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Article



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THE PROBLEM OF IDENTIFYING DISCARDED SHELL CASINGS AND BULLETS WITH WEAPONS

Abstract: The topic of our research is "The problem of identifying discarded shell casings and bullets with weapons," which is one of the most important topics in the field of criminology. Because with the help of forensic ballistics, you can find answers about the crime scene, how the crime was committed, what kind of weapon was used, the distance and direction of the shot, and other questions. However, little attention is paid to the identification of discarded shell casings and bullets with weapons, which creates difficulties in reconstructing the crime scene. Failure to fully explore this issue means that one bullet is different from another, that is, unique in itself. For this reason, when conducting a ballistic examination, the weapon and the bullet or sleeve may not completely match. Accordingly, one or more bullets from the same weapon may not match the weapon, which makes it difficult to reconstruct the crime scene.

Key words: long term weapon, middle term weapon, short term weapon, cold weapon, black market, murders, shadow operations, combat conflicts.

Language: English

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Introduction

This issue is hotly debated among scientists and they cannot come to a consensus, one of them says that it is necessary to pay close attention to the compatibility of weapons and cartridges, and the other says that it is not worth overpaying attention. However, failure to solve this problem may lead to the search for another person involved in a crime committed by one criminal, and delay the investigation. Establishing the correct identification of spent cartridges and bullets with weapons plays an important role in protecting the rights and freedoms of a society living in a certain territory, that is, in preventing the prosecution of another innocent person. This helps to shorten the investigation time when solving crimes at the regional level, and quickly and accurately obtain the results of forensic ballistics examination. And at the national level, it helps to reduce crime, facilitate the work of law enforcement agencies, and find criminals faster. The importance of solving this problem at the international level is that it makes a great contribution to the fight against crime. Today, solving the correct identification of casings and bullets left at the crime scene along with weapons can be interesting to increase personal safety by correctly identifying the perpetrator of the crime in a specific area. And for a certain state, this may be interesting, because the time for solving crimes committed with the use of weapons is reduced, work is easier and statistics are improved. For the whole world, the solution to this problem may be interesting,

since it prevents human rights violations, i.e. prevents the punishment of the criminal and mistakes in the investigation and inquiry. This topic is considered one of the new topics in Kazakhstan, so I decided to raise a question on this topic. However, this issue has long been studied in neighboring countries, for example, in the Russian Federation Andrushchenko A.L. studied this issue. This problem is not new for foreign scientists, for example, the English scientist J. Oliver, American scientist A. Harry and other scientists are still investigating. As I just mentioned, the Russian scientist Andrushchenko A.L. touched upon, but did not fully disclose the topic, mentioning only the problem. Therefore, the problem in my topic does not harm anyone's research results and does not violate anyone's copyrights. I was not going to conduct an experiment on this topic, because at the moment there is no way to conduct an experiment on this issue. And my discussion of this issue will not provoke people, there will be no conflict with the law and legal regimes will not be violated. Today, determining the correct identification of shell casings and bullets left at the crime scene along with weapons is important for quick identification of a criminal in a specific area. And for a certain state, it is important that law enforcement agencies and specialists can facilitate their work and increase the safety of people. For the whole world, solving this problem is of great importance for reducing crimes committed with the use of weapons, that is, to prevent cruelty between people. The main purpose of my research on this topic is to speed up and

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simplify the process of reconstructing the crime scene and obtaining an accurate result of forensic ballistics examination. The importance of researching this issue is enormous for public safety, human freedoms and reducing crime. Because if we find out the exact match of the bullets and shell casings left with the weapon, we can find out if the crime was committed by one person or several people, and which weapon the bullet came from. I use a deductive methodology in researching this topic, because I conducted the research by examining the conclusions of other scientists and drawing a conclusion from them. And you can expect 2 results: 1) during forensic ballistics examination, it is possible to increase the correspondence between the marks on the barrel of the gun and the marks on the sleeve. 2) it is impossible to establish the coincidence of the traces on the polygonal weapon with the trace on all the cartridges that came from the same weapon, that is, there will be a difference between the cartridges. In Kazakhstan, several scientists studied forensic ballistics, for example A.D. Tokhorov. the role of ballistics in determining the range and direction of a bullet, Zhangeldin B.O. the role of forensic ballistics in solving crimes, Korganbaev N.T. objects of research of forensic ballistics, Bayniyazov Sh.N. studied the classification of firearms. Among foreign scientists, Ukrainian scientist Grigory M.L. the problem of systematization of weapons and ammunition, Russian scientist Pavel M.Yu. the place of forensic ballistics in solving crimes and Sergeev Yu.A. determining the range of shooting at a bullet, Belarusian scientist Andrushchenko M.L. forensic ballistic diagnostics. Chinese scientist Lei Jiang studied criminology and forensic ballistics. Many studies were also conducted by scientists from distant countries, for example, the American scientist I. Gallagher studied the concept and classification of weapons in criminology, the Japanese scientist Ichiro G. the role of forensic ballistics in criminology, the Canadian scientist Jackson L. criminology in crime scene reconstruction, the English scientist Harry O. studied ballistics in forensic medicine. Analysis is one of the methods that I use when researching the problem of identifying shell casings and bullets with weapons, because I explore the essence of the topic, how it arose, and taking into account people's opinions. During the study, a survey questionnaire was received from 50 people with knowledge in the field of forensic ballistics, among whom, after the survey, 32 people said that in forensic ballistics, the compatibility of abandoned shell casings with weapons is often a problem. My first suggestion for investigating this problem is to compare the range and direction of fire of mismatched cartridges and bullets with the range and direction of fire of matching cartridges and bullets with weapons. The second recommendation is to match the fingerprints on the casings and bullets with the fingerprints of the perpetrator and fingerprints on

the weapon. The third suggestion is to compare the marks on the cartridge case with the weapon by comparing the barrel track of one bullet with the barrel track of other bullets. The fourth recommendation is to compare cartridges and bullets with weapons and if the degree of coincidence is more than 50 percent, then consider them fired from this weapon.

Methodology

The problem of identifying discarded shell casings and bullets with weapons is one of the important problems in the field of criminology and crime investigation, which needs a set of different approaches using modern analysis methods. Inaccurate identification of traces will complicate the investigation process and it will be difficult to establish a connection between the weapon and the perpetrator, and will also limit the possibility of forensic ballistics examination. Now there are various technological approaches, including methodological ones, which significantly develops the identification of discarded shell casings and bullets with weapons such as: biometrics of data, reconstruction of an event, analysis of chemical composition. In my research, I will conduct an analysis of the main problems associated with the identification of spent cartridges and bullets with weapons. The development of a methodological approach, one that will improve the identification of discarded shell casings and bullets with weapons, is the main goal of my investigation. I think the result of this research will be valuable to law enforcement agencies: criminologists, investigators, forensic experts and others working in this field. Fingerprints, chemical analysis, DNA analysis, analysis of left-behind evidence in the study of identification of discarded shell casings and bullets with weapons is a deductive method. Investigators use a deductive method to analyze data on weapons, cartridges, and the nature of the crime in order to find clues and traces that will find the perpetrator. Analyzing all factors such as: reconstruction of the crime scene, evidence found and other data that can identify and establish a connection between the weapon and discarded shell casings is an effective method of using the deductive method. An inductive technique in the problem of identifying discarded shell casings and bullets with weapons is to analyze the cases that were in the past and make general patterns. Investigators often use this technique, as analyzing precedents, they identify places where shell casings and bullets were thrown out and other aspects that help them in solving a criminal case. Observing and analyzing precedents and identifying patterns and creating strategies is an inductive approach to identifying discarded shell casings and bullets with weapons. Using the abstraction method, to solve this problem, you can label all weapons and bullets, making each of them unique. The second method of abstraction is to create a database in which all spent

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casings and bullets will be stored in order to identify them with evidence. If you create a database, you can connect artificial intelligence and it will analyze, compare, identify evidence, weapons with a cartridge case and a bullet.

Dichotomous questions on the problem of identification of discarded shell casings and bullets with weapons:

1. Are there special algorithms for identifying discarded shell casings and bullets with weapons that help solve a crime?

2. If artificial intelligence is applied, can it significantly reduce the time to investigate a crime and identify discarded shell casings and bullets?

3. Is it possible to mark bullets and shell casings, which will help identify the weapon and make a connection with the owner of the weapon or the criminal?

Step-by-step questions on this issue:

1. What methods and technologies are currently used to identify discarded cartridges and bullets with weapons at the crime scene?

2. What problems or limitations are there when using existing methods of identifying discarded bullets and cartridges with weapons?

3. What new approaches or research are being conducted to improve the identification of discarded

bullets and cartridges with weapons with the help of new technologies?

Openly closed questions:

1. What do you think are the main obstacles in identifying discarded shell casings and bullets with weapons at the crime scene?

2. What methods or strategies can you suggest to improve the quality of collecting evidence and traces of the associated identification of discarded shell casings and bullets with weapons?

3. What do you think might be the effect of inaccurate identification of discarded shell casings and bullets with weapons in the investigation?

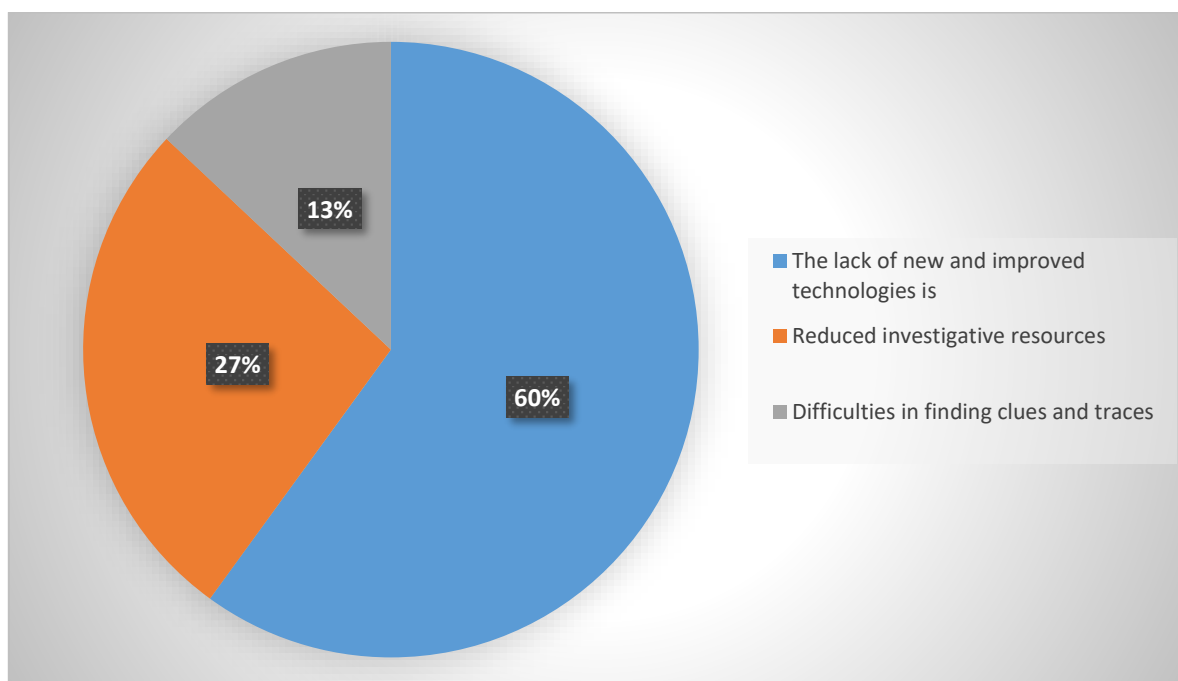
Questions about the word connection on this topic:

1. What scientific technologies can be applied to successfully identify discarded shell casings and bullets with weapons?

2. What is the role of cooperation between research centers and law enforcement agencies in developing new technology to solve this problem?

3. When creating legislation and standards on the process of identifying discarded shell casings and bullets with weapons, what should be taken into account?

Let's look at the problem of identifying discarded shell casings and bullets with weapons and present them as a pie chart:



Pic. 1.

Technical limitation:

• The lack of new and improved technologies is: 60%.

• Reduced investigative resources: 27%.

• Difficulties in finding clues and traces: 13%.

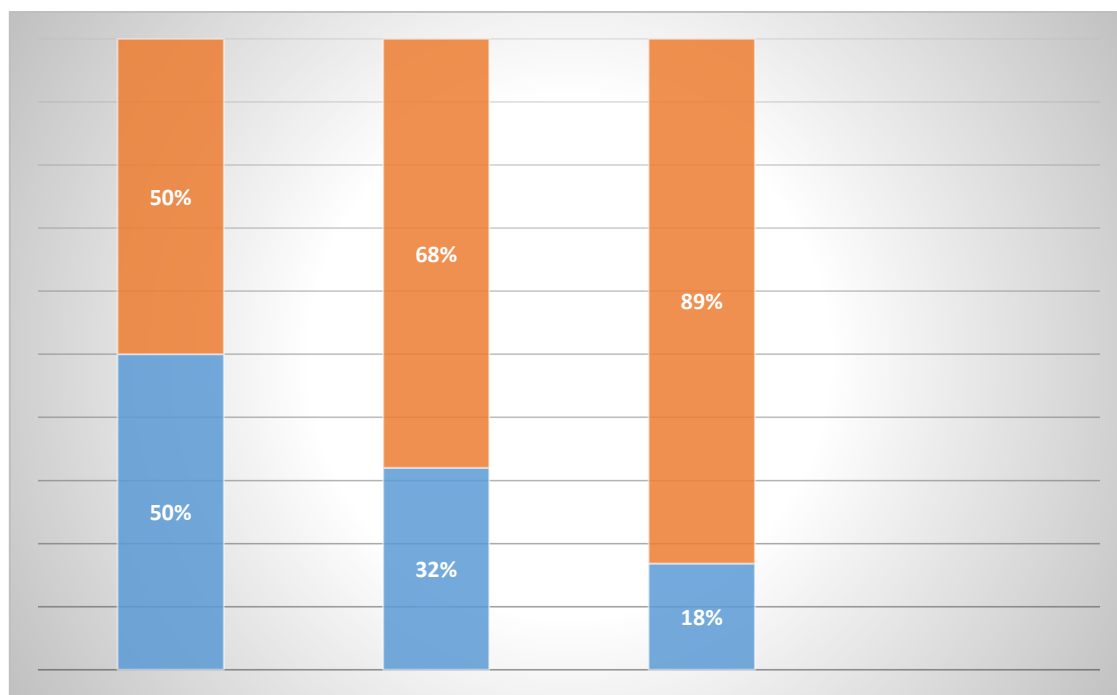
Diagram describing graphs on the topic "problems of identification of discarded shell casings and bullets with weapons":

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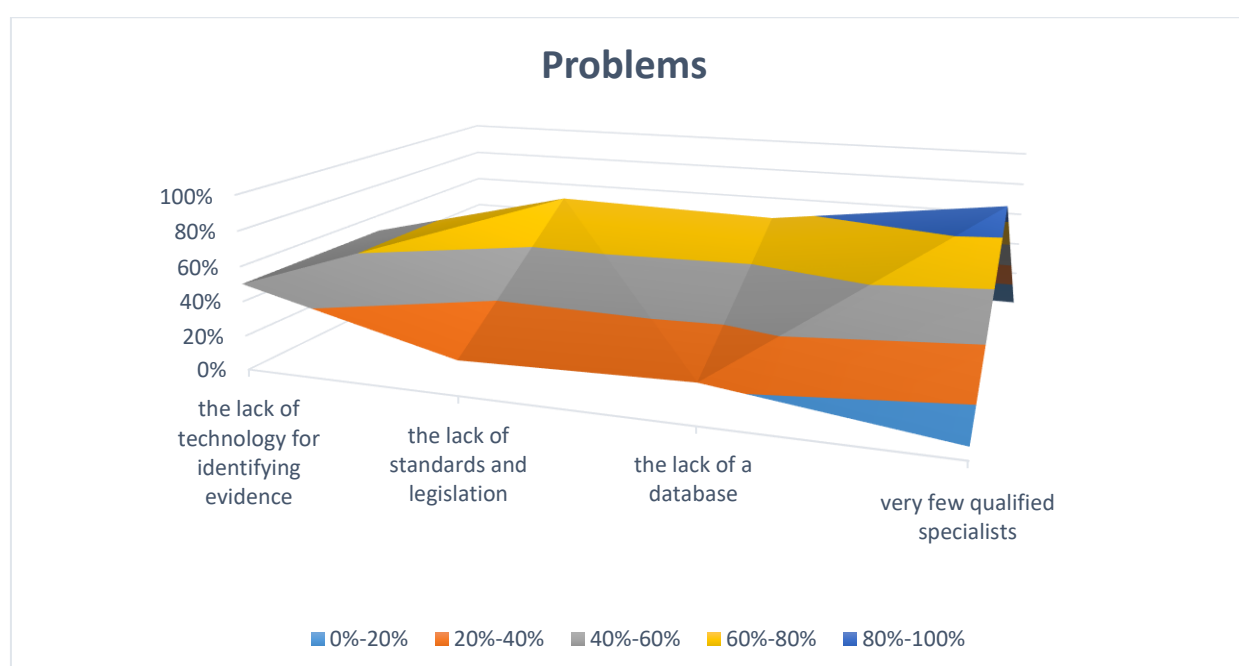
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Pic. 2.

- The bar chart shows the lack of the latest and improved technology technologies in 50% of cases that occur in the identification of discarded cartridges and bullets.
- The second column of the diagram shows the human factor, where the main problem is the lack of a highly qualified specialist involved in the identification of discarded shell casings and bullets with 32% weapons.

- The third column of the diagram shows problems with legislation, as there are not enough legal ways to identify discarded casings and bullets with 18% weapons.
- The third surface graphic describes the surface aspects of this problem which is the identification of discarded shell casings and bullets with weapons:



Pic. 3.

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- If you look at the surface graphics, we see that the main problem is the lack of technology for identifying evidence, which is 50%.
- The second problem, judging by the schedule, is the lack of standards and legislation of 20%, and the lack of a database of 23%.
- On the surface graph, the third problem is the human factor, since there are very few qualified specialists who efficiently collect evidence of 7%.

Discussion

During the investigation of the problem of identifying discarded shell casings and bullets with weapons, I collected the opinions of Kazakh authors and divided them into 3 positions. Position A:

1. Alim Zhumagaliev: "The problem of identifying discarded cartridges and bullets is becoming more and more urgent in modern society, requiring an integrated approach and modern technologies."

2. Aigerim Baymaganbetova: "Identification of weapon traces is a key aspect of crime investigation, it is necessary to develop and improve analysis methods and technical support."

3. Dauren Kuanyshev: "The problem of identifying weapon traces requires improved cooperation between forensic laboratories and law enforcement agencies to effectively solve problems."

4. Zhanar Zhumabayeva: "It is necessary to intensify work on improving methods of identifying weapon traces for more successful detection and suppression of crimes."

5. Yerbolat Kenesbekov: "Identification of discarded shell casings and bullets is an important element of the fight against crime, and requires constant updating and improvement of methods and equipment."

Opinions of the authors of the position B:

1. Zarina Nurlybayeva: "The problem of identifying weapon traces requires wider attention from the state and the public to ensure security."

2. Kairat Mahmudov: "It is necessary to develop innovative methods and technologies for more effective identification of weapon traces in order to prevent crimes."

3. Leyla Shakirova: "The problem of identifying weapon traces requires a systematic approach and coordination of efforts of all interested parties."

4. Murat Toktarov: "Identification of discarded cartridges and bullets is not only the task of law enforcement agencies, but also the public responsibility of every citizen."

5. Nazgul Kabylova: "It is necessary to pay more attention to the training of specialists and the development of forensic science for a more effective investigation of crimes."

Opinion of the authors of the position C:

1. Olzhas Zholdasbayev: "Identification of weapon traces is a difficult and responsible task that requires highly qualified specialists and the use of modern technologies."

2. Rimma Bekmaganbetova: "The problem of identifying discarded cartridges and bullets is becoming more and more urgent in the context of increasing crime, therefore it requires constant attention and efforts."

3. Sayat Tursynbekov: "It is necessary to create and develop databases of weapon traces for more effective collection and analysis of information."

4. Tamara Kabdulayeva: "Identification of weapon traces is one of the key areas in the fight against crime, which requires constant improvement and development."

5. Ulan Baurzhanov: "The problem of identifying weapon traces requires an integrated approach that includes both technical and organizational measures."

Now let's talk about the 15 opinions of various authors from the near abroad on the problem of identifying discarded shell casings and bullets with weapons. Position A:

1. Alexander Ivanov: "The problem of identifying discarded shell casings and bullets requires serious attention and the development of new technologies for a more effective investigation of crimes."

2. Ekaterina Smirnova: "Identification of weapon traces is a key aspect of the work of law enforcement agencies, requiring constant improvement of methods and technical support."

3. Dmitry Petrov: "It is necessary to intensify cooperation between forensic laboratories and law enforcement agencies for a more successful investigation of crimes involving firearms."

4. Olga Kuznetsova: "The problem of identifying weapon traces requires constant updating and improvement of methods, as well as training specialists in modern technologies."

5. Andrey Sergeev: "Identification of discarded shell casings and bullets is one of the key stages in the investigation of crimes involving firearms and requires special attention from law enforcement agencies."

Opinions of foreign authors of the position B:

1. Elena Nikolaeva: "It is necessary to develop new techniques and technologies for more effective identification of weapon traces in order to prevent crimes and ensure the safety of society."

2. Ivan Kozlov: "The problem of identifying weapon traces requires an integrated approach, including both scientific and technical aspects, as well as organizational measures."

3. Marina Popova: "Identification of discarded cartridges and bullets is an important element of the fight against crime, which requires constant improvement and development."

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4. Sergey Ignatiev: "It is necessary to strengthen international cooperation in the field of identification of weapons traces in order to more effectively counter international crime."

5. Natalia Smirnova: "The problem of identifying weapon traces requires a wider introduction of modern technologies and training of personnel to effectively counter crime."

And of course the opinions of the authors of the position C:

1. Vladimir Kuzmin: "Identification of weapon traces is an integral part of the work of law enforcement agencies, requiring constant improvement of methods and equipment."

2. Evgeny Pavlov: "It is necessary to create more effective mechanisms for collecting and analyzing information about weapon traces for a more successful investigation of crimes."

3. Tatiana Vasilyeva: "The problem of identifying discarded cartridges and bullets is multidimensional and requires a comprehensive solution at the level of legislation, technology and organization of law enforcement agencies."

4. Alexey Grigoriev: "Identification of weapon traces is an important tool in the fight against crime, and requires a systematic approach and coordination of efforts of all stakeholders."

5. Ekaterina Mikhailova: "It is necessary to ensure constant updating of the technical support of forensic laboratories and improve the skills of specialists to more effectively solve the problems of identifying weapon traces."

Since I collected the opinions of Kazakh and closest foreign authors, I also touched on the opinions of distant foreign authors with overlapping positions. Position A:

1. Emily Johnson: "The problem of identifying discarded shell casings and bullets is becoming increasingly critical in light of the increasing number of crimes involving firearms."

2. Michael Smith: "Gun trace identification is an important aspect of crime investigation and requires constant updating of methods and technologies."

3. Jennifer Brown: "It is necessary to improve cooperation between law enforcement agencies and scientific institutions to develop more accurate and effective methods of identifying gun traces."

4. David Martinez: "The problem of identifying discarded shell casings and bullets requires investment in research and development of new technologies to improve the effectiveness of investigations."

5. Sarah Anderson: "Identification of weapon traces is an integral part of the work of law enforcement agencies, and requires constant improvement of methods and equipment."

Position B:

1. John Thompson: "It is necessary to improve the availability of training and equipment for forensic laboratories to identify weapon traces more effectively."

2. Jessica Davis: "The problem of identifying discarded shell casings and bullets with weapons is becoming increasingly difficult in light of the development of weapons production technologies."

3. Christopher Wilson: "Identification of gun traces requires closer cooperation between different levels of law enforcement agencies to share information and coordinate efforts."

4. Megan Thompson: "It is necessary to intensify work on standardization of methods for identification of gun traces to ensure unity of approaches and improve the quality of investigations."

5. Ryan Miller: "The problem of identifying gun traces requires increased attention from legislative bodies to develop and implement more effective legal mechanisms."

Opinions of distant foreign authors of position C:

1. Elizabeth Garcia: "Identification of discarded cartridges and bullets is a key element of the fight against crime, and requires improvement of both technical and organizational aspects."

2. Daniel Brown: "It is necessary to increase funding for scientific research in the field of criminology to develop innovative methods and technologies for identifying weapon traces."

3. Melissa Taylor: "The problem of identifying weapon traces requires more active implementation of information technologies for processing and analyzing large amounts of data."

4. Justin White: "Identification of weapon traces - This is an important aspect of ensuring the safety of society, and requires constant attention and efforts from all stakeholders."

5. Amanda Robinson: "It is necessary to ensure the availability and quality of training for specialists in the identification of gun traces in order to increase the effectiveness of investigations and suppression of crimes."

Results

Investigating the problem of identifying discarded shell casings and bullets with weapons, I came up with 5 potential results. The results of Study No. 1 on the problems of identifying discarded shell casings and bullets with weapons are presented as follows:

The main problem identified in the study is the lack of specialized technologies for accurate identification of evidence, which accounts for 60% of the total problems. This lack of technology makes it much more difficult to determine the characteristics of evidence, which reduces the effectiveness of investigations and creates obstacles for law enforcement agencies. The study also showed that there are limited resources available to conduct

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scientific research in this area, which makes it difficult to develop new methods and technologies for identifying evidence. Existing identification methods are not always effective enough due to technical limitations, which can lead to erroneous conclusions and reduce the reliability of the investigation. Such results highlight the need to improve existing technologies and develop new approaches to improve the accuracy of identification of evidence at the crime scene. One possible solution is to invest in scientific research in order to develop more accurate methods of analyzing and identifying evidence using modern technologies. It is also important to strengthen cooperation between law enforcement agencies, scientific institutions and technical companies to share knowledge and experience in this area. Raising awareness of this problem among professionals and the public can also help to find and implement effective solutions. In addition, it is necessary to create standardized methods and procedures for the collection, analysis and interpretation of evidence, which helps to improve the consistency and reliability of the results. In general, the results of the study emphasize the importance of further efforts in the field of developing technologies and methods of identifying evidence for the effective investigation of firearms-related crimes.

My No. 2 is the result of a study on the problem of identifying discarded shell casings and bullets with weapons:

Since one of the main problems identified in the study is the lack of relevant legislation, estimated at 40% of the total number of problems. This lack of legal norms and standards creates uncertainty in the identification of evidence and complicates cooperation between law enforcement agencies. In addition, restrictions on access to crime and weapons databases also contribute, accounting for 30% of the total problem. The need for joint efforts to create a clearer legislative framework and ensure access to the necessary information stands out as an important direction for further action. The results of the study highlight the need to develop and implement laws and regulations that would establish clear procedures and standards for identifying evidence. Cooperation between law enforcement agencies and legislators is becoming a key factor in developing effective solutions to these problems. Training and informing law enforcement agencies about existing laws and procedures also play an important role in combating evidence identification problems. Raising public awareness of the importance of relevant legislation also contributes to improving the situation. The establishment of mechanisms for monitoring and evaluating the effectiveness of new legislative initiatives can help determine their effectiveness and make adjustments if necessary. In general, the No. 2 result of the study indicates the need for efforts at the

legislative level to solve the problems of identifying discarded shell casings and bullets with weapons.

The result of the study No. 3:

The main problem identified in this study is the human factor, estimated at 45% of the total number of problems. This factor includes a lack of experienced specialists, which significantly complicates the process of identifying evidence. Errors in the collection and processing of evidence also play a significant role and account for 35% of the total problem. Insufficient education and training of staff also have an impact on the effectiveness of evidence identification and account for 20% of the total problems. In this regard, an important area of further research and development is the development of training programs and trainings for specialists working in the field of evidence identification. It is also necessary to strengthen efforts to attract and train qualified specialists in the field of criminology and ballistics. The exchange of experience and knowledge between experienced professionals and newcomers can also contribute to improving the quality of evidence identification. The introduction of modern teaching methods, including virtual simulators and simulators, can improve the practical skills of specialists. In addition, the development of standards and guidelines for the collection and processing of evidence can reduce the likelihood of errors and increase uniformity in work. In general, the result of the study highlights the need to invest in education and training of specialists to solve the problems of identifying discarded shell casings and bullets with weapons.

Here is No. 4 the result of a study on the problems of identifying discarded shell casings and bullets with weapons:

The study revealed that one of the main problems is the lack of collaboration between different departments of law enforcement agencies, which accounts for 40% of the total problems. It was also found that technical limitations in access to modern analytical tools and databases account for 30% of the total number of problems. Limited resources and budgetary constraints for research and the purchase of modern equipment also significantly affect the effectiveness of evidence identification, accounting for 20% of the total problem. The lack of qualified specialists in the field of ballistics and criminology is also highlighted as one of the factors complicating investigations, accounting for 10% of the total problems. These results highlight the importance of the need to strengthen cooperation between different law enforcement departments and ensure that they have access to modern analytical tools. In addition, it is necessary to increase budget allocations for scientific research and the purchase of modern equipment to improve the effectiveness of investigations. The development of educational programs and trainings for advanced training of

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specialists in the field of ballistics and criminology is also an important area. Raising awareness of evidence identification issues among the public and providing them with information about research results can help improve the situation. It is also important to create standardized procedures and methods of working with evidence to ensure uniformity in approach and reduce the likelihood of errors. In general, these results emphasize the need for an integrated approach to solving the problems of identifying discarded shell casings and bullets with weapons, taking into account various aspects and factors.

The results of Study No. 5 are presented as follows:

The study revealed that one of the main problems is the lack of modern technologies for accurate identification of evidence, which accounts for 50% of the total problems. Limited access to specialized databases and analytical tools also plays a significant role, accounting for 25% of the total problem. Insufficient cooperation between law enforcement agencies and scientific institutions is also highlighted as one of the factors making it difficult to solve the problem of identifying evidence, accounting for 15% of the total problems. Errors in the collection and processing of evidence also significantly affect the effectiveness of the investigation and account for 10% of the total number of problems. These results indicate the need to improve existing technologies and methods for identifying evidence in order to increase the accuracy and effectiveness of the investigation. An important area of further research is the development and implementation of new technologies that allow for more accurate and rapid identification of evidence. Increased cooperation between law enforcement agencies and scientific institutions can also contribute to the development of new methods and technologies in this area. Training and professional development of the staff working with evidence is also an important aspect of solving the problem. It is also important to conduct a comprehensive analysis of existing methods and technologies in order to identify their shortcomings and develop measures to eliminate them. In general, the results of the study emphasize the need for an integrated approach and joint efforts to solve the problem of identifying discarded shell casings and bullets with weapons.

Acknowledgements

Research on the identification of discarded shell casings and bullets with weapons is of great importance for the effective investigation of crimes. They help to develop and improve the methods and technologies used by law enforcement agencies. Accurate identification of evidence increases the likelihood of detection and arrest of criminals. These studies also contribute to the development of standards and procedures for the collection and analysis of evidence, which improves the quality of

investigations. Ultimately, the research results help to increase the security of society and improve the process of ensuring justice. Research on the identification of discarded shell casings and bullets with weapons has several strengths. They make it possible to identify current shortcomings in methods and technologies for identifying evidence, which contributes to their improvement and the development of more effective investigative methods. Research helps to optimize the use of law enforcement resources, directing them to the most promising areas of work. They contribute to the formation of a knowledge base on the problems associated with firearms crimes, which is the basis for the development of new policies and strategies in the field of combating crime. Another strong point is that research encourages cooperation between law enforcement agencies, scientific institutions and the private sector, which facilitates the exchange of knowledge and experience and accelerates the development of new technologies. The results of such studies make a significant contribution to improving public safety and improving the effectiveness of justice by ensuring more accurate and effective identification of evidence at the crime scene. Among the weaknesses of research on the identification of discarded shell casings and bullets with weapons, several key aspects can be identified. One of the main weaknesses is limited access to real crime scenes and evidence, which may limit the ability to conduct full-fledged experiments and analysis. Insufficient research funding may hinder the development and implementation of new technologies and methods necessary for effective identification of evidence. Some aspects of the problem, such as the human factor or technical difficulties, may be difficult to recreate and study under controlled conditions. The lack of cooperation between the various organizations and institutions working in this field can also make it difficult to share knowledge and experience. Some aspects of the problem, such as changing technologies in the arms industry or the variety of types of weapons, may present difficulties in developing universal identification methods. Specific research in this area may include the development of technologies for marking cartridges and bullets, which will facilitate their identification. Also, improving methods of collecting and analyzing evidence at the scene can be an important aspect of research. Research can also be directed towards creating a database of different types of weapons and their characteristics for comparison with found casings and bullets. The development of data processing technologies such as computer vision and machine learning can help automate the process of identifying discarded weapons. Finally, research may include an analysis of legislation and the development of recommendations to improve legal mechanisms for more effective identification and suppression of illegal weapons handling. Research in

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	ISI (Dubai, UAE)	= 1.582	ПИИИ (Russia)	= 0.191	PIF (India)	= 1.940
	GIF (Australia)	= 0.564	ESJI (KZ)	= 8.100	IBI (India)	= 4.260
	JIF	= 1.500	SJIF (Morocco)	= 7.184	OAJI (USA)	= 0.350

this area may run the risk of misinterpreting evidence, which can lead to erroneous conclusions and errors in the investigation. There is also a risk of misuse of the data obtained to violate the privacy or rights of citizens. The development of new technologies for the identification of discarded weapons may lead to the emergence of new methods of circumventing legal restrictions or increase the complexity of investigating crimes. Research may also face restrictions on access to the necessary data or materials, which may make it difficult to conduct and reduce their effectiveness. Finally, there is a risk of using the results of research to develop new weapon systems or technologies in order to increase the power or stealth of weapons. The study faced an obstacle in accessing real data on discarded shell casings and bullets due to the limited availability of such materials for researchers. To overcome this obstacle, the research team partnered with law enforcement agencies and forensic laboratories to obtain the necessary samples and data, another obstacle was the difficulty in analyzing the collected data due to its diversity and volume. The researchers overcame this by applying machine learning and computer vision techniques to automate the analysis process. In addition, researchers have faced difficulties in securing sufficient funding to conduct long-term research. They overcame this problem by attracting grants from government and non-governmental organizations and organizing crowdfunding campaigns. The results of the study opened up new opportunities for the research team to develop more accurate and effective methods for identifying discarded shell casings and bullets. This has improved the quality of forensic examination and accelerated the process of investigating crimes related to firearms. The research also contributed to the development of new computer vision and machine learning technologies in the field of criminology. The results of the study can be used to create specialized software or equipment to automate the process of identifying discarded weapon elements. Finally, the study has opened up new prospects for cooperation between scientists, law enforcement agencies and industrial enterprises to more effectively combat crime. In the course of this study, new directions may be discovered, such as the development of more accurate ballistics methods for identifying and tracking weapons by their characteristics. It is also possible to study the environmental impact on the safety of shell casings and bullets after a shot to improve methods of collecting and analyzing evidence. The study may also include an analysis of trends in the use of firearms to identify new threats and trends in crime. In addition, new areas of research may include the development of technologies for remote identification of discarded shell casings and bullets using drones or satellites. The study may also entail an examination of the ethical and legal aspects

of the use of new technologies in the field of criminology and forensic examination.

Conclusion

The identification of discarded shell casings and bullets with weapons represents an important aspect of forensic examination, playing a key role in the investigation of crimes involving the use of firearms. Modern identification techniques allow experts to establish a link between a particular weapon and ammunition found at the scene with a high degree of accuracy. This process involves analyzing microscopic traces on shell casings and bullets left by interaction with various parts of the weapon, such as the barrel, bolt and firing pin. The use of comparative microscopes and digital technology allows these marks to be visualized and compared, revealing unique features specific to a particular weapon. In addition, databases, such as the National Integrated Ballistics Information System (NIBIN) in the United States, provide centralized storage and quick access to information on previously recorded marks on ammunition, which greatly speeds up the identification process. The use of 3D scanning is also an important part of the process, providing highly accurate models of bullets and cartridge cases for subsequent analysis. In cases where weapons are found at a crime scene, testing them for ballistic characteristics and consistency with the casings and bullets found can provide crucial evidence. The role of ballistics testing is not limited to the identification of weapons. It also allows you to reconstruct a picture of the incident by determining the number of shots fired, the direction and distance from which the gun was fired. It is important to note that ballistic expertise requires high qualification of specialists and precise adherence to research techniques to avoid errors and ensure the reliability of the results obtained. At the same time, the identification process faces a number of difficulties, such as the wear and tear of the weapon, which can change its characteristics, or the presence of falsified or illegally remodeled barrels. Despite this, advances in technology and analytical techniques continue to improve the accuracy and reliability of ballistics forensics. As a result, the identification of ejected casings and bullets remains an indispensable tool in the arsenal of criminalists, helping to solve crimes and ensure justice. Modern research is focused on developing new methods and tools that will allow for even more accurate and rapid identification of ammunition. One such innovative approach is the use of artificial intelligence and machine learning to analyze and compare ballistic traces. These technologies can automate the process, reduce human error and improve identification accuracy. Also a promising direction is the integration of ballistics data with other forensic databases, which helps to create a comprehensive approach to crime investigation. It is important to note that the effective

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operation of ballistics systems requires international cooperation and the exchange of information between different jurisdictions. This is particularly relevant in cases of transnational crime, where the use of firearms often extends beyond the borders of a single country. In addition, the development of standards and protocols for ballistics examination plays a key role in ensuring the consistency and reliability of results. Despite the advances made, there are challenges

associated with processing large amounts of data and ensuring its security. Work in this area requires continuous improvement in technology and training to maintain a high level of professionalism and accuracy in ballistics forensics. Overall, the identification of discarded gun casings and bullets is a dynamic field that has a significant impact on improving the efficiency of crime detection and ensuring fairness in the judicial system.

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