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Lightning Luminol

TECHNICAL NOTES

Background

Luminol is a water-based chemical mix that is used in the detection of trace amounts of blood. Luminol is applied to a crime scene surface with the use of a fine mist atomizer/sprayer that will lightly coat the surfaces of a crime scene that are suspected of having remnants of blood on them. Luminol is only a presumptive test and should be used in conjunction with a second field presumptive test and followed by laboratory analysis if sufficient amounts of staining are detected.

Luminol has been used at crime scenes and in crime laboratories for many years. First used in Germany in 1937 to detect the presence of blood at a crime scene, Luminol is a convenient tool for investigators.

Lighting Luminol is sold partially premixed. The Luminol powder and Sodium Carbonate are already in solution. The catalyst, Sodium Perborate, is packaged in a small vial and should not be added to the solution until it is time for use.

Luminol works best on old or trace amounts of blood. Visible blood will not readily react and results may be misinterpreted. Luminol is used to find blood that has been greatly diluted due to clean-up efforts at crime scenes.

Safety

Though Luminol is a water-based chemical, contact with the skin and mucosal membranes should be prevented. When mixing the powders in water, gloves should be worn to prevent exposure to the skin. When applying Luminol at a crime scene or in the laboratory; gloves, goggles and a filtration mask should be worn to prevent contact with the fine particulates sprayed into the air.

Equipment

Luminol is generally applied with a hand pump sprayer like a plant sprayer. Other sprayers that use compressed air can also be use.

Components

Basic Luminol utilizes the following components; Luminol, Sodium Carbonate and Sodium Perborate or Hydrogen Peroxide. The Luminol and Sodium Carbonate are the base of the product and the Sodium Perborate or Hydrogen Peroxide are the catalyst.

Method

When it is time to use Luminol, several steps should have already been taken. The areas that are to be processed should have been thoroughly searched for visible signs of blood. If blood was found, it should be collected using standard collection procedures. The scene should be thoroughly documented with notes, sketches and photographs. All detection and collection processes should have been completed. After spraying Luminol, surfaces will be wet and will be coated with a fine white residue when the liquid dries. Latent prints will not be detectable after Luminol spraying.

Decide on an area to be processed. Place your camera on a tripod and take a “before” photograph of the area. Try not to make the photograph to big as the light produced by the Luminol reaction does not have a great amount of energy and it may be difficult for the camera/film to record the results. Set the camera on the bulb setting. The examiner should have some sort of scene markers available to mark the visual positive reactions noted during the processing. Windows should be blacked out to prevent light entering the area. Mix the vial of catalyst with the liquid and mix thoroughly. Allow the solution to set for a couple of minutes to allow the unmixed powder to settle to the bottom of the bottle. Turn out the lights and wait until the eyes have adjusted to the darkness. Lightly spray the area to be examined. Spraying should be done with the user walking backward through the scene as not to track on the sprayed areas. Note any bright color reactions, Luminol will give off a bright blue/white light when it has contacted a reactive substance. The area should be marked and processing continued until the area is finished.
A second presumptive field test should be used on the areas that were detected positive with Luminol. Results should not be reported as a positive presence for blood, only positive indications of blood. It is recommended that laboratory testing, if possible, be followed on staining areas detected at scenes.

Examination

Luminol reacts with components of the hemoglobin in the blood cells. However, it is not specific for the presence of blood. Some metals and chemical oxidizers will produce a reaction with Luminol. Iron, porcelain, copper, rust, bleach and some plant material will cause a short lived reaction. Training before the use of Luminol in the field is recommended to acquaint the user with the reactions of these materials. Luminol can give a low grade reaction with some carpet materials. This low grade reaction could be visible in the entire area and give what has been described as a “swamp gas” type of reaction. Also, tracking through an area that ahs been sprayed with Luminol will produce brighter shoe tracks. These tracks can be transferred to other parts of a crime scene. Care should be taken not misinterpret these reactions.

Photography

Photography can be done while the initial processing is done or can be done on a second spraying.
If photography is done during the initial spraying, care should be made not to obstruct the view of the camera in the scene. A planned path should be used during the spraying. If

photography is to be done during a second spraying, care should be taken no to over saturate the area. This will cause details of the reaction to run and become blurry.
When taking the photograph, a second person should be used. The camera, set on bulb with the aperture set wide open, should be fired and the shutter should remain open until the chemi-luminescent glow ceases. Some sort of scale should be placed in the photograph. The scale should have some sort of night glow tape for reference. Continue this sequence until all areas are processed.

Helpful Hints

Luminol, when applied to a hard surface, will make that surface slippery until the liquid dries. Care should be when walking on such surfaces.
When dry, Luminol will leave a white powdery residue that can be removed with a dry towel or cleaning cloth.

Ordering Information

Catalog No. 4-7820 ..... Lightning Luminol
Catalog No. 7812 ..... Hemadent
Catalog No. 3-3700…… Cotton Swab
Catalog No. 3-3606…… CapSure Swab
Catalog No. FRM-1…… First Response Marker, orange
Catalog No. FRM-2…… First Response Marker, yellow
Catalog No. 4-4986…… Bloodstain Collection Kit