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Application of Modern Trace Examination Techniques In Forensic Science and Their Legal Aspects

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Abstract: In the process of case investigation, trace examination and forensic examination and identification can provide reliable evidence information, laying a good foundation for case detection. So in the process of case investigation through the application of modern trace inspection technology, at the same time the application of modern trace inspection technology to forensic science can effectively improve the efficiency and quality of case investigation. But the modern trace inspection technology applied to forensic science there are certain legal issues, the need for relevant personnel to take appropriate measures to deal with. In this paper, the application of modern trace inspection technology in forensic science and related legal issues are explained.

Keywords: Modern Trace Inspection Technology; Forensic Science; Application; Legal Issues

Introduction

Modern trace inspection technology is through the trace of the relevant theories and methods of verification of science applied to the case of various traces of physical evidence in the test, through the traces of the case as well as the case of human and material relations to be analyzed. So the trace examination technology for the apprehension of criminals, to protect social security has a very important significance. At the same time, forensic identification analysis is also an important part of the case analysis process, so the application of modern trace inspection technology in forensic science is of great significance, can provide more comprehensive and accurate information for the detection of cases. But the application of modern trace inspection technology in forensic science will involve certain legal issues. In this paper, we will analyze the role of forensic science in the application of modern trace inspection technology, and the existence of legal issues for research.

1. Modern trace inspection technology and forensic science links

Although forensic science and modern trace inspection technology belongs to different disciplines, but the two in the practice of research in the process of the way and method there is a certain connection. So forensic science and modern trace inspection technology can be essentially summarized as a trace of the discipline, but the object of the two studies are different. Forensic science will be external forces on the object produced by the physical evidence known as damage, and modern trace inspection technology will be external forces on the object produced by the physical evidence known as traces, can be seen that there is a relatively close link between the two. Usually, traces are suspects in the process of leaving clues, contains a lot of information, through the trace examination and forensic science can effectively analyze the suspect's criminal motives, criminal process, criminal tools and escape routes, for the detection of the case to provide powerful information to effectively enhance the efficiency and quality of the case detection.

2. The significance of modern trace inspection technology applied to forensic science

First of all, in the process of rapid development of science and technology, modern trace inspection technology has been rapid development, can better carry out the relevant trace inspection work. Its application to the case detection process can help public security organs to improve the efficiency and quality of case detection, to provide better conditions for combating crime, and effectively improve the quality of social security. Secondly, through the application of trace inspection technology can effectively innovate the program of case detection, so as to better protect the human rights of criminals. Third, due to the case investigation process, will be affected by a variety of factors that lead to the suspect's information can not be determined, through the application of trace inspection technology in forensic science can better de-

termine the suspect's relevant information, thus enhancing the reasonableness and accuracy of forensic science testing and analysis, improve the level of forensic science testing and analysis, and better promote the detection of cases. Finally, China's trace inspection technology and forensic science technology has been rapid development, but there are still technical incompleteness, by applying trace inspection technology to forensic science can effectively make up for the shortcomings of the two technologies, can better analyze the case information, to help the case handler for the detection of the case.

3. Forensic trace inspection technology classification

Usually, forensic science in trace examination technology can be divided into direct traces and related traces according to the actual needs of forensic science perspective, can provide direct evidence and indirect evidence for the detection of cases. One of the direct traces refers to the forensic science examination process through the visual observation of the body to grasp the shape of the tools left behind and related physical traces and damage. Through these direct traces can effectively determine the suspect used in the process of crime tools. Trace inspection is mainly used in the case of time, location and location of the body is not clear, through the relevant traces of the test can be on the time of the crime, the location of the crime and the location of the body and other relevant information to determine the case to provide relevant references to promote the development of the case for the case to create stronger conditions for the detection of the case.

4. The application of modern trace examination techniques in forensic science

4.1 Direct Trace Inspection

Forensic science through modern testing techniques for direct trace inspection is mainly fingerprint inspection and footprint inspection. One of the fingerprint test is also known as the handprint test, is one of the most commonly used trace inspection techniques. Because each person's fingerprints or palm prints are unique, through chemical or physical methods to extract the fingerprints and handprints left by the suspect information can effectively determine the number of suspects, so as to determine the number of crimes. At the same time, by comparing the collected fingerprint information and palm print information with the information in the fingerprint information database, the suspect can be locked with high accuracy. Footprint inspection technology is to extract and analyze the footprints left by the suspects, which can judge the physiological characteristics of the suspects. Although the footprint information does not have uniqueness, but through the footprint information can be on the suspect's gender, height and weight and other physiological information can be analyzed to effectively narrow the scope of the suspect, to create favorable conditions for the detection of the case. At the same time, the human foot has a more developed sweat gland system, forensic medicine can be extracted from the suspect's footprints to the suspect's sweat, so as to be able to obtain the suspect's biological information, and further lock the suspect, to help the detection of the case.

4.2 Relevant trace examination

Relevant trace examination refers to the way in the case of criminal suspects can not be examined through the body and the traces left behind. Relevant trace test mainly refers to the teeth test, tool trace test, vehicle trace test and disconnection trace test. First of all, dental impression refers to the traces left by human teeth when biting objects, dental impressions most often appear in food, but also may appear in the human body. Typically, a normal adult has 32 teeth, including 8 central incisors, 4 cuspids, 8 premolars and 12 molars. The teeth will also be arranged in an arch shape that is symmetrical between the upper and lower jaws. Each person's teeth shape, size, tooth direction, as well as the shape and size of the arch of the teeth have certain characteristics, so through the dental seal test can be the same identification of the person, to provide clues for the detection of the case. Secondly, tool marks. Tool traces refers to the criminal suspect in the process of the use of tools left behind by the traces, including traces of blowing, cutting traces and prying traces, etc., through the tool traces can be analyzed to effectively determine the suspect's modus operandi, the process of the crime and the tools, so as to provide a certain direction for the detection of the case. The third is the break away from the trace, break away from the trace is the crime process occurs in the break and separation of traces, common break away from the trace including fabric tearing traces and broken knife tip traces, etc., through the break away from

the trace of the examination and analysis can be further judged by the crime process. Through the relevant trace examination can effectively determine the crime time, location and tools, etc., to help the public security organs for case detection.

5. Modern trace examination techniques used in forensic science legal considerations

First of all, the Criminal Procedure Law clearly stipulates that in the process of women's physical examination needs to be carried out by female staff or physicians. So in the actual inspection process needs to be strictly in accordance with the provisions of the law to carry out, to avoid violations of human rights and illegal forensics in the inspection process. So the public security organs need to configure a certain number of female forensic doctors and trace examiners, so that better forensic examination in the modern trace examination techniques. Secondly, the "Criminal Procedure Law" clearly stipulates that the investigation and examination of the situation need to be written into a transcript, and by the investigation, examination and witnesses to sign or seal. So in the forensic examination in the application of modern trace examination techniques need to invite witnesses to witness. At the same time in the choice of witnesses need to pay attention to: (1) do not have the appropriate ability to identify or can not be expressed correctly as a witness; (2) and the case has an interest in the case, may affect the impartiality of the case can not be used as a witness; (3) for the investigation, inspection, search and seizure of staff can not be used as a witness. If in the objective circumstances can not find the conditions of the person as a witness, in accordance with the "People's Republic of China Criminal Procedure Law" in the relevant provisions of the transcript material, and retain the relevant activities for video. Finally, the need to do a good job of investigation and identification of separation. Forensic application of modern trace inspection technology process, personal examination records is one of the types of legal evidence, but the examination records and forensic identification results can not be taken between the equivalent relationship. So in the process of forensic examination need to do a good job of forensic examination process and forensic identification results of separation. Strictly in accordance with the "Criminal Procedure Law" and "Public Security Organs Handling Criminal Cases Procedural Provisions" of the relevant requirements, and effectively do a good job of investigation and identification of separation, to enhance the legitimacy of evidence collection.

Conclusion

In summary, the application of modern trace inspection technology in forensic science testing is of great significance. Through the modern trace inspection technology and forensic examination for effective combination of evidence can be better analyzed for the detection of cases to provide favorable evidence to enhance the efficiency and quality of the detection of cases. However, need to pay attention to trace inspection technology used in forensic science need to pay attention to the legal issues, in strict accordance with the relevant legal basis for forensic science testing to carry out the relevant test work, and effectively enhance the legal effect of the test results.

References

[1] Hou Q, Xu JB. The legal status of forensic medicine in personal examination and the matters that should be noted [C]. 2013:602-605.

[2] Zhai LP. On the use of trace science in forensic examination[J]. Guizhou police vocational college journal,2005,17(5):64-65.

[3] Tang L. Research on the utilization of trace-based science in forensic science examination[J]. Legal system and society, 2016(27): 267-268.