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	<i>Document Manager: Tracee McIntosh</i>	<i>Approved By: Jeffrey Nye</i>

3.12 Leucocrystal Violet

3.12.1 Introduction

Aqueous Leucocrystal Violet (ALCV) can be used to enhance and develop latent prints stained with blood on porous and nonporous surfaces. It can also be used to stain blood marks of shoeprints, swipes and other contact to track where a suspect or victim walked, was dragged, or somehow came in contact with the surface. It will not stain the normal constituents found in latent print residue so it should only be used in the case of blood-contaminated latent prints to be successful. This solution is an indicator for blood; however, it may react with other substances not specific to blood.

3.12.2 Safety Considerations

As with all chemicals, always read the MSDS (material safety data sheet) to learn about the safe handling and health hazards of each chemical. Nitrile or chemical gloves and protective clothing, such as disposable, Tyvek ® lab coats or coveralls, should be worn when using Aqueous Leucocrystal Violet at the crime scene. It should be used with a mist respirator if the product is being sprayed at the scene. In the laboratory, this solution should be used in a fume hood. Some of the solvents used to mix it are hazardous and/or corrosive. Use the proper safety precautions in handling and disposal. Because this solution is used on surfaces contaminated with blood, the proper safety precautions for disposal of biohazards must be considered.

3.12.3 Working Solutions

There are three bottles in the kit containing pre-measured chemicals. The large bottle, A, contains the Fix Reagent, a liquid. Bottle B contains the dry Leucocrystal Violet and Bottle C contains the dry Sodium Acetate. Start by adding about 30 ml (1 ounce) of the liquid Fix Reagent (Bottle A) to the bottle of Leucocrystal Violet (Bottle B). Put the cap on the bottle and shake vigorously for about 2 to 3 minutes. Pour the contents of this bottle (Bottle B) into the large bottle (Bottle A) and shake it. Now, pour about 30 ml (1 ounce) of the liquid in the large bottle (Bottle A) into Bottle C containing the dry Sodium Acetate. Put the cap on Bottle C and shake vigorously for about 2 to 3 minutes. Pour the contents back into the large bottle (Bottle A). Put the cap back on Bottle A and shake thoroughly.

- 500ml 3% Hydrogen peroxide
- 10 grams 5-Sulfosalicylic acid
- 4.4 grams Sodium acetate
- 1.1 grams Leucocrystal violet

3.12.4 Processing Method

Prior to applying Aqueous Leucocrystal Violet, it is recommended to preserve a sample of the suspected blood, if visible, for future biological testing.

Aqueous Leucocrystal Violet can be applied to porous or nonporous surfaces, such as paper, metal, plastics or glass. Aqueous Leucocrystal Violet is best applied by either submersion or by washing the solution over the surface in question. It is NOT recommended to spray Aqueous Leucocrystal Violet except in the case of carpeting to observe shoeprints or other marks in blood. The development will begin to occur within 30 seconds. Then, blot with paper towels, tissues or even toilet paper if that is all that is

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available, to remove the excess reagent. Begin by spraying lightly with a fine mist to avoid overdevelopment.

3.12.4.1 Processing Instructions — Vertical Surfaces

Tape or affix a length of non-textured paper towel material over the wall or other vertical surface. (A textured paper towel may leave its pattern in the latent print.) Wash the Aqueous Leucocrystal Violet solution over the paper towel, allowing it to make total contact (no air bubbles) with the vertical surface. After about 30 seconds, remove the paper towel and observe the surface. Use caution with some plaster and stucco walls, as the solution may stain the entire surface. Also, direct sunlight can cause unwanted back-ground development, so photograph any developed prints or stains as quickly as possible.

3.12.4.2 Processing Instructions — Horizontal Surfaces

Aqueous Leucocrystal Violet solution can be washed directly on the floor or other horizontal surface. After about 30 to 60 seconds, blot with tissues or paper towel material.

3.12.4.3 Sequential Processing

The first process suggested is to use fluorescent powders (choose the color most appropriate for the background fluorescence). Then use Aqueous Leucocrystal Violet and then, Physical Developer. It is suggested to photograph any latent prints developed with each process before treating the evidence with a new process. The Physical Developer may or may not enhance the bloody latent prints, but it may develop other latent prints. Each chemical reacts with different components of the blood residue.

3.12.5 Photography

Photography of latent prints developed with Aqueous Leucocrystal Violet should not pose any problems if the surface background is a light color. If the surface is a dark color but will fluoresce, it may be beneficial to use fluorescence examination to enhance the photographic contrast. One recommended method is to use a Forensic Light Source set between 550 and 600 nm, view with red goggles and photograph with a dark red filter, such as a Tiffin or Wratten 25 or 29.

3.12.6 Minimum Standards and Controls

The Standards and Controls for LCV consists of testing the reagent using a cotton swab with a small amount of known control blood. A resulting purple color change is indicative of a proper working solution. Documentation of this process must be done in the form of a reagent log and in the case record worksheet.

3.12.7 Storage & Shelf-Life

The unmixed Aqueous Leucocrystal Violet Kit of three bottles has a shelf-life of at least one year. Once it is mixed, the shelf-life is approximately 3 months if stored within an office environment. If the mixed solution is stored in a vehicle in hot temperatures, the shelf-life will be considerably less.

3.12.8 Disposal & Cleanup

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Since any crime scene or piece of evidence is suspected to have blood on it when used with this solution, the greater hazard of the blood dictates its disposal and cleanup. Clean any surfaces and blotting tissues in accordance with the regulations for cleaning the biohazard of blood. Bleach may clean some of the staining from Aqueous Leucocrystal Violet.

3.12.9 Minimum Quality Standards and Controls

See Standards

3.12.9 References

- Criminalistics: An Introduction to Forensic Science by Richard Saferstein ©1998, sixth edition, pages 492-499, 623
- Chemical Formulas and Processing Guide for Developing Latent Prints by US Department of Justice, Federal Bureau of Investigation, revised 1994, pages 47-48
- Footwear Impression Evidence: Detection, Recovery and Examination by William J. Bodziak ©2000, second edition, pages 160-163
- <http://www.cbdi.ai.org/Reagents/lcv.html>