

Blood at Crime Scenes

Many body fluids, and especially blood, saliva or semen are found at the scenes of violent crimes, these could be from the victim, the perpetrator, a witness or any combination of all three.

To a forensic examiner the patterns created when blood is lost at a crime scene can be very telling as to what events have taken place. In an ideal situation the sequence of events can be determined as well as the locations of the victim and attacker when this occurred. This however requires considerable expertise and experience on behalf of the examiner and is usually left for experts in the subject.

Blood evidence at a crime scene may provide information which helps to solve the case and lead to a conviction in court. For this reason the way in which this evidence is collected, documented and tested is very important. Correctly gathered blood evidence can establish a link between a suspect and a crime scene or even between a victim and a crime scene.

At crime scenes there may be lots of apparent blood which the examiner may think is blood, there may also be areas where blood cannot be seen but would likely be found; for example in a situation where a criminal has tried to clean up all evidence of a crime from a location or their clothing. The examiner does have a tool to help him with this situation and as with other body fluids there are presumptive tests available. A presumptive test is one which can rule out many substances thought to be blood, a positive reaction does not guarantee that the substance is blood (as some other substances will give positive reactions) however if the substance is blood a positive reaction will always occur. In this way some stains can be ruled out; such as ink, rust or chocolate. If a positive reaction is experienced then a more complicated test can be used as for example;

- Animal blood will also give a positive reaction
- Vegetable matter will give a positive reaction such as horse radish or potatoes
- Some chemicals will also give positive reactions

Presumptive tests for blood include leuco-malachite green (LMG) which is colourless and is oxidised to a blue green colour when it interacts with the haemoglobin in the blood. The method used in this kit is through the use of phenolphthalein indicator (known as the Kastle-Meyer or KM test) which is colourless in its reduced form but is bright pink/purple when it is oxidised. In the phenolphthalein test the oxidiser is hydrogen peroxide and the reaction is catalysed by the haemoglobin so that the reaction occurs much quicker than it otherwise would have done.

A similar test is the luminol test which is particularly useful when large areas are being surveyed for blood as the reagents can be placed in an aerosol and sprayed over large areas. Luminol has the advantage of not interfering with any subsequent blood typing or DNA analysis. When blood is present a mixture of luminol and an oxidising agent such as hydrogen peroxide react to give off a glow which can be photographed. As with other presumptive tests caution needs to be taken as false positives can occur with substances such as bleach.

