STANDARD OPERATING PROCEDURES

OF THE

IDAHO STATE POLICE FORENSIC SERVICES

LATENT FINGERPRINT SECTION

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GOALS OF THE IDENTIFICATION SECTION:

1. To properly receive, record, and return physical evidence submitted to the laboratory.

2. To conduct examinations for latent prints on physical evidence and to maintain records and prepare a report on the results of the analysis.

3. To give expert court testimony.

4. To instruct or inform members of the criminal justice system on aspects of latent print processing and analysis.

1.0.0 REFERENCES:

1.1.1 ISPFS Policy and Procedures Manual.

1.1.2 ISPFS Safety and Blood Born Pathogen Program

1.1.3 American Society of Crime Laboratory Directors (ASCLD) Manual.

1.1.4. U.S. Army Criminal Investigation Laboratory Technical Manual.

1.1.5. ISPFS Chemical Hygiene and Safety Plan.

1.1.6. Manual of Fingerprint Development Techniques (Home Office)

2.0.0 PURPOSE:

This document defines standard procedures for processing the majority of the evidence encountered by the Ident Section.

3.0.0 RESPONSIBILITIES:

3.1.1 The Ident Section supervisor has responsibility for ensuring that personnel adhere to established standard operating procedures and safety practices.

3.1.2. Individual Examiners have a responsible for adherence to established operating procedures and safety guidelines.

3.1.3 The Ident Equipment Officer is responsible for ordering, maintaining, and inventory of all equipment used in the section.

3.1.4 The Ident Section Chemical Officer shall be responsible for ordering, receiving, labeling, logging and dating all chemicals used in the processing of latent print evidence and maintaining the Material Safety Data Sheets (MSDS) for all chemicals maintained in the section.

3.1.5 The Ident Section staff consists of 1) supervisor, 3) latent Fingerprint examiners, 1) question document examiner.

3.1.6 Access to the Ident section laboratory areas will be limited to staff and escorted visitors.

4.0.0 STANDARDS AND CONTROLS:

4.1.1 Standards and controls required for a specific type of processing will be addressed in this manual as required. It should be noted, however, that exact measurements and proportions when preparing chemical solutions are desirable for consistent quality, but successful results in developing latent fingerprints are not dependent upon unequivocal accuracy. There is considerable margin for error in preparing chemical solutions for latent fingerprint techniques without adversely affecting the successful development of latent prints.

4.1.2 Equipment necessary for latent print processing, to include; OP1000, Gallenkamp humidity chamber, Coleman Vacu-Print, and chemical Vent hoods will be maintained in accordance with manufacturers specifications and records kept. Annual inspections will be conducted and records kept. The section supervisor will maintain these procedures and records.

4.1.3 All chemical reagents and solvents should be of an appropriate grade for their intended use.

4.1.4 Standard reference solution prepared in the laboratory will be properly labeled with identity, the date prepared, and the initials of the person who prepared them. Each solution will be tested when prepared and this test documented in the formulary log along with the date made, quantity made, carrier used and initials of the individual making the solution. Concentrations, normality's, etc. should be expressed in correct numbers of significant figures. Stock quantitative solution, which are retained for use over a period of time, should be labeled with a scheduled shelf life if applicable.

5.0.0 SAFETY:

5.1.1. All Ident Section personnel are advised to utilize appropriate work practices when handling the chemicals and solvents used in latent print procedures.

5.1.2. Safe work practices include:

A. Wearing personal protective equipment such as gloves, laboratory coats, eye protection, etc., when handling any chemicals.

B. Making sure that all engineering controls such as ventilation

hoods, etc., are used properly.

C. Utilizing clean work habits such as washing hands after the reparation of chemical solutions (even though gloved), no eating or drinking in chemical labs

5.1.3 Specific safety practices regarding personal protective equipment and work practice controls are outlined within each processing technique described in this manual.

5.1.4 Safety practices regarding engineering controls, biohazards, the disposal of chemicals, etc., are outlined in the ISPFS Chemical Hygiene Plan, Safety Plan and Exposure Control Plan.

5.1.5 Hazards and safety procedures associated with any chemicals are contained in the MSDS file on all chemicals used and stored in the laboratory. Employees have the responsibility to read the MSDS prior to handling unfamiliar materials or if they have any questions about how the chemicals is being used in the laboratory.

6.0.0 METHODS AND PROCEDURES USED IN PROCESSING EVIDENCE

6.1.1 Written technical procedures are available describing examination protocols for each category of evidence which is routinely examined.

6.1.2 These procedures will describe the methods, procedures, and techniques which are routinely used in the examination of evidence. The procedures cannot be expected to address each and every situation or type of evidence encountered. The individual Examiner must exercise sound judgment in selecting the methods which will best suit the requirements of the evidence submitted for a specific case; therefore, the procedures will be designed to accommodate the majority of evidence encountered.

6.1.3 Visible ridge detail suitable for comparison should generally be photographed upon initial examination, as additional detail develops, after a specific technique, and prior to a subsequent technique.

6.1.4 As specific chemical solutions are used to enhance or develop latent prints, these solutions should be tested prior to use. All chemical solution will be tested after they are mixed and before use and results will be noted.

6.1.5 The physical, chemical, or electronic techniques which are used to locate, develop or enhance prints are found in the section on protocols.

7.0.0. LATENT PRINT QUALITY GUIDELINES:

7.1.1. Friction ridge examinations are based on the following premises:

A. The fundamentals of the science of friction ridge identification are permanence and individuality. The comparison and identification of two areas of friction ridge skin impressions are based on the examination of ridge structure, individual ridge appearance, pores, minutiae, and spatial relationships.

B. There is no scientific basis for requiring that a minimum number of corresponding friction ridge features be present in two impressions in order to effect an identification.

7.1.2. Fundamental Principles of Quality Assurance in Friction Ridge Analysis.

A. Latent print examiners must be successfully trained to competency before effecting an identification.

B. All identifications must be verified by a qualified latent print examiner.

7.1.3 Friction Ridge Analysis.

A. Definitions and Conclusions

1. Print evaluation:

Prints are of value for comparison or they are not. Of value comparison means that sufficient ridge detail is present to warrant a comparison in the opinion of the examiner.

2. Identification:

An identification is the determination that two corresponding areas of friction skin impressions originated from the same person.

3. Non-identification:

A Non-identification is the determination that two corresponding areas of friction ridge skin did not originate from the same person.

4. Incomplete or unclear Known Impressions:

Incomplete or unclear known impressions may result in the inability to reach either an identification or non-identification decision.

5. Qualified Identifications:

Friction ridge identification are absolute conclusions. Probable, possible, or likely identification conclusions are outside of the acceptable limits of the science of friction ridge identification.

B. ASCLD/LAB Discrepancy:

1. Class I

a. Erroneous Identification:

An erroneous identification is the incorrect determination that two areas of friction ridge impressions originated from the same person. An erroneous identification is the most serious error an examiner can make in technical case work.

b. Erroneous Verifications:

Verification of an erroneous identification is equal to having effected the original erroneous identification.

2. Class II

a. Missing Identifications:

A missed identification is the failure to make an identification when in fact both friction ridge impressions are from the same origin. This is not an erroneous identification.

3. Class III

a. Clerical and Administrative Discrepancy:

Clerical and administrative errors are not erroneous identifications. Examples include, but are not limited to, writing the wrong finger number or name.

4. Conflict Resolution:

When conflict develops in making an identification, a principle examiner or IAI certified examiner will review the latent in question.
If an identification is made. It should be verified by another IAI Certified examiner if possible or Ident Section supervisor.

5. Corrective Action:

When erroneous latent print identifications occur, the primary consideration is the prevention of further discrepancies and personnel retention and salvage of the latent print examiner's training investment following ISP Forensic Services guidelines when at all possible.

Also In accordance with practices of the Latent Print Certification program of the International Association for Identification, and barring extenuating circumstances, The Latent Print Section Supervisor may recommend the Laboratory Manager consider the following actions in a Class I Discrepancy:

a. Revocation of Latent Print Examiner certification and one year retraining for **one** erroneous latent print identification.

b. Permanent revocation of Latent Print Examiner's certification and a transfer to other duties or dismissal for more than one erroneous identification during a latent print examiner's entire career.

8.0.0 Training and Qualification Records

8.1.1 Training Records

The Ident Section will maintain training records on each examiner and they will be on file in the section.

8.1.2. Curriculum Vitae

The Ident Section will maintain a copy of each examiners Curriculum Vitae on file in the Ident Section.

9.0.0. Latent Print Lifts and Photographs/images

9.1.1. Latent Print Lift shall have the following:

a. Unique Case Identifier
b. Date and Initials or Date and Personal Marking
c. Impression Source (Description or Source Identifier)

9.1.2. Latent print lifts or case notes shall include the following:

a. Scene location or address

b. Significant information about the orientation and/or position of the latent print on the object through description and/or diagram(s).

9.1.3. Latent Print photographs/images or case notes shall include the following:

a. Unique case identifier

b. Date and initials or date and personal marking
impression Source (description of source identifier).

c. Scene location or address.

d. Significant information about the orientation and/or position of the latent prints on the object through description and/or diagram(s).

e. Scale information.

10.0.0. Evidence Handling Procedures

10.1.1. Evidence must be collected, received, and stored so as to preserve the identity, integrity, condition and security of the item.

10.1.2. Chain of Custody

A clear, well-documented chain of custody must be maintained from the time that the evidence is collected or received until it is released.

10.1.3. Each examiner will have an area of short-term storage that is equipped with a proper lock. Keys to these locks will be limited to the individual examiner and a record of their distribution will be kept by the unit supervisor.

10.1.4. Evidence Handling and Storage

Evidence will be handled according to ISPFS SOP Manual Chapter 3. Evidence Handling.

11.0.0. Case Work Documentation and Report Writing

11.1.1. Case work documentation and report writing will be according to ISPFS SOP Chapter 5. Handling Casework.

11.1.2. Documentation must be sufficient to ensure that any qualified latent print examiner could evaluate what was done and replicate any comparison

11.1.3. Verification of all identifications must be documented

11.1.4. Reports must contain the following:

a. Case Identifier
b. Identity of the Examiner
c. Date of report
d. Description of Evidence
e. Results of Latent Print Examination

12.0.0. Proficiency Test

12.1.1 Proficiency Testing will be according to ISPFS SOP Chapter 8. Quality Control 8.1. and ASCLD/LAB 1.4.3.

13.0.0. Continuing Education.

13.1.1. Examiners Skills must be maintained by activities such as:

a. Receiving specialized training
b. Attending educational seminars
c. Reading professional publications
d. Conducting and publishing research
e. Completing self-study programs
f. Instructing specialized classes or seminars
g. Continuing formal education.

14.0.0 Testimony Review

14.1.1. Testimony review will be according to ISPFS SOP Chapter 7. Subpoena and Testimony Policy, Evaluation of Testimony 7.2

15.0.0. QUICK REFERENCE PROCESSING GUIDE

GENERAL EVIDENCE:

NOTE: As each technique is completed, the evidence is visually examined for the presence of identifiable ridge detail. When identifiable ridge detail is visible, the evidence should be photographed prior to any additional processing. The exact steps and procedures are dependent on the examiner's experience and discretion.

POROUS:

1. Visual: White light and possible / Alternate Light Source (ALS)
2. Iodine Fuming (if used) followed by a visual: white light examination
3. DFO (if used) followed by visual: ALS examination
4. Ninhydrin
5. Visual: White light
6. Physical developer
7. Visual: White light

NOTE: See FORMULARY, Appendix A for additional instructions.

NON-POROUS:

1. Visual: White light
2. Cyanoacrylate fuming
3. Visual: White light / ALS
4. Dye Stain
5. Visual: ALS / or Ultraviolet light (UV) as required
6. Powders: Luminescent or non-luminescent
7. Visual: White light / ALS

SPECIFIC EVIDENCE:

BLOOD EVIDENCE:

Non-porous:

1. Visual: White light
2. Cyanoacrylate fuming
3. Visual: White light
4. Amido black

5. Visual: White light / ALS
6. Dye stain
7. Visual: ALS
8. Powders: luminescent or non-luminescent
9. Visual: White light / ALS

Porous:

1. Visual: White light/UV (fabric-background luminescence)
2. Amido black or ninhydrin
3. Visual: White light

CARDBOARD:

1. Visual: White light and possibly / ALS
2. Ninhydrin (Iodine fuming and DFO can be used prior to ninhydrin)
3. Visual: White light and UV (background luminescence)
4. Physical developer
5. Visual: White light

CARTRIDGE CASES:

1. Visual: White light
2. Cyanoacrylate fuming
3. Visual: White light / ALS
4. Dye Stain
5. Visual: ALS

GLOSSY PAPER:

1. Visual: White light
2. Cyanoacrylate fuming
3. Visual: White light / ALS
4. Powders: luminescent or non-luminescent
5. Visual: White light / ALS
6. Ninhydrin
7. Visual: White light
8. Physical developer
9. Visual: White light

HUMAN SKIN:

Macerated Fingers (water soaked)

1. Photography (when possible)
2. Take record prints, if skin flexibility permits.

3. Send to FBI if necessary

Mummified Fingers (dried)

1. Photography (when possible)
2. Take record prints, if skin flexibility permits.
3. Send to FBI if necessary

LEATHER:

1. Visual: White light
2. Visual: ALS
3. Cyanoacrylate fuming: ALS
4. Powders: luminescent or non-luminescent
5. Visual: White light / ALS

PAINTED SURFACES:

Latex Paint: process as for porous evidence

Semi-gloss/enamel paint: process as for non-porous evidence

PHOTOGRAPHS:

Emulsion side:

1. Visual: White light
2. Cyanoacrylate fuming
3. Visual: White light / ALS
4. Powders: luminescent or non-luminescent
5. Visual: White light / ALS

Paper (reverse side): Process as for porous evidence

PLASTIC BAGS:

1. Visual: White light
2. Cyanoacrylate fuming
3. Visual: White light / ALS
4. Dye Stain
5. Visual: White light / ALS
6. Powders: Luminescent or non-luminescent
7. Visual: White light / ALS

RUBBER GLOVES:

1. Visual: White light

2. Cyanoacrylate fuming
3. Visual: White light / ALS
4. Dye stain
5. Visual: ALS
6. Powders: Luminescent or non-luminescent
7. Visual: White light / ALS

TAPE:

Adhesive side:

1. Visual: White light
2. Gentian violet (crystal violet)
3. Visual: White light
4. Physical developer
5. Visual: White light

OR

1. Visual: White light
2. Cyanoacrylate fuming
3. Visual: White light ALS
4. Dye Stain
5. Visual: ALS

OR

1. Visual: White light
2. Sticky side powder
3. Visual: White light

Non-adhesive side:

1. Visual: White light
2. Cyanoacrylate fuming
3. Visual: White light / ALS
4. Dye Stain
5. Visual: ALS
6. Powders: luminescent or non-luminescent
7. Visual: White light / ALS

VARNISHED WOOD:

1. Visual: White light
2. Cyanoacrylate fuming
3. Visual: White light / ALS
4. Rhodamine 6G in water solution
5. Visual: ALS
6. Powders: luminescent or non-luminescent
7. Visual: White light / ALS

WET SURFACES:

1. Visual: White light
2. Small particle reagent
3. Visual: White light / ALS
4. Lift

OR

1. Visual: White light
2. Dry to room temperature-30°
3. Visual: White light/ ALS
4. Physical developer

MLP 16.0.0. PACKAGING OF PAPER ITEMS

REFERENCES:

Scott's Fingerprint Mechanics, Robert D. Olsen, (1978), Page 134.

Fingerprint Techniques, Andre Moenssens (1971), Page 136.

The Science of Fingerprints, F.B.I., (1963), Page 174.

SCOPE:

The packaging of paper items to preserve the possible latent print evidence is necessary to assure the integrity of the evidence. This is required in the laboratory as well as at crime scenes.

OPERATIONS:

When paper items are received in the laboratory or recovered at a crime scene, the paper items are evaluated as to the examinations and handling that will be required. After precautions are taken to not contaminate any additional examinations (if needed), the paper items are packaged in an appropriately-sized envelope or box and the container is sealed. The exterior of the container is then marked with the analyst's initials, the case number, item number and any other information deemed necessary. The materials are then placed in the evidence vault.

If there is a chance a document examination will be made to look for indented writing on the evidence, it is important that the analyst not mark the outside of an envelope while the document is inside. The analyst may be adding indented writing to the document.

Wet items can be handled in the above manner after the evidence is air dried or can be submitted in the same water as the documents were found in. Paper items being submitted wet need to be kept in a water-tight container or kept frozen.

MLP 16.1.0. PACKAGING OF NON-POROUS ITEMS

REFERENCES:

Scott's Fingerprint Mechanics, Robert D. Olsen, (1978), pages 133-134.

Fingerprint Techniques, Andre Moenssens, (1971), page 136.

The Science of Fingerprints, FBI, (1963), page 174.

SCOPE:

The packaging of non-porous items with possible latent print evidence is necessary to assure the integrity of the evidence and preserve any latent prints present. This is required in the laboratory as well as at crime scenes.

OPERATION:

When non-porous items are received in the laboratory or recovered at a crime scene, the non-porous items are evaluated as to the examinations and handling that will be required. After precautions are taken not to contaminate any additional examinations (if needed), the non-porous items are packaged in sturdy containers (such as boxes or metal cans) in a manner so that the suspected latent print bearing surfaces do not contact any other surfaces. The container is sealed. The exterior of the container is then marked with the examiner's initials, the laboratory case number, item number, and any other information deemed necessary. The materials are then placed in the latent print evidence vault.

MLP 16.2.0. SUBMISSION OF HUMAN HANDS, FINGERS, AND FEET

REFERENCES:

The Science of Fingerprints, FBI, (1997), pages 134-162.

SCOPE:

Normally hands, fingers, or feet are submitted to the Latent Section when normal printing procedures fail or cannot be applied due to the decomposed state of the hands, fingers, or feet.

Every attempt at obtaining deceased prints in the field should be exhausted prior to any consideration of having the hands or fingers severed and submitted to the Latent Section. It is our responsibility to assist law enforcement officers, when called upon to do so, to determine when the hands should or should not be severed and submitted.

When the printing has been done, the hands, fingers, or feet will be returned to the submitting agency.

OPERATION:

1. All body parts received at the lab should already be sealed and then placed in the refrigerator or freezer.

2. Any body part that involves a person infected with or possessing antibodies for the HTLV-III - LAV (AIDS Virus) will not be accepted for processing.

3. Submitting hands or fingers of deceased persons:

   A. When possible, it is most desirable to have both the hands, severed at the wrist, forwarded in their entirety. This eliminates the possibility of getting the fingers mixed up or incorrectly labeled.

   B. If it is not possible to send the hands for some reason, the fingers should be cut off and forwarded. The fingers should be severed at the palm. As soon as each finger is cut off, it should be placed in an individual container and immediately marked as to which particular finger it is.

C. It is preferred by the Latent Section that hands be submitted in the same condition as found and as soon as possible. If the hands were immersed in water, transport in water. If found dried out and hard, place in an airtight container and send without using any preservative. If hands cannot be delivered to the Latent Section within 24 hours after being discovered, preserve them by refrigeration. **Do not use a formaldehyde solution** to preserve the hands. This causes the hands to become brittle and hard, making the task of obtaining identifiable prints very difficult.

D. Hands, fingers, or feet should only be severed and removed by the attending medical examiner or under his authority and supervision.

4. Rubber gloves, lab coat, and/or a protective disposable apron will be worn when working with any submitted body parts.

5. All utensils used and any area which the body parts come in contact with will be washed down with the disinfectant foam cleaner.

MLP 16.3.0 RECORDING INKED IMPRESSIONS

REFERENCES:

Scott's Fingerprint Mechanics, Robert D. Olsen, (1978), pages 70-75.

Fingerprint Techniques, Andre A. Moenssens, (1971), pages 144-145.

Friction Ridge Skin, James F. Cowger, (1983), pages 14-19.

The Science of Fingerprints, FBI (11-79), pages 116-162.

SCOPE:

Recording inked fingerprints/palmprints is necessary to secure known samples for comparison with visualized latent friction ridge skin impressions. Recording inked fingerprints/palmprints for comparison with latent prints is most often done by officers of the submitting agencies.

OPERATION:

There are times when the examiner may need to secure the known inked fingerprints/palmprints. The method, number, and types of fingerprints/ palmprints impressions taken is determined by the examiner's training and experience.

APPARATUS AND REAGENTS:

Printer's ink, ink rollers, fingerprint cards, quality bond paper, adhesive materials (tape and Kinderprint), clear latent print lift backing, hypodermic needles, tissue builder, casting materials (Mikrosil), lab coats, rubber gloves, face shields, palmprint roller and cleaning materials (spray soaps, paper towels, etc.).

SAFETY CONSIDERATIONS:

Safety issues when securing inked impressions include, but are not limited to:

Personal safety - When taking the inked finger and palmprints, precautions need to be taken should the person become violent. This often requires the presence of an officer to provide security.

Biological Contamination - When taking the inked impressions of a subject or cadaver, care must be taken to minimize the chance of contact with diseased and/or putrefied materials. Lab coats, rubber gloves and face shields should be worn at the discretion of the examiner.

PROCEDURE:

The exact steps and procedures are dependent on the examiner's experience and discretion.

NOTES AND DOCUMENTATION:

The content of case notes is largely up to the examiner's discretion but should be in accordance with laboratory protocol.

MLP 16.4.0. RECORDING MAJOR CASE INKED IMPRESSIONS

REFERENCES:

The FBI Advanced Latent Fingerprint School Manual, pages 167-172.

Scott's Fingerprint Mechanics, Robert D. Olsen, (1978), pages 70-72.

Friction Ridge Skin, James F. Cowger, (1983), pages 22-25.

SCOPE:

Recording major case impressions is often necessary to secure known samples for comparison with visualized latent friction ridge skin impressions. Major case impressions consist of rolled fingerprints, palmprints, fingerjoint impression and the tips and sides of the fingers. Recording inked major case prints for comparison with latent prints is most often done by officers of the submitting agencies. Occasionally, the examiner is requested to record the impressions at or in relation to a crime scene investigation.

OPERATION:

Securing inked known major case prints are necessary for the comparison against the visualized latent prints. The mechanics for the taking of inked major case prints can be found in the section on major case inked impressions in the FBI Advanced Latent Fingerprint Manual. The examiner's training and experience will determine the number and types of impressions to be secured.

MLP 16.5.0. LIFTING LATENT PRINTS

REFERENCES:

Scott's Fingerprint Mechanics, Robert D. Olsen, (1978), pages 369-387.

Fingerprint Techniques, Andre, A. Moenssens, (1971), pages 109-112.

Friction Ridge Skin, James F. Cowger, (1983), pages 85-88.

SCOPE:

Lifting powder or flame-processed latent prints is an effective technique for preservation of the latent print impression. This technique works because the adhesive on the lifting medium is stickier than the surface on which the latent print deposit resides. Lifting should be done after any necessary photography.

OPERATION:

Lifting latent print deposits that have been developed with the flame technique or have been powder processed is often an effective technique for the preservation of the latent print image. Lifting latent prints is often used in conjunction with photography of the latent print image. The examiner's training and experience will determine the use and/or sequence of the lifting and photographic processes.

FURTHER INFORMATION:

Advantages to the lifting of latent prints are:

a. Lifting latent prints is a cheap, easy, and quick method of preserving developed latent print images.
b. Lifting latent prints is an effective method of preserving the latent print images at a crime scene.

Disadvantages:

a. Lifting latent print images may not always be the most effective method of preserving the latent print image.
b. Lifting sometimes destroys the latent print image left on the surface and makes repeat lifting impossible.

PLP 17.0.0. DETECTION OF LATENT PRINTS WITH POWDER

REFERENCES:

Scott's Fingerprint Mechanics, Robert D. Olsen, (1978), pages 209-235.

Fingerprint Techniques, Andre A. Moenssens, (1971), pages 106-109 and 112-114.

Friction Ridge Skin, James F. Cowger, (1983), pages 85-88.

SCOPE:

Latent friction ridge skin residue can be detected on smooth, non-porous objects by the application of commercial fingerprint powders. This coloring of the fingerprint residue occurs because the latent print residue has greater adhesion properties than the substrate. The powder particles adhere to the latent print residue allowing the latent print to be visualized. The use of cyanoacrylates often increase the adhesion of latent print residue.

OPERATION:

When making an examination for the presence of latent print impressions on smooth, non-porous surfaces, powder processing is often the method of choice.

FURTHER INFORMATION:

Safety concerns when using commercial fingerprint powders are minimal. However, when fingerprint powders are to be used for an extended period of time, a mask should be worn to minimize the inhalation of the fingerprint powder particles. Persons using fingerprint powders should monitor reactions (if any) to the fingerprint powders.

Advantages to using fingerprint powders are:

a. Processing with fingerprint powders is fairly rapid and inexpensive.
b. Powder processing is most often the method of choice in the laboratory or at crime scenes where a large quantity of materials are to be examined and the prints are fresh.

Disadvantages to using powders are:

a. Fingerprint powders are less effective for detecting older fingerprint residue.
b. If fingerprint powders are used as the first technique, the process may prohibit any other type of latent print examination.
c. Success using fingerprint powders is dependent on proper lighting and the examiner's experience and care using the process.

PLP 17.1.0. POWDER PROCESSING OF ADHESIVES

REFERENCES:

Journal of Forensic Sciences, Vol. 44, No. 2, "Sticky-Side Powder: The Japanese Solution", Darren S. Burns, pages 133-138.

"Sticky-Side Powder", Technical Note, Lightning Powder Co., (April, 1994).

Materials needed:

- Sticky-side powder
- Photo-Flo
- Small glass beaker
- Stir rod
- Camel hair fingerprint brush or a small paint brush
- Glass tray
- Tap or distilled water

SCOPE:

Processing the adhesives that are on the sticky sides of tape and other items, such as labels, present problems in processing because traditional powders will not work (unless modified) because the adhesive properties of the tapes cause the powder to obscure the latent print deposits. Sticky-side powder is a liquid fingerprint detection technique that produces gray-developed latent prints when applied to the adhesive surfaces. Surfaces that need other forensic examinations such as serological examinations should be carefully evaluated to determine if this procedure will have an impact on other examinations.

OPERATION:

Adhesive surfaces that need to be examined for latent prints can be examined by using Gentian Violet or Sticky-Side powder at the examiner's discretion.

Sticky-Side powder can be used to detect the fatty/oily and/or epithelial cells often left when handling the adhesive surfaces or items such as tape and labels.

Sticky-Side powder can be used in two ways: the powder solution can be painted on or the surface immersed in an aqueous solution containing the powder solution.

To use the paint-on method, the powder needs to be prepared for use. The powder is prepared as follows:

1. Mix a solution of water and Photo-Flo in a glass beaker in a 1:1 ratio.

2. Mix a quantity of Sticky-Side powder (as needed) in a beaker with the water/Photo-Flo solution to make a liquid that has a consistency of paint.

The above solution is painted onto the adhesive surface with the brush and allowed to remain on the surface for 10 to 20 seconds after which the surface is rinsed with water. The surface is then evaluated for latent prints and any suitable latent prints are photographed or covered with a protective cover such as lifting tape or clear plastic. The surface can be reprocessed to improve contrast and/or make the latent print(s) darker.

To use the submersion method, the glass tray is filled to an appropriate depth with water and the prepared solution of powder and Photo-Flo is added to the water. The examiner's experience determines the proper amount of the powder solution to be added. Some of the powder will suspend in the water and the water should be agitated or stirred to cause the maximum amount of the powder to suspend. After inserting the adhesive surface (adhesive side up) in the tray, the particles of powder will settle onto the surface being examined. The surface is removed from the water after twenty minutes (or longer, at the examiner's discretion) and rinsed with water if necessary. This procedure can be repeated if desired. Latent prints that are developed can be preserved as previously described.

It is not necessary to have commercially-prepared Sticky-Side powder to use this type of processing. An alternate method of using a liquid fingerprint powder is as follows:

1. Measure out .5g of fingerprint powder.

2. Add 1 ml of water to the fingerprint powder.

3. Add 1 ml of Liqui-Nox or other liquid detergent.

4. Thoroughly mix the liquid and fingerprint powder.

5. Apply the solution to the adhesive surface in the same manner as for using Sticky-Side powder.

FURTHER INFORMATION:

When using the Sticky-Side powder in the previously described manner, there does not appear to be a significant health hazard. When using the powder in the dry form, precautions should be taken to prevent the powder from becoming airborne and possibly inhaled. Laboratory safety protocol should be followed when using the powder.

Advantages of using the Sticky-Side powder are as follows:

a. Sticky-Side powder is an inexpensive method of processing the adhesive surfaces of tapes and labels.
b. Sticky-Side powder does not require the use of much equipment and can easily be used at crime scenes if necessary.
c. The latent prints detected with the powder are stable and dark in color.

Disadvantages of using the Sticky-Side powder are as follows:

a. The powder solution tends to be rather messy.
b. A source of water is needed for rinsing the processed surfaces.

PLP 17.2.0. IODINE FUMING

REFERENCES:

Friction Ridge Skin, James F. Cowger, (1983), pages 93-96.

Fingerprint Techniques, Andre A. Moenssens, (1971), pages 114-120.

Scott's Fingerprint Mechanics, Robert D. Olsen, (1978), pages 247-256.

Manual of Fingerprint Development Techniques, British Home Office, (1998), Chapter 4.

Peavey Product Guide, (1999).

Materials:

- Iodine Crystals
- Fume Hood
- Container such as a small chamber or a plastic bag
- Iodine fuming "gun"
- Iodine fuming stix

SCOPE:

Iodine fuming is one of the oldest latent print techniques currently employed in the examination processes for the visualization of latent prints. The iodine vapors are absorbed by the fatty portion of a latent print deposit and turn the latent print a brownish color. Iodine is toxic in any form, and as a result, is only used in such instances as when the desired latent is suspected to have more fatty deposits than normal. An example could be when the contaminant forming the latent print deposit is suspected to be something such as kitchen grease or butter.

OPERATION:

In a fume hood, break open a glass ampoule of iodine crystals to reveal the iodine crystals. Put crystals in an airtight chamber (that has adequate venting available to evacuate the chamber after use) with the questioned surface and a similar control surface which bears a quality latent print. The iodine crystals will start to go from a solid to a gas resulting in purplish fumes with the application of heat (approximately 100° F). If

desired, an electric heater should be wired into the chamber that is being used for iodine fuming. The latent prints will start to turn a brownish color. The process needs to be monitored so that over-development will not occur.

If the questioned surface is too large to fit in a chamber, the surface can be processed by using a commercially made fuming gun. The fuming "gun" consists of a length of rubber tubing (that acts as a mouthpiece) with a length (about 6") of glass tubing attached. The glass tubing contains glass wool and calcium chloride crystals to absorb the moisture that is introduced into the tube when the apparatus is blown into. Attached to the rubber-stoppered glass tube is a thistle tube into which the iodine crystals are inserted. The "gun" is used by inserting iodine crystals into the open end of the thistle tube and wrapping one's hand around the tube. The warmth from the hand is sufficient to cause the change from a solid to a gas. The formation of purple fumes is indicative of the change.

When the change is noticed, the open end of the tube is directed toward the suspected latent print bearing the surface and the mouth piece is blown into to direct the purple fumes onto the surface. This processing with a "gun" is to be done in a fume hood or at least in an area with generous ventilation (preferably outdoors).

Another technique using iodine is called the "cold" method. This technique uses a heavy plastic bag to contain the exhibit, the atmosphere, and the iodine crystals. The exhibit is placed into the plastic bag with a quantity of iodine crystals (the equivalent of a standard iodine ampoule). The open end of the bag is then folded two or three times to make a temporary seal to contain the soon-to-be iodine rich atmosphere. The iodine crystals are then moved to one location in the bag. That portion of the bag is cradled in the hand and the body heat causes the change from solid to gas. The exhibit is monitored by viewing through the bag to determine when the processing is done.

For small items, the iodine fuming stix makes it possible to process prints on wood, paper, or cardboard surfaces on either vertical or horizontal surfaces. The heat from your hands combined with the moisture of your breath causes a chemical reaction that works well.

FURTHER INFORMATION:

The resulting brown latent prints that are characteristic of iodine processing can vanish and must be preserved. The finger marks are evaluated to determine which are suitable for comparison and those deemed of value are photographed and notes taken. Iodine prints which have faded or are completely gone sometimes can be redeveloped by reprocessing if no other techniques have been used or if the time span is not too long.

Other latent print techniques such as DFO or ninhydrin tend to dissolve the fats that the iodine reacts with. Therefore, if iodine fuming is to be used, it must be used prior to other latent print development processes.

Iodine also reacts to fresh prints better than old ones because the fats tend to change and become less receptive to this process with time.

Safety is a major concern when using the iodine technique much the same way as any other laboratory technique. **Iodine is toxic in any form. ALWAYS AVOID INHALING IODINE FUMES AND NEVER BREATHE IN WHEN USING THE FUMING "GUN" APPARATUS!!** The fumes may irritate the skin and damage the respiratory tract. Headaches that can last for several days may result from exposure to iodine. Long-term effects to the thyroid gland may result from exposure. Adequate ventilation when using the technique is mandatory as the fumes are very corrosive to metals and can discolor surfaces that come in contact with fumes.

Iodine routinely comes sealed in glass ampoules or in bulk in glass jars. The sealed ampoules must stay sealed until use for safety purposes. The jars need to have the lids kept screwed tightly and the container kept in a chemical supply room until needed. As some leakage of the iodine vapors can occur after the lid on a jar is loosened for the first time, the ampoules are the recommended containers.

Iodine also degrades the quality of the fuming "gun" by hardening and cracking the rubber stoppers and the rubber hose mouthpiece. The "gun" should be inspected before each use.

Testing the iodine crystals is done upon each use. This test involves the making of quality latent prints on a test surface similar to the one to be examined. The test print is exposed to the fumes in the same manner as the questioned surface is to be examined and the results noted in the

laboratory case notes. If the test results are good, the questioned surface can be processed.

Advantages of the iodine technique are as follows:

Iodine is a quick, simple and inexpensive technique.
If iodine fuming is used, it must be used prior to other latent print processes on porous items. Iodine developed latent prints will fade and disappear on documents leaving the surface undamaged unless there are metal items such as staples present which will show signs of corrosion.

Disadvantages of the iodine technique are as follows:

Iodine is toxic in any form.
Iodine can interfere with the subsequent examinations for body fluids.
Iodine is not suitable for application on dark colored surfaces.

PLP 17.3.0. USING NINHYDRIN SOLUTION

REFERENCES:

Scott's Fingerprint Mechanics, Robert D. Olsen, (1978), pages 285-288.

Fingerprint Techniques, Andre A. Moenssens, (1971), pages 122-126.

Friction Ridge Skin, James F. Cowger, (1983), pages 96-98.

Materials:

- Ninhydrin solution
- Glass trays
- Brushes
- Spray equipment
- Rubber gloves
- Lab coats
- Face shields
- Lab oven
- Steam oven
- Tongs

SCOPE:

The use of ninhydrin is a latent print processing technique which is used on porous objects, such as paper. Ninhydrin processing produces a purple color from the reaction of the amino acids present in the latent print deposit with the ninhydrin solution. Ninhydrin processing should be done after iodine and DFO (1,8-Diazafluoren-9-ONE) processing but before processing with silver nitrate or physical developer.

OPERATION:

The exhibits to be processed with ninhydrin are saturated with the ninhydrin solution in a fume hood or other well-ventilated area. The saturation of the item can be done by dipping in the solution, brushing the solution on the item, or by spraying the surface with the solution. Spraying is the least desirable of the application options as this allows the solution to become airborne.

NOTE: Upon standing in its storage container, some of the ninhydrin will "fall out of solution" causing a visible yellow layer at the bottom. Do not dip, brush, or spray items with this yellow layer.

After the exhibit is dry, the item is exposed to an atmosphere that is warm and humid. This can be accomplished in a lab oven or by passing a steam iron over the surface without touching the paper. The combination of heat and humidity accelerates the reaction of the amino acids and ninhydrin to form the characteristic purple deposits (Rhuemann's Purple) which allow visualization of latent prints with the naked eye.

Any suitable latent prints are photographed because the latent prints will fade with time and may not be retrievable with reprocessing.

Latent prints that were made with blood can often be darkened successfully with application of the ninhydrin solution. The ninhydrin reagent will cause the protein portion of the stain to turn purple and be darker and often will visualize parts of the latent print not readily seen with the naked eye. The latent prints need to be fixed in some manner. Heat or methanol can be used as a fixative. Often methanol is the preferred method as the methanol can be pipetted over the surface and limited to the stain so that the remainder of the surface is unaffected. Also, when using methanol the size of the object does not make as much of a difference as when using heat. Three or four applications of methanol are needed to fix the stain. When using heat as a fixative, the object is put in an oven for one hour at 100° centigrade. This heat fixing often ruins latent prints that are composed of normal latent print constituents. Failure to fix the stain does not always render a poorer quality latent print.

The ninhydrin solution is applied to the stain and allowed to remain at room temperature for approximately 48 hours. The ninhydrin will turn the protein component of the blood/serum stain a dark purple. This often may be the stain of choice on blood stains because of the apparent increased sensitivity of the reagent over other techniques such as Amido Black. This may be used on porous items as well as non-porous surfaces. Non-porous surfaces should be processed with cyanoacrylate esters prior to the application of the ninhydrin reagent. This allows the processing of the item with other conventional techniques.

FURTHER INFORMATION:

Safety is a concern when using or mixing ninhydrin solution. Rubber gloves and lab coats should be worn when using or mixing ninhydrin. Face shields should be worn if there is a chance of the solution splashing into the face or eyes. The examiner needs to be aware of the fact that the skin will stain if it is allowed to come in contact with the ninhydrin solution. The solvent used in the ninhydrin solution (petroleum ether) is *highly flammable* and the solution is to be used or mixed in a fume hood or in another well-ventilated area.

Advantages of the ninhydrin solution are:

a. Ninhydrin is simple to use, inexpensive, and very effective.
b. Ninhydrin will detect latent prints that are months or years old.

Disadvantages of the ninhydrin solution are:

a. Ninhydrin will not detect latent prints deposited by all donors.
b. Ninhydrin will not detect latent prints on items that have gotten wet.

PLP 17.4.0. MIXING AND USE OF THE DFO WORKING SOLUTION

REFERENCES:

Manual of Fingerprint Development Techniques, British Home Office, Chapter 4, (1998).

Technical Notes #1-0038, Lightning Powder Co., 1,8-Diazafluoren-9-One (DFO)

Materials:

DFO Stock Solution

- 0.5g DFO
- 100 ml Methanol
- 100 ml Ethyl Acetate
- 20 ml Acetic Acid
- Gives a total of 220 ml solution.

DFO Working Solution

- 220 ml DFO stock solution
- 780 ml Petroleum Ether
- Gives a total of 1,000 ml DFO solution

SCOPE:

DFO (1,8 Diazfluoren-9-ONE) is an analogue of the ninhydrin molecule that luminesces when illuminated with monochromatic light in the 485 nm to 510 nm range. The use of the DFO reagent when processing porous surfaces provides greater sensitivity than previously offered by the ninhydrin reagent. DFO does not replace the ninhydrin reagent but is used before and in addition to the ninhydrin reagent. Using DFO requires two solutions (stock solution and working solution).

OPERATION:

STOCK SOLUTION:

Measure and mix solvents in a fume hood. While a magnetic stirrer is not necessary, it does make the mixing process go faster. Dissolve 0.5 gram of DFO powder in 100 ml of methanol. When the powder is dissolved, add 100 ml of ethyl acetate. When it is thoroughly mixed, add 20 ml of acetic acid. Store this solution in a dark brown glass or polypropylene bottle.

WORKING SOLUTION:

Measure and mix these solvents in a fume hood. Do not mix this solution until you are ready to use it. The manufacturer recommends for best results, do not use any working solution which is older than two to three weeks. If a liter (1000 ml) of working solution is needed, take the entire 220 ml of stock solution and add 780 ml of petroleum ether, mixing thoroughly. If less working solution is desired, halve or quarter the solutions accordingly.

APPLICATION:

The paper specimen should be dipped into the solution for ten seconds and allowed to dry for about three minutes. This step should be repeated, as two dippings and dryings seem to be better than one application. Although it is possible to spray this solution, it is **not recommended** due to the health hazards involved and its inability to soak the specimen adequately.

Heat is then applied in an oven. While expensive chemical ovens can be used, a regular household toaster oven will work. The specimen should be heated for ten minutes at 100° C (212° F). View the paper item under a forensic light source or laser.

As an alternative to an oven, a hair dryer or dry iron will work. If using one of these alternative heat sources, place a thick towel or other protective material on the counter first. Then, place a few paper towels on top of that. Apply dry heat to the surface for several minutes. A dry iron can be placed directly on top of the paper towels and used the same as when ironing clothes. It is possible to stop ironing to check the progress with a forensic light and, if the latent prints are not very bright, continue to iron for a few minutes longer. Sometimes, this added heating time will improve resulting print development. The DFO-developed latent prints

may or may not be visible to the naked eye, but should be viewed under a forensic light source or laser.

DFO is not intended to replace ninhydrin, but should be used in conjunction with ninhydrin. DFO will detect latent prints on porous surfaces that ninhydrin will not and the reverse is also true.

DFO is used by dipping or swabbing the item being examined with the DFO working solution and allowing the item to dry. The application of the DFO working solution should be done in a fume hood or in a well-ventilated area wearing an air-purifying respirator equipped with an organic vapor cartridge. After the item is dry, it is placed in a lab oven at approximately 70° C for about ten minutes. The item is removed from the oven and examined under the monochromatic light from a light source and any suitable latent prints are photographed. Faint latent prints can be made to luminesce brighter with a second or third application of DFO. The second and third applications of DFO (if necessary) are done in the same manner as the first.

FURTHER INFORMATION:

Safety in the laboratory is always a concern and standard laboratory protocol is followed when handling solvents. DFO has not been fully tested for potential health hazards but is thought to be similar to the ninhydrin molecule which may act as an irritant. Rubber gloves, lab coats, and face shields (if there is a chance of the DFO becoming airborne) should be worn when mixing and using the DFO working solution.

PLP 17.5.0. USING PHYSICAL DEVELOPER

REFERENCES:

Manual of Fingerprint Development Techniques, British Home Office, (1999), Chapter 4.

Advances in Fingerprint Technology, Henry C. Lee, R.E. Gaensslen, (1994), pages 79, 80, 81, 95, 112.

Technical Note #1-2730, Lightning Powder Co., (1993).

Materials:

-Physical Developer Kit (parts A & B)
-2 glass trays (approx. 8" x 11" x 2")
-plastic tongs

SCOPE:

Physical developer is a technique for processing porous items to allow the detection of latent fingerprints. This technique is the final step in the sequential processing of porous items. This technique replaces the silver nitrate technique most of the time. Physical developer is the only technique to show adequate results on paper items that have gotten wet. Physical developer can also be used to detect shoe prints on paper items. The ability to detect shoe prints on paper is limited by the composition and contamination of the sole.

OPERATION:

The processing of paper items with physical developer uses two solutions: Solution A (20% silver nitrate) and Solution B (reductant solution).

The step-by-step procedure for using physical developer is as follows:

1-The actual processing should be done in the stainless steel sink in the chemical lab. The physical developer solution will cause dark stains on any surface with which it comes in contact with.

2-Wash and rinse glass trays. Any contaminants on the glass trays will ruin the physical developer. To avoid any cross contamination, always use clean glassware rinsed with tap water, then with distilled water.

3-Arrange the glass trays in the sink so that the paper items can be moved easily from tray to tray in the proper sequence.

4-Add 5 ml of solution A (20% silver nitrate solution) to 90 ml of solution B (reductant solution) in a beaker. Stir the working solution for approximately one minute with a clean glass/plastic stirring rod.

5-Add the physical developer working solution to it's dedicated glass tray.

6-Wash and rinse the beaker that is used to mix the physical developer solution.

7-Use plastic photographic tongs or plastic forceps without serrated edges to remove articles from PD solutions. **Do not use metal tools.**

8-Place the item to be processed into the physical developer using the tongs. Immerse the item and gently rock the tray for approximately 5 to 15 minutes (examiner's discretion). The item is then removed and placed into another clean tray with running tap water until the excess stains are gone. The water should run clear from the tray.

9-The processed item needs to completely dry prior to final examination and any developed latents need to be photographed.

FURTHER INFORMATION:

Cleanliness is important in the physical developer technique.

A good deal of the instability in the earlier solutions was a result of laboratory equipment that was not spotless. Some contaminants, especially salts, will cause the silver nitrate in the solution to come out of suspension thus spoiling the physical developer solution and perhaps ruining the item being examined.

It is important to keep the glassware spotless and rinsed with distilled or deionized water prior to use. When washing glassware, use detergent (no abrasive cleaners).

The standard protection of rubber gloves, eye protection, and laboratory coats is sufficient. There is no solvent carrier such as is used with ninhydrin and DFO, so a fume hood is not necessary. Standard laboratory protocol is followed for chemical handling.

Physical developer will cause dark stains on many surfaces; therefore, care must be taken to avoid spills in the laboratory. Full strength chlorine bleach will usually remove any stains from counter tops and floors, but the bleach may cause damage to any fabrics stained with physical developer.

Advantages:

a. Physical developer will find latent prints on dry paper that ninhydrin and DFO will not detect.
b. Physical developer will detect latent prints on papers that have gotten wet.

Disadvantages:

a. Instructions for making and use must be carefully followed.
b. The use of the physical developer technique requires some experience to achieve the best results.

PLP 17.6.0. CYANOACRYLATE PROCESSING

REFERENCES:

"Methods of Latent Print Development", Henry C. Lee and R. E. Gaensslen, 1987 Proceedings of the International Symposium on Latent Prints, pages 15-23.

Advances in Fingerprint Technology, Henry C. Lee and R. E. Gaensslen, (1991).

Journal of Forensic Identification, Vol.46, No. 4 July/August, 1996; Vol. 46, No. 1 January/February, 1996.

Coleman Vacu-Print Instructions and Notes, Lightning Powder, (1995).

Manual of Fingerprint Development Techniques, British Home Office, Chapter 4, (1998).

Materials:

- Airtight container such as a tank or sealed plastic bag
- Cyanoacrylate such as "Hard Evidence" or superglue
- Low temperature heating element (optional)
- Sodium hydroxide treated cotton balls (optional)
- Coleman Vacu-Print apparatus

SCOPE:

Processing surfaces with cyanoacrylate esters (CAE) prepares surfaces for the acceptance of powders and dyestains to enable visualization of the latent prints.

OPERATION:

A smooth, non-porous surface that is to be examined with CAE needs to be exposed to an atmosphere rich in CAE fumes. This procedure requires the use of an air-tight container (to trap the fumes to enable them to adhere to the surface) and a source of CAE fumes The container can take many forms such as tanks or plastic bags, but it needs to have a transparent surface or have the interior be readily assessable to check the progress of

the procedure. The surface to be examined is placed in the container and then the CAE source is added.

One of the most common sources of CAE is a commercial preparation known as "Hard Evidence." This is a sealed foil package containing a small amount of CAE in a gel form. The package is designed to be opened and used without additional preparation. Once the gel is exposed to the air, the CAE in the gel begins to vaporize at a controlled rate. Other techniques that use heat or a sodium hydroxide treated pad to accelerate the vaporization of the superglues are described in the previously mentioned references. The "Hard Evidence" packets may be stored at room temperature and have a shelf life of six months to a year.

Another optional CAE processing method is the use of CAE fumes in a vacuum chamber. The Coleman Vacu-Print Instructions and Notes list a step-by-step procedure for the processing of evidence in the vacuum chamber. Vacuum processing may be the preferred method when processing a large quantity of plastic bags because there does not have to be large spaces separating the bags and/or the bags don't have to be unfolded.

Testing of the CAE packets is done by observing the results of the CAE on a test sample that is included in the chamber.

Processing and quality control are done at the same time. A quality test print is applied to a surface and put into the tank with the questioned surface in an easily-monitored position. When the development of the test print is complete, the questioned surface is also finished. Results of the test print are monitored at this time.

FURTHER INFORMATION:

When used in the above-described manner, CAE are not believed to pose a health hazard. Precautions should be taken to avoid inhaling or allowing the vapors to contact the eyes as the vapors can be irritating to the mouth, nose, and eyes. Persons wearing contact lenses should not open CAE chambers without taking proper precautions. Non-vented goggles should be worn. Other precautions include using sealed CAE chambers and evacuating the air from the chambers prior to removal of the questioned and test surfaces.

If liquid glue is allowed to contact the skin, adhesion may result. If the skin sticks together, immerse affected areas in warm water. This will loosen the skin so that it can be gently pulled apart.

Advantages of using the CAE process are as follows:

a. CAE is simple, quick, and an inexpensive technique.
b. Use of CAE prepares the surfaces for the application of powders, stains, and alternate light sources.
c. The exposure of surfaces to CAE fumes hardens and plasticizes the latent print residue and makes the latent prints more durable.

Disadvantages to using the CAE process are as follows:

a. The liquid glue option tends to be messy.
b. The polymerized CAE coats the interior surfaces of the chambers with a whitish layer that can be difficult to remove.
c. CAE are not effective on porous surfaces.
d. CAE my affect further examinations such as firearms (if used heavily) and the serological examinations of body fluids and tissues.

PLP 17.7.0. MIXING RHODAMINE 6G DYESTAIN

REFERENCES:

An Introduction to Lasers, Forensic Lights and Fluorescent Fingerprint Detection Techniques, E. Roland Menzel, (1991), pages 42-44.

Manual of Fingerprint Development Techniques, British Home Office, (1998), chapter 4

Chemical Formulas and Processing Guide for Developing Latent Prints, U.S. Department of Justice, F.B.I. Laboratory Division, (1994), pages 55-56.

Technical Notes #1-0041, Lightning Powder Co. Inc., pages 1-4.

Materials:

- Rhodamine 6G powder
- Spatula
- Spray or rinse bottles
- Methanol or distilled water

SCOPE:

Rhodamine dyestain is a stain that is used primarily to aid in the luminescence of latent prints that have been treated with the Cyanoacrylate Ester (CAE) procedure. Rhodamine 6G is a very important stain because it has light absorption properties that lend itself to being used with Argon lasers, Copper Vapor lasers and alternate light sources. This stain is used in the examination of smooth or semi-smooth non-porous items.

OPERATION:

A spray or rinse bottle (approximately one liter) is filled with methanol or distilled water. A quantity of Rhodamine 6G, about the size of a BB (approximately .1 gram) is added to the methanol or distilled water and the bottle is sealed. The bottle is then gently agitated to mix the Rhodamine and distilled water or methanol. The resulting solution is a light pink color. The bottle is labeled with the date and the contents (being sure to indicate whether the solvent is distilled water or methanol). The solution can be stored at room

temperature with an indefinite shelf life.

No testing needs to be done as the Rhodamine 6G will luminesce when illuminated with an alternate light source such as a laser. The amount and strength of the dyestain used is left to the examiner's discretion. Rhodamine 6G always luminesces when exposed to light in the 450 - 525 nm range, but slight color variations may be noted. These variations may be due to the mixing of the stain or the substrate. The variations do not affect the quality of the examination.

Rhodamine 6G is thought to be a relatively safe compound when the exposures are at low levels. Rhodamine 6G should never be inhaled or allowed to get into the eyes or mouth. If this should occur, the eyes or mouth should be flushed with a generous amount of water and a doctor consulted. The methanol used in the stain is toxic in quantities as small as 30 ml and should not be allowed to come in contact with the skin, eyes, or mouth as it can be absorbed through the skin. If the methanol is allowed to come into contact with the eyes or mouth, the area should be flushed with generous amounts of water and a doctor consulted. For these reasons, the methanol needs to be handled carefully and non-permeable gloves worn during mixing and use of the stain. Inhalation of the methanol vapors should be kept at a minimum and the stain should be used in a well-ventilated area.

The stain can be disposed in the following manner:

a. Methanol-based stains can be allowed to evaporate in a fume hood.
b. Water-based stains can be disposed of in a waste bottle with an absorbent material to soak up the liquid. (See chemical-hygiene plan.)

PLP 17.8.0. BLOOD PRINT PROCESSING

REFERENCES:

Manual of Fingerprint Development Techniques, British Home Office, (1998).

Journal of Forensic Identification, Vol. 45, No. 5 Sept/Oct 1995, "Superglue of Latent Shoe Prints in Blood Prior to Processing", pages 498-50.

Proceedings of the International Forensic Symposium on Latent Prints, "Enhance Latent Prints in Blood With New Staining Techniques", Paul Norkus and Kevin Noppinger, page 147.

Materials:

- Amido Black
- Glacial Acetic Acid
- Methanol
- Distilled Water
- Magnetic Stirrer
- Pipettes
- 2 liter beaker
- Appropriately sized storage bottles
- 100 ml graduated cylinder
- 1000 ml graduated cylinder
- Triple Beam Balance

SCOPE:

Processing surfaces that have been contaminated with blood presents problems in the detection of friction ridge skin impressions because the blood prints have different properties than latent print deposits which are made with sweat and fats or oils. Blood prints on non-porous surfaces can be processed with Amido Black to detect the faint deposits of friction ridge skin impressions. Amido Black is a dye that stains proteins present in blood to give a blue-black or bright blue product. The reagent will not detect the normal constituents of latent fingerprints and, therefore, must be used in sequence with other techniques when blood-contaminated latent prints are

examined.

OPERATION:

When making examinations for latent fingerprints, a smooth, non-porous surface that is suspected of bearing blood-contaminated friction ridge impressions needs special considerations. Any samples to be used for the serological examination of the blood deposits need to be taken before the examination and enhancement of the surface for blood-contaminated friction ridge skin impressions.

Blood-contaminated friction ridge impressions need to be fixed before the processing for latent prints can begin as the liquid solutions used in the Amido Black process tend to wash away some or all of the blood deposits. Fixing can be done using heat, methanol, or superglue. Superglue is more effective as it will fix all possible latent prints. When using methanol, the item should be immersed for about an hour in a fume hood.

Amido Black uses a working solution, a rinse solution, and another wash solution (distilled water). A step-by-step procedure for mixing the solutions is provided below.

Working Solution:

1. Weigh out 3-5 grams of Amido Black and place it in a clean, dry one liter beaker.
2. Measure out 100 ml of acetic acid and add it to the Amido Black.
3. Measure out 900 ml of methanol and add it to the beaker containing the Amido Black and acetic acid. Stir the solution with a magnetic stirrer for thirty minutes and transfer the solution to a clean storage bottle.

Rinse Solution:

1. Measure out 100 ml of acetic acid and pour it into a clean, dry two-liter glass beaker.
2. Measure the 900 ml of methanol and add it to the beaker. Stir the solution for two to three minutes and transfer the solution to a clean, dry storage bottle

Water Rinse:

1. Rinse with water after the rinse solution.

Use of the Amido Black reagent requires the item to be immersed in the working solution for two to three minutes or the item to be irrigated (with a wash bottle) with the Amido Black working solution or spray bottle. The resulting latent prints are a dark blue-black.

Immerse or irrigate the item in the Acetic Acid-Methanol Rinse to remove the excess dye. Then immerse or irrigate the surface with the Water Rinse Solution. Allow the item to dry at room temperature and photograph any latent prints suitable for comparison.

When testing is completed, large quantities of the working solution can be returned to the storage bottle unless badly contaminated. The decision whether to return the solution to the storage bottle or discard the solution is at the examiner's discretion.

FURTHER INFORMATION:

The solutions needed for Amido Black processing have an indefinite shelf life and may be re-used at the examiner's discretion. Storage of the solutions should be in glass bottles which are labeled appropriately.

After mixing, the reagents should be tested by application of the reagent to a prepared latent print that is made with blood or a blood portion. After testing, the reagents can be stored until needed. The reagents can be tested prior to use at the examiner's discretion.

Safety in the laboratory is a concern and proper laboratory protocol is followed when using any acids or methanol. Rubber gloves, lab coats, respirators, and face shields or goggles (if there is a chance of the reagents becoming airborne) are worn when mixing or using the reagents.

Advantages:

Amido black is a simple inexpensive process that may be best for detecting faint, blood-contaminated friction ridge skin impressions on non-porous surfaces.

Disadvantages:

Amido black will interfere with forensic examinations for body fluids, fibers, hairs, paint, and most other examinations. Care should be taken during the evaluation process so that the impact on other types of

examinations is minimized.

Amido black will only stain traces of blood present and will not detect the friction ridge skin impressions composed of normal latent print constituents.

PLP 17.9.0. MIXING GENTIAN VIOLET

REFERENCES:

Chemical Formulas and Processing Guide for Developing Latent Prints, FBI, (1994).

Materials:

- Gentian Violet or Crystal Violet Powder
- Scales
- Graduated Cylinder
- Glass Tray
- Magnetic Stirrer and Stirring Bar (or other stirring device)
- Storage Bottles

SCOPE:

Gentian Violet (or Crystal Violet) is a biological stain that is used in the laboratory to visualize latent print deposits on the adhesive side of many tapes.

OPERATION:

Weigh out five grams of powdered Gentian Violet. Measure 1000 ml of distilled water and pour into glass tray. Add the Gentian Violet slowly. Combine the ingredients and stir using the stirring device for approximately twenty five minutes. After the stain is completely mixed in the water, the solution is ready for use. There is no established shelf life for the solution but the solution should be replaced as needed or every six months at a minimum.

Testing the Gentian Violet solution involves the application of quality latent prints on a piece of transparent adhesive tape (on the adhesive side). Latent prints are developed and the results noted. Gentian Violet is usually made for the examination process as needed, tested, and discarded after use.

FURTHER INFORMATION:

Gentian Violet and Crystal Violet are toxic and irritants. When preparing or using the solutions, the examiner should wear a lab coat, non-porous gloves, and a face shield if there is a chance of the liquid splashing into the eyes.

APPLICATION:

Items may be dipped in the solution or painted on with a small brush for approximately 1 to 2 minutes. Run cold tap water over the tape and the latent prints should appear.

Black tape should be processed in the same manner and the latents can be transferred to resin-coated photo paper and photographed.

PLP 17.10.0. SMALL PARTICLE REAGENT

REFERENCES:

Manual of Fingerprint Development Techniques, British Home Office, (1998), chapter 4.

Advances in Fingerprint Technology, Henry C. Lee and R.E. Gaensslen, (1991), pages 82-83.

Technical Notes #1-2757, Lightning Powder Co.

Materials:

- Molybdenum disulfide
- Distilled water
- Photo Flo 200
- Processing tray
- Spray bottle
- Stirrer base
- 1500 ml beaker

SCOPE:

Small particle reagent is a suspension of molybdenum disulfide particles in water. This solution works like a liquid fingerprint powder and works by adhering to the fatty portion of the latent print residue. Small particle reagent works best on surfaces that have been, or are wet.

OPERATION:

Small particle reagent (SPR) consists of a suspension of fine molybdenum disulfide (MoS_2) particles in a detergent solution. The particles adhere to the fatty portions of the latent print residue and allow visualization by turning the latent print gray. SPR may be used in two ways; dipping or spraying. Dipping is the preferred method as spraying is less sensitive. Spraying should only be considered when no other method is feasible.

The following is the formulation for SPR:

1. Place a 1500 ml beaker on a stirrer base.

2. Add 1000 ml of distilled water to the beaker.

3. Put an appropriately sized stir bar in the beaker.

4. Dissolve 30g of MoS_2 in the water. (MoS_2 comes in 30g bottles.)

5. Add three to four drops of Photo Flo 200 to the solution.

The SPR is put into a storage bottle, labeled, and stored until needed. The shelf life is two to three months. SPR is tested each time it is used by processing a quality latent print before any evidence is processed and the result is recorded in the examiner's case notes.

The following is a step-by-step procedure for the dipping procedure using SPR:

1. Stir the SPR thoroughly and put the solution into a tray.

2. Agitate the solution in the tray and add the item to be processed to the solution.

3. After two or three minutes, remove the item from the SPR and gently rinse with tap water. Allow the surface to dry and inspect for any suitable latent prints. Any latent prints developed can be photographed and lifted.

The following is a step-by-step procedure for the spray processing procedure using SPR:

1. Put the SPR into a spray bottle and shake thoroughly. The bottle needs to be shaken often to keep the MoS_2 in suspension.

2. Spray the SPR onto the item being examined.

3. Gently rinse the processed area with tap water and allow it to dry.

4. Inspect the area that was processed and photograph and lift any suitable latent prints.

FURTHER INFORMATION:

There does to appear to be any health hazards associated with MoS_2, but the process should be monitored to see if there are any allergies. Lab coats, rubber gloves, and face shields (if there is a chance of the solution become airborne) should be worn. Items should be inspected for hairs, body fluids, paint, and most other types of trace evidence before processing with SPR.

Advantages to the SPR treatment are:

a. SPR is cheap, non-toxic, and easy to use.
b. SPR can be used to process items that have been wet and can even be used in the rain.

Disadvantages to the SPR treatment are:

a. SPR is very messy and hard to clean up.
b. It is very difficult to prevent damage to latent prints located on the bottom side of an item being tray processed.

PLP 17.11.0 MIXING AND USE OF SUDAN BLACK

REFERENCES:

Manual of Fingerprint Development Techniques, British Home Office, Chapter 4, (1998).

Lightning Powder Technical Note No. 1-0034, "Sudan Black", (May, 1995).

The solution used in the laboratory consists of Sudan Black B, methyl alcohol, and distilled water. The materials used in preparation of the working solution are as follows:

- Scale
- Sudan Black B powder
- Methyl alcohol (methanol)
- Distilled water
- Beaker
- 100 ml graduated cylinder
- Spatula
- Plastic stirring rod
- Glass bottle (with tight fitting screw lid) to hold at least 200 ml
- Glass tray

SCOPE:

Sudan Black B is a dye which stains fatty components of sebaceous sweat to produce a blue-black image. It is less sensitive than some other processes for latent fingerprint detection but is of particular use on waxy surfaces. Examples of some other surfaces include those contaminated with grease, foodstuff, or dried deposits of soft drink. It will also enhance superglue-developed fingerprints.

OPERATION:

Place 15g of Sudan Black powder into a 2 liter glass beaker. Add 1 liter of methanol and stir with a plastic stirring rod. Add 500 ml of distilled water to the beaker and stir with the stirring rod. A black working solution will result. Some of the Sudan Black will not dissolve. Some will remain as particulate matter floating in the solution or will appear as sediment. Pour the solution, including

any solid matter, into a clean glass bottle with a tight-fitting screw top. Label the container appropriately. The working solution has an indefinite shelf life.

Shake the container of Sudan Black working solution and pour a sufficient amount into a tray large enough to place the item of evidence. Soak the item for 2-3 minutes. Rinse the article in cool, running tap water. The solution in the tray can be poured back into the bottle to be reused. Be certain that all undissolved dye is also returned to the bottle.

For large items, pour the solution over the surface, catching the run off in a tray for reuse. Rinse with cool running tap water.

Allow the item to dry at room temperature. Applying heat is not recommended. Evaluate the latent prints only after they have dried completely. Faintly developed latent prints can sometimes be enhanced by reprocessing.

Latent prints developed with Sudan Black should be photographed. While it is possible to lift the prints with tape, the tape frequently does not lift the print sufficiently. Therefore, it is strongly recommended to photograph the latent prints before attempting to lift them.

FURTHER INFORMATION:

There is no known health hazard associated with Sudan Black B provided these precautions are observed:

a. Wear laboratory coats and non-porous gloves when preparing or using the Sudan Black B processing solution.
b. Wear eye protection if there is any risk of splashing the solution in the eyes.
c. Use Sudan Black B in a well-ventilated area or fume hood.

If any chemical or liquid is:

a. Swallowed – seek medical attention immediately.
b. Splashed in the eyes – flush with cold running water and seek medical attention if soreness or other symptoms persist.
c. Spilled on skin (dry chemical) – brush the dry powder off with a tissue or a soft cloth. Wash the area thoroughly under cold running water.
d. Spilled on skin (liquid) – wash the area thoroughly under cold running water.

Sudan Black B is most effective when used on waxy surfaces. It is also suitable for use on:

a. Smooth non-porous items (contaminated with grease/oil).
b. Rough non-porous items (contaminated with grease/oil).
c. Plastic packaging material.
d. Untreated metal (light-colored objects).
e. Items that have been superglued.

Sudan Black B is NOT suitable for use on porous surfaces.

Advantages:

a. Cheap
b. Non-toxic
c. Can be used on contaminated surfaces

Disadvantages:

a. Relatively insensitive to uncontaminated prints.
b. Ineffective on dark or printed plastic items.
c. Can interfere with most other forensic examinations (including but not limited to handwriting, ink, paper and indented impressions, body fluids, fibers, hairs, and paint).

PLP 17.12.0. FLAME TECHNIQUE

REFERENCES:

Friction Ridge Skin, James F. Cowger, (1983), page 102.

Scott's Fingerprint Mechanics, Robert D. Olsen, (1971), pages 260-263

Fingerprint Techniques, Andre A. Moenssens, (1971), pages 126-127

Materials:

- Camphor blocks
- Shallow metal or Pyrex container
- Matches
- Fingerprint brushes

SCOPE:

Some hard, smooth surfaces, especially galvanized metal, present problems for the latent examiner in the detection of latent print deposits. The latent prints dry out and resist the adhesion of cyanoacrylates and/or powders. The use of a dense smoke, such as that produced by the combustion of camphor, provides heat which softens the latent print deposit and the particulate in the smoke bonds with the deposit and colors the ridge detail so that the latent print can be visualized.

OPERATION:

Preparation for the use of the flame technique is quite simple.

1. A block of camphor is placed in the metal or glass container. One edge of the block is ignited with a match or cigarette lighter. The combustion of the camphor produces a dense black smoke.

2. The surface to be examined with the flame technique is passed through the column of smoke until the surface is coated with a thin layer of soot particles.

The examiner needs to be careful that the surface does not get too hot or the layer of soot too heavy because the ridge detail may become obscured or destroyed.

3. After the surface is coated with a layer of soot, the surface is brushed with a fiberglass fingerprint brush and any suitable latent prints are photographed and/or lifted at the discretion of the examiner.

The flame technique may be used after cyanoacrylate and standard fingerprint powders have been used.

For items such as copper and galvanized surfaces, the flame technique may be the technique of choice as it is most often the most productive.

FURTHER INFORMATION:

Safety is a concern because of the open flame required for use. Established laboratory practices concerning the use of open flames should be observed. This technique should be done in a fume hood or in a well-ventilated area to avoid contamination of the air with smoke.

Care needs to be taken of the surface being examined because damage can occur with the application of excessive heat.

Advantages of using the flame technique are:

- It is a simple, cheap, and easy process.
- Latent prints can be detected on some surfaces standard techniques do not reveal.
- Latent prints developed with this technique can be preserved by lifting or photography.

Disadvantages of using the flame technique are:

- It is a dirty process because of the dense oily smoke produced by the combustion of the camphor.
- Surfaces processed with this technique can be damaged if too much heat is applied to the surface.
- Any technique that requires the use of an open flame has associated risks that must be considered.

18.0.0 IDENT SECTIION FORMS

CHEMICAL: _____

PREPARATION INFORMATION: _____

_____

_____

_____

_____

SHELF LIFE: _____

REFERENCE: _____

_____

_____

_____

QC METHOD: _____

_____

_____

DATE RECEIVED	MSDS	DATE OPENED	EXPIRATION DATE

REAGENT: _____

PREPARATION INFORMATION: _____

_____

_____

_____

_____

SHELF LIFE: _____

REFERENCE: _____

_____

_____

_____

QC METHOD: _____

_____

_____

DATE	NAME OF PREPARER	MANUFACTURER/LOT # OF INGREDIENTS	COMMENTS/ RESULTS OF QC

ISPFS

LATENT SECTION

LATENT TRAINING MANUAL REVISION FORM

Date:_____

Proposed by:_____

Add Amend Repeal

Chapter _____Section _____Page _____

Summary:

Proposed Language:

Form to be forwarded to Ident Section Supervisor.

ISPFS

LATENT SECTION

SOP REVISION FORM

Date:_____

Proposed by:_____

Add Amend Repeal

Chapter _____ Section _____ Page _____

Summary:

Proposed Language:

Form to be forwarded to Ident Section Supervisor.

IDENT UNIT EX MINATION WORKSHEET

LAB# 1 99-0041-LP

EXAMINER: 2 JOHN SMITH

Page 3 1 of 2

PHOTO LATENTS: Yes ___ No___ check one

Exam Start Date 7/21/99

Exam Finish Date 7/23/99 4

5

TYPE OF EXAM

(List # for order of processing sequence)

NV - no prints of value
LDO - lack clear ridge detail observed
LDV - lack clear ridge detail developed
NDP - no ridge detail present

Light
A - alt. light source L - laser

Lab Exh #	Agy Exh #	Description of Evidence	Exam.	Visual	CA	R6G	Light	Nin	PD	DFO	Powder	Sticky	AFIS	Photo	Results
7 1 Item	8 1 Item	9 Was the evidence sealed & signed? Describe the evidence	Sequence	1	2	3	4				6			5	10 Were there latents? Quality? Did you seal & sign evidence
			Date	7/21	7/21	7/21	7/2[illegible]				7/23			7/22	
			By	JS	JS	JS	JS				JS			JS	
			Sequence												
			Date												
			By												
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			By												
			Sequence												
			Date												
			By												
			Sequence												
			Date												
			By												
			Sequence												
			Date												
			By												

LATENT-UNIT EXAMINATION WORKSHEET

1. LAB#: example - *99-0041-LP*

2. Examiner: name of the examiner

3. Page of: example *1 of 1; 1 of 2*

4. Photo Latents: Yes ___ No___ (check one)
   Exam Start Date: *7/21/99*
   Exam Finish Date: *7/24/99*

5. Type of Exam (list # for order of processing sequence) see example

Exam.	Visual	CA	R6G	Light	Nin	PD	DFO	Powder	Sticky	AFIS	Photo
Sequence	1	2	3	4				6			5
Date	7/21	—	—	7/21				7/23			7/22
By	JS	—	—	JS				JS			JS

6. Shorthand for latent results

7. Lab Exhibit # *001*

8. Agency Exhibit # *D1* One item per square

9. Description of Evidence
   Was evidence sealed and signed, describe the piece of evidence
   example: *evidence s & s 1 ziploc baggie approx 3X5 in.*

10. Results: were there any latents?
    example: *NDP - s & s evidence*

Worksheet should be filled out as the evidence is being processed.

IDAHO DEPARTMENT OF LAW ENFORCEMENT
Bureau of Criminal Identification
Ident Section
Case Notes

Lab No. Agency Case No. Date

LP 19.0.0. REVIEW OF THE IDAHO AUTOMATED FINGERPRINT IDENTIFICATION SYSTEM

REFERENCES:

The Idaho Automated Fingerprint Identification System (AFIS) is housed in the Bureau of Criminal Identification (BCI) and is a member of the Western Identification Network, Inc (WIN).

All latent fingerprints submitted to AFIS are processed by the BCI staff. Any latents that do not receive a "HIT" against the fingerprint data base remain in AFIS. AFIS will continue to search these latents until a "HIT" is made, or the statue of limitations runs out.

Advances in Fingerprint Technology, Henry C. Lee and R. E. Gaensslen, (1991), pages 164-191.

Technical Policies and Procedures Manual, Western Identification Network, Inc.

OPERATION:

When a "HIT" is received, the case file, latent print, and fingerprint card are submitted to a latent examiner for comparison. When an identification is made by the examiner, it must be verified by another examiner, an identification report is generated, and the submitting agency must be notified.

LP 19.1.0. MORE HITS DIGITAL FORENSIC IMAGE PROCESSING SYSTEM

REFERENCES:

More Hits User Manual (Version 2.0)

SCOPE:

The More Hits Digital System is a computerized system that enables the examiners to visualize the information that is contained in an image. The information can be further visualized or enhanced with a number of tools such as contrast, brightness controls, and various filters.

OPERATION:

The More Hits Digital System allows the operator to adjust the contrast, black levels, lateral orientation, background noise, and tonal perspective of a captured image. The amount and kind of image processing used on an image is left up to the examiner's discretion.

See the More Hits Digital System SOP 1.0.0.

LP 19.2.0. OPERATION OF THE OHAUS TRIPLE BEAM BALANCE

SCOPE:

The routine operation of the Ohaus triple beam balance is given below.

OPERATION:

1. The balance is set up on a flat, level, even surface such as the work benches.
2. The sliding weights on the beams are slid to the left until the "windows" on the sliding weights read zero in the center and are in the notches that can be felt when moving the weights.
3. The weigh boat or other container is placed on the pan and the large knob (on the left of the beam) is rotated right or left until the beam indicator centers on zero. This reading means the beam has been balanced on zero and will not include the weight of the boat or other container in the weight measurement.
4. When weighed, the material is placed in the weigh boat and the weights are slid to the right until the measurement is close to balancing. The large graduated knob on the left is rotated until the beam balances zero. The combination of weights is read and the weights are recorded.

If a certain amount of a substance is to be weighed out, the beams are adjusted to read the desired weight (the weight above the tare weight) and the substance is added to the weigh boat until the beam balances.

LP 19.3.0. OPERATION OF THE SANYO/GALLENKAMP FINGERPRINT DEVELOPMENT CABINET

REFERENCES:

Sanyo/Gallenkamp Instruction Manual, (1994).

SCOPE:

The Sanyo/Gallenkamp Fingerprint Development Cabinet is a controlled atmosphere unit for the heating of items in a heat and/or humidified environment. The ability to control the heat and humidity is especially useful when making examinations of latent print evidence that has been treated with ninhydrin or DFO (1,8 Diazafluoren-9-ONE).

OPERATION:

The Gallenkamp Fingerprint Development Cabinet can be operated in the ninhydrin sequence or DFO sequence. Determination of the required heat and humidity control is dependant on the examination desired. Details of the operation of the cabinet can be obtained in the operation section of the Gallenkamp Instruction Manual. The most commonly used sequence is the ninhydrin. A step-by-step usage guide is found in the instruction manual.

FUTHER INFORMATION:

Additional information regarding maintenance, service, additional programming, and program profiles can be obtained by consulting the Gallenkamp Operator's Manual.

LP 19.4.0. OMNIPRINT 1000

REFERENCES:

Advances In Fingerprint Technology, Henry Lee and R. E. Gaensslen, pages 90, 115-118.

An Introduction to Lasers, Forensic Lights, and Fluorescent Fingerprint Detection Techniques, E. Roland Menzel, (1991).

Friction Ridge Skin, James F. Cowger, (1983), pages 106-107.

Omnichrome Evidence Detection with Forensic Laser Technology, (1989).

Omnichrome Manufacturer's Operating Instructions

SCOPE:

The Omniprint 1000 (OP1000) (ALS) is a monochromatic light source that has a range of 450-570 nm with one port of white light. Omniprint 1000 is used for the visualization of latent prints which have a natural, inherent luminescence, or prints which have been processed with a fluorescent dyestain or powder. The light can be used to detect the presence of certain body fluids such as semen and saliva. The monochromatic light can also be used in the examination of documents involving inks and obliterated or indented writings.

OPERATION:

The OP1000 is easy to operate, however; the following setup must be followed in order to maximize the lifetime of the lamp and to ensure the safety of the user. Anyone who will be operating this system should become familiar with these instructions. Omnichrome suggests keeping this booklet in a convenient location so it can be referred to if necessary. If any questions arise, feel free to contact Omnichrome's forensic staff.

SETUP

Unpack unit from box. Fully unwind electrical cord from the bottom supports. Open the lid and check to see that both switches are in the "off"

position. Plug the unit into a three-prong, grounded outlet. If an extension cord is used, it must be a heavy duty grounded cord. Please retain the box and packaging material in case the unit must be shipped.

Attach the fiber optic cable or liquid light guide. These cables are located in the black pouch under the lid. Remove the protective plastic cap from the end of the cable. Carefully insert the end of the cable into the opening on the unit.

The operator may unscrew the lens from the cable and attach the lens directly to the unit, allowing hands-free operation. The lid can be removed from the unit by sliding it off to the right.

When using the fiber optic cable, do not use the white light selection at full power for more than thirty seconds, as this will damage the cable. White light may be used at a lower setting for slightly longer periods of time.

The unit is now ready to be started. The following steps must be taken to properly operate the unit.

1. Turn the power rocker switch on. The switch will light, and the fan will begin to operate. Make sure the fan comes to full operating speed. You should be able to hear the fan come to this speed in a few seconds.

2. You may now turn on the lamp switch. The lamp should turn on in a few seconds. A ticking sound prior to the lamp engaging is normal.

3. To select wavelengths, turn the knob marked "Wavelength Selector Knob". A green light will appear next to the selected wavelength.

4. By observing evidence under the various wavelengths, and using the different colored goggles, proper wavelength and filter can be selected.

SAFETY

Although the OP1000 is not a laser, the safety precautions used are the same. Never look directly into the light or allow beams to bounce off surfaces into your eyes or the eyes of other persons in the vicinity. Goggles should be worn when appropriate to view evidence and protect

the eyes. As with other electrical appliances, guard against electrical shock.

Always use proper lab safety guidelines when using powders, dyes, and other chemicals.

SHUT DOWN

The OP1000 is a high intensity light source. It is best to allow the unit to run for longer periods of time. Omnichrome recommends a minimum operating time of five minutes, instead of turning the unit off and on for short periods of time. Repeatedly turning the unit off and on will shorten the life of the lamp, which is rated for 70 hours of use. Law enforcement agencies report that the lamp may last longer if the unit is operated according to these instructions. To turn off the unit, the following steps should be taken.

1. Push the lamp rocker switch to off. You must now wait for the unit to cool down.

2. After feeling the body of the unit and the exhaust, and determining that the unit is cool, the power rocker switch may be turned off.

3. Remove the fiber optic cable or liquid light guide, and replace the protective plastic cap on the end of the cable.

4. Loosely wind the cable and replace in black pouch. Place pouch in lid.

5. Unplug the unit and rewind electrical cord around the base of the unit.

6. Replace and latch lid onto unit.

LAMP REPLACEMENT

Replacing burned-out lamps in the system is relatively simple, however; care should be taken to follow the below listed directions. Improperly replaced lamps could cause shorts within the unit. This type of damage can be costly to repair. Before attempting to change lamps, make sure the unit is turned off and unplugged, and that the following steps have been read and understood.

1. Verify that the unit is off and unplugged.

2. Unscrew knobs on control panel. These knobs are tightened to finger-tight pressure only and should not be difficult to remove. Pliers should not be used to tighten or loosen any knobs.

3. Pull out control panel to reveal the inner portion of the unit.

4. Disconnect lamp plugs from sockets.

5. Unscrew lamp from retainer. Again, these screws should be finger-tight and easily removed.

6. Pull out the old lamp from retainer.

7. Place the new lamp in the retainer by matching and centering the glass alignment bump on the lamp to the alignment notch on the retainer. Do not touch the interior portion of the lamp, this will damage the lamp.

8. Place mounted lamp into bracket by matching the painted area on the lamp retainer to the painted area on the lamp bracket. This is critical to ensure that the lamp is properly oriented in unit.

9. Finger-tighten thumb screws.

10. Firmly plug in the lamp.

11. Replace panel in unit.

12. Finger-tighten knobs.

Please refer to the copy of the manufacturer's Operating Instuctions for using and replacing lamps.

LP 19.5.0. FUMING TORCH

REFERENCES:

FIVIS by 3M , Technical Note, Lightning Powder Co., (March, 1994).

ULTRATORCH, Lynn Peavey Co., Catalog (1999).

Materials:

- Fuming Wand
- Butane Refill
- Fuming Cartridges

SCOPE:

Processing surfaces with cyanoacrylate ester (CAE) prepares surfaces for the acceptance of powders and dyestains to enable visualization of the latent prints.

OPERATION:

See Lightning Powder Co. Technical Notes dated March, 1994 for complete operating instructions and recommendations.

FURTHER INFORMATION:

If used in a closed area or small room, respiratory protection is necessary in the form of a fume hood, vent fan system or unvented goggles and personal organic vapor respirator with dust/mist pre-filter. Persons with contact lenses should not open a working super glue tank with out taking the proper precautions as it could cause sever eye irritation.

LP 19.6.0. COLEMAN VACU-PRINT

REFERENCES:

Coleman Vacu-Print Instruction and Notes, Lightning Powder Co. (August, 1999).

Materials:

- Coleman Vacu-Print Table-top Chamber
- Coleman Vacu-Print Long (rifle) Chamber
- Vacuum Pump/Motor with hose
- Dual Connector
- Vacuum Pump Oil, one quart

SCOPE:

The Coleman Vacu-Print equipment allows for glue-fuming evidence in an air-evacuated, sealed chamber. This allows for shorter fuming times and less super glue for the process. Also will keep the evidence form becoming over super glued.

OPERATION:

See Lightning Powder Co. Technical Notes dated August, 1995 for complete operating instructions and maintenance requirements.

FUTHER INFORMATION:

CAUTION: "Do not place pressurized items such as sealed soda cans, sealed glass bottles or aerosol cans in the chamber. They can expand rapidly or explode as air pressure is evacuated from the chamber, potentially causing injury." As per Lightning Powder Co.

Appendix A

FORMULARY

AMIDO BLACK

Working Solution:

3-5 gram Amido Black
900 ml Methanol
100 ml Glacial Acidic Acid

Rinse Solution:

900 ml Methanol
100 ml Glacial Acidic Acid

May also use water after Rinse Solution

Amido Black 10B
Amido Black 12B
Napthol Blue Black
Naphatllene Black

Buy top grade of all Chemicals.
The shelf life of Amido Black is indefinitely.

NINHYDRIN

Ninhydrin (Ozone Safe)

Working Solution:

30 ml concentrate	X 4 = 120 ml
Fill to 1 liter with N-Hexane	X 4 = 4 liters
Clarify with 2- Propanol if needed	

Concentrate:

1st 300 ml 2-Propanol	X 2 = 600 ml
2nd 100 ml Acidic Acid	X 2 = 200 ml
3rd 50 grams Ninhydrin	X 2 = 100 ml

(stir with magnetic stirrer. May take 2 an hour to dissolve)
Let dry then place in a humidity chamber, this process need a warm moist environment, monitor for the development of latent prints.

RHODAMINE 6 G

Working Solution:

.1 gram	R6g
1 liter	Methanol

Place approximately .1 gram of R6g into into a 1 liter plastic spray bottle and add approximately 1 liter of Methanol, then gently agitate to mix the R6g and Methanol.

Rinse Solution:

1 liter of Methanol in a 2nd plastic spray bottle.

The shelf life of Rhodamine 6G is indefinitely.

PHYSICAL DEVELOPER KITS

Working Solution:

5 ml Solution "A" (20% silver nitrate solution) to
90 ml of solution "B" (reductant solution)

Stir working solution for approximately 1 minute with glass or plastic stirring rod.

This is a working solution of 18:1. For a larger quantity of working solution just add 5 ml of solution "A" to every 90 ml solution "B". If needed all of bottle "A" and "B" can be mixed together.

Do not mix the working solution until ready to use it.

SMALL PARTICAL REAGENT

Working Solution:

1. Place a 1500 ml beaker on the stirrer base.
2. Add 1000ml distilled water to the beaker.
3. Put an approximately sized stir bar in the beaker.
4. Dissolve 30g of MoS2 in the water. (MoS2 comes in 30 g bottles)
5. Add 3 to 4 drops of Photo Flo 200 to the solution.

The shelf life on Small Particle Reagent is approximately four weeks.

SUDAN BLACK

Working Solution:

1. Place 15 grams of Sudan Black powder into a 2 liter glass beaker.
2. Add 1 liter methanol and stir with plastic stirring rod.
3. Add 500ml of distilled water to the beaker and stir with the stirring rod.

The working solution has an indefinite shelf life.

1,8 - DIAZAFLUOREN - 9 - ONE (DFO)

Stock Solution:

1. 0.5 gram DFO
2. 100 ml Methanol
3. 100 ml Ethyl Acetate
4. 20 ml Acetic Acid

Total 220 ml solution

Working Solution:

1. 220 ml DFO stock solution
2. 780 ml Petroleum Ether

Total 1000 ml DFO working solution

Do not mix the working solution until ready to use.

STICKY - SIDE POWDER

Working Solution:

1. 1 tsp. Sticky - Side Powder into a shallow jar
2. Fill a brow dropper-bottle half full of water and half full of Photo-Flo 200.

Shake well. Using the dropper, add this solution to the powder in the shallow jar until you have a paste with the consistency of thin paint.

It should be noted that exact measurements and portions when preparing chemical solutions are desirable for consistent quality, but successful results in developing latent fingerprints are not dependent upon unequivocal accuracy. There is a margin of error in preparing chemical solutions

for latent fingerprint techniques without adversely affecting the successful developing of latent prints.

GENTIAN VIOLET

Working Solution:

1. Weigh out one gram of powered Gentian Violet
2. Measure out 1000 ml of distilled water and pour into a glass tray.

Add the Gentian Violet to the distilled water slowly. Stir using a stirring device for approximately twenty five minutes.

Appendix B
Supplies

1. Brushes

   A. A wide variety of types, shapes and sizes of brushes are available for processing evidence with powders. The total supply of different kinds of brushes required in the Latent Print Section depends on the types of brushes and color of powders used. An ample number of appropriate brushes will help to preclude cross-contamination of powders and brushes. While larger brushes are ordinarily used for large areas and smaller brushes on concentrated work or individual latent prints, fiberglass brushes are often used for both instances.

   B. The four primary categories of brushes are feather, fiberglass, hair and magnetic.

   C. The brushes are available commercially, see list of suppliers.

2. Lifting Materials

   A. Lifting materials for latent fingerprint consist primarily of transparent, opaque adhesive-coated materials. Following is list of recommended tapes and lifts for latent print preservation.

      1. Tape - Special latent print lifting tape, both transparent and frosted, is available from several commercial sources.

      2. Hinge Lifts - These consist of transparent lifting medium (tab) attached to clear, black, or white plastic backing tabs. Available from several commercial sources.

      3. Rubber Lifters - Available in black or white with transparent covers.

      4. Gelatin Lifts - These are available commercially in with black, white or transparent backgrounds and come in various sizes.

3. Magnifying Glasses

   A. Fine quality magnifying glasses are essential to latent print examination work. Usual magnification is approximately 4.5 times. Henry, Battley and other types of reticules are marketed to fit these magnifying glasses.

B. Head mounted magnifying glasses are useful during certain processing and examination procedures. These units are commercially available.

C. Magnifying glasses should be cleaned with commercially available window/lens cleaner. No caustic chemicals should be applied to the lens.

4. Powders

A. Many commercially produced latent print "dusting" powders are available and many are very similar from company to company. No powder is universally applicable to all types of non-porous surfaces and most examiners need a stock of a variety of types and colors of powders for specialized applications.

5. Miscellaneous Items

A. Glassware- Specific types of glassware (beakers, graduated cylinders, pipettes, etc.) required for chemical processing are available commercially.

B. Stirring Devices - Glass stirring rods, magnetic stirrers, plastic stirring rods, etc., are available commercially.

C. Forceps - Tweezers, forceps and tongs are all available commercially.

D. Storage Bottles - Glass and plastic bottles available commercially.

E. Pans and Dishes - Glass, ceramic or metal pans are available commercially.

F. Personal Protective Gear - Lab coats, gloves (latex, vinyl, cotton, etc.), safety glasses, alternate light source goggles, respiratory mask, booties, etc., are available commercially.

G. Maintenance of these items should be conducted during use and cleaning. Any items which are cracked, strained, scratched or torn, causing them to be unserviceable or non-protective, should be disposed of and replaced.

Appendix C

Security / Safety

EMERGENCY NOTIFICATION

Assist. Director Saundra DeKlotz	W 884-7201 H 336-3595
Major Ralph W. Powell FS	W 884-7207 H 884-8967
Manager Rachel Farnsworth FS	W 884-7189 H 288-2240
Supervisor Raymond A. York FS	W 884-7148 H 344-2473

Appendix C - 1

LAB OPENING AND CLOSING PROCEDURES

OPENING

1. All personnel should enter through the Identification Section entrance to the facility.
2. Each person must use their assigned 4-digit code plus # to enter the door and turn off the alarm.
3. If you are the only person in the Identification Section, re-lock the door after entering.
4. Turn on all the lights.
5. The lab door to BCI is to remain closed and locked at all times, as well as the door to the evidence vault.

CLOSING

1. The last person to leave needs to secure the front door by locking and alarming it.
2. The last latent examiner to leave must do the following:

   A. Turn off the fume hoods.
   B. Turn off the lights and the Gallenkamp in the photo lab.
   C. Lock chemical lab and powder lab doors.
   D. Check to make sure all irons are off and unplugged.
   E. Check to make sure all bag sealers are turned off and unplugged.
   F. Make sure forensic lights and alternate light sources are turned off.
   G. Turn off lights in the question document lab.
   H. Make sure all fans are turned off.
   I. Make sure the door to the evidence vault is closed, locked, and alarmed (TRS).
   J. Turn off all lab lights.
   K. Make sure all computers are turned off.
   L. Each examiner should lock their own evidence cabinet.

APPENDIX C - 2

FIRE ALARM EVACUATION PLAN

When an alarm is sounded (fire bell), all persons will evacuate the building using the following routes:

Photo Lab
Examiner's office areas
Question Document Lab
Chemical Lab
Latent Processing/Powder Lab
Supervisor's office
Evidence reception area

EXIT: West door commonly known as the employee/evidence receiving door.

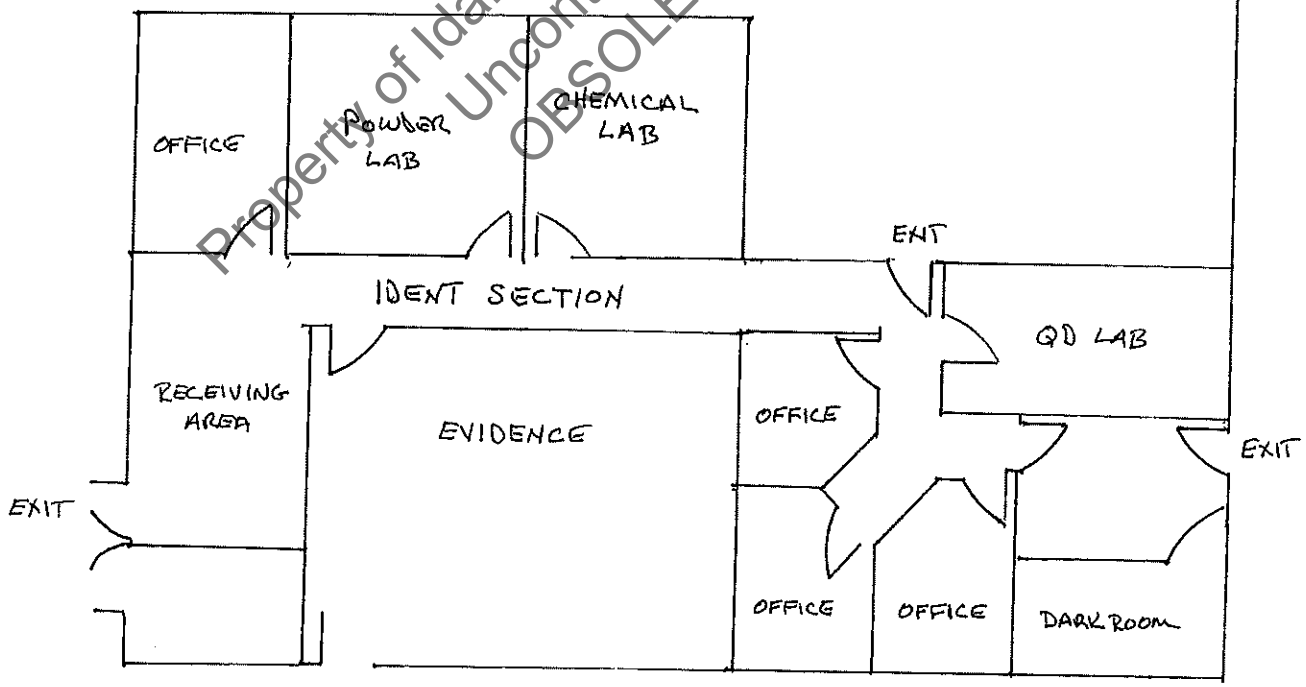
If exit is blocked, employees will evacuate through the nearest exit.

Upon evacuating the building, employees will gather at the **flag poles** and await further instructions. A head count will be taken.

To assist with the evacuation of the building, the following persons are responsible for the following assignments:

Section supervisor will ensure everyone is clear of the section. (Alternate - Latent Examiner Sr.)

Ident Section Safety officer will act as monitor and ensure all doors have been closed and locked. (Alternate - Latent Examiner Sr.)



APPENDIX C-3

SAFETY

Refer to the following manuals for in-depth safety issues.

- Forensic Services Standard Operating Procedures
- Chemical Hygiene Plan
- MSDS Book
- Bloodborne Pathogens Exposure Control Plan

Appendix C- 4

Clandestine Laboratory Safety

Refer to the Idaho State Police Forensic services Chemical Hygiene and Safety Plan, Appendix K.

- Response Plan
- Personal Protective Equipment
- Safety
- Site Control & Decontamination
- Site Emergencies
- Incident Reporting
- Terms
- Resource Agencies

Appendix D

Mesuarments / Tables and Equivalents

METRIC EQUIVALENTS:

DRY:	1 pound (lb)	= 453.6 grams (g)
	1 ounce (oz)	= 38.35 grams (g)
	1 gram (g)	= 0.035 ounces (oz)
	1 milligram (mg)	= 0.001 grams (g)
LIQUID:	1 milliliter (ml) (cc)	= 0.034 fluid ounces (oz)
	1 liter (l)	= 1000 milliliters (ml)
	1 fluid ounce (oz)	= 29.573 milliliters (ml)
	500 milliliters (ml)	= .5 (1/2) liter (l)
	1 gallon (gal)	= 3.79 liters (l)

APPENDIX E

REFERENCES

Advances in Fingerprint Technology, Henry C. Lee & R.E. Gaensslen

American Society of Crime Laboratory Directors (ASCLD), Accreditation Manual

Chemical Formulas and Processing Guide for Development of Latent Fingerprints, U.S. Department of Justice, Federal Bureau of Investigation

Criminal Investigation, Basic Perspectives, Paul B. Weston and Kenneth M. Wells

Department of Law Enforcement, Idaho State Police, Forensic Services, Chemical Hygiene and Safety Plan

Department of Law Enforcement, Idaho State Police, Exposure Control Plan

Department of Law Enforcement, Idaho State Police, Policies Manual

Department of Law Enforcement, Idaho State Police, Forensic Services, SOP Manual

Effective Expert Witnessing, Jack V. Matson

Federal Bureau of Investigation Advanced Latent Fingerprint School Text

Federal Bureau of Investigation Fingerprint Training Manual, Identification Division Technical Section

Fingerprints, Palms, and Soles, An Introduction to Dermatoglyphics, Harold Cummins and Charles Midlo

Fingerprint Techniques, Andre A. Moenssens

Fingerprints and the Law, Andre A. Moenssens

Forensic Image Tracking System, More Hits User Manual

An Introduction to Lasers, Forensic Lights and Fluorescent Fingerprint Detection Techniques, Dr. E. Roland Menzel

Journal of Forensic Identification, International Association for Identification

Kodak Professional DCS 420 Digital Camera User's Guide, Eastman Kodak Co.

Kodak Professional DCS Cameras Quick Guide 12/05/96, Eastman Kodak Co.

Law for the Expert Witness, Daniel A. Bronstein

Lightning Powder Co. Technical Notes

Manual of Fingerprint Development Techniques, Police Scientific Development Branch, Home Office U.K.

Nikon N90 Instruction Manual

Omniprint 1000A Operating Instructions, Mell es Griot

Safety Guidelines, International Association for Identification

The Science of Fingerprints, U.S. Department of Justice, Federal Bureau of Investigation

Scott's Fingerprint Mechanics, Robert D. Olsen Sr.

Technical Notes - Lightning Powder Co.

Techniques of Crime Scene Investigation, Barry A.J. Fisher

INFORMATION FOR THIS MANUAL AND ANY ADDITIONAL INFORMATION REGARDING ANY OF THE TECHNIQUES DESCRIBED HEREIN CAN BE FOUND IN THE LATENT PRINT SECTION LIBRARY.

TRAINING FOR LATENT FINGERPRINT EXAMINERS
BASIC TO ADVANCED

1. Fingerprint Classification
   FBI 40 hrs.

2. Advanced Latent Fingerprint Techniques and Chemical processing
   FBI 40 hrs.

3. Advanced Palm Print Identification
   International Association for Identification. 24 hrs.

4. Digital Image Workshop
   Forensic Identification Training seminars, Ltd. 40 hrs.

5. Advanced Ridgeology comparison Techniques
   Forensic Identification Training Seminars, Ltd. 40 hrs.

6. Mastering Expert Testimony
   Forensic Identification Training Seminars, Ltd. 40 hrs.

7. Rynerson & Chison Homicide Investigation School
   Location to be announced. 60 hrs.

8. Administrative Advanced Latent Fingerprint School
   FBI Academy Quantico, VA. 120 hrs.

9. D.E.A. Clan-Lab Certification Course
   Location to be announced. 40 hrs.

10. P.O.S.T. Instructor Development Course
    P.O.S.T. Meridian, ID 32 hrs.

11. Latent Fingerprint Photography
    FBI Academy Quantico, VA. 80 hrs.

12. Basic Black & White Photography workshop
    Nicon/Kodak Law Enforcement Photography.

13. International Association for Identification Annual Education Conferences (Held Nationwide).

14. Pacific Northwest Division of IAI meetings and training conferences (Held in the Northwest).

15. International Association for Identification Latent Print Certification (CLPE).

16. Crime Scene Technician, (CST) Level I

17. Crime Scene Analyst, (CSA) Level II

18. Senior Crime Scene Analyst Level III

04/04/00 RY

APPENDIX G

MANUFACTURES AND/OR DISTRIBUTORS
OF FINGERPRINT EQUIPMENT
DECEMBER, 1999

ACE Fingerprint Equipment Laboratories, Inc
P.O. Box 288
Wake Forest, NC 27588
Phone 1-800-426-7072
Fax 1-919-556-6176
E-Mail acefel@mindspring.com
Fingerprint Equipment and Accessories

Aldrich
1001 West Saint Paul Ave
Milwaukee, WI 53233
Phone 1-800-558-9160
Fax 1-800-962-9591
Scientific Equipment

Fisher Scientific Laboratories
711 Forbes Ave
Pittsburgh, PA 15219-9919
Phone 1-800-766-700
Fax 1-800-926-1166
Scientific Equipment and Supplies

GRAINGER
5576 Irving Street
Boise, ID 83706-1288
Phone 1-208-377-2801
Fax 1-208-375-0869
Industrial and Commercial Equipment and Supplies

Identicator Corp.
4051 - T Glencoe Ave.
Marina Del Rey, CA 90292
Phone 1- 310-305-8181
Fax 1-310-578-1910
Fingerprint Equipment and Accessories

Kinderprint Company, Inc.
P.O. Box 16
Marinez, CA 94553
Phone 1-800-227-6020

Fingerprint Equipment and Accessories

Lightning Powder Co., Inc.
1230-T Hoyt St. SE
Salem, OR 97302
Phone 1-800-852-0300
Fax 1-503-588-0398
Fingerprint Equipment and Accessories

Lynn Peavy Co.
11148 Thompson Ave.
P.O. Box 14100
Lenexa, KS 66215
Phone 1-800-255-6499
Fingerprint Equipment and Accessories

Melles Griot
2251 Rutherford Road
Carlsbad, CA 92008
Phone 1-800-645-2737
Fax 1-760-438-5208
E-Mail mnolte@aol.com
Fingerprint Equipment and Accessaries

SIRCHIE Finger Print Laboratories, Inc.
100 Hunter Place
Youngsville, NC 27596
Phone 1-800-356-7311
Fax 1-800-899-8181
E-Mail sirchie@nando.net
Fingerprint Equipment and Accessaries

RICE SAFETY EQUIPMENT CO.
5500 West Howard
Skokie, IL 60077
Boise, Id Phone 1-800-452-7433
Fax 1-208-378-4929
Safety Equipment and Accessories

BIBLIOGRAPHY

Journal of Forensic Identification
by The International Association for Identification

Advances in Fingerprint Technology
by Henry C. Lee & R.E. Gaensslen

Fingerprint Techniques
by Andre A. Moenssens

Fingerprints and the Law
by Andre A. Moenssens

Scott's Fingerprint Mechanics
by Robert D. Olsen, Sr.

An Introduction to Lasers, Forensic Lights
and Fluorescent Fingerprint Detection Techniques.
By Dr. E. Roland Menzel

Fingerprint, Palms and Soles
An Introduction to Dermatoglyphics.
By Harold Cummins and Charles Midlo

Techniques of Crime Scene Investigation
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Effective Expert Witnessing
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by Daniel A. Bronstein

Forensic Image Tracking System
More Hits User Manual

Manual of Fingerprint Development Techniques
Police Scientific Development Branch
Home Office U.K.

Safety Guidelines
International Association for Identification

The Science of Fingerprints
F.B.I.

F.B.I. Advanced Latent Fingerprint School text.

F.B.I. Fingerprint Training Manual
from the Identification Division Technical Section

Kodak Professional DCS Cameras
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Operating Instructions
Mell es Griot.

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User's Manual
Eastman Kodak Co. 1994

Nikon N90
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Lightning Powder Co.
Technical Notes.

Department of Law Enforcement
Idaho State Police Forensic Services
Chemical Hygiene and Safety Plan (May 1996)

Journal of Forensic Identification
Vol. 45 No. 5 Sept/Oct 1995 pages 498-503
Super glue of Latent Shoe Prints in Blood prior to processing with powder

Journal of Forensic Identification
Vol. 46 No. 1 Jan/Feb 1996 pages 19-31
The Super Glue Fuming Wand (FIVIS)

Forensic Science Omnichrome-Evidence Detection with Lasers
Effect of Super Glue, Other Fingerprint Development Agents, and
Luminol on Bloodstain Analysis.
April 2, 1986 George T. Duncan

Enhance Latent Prints in Blood with New Staining Techniques.
Paul Norkus and Kevin Noppinger
Florida Dept. Of Law Enforcement
Proceedings of the International Forensic Symposium on Latent Prints page 147

Recovering of Latent Fingerprints Evidence
from Human Skin: Causation, Isolation, and Processing Techniques.
By William C. Sampson, Karen L. Sampson, and Frank Shonberger, 1997

RECOMMENDED READINGS
FOR
LATENT FINGERPRINT EXAMINERS

Journal of Forensic Identification
by The International Association for Identification

Advances in Fingerprint Technology
by Henry C. Lee & R.E. Gaensslen

Quantitative-Qualitative Friction Ridge Analysis
An Introduction to Basic and Advanced Ridgeology
David R. Ashbaugh

Fingerprint Techniques
by Andre A. Moenssens

Fingerprints and the Law
by Andre A. Moenssens

Scott's Fingerprint Mechanics
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