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United Nations Office on Drugs and Crime



Crime scene awareness and investigation

Training programme and trainers' guide

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Introduction

The success and fairness of criminal proceedings and trials depend to a large part on the reliability of the admissible physical evidence.

Initial actions at crime scenes, basic crime scene investigation capacity and awareness of the forensic process, from the crime scene to the courtroom, are of tremendous importance to the preservation of evidence integrity, that is the ability of courts to consider physical evidence gathered at a crime scene for the purpose of determining what happened during the commission of the crime. Opportunities seldom exist to correct errors made during the initial processing of the scene or recovering unrecognized or overlooked evidence after the fact.

Both forensic and non-forensic personnel (e.g. law enforcement officers, prosecutors, judges, lawyers) are essential for preserving evidence integrity and maintaining the chain of custody. Appropriate capabilities can be achieved with basic resources and training, building on relevant education and providing specific knowledge and abilities directly associated with the work environment.

One of UNODC's priorities in the forensic field is to contribute to the development and improvement of forensic capacity, especially in countries with limited resources. Capacity-building activities include the development and dissemination of training materials suitable for the needs of beneficiary countries.

The need for training in crime scene awareness and investigation is widely recognized, as is the need for standardization, namely for the following two reasons:

- Crimes that cross international borders require criminal justice systems that interface seamlessly, among others, by sharing data internationally. This requires the underlying procedures to be standardized, delivering results that can be recognized across jurisdictions;
- Training in crime scene awareness and investigation potentially involves training a huge number of individuals. The availability of a standardized training programme helps to maintain the quality of training in a country by encouraging all potential providers of training assistance, including other international personnel, to provide training that ensures that all ISO/IEC requirements as they relate to crime scene investigation are addressed so that successful trainees have the necessary basis to carry out their duties in compliance with these international standards (mainly ISO 17020 and ISO 17025).

With its global mandate and normative functions, UNODC is well placed to lead such an approach to standardization, through the present training programme.

The training programme was developed in a multi-step process, including two expert group meetings in Vienna in June and August 2009 and the contributions from a number of reputable individual experts and from international organizations (IAI, INTERPOL, OSCE, ICRC). It also includes the inputs of lessons from pilot regional training courses carried

out in Lagos, Nigeria, and in Gran Bassam, Côte d'Ivoire, and a national training course carried out in Islamabad, Pakistan.

The training programme is essentially based on the UNODC manual "Crime scene and physical evidence awareness for non-forensic personnel",¹ and integrates relevant existing training materials and guidelines in this field. Of specific mention are the "Crime scene investigation guidelines" from the International Association for Identification (IAI) and guidelines for crime scene investigations developed by regional forensic associations, such as the European Network of Forensic Science Institutes (ENFSI).

Purpose and scope

The present document provides guidance for the organization of training courses in crime scene awareness and investigation for audiences at three different levels:

1. Crime scene and physical evidence awareness (module 1),
2. Responsibilities of first responders at crime scenes (module 2), and
3. Basic crime scene investigations (module 3).

The programme is aimed for use by individuals or organizations, at the national level or through international projects or bilateral activities, as an integral part of crime scene investigation and forensic institution building. Following the guidance and course contents outlined in this document helps to ensure that any training delivered is grounded in the same, universal standards and can adequately be adapted to national and regional requirements.

The document therefore provides the framework for a standardized approach to crime scene awareness and investigation training. Namely it provides:

- Guidance to organize fit-for-purpose courses, to recruit qualified trainers and to use adequate facilities;
- General information about the courses: purpose, target audience, duration, etc.;
- Courses content (focussing on core topics to be addressed in each module);
- Notes for trainers, casework examples and case studies.²

Modular approach and strategy for training delivery

The present training programme follows a modular approach.

Module 1 (Crime scene and physical evidence awareness) is addressed to anyone, from forensic to non-forensic personnel as well as policy and decision-makers, who needs to understand the forensic process.

¹UNODC (2009), *Crime scene and physical evidence awareness for non-forensic personnel*, United Nations, New York, ST/NAR/39.

²Notes are more comprehensive for module 1 to ensure a certain standard for delivery of key messages despite the fact that this module is expected to be delivered by a wide range of trainers. Modules 2 and 3, with their practical sessions, require experienced trainers with current knowledge in crime scene investigation. Notes for these two modules are therefore less comprehensive leaving more flexibility to the trainer.

Module 1 is designed to provide the very basics of the subject matter and raise awareness across all target groups. It can be used as a stand-alone, self-sufficient training course or lecture for those who need to be aware of forensic issues but who do not actually work at crime scenes (e.g. prosecutors, judges, lawyers, policymakers). It can also be used to prepare the grounds and complement more specific, practical training on crime scene investigation for first responders and crime scene investigators.

The level of detail and duration of module 1 must be adapted to the target audience.

Module 2 (Responsibilities of first responders at crime scenes) and module 3 (Basic crime scene investigation) are designed to provide trainers with the necessary guidance for the delivery of practical hands-on training for first responders and crime scene investigators, respectively, in order to enable them to carry out their tasks at crime scenes.

The table below illustrates the modular approach and related target audiences. First responders should ideally receive modules 1 and 2, and crime scene investigators modules 1 and 3.

Table 1. Modular approach to crime scene awareness and investigation training

Training course Target audience	Module 1: Crime scene and physical evidence awareness	Module 2: Responsibilities of first responders at crime scenes	Module 3: Basic crime scene investigation (CSI)
End-users of forensic information: <ul style="list-style-type: none"> • Criminal justice practitioners: judges, prosecutors, lawyers Others who need to know: <ul style="list-style-type: none"> • Decision and policymakers • Peacekeepers • Humanitarian workers • Human rights investigators 	Level of detail and duration to be adapted to target audience		
First responders: <ul style="list-style-type: none"> • Law enforcement/ police/customs personnel • Military personnel • Emergency personnel: fire services, medical personnel 	Level of detail and duration to be adapted to target audience	Module 2 (a) Standard Module 2 (b) Extended (If CSI capacity does not exist*, responsibilities of first responders are extended)	
Crime scene investigators: <ul style="list-style-type: none"> • Specialized law enforcement personnel • Laboratory personnel 	Level of detail and duration to be adapted to target audience		

*This may apply to the unavailability of CSI capacity in a country, or unavailability in certain regions (e.g. remote locations) within a country.

It is recognized that dedicated crime scene units may not be available in all countries or in all regions of a country and are more often limited to major cities, even in otherwise well resourced countries. As a result, there will always be situations and remote locations where first responders perform extended functions. Module 2 has therefore been developed in two versions, for delivery to first responders depending on the infrastructure and resources in a given country:

- Module 2 (a) (Standard responsibilities of first responders) and
- Module 2 (b) (Extended responsibilities of first responders).

Delivery of module 2b is recommended as initial phase of a phased institution building in the field of crime scene investigation, with the second phase comprising the building of dedicated basic crime scene investigation capacity. The exact nature and scope of extended first responder functions will depend on the specific circumstances in the trainees' country/region. In addition to the available or anticipated level of crime scene investigation capacity, an important additional consideration relates to access to a laboratory (at national or regional level, or through bilateral agreements) with capacity to provide the required forensic science expert services. The types of physical evidence recognized as a minimum coverage for forensic services, and hence covered in module 2 (b), include drugs, fingerprints, documents, firearms and ammunitions and human remains.

Module 3 is designed as a basic course and therefore does not address crime scenes that require highly specialized expertise to identify and collect evidence and interpret the scene, such as post-blast investigation, fire cause and origin determination, shooting scene reconstruction, blood stain pattern analyses, clandestine laboratory investigation, digital evidence collection, buried human remains, and traffic accident reconstruction.

In order to achieve the appropriate level of expertise and an effective system, an ideal training scenario includes delivery of module 1 to all target groups followed by delivery of module 2 (a) and module 3 to the respective target groups. This will result in crime scene and physical evidence awareness at the appropriate level of detail across all target audiences, and in standard first responder capacity and basic crime scene investigation capacity. Subsequent to the delivery of the full training programme, the first responders and crime scene personnel should ideally act as a team in order to ensure effective crime scene investigation.

Table 2. The ideal scenario

Training course Target audience	Module 1: Crime scene and physical evidence awareness	Module 2: Responsibilities of first responders at crime scenes	Module 3: Basic crime scene investigation (CSI)
The IDEAL scenario: crime scene awareness and investigation capacity	MODULE 1 to raise crime scene and physical evidence awareness in all target audiences	MODULE 2 (a): to develop standard capacities of first responders at crime scenes in all regions of a country	MODULE 3 to develop basic capacities to investigate crime scene in all regions of a country

When delivering the training programme, it is recommended that the provision of extended first responder training (module 2 (b)) and basic crime scene investigator training (module 3) are accompanied by the provision of crime scene kits appropriate for the tasks of the two target groups.³

Course details

The following sections of this document provide the outlines of the different training modules. They follow a common structure, including:

- Target audience
- Purpose
- Learning objectives—expected outcomes
- Course content
- Proposed duration of the course
- Recommended resource materials

General guidance for the planning and organization of training courses

Training delivery should be tailored and fit-for-purpose. This section provides general guidance for the planning and organization of the delivery of any of the modules of this training programme, tailored to the needs of the respective target audiences.

Good preparation before delivering training is vitally important. The preparation phase encompasses gathering information about the number and qualifications of participants, the national/regional context, the resources available to future trained first responders and crime scene investigators, and the legal system/framework. However, a preset timeframe and the resources available to deliver a particular training course may determine the flexibility of the trainer to plan a tailored programme.

Key principles to be followed when planning and organizing training courses include:

Ensuring fit-for-purpose training

It is important to tailor training courses because different personnel will require different levels of training and because the learning process will vary from one target audience to another. Police officers, investigators, prosecutors, as well as other criminal justice practitioners will require an understanding of the process and what information can be determined through analysis of the evidence at the laboratory. Individuals likely to be first responders at crime scenes will require some hands-on training in scene preservation, but far less than the individuals actually conducting the crime scene investigation.

³As part of this training programme, standardized lists of the content of those kits have been developed (annex III). Based on those lists, UNODC has designed standardized kits. General information can be found under: www.unodc.org, and further details be requested at lab@unodc.org.

Considering national/regional context and resources

Knowledge of the political, social and legal issues of the host country is crucial and is recognized as one of the biggest challenges in organizing fit-for-purpose courses. Trainers should be familiar with the local structure of forensic services, crime scene investigator responsibilities and resources available at the local level of law enforcement in order to introduce concepts and techniques that trainees can then apply. International trainers should never insist that the ways they do things “back home” are the best. Trainers should be sensitive to the situation of the country they are in, especially if they come from a more advanced environment. If regional training is organized, participants coming from the various countries of the region may have different levels of knowledge and experience. They will also have diverse internal resources from which to draw upon. As a result, trainers must be familiar with the unique needs of the participants and the country in which they are providing training. Trainers may need to train more advanced attendees while also bringing the rest of the trainees up to the same level. Training should take into account the types of case problems that participants commonly face.

It is recommended that organizations who plan the delivery of training provide individual trainers with relevant information about the situation in the country/region or make funds available to carry out assessment missions⁴ in the country/region as part of the preparation and organization of the training.

Considering the legal framework

The legal framework and established rules, regulations and procedures influence many aspects of the provision of forensic services. It relates to issues such as how to obtain authority to enter the scene, to conduct the investigation, to handle evidence (e.g. the type of sealing procedures required), to submit physical evidence to a forensic laboratory, to analyse physical evidence and to dispose of evidence. Forensic databases (e.g. fingerprints and DNA) are governed by the legal framework which may regulate data use, maintenance and removal of data.

The roles of personnel (investigators, prosecutors, judges) in the forensic process can vary between countries that have common law systems and countries with civil law systems, and also between countries within the same type of legal system. Trainers should be aware of this aspect.

Ensuring integrated training

Involvement of national/local operational forensic science laboratories

Relevant pieces of physical evidence collected at crime scenes are sent to forensic science laboratories within the country or region to be further examined. Thus it is particularly helpful to involve local staff from the forensic laboratory in the training; this will contribute to building working relations right from the beginning. Forensic personnel will be able to advise participants on their respective laboratory capacities and services available, the information they can expect from further analysis and examinations and how crime scene and laboratory personnel would benefit from increased collaboration. Involving laboratory personnel will therefore also strengthen communication channels between forensic service

⁴Guidance to conduct forensic needs assessment can be found in the tool: “Forensic services and infrastructure” of the UNODC “Criminal justice assessment toolkit” (2010), accessible at www.unodc.org or on request from lab@unodc.org.

providers in a country and their clients. When involving local forensic practitioners in training courses, experience has shown that it is important to discuss the objective and content of the course in advance and encourage them to attend the entire course in order to ensure consistent messages throughout the course.

Involvement of various target audiences in mock crime scenes and moot courts

Practical exercises with various target audiences playing their respective roles would be of significant value if resources are available to organize such training. Organizing modules 1, 2, 3, respectively, for non-forensic personnel, first responders and crime scene investigators simultaneously can add value by providing the opportunity to bring together the various target audiences for a final practical exercise, putting each individual in their respective role in the country.

Recruiting a qualified trainer

Recruiting a qualified trainer is key for delivering good training on forensic awareness and crime scene investigations. The following information can be used to guide the recruitment of a trainer (this information can be of use when writing terms of references for individual trainers). Specifically, a qualified trainer should:

- Have a combination of academic/technical education and professional experience in crime scene investigations (forensic laboratory experience in addition to crime scene investigation experience is considered an asset but is not essential), or comparable combination of education and skills;
- Be someone who has an overview (not necessarily in-depth knowledge) of the entire forensic process (e.g. generalist criminalist);⁵
- Preferably have had (at least a short) instructor training (communication skills and ability to lead a directed discussion);
- Have professional experience outside his/her own country;
- Be able to tailor the content and means of training delivery to the different target audiences;
- Have the ability to work effectively in a multidisciplinary as well as a multicultural environment.

It is an asset if a trainer:

- Has knowledge of the official language of the country receiving training if no interpretation is provided during the training.
- Has experience in the country/region.

In addition, for module 2 (*b*) and 3, a qualified trainer should:

- Be an active crime scene investigator or an experienced trainer with current and advanced knowledge of crime scene investigation.

⁵Delivery of module 1 (Crime scene and physical evidence awareness) to end-users of forensic information, decision and policymakers could be done by individuals without forensic background but with criminal justice or law enforcement experience. For all other training courses, a forensic background, as expressed in this document, is crucial.

It is recommended to have the training delivered by a team of a minimum of two trainers, preferably trainers that have worked together in the past. In addition, it is also recommended to include local personnel involved in forensic activities who can advise on local resources available, limitations encountered, political situation, cultural sensitivity, etc.

Using appropriate training means, facilities and supplies/ equipment and related logistics

The recommended means for delivery of this training programme include lectures/ presentations, group discussions, case studies and casework examples, as well as practical sessions.

Case studies and casework examples are an effective way to teach concepts to students and make the training more interesting. Working on case studies is also a good way for the trainer to assess the capacities of the participants, and getting insight and information on structures and procedures in place in the countries participating in the course.

Practical, hands-on exercises help to reinforce theoretical parts, create a positive learning atmosphere, and are generally very well received by the participants. Practical sessions are essential parts of the delivery of modules 2 and 3. Limited practical sessions are also recommended as part of delivering module 1 to first responders and crime scene investigators.

If the training module consists only of lectures, there are no specific requirements for the training facilities, except what is required for slide presentations, computer-based presentations or videos.

If the training consists of a combination of lectures, practical exercises, mock cases (indoor and/or outdoor) and/or moot courts, the training facilities should allow both theoretical and practical parts. In this situation it is important that supplies and equipment are made available.

Irrespective of the training module delivered, the safety and security of trainers and trainees must be taken into consideration. This relates to both safety and security considerations of practical exercises as well as to any country-specific issues or situations. In this connection, post-conflict countries can pose particular challenges.

Evaluating learning progress and courses

When evaluating training courses it is important to separate the two issues of (i) ensuring that the training delivery process is adequate, and (ii) assessing the individuals' learning progress.

- (i) Ensuring that the training delivery process is adequate is important for establishing that the course meets the expectations of the target audience and for improving the course in the future.

A pre-instruction questionnaire is helpful for participants to express what exactly they are hoping to obtain from the training, and to be certain that these wishes can be realized and are not unrealistic expectations. Depending on the number of participants, this could take the form of a discussion as well. Post-instruction questionnaires should ask the participants for their suggestions on what aspects of the class could be improved or did not meet the participant's needs or expectations.

- (ii) Assessing the individuals' learning progress and medium-term impact is critically important. Appropriate means should be used.

To assess the progress made and the impact of the course on the participants, it is fundamental to evaluate the level of knowledge and expertise before and after the training with comparative means. This could take the form of a questionnaire that the participants fill in at the beginning of the course and at the end. Depending on the module to be delivered and the number and level of participants, a quiz or practical cases could be used instead of a questionnaire.

Other means to assess the impact of training sessions are:

- Field-based proficiency tests/mock cases, or virtual, computer-based proficiency tests (typically using a booklet and questions); such tests should ideally be conducted before and after the training;
- On-site evaluations, assessing the proficiency in using relevant equipment and consumable materials, checking the quality of reports, e.g. quality of fingerprints detected, but also observing work done at the scene; such on-site evaluations should ideally be conducted before and after the training;

It is also possible, and the preferred option, to conceptualize the training from the outset in two phases, consisting of the initial (main) training and subsequent (short) follow-up / refresher courses, which will enable the trainer to test the knowledge and skills retained by the trainees after the initial training.

In some situations it may be useful to base the course evaluation on a combination of variables, including attendance, participation and the results of a test. It is good practice to inform participants at the beginning of the course which variables will be used to evaluate them and to issue a certificate of participation on completion of the course.

While evaluations of the learning progress after training delivery are important, it is equally important to recognize that the impact of enhanced forensic awareness and crime scene investigation capacity cannot be measured immediately after delivery of a single training course. In order for training programmes to have a long-term impact, forensic awareness and crime scene investigation courses need to be delivered multiple times, with impact being measurable (and impact assessments being sensible) only after extended periods of time. It is therefore critically important to clarify that any certificate issued after completion of a course is only a certificate of participation. It should by no means be misinterpreted to mean that the person is competent because he/she has received training.

In this connection, it is recommended that the specific needs of a country or region, in terms of training requirements, be used to identify the appropriate number of potential trainees and anticipated training courses. This will help to initiate a management-level discussion on the systematic incorporation of forensic awareness and crime scene investigation training into police training academies as an investment into institution and reputation building.

Module 1. Crime scene and physical evidence awareness

Module 1 is designed to provide trainers with detailed guidance for the delivery of a lecture or short training course on the key concepts of crime scene investigation and physical evidence.

It can be used as stand-alone, self-sufficient lecture for an audience who needs to be aware of forensic issues but who does not actually work at crime scenes (e.g. prosecutors, judges, lawyers, policymakers). It can also be used to prepare the grounds and complement more specific, practical training on crime scene investigation for first responders and crime scene investigators.

Target audience for module 1

Module 1 (Crime scene and physical evidence awareness) provides a basic overview of the subject matter. It is directed at personnel who have widely differing experience and duties but who are all involved with the forensic process and therefore “need to know” about the subject. This includes members of the criminal justice community and policymakers involved in decisions affecting the criminal justice system. The target audience may vary from one region to another depending on who is involved in/responsible for the forensic process. It may consist of both government and non-government (e.g. NGO) personnel. The main target groups include:

Target group I—end-users of forensic information, such as:

- Criminal justice practitioners, e.g. prosecutors, judges, lawyers, police administrators
- Others who need to know:
 - Policymakers
 - Peacekeepers
 - Humanitarian workers
 - Human rights investigators

Target group II—first responders, such as:

- Law enforcement personnel, e.g. police, customs officers
- Military officials
- Emergency personnel, e.g. fire services, medical personnel, rescue workers

Target group III—crime scene investigators, such as:

- Specialized law enforcement personnel
- Laboratory personnel

The level of detail and duration of module 1 must be adapted to the audience. Delivery of a short version of module 1 is recommended to Target group I, i.e. those who are not directly involved with the processing of crime scenes or any subsequent forensic analyses or examinations, but who none the less use the information derived from them. It is also important that policymakers engaged in the criminal justice system within a country have an informed view of the nature of the process and its importance.

A longer version of module 1 should be used as an introductory part to any other crime scene investigation-related training, namely before delivery of module 2 (a) or 2 (b) for first responders (Target group II) and module 3 for crime scene investigators (Target group III).

The recommended number of participants for delivery of module 1 to Target group II (first responders) and Target group III (crime scene investigators) is 15-20. There is no limitation for the number of participants when delivering module 1 to Target group I (end-users of forensic information).

Purpose of module 1

Module 1 aims to raise awareness of the forensic process from the crime scene to the court room with an emphasis on the work done at crime scenes. It also educates the audience about the importance, nature and use of physical evidence and about best practices at a crime scene and in the forensic process. Ideally, module 1 should also outline a vision of the future, namely presenting and discussing the enhancement of forensic science capabilities within the country/region receiving the training. Module 1 will thus assist in building confidence in the national criminal justice system, improving relations between relevant counterparts and building a relationship with the “rule of law”.

As module 1 is mainly aimed at awareness-raising and conveying key concepts, it is essentially designed as lecture/presentation without the need for comprehensive practical sessions. However, when delivered to first responders and crime scene investigators, in a longer version, it is recommended to include some limited practical hands-on exercises for actions to be taken at crime scenes.

Learning objectives—expected outcomes

After taking module 1, participants will be aware of good practices in crime scene investigations and the nature and relevance of physical evidence. They will have an appreciation of the benefits and requirements of an efficient national crime scene investigation infrastructure, including a vision of the future.

Specifically, the participants will be aware and understand the following concepts and approaches:

- The forensic process (overview):

Physical evidence, its value and the importance of integrity/chain of custody (including an overview of various types of physical evidence and the importance of preservation of evidence to avoid contamination).

What are forensic sciences/what is meant by the term forensic?

The forensic process from the crime scene to the courtroom.

Forensic infrastructure and services.

The role of different personnel involved from the crime scene to the courtroom, including the need for independence, impartiality and integrity on behalf of forensic personnel at the crime scene, and their ability to make professional judgements.

Health and safety considerations for forensic personnel.

Legal, ethical and human dignity considerations.

Quality with respect to forensic services, including crime scene investigation (brief introduction to quality assurance requirements, and the reasons for them).

- The crime scene investigation process:

Recognizing a crime scene;

Planning, organization and coordination of the work at the scene;

Preservation of the scene (including anti-contamination measures);

Documentation of the scene and its evidence, including chain of custody;

Recognition, recovery and preservation of physical evidence;

Transportation, storage and submission of evidence to the laboratory.

- The various types of physical evidence:

Various types of physical evidence, transient and visible, and information that may be obtained from forensic examinations (evidential value).

Target groups II and III (first responders and crime scene investigators), after taking a longer version of module 1, will in addition have an understanding of the challenges of and best practices for work at crime scenes, including some practical exposure, e.g. to the detection of fingerprints or the collection of ink exemplars of fingerprints from suspects. However, it is important for trainers to stress that at the end of module 1, participants should not be considered crime scene investigators or experts in any of the techniques used during the practical sessions.

Course content for module 1

This course is based on the UNODC Manual "Crime scene and physical evidence awareness for non-forensic personnel". The trainer should be familiar with its content. For ease of reference, the key points are reproduced below under the relevant section headings.

Topics to be covered are the same for all target audiences but the content and level of detail should be tailored to the audience. A short version is recommended for policymakers and criminal justice practitioners (Target group I) and a longer version for personnel who are likely to go through module 2 and 3 in the future (Target groups II and III).

1. Introduction

1.1 Presentation of the objectives of the course (purpose and expected learning objectives)

1.2 Introduction of the trainers

1.3 Introduction of the participants and their expectations about the training ("managing expectations")

1.4 Presentation of the work of the organizations organizing the course (if required)

In general, Paul Kirk's quote (one of the fundamentals of forensic sciences) is a good way of introducing the topic:

"Wherever he steps, whatever he touches, whatever he leaves, even unconsciously, will serve as silent evidence against him. Not only his fingerprints or his footprints, but his hair, the fibers from his clothes, the glass he breaks, the tool mark he leaves, the paint he scratches, the blood or semen he deposits or collects - all these and more bear mute witness against him. This is evidence that does not forget. It is not confused by the excitement of the moment. It is not absent because human witnesses are. It is factual evidence. Physical evidence cannot be wrong; it cannot perjure itself; it cannot be wholly absent. Only its interpretation can err. Only human failure to find it, study and understand it, can diminish its value."

Kirk, Paul, *Crime investigation*,
John Wiley & Sons Canada, Limited, 1953

2. Introduction to the forensic process

2.1 Definitions and concepts

Definitions are essential to an understanding of the forensic process. As participants come from a wide range of different backgrounds, it is important that they start off their training with some basic definitions and concepts so they may best appreciate the training they will be receiving. In other languages it might be important to present the terms used (e.g. the term "forensic" in French has several translations).

- Physical evidence (overview of various types of physical evidence), its value and integrity/chain of custody
- Forensic sciences
- The forensic process: from crime scene to courtroom, to include use of databases (e.g. AFIS, CODIS, IBIS)
- Forensic infrastructure and services

2.2 Role of different personnel involved from the crime scene to the courtroom

It is important for the participants to recognize that many persons are involved in the forensic process. At the scene, the investigation is a team effort and consists of a variety of individuals with different skill sets, for instance, first responders, crime scene investigators, and forensic scientists. The trainer should stress the crucial role of the first responders in starting the preservation of crime scene and its evidence. Depending on the nature of the crime and the situation, the first responders may have an extended role. The role of the different personnel should be described in more or less detail depending on the audience. In order for forensic information and data to be used, communication between the various persons is crucial, an aspect that cannot be emphasized enough.

It is also critically important for the trainer to stress the need for independence, impartiality and integrity on behalf of forensic personnel at the crime scene (e.g. by reference to a code of conduct), and their ability to make professional judgements. The level of detail should be appropriate for the audience.

2.3 Health and safety considerations at the scene and in the laboratory

It is important for the audience to understand health and safety considerations including the use of personal protective equipment at the scene as well as measures to ensure safety of laboratory personnel. At the same time, it is important for the audience to understand that first-aid at the scene, i.e. first-aid to victims of the crime, is critical and to be delivered by specialized personnel and not part of crime scene personnel.

Useful examples to illustrate health and safety considerations:

- Example of packaging a loaded gun and sending it to a forensic lab thereby endangering lab employees who are unknowingly handling a loaded firearm.
- Example of booby traps (e.g., gun booby trapped to explode when it was opened, the laboratory being the target).
- Example of secondary bombs at the scene.

2.4 Legal, ethical and human dignity considerations

Laws and regulations must be considered as well as social and religious customs when collecting physical evidence. The trainer should address, in more or less detail depending on the audience, the particular issues involved when preserving and collecting evidence from victims, i.e. sensitivities, priorities, avoidance of loss/contamination, sequence of examinations, collaboration with forensic doctors, medical examiners, pathologists, etc. He/she should address similar considerations when preserving and collecting evidence from suspect offenders. The trainer should also discuss the need for legal authority to seize evidence.

2.5 Quality of forensic services (introduction to quality assurance)

International standards exist for forensic science service providers including crime scene investigation services and it is essential to follow them. The trainer should outline the main requirements, and reasons for them, including the need for the service provider to have a documented quality management system and comply with a series of administrative, organizational and management requirements. The trainer should also highlight that accreditation under ISO/IEC standards and certification for crime scene investigators are only the demonstration that they follow international ISO/IEC standards. It is important to emphasize that forensic institutions and crime scene investigators can follow international standards without being accredited and that accreditation and certification are recognized as a lengthy process.

3. Introduction to the crime scene investigation process

3.1 Recognizing a crime scene

The trainer should never assume that the concept of a crime scene is fully understood. Using casework examples will help to explain what a crime scene is and its boundaries.

Useful example to illustrate the misunderstanding of what is a crime scene is:

- Example of a crime scene in a hotel and a victim transported to the hospital. In this scenario, the local police took pictures to document the hospital because it is where they saw the victim for the first time but did not consider and document the crime scene as such, in that situation the hotel.

3.2 Procedures in place in the country/region for processing crime scenes.

The trainer is encouraged to enter into discussion with the audience on procedures in place to process crime scenes. Police agencies may already have protocols in place to preserve, document and recover evidence processes. The trainer should encourage the participants to share protocols from their respective countries. It is important to emphasize that module 1 is not intended to develop protocols if none exist.

3.3 Planning, organization and coordination of the work (i.e., crime scene management)

Preparation and management aim at deploying resources commensurate with the case being investigated and using these resources efficiently and effectively. When presenting this section, the trainer should emphasize that coordination and management start before a case happens/before arriving at the scene and that they continue at the scene:

- Infrastructure to react quickly should be in place and equipment should be ready to be used (replenished kits).
- Gathering of a maximum of information about the case before attending the scene.

At the scene:

- Initial evaluation at the scene, to include what needs to be done, who is allowed to enter the scene, who is responsible for which tasks and how required actions will be undertaken.
- Keep a flexible approach
- Management of vehicles, ambulances, emergency personnel, victims, witnesses
- Media relations

The trainer should discuss why crime scene management is important:

- Arriving unprepared at the scene, especially without the commensurate equipment and expertise, may result in missed opportunities and compromise the entire investigation.
- An uncoordinated approach can lead to misunderstanding, to duplication of effort or to wrong assumptions that someone else is taking care of a particular assignment.
- Without clear assignments of responsibility, important elements at the scene may be overlooked, evidence may go unrecognized or worse, may be lost.
- Having too many or inappropriate people involved also runs the risk of compromising or destroying relevant evidence.
- Establishing early communication at the scene and between scene and laboratory personnel creates a better understanding of possible further examinations that could be conducted on physical evidence and significantly improves the outcome of the case.

Useful examples to illustrate the consequences of a lack of management at the scene:

- Example of "crime scene tourism" (when a case is important, too many police officers come to the scene).
- Example of insufficient coordination between fire department, police and crime scene investigators. In some situations, the crime scene investigator is alone in facing large number of police officers who have limited understanding of the importance of protecting a crime scene.

3.4 Preservation of the scene

Preservation of the scene aims to implement appropriate protective and anti-contamination measures to keep disturbance of the scene and the physical evidence to a minimum. When presenting this section, the trainer should emphasize that:

- Preservation of the scene should start as soon as possible after the incident is discovered.
- Delineation of the area to be protected can be complex.

The trainer should also present anti-contamination measures to be implemented (i.e. wearing personal protective equipment), as well as other behaviour to avoid contaminations, such as refraining from smoking or using the toilet in the crime scene area, not eating at the scene, avoiding walking over shoe marks or driving over tyre impressions left at the scene.

The trainer should also mention that unaltered scenes are rarely if ever encountered, as discovery of the event may unavoidably alter the scene. In outdoor scenes, weather may compromise evidence. Medical aid to victim may alter evidence, etc.

The trainer should discuss why preservation of the scene is important:

- A scene not properly secured and preserved will lead to unnecessary activity at the scene, which may irreversibly modify, contaminate and compromise the scene and its evidence.
- Lack of protective measures can result in the destruction of important evidence, and thus misdirect investigators and adversely influence the final result of the investigation. In the worst situation it may prevent the solution of the case or result in a wrong conclusion.
- No or unsystematic use of protective clothing by the personnel working at the scene will lead to irrevocable contamination of the scene (e.g. hairs, fingermarks, shoemarks, cigarettes left by the personnel working at the scene). Those contaminations may ultimately prevent the solution of the case.
- No or unsystematic use of protective clothing will also expose personnel to unnecessary health and safety hazards.
- Once the scene is released, opportunities to correct errors or recover unrecognized or overlooked evidence seldom exist.

Many examples of destruction of physical evidence at the scene can be presented:

- Examples of police walking over a crime scene and destroying shoemarks and other evidence.

3.5 Documentation of the scene and its evidence

Documentation aims to produce a permanent, objective, contemporaneous record of the crime scene, of the physical evidence and of any actions that have been taken.

When presenting this section the trainer should emphasize that:

- Documentation starts with the arrival of the first person at the scene and continues after the crime scene has been processed to trace the evidence throughout the process
- Documentation is crucial to ensure "continuity", "traceability", chain-of-custody from the crime scene and throughout the forensic process.
- Means to document scene and evidence: a log can suffice in some situations but other means, such as photography, are commonly used to document crime scene.

The trainer should discuss why documentation is important:

- Personnel working at the scene may be called upon to recount certain details and demonstrate actions taken during the scene investigation. Memory cannot be relied on for this.
- Documentation is crucial to recall and demonstrate, at a later stage, the initial status of the scene and what was done, when, how and by whom.
- Chronological and careful documentation is important to ensure "traceability" and "continuity" of the evidence throughout the process. The chain-of-custody establishes that what is produced in court relates to the specified item recovered from the scene.
- All subsequent examinations and analyses can be compromised if the chain-of-custody is not properly initiated and maintained at the scene.

3.6 Recognition, recovery and preservation of physical evidence

Recognition, recovery and preservation entail locating and identifying a maximum of potentially relevant evidence, and selecting appropriate recovery methods and adequate packaging to preserve the evidence integrity.

When presenting this section the trainer should emphasize that this is the central part of the work at the scene and that it is very challenging.

The trainer should also stress that an exhaustive list of steps to recognize evidence cannot be established, thus there is a need for methodical search strategy. Also there is a need for suitable recovery methods, a need for selecting relevant pieces of evidence at the scene and a need for adequate sampling expertise that should include appropriate substrate and background samples. Finally, the trainer should stress the need for, and provide examples of suitable packaging materials and conditions to avoid contamination/deterioration for different evidence types, as well as the need to ensure unique identification of samples/items.

The trainer should emphasize that recognition of evidence is about making a strategy/plan for the collection of evidence.

The trainer should also point out that some physical evidence is always missed and not recovered. Importance of due diligence to diminish this factor.

The trainer should discuss why recognition, recovery and preservation are important:

- Relevant evidence that is present at the crime scene but that goes unrecognized cannot contribute to the solution of a case. It may be irretrievably lost or may send an investigation in a costly and unproductive direction.
- Recovery of only the most obvious and visible evidence may result in leaving the most relevant evidence behind.
- Adequate recovery methods avoid loss, degradation or contamination of the evidence.
- Indiscriminate evidence recovery might potentially overburden the laboratory with irrelevant items and thus hinder the investigation.

Useful examples to illustrate good/bad practices in recognition, recovery and preservation of physical evidence at the crime scene:

- Example of latent fingerprints for recognition and development.
- Example of packaging bloody clothing in plastic bags: ok for temporary storage to avoid dropping at the scene but not for long-term storage causing the biological material to putrefy.
- Example of mixing evidence from differing locations in one single container thus making it impossible to determine the source of individual items.
- Example of inadequate recovery/contamination: victim and suspect handled by the same officer.

3.7 Transportation, storage and submission of evidence to the laboratory

Selecting means of transportation and storage that are appropriate for the type of physical evidence is important to ensure the integrity of evidence submitted to the laboratory.

When discussing this section the trainer should emphasize the importance of early involvement of laboratory personnel to facilitate decisions of examination/analysis.

The trainer should mention that the conditions of transportation and storage should be adapted to the type of physical evidence. The safety of the items should also be considered.

The trainer should discuss why transportation and storage are important:

- To be useful to the case, the evidence that is recovered at the scene must ultimately reach a forensic laboratory in a way that maintains its integrity and identity.
- Adequate conditions will avoid degradation of evidence during the transport and storage.
- Secured access during transportation and storage will prevent any unauthorized access and possible tampering or loss of evidence.

4. Various types of physical evidence (presentation and casework examples)

Using casework examples, the trainer should present and discuss the various types of physical evidence and the information that may be obtained from forensic examinations, including the use and value of databases. Casework examples include:

- Murder case, to include firearms, GSR, fibres, blood spatter patterns, DNA, fingerprints.
- Sexual assault case including "rape kits" collected at a hospital, to include biological material (semen); to include body fluids for testing drugs (toxicology) e.g. GHB, flunitrazepam.
- Burglary case, to include fingerprints, broken glass, shoeprint evidence, tool mark, DNA.
- Drug trafficking, to include solid dose drug testing, fingerprints on packaging materials.
- Child pornography, to include digital evidence from computers.
- Fire scene, to include burn patterns and fire debris.
- Mass casualty situations, to include human remains.
- Terrorist cases, to include explosives.
- Suspicious death determination, to include autopsy, toxicology.
- If relevant: clandestine drug laboratory case, including caution about how to stop a chemical reaction, collecting samples and safety at the scene.

When discussing the types of physical evidence, the trainer should highlight that fingerprints and DNA evidence can be found in many cases (i.e. they are ubiquitous), and that it is recognized that these are often contaminated and may therefore be non-informative (re: importance of preservation of evidence).

He/she should also discuss what can be reasonably done with the evidence (in terms of examination and interpretation) in a country/region, and the information that can be obtained after forensic examinations. The trainer should introduce the use/application of databases where appropriate.

Case studies and casework examples

Case studies and casework examples should be used in module 1, as they are an effective way to teach concepts to students and make the training more interesting. It is recommended to make the participants work with colleagues preferably from the same country on at least one of the case studies. This will trigger discussion of the national/regional context (social, cultural, legal and ethical) and environment. Presentation of the outcomes of the group exercises to the rest of the class will allow for discussion on how well the students performed and on how to improve the effort (trainers should be extra careful not to embarrass anyone in such an exercise).

Cases should be simple to enable participants to be active. This is especially important for the longer version of module 1, because the participants will work in groups on the cases.

Useful casework examples include:

#1: You have been briefed about a series of home burglaries plaguing your patrol area. One day on routine patrol, the dispatcher calls you to respond to a residential burglary in your area. You arrive at the scene and speak to the crime victim. She takes you around the back of the house and shows you a broken window where the perpetrator apparently broke into her home and stole a considerable amount of cash from her property. What are the actions to be envisaged in this situation?

#2: You are a police officer on patrol. You receive a call to respond to a home in your district. Neighbours called the police reporting they heard a woman screaming. You arrive at the house and find the front door ajar. You knock on the door, announce that you are the police and enter the house. You note a woman lying on the floor. She appears unconscious. What are the actions to be envisaged in this situation?

Instead of group exercises, a presentation and discussion of a well-known case (e.g. the 2004 train bombing in Spain) will be more appropriate for policymakers and for delivery of the short version of module 1. Alternatively, a casework example could be presented that involves evidence of interest to the audience. Newspapers and the Internet are good sources of information for this type of case.

An example of a drug trafficking and organized crime case that could be presented in the absence of a suitable real case is as follows:

#3 A person suspected of taking an active part in drug trafficking activities is arrested in his/her car. An officer searches the vehicle using all care to recover a maximum of evidence and avoiding destroying any evidence. In the car the following items are found: packages suspected to contain drugs, a computer, a mobile phone as well as identity documents (passports, ...). Those items can bring relevant pieces of information to the investigation and be ultimately used as evidence in court proceeding.

- Regarding the packages suspected to contain drugs

At the scene: preliminary tests to detect possible drugs

In a laboratory: analytical technique to confirm and identify the material as drugs and possibly, to determine the purity of the substance (quantification)

Other physical evidence on the packages: fingerprints, DNA,...

- Regarding the electronic devices suspected to have been used for illegal activity (computer, mobile phone)

At the scene: adequate handling of the device, no switching off or on

In a laboratory: retrieve data from hard disk or other storage media, derive sequence of actions on computer

Other physical evidence on electronic devices: fingerprints,...

- Regarding the identity document (passport)

At the scene: preliminary examination (visual examination without specific equipment) to observe watermarks, relief structure, mechanical erasure,...

In a laboratory: forensic examination using technical facilities and equipment (UV, IR)

Signature falsified, paper, microscopic details

Practical sessions (only for the longer version of module 1)

Practical sessions create a positive learning atmosphere and are generally very well received by the participants. If the audience consists of potential first responders (Target group II) or crime scene investigators (Target group III) who are eligible for, and should subsequently attend, modules 2 or 3, it is important to build some limited practical sessions into module 1. Fingerprints and basic crime scene investigation have proven to be particularly useful. However it is crucially important for the trainer to stress that the participants at the end of module 1 are neither fingerprints expert nor crime scene investigators.

The proposed limited practical sessions include:

- Fingerprint detection, enhancement using powders, and recovery
- Taking ink exemplars of fingerprints
- Mock crime scene (assigning roles and going through the process with the trainees)

Conclusions

When delivering module 1 to end-users of forensic information (Target group 1), in particular to policy and decision makers, a strong closing is recommended to ensure future investments in crime scene investigation and forensic work.

Proposed duration

The duration of the course delivering module 1 is scalable from one hour to three to four days. The short version is recommended for Target group I (end-users of forensic information and others who need to know). The other target audiences should receive the longer version of a three to four day training course, including case studies, and practical sessions (one day). A 3-4 day course is especially suitable when a regional training is organized.

An even longer course could be justified if forensic personnel in a country are invited to attend the last one to two days for case studies, to improve communication and clarify expectations from both sides.

Recommended resource materials

Key reference materials

- UNODC “Crime scene and physical evidence awareness for non-forensic personnel”, ST/NAR/39, 2009, full pdf available under: www.unodc.org

Glossary of terms (attached to this training programme, annex I)

Questionnaires (sample questionnaires attached to this training programme, annex II).

- Pre and post-instruction questionnaire to ensure that the process for training delivery in place is adequate.
- Pre and post-instruction questionnaire to assess the individuals’ learning progress

Casework examples and case studies

- Casework examples to illustrate the points made in the lectures. To the extent possible, cases with photographs/images should be used as they best help the audience understand the right way and wrong way to conduct crime scene investigations.
- Case studies for the participants to apply the presented concepts.

Handout materials

- Handout materials should be prepared to support the course.
- A presentation with notes for the delivery of the short version of module 1 (one hour presentation) can be provided by the Laboratory and Scientific Section, UNODC, upon request.

Audio-visual materials

- DVD “Crime scene investigation in the DNA era” (prepared by the Institute of Legal Medicine University of Innsbruck, Austria; supported and recommended by INTERPOL) is available on request.

Generic agenda for the delivery of module 1 (attached to this training programme, annex IV)

Module 2. Responsibilities of first responders at crime scenes

Module 2 (“Responsibilities of first responders at crime scenes”) is designed to provide trainers with the necessary guidance for the delivery of practical hands-on training for first responders, enabling them to carry out their tasks at crime scenes. Ideally, first responders should receive training on both modules 1 and 2.

Module 2 is available in two versions for delivery to first responders depending on the infrastructure and resources in a given country/region:

- Module 2 (a) (“Standard responsibilities of first responders”) and
- Module 2 (b) (“Extended responsibilities of first responders”)

Delivery of module 2 (a) is recommended to develop first responder capacity in situations /countries where specialized crime scene investigation services are available to take over the work of first responders at crime scenes. Delivery of module 2 (b), in addition to module 2 (a), is recommended if there are no crime scene investigation services available. Module 2 (b) is recommended as part of a phased approach to institution building in the field of crime scene investigation, in anticipation of a subsequent phase aimed at building dedicated, basic crime scene investigation capacity (module 3).

Module 2 (a). Standard responsibilities of first responders at crime scenes

Prerequisite for delivery of module 2 (a): module 1 completed, or delivered as refresher course at the beginning of module 2 (a).

Participants should also have had first-aid training. If the participants are lacking this expertise, the trainer should consider adding a session on first-aid, preferably delivered by a local institution.

Target audience

Module 2 (a) is a standard course for first responders at crime scenes. It is designed for people arriving first at crime scenes as part of their professional duties. First responders are in many cases non-forensic personnel and with no specific experience in crime scene investigations. The audience consists of:

- Law enforcement personnel, e.g. police, customs officers
- Military officials
- Emergency personnel, e.g. fire brigade, medical personnel, rescue workers

The recommended number of participants for delivery of module 2 (a) is 15-20.

Purpose

Module 2 (a) (Standard responsibilities of first responders at crime scenes) is designed to provide trainers with the necessary guidance for the delivery of hands-on training for first responders to take appropriate initial actions, namely to preserve and protect crime scenes and to keep a log.

First responders do not need specific equipment to preserve the scene except for barrier tape. Thus there is no need for the provision of a specific kit as part of this training on module 2 (a) (by contrast, specific kits should be provided as part of module 2 (b) and 3).

Learning objectives

After taking module 2 (a), participants will have the necessary practical basis to preserve and protect crime scenes and keep a log. Participants will also have an in-depth knowledge of the different types of crime scenes, the role and responsibilities of first responders, and applicable safety and security measures, including assistance to victims.

Trainers should be aware and clarify to their trainees that delivery of module 2 (a) does not cover practical aspects of collection of physical evidence, nor does it teach how to provide first aid to crime victims.

Course content for module 2 (a)

This course is based on and consistent with existing guidelines for crime scene investigations, in particular the International Association for Identification (IAI) Crime Scene Investigation Guidelines. The trainer should be familiar with their content and use relevant parts as resource material. For module 2 (a), the section on "Initial Response" is particularly relevant. Guidelines have also been developed by regional forensic associations and should be consulted and used as appropriate.

1. Introduction

- 1.1 Presentation of the objective of the course (purpose and expected learning objectives)
- 1.2 Introduction of the trainers
- 1.3 Introduction of the participants and their expectations about the training ("managing expectations")
- 1.4 Presentation of the work of the organizations organizing the course (if required)

2. Types of crime scenes

The trainer should review with the participants at the appropriate level of detail what was covered under module 1 (session 3.1) and use additional casework examples to illustrate and introduce the various types of physical evidence.

3. Health and safety measures at crime scenes

The trainer should review with the participants at the appropriate level of detail what was covered under module 1 (session 2.3) and use additional casework examples to illustrate health and safety measures at crime scenes. This should also include aspects of public safety, e.g. at dangerous crime scenes and when handing back a scene which has been contaminated (e.g. with fingerprint enhancement chemicals) to its owners.

4. Role and responsibilities of first responders at the scene

The trainer should review with the participants at the appropriate level of detail what was covered under module 1 (session 2.2) and use additional casework examples to illustrate the role and responsibility of first responders at crime scenes. It is important to highlight that for first responders, responses to crime scenes are only one aspect of their work, and that they are responsible for other duties as well. It should also be stressed that the only techniques the first responder should use are those for which he/she has demonstrated competence.

5. Preservation, initial documentation and control of the crime scene

This part should include theory and practical sessions. The trainer should use demonstrations, case studies and mock cases.

Rendering assistance/first-aid to victims is the first priority upon arrival at the scene. It should be taught as part of a specific course.

5.1 Delineate the scene and establish a security cordon

The trainer should discuss different types and sizes of crime scenes and time constraints at crime scenes.

5.2 Establish communications

The trainer should discuss the various communication channels that need to be established. Among others, it is crucial for first responders to call for specialized expertise (e.g., crime scene investigators, forensic scientists, medical examiners, police administrators, if required). It is also very important to train the participants to report to and brief appropriate personnel as they arrive at the scene.

5.3 Establish a log

The trainer should show the importance of establishing a log through practical exercises. It is suggested to set up a mock crime scene on the first day. Later during the course the participants should be asked to recall details of the crime scene and the work done. This will highlight the importance of keeping a detailed log about who enters and leaves the scene, contact information for witnesses and descriptions of any actions taken.

5.4 Protect physical evidence

It is not possible to go through all types of physical evidence as part of module 1. The trainer should therefore focus on the types of physical evidence most likely to be encountered in the country/region and consider the forensic capacity in the country/region.

5.5 Set up a staging area for vehicles and personnel who may be arriving

Testify in court proceedings

Depending on jurisdiction, first responders might be asked to testify in court proceedings. In those situations, the trainer is encouraged to set up a moot court and have the participants present crime scenes, their actions at the scene and what happened while they were there as if they were giving evidence in court. In addition to addressing testifying in the oral sense, the trainer should also touch on requirements for preparing written reports/statements.

Where applicable, the need for independence, impartiality and integrity should also be stressed as part of this session, e.g. by reference to a code of conduct.

Practical sessions

It is important to set up mock crime scenes for the participants to practice what they have learned during the course. Basic crime scenes (e.g. burglary, murder) should be considered first before adding on complexities.

Proposed duration

The recommended duration of module 2 (a) is between two and three days.

One to two additional day(s) should be included, if necessary, to ensure that all topics of module 1 are covered in the necessary detail.

Facilities

The training facilities should include space for both theoretical and practical components, and include material to set up mock crime scenes, both indoor and outdoor.

Recommended resource materials

Key reference materials

- UNODC “Crime scene and physical evidence awareness for non-forensic personnel”, ST/NAR/39, 2009; full pdf available under: www.unodc.org
- International Association for Identification “Crime Scene Investigation Guidelines”
- Other crime scene investigation guidelines by regional forensic associations

Glossary of terms (attached to this training programme, annex I)

Casework examples

- Casework examples to illustrate the points made in the lectures. To the extent possible, cases with photographs/images should be used as they best help the audience understand the right way and wrong way to conduct crime scene investigations.

Handout materials

- Handout materials should be prepared in support of the course.

Audio-visual materials

DVD “Crime scene investigation in the DNA Era” (prepared by the Institute of Legal Medicine University of Innsbruck, Austria; supported and recommended by INTERPOL) is available on request.

Generic agenda for the delivery of module 2 (a) (attached to this training programme, annex IV)

Module 2 (b). Extended responsibilities of first responders at crime scenes

Prerequisite for delivery of module 2 (b): module 1 and 2 (a) completed (module 2 (b) should always be delivered together with module 2 (a)).

TARGET AUDIENCE

Module 2 (b) (Extended responsibilities of first responders at crime scenes) is a course for first responders with extended responsibilities at crime scenes and is designed for individuals arriving first at crime scenes as part of their professional duties, in situations where there are no dedicated or functioning crime scene investigation services (i.e. in situations where first responders act as “only responders”). First responders are in the majority of cases non-forensic personnel with other major responsibilities than forensic and crime scene investigation. The audience consists of:

- Law enforcement personnel, e.g. police, customs officers
- Other personnel may also be considered depending on legislation:
 - Military officials
 - Emergency personnel, e.g. fire brigade, medical personnel, rescue workers

While module 2 (b) responds to the extended responsibilities of first responders under certain circumstances, it is still a module delivered to those who are not on a career path to becoming a dedicated crime scene investigator (If there are crime scene investigation services or concrete prospects for building up dedicated crime scene investigation capacity, module 3 should be used).

The recommended number of participants for delivery of module 2 (b) is 15-20.

PURPOSE

Module 2 (b) is designed to provide trainers with the necessary guidance for the delivery of a course for individuals who are the only responders at the crime scene (i.e. when there are no dedicated crime scene investigation services).

Module 2 (b) is specifically designed to provide practical hands-on training on how to document the scene and collect a subset of physical evidence (see below).

Crime scene investigation kits containing the necessary equipment for first responders with extended responsibilities acting at crime scenes as “only responders” should be provided as part of delivering module 2 (b). A list of recommended kit contents is attached to this training programme (annex III).

Learning objectives

After taking module 2 (b), participants will be able to take appropriate initial measures at crime scenes and collect a subset of physical evidence. Specifically, they will be able to:

- Preserve the scene and implement anti-contamination measures;
- Record and document the crime scene;
- Search the crime scene, recognize and locate evidence;
- Recover, preserve, document and package a subset of physical evidence:
 - Drugs
 - Fingerprints (including ten prints) and other ridge skin impressions (palmprints, bare footprints)
 - Documents
 - Firearms and ammunition
 - Human remains
 - Others: biological materials only if capacity to analyze it (e.g., DNA analysis) is available at national/regional level
- Testify in court proceedings;
- Use and maintain crime scene investigation equipment and material.

Trainers should establish the expected nature and scope of extended first responder functions beforehand, based on the specific circumstances in the trainees' country/region, including access to the required forensic examinations, analyses and expert services.

Course content of module 2 (b)

This course is based on and consistent with existing guidelines for crime scene investigations, in particular the International Association for Identification (IAI) Crime Scene Investigation Guidelines. The trainer should be familiar with their content and use relevant parts as resource material. Guidelines have also been developed by regional forensic associations and should be consulted and used as appropriate.

All sections below require both theory and practical sessions. Throughout, the trainer should stress that the only techniques the first responder should use are those for which he/she has demonstrated competence.

Training elements 1-5 are included in module 2 (a), which should always precede delivery of module 2 (b).

6. Record and document crime scenes

6.1. General approach to scene documentation

This should cover the general approach to scene documentation, including an introduction to the various means of documentation, with a focus on equipment available at the local level. The importance of documentation to ensure chain of custody should be emphasized. The trainer should stress the need for records to be in sufficient detail for another competent person to be able to evaluate the work done and also the need for the records to be retained securely for a specified time in confidence to the client, unless otherwise specified by law.

6.2. Taking notes, keeping a log

6.3. Photography (long, mid, close-up/detail photography)

The trainer should make clear that macro photography is beyond the scope of this course and is part of module 3.

6.4. Sketches, including measurement

7. Preserve the scene: implement anti-contamination and personal health and safety measures

The trainer should emphasize the importance of using disposable supplies to avoid contamination. He/she should alert trainees to the fact that there is often a wrong assumption of cleanliness.

8. Search the crime scene, recognize and locate evidence

The trainer should present search methodologies and techniques for locating visible and latent physical evidence with a focus on drugs, fingerprints, documents, firearms, ammunition and human remains.

9. Recognize, recover, preserve, document and package a subset of physical evidence

The trainer should cover fully and in detail all aspects related to ensuring unique identification of samples/items of the subset of physical evidence discussed below, their preservation and storage, and maintenance of the chain of custody.

a. Illicit drugs

The trainer should make clear that this extended first responder training does not include the investigation of clandestine laboratories, and that in such cases, specialist expertise will have to be called in.

b. Fingerprints (including ten prints) and other ridge skin impressions (palmprints, bare footprints)

c. Documents

d. Firearms and ammunition

e. Human remains

The trainer should make clear that this extended first responder training covers only human remains that are not buried.

f. Others

The trainer should consider addressing the collection and preservation of biological material for DNA analysis only if DNA analysis capacity is available at national/regional level, or through bilateral agreements.

10. Testify in court proceedings

The trainer is encouraged to set up a moot court and have the participants present crime scenes, their actions at the scene and what happened while they were there, as if they were giving evidence in court. The trainer should provide instructions on court etiquette and stress the importance of presenting evidence impartially. The trainer should coordinate with a local prosecutor and/or a judge for assistance on this. In addition to addressing oral testifying, this session should also discuss requirements, at the appropriate level of detail, for preparing written reports/statements (i.e. a subset of information provided in module 3, sessions 9 and 11).

11. Use of crime scene investigation equipment and material

The trainer should introduce the content of crime scene investigation kits, their use and the importance of regular replenishment to ensure their readiness at any point in time. This session should also address, at the necessary level of detail, quality standards related to the access to, use of and maintenance of facilities and equipment, including computers, automated equipment and software, and also including calibration and the use of reference standards, where applicable.

Practical sessions

It is important to set up mock crime scenes for the participants to practice selected aspects of crime scene investigation approach and methods learned during the course. Basic crime scenes (e.g. burglary, murder) should be considered first before adding on complexities.

Proposed duration of the course

The duration of module 2 (b) should be four to five days. As module 2 (b) should always be delivered subsequent to module 2 (a), the total duration for delivery of module 2 (a) and (b) should be six to eight days, or one and a half to two weeks on average. Of these, one day should be dedicated to documentation and photography and one day to detection of fingerprints.

One to two additional day(s) should be included, if necessary, to ensure that all topics of module 1 are refreshed at the necessary level of detail.

Facilities

The training facilities should include space for both theoretical and practical components, and include all necessary equipment and material for the recognition, recovery, documentation and packaging of various types of physical evidence, documentation of the scene, as well as material to set up mock crime scenes.

Recommended resource materials

Key reference materials

- UNODC “Crime scene and physical evidence awareness for non-forensic personnel”, ST/NAR/39, 2009; full pdf available under: www.unodc.org
- International Association for Identification “Crime Scene Investigation Guidelines”
- Other crime scene investigation guidelines by regional forensic associations

Glossary of terms (attached to this training programme, annex I)

Casework examples

- Casework examples to illustrate the points made in the lectures. To the extent possible, cases with photographs/images should be used as they best help the audience understand the right way and wrong way to conduct crime scene investigations.

Handout materials

Handout materials should be prepared in support of the course.

Audio-visual materials

DVD “Crime scene investigation in the DNA Era” (prepared by the Institute of Legal Medicine University of Innsbruck, Austria; supported and recommended by INTERPOL) is available on request.

Generic agenda for the delivery of module 2 (b) (attached to this training programme, annex IV)

Module 3. Basic crime scene investigation

Prerequisite for delivery of module 3: module 1 completed, or included as a refresher at the beginning of module 3.

Target audience

Module 3 (Basic crime scene investigation) is designed for crime scene investigators, for personnel with primary duties to process crime scenes and for individuals, who have the appropriate education and skills and are on a career path to becoming crime scene investigators. It is recommended in countries where dedicated crime scene investigation services exist or are in the process of being established.

Participants should have a basic understanding of the forensic process, the crime scene investigation process, the various types of physical evidence, preservation of the scene and its evidence, initial documentation means and exhibit management. They should also have some practical experience in processing crime scenes before attending the course.

The recommended number of participants for delivery of module 3 is 15-20.

Purpose

Module 3 is designed to provide trainers with the necessary guidance for the delivery of practical hands-on training on conducting basic crime scene investigations. It should be delivered exclusively in situations where dedicated crime scene investigation services exist or if there is a concrete prospect for building up dedicated crime scene investigation capacity.

Crime scene investigation kits containing equipment necessary for crime scene investigators to conduct basic investigations should be provided as part of delivering module 3, if not already available. A list of recommended kit contents is attached to this training programme (annex III).

Learning objectives

After completing module 3, participants will have the necessary practical knowledge of basic crime scene investigation methodologies, and practical ability to preserve and collect evidence and interpret a range of crime scenes. Specifically, participants will be able to:

- Implement applicable safety and security measures;
- Take over a scene from first responders and preserve the scene;
- Plan and coordinate work at the scene based on the available information;

- Record and document crime scenes;
- Search the scene, and recognize and locate physical evidence;
- Recover, preserve, document and package various types of physical evidence:
 - Drugs
 - Fingerprints
 - Documents
 - Firearms and ammunition
 - Human remains
 - Biological materials (including DNA)
 - GSR
 - Trace evidence (fibres, paint, glass, and other microtraces)
 - Tools and toolmarks, including restoration of obliterated serial numbers
 - Shoe and tyre marks
 - Electronic devices (e.g. computers, mobile phones)
 - Autopsy evidence
 - Crime scene involving vehicles
 - Others: arson evidence and explosive
- Interpret findings at the scene in the context of the case;
- Manage a crime scene, exhibits and an entire case;
- Testify in court proceedings;
- Use and maintain crime scene investigation equipment and material;
- Appreciate the need for acting in accordance with international standards and advise his/her organization to begin implementing a basic quality management system and work towards accreditation.

However, since module 3 is designed as a basic course, it cannot include crime scenes that require highly specialized expertise to identify and collect evidence and interpret the scene, such as post-blast investigation, fire cause and origin determination, shooting scene reconstruction, blood stain pattern analyses, clandestine laboratory investigation, digital evidence collection, buried human remains, and traffic accident reconstruction. Consequently, after completing module 3, participants will not be proficient in the investigation of such crime scenes. In those cases additional education and/or training are required.

Course content for module 3

This course is based on and consistent with existing guidelines for crime scene investigations, in particular the International Association for Identification (IAI) Crime Scene Investigation Guidelines. The trainer should be familiar with their content and use relevant parts as resource material. Guidelines have also been developed by regional forensic associations and should be consulted and used as appropriate.

All sections below require both theory and practical sessions. Throughout, the trainer should stress that the only techniques the first responder should use are those for which he/she has demonstrated competence.

1. Introduction

- 1.1. Presentation of the objective of the course (purpose and expected learning objectives)
- 1.2. Introduction of the trainers
- 1.3. Introduction of the participants and their expectations about the training (“managing expectations”)
- 1.4. Presentation of the work of the organizations organizing the course (if required)

2. Types of crime scenes

The trainer should review with the participants at the appropriate level of detail what was covered under module 1 (session 3.1) and use additional casework examples to illustrate the various types of physical evidence.

3. Health and safety at crime scenes

The trainer should review with the participants at the appropriate level of detail what was covered under module 1 (session 2.3) and use additional casework examples to illustrate health and safety measures at crime scenes. This should also include aspects of public safety, e.g. at dangerous crime scenes and when handing back a scene which has been contaminated (e.g. with fingerprint enhancement chemicals) to its owners.

4. Scene handover from first responder and continuation of preservation of the scene and its evidence

- Re-assessing boundaries and establishing security cordon and log of scene
As part of this, the trainer should discuss different types and sizes of crime scenes and time constraints at crime scenes.
- Protecting physical evidence, if required

5. Plan, organize and coordinate the work at the scene

The trainer should highlight the importance of planning, organization and coordination at the scene with a focus on:

- Role and responsibilities of crime scene investigators and other responders at the scene (e.g. medical personnel)
- Briefings: establish communication with first responders, police investigators, forensic personnel, if necessary
- Identifying resources (e.g. personnel, specialists, equipment, ...)
- Establishing a crime scene plan/priorities according to available information
- Establishing a sequence of procedures at the scene (least destructive to most destructive method)

6. Record and document the scene

- General approach to scene documentation,
This should include the general approach to scene documentation, including an introduction to the various means of documentation, with a focus on equipment available at the local level. The importance of documentation to ensure chain of custody should be emphasized. The trainer should stress the need for records to be in sufficient detail for another competent person to be able to evaluate the work done and also the need for the records to be retained securely for a specified time in confidence to the client, unless otherwise specified by law.

- Taking notes
- Photography (long, mid, close-up/detail photography)
- Sketches, including measurement
- Other means: Video (overview)

7. Search the crime scene, and recognize and locate physical evidence

The trainer should discuss search methodologies and techniques for locating visible and latent evidence.

8. Recover, preserve, document and package various types of physical evidence:

a. Commonalities for all types of physical evidence

The trainer should discuss the overall approach and practicalities for recovery, packaging and preservation of different types of physical evidence. He/she should cover fully and in detail all aspects related to ensuring unique identification of samples/items and maintenance of the chain of custody. Because background or control samples might need to be collected at the scene, the trainer should also introduce the importance of control samples to be used in further forensic analyses and examinations. He/she should also revisit in more detail relevant parts of module 1 (session 2.4) that relate to the particular issues involved when preserving and collecting evidence from victims (and from suspect offenders).

b. Illicit drugs

The trainer should make clear that this basic crime scene investigation training does not include the investigation of clandestine laboratories, and that in such cases, specialist expertise will have to be called in.

c. Fingerprints

d. Documents

e. Firearms

f. Ammunition

g. GSR

h. Human remains

The trainer should make clear that this basic crime scene investigation training covers only human remains that are not buried.

i. Biological materials (including DNA)

j. Trace evidence (fibres, paint, glass, and other microtraces)

k. Tools and toolmarks, including serial number restoration

l. Shoe and tyre marks

m. Electronic devices (e.g. computers, mobile phones)

The trainer should emphasize that this basic training only covers the preservation of the integrity of electronic devices, and that further examinations on electronic devices are to be carried out by a specialist.

n. Autopsy evidence

The trainer should emphasize that this basic training only covers the collection of evidence on clothes and bodies, that forensic pathologists perform the autopsy itself and that forensic scientists carry out further examinations and analyses on collected evidence.

o. Crime scenes involving vehicles

The trainer should discuss the preservation and collection of physical evidence inside and outside vehicles, but emphasize that traffic accident reconstruction is performed by a specialist.

p. Others: arson evidence and explosives

The trainer should familiarize the participants with the appropriate collection of fire debris and explosives when they have been identified and located by a specialist, and point out that participants after this course are not proficient to determine the cause and origin of arson or to identify bomb components. Specialists are required to carry out those tasks.

9. Interpretation

The trainer should discuss requirements to prepare an initial report with all relevant findings together with sufficient other information for their proper understanding/interpretation, and how other information (autopsy, closed-circuit television (CCTV), etc.) are to be considered in the final report.

10. Exhibits management

The trainer should cover aspects of prevention of cross-contamination between exhibits, managing exhibit logs at a scene, maintaining continuity, awareness of the importance of sequencing exhibits for forensic analyses.

11. Case management

The trainer should cover management of reports, statements, results of investigations at the scene and photographs. This should also address the need for reports to be signed only by authorized staff and how to deal with corrections/additions to the report. The trainer should also remind trainees of their independence, impartiality and integrity and the need for them to make professional judgements.

12. Testifying in court proceedings

The trainer is encouraged to set up a moot court and have the participants present crime scenes, their actions at the scene and what happened while they were there, as if they were giving evidence in court. The trainer should provide instruction on court etiquette and stress the importance of presenting evidence impartially. The trainer should coordinate with a local prosecutor and/or a judge for assistance on this.

13. Use of crime scene investigation equipment and material

The trainer should introduce the content of crime scene investigation kits, their use and the importance of regular replenishment to ensure their readiness at any point in time. This session should also address, at the necessary level of detail, quality standards related to the access to, use of and maintenance of facilities and equipment, including computers, automated equipment and software, and also including calibration and the use of reference standards, where applicable.

14. Quality assurance

The trainer should introduce the main requirements of applicable ISO/IEC standards (i.e. ISO 17020 and ISO 17025), and the reasons for them. This should also include the need to have in place appropriate checking systems for calculations, data transfers, etc. The trainer should highlight the importance of aiming for and working towards accreditation but emphasize also that forensic institutions and crime scene investigators can follow international standards without being accredited and that accreditation and certification for crime scene investigators are only the demonstration that they follow international standards.

Practical sessions

It is important to set up mock crime scenes for the participants to practice the entire approach and methods learnt during the course.

Proposed duration

The duration of module 3 should be three weeks, but also depends on the extent to which the specifics of different types of evidence are considered.

As part of the proposed three weeks training for module 3, one to two days should be dedicated to ensure that all topics of module 1 are understood at the necessary level of detail.

Facilities

The training facilities should include space for both theoretical and practical components, and include all necessary equipment and materials for the recognition, recovery, documentation and packaging of various types of physical evidence, documentation of the scene, as well as materials to set up mock crime scenes.

Recommended resource materials

Key reference materials

- UNODC “Crime scene and physical evidence awareness for non-forensic personnel”, ST/NAR/39, 2009, full pdf available under: www.unodc.org
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Glossary of terms (attached to this training programme, annex I)

Casework examples

- Casework examples to illustrate the points made in the lectures. To the extent possible, cases with photographs/images should be used as they best help the audience understand the right way and wrong way to conduct crime scene investigations.

Handout materials

Handout materials should be prepared in support of the course.

Audio-visual material

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Annex I. Glossary of terms

This glossary is a selection of relevant terms from the glossary of the “Forensic services and infrastructure” Assessment Tool of the UNODC “Criminal Justice Assessment Toolkit” (2010).

Accreditation Accreditation aims at establishing the status, legitimacy or appropriateness of a service provider by an independent body (often called a national accreditation body); in a forensic context, typically refers to the official assessment of a forensic science laboratory or forensic service provider, based on internationally accepted standards, such as ISO 17025, 17020. [see also certification]

Accreditation Accreditation aims at establishing the status, legitimacy or appropriateness of a service provider by an independent body (often called a national accreditation body); in a forensic context, typically refers to the official assessment of a forensic science laboratory or forensic service provider, based on internationally accepted standards, such as ISO 17025, 17020. [see also certification]

Analysis and examination Analysis of samples aims at determining its composition; in a forensic context usually a chemical analysis.

Examination of samples refers to non-chemical analysis, e.g., observation, comparison.

Caseload Number of cases submitted, investigated, examined or analysed by a laboratory or forensic service provider in a given time period.

Casework Investigation of criminal cases or evidence resulting from an investigation; the process of case analysis and examination in a laboratory.

Certification A procedure by which a competent independent body (certifying body) evaluates and gives formal recognition either to an individual or organization as meeting pre-determined requirements or criteria; in this context the term typically refers to a formal recognition of the competence of a forensic expert. [see also accreditation]

Chain of custody Procedures and documents that account for the integrity of physical evidence by tracking its handling and storage from its point of collection to its final disposition, to establish its connection to an alleged crime

Other terms used: chain of evidence, traceability.

Competence	A demonstrated ability to perform a task to a specific, pre-determined standard.
Contamination	The direct or indirect transfer of extraneous material to a forensic sample or scene of crime; Other term used: cross contamination.
Crime scene and crime scene investigation	A site containing records of past activities, alleged to be a crime: <ul style="list-style-type: none"> • Crime scene investigation is a process that aims at recording the scene as it is first encountered and recognizing and collecting all relevant physical evidence Other term used: crime scene examination • Crime scene investigation service is a dedicated team or organizational unit consisting of crime scene investigators which main function is to process crime scenes. • Crime scene investigator is an individual with the professional knowledge and skills (who received adequate forensic training) to perform crime scene investigation. Other term used: crime scene examiner
Crime scene investigation kit	A specially prepared collection of supplies contained in some carry-all, needed to preserve, document, collect and package physical evidence at crime scenes. Contents of kits vary but typically include containers to gather evidence, labels, gloves, measuring devices and hand tools to help in the recognition and collection of evidence, such as light sources.
Database	In a forensic context, searchable collection of data or information, usually but not necessarily, in an electronic/digital format, e.g., Automated Fingerprints Integrated System (AFIS), Combined DNA Index System (CODIS), Integrated Ballistics Identification System (IBIS). [see also reference collection]
First responder	First person arriving at a crime scene, e.g. law enforcement officer, fire personnel, emergency medical personnel.
Fingerprint	A mark left on a surface that was touched by an individual. Other term used: fingermark. Also used for the fingerprint ink exemplar taken from an individual for comparison purposes.
Field detection test kit	A specially prepared kit for performing preliminary tests on samples outside of laboratory facilities, e.g., for field testing drugs and precursors.
Forensic service provider	A public or private agency/institution/institute/laboratory performing forensic analyses and examinations, including crime scene investigations and forensic medical examinations, and preparing reports used by the criminal justice system.

Physical evidence	Any tangible item associated with a crime.
Proficiency test	Test to evaluate the competence of analysts or examiners and the quality of performance of a laboratory or forensic service provider; in open tests, the analysts or examiners are aware that they are being tested; in blind tests, they are not aware.
Quality assurance	All planned and systematic activities implemented within the quality management system to provide adequate confidence that the laboratory or forensic service provider will fulfil requirements for quality.
Quality management system (QMS)	The QMS consists of documentation of a laboratory's or forensic service provider's policies, systems, procedures and instructions to the extent necessary to assure the quality of its results, to meet relevant jurisdictional, regulatory and safety requirements and to satisfy the needs of the clients.
Reference collection	A set of samples and objects used in forensic casework for identification and comparison purposes (e.g. firearms and ammunition; genuine banknotes; ID documents; glass particles; shoe soles; drug packaging; inks). [see also databases].
Traceability	[see chain of custody]

Annex II. Pre and post-instruction questionnaires to assess the individuals' learning progress of module 1

Pre-training questionnaire. For each situation described, put a tick for T (True) or F (False)

1.	Physical evidence recovered and properly collected in 2001 can be used as evidence in a trial in 2006.	T	F
2.	It is not necessary to separate witnesses at a crime scene, as they know what happened and can relate their version in a clear and concise manner.	T	F
3.	Upon arrival at a homicide scene, an officer sees a gun that might have been used in the homicide and a victim in need of medical assistance. The officer should collect the gun first and then render medical assistance.	T	F
4.	A crime scene log should only be maintained at major scenes such as homicides, suicides, or other violent crimes.	T	F
5.	The purpose of crime scene photography is to document the scene as it was when the crime was committed.	T	F
6.	Physical evidence is extremely important because police are interested only in proving the guilt of a criminal suspect.	T	F
7.	If evidence has been contaminated or altered at a crime scene, it can be restored to its original condition later in the process.	T	F
8.	Generally speaking, the most important area of concentration for latent fingerprint evidence is the point of entry.	T	F
9.	Where the officer observes gloves or other hand covering at the point of exit, the officer should disregard the evidence and request the victim to dispose of the gloves or other hand covering.	T	F
10.	While doing a walk-through of the premises, the officer observes nothing out of place. The officer should conclude that the offender(s) did not touch/look at that area for valuables.	T	F

Post-training questionnaire. For each situation described, put a tick for T (True) or F (False)

1.	Physical evidence recovered and properly collected in 2001 can be used as evidence in a trial in 2006.	T	F
2.	Leaving behind or contamination of physical evidence at a crime scene is never acceptable.	T	F
3.	Paramedics and other emergency personnel do not need to be directed how to enter a crime scene, as they are trained and possess the knowledge of how to skilfully approach a scene.	T	F
4.	A crime scene log should only be maintained at major scenes such as homicides, suicides, or other violent crimes.	T	F
5.	The officer will always be able to detect chemical evidence through the smell and/or the appearance of the evidence.	T	F
6.	Physical evidence is extremely important because police are interested only in proving the guilt of a criminal suspect.	T	F
7.	If evidence has been contaminated or altered at a crime scene, it can be restored to its original condition later in the process.	T	F
8.	Since the likelihood of developing fingerprints on a rifle or shotgun is relatively slim, it is permissible to transport a rifle or shotgun by picking it up by the stock, butt, or barrel.	T	F
9.	In an instance where the victim was adamant that a suspect was wearing gloves, officers should not concern themselves with the presence of latent prints.	T	F
10.	While doing a walk-through of the premises, the officer observes nothing out of place. The officer should conclude that the offender(s) did not touch/look at that area for valuables.	T	F

Annex III. Lists of recommended contents of crime scene investigation kits

When delivering the training programme, it is recommended that the provision of extended first responder training (module 2 (b)) and basic crime scene investigator training (module 3) are accompanied by the provision of crime scene kits appropriate for the tasks of the two target groups.

What follows is recommended contents of crime scene investigation kits. It is in no way compulsory but provides guidance when developing crime scene investigation kits. Indicative quantities of the different items to be included in kits and to be made available as stock in an accessible storage room are also included.

Based on those lists, UNODC has designed standardized kits. General information can be found under: www.unodc.org, and further details be requested at lab@unodc.org.

The recommended content lists of two types of kits are provided, representing the two different levels of capacity:

Basic crime scene investigation kit: Kit for use by crime scene investigators, to enable them to process different types of crime scenes at a basic level. This kit is to be provided together with training module 3.

Elementary crime scene investigation: Kit for use by first responders (mainly police officers) of countries where there is no dedicated crime scene investigation service, and where first responders are expected to perform extended functions. This kit is a lighter version of the basic crime scene investigation kit. It is to be provided together with training module 2 (b).

The following lists assume that IT equipment (computer, software, printer) and a hard-copy fingerprint database) are available in the national crime scene investigation service.

<i>Elementary crime scene investigation</i>			
No.	Description	Number of units per kit module (for 1 person)	Units of replaceable stock (to be provided with kit or later)
1.	Disposable latex/plastic examination gloves, pair	5	150
2.	Disposable coveralls (medium and large sizes)	2 (1 medium and 1 large)	20 (10 medium and 10 large)
3.	Shoe covers, pair	2	30
4.	Hair caps (surgical)	1	5
5.	Disposable face masks (dust and anti-putrefaction masks)	2	20

Elementary crime scene investigation			
No.	Description	Number of units per kit module (for 1 person)	Units of replaceable stock (to be provided with kit or later)
6.	Crime scene barrier tape (with text such as: "crime scene do not cross"), roll	1	4
7.	Paper towels, roll	1	10
8.	First aid kit (standard)	1	-
9.	Hermitical waste bags, approx. 25 litres	1	10
10.	Magnifier	1	-
11.	Hand-held light source (torch)	1	-
12.	Spare batteries for hand-held light	6	-
13.	Clear adhesive tape (basic for all uses), roll	1	2
14.	Disposable plastic tweezers	3	30
15.	Scalpel handles	1	2
16.	Scalpel replacement blades	6	60
17.	Disposable spatulas	3	30
18.	Scissors	1	-
19.	Individually wrapped sterile cotton swabs	20	200
20.	Disposable plastic pipettes	4	40
21.	Paper bags (small, approx. 2 litres)	10	100
22.	Paper bags (medium, approx. 4 litres)	20	200
23.	Paper bags (large, approx. 8 litres)	10	100
24.	Plastic bags, approx. 4 litres	10	100
25.	Envelopes (various sizes, from A5 to A3)	20	200
26.	Slide boxes (for teeth, projectiles, etc)	10	100
27.	Body bags	2	10
28.	Evidence tags/labels of standard dimension, with fields where general information about evidence can be written by pencil or ballpoint	25	250
29.	Tamper proof evidence tape	1	3
30.	Rulers (approximately 30 cm)	1	-
31.	Reference scales (L-shaped)	2	-
32.	Tape measure, roll, metric system	1	-
33.	Writing pad	1	2
34.	Clipboard	1	-
35.	Writing and marking pens, pencils, metal scribe, chalk, pack	1	2
36.	Stapler and staples	1	-
37.	Magnet	1	-
38.	Compact digital camera with rechargeable batteries, memory card 1Gb., resolution min 10 megapixels, zoom min 3 x	1	-

<i>Elementary crime scene investigation</i>			
No.	Description	Number of units per kit module (for 1 person)	Units of replaceable stock (to be provided with kit or later)
39.	Compass	1	-
40.	Multi tool (approx. 10 x 4 cm) with at least a plier, a screwdriver, a blade and a saw	1	-
41.	Brushes (for black powder)	2	6
42.	Magnetic wand applicator (for magnetic powders)	1	1
43.	Black magnetic powder (or approx. 450 g per jar)	1	5*
44.	Black non magnetic powder (or approx. 450 g per jar)	1	5*
45.	Fingerprint tape, roll (at least 3000cm x 3.8cm)	1	10
46.	Lift card (support for the fingerprint tape, white)	50	500
47.	Ink pad (for finger and palm)	1	1
48.	10-print and palms forms for fingerprints (e.g., Interpol forms)	10	100

<i>Basic crime scene investigation kit</i>			
No.	Description	Number of units per kit module (for 1 person)	Units of replaceable stock (to be provided with kit or later)
1.	Disposable latex/plastic examination gloves, pair (medium and large sizes)	5 (2 medium and 3 large)	150 (75 medium and 75 large)
2.	Disposable coveralls (medium and large sizes)	2 (1 medium and 1 large)	20 (10 medium and 10 large)
3.	Shoe covers, pair	2	30
4.	Hair caps (surgical)	1	5
5.	Disposable face masks (dust and anti-putrefaction masks)	2	20
6.	Heavy gloves, pair	1	5
7.	Crime scene barrier tape (with text such as: "crime scene do not cross"), roll	1	4
8.	Paper towels, roll	1	10
9.	First aid kit (standard)	1	-
10.	Hermetical waste bags – approx. 25 litres	1	10
11.	Hazardous chemicals reference material (chemical handbook), including all UN languages	1	-
12.	Magnifier	1	-
13.	Rechargeable hand-held light source (torch)	1	-
14.	Rechargeable hand-held forensic light source (basic)	1	-

Basic crime scene investigation kit			
No.	Description	Number of units per kit module (for 1 person)	Units of replaceable stock (to be provided with kit or later)
15.	Filter goggles	1	1
16.	Clear adhesive tape, roll (basic for all uses)	1	2
17.	Disposable plastic tweezers	3	30
18.	Scalpel handles	1	2
19.	Scalpel replacement blades	6	60
20.	Disposable spatulas	3	30
21.	Scissors	1	-
22.	Screw-cap test tubes	5	50
23.	Individually wrapped sterile cotton swabs	20	200
24.	Disposable plastic pipettes	4	40
25.	Buccal swab collection kit	10	100
26.	Aliquots of sterile water or saline (approximately 1ml)	10	100
27.	Paper bags (small, approx. 2 litres)	10	100
28.	Paper bags (medium, approx. 4 litres)	20	200
29.	Paper bags (large, approx. 8 litres)	10	100
30.	Plastic bags, 4 litres	10	100
31.	Envelopes (various sizes, from A5 to A3)	20	200
32.	Bindle material (box kit)	1	-
33.	Cardboard boxes (small –approx. 10x5x3cm)	2	20
34.	Cardboard boxes (large – approx. 30x20x10cm)	2	20
35.	Slide boxes (for teeth, projectiles, etc)	10	100
36.	Containers for sharp objects (eg. knives, syringes)	4	40
37.	Metal unlined cans for collection of arson evidence	None in the kit, user to take from stock depending on the case	20
38.	Body bags	2	10
39.	Evidence tags/labels of standard dimension, with fields where general information about evidence can be written by pencil or ballpoint	25	250
40.	Tamper proof evidence tape, roll	1	3
41.	Rulers (length, approximately 30 cm, metric system)	1	-
42.	Reference scales (L-shaped, metric system)	2	-
43.	Tape measure, roll, metric system	1	-
44.	Writing pad	1	2
45.	Clipboard	1	-
46.	Writing and marking pens, pencils, metal scribe, chalk, marking paint, pack	1	2

<i>Basic crime scene investigation kit</i>			
No.	Description	Number of units per kit module (for 1 person)	Units of replaceable stock (to be provided with kit or later)
47.	Stapler and staples	1	-
48.	Magnet	1	-
49.	Single lens reflex digital camera with rechargeable batteries, focal length 18–55mm, memory card 1Gb., resolution, min 10 megapixels	1	-
52.	Photographic tripod stand with water-level	1	-
53.	Compass	1	-
54.	Dental stone (or plaster of paris) for shoe and tyre marks, premeasured amounts of dental stone sealed in mixing bags	2	20*
55.	Wire or wooden splints for support or casting forms	1	-
56.	Silicone casting material for tool marks and indented finger marks, tube	1	5
57.	Multi tool (approx. 10 x 4 cm) with at least a plier, a screwdriver, a blade and a saw	1	-
58.	Rake (sieve, sifting screen)	1	-
59.	Brushes (for black powder)	2	6
60.	Magnetic wand applicator (for magnetic powders)	1	1
61.	Black magnetic powder (approx. 450 g per jar)	1	5 *
62.	Black non magnetic powder (approx. 450 g per jar)	1	5 *
63.	Fingerprint tape, roll (at least 3000cm x 3.8cm)	1	10
64.	Lift card (support for the fingerprint tape, white)	50	500
65.	Ink pad (for finger and palm)	1	1
66.	10-print forms for fingerprints e.g., Interpol forms	10	100

ANNEX IV. Generic agendas

What follows provide guidance to develop agenda of training sessions for crime scene awareness course (module 1) and responsibilities of first responders at crime scenes (modules 2 *(a)* and 2 *(b)*). Of note is the recommended proportion, for each course, of hands-on/practical sessions (in blue in tables below) and presentations (theory and demonstration).

Crime scene and physical evidence awareness course (module 1)

The purpose of this training course is to provide an overview of the forensic process, to sensitize the audience to the importance, nature and use of physical evidence, to raise awareness of the importance of good practices in crime scene investigations; and to provide practical hands-on exercises for some selected aspects of crime scene investigation.

The target audiences are first responders, such as law enforcement personnel, e.g. police, customs officers, military officials, emergency personnel, e.g. fire services, medical personnel, rescue workers, and crime scene investigators, such as specialized law enforcement personnel or laboratory personnel.

	Day 1	Day 2	Day 3	Day 4
AM	Registration and opening ceremony	<div>Case study 2/Recapitulation of day 1</div> <div>Presentation by the trainees of the roles of their respective agencies in crime scene investigation and forensic work (as agreed by volunteer participants on day 1)</div>	Demonstration of taking fingerprints from individuals and powdering of latent fingerprints	Presentation of forensic work and cases in country (local expert) continuation if required
Coffee/tea break				
AM	Introduction of the trainers, trainees and objective of the course	Introduction to the types of physical evidence and their evidential value	Hands-on session	
	Identification of volunteers for presentation of their respective agencies in crime scene investigation and forensic work		Group A Taking fingerprints from individuals	Group B Powdering of latent fingerprints
	Questionnaire		Wrap up and discussion	
			Questionnaire	

Audio-visual (DVD) presentation, e.g., "Crime Scene Investigation in the DNA Era", produced by the Institute of Legal Medicine, University of Innsbruck Austria and supported and recommended by INTERPOL

Lunch Break					
PM	Introduction to the forensic process Case study 1	Introduction of the content of crime scene investigation material and kit	Hands-on session		Closing ceremony and distribution of certificates of attendance
			Group A Powdering of latent fingerprints	Group B Taking fingerprints from individuals	
Coffee/tea break					
PM	Introduction to the crime scene investigation process, to include: Recognizing a crime scene Preservation of the scene Documentation of the scene and its evidence Recognition, recovery and preservation of physical evidence Transportation, storage and submission of evidence to the laboratory	Introduction to detection, enhancement and collection of fingerprints	Presentation of forensic work and cases in country (local expert)		

In grey: hands-on sessions

Responsibilities of first responders at crime scenes (module 2) Standard responsibilities of first responders at crime scenes (module 2 (a)), agenda includes module 1

The purpose of this training course is to provide hands-on training for first responders to take appropriate initial actions, namely to preserve and protect crime scenes and to keep a log.

The target audiences are first responders, such as law enforcement personnel, e.g. police, customs officers, military officials, emergency personnel, e.g. fire services, medical personnel, rescue workers.

	Day 1	Day 2	Day 3	Day 4	Day 5
AM	Registration and opening ceremony	Case study 2 and recapitulation of day 1 Presentation by the trainees of the roles of their respective agencies in crime scene investigation and forensic work (as agreed by volunteer participants on day 1)	Audio-visual (DVD) presentation, e.g., "Crime Scene Investigation in the DNA Era", produced by Institute of Legal Medicine, University of Innsbruck Austria and supported and recommended by INTERPOL	Preservation, initial documentation and control of the crime scene (theory) Delineate the scene and establish security cordon Establish communications Establish a log Protect physical evidence Set up a staging area	Testify in court proceedings (theory) Testify in court proceedings (practical sessions – moot court)
Coffee/tea break					
AM	Introduction of the trainers, trainees and objective of the course Identification of volunteers for presentation of their respective agencies in crime scene investigation and forensic work Questionnaire	Introduction to the types of physical evidence and their evidential value	Various types of crime scenes	Preservation, initial documentation and control of the crime scene (practical sessions)	Wrap up and discussion Questionnaire

Lunch Break				
PM	Introduction to the forensic process	Introduction of the content of crime scene investigation material and kit	Health and safety measures at crime scenes	Preservation, initial documentation and control of the crime scene (practical sessions)
	Cases study 1			
Coffee/tea break				
PM	Introduction to the crime scene investigation process	Presentation of forensic work and cases in use in country (local expert)	Role and responsibilities of first responders at the scene	Preservation, initial documentation and control of the crime scene (practical sessions)

In grey: hands-on sessions

Responsibilities of first responders at crime scenes (module 2) Extended responsibilities of first responders at crime scenes (module 2 (b)), agenda includes module 1 and 2 (a)

The purpose of this training course is to provide practical hands-on training on how to document the scene and collect a subset of physical evidence.

The target audiences are first responders, such as law enforcement personnel, e.g. police, customs officers, but other personnel may also be considered depending on legislation military officials, emergency personnel, e.g. fire services, medical personnel, rescue workers.

	Day 1	Day 2	Day 3	Day 4	Day 5
AM	Registration and opening ceremony	Case study 2 and recapitulation of day 1 Presentation by the trainees of the roles of their respective agencies in crime scene investigation and forensic work (as agreed by volunteer participants on day 1)	Audio-visual (DVD) presentation, e.g., "Crime Scene Investigation in the DNA Era", produced by the Institute of Legal Medicine, University of Innsbruck Austria and supported and recommended by INTERPOL	Preservation, initial documentation and control of the crime scene (theory) Delineate the scene and establish security cordon Establish communications Establish a log Protect physical evidence Set up a staging area	Record and document crime scenes (demonstration)
Coffee/tea break					
AM	Introduction of the trainers, trainees and objective of the course	Introduction to the types of physical evidence and their evidential value	Various types of crime scenes	Preservation, initial documentation and control of the crime scene (demonstration)	Preservation and documentation of the scene (practical session)
Lunch Break					
PM	Introduction to the forensic process Cases study 1	Introduction of the content of crime scene investigation material and kit	Health and safety measures at crime scenes	Record and document crime scenes (theory)	Preservation and documentation of the scene (practical session)

Coffee/tea break					
PM	Introduction to the crime scene investigation process	Presentation of forensic work and cases in use in country (local expert)	Role and responsibilities of first responders at the scene	Photography (theory)	Preservation and documentation of the scene (practical session)
	Day 6	Day 7	Day 8	Day 9	Day 10
AM	Preserve the scene: implement anti-contamination and personal health and safety measures (theory)	Recognize, recover, preserve, document and package a subset of physical evidence (illicit drugs, fingerprints, documents, firearms and ammunition, human remains, others) (demonstration) Introduction to fingerprint analysis	Detection, enhancement and collection of fingerprints (practical session)	Crime scene investigation (practical session)	Testify in court proceedings (practical sessions)
Coffee/tea break					
AM	Search the crime scene, recognize and locate evidence (theory)	Detection, enhancement and collection of fingerprints (theory)	Detection, enhancement and collection of fingerprints (practical session)	Crime scene investigation (practical session)	Wrap up and discussion
					Questionnaire

Lunch Break					
PM	Recognize, recover, preserve, document and package a subset of physical evidence (theory) Illicit drugs Fingerprints Documents Firearms and ammunition Human remains Others	Comparison and identification of fingerprints (theory)	Comparison and identification of fingerprints (practical session)	Crime scene investigation (practical session)	Closing ceremony and distribution of certificates of attendance
Coffee/tea break					
PM	Testify in court proceedings (theory)	Detection, enhancement, collection and identification of fingerprints (demonstration)	Comparison and identification of fingerprints (practical session)	Crime scene investigation (practical session)	

In grey: practical sessions

ANNEX V.

INTERNATIONAL ASSOCIATION FOR IDENTIFICATION

CRIME SCENE INVESTIGATION GUIDELINES



Neither an individual nor an agency should rely solely on these guidelines to conduct a crime scene investigation or collect or preserve evidence. These guidelines should be used only as a reference and suggested standard.

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**Crime Scene Investigation Subcommittee
International Association for Identification
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INTRODUCTION

It is recognized that all crime scenes are unique. Because of this, it is impossible to propose a single procedure to deal with every type of crime scene. However, a consistent approach to the processing of a crime scene should be used.

These guidelines are intended for use by law enforcement and other responders who have responsibilities at crime scenes. These responsibilities include scene integrity and physical evidence recognition, collection, preservation, and packaging.

It is recognized that laws and regulations (e.g., Federal Statutes, State Statutes, Case Law and Departmental Policy) will govern how you actually process the crime scene. These guidelines are not a comprehensive method, but a guide for best practices.

Many of these procedures within these guidelines may have no practical application at certain crime scenes. These guidelines are intended to give the investigator guidance for the processing of crime scenes and can be adapted for the various types of crime.

The investigator should always keep in mind the proper procedures to ensure and maintain the integrity of the crime scene and evidence that is recovered. Such evidence may be later submitted for any possible latent print work, trace evidence, and any other laboratory work that may be conducted.

The investigator should also keep in mind proper safety techniques while working in the crime scene and while handling, examining and transporting the evidence.

The equipment list attached is for recommended items that the investigator should have. However, it is recognized that some agencies may not have all of the equipment that is listed.

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LIST OF EQUIPMENT

NOTE: We recognize that not all agencies have the equipment listed below. These are only recommendations.

PROTECTIVE EQUIPMENT

- Protective gloves
- Disposable jumpsuit
- Hair caps
- Face covering/respiratory masks
- Shoe covers
- Coveralls
- General eye protection and goggles for use with forensic light sources

BASIC EQUIPMENT

- Pens, pencils and permanent ink markers
- Blank cards
- Writing pads/clip boards
- Sketch pads
- Transparent tape
- Stapler with staples
- Tape recorder with blank tapes
- Evidence collection forms and crime scene log
- Report forms
- Evidence tags
- Crime Scene tape
- First Aid kit
- Chalk
- Marking Paint
- Magnifying Glass
- Compass

EVIDENCE COLLECTION EQUIPMENT

- Short tape measure
- 100 foot tape measure
- Rolling measuring device
- Paper bags of various sizes
- Coin envelopes
- Small boxes
- Plastic bags
- Bindle material
- Metal unlined cans for collection of arson evidence
- Disposable wooden spatulas (popsicle sticks)
- Plastic trash bags
- Trace Evidence Kit including tape
- Blood test and collection kit
- Gunshot residue collection kit
- Rape collection kit
- Latent print kit including various powders, brushes and tape
- Shoe and tire casting material and casting forms
- Tool mark casting material
- Photographic scales
- Single edge razors/scalpels
- Wooden stakes
- String and rope
- Tweezers
- Cotton sterile swabs
- Sterile water
- Trace evidence vacuum
- Evidence number markers
- Hand tools including bolt cutters, screw drivers, hammers, saws, shovels, pliers and pry bars
- Sifters
- Gunshot residue collection kits
- Buccal swabs

CAMERA EQUIPMENT

- Photographic camera with flash, various lenses and filters for forensic light sources
- A video camera
- Photographic scales
- Tripod
- Extra batteries
- Film

ADDITIONAL EQUIPMENT

- Generator
- Extension cord
- Portable lighting
- Inclement weather gear and boots
- Alternate light source/portable laser
- Black light
- Flashlight and extra batteries

HEALTH AND SAFETY AT CRIME SCENES

By their very nature, crime scenes contain substances or items that pose a risk to personnel. Types of hazards that forensic investigators may be exposed to include, but are not limited to:

- Loaded and/or not securable weapons, knives, syringes, broken glass, ammunition
- Structural, electrical, and gaseous elements
- Working under hoists and operating machinery,
- Biological fluids such as blood, semen, urine, and other body secretions
- Blood borne pathogens (such as HIV, Hepatitis A, B, C)
- Airborne hazardous materials (such as asbestos, carbon dioxide) Chemical, Gas, explosives, fuels

Hazards for staff working at outdoor crime scenes may also include areas that are unstable or cannot be secured, such as, slippery areas and vehicle traffic.

CONTAMINATION PREVENTION

Take all possible precautions at all times to prevent contamination or injury of yourself, other people, the scene, forensic evidence, the workplace, and the environment.

To prevent the scene or items of evidence being contaminated, read and adopt the minimum levels of protection and best practices detailed here.

To prevent the contamination/injury of staff and other personnel at scenes or in the laboratory, wear Personal Protection Equipment (PPE), as specified. Upon entering the crime scene wear and use PPE, as appropriate.

PERSONAL SAFETY AT CRIME SCENES

Personal Protection Equipment (PPE)

The level of PPE required depends on the situation. All Investigator(s) at the scene must assess the appropriate level of PPE.

Any personnel not wearing the appropriate level of PPE should not be permitted to enter the crime scene.

- No one should eat, drink or smoke in the crime scene.
- All body fluids should be considered infectious and treated as biological hazards.
- Crime scene personnel should be aware of sharp objects.
- Crime scene personnel should avoid unprotected contact with body fluids and tissue. Alternate light source users should wear proper eye protection.

At clandestine laboratories, crime scene personnel should be aware of hazards and should contact their local narcotics laboratory units or hazardous materials response team.

FIREARMS SAFETY

Always consider the weapon as LOADED and unsecured.

Do not pick up the weapon with an object in the trigger guard or barrel.

Always point the barrel end of all weapons away from people.

INITIAL RESPONSE

Every crime scene is unique; they are to be approached using best practices specific to the crime and/or scene.

Protecting the crime scene:

1. As soon as possible after arriving at the scene, the first responding officer(s) should take steps to protect the scene from contamination, loss of evidence or other investigative information.

2. All unauthorized personnel should be excluded from the scene AFTER the scene is secured.
3. The crime scene is considered secured when it has been ascertained that suspects, witnesses, and living victims have been removed, and an adequate staff is in place to safeguard it.
 Discourage entry by non-essential personnel.
 Personnel may be admitted only after they sign in and out on a log sheet, and state a purpose for entering.
 Under no circumstances, should a suspect or victim be led back to or enter the scene, due to potential secondary contamination or transference of trace, biological or other evidence. The exception would be if the crime scene investigation has been completed and the scene released.
4. The first officer at the scene should touch nothing unless absolutely necessary.
5. Victims, and relatives of victims, may attempt to clean the scene.
 They should be stopped as soon as possible.
6. The first officer should determine and note original physical and environmental conditions.
7. The scene should be secured by simply locking a door, or stringing rope or tape. It may be necessary to replace the door lock, to ensure there are no secondary keys available to breach security of the scene.
8. Inside the scene:
 Barricades should include the central scene, and where possible, the probable entry and exit path used by the suspect.
9. Outside the scene:
 Tape off to include path taken by the suspect to and from the scene.
 - Secure path.
 - A reliable barricade must have an officer stationed outside the perimeter.
10. Injured persons at the scene:
 First aid should be administered immediately
 - 10.1. Note how victim is lying or sitting.
 - 10.2. Advise emergency medical personnel how to enter and exit the scene so as not to disturb it needlessly.
 - 10.3. Note objects that are moved by emergency medical personnel. Names and contact information of emergency medical personnel should be obtained, if needed finger/palm prints or footwear elimination prints be required.
 - 10.4. If non-police personnel transport the victim, a police officer should accompany the victim.
11. Dead person(s) at the scene:
 If the first officer on the scene is able to establish certain signs of death i.e., rigor mortis, lividity, decomposition, etc., then the body should not be moved or touched.

A policy should be arranged with the local Medical Examiner/Coroner's office on response procedures.

In most jurisdictions, the Medical Examiner/Coroner is responsible for the deceased, and the body should not be touched, moved or searched without prior permission.

In cases of strangulation or hanging, where unmistakable signs of death are present:

Do nothing with the body.

Support the body if it appears the rope or device might break.

The knot should not be untied.

12. Firearms and Ammunition

Firearms and ammunition should be left untouched until investigating personnel arrive.

If exigent circumstances prevail, then the evidence may be removed and the original location of the evidence properly noted.

ENTERING THE CRIME SCENE

Every effort should be made to observe details, particularly those that are transient. Make written notes on such points as:

- Doors
 - Open, closed or locked, forced open?
 - On which side was the key?
- Windows
 - Open or closed broken glass?
 - Were they locked or forced open?
- Lights
 - On or off?
 - If on, which, lights were on?
- Shades or shutters
 - Open or closed?
- Odors
 - Was there an odor of cigarette smoke, gas, powder, perfume, etc?
- Signs of activity
 - Meal preparation, dishes in sink, condition of housekeeping (clean, dirty or items in disarray) appliances/television/stereo left on - what channel, etc.
- Date and time indicators
 - Mail, newspapers, dates on milk cartons.
 - Stopped clocks.
 - Spoiled foods.
 - Items that should have been hot or cold, but are at room temperature.
 - Room temperature and environmental conditions
 - Footwear impressions

WHAT TO DO UNTIL INVESTIGATING PERSONNEL ARRIVE

1. Write down the name of witnesses and other personnel who are known to have entered the scene.
2. Who was at the scene when officers arrived?
3. Establish the basic facts.
4. Keep suspect, victim and witnesses separated whenever possible.
5. Instruct witnesses not to discuss the events.
6. Do not discuss the crime with witnesses or bystanders.
7. Listen attentively.
8. Protect evidence that is in danger of being destroyed.
9. The first officer at the scene should remain at the scene, in order to brief investigating personnel.

PRIMARY EXAMINATION OF THE CRIME SCENE

1. Evaluate the scene of the crime.
2. Establish an entry and exit path into the scene that is different than the suspect(s) used.
3. Coordinate with the Crime Scene Investigator. Insure that they are aware of:
 - What actions need to be taken
 - How you intend to proceed
 - Of any special needs
4. Plan your activities with all personnel involved, Detectives/Investigators, Deputy Coroner/Medical Examiner, Prosecutor and laboratory personnel.
5. Plan for an orderly process of documenting (measuring), recording (photographing) and collecting of evidence.
6. Evaluate equipment and manpower requirements.
7. Evaluate photo requirements for the scene. When evaluating for photographs be aware of the required views to properly record the scene taking into consideration lighting factors, which may affect the image exposure and environmental factors, which may affect equipment.
8. Ensure that you have enough manpower, equipment and supplies to record/collect all required evidence. If not, request additional equipment, supplies and/or additional personnel.

BASIC EVIDENCE COLLECTION

Clearly one of the most important duties at a crime scene is the collection of the evidence. In order to collect evidence it is imperative that each person at the scene has an understanding of what evidence is and the role it will play in the investigation. Physical evidence may be any object that can establish that a crime has occurred, possibly the sequence of events and can provide a link between the crime scene to the victim or the suspect (to be consistent in document). In order for physical evidence to be collected properly there must be an underlying basis of knowledge by the person collecting the evidence as to what can be done with the evidence once it has been collected. For purposes of clarity, the collector of the evidence will be referred to as the Crime Scene Investigator.

The Crime Scene Investigator should begin collecting evidence once it has been documented properly in the scene. It is recommended that the evidence most likely to be destroyed be collected first. Each item of evidence should be packaged separately to keep from cross contamination. This will also protect the evidence from being damaged during transport from contact with other items and will aid in the reconstruction of the case when all items have been kept apart. In this way evidence can be submitted to the laboratory intact or as near to intact as possible.

CRIME SCENE RECORDING AND DOCUMENTATION

- Photography
 - Most common method used to record the crime scene.
 - Photograph the overall, mid-range, and the close-ups of required views.
- Video
 - Excellent media to record the overall scenes of the crime scene area.
 - Capture the complete inside of a room showing the placement of all items. Always be aware of the audio being recorded along with the image.
- Sketching, drawing or computer rendering.
 - Please refer to the Sketching chapter in these guidelines.

CRIME SCENE PHOTOGRAPHY

Each crime scene has unique characteristics. The types of photographs needed will be determined at the scene by the Crime Scene Investigator familiar with the details of the particular case.

Photographs should provide a visual record showing the following.

- What the item is.
- What the condition of the item is.
- Specific location of the item with respect to the total crime scene.

Photography Procedures

1. Take an establishing photograph to show the location using street signs, addresses or other geographical information.

2. Take overall photographs of the exterior of the crime scene.
3. Take overall photographs of the interior of the crime scene, if applicable.
4. Place some form of identifying markers at all items of evidence and/or interest, and take a second set of overall photographs that include these markers.
5. Take midrange and close-up photographs of each item delineated by a marker. A ruler or scale should be included in each exposure, making sure the camera is parallel to the scale and item and the proper lighting techniques are used.
6. If there is a body present, overall photographs should be taken of all four (4) sides of the body. Additional mid-range photographs should be taken of the body.
7. Once the body has been removed, photograph the area where the body was previously lying.
8. If the crime is a sexual assault, attempt to locate biological evidence with a forensic light source and photograph.
9. Whenever possible, aerial photographs should be taken of homicide scenes.

SKETCHING

During the course of the crime scene investigation the determination may be made that a sketch, drawing, or computer rendering will be necessary to help establish location and spatial relationships between items of evidence.

It is important to note that not all crime scenes will require a sketch to supplement the photographs that may be taken at the crime scene.

It will be at the discretion of the person doing the sketch, drawing, or rendering to determine what aspects of the scene will be included in the sketch.

There are four categories of sketches.

1. Perspective
 - A perspective sketch contains a vanishing point and depicts objects of evidence as they would appear to the eye with reference to relative distance and depth.
2. Projection
 - Projection sketch usually contains only one viewpoint and depicts objects on one plane.
 - This is the most common type of sketch and is usually done from a bird's eye view.
 - One extrapolation of the projection sketch is the "Exploded" view sketch that contains more than one wall from one viewpoint.
3. Schematic
 - The schematic sketch is used when it is desirable to represent a sequence of events.

4. Detailed

- The detailed sketch is used when describing a small area which is not easily incorporated into the overall drawing due to the scale which is chosen for the rough or finished scale drawing.

There are two types of sketches.

1. Rough

- The rough sketch is usually done in the field and will contain the measurements and freehand representation of where the essential elements in the sketch are located.
- It should be marked like any other piece of evidence including the author's initials and pertinent information relating to the case.
- It is advisable to use a compass or other means to determine north for inclusion later in the finished sketch.

2. Finished

- The finished sketch or drawing will be to scale and will be made manually or with the aid of computer drafting programs.
- It should accurately represent the information contained in the rough sketch and will be precise and proportional showing the exact distances within the crime scene.
- The finished drawing should contain the following.

Case number

Location

Crime type

Date the crime occurred

Scale or proportion used to make the drawing

Name of the person who made the drawing

Date the finished drawing was completed

Direction of north.

The legend or key can be used to identify items of evidence in the drawing and correlate information in the drawing to these items.

Measurements for sketching

There are four measuring techniques used to obtain accurate measurements for the sketch.

1. Triangulation Method

- The triangulation method utilizes two fixed permanent objects within the crime scene.
- Measurements are taken from each fixed point to each piece of evidence.

2. Rectangular Coordinate Method

- The rectangular coordinate method is used when measuring the distance to an object from two mutually perpendicular objects, such as walls.

3. Straight Line Method

- Straight line measurements record the distance from fixed points to either side of an object.

4. Transecting Baseline Coordinate Method

- The transecting baseline coordinate method is used to measure items of evidence when there are numerous objects in the crime scene and other measuring techniques will not work.
- This is accomplished by laying a tape measure down so that it crosses the entire room or area to be measured.
- This first tape measure becomes the base line for all other measurements in the crime scene.
- Measurements are then made from this tape by laying another tape measure perpendicular to the first tape out to the evidence.

PHOTOGRAPHING A DEATH SCENE

Each crime scene has unique characteristics and the Crime Scene Investigator familiar with the details of the crime will determine the types of photographs needed. The following are some of the common types of photographs taken; however, these should not be considered comprehensive lists of necessary photographs.

- A distant view or image of the exterior of the building or area.
- An entrance view or image depicting the address (if posted).
- A medium range view or image showing any evidence in that area.
- A close up view or image of evidence without measuring device, then another close up view or image with a measurement device.
- The room or area the body (ies) was/were located.
- Other rooms in the house or building including hallways and stairwells.
- All doors and windows.
- Photograph the body (ies) (distant range, medium range and close range) prior to and after removal of the body (ies).
- Photograph the wound(s) of victim(s) at close range without measurement device; then photograph at close range with a measurement device.
- Photograph any evidence in the scene, distant and close up ranges without a measurement device; then, photograph at distant and close up ranges with a measurement device.
- Photograph autopsy, if applicable, using agency protocol.
- Photograph case number on each roll of film or image capture device.
- Aerials of crime scene area, if needed.
- Photograph suspect, documenting overall appearance and any bruises or wounds; as described above.
- Videotape the crime scene and autopsy, if applicable.

PROJECTILES RECOVERED AT THE SCENE

After the projectiles have been photographed and documented, they should be collected as follows:

1. When recovered loose, not imbedded in, or affixed to, a structure.
 - 1.1. Wrap in soft tissue or cotton.
 - 1.2. Place in a soft container-coin envelope or slide box.
 - 1.3. Mark evidence container.
2. When imbedded in a wall:
 - 2.1. When possible, remove a portion of the wall containing the bullet.
 - 2.2. Portion of the wall containing bullet should be at least 1" larger than the bullet
 - 2.3. Cartridges removed from weapon - see processing of firearms above.
3. Fired, loose cartridge cases.
 - 3.1. Wrap in soft tissue.
 - 3.2. Place in soft container - slide box.
 - 3.3. Mark evidence box for identification
 - 3.4. Place collected items in evidence envelope.

THE COLLECTION AND PACKAGING OF BIOLOGICAL EVIDENCE

BLOOD

1. DNA reference material

Obtained by buccal swab or by venipuncture, licensed nurse, phlebotomist, or other medical practitioner:

 - 1.1. For DNA purposes
 - The preferred method is a purple top tube containing ethylenediaminetetraacetic acid (EDTA).
 - The second most preferred method is a yellow top tube containing acid citrate dextrose (ACD).
 - DO NOT use grey top tubes containing fluoride potassium oxalate.
 - 1.2. When obtaining, gently invert the tube 20-30 times to ensure the anticoagulant is thoroughly mixed.
 - 1.3. Refrigerate as soon as possible.
 - 1.4. Write name of subject on the blood tube label.
 - 1.5. Make notes of any relevant history (i.e. transfusion) on the tube label and in notes.

2. Bloodstains

2.1. Documentation

Bloodstain patterns can reveal many aspects vital to crime scene reconstruction.

- Sequence of events.
- Placement of assailant and/or victim.
- Type of weapon used.
- Minimum number of blows.
- Whether there is more than one person bleeding.

If a crime scene requires bloodstain pattern interpretation, a qualified analyst should be called. No amount of documentation can replace the analyst's knowledge and experience at the scene for reconstruction or sequencing events.

Proper documentation includes photographs (distant range, medium range, close-up range, and macroscopic) sketches, and notes.

- Photographs should document each "pattern", distribution of the spatter, stains, size of stains (with appropriate measurement device), void patterns, and reconstructed actions (e.g. point of origin.)
- Sketches should reflect relative positioning of the pattern(s). Measurements should be included either in the sketch or in notes.
- Notes should corroborate any opinions offered, such as points of origin (including measurement), actions which give rise to particular patterns, justification for sequence of events, placement of individuals or objects, weapon type(s), etc.

2.2. General rules for bloodstain collection.

Minimize disturbance, transference/swiping and contamination of stains at the scene. Collect a substrate standard (an unstained sample of material from the same surface the bloodstain is adhered). Gloves should be worn during the collection and handling of the swab.

If blood is wet, allow it to air dry, or collect the sample on a prepackaged single use cotton tipped applicator (swab). Allow the swab to dry prior to packaging. All swabs shall be placed no closer than one inch (1") apart while drying and an identifying label placed on each swab.

Order of preference for collecting dried bloodstains:

- I. Collect entire item bearing the stain. Insure that the stain will not flake off or become dislodged.
- II. Cut the stain from the carpet, upholstery or other item that cannot be collected.
- III. Scrap the stain from the item with a clean knife, or preferably a disposable scalpel. The disposable scalpel may be used for the entire scene, but the blade area must be sterilized between each specimen collection to prevent cross contamination.

Things to avoid:

- Heat - this denatures proteins.
- Water - this reactivates enzymes, promotes bacterial contamination, and can dilute the sample.
- Strong light - UV light can denature the proteins.
- Touching the sample or coughing/sneezing on the sample - this can contaminate the sample.

3. Packaging

Packaging must be securable and "breathable": DO NOT USE PLASTIC.

Envelopes and paper bags sealed with tape are best utilized for entire articles and cut-out blood stains. Do not lick the envelope flap, to prevent contamination of sample.

Blood scrapings are best packaged in glassine weighing paper bindles and placed into coin envelopes sealed with tape.

Swabs may have the wooden stem broken and placed directly into a coin envelope and tape sealed; do not lick the flap or contamination of the sample may occur.

Freeze bloodstains as soon as possible.

If the item is too large to freeze, the item should be submitted to the appropriate DNA Laboratory serology section for processing.

Note any special circumstances or history of the stain (i.e. sample exposed to heat/water, duration of exposures, odor, etc.)

Note any chemical or presumptive tests that have been conducted.

Hemastix: Add water to the stain. Is more susceptible to false positives than 2-step o-toluidine procedure.

Luminol: Sketch and photograph. Follow up with o-toluidine 2-step procedure.

Obtain a secondary blood standard whenever possible (i.e. blood sample associated with a major wound or sample from a blood pool associated with the person.) due to:

Inability to obtain blood at autopsy.

Person may have received a subsequent blood transfused.

Use for assessing degradation of other stains from the scene.

Judicial actions, such as defense motion for additional/independent examinations

SEMEN

1. Locating semen stains:

Semen stains are difficult to see under room and ambient lighting conditions. They may appear as a slightly yellow stain on light colored fabrics or a whitish stain on dark colored fabrics. Semen stains may also appear "crusty." Still, many stains will be missed by normal or unaided visual examination, therefore it is best to collect any item that may have semen stains and submit it to the appropriate DNA Laboratory serology unit for evaluation. Common items to collect are:

Victim and suspect clothing, especially underwear of female sexual assault victims.

Bedding where an alleged sexual assault took place.

2. Detecting semen stain:

Items that are impractical to submit to the laboratory (e.g. vehicles, carpets, etc.) can be screened using special lighting techniques. NOTE: ALL VISUAL LIGHTING TECHNIQUES are viewing tests that can fail to detect semen stains, and visual tests will not discriminate between many possible physiological fluids or fluorescent contaminants.

- 2.1. Forensic Light Source (ALS) may cause semen stains to fluoresce when viewed through an orange barrier filter.
 - Optimal wavelength is dependent on surface characteristics of item.
 - Certain surfaces appear to quench the fluorescent reaction.
- 2.2. Argon Ion Laser (similar reaction as ALS.)
- 2.3. Long Wave Ultraviolet lamp
 - As a precaution, analyst must wear plastic UV eye protection and cover any bare skin that will be exposed, such as hands and arms, during the UV examination or viewing.
 - Semen stains may appear on a dark background.
 - It should be noted that some clothing could fluoresce due to optical brighteners in detergents.
- 2.4. Chemical Tests
 - Acid phosphates reagent may be utilized to further characterize suspected semen stains.

3. Collection of semen stains,

Minimize disturbance, transference/swiping and contamination of the stain. Collect a substrate standard (an unstained sample of material from the same surface as the stain is adhered). Gloves should be worn during the collection and handling of the swab.

Order of preference for collecting dry semen stains:

- I. Collect entire item bearing the stain. Insure that the stain will not flake off or become dislodged.
- II. Cut the stain from the carpet, upholstery or other item that cannot be collected.
- III. Scrape the stain from the material with a clean knife or disposable sterile scalpel.
- IV. Moisten a sterile swab with distilled water, swab the suspected semen stain, and air dry prior to packaging.

Things to avoid:

Heat - this denatures proteins.

Water - this reactivates enzymes, promotes bacterial contamination and can dilute sample.

Strong light - UV light will denature proteins.

Touching the sample or coughing/sneezing on the sample - this can contaminate the sample.

4. Packaging and storage

Packaging must be securable and be “breathable”. DO NOT USE PLASTIC.

Paper bags and envelopes sealed with tape are best utilized for entire articles and cut out semen stains. Do not lick the envelope flap or contamination of the sample may occur

Scrapings are best packaged in glassine weighing paper bindles and then into tape-sealed coin envelopes. Do not lick the envelope flap or contamination of the sample may occur

Freeze dried semen stains as soon as possible.

If the item is too large to fit in your agencies freezer, the item should be submitted to the appropriate Forensic Lab for processing.

SALIVA

Cigarette butts are the most common type of saliva evidence at crime scenes. Cigarette butts should be packaged in paper coin envelopes, tape sealed, and then frozen for storage. Use gloved hands or forceps to collect the item to prevent contamination. Do not lick the envelope flap or cough/sneeze on sample or contamination of the sample may occur.

CRIME SCENES INVOLVING VEHICLES

Whenever a vehicle is involved during the commission of a crime, it should be treated just as any other crime scene.

Documentation of the vehicle should include overall photographs of the exterior and interior of the vehicle as well as any landmarks near the scene in order to show the relationship of the vehicle to its surroundings.

When documenting the vehicle(s), try to obtain the following.

- Accident/crime scene location and orientation.
- Record the license number, VIN number, type, model, year and color of the vehicle(s), as well as tire manufacture, mileage, gas gauge level, driver seat/mirror settings, if applicable
- Vehicle orientation.
- Overall or distant range, medium range and close-up of each pertinent piece of evidence; measurement device should be included, if applicable.
- Any skid marks or impact points present at the scene.
- Aerial photographs, if deemed appropriate.

Evidence Collection:

Evidence collection should begin after the vehicle(s) has been properly documented.

All decisions regarding this phase of investigation should be coordinated between the crime scene investigator, the detectives, command personnel, Coroner/Medical Examiner, prosecutor and/or laboratory personnel. This will ensure that evidence documentation, collection and preservation are properly conducted.

It is the ultimate goal when collecting evidence to collect all pertinent evidence that will be needed to obtain accurate interpretation and reconstruction of events.

Common types of evidence on vehicle exterior:

- Glass. Collect all of the pieces and package them separately according to the area where they were found.
- Latent prints.
- Paint and pattern (fabric/footwear) transfers.
- Fibers, hair, tissue, blood or other physiological fluids on the surface of the vehicle.
- Debris from under the vehicle if relevant.
- Any type of evidence that is relevant to the crime/accident
- Collect standards as applicable.

Common types of evidence in the interior of the vehicle:

- Hair and tissue.
- Blood, semen and other physiological fluids.
- Fibers, embedded or loose.
- Latent prints.
- Any type of evidence that is relevant to the crime/accident.
- Collect standards as applicable.

COLLECTION OF FIREARMS – SAFETY ISSUES

1. Safety Issues

Firearms should be kept in their same condition as found; safety issues may require otherwise, until they are in a controlled environment.

Firearm safety: TREAT ALL FIREARMS AS LOADED UNTIL RENDERED SAFE.

Pick up the weapon while wearing gloves by grasping the grip area. Do not put anything down the barrel.

The weapon should be photographed/sketched and measurements taken in place prior to checking the condition of the weapon.

After recovery of the weapon it should be examined to determine the following.

- Model and manufacture
- Caliber
- Serial Number(s)
- Loaded/unloaded and position of fired/unfired cartridges.
- Hammer cocked/un-cocked.
- Position of the safety lock
- Mark top position on cylinder in some manner on back or top.
- Ammunition cylinder/clip diagram.

2. Processing Firearms for Evidence

- Secure the weapon whenever possible.
- Collect and preserve trace evidence.
- Process for latent prints and/or DNA using appropriate techniques.
- Developed prints should be photographed whenever possible prior to lifting.

GUN SHOT RESIDUE COLLECTION METHODS

- Determine if the suspect(s), victim(s), or witness (es) should be tested; collect the gunshot residue as quickly as possible.
- DO NOT allow the suspect(s), victim(s), or witness (es) to wash their hands or subject them to any liquids after the shooting.
- Bag the subject's hands separately, using paper bags and not plastic bags (as this may cause hands to sweat).
- The instructions included in the kit should always be followed.
- Good residue samples can generally be found in the web portions of the hands.
- GSR kits should contain SEM materials required to perform residue tests.
- It is good practice to collect gunshot residue from suicide victims, as well as any family members or others present at the scene.

SEXUAL ASSAULT EVIDENCE

Sexual Assault Kit

For use by medical personnel only:

The exception would be for suspects; law enforcement or forensic laboratory personnel generally conduct these.

A sexual assault kit is required from the victim's partner. The kit has everything needed for examination and evidence collection, including handling and storage instructions.

- Collect, identify and store any hair and body fluids, as well as applicable standards.
- Collect, identify and store all applicable clothing and bedding.

TRACE EVIDENCE

This section will deal with the collection of a variety of items, such as hair, fibers, paint and soil. Trace evidence can be easily destroyed, contaminated or transferred.

- Take precautions when approaching the scene.
- Care should be used in collecting weapons used, as improper handling and packaging can compromise the trace evidence.

- Careful photography, documentation and sketching is critical for the optimal use of the evidence.
- Always package items to prevent damage or alteration of the evidence:
 - Use packaging which corresponds to the size and type of the item and evidence.
- Always collect sufficient amounts of the trace evidence as possible.
- Do not package evidence if it is wet or damp.
- Standard samples should be collected for laboratory examination/elimination purposes.
- Always wear gloves while collecting evidence to avoid contamination.
- Use of a light source may help in locating trace evidence.
- Tweezers, vacuums with filters and tape may be used for the collection of trace evidence.
 - Care should be utilized when using tweezers to minimize damage to the evidence.
- Label the containers appropriately with initials, case number, date and contents.
- Collection of hair samples from individuals should include the root and be a sufficient representative sample.
 - The hair should be pulled and combed for collection.
 - The hair should come from several areas on the head, such as the crown, sides, back.
 - It should be noted that the root may be used for DNA testing

FOOTWEAR IMPRESSION EVIDENCE

- A suspect may be associated to a crime scene by impressions left behind by their footwear.
 - A comparison of the crime scene impressions can result in an identification or elimination of a footwear outsole.
 - Impressions can be found in soil, snow, on counters, tile floors, doors, wood and vinyl furniture, paper items, as well as other surfaces.
 - The evidentiary value of a comparison usually depends upon the quality of the impression and the manner in which it is recorded.
 - The decision to cast is affected by the conditions of the substrate the impression is in or on.
 - Impressions in fine, humus soil and even snow are excellent candidates for casting.
 - Coarse or sandy soil may not always be the best substrate for casting detail of the footwear impression(s).
1. Photography
 - As with all evidence, overall photographs should be taken using a standard format lens showing the impressions in relation to the other features of the scene.
 - Photography may be the most valuable way of collecting impression evidence for later comparison.
 - It is critical that distortions are minimized by adhering to the following:
Impression photography requires the use of a tripod and detachable flash.

The photograph must include a photograph WITH AND WITHOUT a measurement scale.

The scale must be level with the impression for proper documentation.

The scale should contain case identification information:

- Case number
- Orientation

The camera should be mounted on a tripod directly over the pattern, with the film plane parallel to the impression.

The impression should be shaded from direct sunlight.

It is recommended that the detachable flash or other light source should be at an angle of 45 degree or less depending on the depth of the impression.

The entire impression should be captured in one frame.

Instant or auto-focus cameras should not be used for capturing impression evidence.

2. Casting

There are several different types of casting materials:

- Dental stone;
- Traxtone;
- Die Cast;
- Plaster of Paris.

NOTE: These materials should be used according to the manufacturer's directions for a proper cast.

After photography, casting may be performed to document the impression in three-dimension form.

The decision to cast is affected by the by the substrate conditions and other environmental factors.

Do not remove any soil adhering to the casting after recovery.

Place each casting in a protective, breathable container after drying.

3. Hard Surface Imprints

Hard surface or two-dimensional imprints may be found on paper items, doors, counters, tile floors, and other hard surfaces/substrates.

There are generally two ways footwear impressions are left on surfaces:

Footwear outsole pattern created by dust or other surface material or contaminate adhering to the outsole and being removed from the surface, making the impression of the outsole pattern

The deposition of a material or contaminate such as blood, dirt, and oil to the footwear outsole, which is transferred to the surface, making an impression of the outsole pattern.

Photography is the best method of preserving and documenting this type of impression.

If possible, submit the entire item that has the impression on it.

If that is not practical, the impressions may be lifted using various techniques such as:

- Electrostatic dust lifter.
- Gel print lifter.
- Tape or clear adhesive material. (If no other material is available)

4. Enhancements/Optimization

Chemicals may be used to enhance or optimize the impression(s) in blood. It should be determined prior to chemical application if a sampling the blood is required, as the chemicals used to optimize the impression(s) may interfere with DNA analysis.

Forensic light sources and fluorescent powders may optimize visualization and photography of the impression(s). Examination of the impression(s) using the forensic light source needs to be conducted prior to applying any chemicals or powders, due to native fluorescence of the impression contaminate or the substrate. It should be noted that blood does not fluoresce, but views as black and offers contrast between the impression and the substrate of the item it is on.

TIRE IMPRESSION EVIDENCE

A suspect maybe associated to a crime scene by impressions left behind by the tires from the victim or suspect's vehicle.

A comparison of the accident/crime scene impressions can result in an identification or elimination of a tire.

Impression(s) can be found in soil and snow, as well as cement and asphalt.

The evidentiary value of a comparison usually depends upon the quality of the impression and the manner in which it is recorded.

The decision to cast is affected by the conditions of the substrate the impression is in or on.

- Impressions in fine, humus soil and even snow are excellent candidates for casting.
- Coarse or sandy soil may not always the best substrate for casting detail of the tire impression(s).

1. Photography

As with all evidence, overall photographs should be taken using a standard format lens showing the impressions in relation to the other features of the scene.

Photography is the most valuable way of collecting impression evidence for later comparison.

It is critical that distortions are minimized by adhering to the following:

Impression photography requires the use of a tripod and detachable flash.

Documentation must include a photograph with and without a measurement scale.

The scale must be level with the impression for proper documentation.

The scale should contain case identification information.

- Case number;
- Orientation;
- Document the direction of travel;

The camera should be mounted on a tripod directly over the impression, with the film plane parallel to the impression.

The impression should be shaded from direct sunlight.

It is recommended that the detachable flash or other light source should be at an angle of 45 degree or less depending on the depth of the impression.

The full length of the impression should be captured.

- In the case of a tire impression, a minimum of eight feet should be taken.
- Each frame should overlap by 20% and no more than two feet should appear in each frame.

Instant or auto-focus cameras should not be used for capturing impression evidence.

2. Casting

There are several different types of casting materials such as:

Dental Stone;
Traxtone;
Die Cast;
Plaster of Paris.

NOTE: These materials should be used according to manufacturer's directions for proper casts.

- After photography, casting may be performed to document the impression in three-dimensional form.
- The decision to cast is affected by the by the substrate conditions or other environmental factors.
- Do not remove any soil adhering to the casting after recovery.
- Place each casting in a protective, breathable container after drying.

3. Enhancements/Optimization

Chemicals may be used to enhance or optimize impressions in blood. It should be determined prior to chemical application if a sampling the blood is required, as the chemicals used to optimize the impression(s) may interfere with DNA analysis.

Forensic light sources and fluorescent powders may optimize visualization and photography of the impression(s). Examination of the impression(s) using the forensic light source needs to be conducted prior to applying any chemicals or powders, due to native fluorescence of the impression contaminate or the substrate. It should be noted that blood does not fluoresce, but is seen as black and offers contrast between the impression and the substrate of the item it is on.

4. Tire Impression Measurements

The track width of a vehicle is the distance between the center of the tire mounted on one side of the vehicle to the center of the tire on the opposite side.

The front and rear track widths may be different.

The wheelbase of a vehicle is the distance between the center of the front axle and the center of the rear axle.

TOOL MARK EVIDENCE

A tool mark is any impression, scratch, gouge, cut, or abrasion made when a tool is brought into contact with an item, leaving an impression of the tool.

In some cases, tool mark identification may link a person to the tool used in the commission of a crime.

1. Photography

Overall photographs should be taken of the tool mark impression.

A close-up photograph should be taken of the tool mark impression.

The photographs should include a measurement scale.

2. Measurements

Measurements should be taken to document the tool mark impression in relationship to the ground or other fixed objects.

3. Casting

If an item bearing the tool mark impression cannot be submitted for tool mark examination, a casting of the impression can be made using a suitable and flexible casting material such as:

Duplicast

Mikrosil

Silicone type sealant.

Castings must be stored in a securely packaged type container.

If the item with the tool mark is collected, it should be packaged to prevent any additional marks, impressions or other damage.

AUTOPSY EVIDENCE

1. Photography

Take overall photographs of the body prior to clothing or other objects being removed.

After being unclothed, take overall photographs of the body.

Medium range and close-up photographs should be taken of any wounds, scars or tattoos. These photographs should be taken with and without a measurement scale.

Photographs should be taken of any evidence prior to and after collection from the body.

2. Collection of Clothing from the Body

Note, photograph and collect any loose trace evidence.

Collect all garments being aware of possible trace evidence.

Allow wet or damp items to air dry.

Package each dry garment separately in paper material.

Package bloodstained items so that they do not become contaminated due to contact with other items or surfaces.

3. Evidence Collection from the Body

The following list of items should be reviewed to see if they are applicable to the case.

- 3.1. A sample of blood from the victim.
- 3.2. Head hair sample(s).
 - From five (5) locations.
 - Pluck out hair with root.
 - Obtain 10-20 strands from each location.
- 3.3. Pubic hair sample(s).
 - Combed.
 - Plucked.
- 3.4. Fingernail scrapings.
 - Keep right and left hand in separate containers.
 - Include scraping tool with samples.
 - May substitute cuttings for scrapings.
- 3.5. Tape lift of hairs or fibers or any other trace evidence.
- 3.6. Collection of possible body fluids on the victim.
- 3.7. Any foreign objects in the body.
- 3.8. On decomposed or skeletal remains, teeth/bone samples should be obtained for DNA.

4. Gun shots

X-rays should be considered for any gunshot victim prior to autopsy.

Fragments from a single shot or projectile should be collected as one (1) sample.

Shotgun - Collect a reasonable amount of shot pellets for one (1) sample.

Multiple gunshot - Obtain all fragments from each shot as one (1) sample per projectile.

LATENT PRINT PROCESSING AND PHOTOGRAPHY

1. Processing

The processing of items for latent prints will be done in accordance with the goals determined by Crime Scene Investigators and the investigator assigned to the case. The prints will be obtained utilizing normally accepted practices for that type of item, taking into consideration the weather conditions, substrate, matrix and the nature of the case.

- 1.1. Latent print and DNA considerations
- 1.2. Prioritize the order of processing for the various forensic examinations

- 1.3. Fully protect the scene and evidence until latent prints are collected
- 1.4. Lighting is very important to locate latent prints
- 1.5. Concentrate the search for latent prints, i.e. point of entry and areas disturbed
- 1.6. Photograph latent prints
- 1.7. Evaluate the best method for processing the latent prints and consider the proper sequencing of the methods. Examples of methods listed below are those most commonly used, but is not exclusive.
- 1.8. Powders and brushes
 - e.g.,
 - Volcanic ash and other non-magnetic powders
 - Magnetic powders
 - Fluorescent powders
 - Camel hair brushes
 - Fiberglass brushes
 - Feather brushes
 - After photographing as previously described, the powder processed latent prints can be lifted using frosted or non-frosted lift tape and secured to an appropriate color backing card; white for dark powders and black for light and fluorescent powders.
- 1.9. Cyanoacrylate Ester or Super Glue
 - Non-porous surfaces (e.g.)
 - Glass
 - Metal
 - Semi-porous surfaces (e.g.)
 - Glossy or coated
- 1.10. Ninhydrin

It should be noted that if Ninhydrin is used at the crime scene, proper safety precautions must be taken. Solvents used in the preparation of Ninhydrin can be flammable or deplete oxygen.

 - Porous surfaces (e.g.)
 - Paper
 - Wood
 - Wall board
- 1.11. Crystal violet
 - Sticky side of adhesive tapes

1.12. Sudan Black

- Plastic baggies
- Coated drinking cups and plates
- Food stuff contaminated non and semi-porous items
- Cyanoacrylate Ester processed items

1.13. Alternate Light Source (ALS)

- DFO
- Indanedione
- Rodamine 6G, RAM, Basic Yellow, etc
- Redwop, Greenwop

1.14. Amido Black, Leuco-Crystal Violet, DAB, etc.

These chemical reagents are used to optimize blood-contaminated impressions.

2. Photography of latent prints

Latent prints can be very fragile and should be photographed prior to processing when it is determined that the substrate or matrix of the prints is too weak for transport or it is felt the print would not develop or lift normally. This should also be done prior to shipping evidence to a laboratory when prints are known to exist or when other tests will necessitate the destruction of the print.

3. Automated Fingerprint Identification Systems (AFIS)

If the latent prints are not identified or eliminated to subjects of the case, then the prints can be searched through the appropriate database to generate investigative leads.

- Latent fingerprints
- Palm latent prints

PERFORM FINAL VIEW OF CRIME SCENE

The investigator in charge of the case should insure a walk-through of the crime/accident scene at the conclusion is conducted to ensure that the area investigation is complete

- Each area identified as part of the crime scene is visually inspected
- All evidence collected at the scene is accounted for
- All equipment and materials generated by the investigation are removed
- Any dangerous materials or conditions are reported and addressed
- The crime scene is released in accordance with jurisdictional requirements.



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