

Fingerprint and Footwear Forensics Newsletter

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PROGRAMME UPDATE

It has been brought to our attention by a number of forces that it would be beneficial if we highlighted specific advice, contained in this and other publications, which will impact directly on working practices in force.

We have previously used this newsletter format to present key information on new or amended techniques ahead of formal publication in the Manual of Fingerprint Development Techniques. This is done to ensure that our recommendations for maximising evidence recovery are disseminated at the earliest opportunity. However, it is apparent that such important information could be missed when it is presented alongside articles on more general aspects of our work.

We appreciate now that we need to find a way of highlighting specific advice on new or amended techniques, either within this newsletter format, or possibly via an additional formal notice to SSMs and practitioners.

We have already discussed this issue with NPfA, Harperley Hall and agreed to provide clear training documentation, in parallel with our publications for forces, enabling them to include any new recommendations in their course material.



Newsletter Index

Until we have decided upon a suitable mechanism for disseminating key information to forces directly, we have compiled an index of all our newsletter articles since 2000, which has been circulated with this newsletter. In the index we have identified all those articles which represent changes to our recommendations and plan to update this index annually.

NEW RECOMMENDATIONS for Powder Suspensions

For some time our programme plans have included projects to evaluate the performance of powder suspensions (PSs) on a variety of surfaces. These projects are continuing this year, since we are aware of the potential that this technique appears to offer for fingerprint (and footwear mark) development.

Until now, we have limited our advice to recommending that PSs are used on non-porous surfaces as a final treatment when other processes have been unsuccessful (Publication No. 47/05, October 2005). More specific advice on the use of PSs on adhesive surfaces was issued later (Publication No. 23/06, March 2006).

The operational successes that are being reported by police forces cannot be ignored. We have already passed on information on the use of white powder suspension (WPS) on cowlings in our last newsletter (Publication No. 17/07, April 2007). We understand that SPSA Forensic Services, Glasgow are collaborating with Strathclyde University to compare the use of WPS (White Wet Wop ®) with VMD. Their work on cowlings supports our previous information for WPS but for wetted black, clear or coloured polythene, further work is planned.

In our laboratory, latest work on adhesive tapes and non-porous surfaces has highlighted a variety of issues which need to be evaluated before we can be confident to give definitive advice to police forces. We have enlisted the support of Brunel, Lincoln and Bradford Universities as well as sponsors from the FFF User Group to try to understand the effects we have observed: these have largely been of inconsistency in performance. We have made significant progress regarding the relative performances of carbon-based black powder suspension (CBPS) and iron-based black powder suspension (FeBPS) on a variety of surfaces.

Until further advice can be given, we are able to make a number of recommendations, which can be put into effect immediately.

RECOMMENDATIONS

- On the adhesive side of light-coloured tapes and labels either carbon-based black powder suspension (CBPS)¹ or, for tapes known to have rubber-based adhesive, superglue/ basic yellow 40 (SG/BY40) are recommended.
- On the adhesive side of dark-coloured tapes and labels it is recommended that you use either the HOSDB titanium dioxide-based white powder suspension (TiWPS)² or, for tapes known to have rubber-based adhesive, SG/BY40.
- On the adhesive side of tapes and labels basic violet 3 (BV3) will give extra fingerprints after both SG/BY40 and powder suspensions have been used.
- There is no change to the recommendations given in the adhesive tapes newsletter for tapes and labels with porous and semi-porous backings.

“On the non-adhesive side of masking tapes the most effective technique is vacuum metal deposition (VMD).

If VMD is not available, it is possible to use superglue followed by black powder or black magnetic powder although the effectiveness is significantly less than that achieved with VMD.

The adhesive side of tape should be spot tested with powder suspension (Appendix 2 - 23/06) to determine the type of adhesive. If rubber-based, the adhesive should be treated with black powder suspension. However as superglue is known to adversely affect the performance of subsequent black powder suspension*, then it is recommended that if the non-adhesive side is treated with superglue the adhesive side should be protected by placing it on silicone release paper (Appendix 1 - 23/06). If the adhesive is shown to be acrylic-based then this should be treated with physical developer.”*

- On light-coloured non-porous surfaces powders followed by iron-based black powder suspension (FeBPS)³ may be used as an alternative to powders followed by SG/BY40.
- On dark-coloured non-porous surfaces powders followed by TiWPS⁴ may be used as an alternative to powders followed by SG/BY40.

* Post-publication note:

Iron-based Black Powder Suspension (FeBPS)

Summary Table

Adhesive-side of Tapes		Non-porous surfaces	
Light	Dark	Light	Dark
CBPS ¹ or	TiWPS ² or	Powders then FeBPS ³ or	Powders then TiWPS ⁴ or
SG/BY40 ⁵	SG/BY40	Powders then SG/BY40	Powders then SG/BY40
Use BV3 last	Use BV3 last		
No change to tapes with porous and semi-porous backings			

Notes

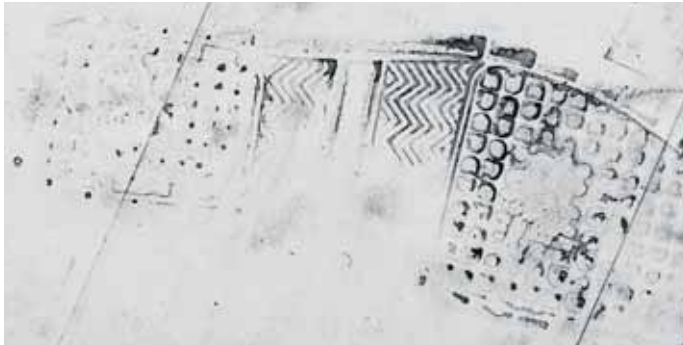
1. Carbon-based black powder suspension has been found to be more effective across the range of adhesives. Black Wet Powder from Kjell Carlsson and Black Wet Wop from Armour Forensics are known to be carbon-based.
2. It is believed that all white powder suspensions are titanium-dioxide-based but the particles have different coatings to give them various properties. The HOSDB titanium dioxide supplied with Publication No. 23/06, March 2006 the Additional Fingerprint Development Techniques for Adhesive Tapes Newsletter, is most effective for use on adhesive tapes and should be kept only for this use until an alternative is recommended.
3. Iron-based black powder suspension, detailed in Publication No. 23/06, March 2006 the Additional Fingerprint Development Techniques for Adhesive Tapes Newsletter, has been found to be more effective than carbon-based black powder suspension on non-porous surfaces.
4. It has been reported by some police forces that White Wet Wop ® from Kjell Carlsson and White Wet Wop ® from Armour Forensics are more effective on non-porous surfaces than the HOSDB TiWPS.
5. Superglue should only be used if it is certain that the adhesive is rubber-based, otherwise use carbon-based black powder suspension.



FeBPS (left) and CBPS (right) on a textured ceramic tile

Footwear Mark Recovery

Last year HOSDB completed a six-month feasibility study looking at footwear mark recovery methods (see HOSDB Publication No. 58/06, October 2006, for further details).



Latent footwear mark imaged on the GLScan equipment

On completion of this phase of the project, fourteen distinct areas of work were suggested for further study. All forces were asked to review and prioritise the proposals, via the National Footwear Board's regional representatives. As a result of this prioritisation, and with some flexibility for innovation from HOSDB, a programme of work has been established consisting of the following projects:

1. Powder suspensions for enhancing footwear marks in a range of contaminants
2. Health and safety assessment of electrostatic lifting equipment
3. Production of a prototype mark dryer
4. Enhancement of footwear marks in blood
5. Lifting and storage of footwear marks



Trial of fixing method for the application of blood reagents

Project progress is discussed at quarterly meetings of the National Footwear Board's Research and Development sub-group, chaired by Dick Johnson (SSM, Bedfordshire Police). Findings from this work will be disseminated to crime scene investigators and chemical enhancement laboratories via newsletters and updates to the NPIA Footwear Marks Recovery Manual.

Scene Clean Up

Further to the article in the April 2007 Newsletter (HOSDB Publication No. 17/07), more progress has been made with regard to protocols for scene clean-up following chemical treatment. A letter outlining the concerns raised about the suitability and robustness of scene risk analyses, roles and responsibilities at the scene and measures to be taken in the event of the application of non-HOSDB methods was submitted to the Crime Scene Investigation Board for their consideration.

This issue remains an item on the National Scientific Support Laboratories' Working Group of the National Fingerprint Board. We hope to give a progress report in the next Newsletter.



Cleaning up after application of Acid Violet 17

We can also report that Rentokil R & D department have completed a short study into techniques for removal of ninhydrin marks from treated surfaces. Several cleaning solvents were tested on plaster covered in white paint and treated with a ninhydrin fingerprint working solution. The key observations from the study can be summarised as follows:

- Water and propylene carbonate-based products did not completely remove the purple reaction products.
- Ethanol and acetone-based products did remove the purple reaction product, but may also remove painted surfaces from the plaster.
- Pale purple spots may re-develop several weeks after cleaning

Based on these results, Rentokil's recommendations for clean-up of scenes treated with ninhydrin are to clean the purple reaction product from the treated surface using detergent and water, followed by the application of a seal coating to cover any purple colouration that could re-develop in humid conditions. This is in close agreement with previous advice from HOSDB.

Staff Issues

Chris Selway joins the team

Chris Selway joined the Fingerprint and Footwear Forensics team in July, taking over responsibility for the CBRN Forensics project from Alex Hart. Chris has worked at HOSDB for over eight years in the Firearms and Protective Equipment Group.

The FFF team would like to congratulate Alex Hart on his promotion to Senior Scientific Officer in the Business Planning and Performance team at HOSDB. After eighteen months managing the CBRN Forensics project with Lesley Fitzgerald, Alex made significant progress in this new area of work for the FFF team. During his time with the group Alex has worked on a variety of projects and has been primarily responsible for developing the solvent black 3 formulation for use at scenes of crime and for work leading to our recommendations for developing fingerprints on masking tapes.

Glen Cochrane's secondment

During May and June, the FFF team had the benefit of the secondment of Glen Cochrane from Hertfordshire Constabulary. Glen has been able to provide a customer's perspective on the broad range of activities of the team and has been working on several issues, primarily evaluating and proposing ways of improving the communication of FFF team work outputs to police forces. From the results of a survey, several recommendations have been made for how these communications (Manual, Handbook, Newsletters, website and telephone/e-

mail enquiries) could be improved. Several of these recommendations will be implemented in the coming months and include the publication of a subject index to the HOSDB Newsletters since 2000, referred to earlier in this publication.

Glen became involved in other aspects of the group's work and gave operational insight during the design and prioritisation of new projects as well as experimental design in the powder suspensions study. We are grateful to Glen for all of her input during her secondment and look forward to her continued interest in our activities.

SUMMARY REPORTS OF RECENT STUDIES

Use of Ethanol-based Basic Red 14 with the Laser

A joint project between SPSA Forensic Services Dundee and the University of Abertay, Dundee has examined the use of ethanol-based basic red 14 as a stain for superglue on polythene bags for fingerprint development. They compared the use of ethanol-based basic red 14 with excitation using a 5W 532nm laser with the ethanol-based basic yellow 40, when excited with the violet/blue filter in a Quaser (Q) 101.

The results on fifty randomly collected, used polythene bags show that the effectiveness of the two systems appears to be equivalent.

Earlier work carried out by HOSDB found the ethanol-based versions of each dye to be equivalent when excited by the correct viewing filter from the same Q100. Use of the Q40 or Q2000 visualised fewer fingerprints than the Q100.

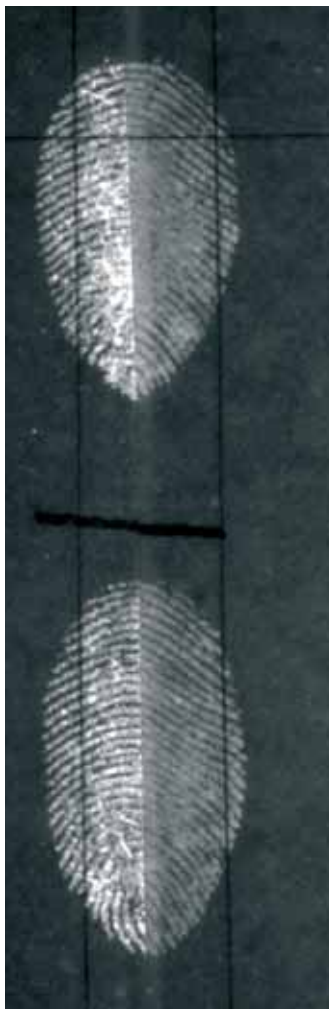
NEW RECOMMENDATION

Therefore, it is recommended that police forces with a 5W 532nm laser use ethanol-based basic red (1.5g basic red 14 in 1 litre ethanol) as an alternative to basic yellow 40 visualised using a Q40 or Q2000.

Ethanol-based basic red 14 may also be used if background fluorescence interferes with fluorescence from fingerprints stained with basic yellow 40.

Effectiveness of Zinc/Indandione Formulations

In the late 1990s, HOSDB compared a new amino-acid developing reagent, 1,2-Indandione, with three DFO formulations in an operational trial.



A typical split depletion with DFO on the left and Indandione on the right

The HFE-based DFO proved to be the most effective and was recommended to replace the CFC-based DFO.

Researchers in the USA and Australia have recently been working on new formulations of 1,2-Indandione which include zinc salts that when reacted with fingerprints produce increased fluorescence over the original, making them more effective.

Rebecca Batham from Strathclyde University, has carried out a series of comparisons at HOSDB, using these new indandione formulations and a modified UK formulation.

The modified UK 1,2-Indandione formulation developed more and brighter fluorescent fingerprints than the other indandione formulations but then proved to be less effective than HFE-based DFO, although the results of the final comparison were close.

Therefore HOSDB does not see any operational advantage in continuing internal research in this area at present.

Relationship between DNA Shedding and Fingerprint Donation

If a crime has been committed and a perpetrator leaves behind their fingerprint, their identity may be found in two ways – by the level of detail in their fingerprint and by the DNA left behind. For serious crimes, both avenues of evidence are usually explored.

In an operational setting it would be useful to know whether a poor fingerprint would yield enough DNA for a profile to be obtained.

HOSDB is currently part-funding a PhD project investigating the recovery and examination of human contact traces from fire scenes with the Centre for Forensic Science at the University of Strathclyde. The work is being carried out by Ainsley Dominick, who recently completed her first six month placement at HOSDB.

One of the aspects of the PhD will be to establish whether there is a correlation between the DNA shedder status of a person and whether or not they are a good fingerprint donor.

HEALTH AND SAFETY ISSUES

Welfare of Pregnant Staff

HOSDB has recently received a number of enquiries about the welfare of pregnant staff working in scientific support environments. There are two ways of presenting advice about pregnant workers, although in essence they are the same.

The short answer is that the welfare of all staff should be managed in the same way. That is, all risks associated with the working environment and tasks that staff are asked to carry out should have been identified. Those risks should then be mitigated through safe systems of working which will include the careful choice and proper use of protective equipment (including engineering controls such as fume hoods) and personal protective equipment (such as disposable gloves, laboratory coats, protective goggles, glasses and if necessary, respirators).

This is especially pertinent for pregnant staff as the first trimester (0-14 weeks) of pregnancy is when the foetus is most vulnerable to chemical or radiological hazards and often a woman does not know that she is pregnant for the early part of this period.

HOSDB publish recommendations in the Manual of Fingerprint Development Techniques (MoFDT) for the safe and effective use of each of the recommended processes and these should be adhered to. If a local risk assessment gives conflicting advice to the MoFDT then HOSDB should be informed immediately.

The long answer is that the 1992 European Directive on pregnant workers and new mothers, which has become law in every member state, gives female employees a number of important rights. Amongst these are that the employer is obliged to carry out a risk assessment of the work once given notice of pregnancy. Early notice is important because, as already mentioned, some risks are higher early in pregnancy. Also pregnant staff cannot be compelled to work at night, so the employer must ensure that only day shifts are worked by them.

The risks from chemicals are considered low as the recommended fingerprint development processes contain no chemicals known to be toxic for reproduction and only four that are suspected of giving problems in this area. Of these iodine and zinc chloride are extremely rarely used and may therefore be easily avoided. Basic Violet 3 (crystal violet) and phenol might be used more often and work should be planned to avoid exposure of pregnant staff to them.

For all development techniques, including those recommended by HOSDB, the employer must conduct in-depth risk assessments and hold written reports of them, whether they are carried out in the laboratory or at scenes.

However, when carrying out a risk assessment in respect of pregnancy a laboratory is deemed to contain many more risks other than those posed solely by physical, chemical, and biological agents. Mental and physical fatigue, standing or sitting for too long, and stress at work are all recognised as potential threats during pregnancy. For example, some parts of the job may become uncomfortable or impossible when pregnant. Manual lifting is dangerous, because ligaments are softened. Lone fieldwork is not advisable in the latter stages of pregnancy, and activities that put the body under stress, such as climbing, are extremely inadvisable. Long hours and working in hot conditions should also be avoided. Sitting on uncomfortable lab stools or standing for long periods are not only difficult but increase the risk of low birth weight or pre-term delivery. In early pregnancy, even the smell of some chemicals may bring on a feeling of nausea. These are all recognised risks so it is important to ensure that the person carrying out the risk assessment knows what difficulties a pregnant member of staff is facing and any risks identified should be avoided.

Certainly, if good laboratory practices are used and those risks are managed well, there is no reason why a pregnant woman would be at an increased risk compared to other staff. Indeed a number of studies in the USA, although not conclusive, have shown that laboratory workers have no or only slightly increased risk of pregnancy problems compared to the general population (Reference 11).

Further reading

1. Council Directive 92/85/EEC on the introduction of measures to encourage improvements in the health and safety at work of pregnant workers and workers who have recently given birth or are breast feeding (tenth individual directive within the meaning of Article 16 (1) of Directive 89/391/EEC).
2. Health and Safety Commission, "The Management of Health and Safety at Work Regulations 1999 – Approved Code of Practice and Guidance", L21, 2nd Edition, HSE Books, 2000.

3. "Control of Substances Hazardous to Health - The Control of Substances Hazardous to Health Regulations 2002 - Approved Code of Practice and Guidance" L5, 5th Edition, HSE 2005.
4. "Control of Lead at Work - The Control of Lead at Work Regulations 2002 – Approved Code of Practice and Guidance, L132, HSE 2002.
5. "New and Expectant Mothers at Work - A Guide for Employers", HS(G)122, 2nd Edition, HSE, 2002.
6. "A Guide for New and Expectant Mothers Who Work", INDG 373, 2nd Edition, HSE, 2005.
7. DTI Pregnancy and work: what you need to know as an employee. Babies due on or after 1 April 2007 <http://www.berr.gov.uk/employment/workandfamilies/maternity-leave-pay/index.html>
8. DTI Pregnancy and work: what you need to know as an employers. Babies due on or after 1 April 2007 <http://www.berr.gov.uk/employment/workandfamilies/maternity-leave-pay/index.html>
9. EHSC Note, "Pregnant Workers, Chemicals and the Law", Royal Society of Chemistry, version 3 2005
10. EHSC Note, "Reproductive Risks of Chemicals at Work", Royal Society of Chemistry, 2005.
11. Career Development - Alone in the Lab, Jim King US Apr 2006 http://sciencecareers.sciencemag.org/career_development/previous_issues/articles/2006_04_07/alone_in_the_lab

EQUIPMENT UPDATE

Photo-flo supply

We are aware that several forces have had difficulty in obtaining the Photoflo detergent used to make iron-based and titanium dioxide-based powder suspensions. Kodak have given assurances that they have no plans to cease production.

Current suppliers are

Keyphoto Ltd

156 St Albans Road
St Albans, Herts, AL4 9LP

Tel: 01727 860400

E-mail: service@keyphoto.com

Calumet Ltd

Bradbourne Drive
Tilbrook
Milton Keynes, Bucks, MK7 8AJ

Tel: 01908 366344

www.calumetphoto.com

We also have information regarding the components of Photo-flo and are investigating the possibility of providing a formulation should the product become unavailable in the future.

Anti-mist Goggles

Earlier in the year HOSDB received a number of enquiries about how to stop goggles used for fluorescence misting up. A number of different products were purchased and tested. They all proved to be better than doing nothing and are listed in the table below.

Product	Website – www.	Cost/£	Type	Ease of use
Fog Buster	gosportsspex.co.uk	£12 for 29.5ml	Spray	Easy, spray onto cloth and wipe. The solution is a runny gel so is more difficult to wipe clear than a liquid.
Fog Clear	carpartfactors.com	£6.95 for 150ml	Tube of liquid gel	Easy but messy due to large tube with large output hole. However, is very cheap.
FogTech	visorvision.co.uk	£5 for 5	Wipes	Very easy to use. Each wipe will last for many goggles.
Miramist	goldenmeangauge.co.uk	12/tube	Tube of soft solid detergent gel	Easy but instructions unclear. Claim to last 30 minutes for dental mirrors.
Oakley hydrophobic lens solution	gosportsspex.co.uk	£4.95 for 29.5ml	Dropper bottle	Easy, drip onto supplied cloth and wipe. Claim that coatings can be built up by repeated use.
Zero Fog	gosportsspex.co.uk	£4.85 for 30ml	Spray	Easy, spray on cloth and wipe.

COMMUNICATIONS

IFRG Conference 2007

The Biennial International Fingerprint Research Group (IFRG) meeting was held between 26-30 March 2007, in Canberra, Australia. Helen Bandey and Steve Bleay represented HOSDB at the conference, presenting papers on powders and footwear enhancement techniques, powder suspensions and the retrieval of fingerprints in blood from arson scenes.



Helen presenting her work on the performance of fingerprint powders

IFRG is attended by representatives of most countries actively conducting fingerprint research and this year's conference had delegates from Australia, Canada, Germany, India, Israel, the Netherlands, New Zealand, Switzerland, Taiwan, UK and the USA. The main hosts for the event were the Australian Federal Police, whose principal forensic laboratory is in Canberra. The main themes of the conference and their impact on the current HOSDB research programme are reported below.

1,2-Indandione (1,2-IND). This reagent has been proposed as an alternative to DFO since the end of the 1990s and HOSDB has previously conducted research to optimise 1,2-IND formulations. In operational trials conducted in the early 2000s, 1,2-IND was found to be inferior to DFO and therefore the formulation was not recommended for operational use. Since then, research has been conducted in Australia and the USA which has established that improved performance can be obtained by the addition of a zinc salt to the formulation.

The work reported at IFRG prompted the HOSDB study reported earlier in this Newsletter.

Oil Red O (ORO)

ORO has been proposed as an alternative method to Physical Developer for the development of marks on paper that has been wetted. Further research into the method and its effectiveness relative to PD has been conducted in Australia, the USA and the UK. The results of all these studies indicate that although the method has fewer processing stages than PD, it often takes longer overall and is less effective on older marks and marks that have been wetted for long periods of time. The solvents used in ninhydrin and DFO may also remove some of the constituents targeted by ORO, making its use in sequential processing less beneficial. Based on the results reported at the conference HOSDB does not intend to initiate any further research into ORO.

Nanoparticles

Several research groups around the world (Australia, Israel, India, Switzerland) are investigating nanoparticles as fingerprint reagents, either as initiators for other chemical processes (e.g. Multi-Metal Deposition), as fine-scale powders or powder suspensions with inherent colorimetric or fluorescent properties. The majority of the studies reported are still at the laboratory assessment phase, although some promising results have been obtained. HOSDB does not intend to carry out any research of its own into nanoparticles but aims to become involved in the assessment of technique effectiveness once candidate formulations for operational use emerge from laboratory studies, both in the UK and abroad.

Recovery of fingerprints from contaminated scenes

There were a number of talks discussing the issues associated with recovery of fingerprints from contaminated scenes, whether this is a 'simple' situation such as a fire scene, or more complex scenarios where CBRN agents may be involved. Pertinent points from these talks have been fed back to relevant research groups within HOSDB and the wider government community.

Likelihood ratios for partial fingerprints

Different models for assessing the weight of evidence associated with partial fingermarks were presented by researchers from the UK, Switzerland and the Netherlands. HOSDB does not have expertise in this area and does not intend to conduct research itself, but there are implications for fingerprint laboratories if these models become accepted in court because more partial marks may need to be marked up and photographed.

Other subjects covered during the conference included research on the influence of contextual bias during fingerprint identification, the effect of surface energy on VMD effectiveness, factors affecting the appearance of marks deposited in blood, use of natural reagents for fingerprint development, dual action (colour and fluorescence) fingerprint reagents, recording and analysing distortion of fingerprint ridges, background subtraction by digital and optical techniques, use of test strips and standards and longevity of fingerprints. Case studies from several Australian state police forces and Taiwan provided practical examples of how fingerprint evidence has been used to solve high profile cases.



Helen and Steve with Della Wilkinson (RCMP)

As part of the accompanying programme, there was also the opportunity to tour the AFP laboratories in Weston.

Overall, the conference provided a unique opportunity to discuss fingerprint research first-hand with the groups carrying out valuable work world-wide, in particular the Australian participants who have previously only been able to attend IFRG in limited numbers. Steve and Helen would like to extend their thanks and appreciation to Professor Chris Lennard of the University of Canberra and his organising team for what was a rewarding and memorable conference, and to HOSDB senior management for their permission to attend.

ENFSI: Fingerprint Working Group

This group meets annually to discuss matters relating to both fingerprint identification and detection. The 7th meeting of the group was held on 26-28 September in Leuven, Belgium for sixty-eight delegates from thirty countries.

The agenda covered progress on the 'Best Practice Manual', proficiency testing, accreditation and current fingerprint research. Workshops were held in both identification and detection.

Research topics included the recovery of fingerprints from thermal papers, AFIS benchmarking for likelihood ratios and digital imaging formats.

ENFSI Expert Working Group: Marks (EWGM)

The EWGM is one of the forensic science working groups of the European Network of Forensic Science Institutes (ENFSI) (see Publication No. 71/04). There are currently fifty-three member institutes from thirty-two countries represented. The working group covers examinations across a wide range of disciplines including tool marks, shoeprints, tyre marks, bare feet, lock and key examinations, manufacturing marks and other related topics. This year's meeting formed part of the Sixth Shoe Print and Tool Mark (SPTM) Conference and was held in Copenhagen, Denmark. As part of HOSDB's footwear project, Helen Bandey and Melissa Black attended and presented at the conference.

Helen Bandey presented the findings of a recent feasibility study conducted at HOSDB, whilst Melissa Black gave a poster presentation on powder suspensions and their use for footwear enhancement.

The conference was predominantly based around scientific presentations covering the range of disciplines already mentioned. In particular, there were several presentations on the recovery of footwear marks such as 'Lifting bloody shoeprints from cloth', 'Electrostatic lifter vs. gelatine lifter', and 'Methods of seeing impressions in snow'.



Kjell Carlsson demonstrating his new method for improving the visibility of marks in snow. Temperatures in Copenhagen were ~23°C so he had to work quickly!

For more information please visit
<http://www.enfsi.org/ewg/mwg/>

Contacts made and information gained at such conferences is extremely important as it can significantly influence the direction and time-scales of projects at HOSDB by introducing new ideas or by sharing experimental results. Such collaborations can give strength to recommendations, produce more effective processes and ultimately increase the amount of evidence recovered from scenes.

Newsletter publications can be downloaded from:
<http://scienceandresearch.homeoffice.gov.uk/publications/fingerprint-publications/>
For further information contact: hosdb@homeoffice.gsi.gov.uk

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