENCE OF CONDITIONS SUCH AS:

- CONDUCTION
- CONVECTION
- RADIATION
- FLYING BRANDS
- DROP DOWN
- SHAFTS
- WALL OR FLOOR CAVITIES
- OVERLOADED WIRING
- GAS OR DUST EXPLOSIONS
- LIGHTNING
- AEROSOL CONTAINERS



Multiple fires can be confirmed when there are two or more points of origin that are, physically separated with no evidence of conditions that would allow for a natural growth or spread of the initial fire such as conduction, convection, radiation, flying brands, drop down, shafts, wall or floor cavities, overloaded electrical wiring, gas or dust explosions, lightning or launching of aerosol containers.

It is also important to determine that the separate fire locations are not the result of a previous fire incident and that both locations were results of the same event.

INCENDIARY FIRES

TRAILERS

FUELS USED TO SPREAD FIRE FROM ONE AREA TO ANOTHER

NEWLY INTRODUCED FUELS

MANIPULATED EXISTING FUEL

IGNITABLE LIQUID, SOLID FUEL OR COMBINATION OF BOTH

MAY SURVIVE FIRE OR CREATE DISTINCTIVE PATTERNS

Trailers are fuels that are deliberately used to ensure fire progression from the initial fire to another area or multiple areas.

Fuels used for trailers can be newly introduced to the location or they can be a manipulation of fuels present at the scene.

Trailers can be created by using ignitable liquids, solid fuels or the combination of both liquids and solids.

Depending on the fuel used and the extent of the fire, part of the trailer may survive the fire or create distinctive fire patterns. It is important to take care that naturally occurring burn patterns are not mistaken for trailer burn patterns.

This photo is a trailer cause by an ignitable liquid that was spread around the perimeter of the room. The ignitable liquid burned off and the fire went out leaving a distinct trailer pattern.

This photo shows a solid fuel trailer, wax paper, that was used to spread the fire from one area to another. The trailer was located on the charred part of the carpet. There will be residue left after the wax paper burns but this may be destroyed during fire suppression activities or be burned over and masked if flashover occurs in the room.

Can you see a trailer in this photograph? (Tim please leave a few seconds pause)
The straight line on the floor highlighted by the arrow is actually a seam where two pieces of carpet were joined. The irregular shaped pattern outlined in red is the remains of an ignitable liquid trailer.

Also there are a couple of protected areas in the photograph. Can you identify them? (Tim please leave a few seconds pause)

Were the closet bifold doors open or closed during the fire? (Tim please leave a few seconds pause) At least one door was open on each closet which created a protected area on the floor. The interesting thing was, the home owners were away at the time of the fire, but, told investigators that the closet doors were definitely closed when they left the house. This turned out to be critical evidence of a deliberately set fire that led to an arson conviction.

INCENDIARY FIRES

LACK OF EXPECTED FUEL LOAD

FIRE DAMAGE IS **NOT** CONSISTENT WITH FUEL LOAD PRESENT

Different sized fuel packages will normally create different sized fires and fire damage. When the fire damage is inconsistent with the normal or expected fuel load for a specific fire area more investigation should be performed to determine the reason for the increased fire damage. In this case there was very little in the way of furnishings in the room of origin but the fire still went to flashover. Investigators initially thought there must have been an accelerant but determined through interviews that the home had been painted many times. They hypothesized that a buildup of oil based paint on the walls contributed to the fuel load. Paint can be seen flaking off the walls in large pieces.

Inconsistencies between fuel load and fire damage without evidence of accelerants cannot be the only factor in the determination of an incendiary classification.

IGNITION SOURCES

IGNITION SOU

BILANCIA IGNITION MATRIX

Source / Fuel	clock radio	cell phone charger	cigarette	candle	compact fluorescent lamp	plug-in room refresher
[illegible]	1. yes (a) 2. [illegible] 3. [illegible] 4. yes path	1. yes (a, c) 2. [illegible] 3. [illegible] 4. yes	1. 2. [illegible] 3. [illegible] 4.	1. yes comp 2. yes 3. maybe 4. yes	1. yes (a, c) 2. yes 3. no (d) 4. yes gravity	1. yes (a) 2. not close 3. no (d) 4.
Sheets or covers	1. no (c) 2. not close 3. no (d) 4. yes gravity	1. yes (a, c) 2. yes close 3. no (d) 4. yes	1. 2. not close 3. no evid. 4.	1. yes comp 2. not close 3. 4.	1. yes (a, c) 2. no 3. no (d) 4. no	1. yes (a) 2. yes close 3. 4.
Curtains	1. no (c) 2. not close 3. no (d) 4. yes path	1. yes (a, c) 2. yes close 3. no (d) 4. yes	1. 2. not close 3. no evid. 4.	1. yes comp 2. not close 3. 4.	1. yes (a, c) 2. no 3. no (d) 4. yes shade	1. yes (a) 2. yes close 3. no (d) 4.
Plastic decorative flowers	1. no (c) 2. not close 3. no (d) 4.	1. yes (a, c) 2. not close 3. no (d) 4. no	1. not comp. 2. 3. no evid 4.	1. yes comp 2. yes close 3. maybe 4. yes	1. no (a, c) 2. no 3. no (d) 4. yes shade	1. no (a, c) 2. not close 3. no (d) 4. no
Lamp shade	1. yes comp 2. not close 3. no (d) 4. yes path	1. yes (a, c) 2. not close 3. no (d) 4. no	1. 2. not close 3. no evid 4.	1. yes comp 2. not close 3. indirect 4. yes path	1. no (a, c) 2. yes close 3. no (d) 4. yes	1. no (c) 2. not close 3. no (d) 4. no

CLOSER INVESTIGATION REQUIRED?

When an ignition source is not readily apparent in the area of origin, closer investigation of the fire debris is required to look for competent ignition sources.

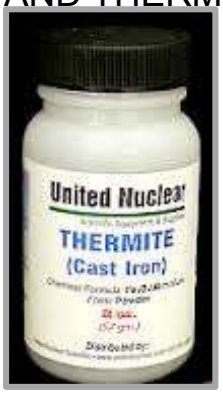
The other side of this is when there are many potential ignition sources the investigator's job is to determine which if any could provide the heat of ignition. One tool that may help identify ignition sources is the Bilancia Ignition Matrix which exhaustively compares all potential ignition sources and all fuels in the room of origin. More information on this tool can be found in the Resources section of this Chapter.

Julie please note that we need to put some information in the resources section.

EXOTIC ACCELERANTS

HIGH TEMPERATURE ACCELERANTS (HTA)

EXTREMELY HOT-BURNING FUELS MIXED WITH CLASS 3 OR 4 OXIDIZERS AND THERMITE MIXTURES
BRILLIANT FLARES
MAY SELF IGNITE
CAN MELT STEEL OR CONCRETE



Exotic accelerants are also referred to as high temperature accelerants or HTA.

They can be made from fuels that are mixed with Class 3 or Class 4 oxidizers as well as thermite mixtures. Thermite is a composition of metal powder, fuel and metal oxide. Class 3 and 4 oxidizers dramatically increase the burning rate of combustible material.

Given the correct conditions some of these mixtures may self ignite.

These accelerants will burn extremely hot and can display as a very rapidly growing fire with brilliant flares and possibly result in melted steel or concrete.

INCENDIARY FIRES

UNUSUAL FUEL LOAD OR CONFIGURATION

DETERMINE SIZE AND CONFIGURATION PRE FIRE

In an attempt to increase the speed and size of fire and possibly to ensure complete combustion of the fuels, fire setters may manipulate the location, configuration and amount of fuel loads.

This was a fire in a restaurant. The restaurant closed on Saturday night around 10 pm. A staff member, working in the kitchen, brought some food down to the basement and placed it in a freezer just before her shift ended at 10. There was no cardboard in this room when she left. The fire department got the call around 03:00 hrs on Sunday morning. On arrival they found smoke and flames showing on the main floor. During overhaul they discovered a fire in the basement as well. This fire was extinguished by a copper water line located at ceiling level over the cardboard boxes. A soldered joint in the line let go which created a sprinkler effect extinguishing the fire. The restaurant owner was unable to explain the presence of the cardboard and was ultimately charged with setting the fire.
In this case the cardboard was placed there to increase the fuel load.

INCENDIARY FIRES

BURN INJURIES

RECORD ALL BURN INJURIES

CONTACT HOSPITALS

Burn injuries may occur while igniting, escaping from or trying to suppress a fire therefore all burn injuries should be examined to determine their relationship to the fire incident.

An incendiary fire setter who gets burned is unlikely to stay on scene for treatment so it is important to contact hospitals for information on any recent burn victims. In many cases, freedom of information and privacy legislation may dictate that the hospital can't provide the requested information to the fire investigator but may be allowed to provide it to the police. If the hospital is unwilling to provide information try a different approach because this information can be critical.
It may also be important to examine and perhaps test burn victims clothing for traces of accelerants.

This a fire and explosion that occurred in a restaurant. The fire was deliberately set for personal and financial gain. The fire ignited prematurely causing a vapour explosion and the arsonist received burns to 40 per cent of his body. Because of his burns he took a taxi to escape the scene of the crime, but later checked himself into hospital. Police tracked him down shortly afterward and were able to seize and analyse his clothing.

INCENDIARY DEVICES

WIDE RANGE OF ME
INCENDIARY FIRES

ALMOST ANY APPLI CE
CAN BE U

There are a wide range of different mechanisms that can be used as incendiary devices. Fire setters are only limited by their imagination, however history shows that the less complex the device is, the more chance it will be successful. Many times fire investigators find devices that failed to work.

In reality, almost any appliance or heat producing device can be used to ignite a fire. Examples of such devices include; combination of cigarettes and matchbook, candles, wiring systems, electric heaters and other appliances, or fireplace starters many of which are made of paraffin wax and sawdust.

This photo shows a simple time delay device using paperback matches outlined in blue, and a cigarette placed near two Zip barbeque starter cubes outlined in yellow. The idea was for the cigarette to burn slowly to the paper match package causing ignition of the matches which in turn would ignite the Zip barbeque cubes which would burn for a considerable length of time.
There were a number of these devices used to start a fire in an old motel. This is one of several sets that failed to work. This again highlights the need for investigators to work from the area of least damage to the area of greatest damage. Had they gone directly to the area of most damage this set may have been missed.

DELAY DEVICES

DELAY THE IGNITION

ESTABLISH ALIBI

HIDE ACTUAL CAUSE

DIRECT INVESTIGATOR TO MORE “

DO NOT MOVE AN UNACTIVATED INCENDIARY DEVICE

Incendiary devices are often constructed to delay the ignition of the fire. By using a delay device the fire-setter gives themselves time to leave the scene safely as well as time to establish an alibi for their whereabouts when the fire started.

Delay devices can also be used to mask or conceal the fact the fire is incendiary by trying to point the investigator towards a more “obvious” accidental cause. In this case, a fire setting gel was pushed into the power bar outlets in an attempt to make the investigator think the power bar failed. Ignition was from a birthday candle placed beside the power bar. When the candle burned down the fire gel ignited.

Delay devices can also be sophisticated devices like the ones shown in this photograph. They can be extremely hazardous to touch or move depending on the type of device and should only be handled by trained professional ordnance disposal personnel.

CANDLE & FOAM

New foam furnishings burn completely different than older, non-synthetic material. In most cases the foams are ignition resistant but once ignited by an open flame rapid fire development occurs.

In this test fire, a small hole is made in the foam sofa cushion material and a birthday candle is inserted into the hole. The foam is ignited by the candle when it burns down. In this test, the delay time was 38 minutes. The larger the candle the greater the delay.

GASOLINE/DIESEL MIX & CANDLE

This test involved pouring a mixture of 20% gasoline and 80% diesel fuel into a plastic bowl and using a birthday candle as the ignition source.
In this test, a delay of about 46 minutes was recorded. Again, the larger the candle the longer delay time to ignition.

40 WATT…….100 WATT

Incandescent light bulbs are another readily available delay device. In this test, newspaper was wrapped around a 40 Watt bulb and ignition occurred after a 22 minute delay. In the test on the right a 100 watt bulb was used which created a 6 minute delay. If a lamp is put on a 24 hour timer the fire setter can be a long way from the scene when the fire department receives the call.

MOSQUITO COIL DELAY DEVICE

A mosquito coil can also be used as a delay device and very little evidence will be left if the point of origin is suppressed with a hose stream. How long a delay time would you expect a mosquito coil to create? 30 minutes? 1 hour? 2hours?
4 hours? More than 4 hours?

(Tim please leave a pause and then run the video.)

Lets see what happens in the following video.

PRESENCE OF IGNITABLE LIQUIDS IN AREA

USED TO START, ACCELERATE, OR SPREAD THE FIRE?

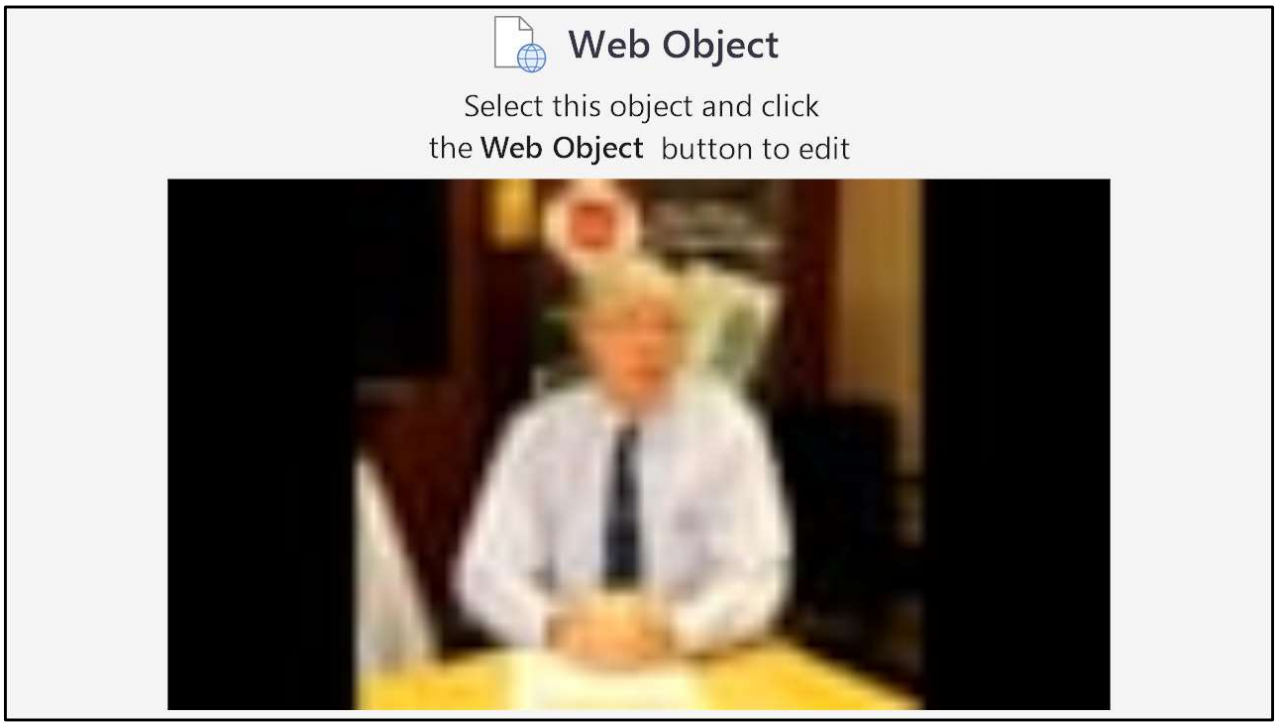
LOCATION WHERE THE IGNITABLE LIQUID TO BE THERE?

The presence of ignitable liquids at a fire scene does not confirm an incendiary fire occurred. The investigator must determine if the liquid was used to start, accelerate or spread the fire.

The location where the ignitable liquids were discovered is also an important factor to consider. For example, ignitable liquid containers found in a garage would be much more common than an ignitable liquid container found in a living room.

Having said that though, a fire investigator was investigating a fire in a rural farm house in the middle of winter. The fire did extensive damage to the home. The home was heated by a wood stove in the living room. In the debris around the wood stove the investigator found a melted plastic gasoline type container. This raised his curiosity so after he completed the scene examination he interviewed the home owner and found out that the can contained a diesel / gasoline fuel mixture that the owner used a small quantity of to start the fire in the wood stove. In this case it was normal for the farmer to have the ignitable liquid in the house.

The presence of ignitable liquids at a fire scene should be confirmed by the collection and laboratory analysis of debris samples from the areas in question.



DeHaan Video #25 Dr. DeHaan: E85 Fuel Chemistry

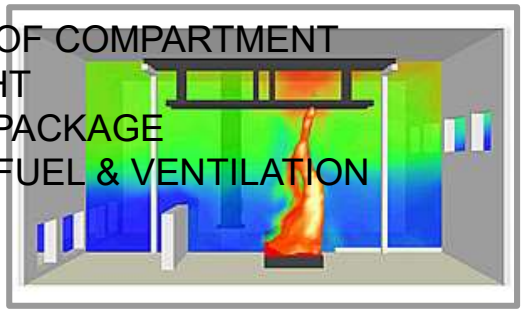
ASSESSMENT OF FIRE GROWTH AND DAMAGE

QUICK FIRE GROWTH?

FIRE MODELLING CAN BE USED TO SUPPORT THE INVESTIGATORS OBSERVATIONS

CONSIDER ALL FACTORS THAT AFFECT FIRE GROWTH

- SIZE/VOLUME OF COMPARTMENT
- CEILING HEIGHT
- HRR OF FUEL PACKAGE
- LOCATION OF FUEL & VENTILATION



When a fire seems to have been much quicker and larger than can be explained by the available fuel load it is important for the investigator to take a closer look at the circumstances that may have brought this about.

Fire growth can be affected by a number of variables such as; the size and volume of the compartment, ceiling height, heat release rate of fuel package, location of fuel and ventilation.

A rapidly developing fire does not necessarily mean it is an incendiary fire. The proper use of a computer fire model can be of assistance in supporting the investigators observations and hypothesis.

INCENDIARY FIRES

REMOTE LOCATIONS – BLOCKED/OBSTRUCTED VIEW

REMOTE LOCATION NOT SOLE DETERMINING FACTOR

WINDOWS COVERED/ PAINTED?

FURNITURE PLACED IN FRONT OF OPENINGS?

ATTEMPTS TO DELAY DISCOVERY?

A fire-setter may start a fire in a remote location to avoid detection but accidental fires also start in remote locations, therefore the remoteness of the fire should not be the only factor the cause classification should be based on.

It is more important for the investigator to consider recent activities such as windows being covered or painted or the placing of furniture in front of openings. These activities may be attempts to delay the discovery of a fire inside the structure.

In this picture, a mattress was placed over a window so that people passing by would not see the fire until it was well into the growth or fully developed phase.

FIRES NEAR SERVICE EQUIPMENT AND APPLIANCES

MADE TO APPEAR TO BE THE HEAT SOURCE

AVOID SPOLIATION

If an origin of a fire is near service equipment or electrical appliances, care should be taken to carefully evaluate whether the equipment or appliance is the source of ignition. For example, a fire may be set in a cloths dryer to make it look like an accidental fire.

Care should also be taken to consider issues of spoliation before any destructive tests are performed on the equipment or appliances.

INCENDIARY FIRES

REMOVAL, REPLACEMENTS, OR ABSENCE OF CONTENTS

INDUSTRIAL/COMMERCIAL PROPERTIES

- FURNITURE
- ART WORK
- JEWELRY
- PHOTOGRAPHS
- PETS
- RECORDS
- FIREARMS

Fire-setters may remove personal or irreplaceable items or replace valuable items with less valuable items before setting the fire.

Commonly removed items include furniture, art work, jewelry, photographs, pets, financial or business records, and firearms. Replaced items will depend on the type of occupancy involved in the fire. Examples from industrial or commercial properties may be machinery, equipment, stock or merchandise that was replaced. Residential occupancies could have items like furniture, clothing, appliances, jewelry, and guns removed or replaced. In this case, the bedroom had a bed and nightstand but very little else one would expect to find in a lived-in house. There were no clothes in the closet or draws, no photographs and even the bedspread was missing. Unfortunately for these arsonists, the fire was extinguished prior to this room becoming involved.

INCENDIARY FIRES

BLOCKED OR OBSTRUCTED ENTRY

HINDERING FIREFIGHTING ACCESS

To increase the time available for the fire to grow, fire setters may block or obstruct access or entry for firefighters either onto the property or into the structure.

Any obstruction that slows or blocks access for responding fire apparatus should be noted and evaluated.

Obstructed doors and windows that block access into the structure should also be noted and evaluated.

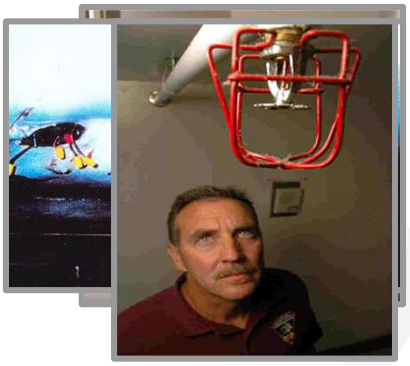
INCENDIARY FIRES

SABOTAGE

INTENTIONAL DAMAGE OR DESTRUCTION

FIRE-RESISTIVE ASSEMBLIES

FIRE PROTECTION SYSTEMS



Fire-setters may intentionally damage or destroy building systems or structures to ensure rapid and complete destruction of the building and its contents.

Fire-resistive assemblies work to reduce the movement of smoke, heat and fire through a building by confining fire to it's area of origin. Penetrations in walls, floors or ceilings, or propped open doors may be indications of an attempt to spread the fire. It is important for the investigator to ensure these penetrations were not the result of fire fighting activities, poor construction or maintenance, or innocent actions of occupants.

Failure of any or all fire detection or fire suppression systems needs to be examined and investigated thoroughly to ensure the cause of the failure such as improper installation, tampering, lack of maintenance, system shutdown, or equipment or structural assembly failure and if the failures were present prior to the fire.

INCENDIARY FIRES

SABOTAGE

DISABLING DETECTION SYSTEMS

MULTIPLE FIRES

BUILDING DAMAGE

Common methods of disabling fire detection or protection systems would be removing or covering smoke detectors, obstructing sprinklers, shutting off control valves, damaging threads on standpipes, hose connections, and fire hydrants, placing debris in fire department connections or fire hydrants, disconnecting alarm bells or starting multiple fires in an attempt to overwhelm the suppression system.

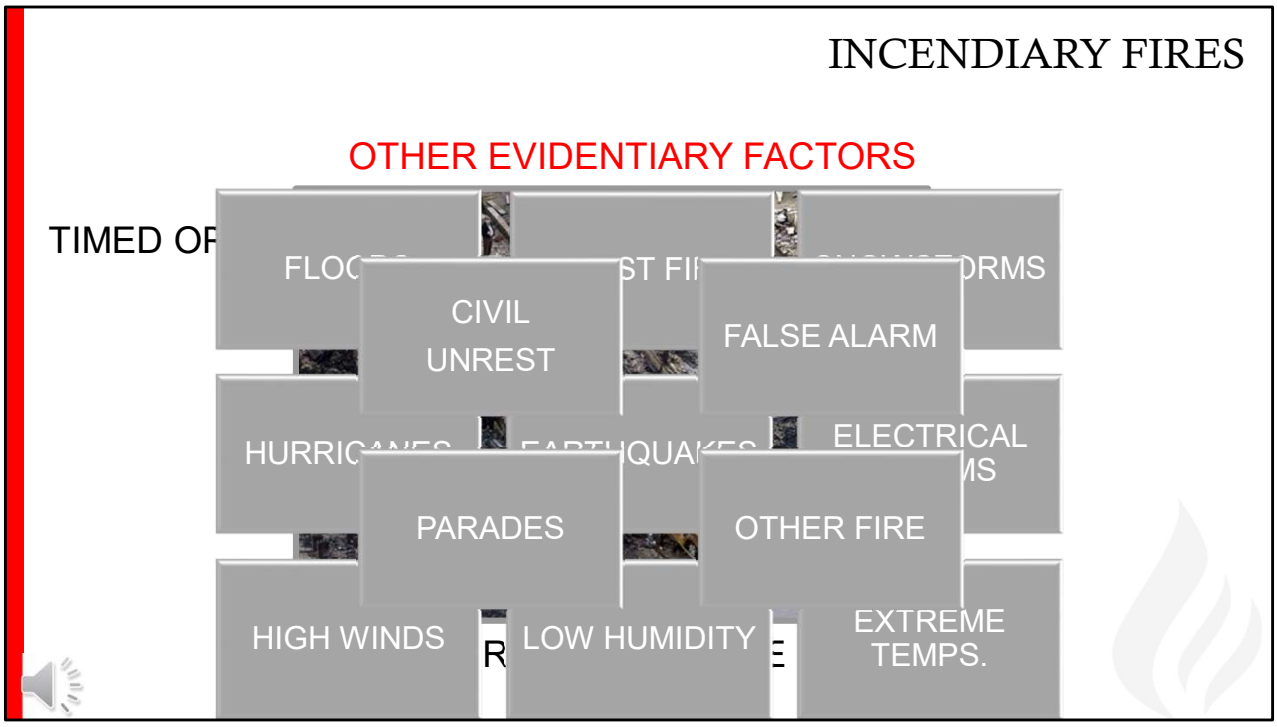
Buildings can be damaged to both increase fire spread as well as to hinder fire fighting activities. Examples of such building damage would be; cutting open or breaching of floors, walls or doors, jamming or barricading doors and windows, and damaging fire–rated doors and fire dampers so they stay open during the fire.

INCENDIARY FIRES

OPEN WINDOWS & DOORS

SPREADING THE FIRE BY PROVIDING VENTILATION AND ADEQUATE OXYGEN SUPPLIES

As fire requires an oxygen supply to continue combustion fire-setters may open or break exterior windows and doors to provide the required oxygen.
The ventilation provided by the open windows or doors may also create artificial avenues for fire spread inside the building.
It is important for the investigator to examine the normal routine and activities of the occupants before determining whether or not the open doors and windows were an attempt to spread the fire.



Taking advantage of situations or circumstances that increase the chance of total destruction of the property or reduce the chance of being apprehended are called timed opportunity fires. Examples of situations that could be considered timed opportunities consist of;

Natural conditions such as floods, forest fires, snowstorms, hurricanes, earthquakes, electrical storms, high winds, low humidity, or extreme temperatures, as well as;

Other situations such as civil unrest, or an unavailable fire department due to the calling in of a false alarm, parades or another working fire.

This is a photograph of the massive fire that occurred as a result of flooding caused by Hurricane Sandy in New York's Breezy Point area a beachfront community in Queens. Over 100 homes were destroyed by the fire.

MOTIVES ★

FIRE CAUSE AND RESPONSIBILITY - INCENDIARISM

MOTIVE INDICATORS –
ID POTENTIAL SUSPECTS

MOTIVE NOT REQUIRED –
BUT HELPS THE CASE

A large portion of reported fires are identified as incendiary. The primary role of the fire investigator is to determine the cause, origin and circumstance of the fire but some fire investigators also take on the role of determining who is responsible for the fire. If the fire is identified as incendiary investigators often look for motive indicators to develop or identify potential suspects. The motive is defined as the impulse or inner drive that causes a person to act in a certain way. Remember that the identification of the motive is not a requirement of the prosecution of arson, but it often helps the case.

REPETITIVE FIRE SETTING

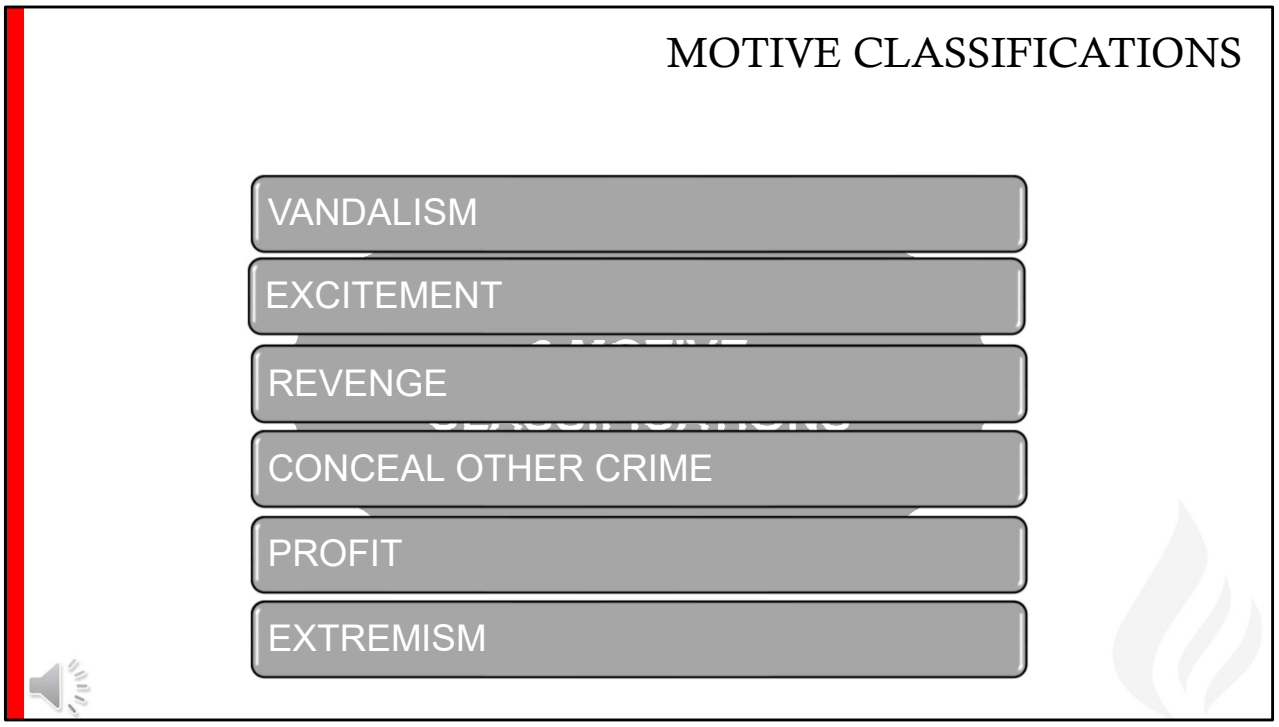
FIRE SETTING BEHAVIOUR

SERIAL ARSON
3 FIRES WITH COOLING OFF PERIOD

SPREE ARSON
3 FIRES NO COOLING OFF PERIOD

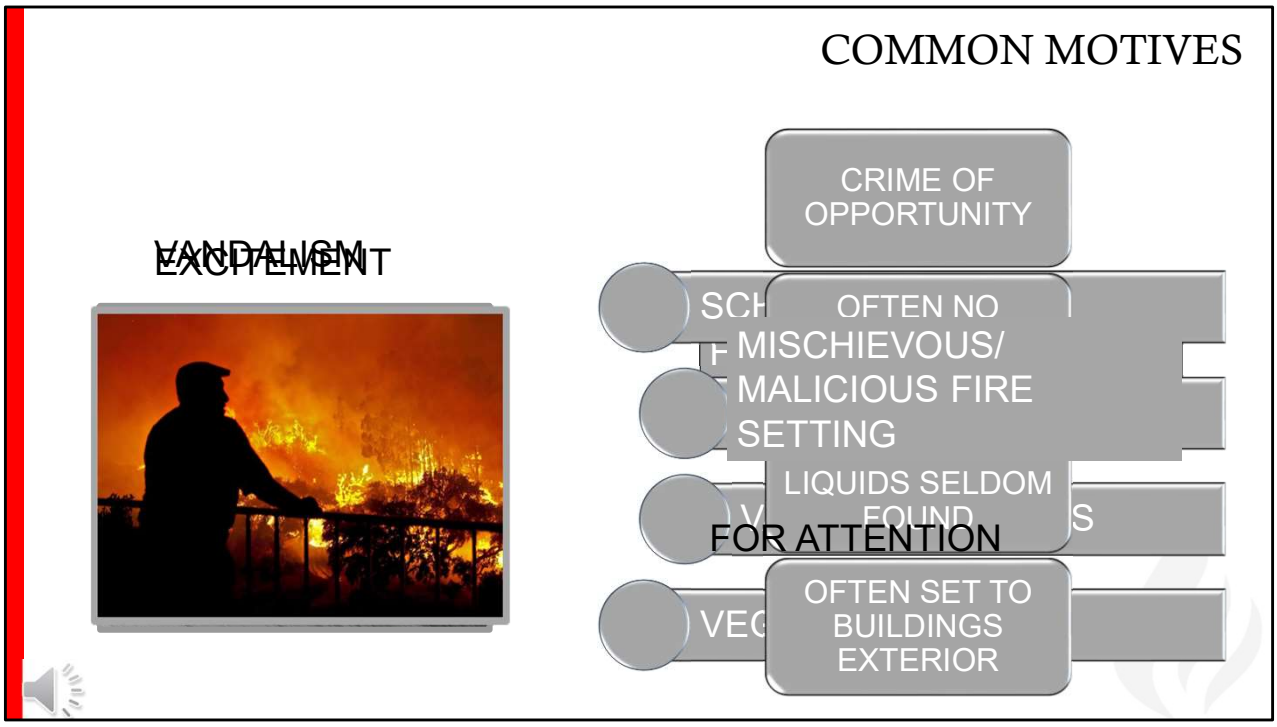
MASS ARSON
MULTIPLE FIRE - SAME TIME - SAME LOCATION

Determining the motive can identify if the fire was a single event of fire setting or a multiple event of fire setting behavior. Repetitive fire setting is broken down into three classifications. The classifications are: serial arson, spree arson and mass arson. Serial arson is as many as three fires set at different locations and each fire has a cooling off period between the sets. Spree arson is as many as three fires at different locations with no cooling off period between sets. Mass arson is multiple fires set at the same time at the same location.



There are six motive classifications that are associated with firesetters:

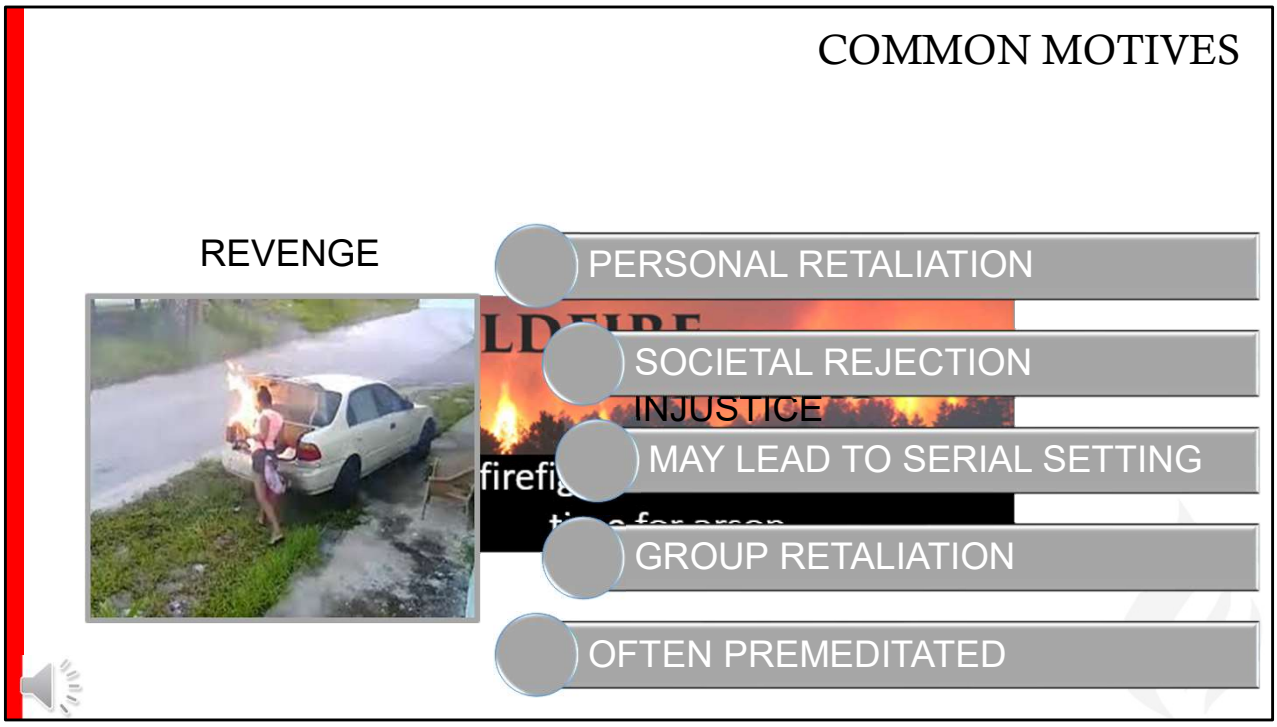
Vandalism
Excitement
Revenge
Crime concealment
Profit
Extremism



Common motives of incendiary fires include:

Vandalism.
Vandalism is a common cause of incendiary fires and is defined as mischievous or malicious fire setting. Common targets for vandalism fires include schools, trash containers, vacant buildings and vegetation. Vandalism is usually a crime of opportunity so perpetrators seldom bring the fuel with them but rather use fuels that are present. Often there is no apparent motive but in some cases vandal fires can be the result of peer pressure usually amongst juveniles or young adults.
Since these fires are often not planned in advance ignitable liquids are seldom found. An arson set to a home or business is often set to the exterior of the building. When a fire is set inside a house there is often a domestic dispute that precedes the fire.

Excitement.
Some arsonists get pleasure from creating a fire and the response that follows. Others set fires to gain attention to themselves. In one case a flight attendant set a fire in the washroom on a commercial airline flight. He then detected and extinguished the fire in an attempt to make himself out as a hero. He was convicted of setting the fire and sentenced to 6 years. .

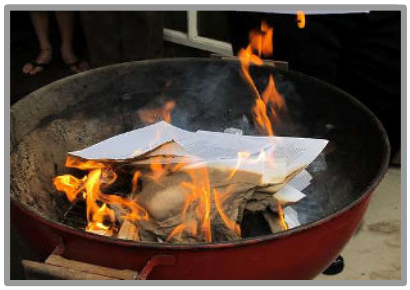


Firefighters, security guards and police officers also may be involved in this type of fire just to be the hero that detects or even puts out the fire thus saving the day.

Revenge.
Revenge fires are set because of a real or imagined injustice that has been done to the arsonist or a person or group the arsonist cares about. Personal retaliation may trigger a fire setter to act against the property of the person assumed to have wronged them. Other revenge fires may occur because the perpetrator feels societal rejection or abuse. This feeling may lead them into the area of serial fire setting. Institutional or group retaliation fires may occur when the fire setter has a grudge against an employer, religious group or the government. These fires may be premeditated and well planned so the arsonist will often bring fire setting supplies with them.

COMMON MOTIVES

CRIME CONCEALMENT



COVER UP OR DESTROY
DESTROY RECORDS
EVIDENCE

Crime Concealment.

When a crime is committed such as burglary, homicide or embezzlement a fire may be set to cover up or destroy evidence.
Often murder can be a crime of passion which the perpetrator did not mean to commit but once it has taken place they seek ways to cover it up or make it look accidental. Fire is often used for this purpose but usually thorough investigation will uncover the truth. In some cases the fire is set specifically to kill a targeted individual so extra care should be taken whenever there is a fire death.

Fire is often used when someone wants to destroy records usually associated with a business or institution. There have been many cases where people with access to financial documents and transactions have embezzled money from an organization and realizing they are going to be caught set a fire in attempt to cover up their activities.

COMMON MOTIVES

Pyromania is not a motive as it is recognized as a psychological disorder

PROFIT/FRAUD

FOR FINANCIAL GAIN - REDUCE LOSS

COLLECT $ FROM INSURANCE COMPANY

VEHICLE FIRES

Profit or Fraud.

Fraud fires are fires set for financial gain or to reduce loss usually with the intention of collecting money from an insurance company. These fires may be set to destroy old stock that is not selling or to cover up that the stock was sold but the sales were not reflected on the inventory list.

Vehicle fires are also subject to fraud fires. If a vehicle is nearing the end of it's lease period the cost to turn the vehicle in may be a motivating factor to get rid of the vehicle.

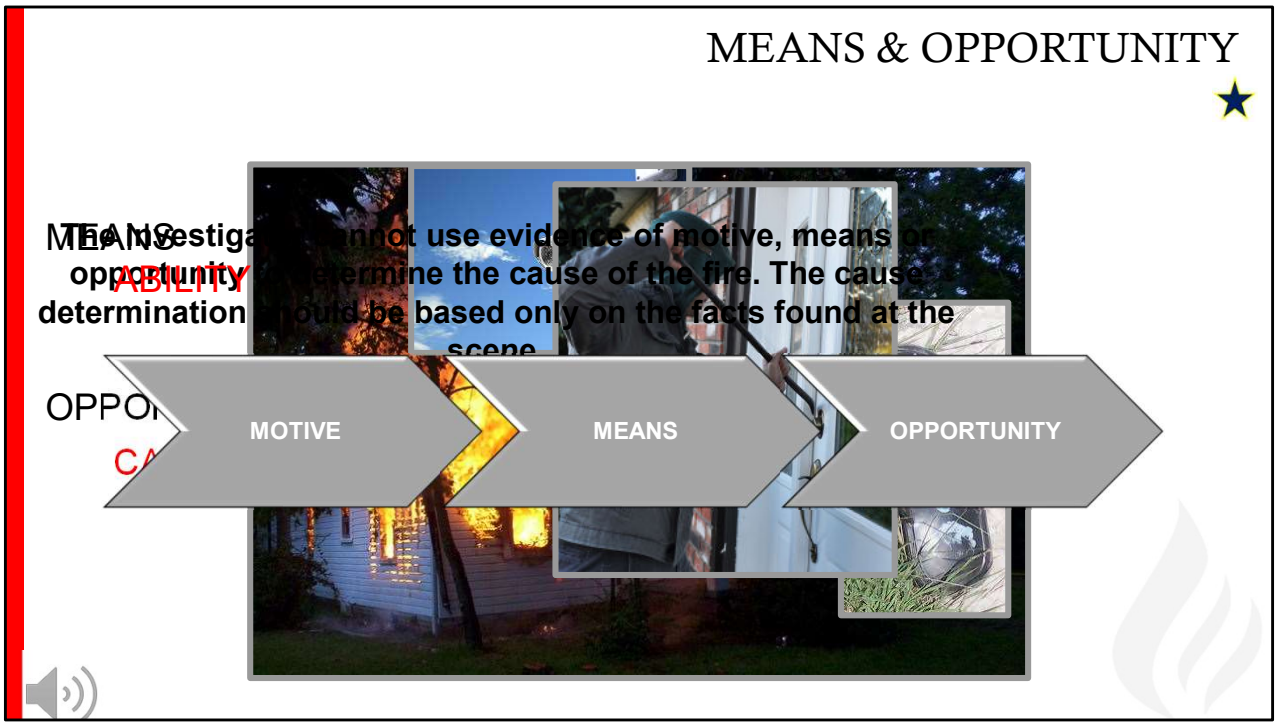
It should be noted that pyromania is not a motive as it is recognized as a psychological disorder

COMMON MOTIVES

EXTREMISM

Extremism fires are set with an intent based on opposition to the target such as a political, ethical, ethnic or religious group or facility.
Although the individual who ignited the fire may want to remain unknown, often their cause or group will want recognition for the fire and may leave behind messages at the scene or write letters or make phone calls to media.

A case history is that of Canadian Eco Terrorist, Rebecca Rubin. She pleaded guilty to participating in what the FBI calls "the largest eco-terrorism case in United States history." By the time the cell disbanded in 2001, it had committed 20 arsons in five western U.S. states causing $40 million (U.S.) in damage. The targets included everything from horsemeat processing plants to SUV dealerships. "Little Missy," as Rubin was known in the group, participated in five missions one of which was a ski resort in Vale Colorado shown in this picture.



In attempting to determine human involvement and responsibility for the fire, investigators look for Motive, Means and Opportunity. Respectively, they refer to the person's reason or motive to start the fire, their ability to set the fire (means), and whether they had the chance or opportunity to set the fire.

We have already discussed Motive so lets look briefly at Means and Opportunity.

Means is the ability of the person to set the fire . Do they have the material and tools necessary to set the fire and is that consistent with the investigator's scene analysis. For example did they use break and entry tools and were these identified?

Opportunity means the suspect was capable of setting the fire at the time and place where the fire was set. An investigation might uncover personal items left at the scene, security footage placing the suspect at that location, the suspect might have access keys to the property or familiarity with the facility.

The investigator cannot use evidence of motive, means or opportunity to determine the cause of the fire. The cause determination should be based only on the facts found at the scene.

CHAPTER REVIEW

DEFINITION OF INCENDIARY FIRE

LACK OF AN EXPECTED FUEL LOAD

BURN INJURIES TO ARSONISTS

COMBUSTION RELATED INCENDIARY FIRE INDICATORS

INCENDIARY & DELAY DEVICES

POTENTIAL INDICATORS NOT DIRECTLY RELATED TO COMBUSTION

TIMED OPPORTUNITIES

MOTIVES

BILANCIA IGNITION MATRIX

In this chapter we discussed:

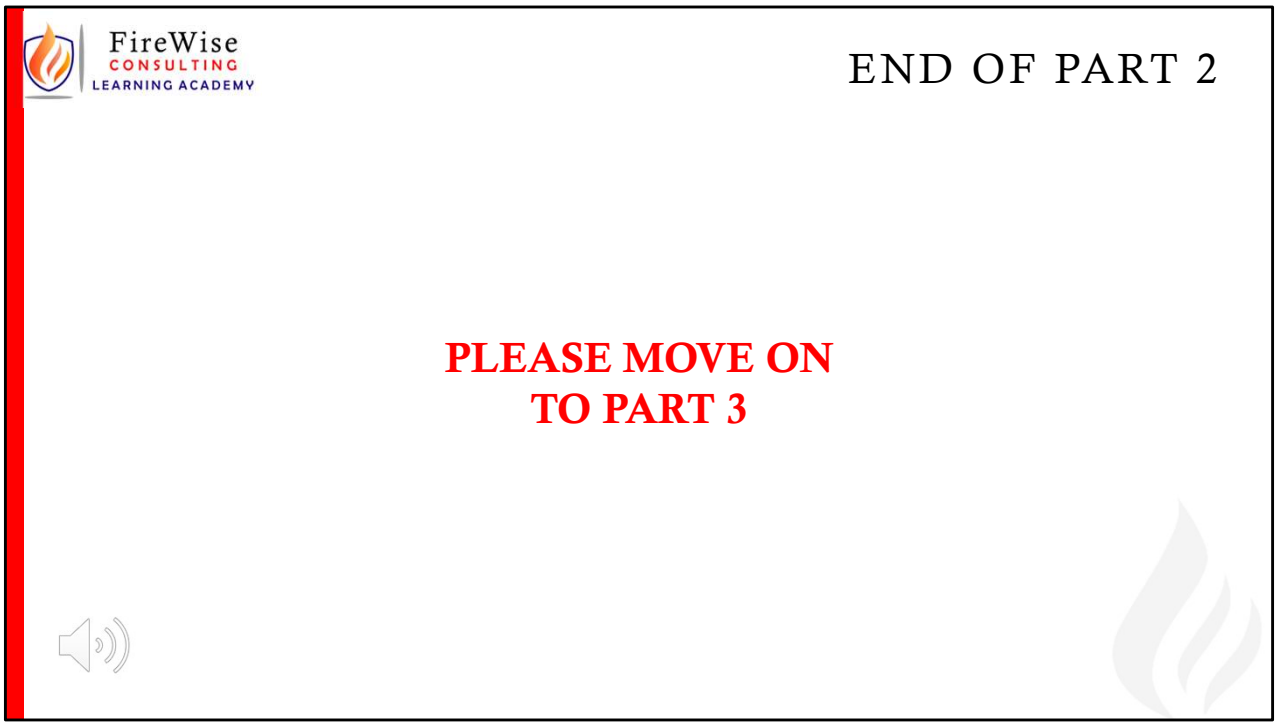
- The definition of incendiary fires as it relates to fire cause classification.
- The combustion related fire indicators that support a hypothesis of an incendiary fire cause.
- The Potential indicators not directly related to combustion which are to be examined after an incendiary fire cause is determined to help in developing an ignition hypothesis, questions for witnesses or avenues for further investigation.
- the Bilancia Ignition Matrix which compares potential ignition sources with available fuels
- The lack of an expected fuel load.
- Burn injuries to arsonists and their clothing
- Types of incendiary and delay devices
- Timed opportunities to set fires to coincide with other events

And

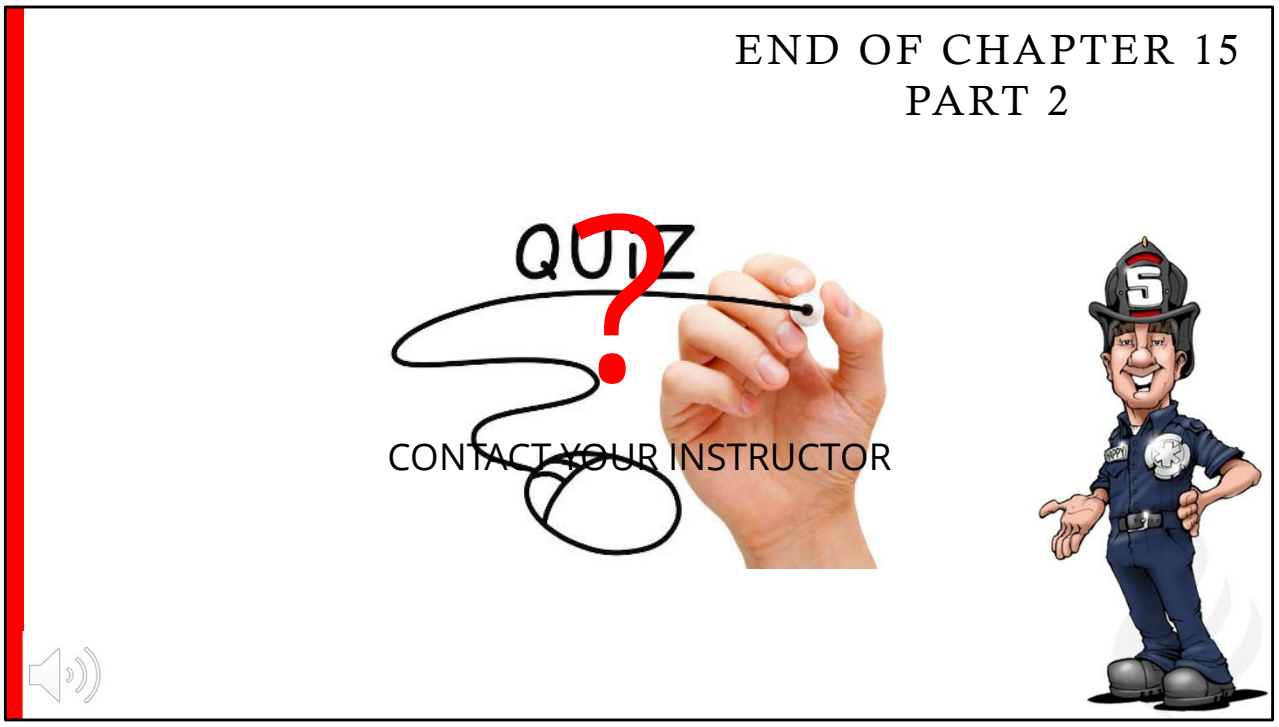
- Motives for setting fires

And

Other evidentiary factors looked at after an incendiary fire cause classification has been made to help develop suspect profiles.



That's the end of part two, Basic Fire Chemistry.
Please move on to part 3



That's the end of **Part 2 of Chapter 15, Analyzing the Incident**. You are now ready to move on to **Part 3 of Chapter 15 which deals with Human Behavior and Fire** but please complete the quiz for **Part 2** first.

If you have any questions now is a good time to contact your teacher.