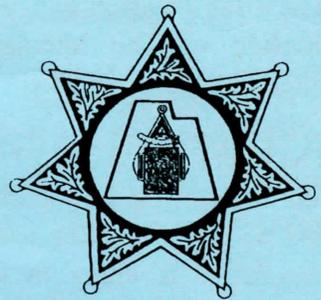


The International Association For Identification

Utah Division of I.A.I.

Chartered 1989

NEWSLETTER



PRESIDENT'S MESSAGE

**By
Don B. Thurgood**

First let me extend my warmest wishes for a successful and rewarding New Year in 1998. In both your professional and personal endeavors may you have ever increasing success!

Our Fall Meeting held in **October 1997 at Provo Police Department** was the most successful semi-annual meeting we have had in the history of the Division. Many people spent numerous hours in order to make the presentations and classes pleasant and informative. My heartfelt thanks to our past 1997 President George J. Throckmorton for his preparations and execution of a successful meeting. In addition I would like to express appreciation to both the elected Officers of 1997 and the members of the Provo Police Department for their assistance and cooperation.

I have by way of announcement several technical programs sponsored by Polaroid® in the area of crime scene photography and latent fingerprint enhancements. Likewise the Utah State Crime Scene Academy is initiating an F.B.I. sponsored Advanced Fingerprint Training Course (40 Hours). This class is tentatively scheduled for March or April of 1998. Please feel free to contact me for any suggestions of ideas on other training programs or courses which the Divisional members would find beneficial. The Utah Division of I.A.I. is your organization and is here to accommodate to your needs.

Thank you for all your support and contributions to the Division. We have a formidable challenge to continue the upward move in the effort to make the Utah Division of I.A.I. one of the most successful Forensic and Investigational organizations available. Again on behalf of all the Officers for 1998 I would like to express our sincere wishes for a successful and Happy New Year.

**Don B. Thurgood
1998 President
Utah Division
of
The International Association for Identification**

The Utah Division of I. A. I. has been chartered division of The International Association for Identification since 1989.

The Utah Division of I.A.I. Newsletter is published four times a year during the Spring, Summer, Fall, and Winter. The information contained within the newsletter is either in the form of submitted articles, information from other investigative publications, or reported information.

The Utah Division of I.A.I. Newsletter will accept any article or information of those wishing to submit to the editor. It is requested the submitted articles or information be in typewritten form or on 3.5" disks using WordPerfect 8.0 or lower format.

Please send items to be published to the editor:

Scott R. Spjut; Editor, Utah I.A.I.
West Valley City Police Dept.
Forensic Services Unit
3600 Constitutional Blvd.
West Valley City, Utah 84119

The Utah Division of I.A.I. Newsletter reserves the right to reject or modify any submitted articles deemed to be slanderous, derogatory, or inappropriate for the members of the association.

The annual membership dues to the Utah Division of I.A.I. are currently \$15.00 per membership, or \$200.00 for a lifetime membership. Dues can be mailed to:

Utah Division of I.A.I.
Ms. Deborah Herrera-Parkin
Salt Lake County Sheriff's
Office Identification Section
437 South 200 East
Salt Lake City, UT 84111

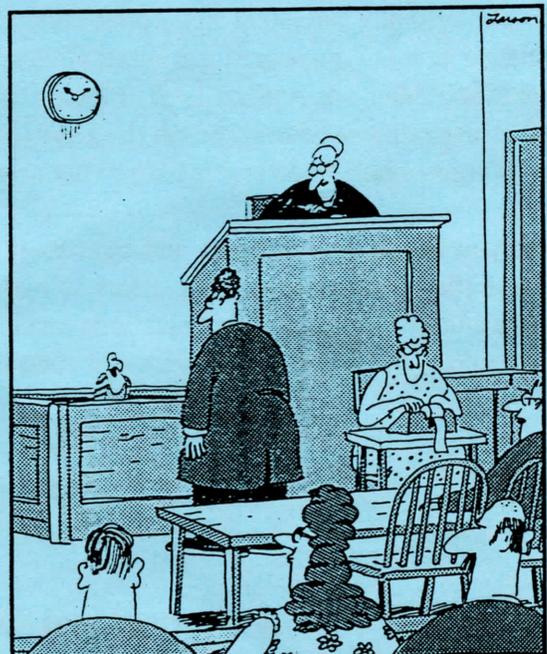


**Utah Division of I.A.I.
Insignia Items**

The Utah Division of I.A.I. has baseball hats, t-shirts and lapel pins with the Division Insignia embossed on them. These items are available for a minimal charge and look great! The prices for these items are as follow:

- Hats \$5.00
- T-Shirts \$8.00 (any size)
- Lapel Pins \$3.00 Members
- \$5.00 Non-members

Contact 1998 President, Don B. Thurgood at (801) 626-7676 or Editor, Scott R. Spjut at (801) 963-3395 for further information or to purchase these items. Likewise, we have these items available at the Division Semi-Annual Meetings.



"No, I never said that. ... Well, I actually *did* say it, but *after* he said it. He said it, then I said it. I'm a mimic—that's what I do."

**Utah Division of I.A.I.
1998 Elected Officers**

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Course Notification

The following information was forwarded to the Editor from the 1996 President Richard L. Wright, Latent Print Examiner with the State of Utah Crime Lab.

We are trying to arrange a training class locally on the subject; "Development of Latent Fingerprints on Human Skin." This is a one day, eight hour course taught by an authority in this area of fingerprint development.

The class will be about \$60.00 per student for the course. 150 students will be required as a minimum number to attend in order to keep the fee at \$60.00 each.

This would be an excellent course and very informative. We are thinking of Spring or Summer 1998 would be a good time to schedule the course.

Please let me know if you would be interested and give any input as to when would be a good time to schedule this training. Thank you!

*Richard L. Wright
State of Utah Crime Lab
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Salt Lake City, Utah 84114-8285
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Submitted Articles

The following article was submitted to the Editor from Criminalist David Wakefield with the State of Utah Crime Lab. This submission is a commentary to a previously published article in the Utah Division Newsletter Vol. VIII. No. 2.

Usefulness of GSR Testing

by

**David Wakefield, Criminalist
State of Utah Crime Lab**

The article in the June 1997 Newsletter for the Utah Division of I.A.I. by Deputy Jeff Itami entitled, "GSR Evidence Valuable" was well written, with excellent advice on the use of GSR (Gunshot Residue) kits to collect potential trace evidence. I have found however, that there are many misconceptions as to what a GSR test can tell an investigator, as well as how to interpret GSR results. I will attempt to clarify these issues.

Many investigators believe that a GSR test will enable you to determine if an individual fired a weapon. This is simply not true. As Roger Aaron of the F.B.I. states in an excellent article on GSR, "*The real value of the GSR test is that it can associate an individual with a firearm*"(1). Furthermore another article quotes, "*A positive result indicates that an individual fired a weapon, handled a fired weapon, or was in the close vicinity of a fired weapon. Close vicinity is generally accepted to mean 3-4 feet away*" (2).

What does this mean to the investigator? A Common scenario is the question of suicide/homicide. A victim is found with a bullet wound to the head, and no reliable witnesses can be found to the actual shooting. The common practice is to test the hands of the victim for GSR. However the results of such a test have very limited probative value. A positive result would only

indicate that the victim was in the vicinity of a fired weapon. Judging from the bullet hole in the victim, that much is already known! **It does not mean that the victim fired the weapon. Also, a negative result does not mean that someone did not fire a weapon, as GSR is sometimes not deposited on the hands after firing.**

The next subject that I wanted to briefly overview was GSR results. As Mr. Itami noted, lead, antimony, and barium particles from the primer are the constituents of interest when looking for GSR. Particles may be a combination of one or more of these constituents. However ONLY particles containing all three of these elements are considered to be definitive proof of GSR. These particles are termed "unique" to GSR. Particles containing either one or two of the other elements are termed "characteristic" to GSR. This is interpreted as these particles may have originated from gunshot residue or from a limited number of other sources. It should ne also noted at this point that most brands of .22 long rifle ammunition do not contain all three of these elements in the primer mixtures. Therefore finding particles unique to GSR in these instances would be impossible.

GSR can be very useful as an investigative aid, and can often times help prove or disprove a story. Indeed, just the act of sampling a suspect's hands can sometimes be enough to produce a confession. Testing for gunshot residue does have limitations, and is not a final conclusion that the suspect or victim is indeed the shooter. By having a better understanding of GSR testing, the investigator can make judgements as to what the test can and cannot do for them as part of the investigation.

(1) Gunshot Primer Residue, The Invisible Clue. Roger W. Aaron.

(2) The Aerospace Corporation, Final Report on Particle Analysis for Gunshot Residue Detection.

The following article was submitted to the Editor by Jon T. Stimac, Latent Print Examiner with Oregon State Police.

Why not "V.C." Cyanoacrylate?

By

Jon T. Stimac
Forensic Services Division
Oregon State Police

During World War II to reduce light reflection, a unique method was used to place a thin coat of magnesium fluoride on glass lenses. This method is found in all light bulb manufacturing and is a process to freeze-dry food. It also helps in the electromagnetic separation of uranium-235 from non-radioactive uranium [1].

Why then, when it comes to its application in latent fingerprint processing, do many Fingerprint Specialists and Technicians shy away from this method?

What is this technique that includes lens coating, food drying and uranium separation amongst its countless applications? Defined strictly, it is space that has all matter removed. It can also be described as a region of space where the pressure is less than the normal atmospheric pressure of 760 mm (29.9 in) of mercury [2]. Need a more finite definition? It's a vacuum. And the same processes that are at work to clean your carpet can develop a latent fingerprint in a cyanoacrylate vacuum chamber.

The basic principle behind any vacuum chamber is as follows: When the quantity of oppressive gas such as air in a closed vessel is removed, the remaining molecules, atoms, or any electrically charged particles that are derived from them, such as ions and electrons, can move about more freely. This freedom is proportional to the reduction in the gas pressure [3]. So, when this principle is applied

to our fingerprint vacuum, the evidence and cyanoacrylate (CA) are placed in a closed vessel. The "oppressive" air from the vessel is removed allowing molecules released from the CA to freely roam in the enclosed vessel. Polymerization occurs as it would in traditional CA processes, only in a more efficient and effective manner; one need not worry about fingerprint over-development or excessive background development.

With the vacuum chamber, processing evidence can usually be completed within 20 minutes. However, let's say you became 'sidetracked' during the 20-minute period and realize 60 minutes later your 'cooking' evidence is still in the chamber. No problem, due to the vacuum principle, the CA polymerization cannot over process your evidence like traditional CA methods often do. Another benefit with vacuum CA - evidence within the chamber need not be placed in such positions as to allow proper processing coverage - the vacuum allows for all surfaces of the item that are not sealed airtight to be effectively processed. Even the interior of plastic bags (again, as long as they are not sealed airtight) are productively processed.

A paper published in the Journal of Forensic Identification [4] written by representatives from the Canadian Police Research Center and Forensic Identification Research and Review Section; RCMP, exemplified the results of the vacuum chamber when compared to results from traditional CA techniques. Their abstract as follows: "Fingerprints were developed on a number of different surfaces using cyanoacrylate in either a heat and humidity cabinet or a vacuum chamber. The resulting latents were compared in a blind test by 54 Forensic Identification Specialists. Results of the survey showed that in a majority of cases, the vacuum chamber results equaled or exceeded those from the heat and humidity cabinet"[5].

The Washington, D.C. Metropolitan Police Department reports that prior to vacuum fuming, less than 5% of the firearms processed yielded fingerprints. Once the vacuum system was implemented, more than 700 firearms were processed; 20% of these yielded visible fingerprints after fuming [6].

Again, why do some in the latent print community balk from this method? I believe there are several reasons - the initial high cost of a CA vacuum chamber, the lack of interest to try new methods and this processes 'hidden' dilemma.

The time proven method of the traditional CA fuming cabinet, the 'workhorse' of our non-porous evidence processing techniques, has been an effective means to produce a polymerized fingerprint. Heat, humidity, CA and a secure enclosure have been economically feasible from the inception of this technique. One can purchase a \$20 aquarium, \$5 coffee mug warmer, a package of tin baking cups and Super Glue and be processing non-porous items for less than \$30. That certainly beats the high price tag of today's latent fingerprint vacuum chambers and is the first barrier in why many individuals and their agencies shy away from this method. It is hard to break old habits, especially if a new habit comes with a higher price tag.

We're a stubborn group. I have met individuals within our discipline and in the driest of climates that believe they can more effectively process evidence with powder than with CA methods. This kind of mind set is hard to overcome and a similar scenario vacuum CA fights with traditional CA. One can't argue with the results of old methods, so why try new means to get results. Nevertheless, we should all continue to seek current productive and proficient means to process evidence while still maintaining knowledge of past protocols.

The largest reason many fail to see the applicable use of the vacuum chamber, especially with individuals who have access to these chambers, is the initial visual assessment of the evidence once it has been removed from the chamber. Often, an item processed in the vacuum chamber show little or no sign of visual CA polymerization. The polymerization created in the vacuum chamber is not as visible as that of the traditional CA method and enhancement by fluorescent dye staining is recommended. Typically, this is not the case using traditional CA where polymerization is visually noticeable and can be enhanced easily with powders. More than once I have processed evidence in the vacuum chamber, visually inspected the finished item and noticed that no fingerprints could be seen. Once fluorescent dye stain has been applied and viewed under an alternate light source, latent prints were revealed. The concept (or lack of knowledge) of processing an item to reveal a latent fingerprint only to find that the latent print may continue to be hidden seems confusing to many.

Like most things, vacuum chambers are not the answer for every situation. One should not use vacuum CA on pressurized items such as sealed soda cans, sealed glass bottles or aerosol cans, as they may explode while air pressure is removed from the chamber [7]. The size of the vacuum chamber may also cause some concern. Currently, there are two different chamber sizes to choose from, one suitably sized (approx. 48" x 8" dia.) for long items such as rifles. The other has the capacity for average proportioned items (approx. 16" x 10" dia.) such as glassware, hand guns and plastic bags; however, there are certain items which cannot be processed with vacuum CA due to size, and traditional methods should therefore be utilized.

Regardless of the limitations, I continue to promote the view of vacuum CA as a more

efficient and effective means to achieve the end result of CA polymerization. Problems with surface background and fingerprint over-development, both of which effect the contrast quality of latent prints, are eliminated with the vacuum method. Add to this the aspects of increased polymerization sensitivity and coverage due to the vacuum principle, and I feel the initial high cost of a chamber is well worth the investment, and a minimal perplexity to the vacuum CA method.

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1."Vacuum Technology", *Encarta*, Microsoft Corporation, Funk & Wagnall's Corporation, 1994.

2."Vacuum", *Encarta*, Microsoft Corporation, Funk & Wagnall's Corporation, 1994.

3."Vacuum Technology", *Encarta*, Microsoft Corporation, Funk & Wagnall's Corporation, 1994.

4 & 5.Watkins, J.E.; Wilkinson, D.A.; Misner, A.H.; Yamashita, A.B., "Cyanoacrylate Fuming of Latent Prints: Vacuum versus Heat/Humidity", *Journal of Forensic Identification*, 44(5), 1994, p 545.

6.Board, T.W., "The Cyanoacrylate Vacuum Fingerprint Development Method Utilized by the Metropolitan Police Department", *International Symposium on the Forensic Aspects of Latent Prints*. FBI Academy, 1993.

7.Saviers, K. D., "Colman Vacu-print™", *Lightning Powder Company Instructions & Notes*, 1995, p 1.



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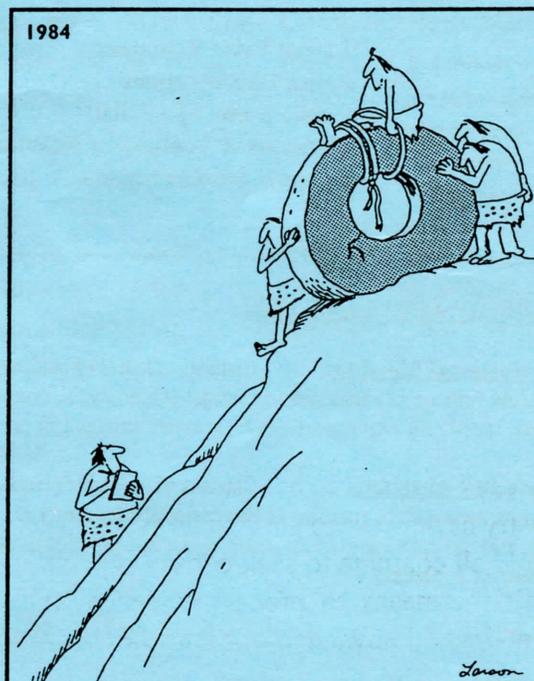
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