THE PRINT

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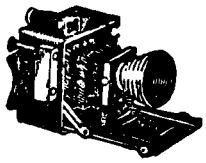


OC SPRAY AND THE ALS

(This article was downloaded Nov. 27, 2001, from www.crime-scene-investigator.net/oc-als.html after seeing it published in the Fall 2001 issue of the Chesapeake Examiner.)

By **HAROLD RUSLANDER**, SCSA
Palm Beach County Sheriff's Office
Crime Scene Division West Palm Beach, Florida 33406

Recently, in the early morning hours, a woman was run down by an automobile. The automobile was operated by a female, with another female passenger. The victim suffered compound fractures to both legs and her jaw. She also suffered extensive "road rash" abrasions to her body.

The ensuing investigation showed that this was not the average hit and run. Rather, it seemed to be an intentional act. After striking the victim, the car drove off.

Speaking to witnesses, the following information was obtained by the lead investigator. The victim was heavily intoxicated. She becomes violent when drinking and had been shouting obscenities at the occupants of the vehicle. The operator of the vehicle had gone past then turned around to find out what the woman's problem was. After this action, the victim apparently sprayed O.C. spray into the vehicle. The occupants never tried to exit the vehicle. The vehicle pulled away and drove a short distance down the street. The driver and passenger exchanged places and the vehicle came back in the direction of the victim. The victim was struck by the left front fender of the vehicle and thrown up onto the hood before falling off onto the pavement. The O.C. spray container was found lying on the street near the victims' shoes.

Approximately one week later, the car owner was identified and interviewed. Of course, her story differed from that of the witnesses. She executed a consent search form and the vehicle was placed in the Sheriff's Office processing garage.

I spoke to one of the chemists, Mr. Bill Hightman, assigned to our lab in order to formulate a plan of action in processing the vehicle for O.C. spray residue. The only thing we could come up with was to swab the vehicle with cotton soaked with isopropyl alcohol. This would "cut" the residue from the surface of the vehicle. It should also be noted, it had rained for almost the entire week. The vehicle was driven every day since the incident. The sun, when it did shine caused temperatures to be in the mid 80's.

After discussing our course of actions, I started of thinking of ways to obtain results without swabbing the surface and causing destruction to any fabric impressions or face and/or fingerprints still on the car. I decided to see if using an alternate light source would cause a reaction. I got the victims O.C. spray out of evidence, appendix 1, and sprayed it to cause the discharge area to become wet with the contents. I also used my issued O.C. spray and did the same thing, appendix 1.

Using the Omnichrome, Omniprint 1000, I examined the 2 canisters. The open setting on the Omniprint 1000 has a UV filter in it. I also used the Spectroline model BIB150 PX UV light with a wavelength of 365nm. I found that using the orange goggles and setting the Omnichrome at 450nm, I got a medium red reaction. This is best described as the same red color a fire extinguisher is painted. This reaction was the same on my issued O.C. spray and the victims' canister. Using the open (UV) setting on the Omnichrome and the Spectroline UV light source, I observed a reaction similar to a Luminol reaction to blood, a bluish glow on the victims' canister. My issued spray did not cause this type of reaction.

After processing the suspect vehicle with the Omniprint 1000, and getting results, I decided to try this experiment with several other types of CS, CN and OC sprays. I felt that this could aid law enforcement in identifying suspects who had been sprayed, similar to the dye packs marking suspects in bank robberies.

I obtained 10 different sample canisters, from our Departmental Armorer, appendix 2. I sprayed a burst of spray from each canister onto a glass microscope slide . Each slide was marked with a black permanent marker (sharpie) on the reverse side with the type of spray used.

It should be noted that I tested a marked slide without any spray applied under all wavelengths and all 4 filters prior to performing this test. I did not observe any reactions caused by either the marker or glass. This way, I knew that I would not get any false positive reactions from these sources.

After allowing the slides to air dry, I placed each slide on top of a white chrome-kote fingerprint card, and laid it on the copy stand. I secured the ALS lens in a test tube holder and stand, approximately 12 inches above and 12 inches away from, the surface and angled it at approximately 30 degrees, to avoid reflected light into the camera lens. I began testing each sample with both light sources, and all available settings. Each setting was observed with all 4 colors of goggles and the reactions or lack thereof noted. See appendix 3.

While I was conducting my experiments, I passed on the preliminary results to my co-workers in the event they needed to examine a subject or surface. CSI A. Mead, my counterpart at the Belle Glade substation, conducted the same tests I did and obtained similar results. He also tested the results when O.C. is sprayed on a white towel, see appendix 4.

After completion of those tests, he sprayed his own forearm. Allowing the O.C. to air dry he examined his arm and using red goggles and 450nm setting on the Omnichrome observed a strong orange reaction. After washing the skin with soap and water, he observed the same strong reaction. He then held his arm under running water for 5 minutes and wiped it dry with a towel. He observed a moderate orange reaction with the red goggles and 450nm setting. Finally, he held his arm under running water for 10 minutes and wiped it dry with a towel. He was able to observe a light orange reaction when wearing red goggles.

While it is obvious that O.C. spray leaves an orange deposit on the surface it comes in contact with, the reactions described above were not caused by this natural coloration. In fact, the O.C. residue was not visible to the unaided eye during the final test. It had, after all, been washed off with soap and water and rinsed under running water for over 15 minutes!

Our test showed that if a subject is sprayed with any of the products tested, results can be obtained using an alternate light source and filter goggles. This procedure could aid in an investigation where OC, CS or CN has been discharged.

Due to the irritation to skin caused by the OC spray, it was not possible to determine how long the residue would react to ALS examinations. It could be assumed that, due to perspiration and absorption, there would be a loss of reaction after some undetermined passage of time.

It should also be noted that 2 of the samples used, one a mix of OC and CS and the other OC only , had UV dyes mixed in by the manufacturer for aiding law enforcement in the identification of individuals sprayed.

After the visual examination, I set up the camera, a Nikon FM-2, equipped with a 55 mm Nikon lens, and a cable release, on the copy stand and loaded the camera with Kodak Gold 200 ASA color print film.

I used the following filters, a #29 red filter, a #56 orange filter, the yellow goggles that were supplied with the Omnichrome and the gray goggles since we did not have a gray filter. As mentioned, the light was positioned at about 30 degrees to avoid bounce back into the lens and was set approximately 12 inches above and behind the slides. Using timed exposures from 1 second to 120 seconds, I photographed the reactions through all 4 filters and using all 7 light settings. The lens was set at F 3.5 for all photographs. A cable release was used to prevent "shutter shake". Appendix 3 shows the results for each sample tested and the wavelength at which results were observed.

Appendix 1.

Mace Security Intl., MK-XI Peppermace, 5.5% OC fogger in a flammable carrier. Club brand pepper spray, 6.6% OC in an unknown carrier.

Appendix 2.

First Defense MK-3 10% OC vehicle unknown Punch II M-3 with UV dye, 5% OC in isopropyl alcohol with an isobutane propellant. Freeze+ with UV dye, .25% OC and 1% CS in a non-flammable carrier. Devastator, 5% OC in an unknown carrier. CAS-OC, 5.5% OC in a non-flammable carrier. MK III Pepper Foam, 10% OC in a non-flammable carrier. Federal Mini-Streamer #582, .5% CS in a volatile solvent. Federal #1, .8% CN in an unknown carrier. Pacifier ZB1, 1% CS in an unknown carrier. Cap-Stun M-2, 1% OC in a flammable carrier. MK-XI Peppermace, 5.5% OC in a flammable carrier.

Appendix 3.

Gray Filter

530 nm no reactions observed with any product

525 nm same

485 nm same

450 nm same

570 nm same

open setting both Freeze and Punch gave a red reaction

365 nm both Freeze and Punch gave a black reaction

Yellow Filter

530 nm no reactions observed with and product

525 nm same

485 nm same

450 nm Punch gave an orange glow

570 no reactions

open setting Punch gave a blood red reaction

365 nm both Freeze and Punch gave black reactions

Orange Filter

530 nm no reactions observed with any product

525 nm same

485 nm Punch gave a white powdery appearance

450 nm Punch and Federal Mini gave pink powdery appearances

570 nm no reactions observed

open setting Freeze gave a red reaction

365 nm Freeze appeared black, Punch appeared red

Red Filter

530 nm Devastater appeared hot pink, Punch had a red glow MK-XI gave a red glow

525 nm no reactions observed

485 nm same

450 nm Devastater gave an orange glow, Punch and Cap-Stun appeared red and MK-XI gave a red glow

570 nm MK-XI gave an orange glow

open setting no reactions observed

365nm Freeze appeared black, Punch gave a red glow and MK-XI appeared pink

Appendix 4.

Tests performed by CSI A. MEAD

MK-XI OC, sprayed on black plastic, observed using 450 nm setting with both orange and red goggles produced a medium red reaction.

MK-XI OC, sprayed on stainless steel, observed using 450 nm and both orange and red goggles produced an orange reaction.

MK-XI OC, sprayed on a white terry cloth hand towel, using;

450 nm with both orange and red goggles produced an orange reaction

570 nm with both orange and red goggles also produced an orange reaction.

The towel was then soaked in water and wrung out, all tests repeated and similar results obtained.The towel was placed under running tap water for 5 minutes, wrung out and all tests were repeated again. Again, similar results were obtained.

The towel was then placed under running tap water for 10 minutes and wrung out. All tests were repeated and the same results obtained.

As you can see, rinsing with water, even for as long as 15 minutes, while causing a marked lightening of the reaction on human skin, did not fade out on the towel at all. Even though the reaction faded, it was still visible on skin and would aid in the identification on a person sprayed.

For further information contact:

Harold Ruslander, SCSA
Palm Beach County Sheriff's Office
Crime Scene Division
3228 Gun Club Road
West Palm Beach, Florida 33406
561-688-4266

This information was posted on www.crime-scene-investigator.net 07-30-01.

CONTROLLED REFLECTION LATENT FINGERPRINT PHOTOGRAPHY

(This article is reprinted from the Spring 2001 issue of the Examiner, published by the PNW/IAI.)

By **CRAIG A. COPPOCK**
Spokane County S.O.

Developed latent fingerprint impressions on adhesive surfaces are often difficult to photograph without excessive diffused highlights. The reason is that the surface of many tapes such as strapping tape or duct tape is not perfectly flat. Numerous small surface irregularities (texture) scatter light creating unwanted highlights in the photograph. The use of water can often help increase contrast in latent prints developed on adhesive or other textured surfaces. These developers may include: crystal violet, Coomassie blue, and others. A photographic procedure was developed by Beverly Naccarato, of the Spokane County Sheriffs Identification Unit, that effectively controls these unwanted highlights.

Procedure:

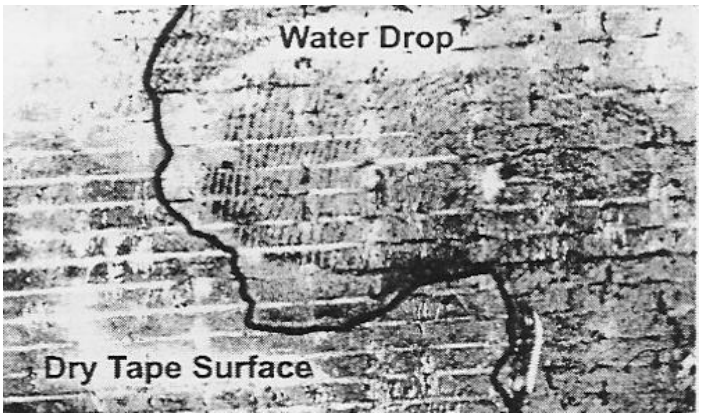
Utilizing a standard photographic copy-stand adjust the lights to 45°. Set the camera lens for 1: 1 (life size) and include any necessary contrast enhancement filters. Use a syringe with a blunt needle to apply a large drop of water to completely cover the developed print or section of print to be photographed. Then add water and/or adjust the lights to ensure the specular highlights of the light sources do not interfere with the fingerprint. The final step is to photograph the print.

The more water that is added to the print, the further the specular highlights reflecting off the water will move away from the fingerprint in the center of the photograph. In fact, if the lights are set correctly the specular highlights will be located at the edge of the water bead that covers the print. The refraction qualities of the water drop will effectively control the diffused highlights from the textured surface on which the print may reside. (See Illustration).

The photograph shown for this illustration is of a Coomassie Brilliant Blue® developed fingerprint on the adhesive side of duct tape. It was photographed by Beverly Naccarato using a Olympus OM-4t camera with a 50mm macro lens extension tube for a 1: 1 photograph. The film is Ilford B&W XP2 film set to an ISO of 200. A dark line was added using Photoshop to illustrate the division between the water and the dry tape surface.

The concept of controlling the refraction qualities of the light source(s) with water may also have other applications. The general result of using a drop of water for refraction control is that contrast is increased thus making the developed fingerprint more visible.

WATER DROP USED TO CONTROL LIGHT REFLECTION ON A TEXTURED SURFACE.



Adhesive side of duct tape.

Note how the water better controls the highlights along the tape's fabric lines.

SMALL PARTICLE REAGENT THE EVIDENCE MAY NOT BE A WASH AFTER ALL!

(This article is reprinted from the July 2001 issue of "The Magnolia Print," published by the Mississippi IAI Division.)

By **JASON PRESSLEY**, CLPE, MCL

In each of the previous articles that I have written I discussed both porous and nonporous surfaces and several techniques that could be used for processing these items. In this article, I would like to address the possibility of developing latent prints on surfaces that have been wet. The two general surfaces (porous/non-porous), which can be processed when they are dry, may also be processed for latent prints when they are wet.

It is not very well known that wet items can be processed for latent prints; therefore, for that very reason, most wet items are typically discounted or not submitted for laboratory processing. This article will discuss processing nonporous surfaces that are wet with Small Particle Reagent (SPR). We will look at processing wet porous surfaces in a later article.

SPR is a processing agent that comes in a liquid form and can be easily employed to process wet non-porous items for latent prints. Many of us have had the unfortunate opportunity to have to process a vehicle outside and it begins to rain. In many of these instances, getting the vehicle out of the rain is simply a futile effort. In the past, processing for latent prints on a wet vehicle had to be postponed until the surface had dried. SPR is an alternative available to us for accomplishing latent print processing while the vehicle is still wet.

Because latent prints are composed mainly of water, amino acids, oils, and a few other substances, the addition of water on the surface compounds the difficulty to develop latent prints that may be present. The majority of a latent print is simply washed away when water is applied to it. However, the oily component of a latent print is occasionally left behind even though an item may have been wet. This means that there is a possibility of developing latent prints. SPR is made up primarily of two components: Molybdenum Disulphide particles and detergent solution. The two components are mixed together to form a liquid suspension. The SPR mixture can be applied by using the submersion or spray techniques, whichever is appropriate at the time.

The submersion method is accomplished by filling the bottom of a dish (i.e. pyrex cooking dish) with the solution of SPR (Make sure that the solution has been mixed thoroughly by stirring or shaking the solution prior to use). The item to be processed can then be submerged in the solution for approximately 30 seconds to allow the solution to react with the fatty components of the latent print. The item is then removed and rinsed in the same fashion in a second dish containing clear water. During the rinsing process, be sure to gently agitate the item being processed for a few seconds. Remove the item from the rinsing solution and allow it to air dry. SPR developed latent prints are very delicate and easy to destroy and, for that reason, should be preserved as soon as possible. In some instances, SPR developed prints can be lifted, but they should be photographed on the surface before any lifting technique is attempted.

The second application method is the spray method. The spray is significantly less effective than the dish method, but this can be successful when the alternative is not available. If you are processing an item outside and it begins to rain, simply shelter the area to be processed [1]. Utilizing a pump spray bottle, shake the solution to ensure that it has been mixed well. Apply the SPR by simply spraying the surface to be processed, while still wet. When using this technique, make sure that an adequate amount of SPR has been applied to the surface. Photograph the developed latent prints as soon as possible and allow them to air dry. Photographs of the dried print should be taken again prior to lifting it.

Not only can SPR be used on wet items, but it can also be used on dry items. However, with the variety of techniques available for use on dry surfaces, a more sensitive method can generally be utilized. It should also be noted that processing with SPR is a destructive method, and will interfere with just about every other forensic examination that may be required on that item of evidence

As with any investigation, time is of the essence. Nobody wants to miss valuable evidence because they weren't aware of the possibilities for processing an item for latent prints. With technics such as SPR (and Physical Developer, which we will discuss in the next issue), we begin to see that the possibility of discovering latent print evidence is promising even in the most adverse conditions. I hope you give those techniques the opportunity to take you one step closer to solving your case.

References:

Police Scientific Development Branch, Home Office, London. "Scene of Crime Handbook Fingerprint Development Techniques," 1993, Crown Copyright, London, England, United Kingdom, pp. 75-77.

SCAFO
MINUTES OF MEETING
Saturday, Oct 13, 2001

LOCATION: Radisson Hotel, San Bernardino

HOST: Bob Goss, President

SECRETARY: Ed Palma

SPEAKER: Ed Palma, San Diego Police Dept.

PROGRAM: Palm Print Basics

Call to Order at 2030 hours (8:30 P.M.) by President Bob Goss

ATTENDANCE: Past Presidents - Alan McRoberts (1991), Jim Lawson (1995), Bill Leo (1996) Clint Fullen (1998), Art Coleman (2000) Executive Board - All present except, George Durgin, Susan Garcia and Elaine Sena-Brown. Members and guests present - 49.

GIFTS: Provided by Host Bob Goss

OLD BUSINESS:

Second Reading:

Brandy L. Brooks, Burbank Police Dept. (Active)
Teri L. Eklund, San Diego Sheriff's Dept. (Active)
Motion to Accept: Marvin Spreyne
Second: Ed Palma

Swear-Ins by Past President Alan McRoberts
Lourdes Aboytes, Student (Associate)
Eric Huber, Student (Associate)
Jackie Thompson, Student (Associate)

NEW BUSINESS:

First Readings: No first readings

Elections: Dennis Uyeda (Nominations Committee Chair) announced Nominations for 2002 SCAFO Executive Board

President - Steve Tillman
First Vice President - George Durgin
Second Vice President - Ed Palma
Secretary - Dennis Uyeda
Sergeant at Arms - Elaine Sena-Brown
For Two Director Positions:
Director - Tom Washington
Director - Rodrigo Viesca (Rodrigo took the floor to withdraw his nomination)
Director - Gina Russell-Durgin
Motion to Accept: Art Coleman
Second: Amy Adams

No other nominations from the floor. The 2002 Executive Board was elected by acclamation. The 2002 Board Executive will be sworn-in at the Dec. meeting.

ANNOUNCEMENTS:

Next Meeting:
Portofino Restaurant Italiano, La Habra
Date/Time: Dec. 15 2001
Reception 5 PM, Dinner at 6 PM

Reference student request for information on how to fabricate latent prints for school project - Bob Goss and Marvin Spreyne - Marvin investigated the issue with the school. President Goss recommended that SCAFO Members should not engage themselves in giving out this type of information.

Treasurer Jim Lawson announced that with the cancellation of the 2001 Training Seminar, the deposit to Cal-Poly will be carried over to the 2002 Seminar.

Treasurer Jim Lawson also announced that the 2002 membership dues ($20.00) are due Nov. 1, 2001 and delinquent as of Jan. 1, 2002. A delinquent fee of $5.00 will be assessed for all delingquent payments. Notices will be sent out in November.

Attendance Drawing: not won by Maria Wright-Wilson, Robert Webber, or Craig Johnson No Winners: cash amount still $50.00!

Door Prizes won by 14 members and guests in attendance.

Motion to Adjourn by: Dennis Uyeda
Seconded by: Art Coleman

Meeting Adjourned at: 2116 hours (9:16 P.M.)

Upcoming SCAFO Meeting

December 15, 2001

Christmas Dinner, Entertainment (Dickens Carolers) & Installation of Officers

Reception 5:00
Dinner 6:00

Portofino Restaurant Italino, La Habra

For more information contact:

Steve Tillmann at (213) 989-5107,
(213) 989-2163, or Tillmann@scafo.org

PRESIDENT'S MESSAGE

My apology to those who had planned to attend the annual SCAFO training seminar on October 19 and 20 in Pomona. Due to circumstances beyond our control, cancelling it was the only decision I could make. Going forward with the seminar, in my estimation, would have cost this association a lot of money. The World Trade Center and Pentagon attacks, probable cancellation of keynote speaker Steve Meagher from the FBI, slow registration, and the host of the seminar, First Vice-President George Durgin, being called to active duty, were major considerations. Comments and suggestions from Board members assisted and supported my decision to cancel the seminar.

With the cancellation of the training seminar, an October meeting was necessary to complete the nominations and election of the 2002 SCAFO Board of Directors. Usually following lunch on Saturday of the seminar, SCAFO holds a business meeting to complete the nominations and elections process. The timing of the events briefly described above and short notice to find a location limited the business meeting to October 13 in San Bernardino.

Fifty members and guests attended the business meeting on Saturday, October 13. Ed Palma presented a brief, but certainly applicable, fingerprint history and palm print identification training. Great job, Ed. My wife and others not familiar with palm impressions, were looking at their palms to follow your power point presentation. Nominations opened and closed followed by election of new officers for the 2002 SCAFO Board of Directors.

Congratulations to the 2002 SCAFO Board: President Steve Tillmann, First Vice-President George Durgin, Second Vice-President Ed Palma, Secretary Dennis Uyeda, Sergeant-At-Arms Elain Sena-Brown and Directors (2002-2004) Tom Washington and Regina Russell. Directors (2001-2003) Susan Garcia and Tony Clark-Stewart will complete our 2002 SCAFO Board of Directors.

Congratulations to First Vice-President George Durgin and Director (2002-2004) elect Regina Russell. Their wedding ceremony took place at Camp Pendalton toward the end of September, 2001. Unfortunately, their honeymoon will have to wait until he returns from active duty.

Take a moment and remember those who have lost their lives to preserve and protect our way of life in this great nation. In addition, continue to support those going in harm's way, here and abroad, to defend us. God Bless America!

Fraternally,

Bob Goss, President
(909) 388-4904
goss@scafo.org

"Every man owes a part of his time and money to the business or industry in which he is engaged. No man has a moral right to withhold his support from an organization that is striving to improve conditions within his sphere."
- President Theodore Roosevelt, 1908

For subscription or membership information, or address corrections contact:

S.C.A.F.O. **Ed Palma, Secretary**
1401 Broadway m.s. 725, San Diego CA 92101-5279
(619) 531-2573 email palma@scafo.org
$20.00 yearly subscription (attendance required for membership)
$30.00 yearly for International Subscriptions

C.S.D.I.A.I. **Ricardo Tomboc, Treasurer**
710 North "D" Street, San Bernardino, CA 92401
(909) 384-5701
$25.00 yearly membership

I.A.I. **Joe Polski, Chief Operations Officer**
2535 Pilot Knob Road, Suite 117
Mendota Heights, MN 55120-1120
(651) 681-8566 iaisecty@theiai.org
$60.00 yearly membership

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-- Upcoming Events/Schools/Seminars --

December 15, 2001	***S.C.A.F.O. Meeting*** Host Steve Tillmann Los Angeles Sheriff's Department
February 2, 2002	***S.C.A.F.O. Meeting*** Host Alan McRoberts Los Angeles Sheriff's Department
April 7 - 11, 2001	C.S.D.I.A.I. Monterey, CA Host Tony Clark-Stewart
August 4 - 10, 2002	International Association for Identification Las Vegas, Nevada
October 4 - 5, 2002	***S.C.A.F.O. Seminar*** Cal-Poly Pomona
July 6 - 11, 2003	International Association for Identification Ottawa, Ontario, Canada

Southern California Association of Fingerprint Officers
An Association for Scientific Investigation and Identification Since 1937
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