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The Use of Tinks Starlight® Bloodhound Trailing Aid Luminol Preparation to Determine the Detection and Persistence of Blood at an Outdoor Crime Scene

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1 Introduction

The recovery and detection of possible blood stains at the crime scene can make or break a case, especially with the advent of and perfection of DNA testing. When a crime scene is cleaned up or subjected to environmental conditions, this technology becomes even more important. Review of the scientific literature revealed that significant studies were performed using luminol to detect blood in soil up to eight years after deposition.^[1-5] There was also a study involving the chemical detection of blood after dilution by rain over a 72 day period^[6].

On Saturday, June 11, 2014, the deceased body of a white 35-year-old female was discovered in a wooded remote area behind one of two large cement culverts in Palm Beach Gardens, Florida. Rain had fallen on the day she was discovered and continued intermittently for several days (Figure 1). The decedent had sustained severe blunt force trauma to her head and body at the scene. There was a distinct blood trail that led from a saturation stain of blood where the initial assault occurred to the location of her body behind the culvert, which was rapidly disappearing due to the rain. On the day of the discovery of her body the normal crime scene investigation was conducted; however, due to the rain no

bioluminescent techniques were used to visualize the blood trail.

On June 24, 2014, nineteen days after the incident we were requested to determine if there was any way to conduct further testing in an attempt to visualize the blood trail. The investigators wanted to know if it could be determined if the decedent was carried or dragged to the location where she was found. It had rained almost every day since the incident and approximately seven inches of rainfall was recorded during that time period. This was coupled with the hot and humid conditions and the environmental exposure of the scene to these elements.

2 Discussion

Crime scene investigators responded to the scene, took initial photographs before darkness and prepared a secondary diagram. After darkness, the area was sprayed with Tinks Starlight® Bloodhound Trailing Aid in an attempt to visualize the blood trail (Figure 2). This luminol preparation is primarily used for the location of blood trails by hunters seeking an animal that was not killed immediately.

After nineteen days of weather, rain, humidity and sun the luminescence of the saturation stain and the path the suspects carried the victim to her final position behind the concrete culvert

was clearly visible (Figures 3 and 4). Photographs were taken using a tripod mounted, Nikon D7100 camera at manual setting mode utilizing various time exposures with ISO set at 3200.

The use of experimentation in forensic analysis is a very important developmental technique and the question was raised as to the length of time that Tinks Starlight® Bloodhound Trailing Aid would react with the exposed blood stains. This was unknown at this point and it was decided to conduct a later examination.

On October 7, 2014, 122 days after the initial incident during which there was approximately 35.60 inches of rainfall and exposure, crime scene investigators responded back to the initial scene. The objective was to determine if there would be any remaining bioluminescence at the scene between summer and the fall. The initial blood pool, the nearby underside of plants at the scene and the area where the decedent's head rested on the ground behind the culvert all produced a positive bioluminescent reaction (Figure 5). During the initial application of Tinks Starlight® Bloodhound Trailing Aid the concrete culverts displayed a positive reaction. However, during the second application they did not react.

3 Conclusions

Tinks Starlight® Bloodhound



Figure 1. General view of the area of the remote scene.



Figure 4. Showing Multiple Stabs and Superficial Incised Wound Involving Neck.



Figure 2. Components of Tinks Starlight® Bloodhound Trailing Aid Luminol Preparation.



Figure 4. Showing Multiple Stabs and Superficial Incised Wound Involving Neck.



Figure 3. View of the luminescent blood pool in front of the concrete culvert and the path indicating the direction that the decedent was carried between the concrete culverts.

Trailing Aid has demonstrated excellent reliability in the visualization and recovery of bloodstains after an extended period of time of being exposed to excessive rain and hot humid South Florida weather conditions. This luminol preparation does not destroy or inhibit DNA recovery. It was noted however that if a secondary presumptive blood test such as Phenolphthalein you will get a negative reaction, due to the chemical components.

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