Explosives Part2

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Fires and Explosions

- Fires and explosions can occur naturally, so forensics experts look for specific clues to determine when arson and deliberate bombing have taken place.
- Investigators collect evidence about a fire or explosion's point of origin, the chemical composition of the materials involved, the spread of damaged objects and debris, even standard forensic evidence like fibers, fingerprints, and DNA to create a complete picture of an incident's cause.

The Basics of Explosives

- The chemistry and physics are somewhat different from fires.
- An explosive is a material capable of rapid conversion from a solid or liquid state to a gas.
- That conversion results in energy released as heat, pressure, and sound waves.
- All explosions, except nuclear ones, are similar to fire in many ways, but explosions give off more energy than fires for a given amount of fuel, and the oxygen is mixed into the fuel during an explosion, rather than coming from the surrounding air as during a fire.

The Damaging Effects of Fire

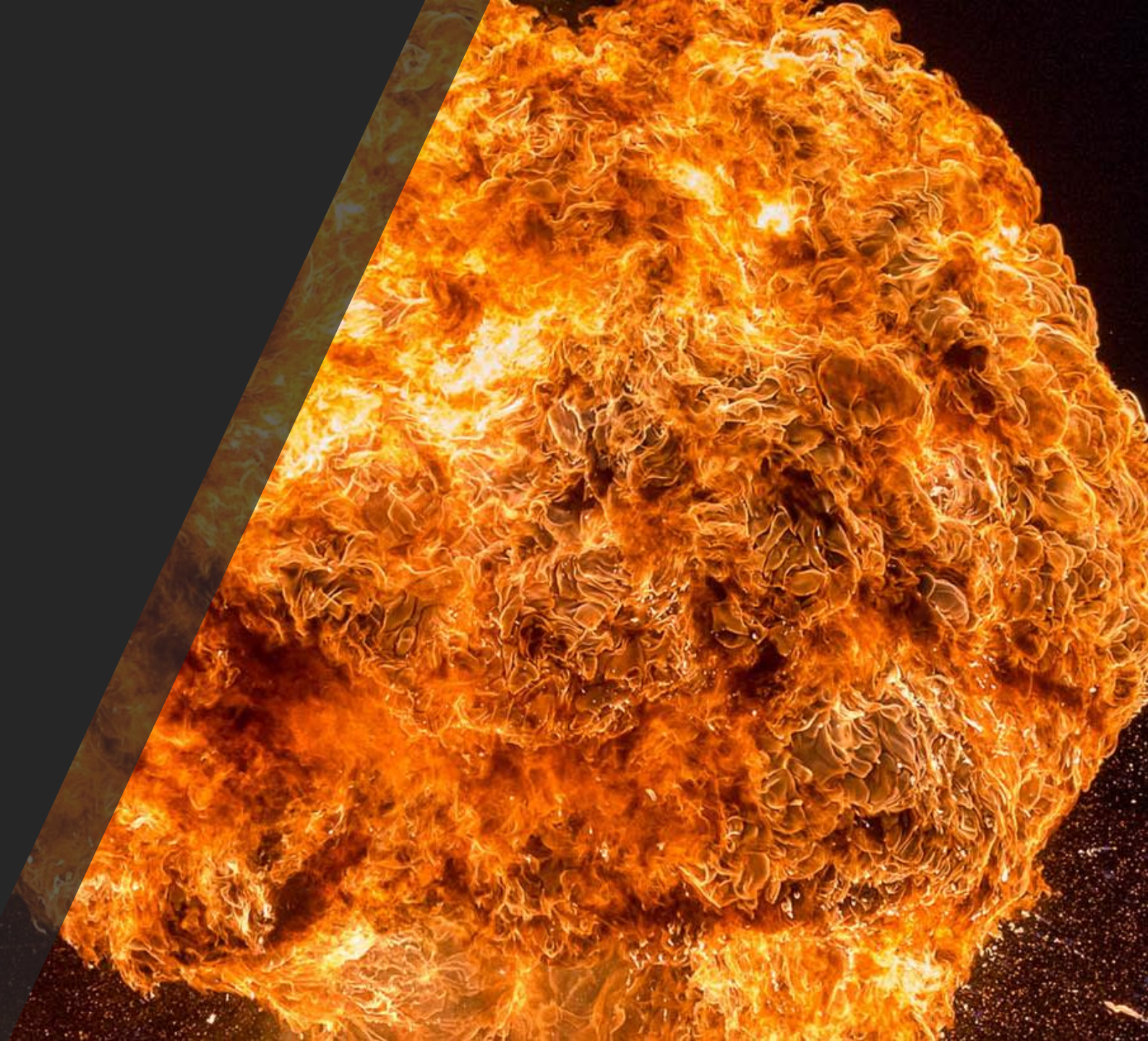
- The damaging effects of fire include the heat that melts objects, the burning that can reduce materials to ash, and smoke damage (which also carry soot deposits and disperse chemicals from burned objects).
- Smoke inhalation kills far more people who die in fires than the flames themselves.

The Truth About Explosion Damages

- Explosions have their own set of damage mechanisms:
- The escaping gases from the blast pressure, called a positive pressure blast, can travel thousands of miles an hour away from the explosion site and exert hundreds of tons of pressure per square inch.
- This blast creates a partial vacuum at the explosion site that, in turn, sucks air, gases, and debris from the explosion back toward the site of detonation during the negative pressure phase of a blast.
- It is not as strong as the initial positive pressure blast, but it can still do a lot of damage.

The Effects Of The Blast

- Explosions also produce fragmentation not seen in fires.
- The casing on a bomb can shatter and produce shrapnel that can tear apart any objects or people it hits.
- As the blast fragments objects in its path, those fragments can become projectiles, too.
- Bombers can also put nails or other pieces of metal inside the bomb casing to create additional damage.



High Explosives & Fireballs

- Typically the least damaging consequences of an explosion are its thermal effects.
- Sometimes there's a fireball at the moment of detonation.
- When high explosives are used, the thermal effects are hot and quick; with low explosives, the thermal effects are cooler but longer in duration.
- An explosive fireball tends to burn out quickly, unless other materials catch fire.

Thank You For Your Attention!

Questions and Comments