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Vedlagt fremsendes til Justitsministeriets orientering samt med henblik på orientering af Folketingets Retsudvalg resultatet af det eksterne sagkyndige review af Nordisk Brandmanual, som Rigspolitiet har bedt University of Strathclyde i Skotland om at gennemføre på baggrund den kritik, som i foråret 2014 blev rettet mod dansk politis kompetencer og arbejdsmetoder på brandefterforskningsområdet.

Der henvises i den forbindelse til justitsministerens besvarelse af spørgsmål nr. 595 og nr. 1315 (Alm. del) fra Folketingets Retsudvalg.

Det kan oplyses, at Rigspolitiet nu vil foretage en nærmere gennemgang af reviewet og beslutte, hvordan der skal arbejdes videre med anbefalingerne.

Det bemærkes, at professor Niamh Vic Daeid, som har gennemført reviewet sammen med dr. Peter Mansi, i mellemtiden er blevet ansat på University of Dundee i Skotland.

Med venlig hilsen

Svend Larsen
Politidirektør

Review of the Nordic Fire Investigation Manual.

January 2015

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1. Review team

Professor Niamh Nic Daeid, BSc, BA, PhD, FICI, FCSFS, FRSS, MRSC

Professor of Forensic Science and Director of Research, Centre for Anatomy and Human Identification, University of Dundee, DD1 5EH, Dundee, Scotland.

Professor Nic Daeid holds a Bachelor of Science (twin honours) degree in Chemistry and Mathematics, a Bachelors of Arts degree in Psychology and a Doctorate in Chemistry. She is a Fellow of the Institute of Chemistry of Ireland, a Fellow of the Royal Statistical Society, a Fellow of the Chartered Society of Forensic Science, a member of the Royal Society of Chemistry, a Member of the International Association of Arson Investigators, a member of the UK Association of Fire Investigators and a founding member of the Fire Investigation Association of Ireland.

She has over 20 years of experience in the national and international field of forensic science and forensic chemistry and has given evidence in criminal courts in the United Kingdom. In her professional capacity as a Forensic Chemist, she has assisted national police forces and defence solicitors and is authorised as a Forensic Chemist under the Criminal Procedure (Scotland) Act 1995 under Section 280(4). Her specific areas of expertise in forensic chemistry centre on fire investigation, both at the scene and in the laboratory, the review of explosive and terrorism cases relating to improvised and homemade explosive devices and the clandestine synthesis and analysis of drugs of abuse. She has authored over 100 peer reviewed papers in her field, and has written 11 book chapters and edited 5 text books.

She is the current chair of the European Network of Forensic Science Institutes (ENFSI) Fire and Explosion Investigation Working Group and a member of the Forensic International Network for Explosives Investigation. She has been technical coordinator for forensic chemistry including fire investigation for the INTERPOL forensic science managers' symposium and is the current Chair of the Symposium. She is vice chair of the Scientific Advisory Board of the International Criminal Court (ICC). She has held a council position of Forensic Science Society (now the Chartered Society of Forensic Science) and was editor in chief of their scientific journal, Science and Justice for 6 years. She managed the Chartered Society for Forensic Science's professional diplomas for 6 years including the Diploma in fire investigation for which she has acted as both the Diploma Manager and an examiner. She is leading a UK team to develop a National protocol for fire scene investigation in collaboration with the UK Forensic Science Regulator and also leads a European team developing a best practice manual for fire investigation for ENFSI.

Dr Peter Mansi PhD, FIFireE, MCSFS, IAAI-CFI, ECTCI

Certified Fire Investigator and a Partner in Fire Investigations (UK) LLP who trade as FI-UK and FI-Global. Fire Investigations (UK) LLP provide fire investigation services including: origin and cause determination, fire development determination, case management, cold case review, expert witness service, training and presentations.

Dr Peter Mansi is a Certified Fire Investigator with experience of investigating fires both accidental and non-accidental in origin, including fires involving fatalities and non-terrorist explosions. He is a Member of the Chartered Society of Forensic Sciences, a Fellow of the Institution of Fire Engineers and a Certified Fire Investigator, Certified Evidence Collection Technician and Certified Instructor with the International Association of Arson Investigators.

He is the current immediate Past President of the UK Association of Fire Investigators and President of the International Association of Arson Investigators. He is an examiner for the International Association of Arson Investigators Certified Fire Investigator programme and their Evidence Collection Technician programme.

He was employed by the London Fire Brigade (1981 to 2011) as a career Fire Officer for over 30 years. For 12 of those years he was a fire investigator where he had been the lead or supervising investigator on over 400 fires including more than 30 fatal fires. He also had the managerial and training responsibilities for 28 full-time Fire Investigation Officers dealing with a total of approximately 3,500 fire investigations a year. Prior to specialising in fire investigation he had been employed as a Fire Officer in the Operational Command (Service Delivery) department of the Brigade serving at operational fire stations for 18 years. Since retiring from the Fire Service in December 2011, he has been a Partner in Fire Investigations (UK) LLP and has been involved with the investigation of fires including 19 fire fatalities.

During his fire investigation career he has attended numerous fire and arson investigation development courses and conferences and has instructed at most of them, not only in the UK but also in many USA states, Canada, France, Holland, Finland, Germany, Portugal, Croatia, Spain, South Africa, Abu Dhabi, Dubai and Oman. This includes training undertaken with the Fire Service, private fire investigation training providers, the Metropolitan Police Service and the Department of Justice, Bureau of Alcohol, Tobacco, Firearms and Explosives at the ATF Training Centre, Maryland, USA and the Federal Law Enforcement Training Centre in Georgia, USA.

He developed training packages for these courses and has acted as a mentor to fire investigators undergoing training both on courses and in the field.

He has been part of several working groups involved in the development, application and updating of the UK National Occupational Standards (NOS) for Fire Investigators under Skills for Justice; the IAAI Fire Investigation Standards Committee (FISC) and the development of a UK Fire Investigation Protocol when dealing with crime scenes.

2. Terms of reference

2.1 On 01st July 2014, the Danish National Police, National Centre of Forensic Services (NKC) requested us to conduct a review of the Nordic Fire Investigation Manual. On 4th August 2014 we received appendix 5 and related documents for the assignment.

We were asked to focus on the following specific parts of manual in our review:

a) The core document

b) The following appendices:

Safety at the scene of a fire
Correct use of fire sample bags
Definitions and abbreviations
Electricity and fire
Cleaning tools and equipment
Spontaneous ignition
Glass
Flammable liquids
Interpreting the picture of the fire and the point of origin
1St responders
Alarm systems
Instructions for using Fire investigation dogs
Forensic examinations
Fires on boats
Plastic products

2.2 In relation to these parts of the Nordic Fire Investigation Manual we were asked to validate (to assess the fitness for purpose of the manual as a practical guide) the Nordic Fire Investigation Manual as a practical guide based on the following points;

a) is the Nordic Fire Investigation Manual based upon sufficient facts?
b) is the Nordic Fire Investigation Manual the product of reliable principles and methods?
c) has the Nordic Fire Investigation Manual applied the principles and methods related to the area of fire investigation?

2.3 We were asked for suggestions for the professional and methodical development of the Nordic Fire Investigation manual, in a dialogue, with regard to:

a) technical methods
b) using processes mapping to aid hypothesis testing, interpretation and evaluation
c) suggestions regarding the expansion of the manual with regard to further relevant professional subjects.

3 The review process

3.1 During the review process, various documents and texts in addition to the specific experience and expertise of the review team were referred to and are listed in appendix 1.

3.2 The review process was undertaken between July 2014 and October 2014 and an interim verbal report was presented to the Danish National Police, National Centre of Forensic Services (NKC) in Copenhagen on 27th October 2014. This verbal report presented a summary of the findings or the review team and a set of recommendations.

4. Background information - overview of the Nordic Fire Investigation Manual

4.1 It is our understanding that the Nordic Fire Investigation Manual is designed to be a practical handbook, produced by the Nordic Fire Group, which is a cooperative group consisting of the police and their partners in the Nordic countries (Sweden, Norway, Finland, Iceland and Denmark). The manual has developed organically over a number of years as a collaboration between the police authorities and their partner agencies and organisations who have responsibility for fire scene investigations. The purpose of the manual is to provide practical guidance to fire investigators rather than produce a definitive text book on the subject. An additional objective of the Nordic group was to develop a more cohesive and generic investigative structure for the Nordic fire investigation community.

4.2 In 1999, the Danish Forensic Science Department approved the Nordic Fire Investigation Manual as its template for the investigation of fire scenes and in particular the determination of fire origin and cause. The core document is shared across the Nordic countries and makes provision for activities from fire suppression, through the phase(s) involved in fire scene investigation and finally to the production of the written report.

4.3 Appendices to the manual have been developed nationally and include legal aspects, as well as other specific areas of interest for a particular country of jurisdiction.

4.4 The National Forensic Centre's leadership expects that personnel at the National Centre of Forensic Services who work with forensic fire declarations and examinations, work based on scientifically recognized methods for:

Collecting data, facts and evaluations of the fire scene
Interpreting and evaluating data
Constructing a hypothesis
Testing a hypothesis
Final evaluation and conclusion

5 Summary and recommendations.

5.1 Assessing fitness for purpose of the Nordic Fire Investigation Manual (Terms of Reference 2.2)

a) Is the Nordic Fire Investigation Manual based upon sufficient facts?

Yes. The review group were satisfied that the main document covered the majority of the required procedures and areas related to the routine investigation of fires. As such it presents a comprehensive basic guidance document for routine fire investigations.

The review group suggest that the appendices covered some, but not all, of the topics that would provide assistance in routine fire investigations. There were some areas within the core manual that require strengthening in terms of emphasis and approach and there were some omissions. These have been included in our recommendations.

A more comprehensive fire investigation guidance document is presented in NFPA 921 (2014), which is now internationally accepted and closer modelling of the Nordic manual to this document would be beneficial.

b) Is the Nordic Fire Investigation Manual the product of reliable principles and methods?

Yes. The review group were satisfied that the Nordic manual reflected accurately the knowledge, skills and methods required for routine fire scene investigation.

The overarching principles of the implementation of a systematic methodology are present within the manual but could be presented and emphasised more clearly. There were some minor inconsistencies and omissions in the documents and clearer cross-referencing would be beneficial.

c) Has the Nordic Fire Investigation Manual effectively applied the principles and methods related to the area of fire investigation?

Yes. The overarching principles of the implementation of a systematic methodology are present within the manual.

The manual needs to state more clearly the principles of hypothesis testing as a scientific tool to underpin fire investigation methodology.

The use of diagrams and photographs to emphasise the applications of principles and methodology and to provide concrete examples of the various physical indicators could be increased.

The appendices varied considerably in formatting, depth of information and style of presentation; this has provided information at a variety of levels.

5.2 Recommendations for the professional and methodical development of the manual Nordic Fire Investigation Manual (Terms of Reference 2.3)

There are two options which should be considered:

5.2.1 Option one: Danish National Police, National Centre of Forensic Services (NKC) continue to use the Nordic Fire Investigation Manual as their practical guide for Fire investigation in which case we would recommend the following:

1. The manual is revised comprehensively with core sections aligned more closely to the style of NFPA 921.

2. The manual needs to state more clearly the principles of hypothesis testing as a scientific tool to underpin fire investigation methodology.

3. The manual should be reorganised to flow more logically, for example the documentation section and a section on contamination control should appear earlier in the document.

4. The use of diagrams and colour photographs in the manual should be increased to emphasise more clearly the applications of 'principles and methodology' and to provide robust examples of the various physical indicators of fire and burn patterns used throughout fire scene investigation.

5. Further guidance on contamination control procedures (such as swabbing equipment for ignitable liquid residues post cleaning, when to change gloves) should be introduced into the manual.

6. Further guidance on the seizing of samples and the inclusion of container controls and comparative samples should be included.

7. An overhaul of the appendices is required. Some are overly detailed (glass) while others are too superficial (electricity, plastics). A common style is needed across all appendices.

8. Within the existing appendices the following subjects require significant modification and NFPA 921 (appendix 1) would be a good template for guidance in this regard:
   - Safety at the scene of a fire
   - Electricity and fire
   - Spontaneous ignition
   - Glass
   - Flammable liquids
   - Interpreting the picture of the fire and the point of origin
   - 1st responders to fire scenes
   - Forensic examinations
   - Plastic products

9. Within the existing appendices the following subjects require some modification:
   - Correct use of fire sample bags
   - Cleaning tools and equipment
   - Instructions for using fire investigation dogs

10. An appendix on forensic awareness should be added.

11. An appendix on interviewing and information gathering should be added.

12. Other appendices should be considered which would include data on heat release rates, melting points of common materials and other useful data to aid in the investigation.

5.2.2 Option two: Should the Danish National Police, National Centre of Forensic Services (NKC) opt to use NFPA 921 (appendix 1), or a similar externally accepted guidance document as their practical guide for Fire investigation, we would recommend that the following are considered:

1. Undertaking a gap analysis of NFPA 921 (or a similar externally accepted guidance document) having particular regard to the existing appendices in the current Nordic Fire Investigation Manual to ensure that they are covered adequately and bearing in mind that:

   Within the existing appendices the following subjects require significant modification:
   - Safety at the scene of a fire
   - Electricity and fire
   - Spontaneous ignition
   - Glass
   - Flammable liquids
   - Interpreting the picture of the fire and the point of origin
   - 1st responders to fire scenes
   - Forensic examinations
   - Plastic products

   Within the existing appendices the following subjects require some modification:
   - Correct use of fire sample bags
   - Cleaning tools and equipment
   - Instructions for using fire investigation dogs

2. An appendix on forensic awareness should be added.

3. An appendix on interviewing and information gathering should be added.

4. Other appendices should be considered which would include data on heat release rates, melting points of common materials and other useful data to aid in the investigation.

5.2.3 Additional recommendations

In addition to selecting one of these options we also recommend the following:

1. Consideration should be given to designing and providing standard forms for note taking and documentation of the scene to include sketches, photographic logs and seized item logs.

2. An appendix relating to the skills and knowledge requirements for a competent fire investigator should be added to the practical guide prepared. This will provide a template against which core competence can be tested. The UK National Occupational Standards (appendix 2) and NFPA 1033 Job Performance Requirements for Fire Investigators (appendix 1) are good examples.

6. Appendix 1: List of specific reference materials used during the review process

NFPA 921 (2014) : A guide for fire and explosion investigations.
NFPA 1033 (2014): Standard for professional qualifications for fire investigator.

7. Appendix 2: List of relevant occupational standards and certification programs.

1. UK Skills for justice National Occupational Standards
http://sfjawards.com/portfolio-item/level-5-certificate-in-fire-investigation/

2. Chartered Society of Forensic Science diploma in Fire investigation criteria
http://www.forensic-science-society.org.uk/Qualifications/FireInvestigation

3. Institute of Fire Engineers Curriculum for fire Investigation
http://www.ife.org.uk/write/MediaUploads/Documents/610_L4C6_-_FI.pdf

4. International Association of Arson Investigators certification programs and training provision
https://www.firearson.com/Training-Certifications/Certified-Fire-Investigator-IAAICFI.aspx