# Investigating Fires and Explosives Part3


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# Fire Responders Responsibilities


- When a fire is discovered or an explosion happens, the first responders have 2 main priorities:
- Get everyone trapped by the fire or blast to safety, then put out the fire and/or ensure there are no more explosions.
- Only after those 2 things are tended to will an investigation begin.

# Forensic Investigation Details

- Collecting evidence at the scene of a fire can be far more complicated than in most other forensic investigations.
- Lighting and temperature control were likely taken out by the incident, the structure under investigation may be unstable, investigators may be slogging around in piles of wet materials, and hazardous fumes and residues may be present.

# Results of the Damage

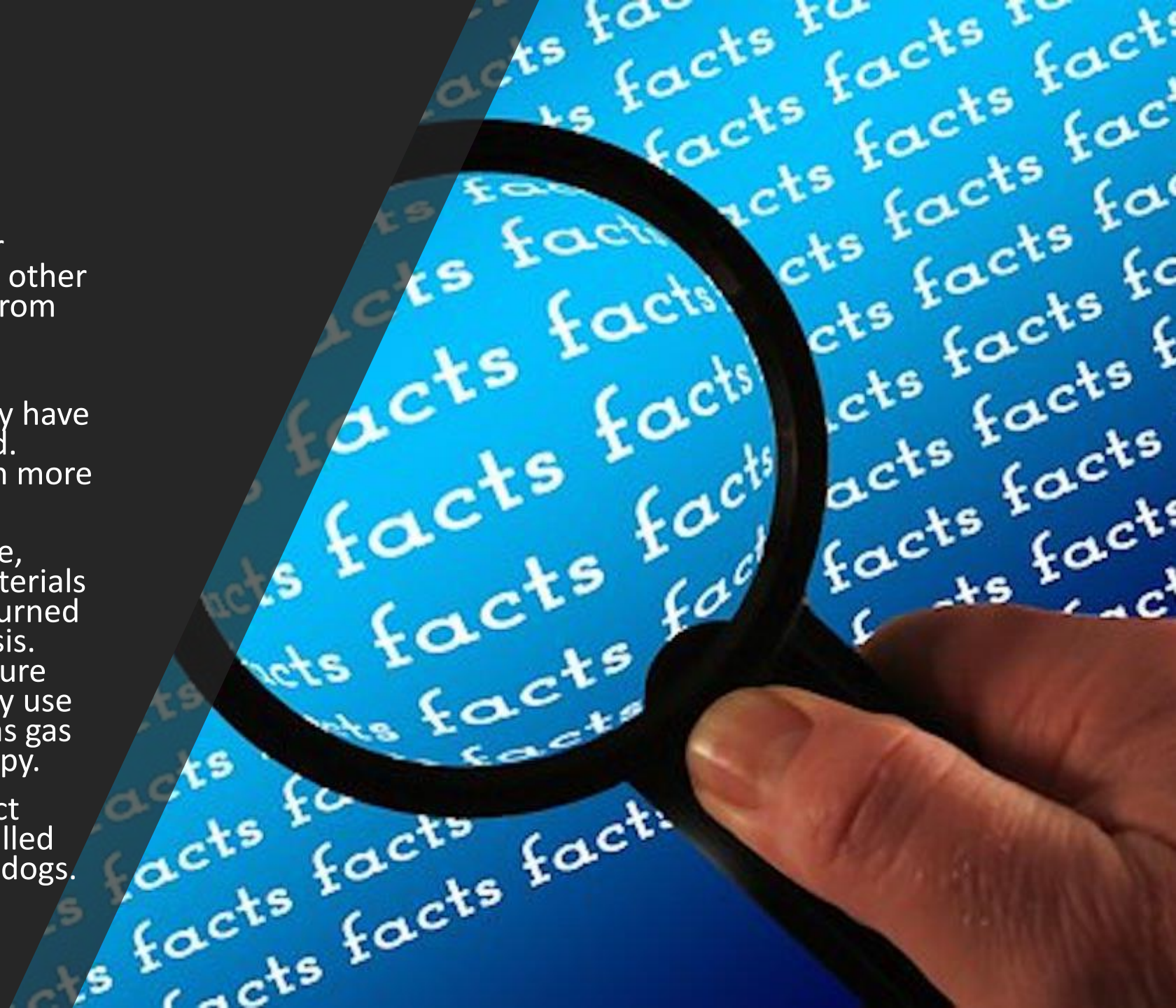
- Victims can be nearly completely incinerated by fire, and the highly pressurized water coming out of fire hoses can cause additional damage.
- Objects can be nearly obliterated by fires and blasts, and even common household and personal items may be difficult to identify.
- Explosions can rip objects and people apart, or throw them a considerable distance away—all complicating the investigation.


# Crime Scene Investigations

- As with any crime scene, firefighters, rescue personnel, utility workers, police officers, and even onlookers can taint a fire or explosion scene before investigators even get there.
- This can damage existing evidence, and may even introduce irrelevant footprints, fingerprints, fibers, DNA, or other material. But the need to rescue people and secure the scene takes priority over evidence preservation.

# The Job Of The Investigators

- Investigators collect pieces of burnt or partially burned wood, carpeting, and other materials, as well as control samples from unburned or undamaged areas for comparison if available.
- Samples of flammable liquids that may have been used as accelerants are collected. (Gasoline is the accelerant of choice in more than 50% of all arson fires.
- Carpet, bedding, upholstered furniture, clothes, soil, and other absorptive materials have the most potential to retain unburned accelerant for sampling and lab analysis. Forensic labs use the same tests to figure out the nature of an accelerant as they use for identifying other chemicals, such as gas chromatography and mass spectroscopy.
- Investigators have many tools to detect accelerants, like chemical analyzers called hydrocarbon sniffers, as well as arson dogs.



# Looking For Clues

- One clue that a fire is arson is the presence of a branching pattern called a fire trail, which does not occur in an accidental structure fire.
- This happens when an arsonist pours an accelerant on the floor from room to room and then lights it on the way out.
- Investigators also look for the source of ignition for a fire or whatever served as the detonator in an explosion. An igniter can be as simple as a burned match, which could possibly be linked through microscopic examination to a matchbook in a suspect's possession.
- A matchbook, lighter, or candle left at an arson scene might have fingerprints on it, and if a cigarette was used to start a fire, there could be DNA on the cigarette butt.

# The Perfect Timing Of An Analyst

- Analysts will also look for timing devices—anything that could be used to delay ignition of a fire or an explosion so that the perpetrator can get away before the destruction starts either for his or her own safety or to avoid suspicion.
- These timing devices can range from simple, like a pack of matches wrapped around a burning candle, to very complex, like the cell phone bomb detonators seen in movies.

# Thank You For Your Attention!

Questions and Comments