

Bombs And Explosives



Forensic Science

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Forensic Science

- The need for studying bombs and explosives by forensic personnel mainly relates to mass murder cases, where bombs would be the ideal weapon.
- Such bomb cases have their own special methods to help deduce different forms of evidence.



Bombs

- Today, making a bomb is a very simple exercise, with recipes readily available on the internet and the materials easily accessible. The make-up of a bomb is very simple and easily fashioned. A timer or remote control device is used to start the primary charge, or spark, which then ignites the gas inside the bomb, triggering a much larger, high powered blast which causes the damage.



What is a Bomb?



- There are many bomb types available, some very basic ones that yield little power and some which can cause mass destruction. But what's important is to know that an explosion from a bomb occurs as a result of an endothermic chemical reaction, which is one that releases vast amounts of heat energy and takes place very quickly, thus releasing an explosion.
- The chemical reactants the bomb maker decides to use reflect on the power of the bomb, since some chemical reactions release more energy than others. Noble gases and alkali metals are among some of the most reactive elements in the periodic table and their compounds are likely bomb materials for ex. In a basic soda bomb, the use of sodium bicarbonate is the use of a sodium compound, subsequently an alkali metal.

Bomb Deposits

- When a bomb explodes, a lot of it is thrown far away from the scene. Investigators search for any possible fragments of the bomb by agents that react by changing colour when it comes in contact with fuel. Fragments that carry traces of unburned fuel are taken back to the laboratory, where they are studied under microscopes.
- The shapes of the fuel particles are identified and are then washed in water and a colourless and inflammable liquid called acetone. The purpose of this process is to turn the particles into a liquid solution for further testing.



- The solution is then screened and analyzed using mass spectrometry, which involves an instrument that breaks up ions. These ions are attracted into a magnetic field and when their charges are measured in contrast to the mass of the ions, it identifies the chemical composition of the solution.
- Another method used is thin-layer chromatography, which involves the liquid sample being pushed in an upward direction by a specially coated plate, using an organic solvent that soaks upwards from the base. The different components in the liquid sample move up at different speeds and separate onto a plate, which then allows the solution to be identified.



Fragments

- Even though when a bomb explodes, it is reduced into tiny fragments. These fragments can still lead investigators to the bomb's creator. Occasionally, the fragments of the bomb may carry fingerprints, but in most situations, a piece of a bomb simply leads to determining where the bomb was manufactured.



- Explosives units around the world usually retain a large collection of frequently used bomb parts, batteries, timers, remote control devices and fuel components, which makes it possible for investigators find similarities between certain blasts.

Questions or Comments?

