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| **Arson Investigation Checklist** |

**Canvasing Crowds and Vehicles**

Sometimes people who start fires will remain at the scene for a number of reasons – or they will return to it. Some arsonists may return to ensure that the fire has destroyed the intended target. Others will return because they are emotionally excited about the actual fire and the burning process. It is not unusual for a crowd to gather at a fire scene. Inclement weather, such as extreme cold, may discourage large numbers of people from gathering at a scene. A good investigator should place his or her back to the fire – and then face the crowd and record them. Video the onlookers. A later review of the crowd may disclose unusual behavior, which could provide a possible identification of a suspect. In addition, a patrol officer should make note of vehicles, by license plate number, which are parked within a two-block radius around the fire scene. Frequently, arsonists will park their vehicle in the area of the fire, either when they return to watch the fire’s destruction, or to recover a vehicle that they left at the scene, while making their get-away by using another mode of transportation.

**Safety of Investigators**

In order to conduct a search of the crime scene safely, the investigative team should verify that the utilities (electric power and any gas lines) are turned off at the crime scene. Getting a listing of the [Safety Data Sheets](https://drive.google.com/file/d/1sWPwFMYdc6DmoLRmDc7wXIofEUjkfU3T/view?usp=sharing) from the person responsible for the crime scene structure will allow investigators to know if there are any harmful chemicals in the crime scene. Keep in mind that even household chemicals like cleaning supplies may be harmful when exposed to heat. A first walkthrough of the scene should identify any dangerous areas, where the building structure is weakened, which includes but is not limited to, flooring, [elevator shafts](https://drive.google.com/file/d/1SbKhMfx3DsLCr2HtpoJYmrvsIeaV03bZ/view?usp=sharing), stairways, overhanging unsecure items (such as air handlers, lighting fixtures, and other materials) or roof structures that could fall on investigators (Occupational Safety and Health Administration, 1995).

In terms of safety for arson scene investigators, all aspects of processing a scene should be done in pairs. Having an investigative partner is critical and is especially important when photographing or video recording a scene. Using a photographic/video device sometimes means that the investigator is looking through a camera lens or at a camera screen, instead of watching where they are walking. The investigative partner should be concerned with the photographer’/videographer’s *safety of movement* throughout the crime scene. For example, it can be dangerous to walk on or under a weakened structure, stepping on sharp items like stuck-up nails, screws, or sharp glass, or even walking into an [empty elevator shaft](https://drive.google.com/file/d/1SbKhMfx3DsLCr2HtpoJYmrvsIeaV03bZ/view?usp=sharing) at an arson crime scene. There may also be multiple elevators and elevator shafts to be aware of.

**Human Resources and Records Checks**

Always check for prior complaints made by former employees, in regard to being fired or let go. Records from [Human Resources](https://www.dictionary.com/browse/personnel-department) for a company should be obtained – and the files should be reviewed for motives and for possible suspects. In the event that personnel issues are not a motive, then the insurance paperwork should be obtained from the company. Inventory records should be compared to the amount of property loss claimed by the store. For example, a fire could have been done to cover up a fraud crime when the property that was supposed to have been burned was sold by the beneficiary of the insurance policy, just prior to setting the fire. This would allow the fraudulent insurance claim to include inventory that was not actually burned in the fire. When an arson scene is processed and there is an insurance claim for losses of inventory (items that were stored in the arson structure), then the debris should be evaluated. The quantity of burned debris should match what would be present, if the claimed loses of inventory were actually burned. For example, in a fur warehouse, if 400 fur coats were claimed as being destroyed in the fire, there should be debris left from the coats, that would match 400 burned coats. Items burned in a fire are never completely consumed. Finally, background checks should be done on all of the employees, to include recent former employees, and any beneficiaries of the insurance policy for the crime scene. There may be indicators of prior crimes on record, for similar arson type activity.

**Arson Clues**

Items of evidence that are critical in determining the ignition points where the fire(s) were started, include piles of debris soaked in some type of accelerant, burn patterns, [V-patterns](https://drive.google.com/file/d/1B9x1Aijw1N8zLs8WQUndqTkp4eFE7GEj/view?usp=sharing) on walls, soot on glass, [pour patterns of accelerant](https://drive.google.com/file/d/1Q_-TD0UhtwC4jOaUxs5vlkU5TT1YrSBL/view?usp=sharing) on floors, accelerant containers, and forced entry into the structure). Things like [alligatoring](https://www.nwcg.gov/term/glossary/alligatoring) and [glass items bending](https://drive.google.com/file/d/1FiGCsf_q9dXvMw3xkDbm0pBeDnngpuSa/view?usp=sharing) would indicate the heat and direction of the fire (Office of Justice Programs, 2000).

**Incendiary Devices**

You may find things like incendiary devices designed to explode and spread fire. Extreme caution should be taken in the event there is an [unexploded incendiary device](https://drive.google.com/file/d/1UCQFbOAzp9v_f2rsfH64zQBRsNfLeipL/view?usp=sharing) still in the crime scene. Also, you may find additional containers that had previously held accelerants. You might find piles of material like packing material or cloth soaked with accelerants. Also, tools used to break into the scene by the offenders, along with lighters, matches, candles, and torches could be located. These items would be collected as evidence (Federal Emergency Management Agency, 1992).

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|  | **Factoid** – When accelerants are used, there is often residual liquid that remains in containers that were thrown away at the arson scene. |
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**Evidence Collection**

Collecting physical items like lighters, matches, torches, and tools would be done, just like you would collect any other item of physical evidence at a crime scene. The more sensitive items would be *material with accelerant residue* or *burned documents*. Accelerant residue is collected in [airtight arson evidence cans](https://drive.google.com/file/d/1abWZTj3f0koyod6lklxEXXBS3ga2GT1x/view?usp=sharing). They are unlabeled paint cans without a lining inside. Lining in paint cans could chemically be leached and skew the lab analysis for the accelerant identification. Some evidence like pour patterns require extensive photos of the pattern, which allows for tracking movements of the arsonist(s). Burned documents require special handling. They are kept in the container in which they were found whenever possible. Otherwise, the entire stack of papers should not be separated, and they should be placed in a cardboard box, approximately the dimensions of the stack of burned papers, so that they do not shift around and break up. The lab will separate all pages.

When searching for accelerant evidence, using an [arson trained canine](https://drive.google.com/file/d/1bwxzvKW-rtiE9vPpylaOkit5tUeR5HS0/view?usp=sharing) has been one of the main methods for finding *hydrocarbon producing accelerants*. Since most accelerants stem from petroleum products, hydrocarbons are almost aways present. Technologically, a [hydrocarbon sniffer](https://drive.google.com/file/d/1krv0UiJY01oiEdi6jslAnxXft7FAGp72/view?usp=sharing) is used by almost every arson investigator. It has an increasing proximity alarm usually including a red-light tree and increasing tone. This means that as the investigator gets close to the source of the accelerant, at the ignition point, it gets brighter and louder.

**Arson Tools for Investigators**

There are any number of processing tools and items that are important at an arson crime scene. For example, safety equipment included bunker [boots with steel shanks in the soles](https://drive.google.com/file/d/1SGMDw62KOqISx4fGcTjpJLl8C6Ml1R21/view?usp=sharing), heavy work gloves, eye protection, dust mask, and a construction hard-hat. Tools may include, but are not limited to, a rake, shovel, bolt cutters, sledgehammer, ladder, and a crowbar. Powerful lighting is always a requirement (always have extra batteries available). The hydrocarbon sniffer/detector is always a good addition. [Chemical illumination lights](https://youtu.be/GohPkrm79zA) for marking the location of evidence are excellent because there will be no electricity source available in the scene because the power will have been shut off for safety reasons. [Forensic lighting in various wavelengths](https://youtu.be/HPX05B9HfN8) is critical for finding various items of evidence that have a [fluorescence](https://dictionary.cambridge.org/us/dictionary/english/fluorescence).

**References**

Occupational Safety and Health Administration Standard Number 1910-1200; (1995); The purpose of Material Data Safety Sheets; United States Department of Labor; <https://www.osha.gov/laws-regs/standardinterpretations/1995-01-25-0>

Office of Justice Programs; (2000); Fire and arson scene evidence; US Department of Justice; <https://www.ojp.gov/pdffiles1/nij/181584.pdf>

Federal Emergency Management Agency (1992); Basic tools and resources for fire investigators: a handbook; <file:///C:/Users/David/Downloads/446380%20(2).pdf>