

Case Report

Chemical Detection of Blood After Dilution by Rain Over a 72 Day Period

Terry L. Waldoch

*Clinton Township Police Department
Clinton Township, MI*

On May 10, 1992, (Mother's Day) ten-year-old Deanna Seifert was abducted from the Warren, Michigan home of a girl friend where she had spent the night. A suspect was arrested by Warren Police later that evening, and his van, which had been described by one of the witnesses, was recovered. The victim, however, had not been located.

Approximately two months later the badly decomposed body of Deanna Seifert was found in a metal parts bin behind a factory a short distance from where she was abducted. Autopsy reports indicated that Deanna died from massive crushing injuries to the skull [1]. Three months later the charge against the defendant was changed from kidnapping to felony murder.

Prior to the discovery of the body, Warren Police crime scene investigators had spent considerable time and effort processing the suspect's van and had, in fact, developed latent impressions that were believed to have been left by Deanna on a glass window when she was initially kidnapped. After the discovery of the body, investigators began meticulously documenting and collecting bits of evidence from the location where the body had been found in the hope that questions having to do with time and location of the actual murder would be answered.

It was within the first few days after the discovery of Deanna's body that I was contacted by Christine Dyke, senior identification technician

with the Warren Police Department, who along with Detective Randy Ricotta was responsible for the vast majority of the crime scene work. From discussions in the past, Christine was aware of my interest in blood stain pattern analysis and chemical detection of blood, and described the scene of the body discovery with the thought that chemical processes might reveal blood patterns that may tend to assist in the investigation.

In meeting with crime scene investigators, detectives, and representatives of the Macomb County Prosecutors office, it was recommended that an attempt be made to utilize luminol in the area adjacent to where the body was discovered in the hope that blood evidence might be discovered for reconstruction purposes. Unfortunately, the outcome was not expected to be positive due to environmental factors during the elapsed 72 days. During the period between Deanna's disappearance and the body discovery, a total of seventeen rainfalls with measurable amounts were recorded. An additional seven days with trace amounts of precipitation were also recorded. In addition, between the time that Deanna's body was discovered and the luminol examination of the parking area was to occur, an additional five rainfalls had been recorded. This amounted to a total of 7.86 inches of rain, noted in Appendix A, that had fallen between May 10, 1992, when Deanna was abducted, and July 21, 1992, when the luminol examination was to take place [2].

In discussing the potential use of luminol with Warren Police investigators, I was aware of a case that had recently been published in the newsletter of the International Association of Bloodstain Pattern Analysts. This article, entitled "Luminol. An Investigative Tool", was written by Sergeant Timothy Bryant of the Phoenix Police Department [3]. Sergeant Bryant's article dealt with a case in which he assisted the Flagstaff Arizona Police Department with the use of luminol in an outdoor crime scene within that jurisdiction. In that particular case, the victim's body had been found 19 days after she was abducted, and there had been three heavy rainfalls within this 19 day period.

Other than that particular case, however, I was unable to locate any other uses of luminol that approached the environmental factors that we were faced with – that being 23 days of measurable rain over a 72 day period. It was with little expectation of success then, that we decided that an attempt would be made regardless of the tremendous handicap under which we would be working.

On the night of July 21, 1992, at approximately 8:00 p.m., I met with Officer Ricotta, Christine Dyke, and David Woodford (a serologist with the Michigan State Police Crime Lab) at the Warren Police Department to prepare for processing of the parking lot area with luminol. Luminol, "being a chemi-luminescent, emits a blue light as it reacts with the peroxidase system found within the hemoglobin molecule of blood" [4]. That being the case, the luminescence would be observable only in darkness and, therefore, evening hours were utilized for the application of the luminol. To further darken the area from ambient lighting nearby, Officer Ricotta constructed a framework approximately 8' in cubic dimensions and covered on all sides, except the bottom, with thick black plastic. In this structure then, we would be able to apply the luminol and observe any resultant reaction in total darkness.

Again utilizing information that had been obtained from Sergeant Bryant's published account, a large chemical sprayer, similar to those used for the application of insecticide, was purchased. This sprayer was constructed entirely of plastic and was cleaned and tested to preclude the possibility of any false positives from the sprayer itself. The luminol mixture was then prepared according to manufacturer's instructions and tested on known blood samples for the purpose of confirming the proper reaction.

At the scene where the body was discovered, officer-s used the luminol in a similar area somewhat further away from where the body was discovered in an effort to determine whether any organic or inorganic materials in the area might react with the luminol [5]. Several materials were discovered, including some weeds (especially at the areas where damage to the leaf or stem was apparent) and some small chips of metal that are manufactured at this particular shop. After these false positives had been identified and noted, officers began applying the luminol to the parking lot around the location where the body had been discovered.

After several passes back and forth across the parking lot, an area of reaction was discovered that was not consistent with any of the false positive reactions previously indicated. This area was much larger than the test site, and the resulting luminescence was not as brilliant. This pattern of luminescence was photographed using 400 ISO color film with the shutter held open for approximately twenty seconds. The location was marked, and processing continued with the subsequent

location of another area of reaction similar to the first, but considerably larger. This was also photographed and the location marked.

At this point, the areas that had been marked as reacting with the luminol were examined under bright lights. The surface was asphalt, but the asphalt was old and pitted. It was also badly broken into chunks of varying sizes. Several of these pieces of asphalt were removed and tested using phenolphthalein with a very rapid positive result. This positive reaction manifests itself as a color change (pink) when exposed to peroxide [6]. Several of the samples were tested with identical results.

Some of the underlying soil was removed and rinsed with the liquid being absorbed into a filter. This was also tested with phenolphthalein and also produced immediate positive results.

The samples of asphalt and underlying soil were collected and conveyed to the crime lab where they were tested by David Woodford who confirmed the presence of blood and further identified it as human. Unfortunately, there was not a sufficient sample that could be extracted for typing or for any subsequent genetic marker analysis [7].

The limited testing that was possible on the sample obtained notwithstanding, the result of the luminol examination of the outdoor scene was exciting in that human blood that had been subjected to so many environmental factors could still be located and documented. The information obtained at the scene was ultimately admitted into evidence at the trial and assisted the jury in understanding the prosecution's theory regarding the abduction and subsequent murder of Deanna Seifert. After a trial that lasted almost six weeks, the defendant was found guilty of murder and was sentenced to 40 to 60 years in prison.

For further information, please contact:

Terry L. Waldoch
Clinton Township Police Department
22932 Rasch Drive
Clinton Township, MI 48035-3739
(810) 791-2020

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