



Footwear Impression Evidence

Every time a person takes a step, they will leave behind a footwear impression or footprint regardless of the surface they are walking on (White 2004). Impressions can be left in both 2D and 3D forms. 2D impressions are found on flat surfaces such as a tiled floor or piece of paper, occurring due to materials from the under sole of the shoe/foot such as dirt, flour, blood being deposited onto the surface. Some impressions may not be visible by the eye alone, requiring the use of special techniques to be viewed. 3D impressions are made when someone walks over soft ground such as soil or sand, and a detailed imprint is left behind. The impression is influenced by both the weight of the person and the surface over which the person has travelled (Langford 2010).

Weather, such as rain, strong winds or snowfall can damage or degrade impression evidence and great care should be taken to protect impressions as soon as possible. This may be with the use of a tent or tarpaulin, or simply covering a lone print with an object such as a bin lid to give adequate protection from the elements (Langford 2010).

Footwear impressions can be used to determine if a particular person was present at the scene at some time (Weiss 2009) and due to the fragile nature of the evidence it is important that it is collected and recorded correctly.

The basic steps for the processing of shoe print evidence include:

1. EXAMINATION
2. RECOVERY
3. IDENTIFICATION

Photography Techniques



Practise



Makes



Perfect

With the importance of impression evidence, it is vital to ensure that all photographs taken result in high quality images. The camera should be placed vertically above the impression on a tripod where available and a scale placed next to the impression. Keeping the camera parallel to the impression stops the image being distorted (Fisher and Fisher 2012).

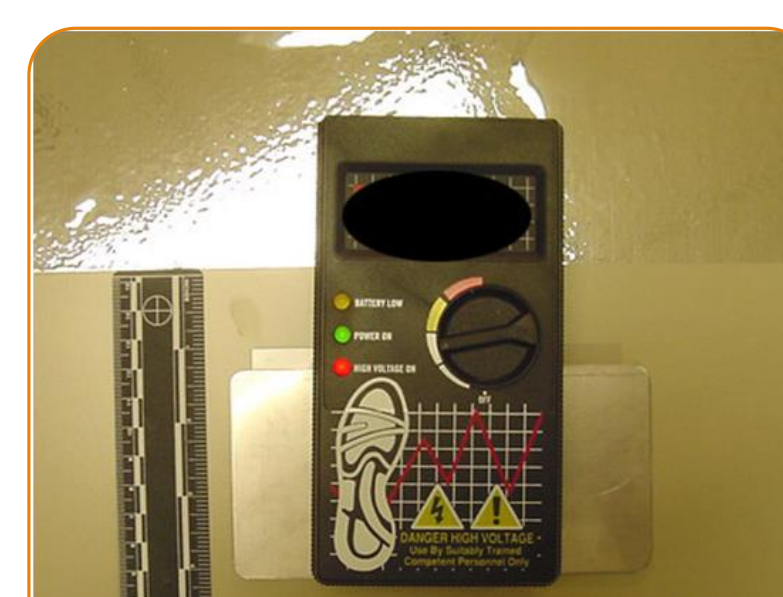
You must also ensure that the camera is focused on the impression and not on the ruler. Each shoe impression should be photographed initially with a positional reference, then crop the image in the camera viewfinder so only the evidence, scale and label remain in view.

When using a flash, it should be set up separately to the camera and positioned obliquely to the print. This is because it will be more effective. You can experiment with where you position the flash to ensure you get the best image containing optimum detail. It is better to take multiple images, ensuring you capture all the details rather than rushing through. If the impressions are on a reflective surface, you may find you have to bounce the flash off another surface onto the image. This will resolve the issue of the flash creating white spots over the impression as the flash reflects off the surface back to the camera lens (Weiss 2009).

All photographs taken must be documented including the image number and brief description. You must never delete an image as you need to be able to provide all images taken if requested by the court. If an image is deleted, there is no way to be sure that vital evidence hasn't been deleted from the logs.

Becoming an expert in crime scene photography takes practice, the more you do the better you will become.

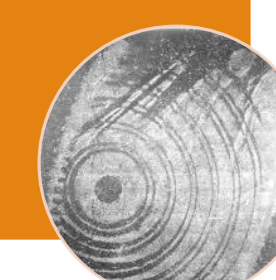
Lifting Techniques



ESLA



Gel Lift



Casting



There are various lifting techniques that are used by CSI's to recover both 2D and 3D impressions from a crime scene, which enables the impressions to be examined in the laboratory. Once an impression has been photographed, the appropriate lifting technique is established.

Electrostatic lifting (ESLA) involves a high-voltage power source to create static charge which transfers dry origin impressions from the surface to a special black lifting film. These lifts are fragile, so they must be stored correctly and photographed before they can be examined. This is usually the method tried first if it's unknown whether the origin of the impression is dry or wet. If unsuccessful, the impression is left unharmed enabling another lifting technique to be used (Fisher and Fisher 2012).

Gel lifters have a slightly sticky surface which, when pressed onto the impression, picks up the deposits creating a replica of the entire print. However, care must be taken not to stretch the gel lifter so not to distort the print. The lift is then secured onto a piece of clear acetate (James et al. 2014).

Casting 3D impressions is usually done using the casting material dental stone, which is a type of gypsum or calcium sulfate. Dental stone replaced the use of plaster of Paris as it sets harder, has higher compressive strength and retains greater detail upon cleaning. It is a quick and easy way to recover 3D impressions. Dental stone is usually weighed out in ready to mix zip-lock bags allowing you to add the water when needed. It should be mixed for at least 3 minutes to ensure the water has been absorbed by the dental stone, then poured into the casting frame. It should not be poured directly onto the impression as this may cause damage. Pouring next to the impression and allowing the dental stone to flow naturally into the impression is advised. It sets in 20-30 minutes, allowing for quick removal from the scene, but should not be cleaned for 24-48 hours to ensure it is fully set and all water has evaporated (Fisher and Fisher 2012; James et al. 2014).

Key Things to Remember

- Include a scale in photographs. A graduated scale would give anyone else looking at the image an idea of the size of the object in the image.
- Make specific notes. Each photo is given a unique 'frame number'. This number is noted.
- Descriptions. A brief description of each photo that is taken needs to be written.
- Storage. Each photo album should be stored on a secure server and backed up.
- Equipment. A tripod and flashes can be used to enhance the photographing of a crime scene.
- Chain of custody must be maintained!

References

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