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CHEMICALS IN FORENSICS

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Annotation:
This article discusses the current use of chemicals in forensics. The relevance of works on this topic is noted in many literatures. The work provides a far from complete list. Tasks facing the experts, which are solved with using instrumental analytical methods. Creation of new analytical techniques on the basis of more advanced methods, techniques and equipment will determine the further development forensic examination.

Keywords: - the plate iscanned , a laser densitometer, spectrophotometric in the UV region and the method, , microparticles, Foreign criminologists also showed the possibility of determining the prescription of a shot from hunting rifles and rifles by the content of other products of a shot in the gas phase inside the barrel or ilz.

An effective weapon in the fight against crime is a forensic science that acts in as an effective way to establish significant circumstances, the investigation could be about crimes. Forensic examination, which uses the entire arsenal of modern scientific and technical means in the course of legal proceedings, significantly expands the possibilities investigation and judgment. Significantly expands the possibilitiesinvestigation and judgment. The course and results of expert research are documented in a special procedural document - an expert opinion, which is an independent type of judicial evidence provided for by law. When deciding the question of the admissibility of an expert opinion in as evidence, the investigator and the court, outfit with assessment of compliance with the procedural form during appointment and production of expertise, analyze research methodology used by the expert point of view of the correct choice of methods of analysis, the correctness of their application and the validity of the conclusions drawn based on the results of the analysis. Scientific and technical apparatus of forensic examination constantly evolving, creating new and improving existing research methods. The formation of expert

methods is based on the fundamental achievements of the natural sciences, including analytical chemistry. At the same time, analytical methods are used in forensic examination in several ways.

In a transformed form, corresponding to the nature of the expert task being solved and specific research objects. To the methods used in the production of forensic examinations , in addition to the generally accepted requirements for methods of analysis and research, a number of additional requirements are imposed, due to the specifics of forensic practice: 1) methods of expert research, if possible, should not lead to damage or a significant change in material evidence; 2) the methods used in the examination must ensure the study of the properties and characteristics of objects, necessary to solve the task set by the investigator or the court; 3) detection limits of the methods used must be sufficiently low, taking into account the microquantities of objects submitted for examination; 4) methods must be express, because terms of production of expertise are limited; 5) for introduction into expert practice methods must undergo pilot testing; 6) information obtained during the implementation of the analytical method should be understandable to all participants in the criminal (civil) process. The objects of examination are material subjects subject to expert examination to establish the circumstances (facts) having importance for the investigation could be done. View from the big o variety of physical evidence submitted for examination, for their study, accordingly, a complex of analytical methods is needed and methods developed on their basis. The objects of examination, the study of which is carried out by methods of analytical chemistry, could be substances of unknown nature in any aggregate condition, paintwork materials and coatings, rubbers, adhesives, plastics, petroleum products, fuels and lubricants, metals and alloys, narcotic drugs, drugs, glass and other building materials, minerals, liquids containing alcohol, shot products, ammunition, explosives, pyrotechnic mixtures, flammable liquids, soils, materials and details of documents, etc. Often, the objects to be studied are presented in microquantities, they can be in the form of traces of layers on various carrier objects, be fragments of products and, as a rule, are contaminated. All this greatly complicates the stage of sample preparation. To the analysis and the process of analysis itself. analysis and the process of analysis itself. Below is a brief overview of expert tasks solved using modern instrumental analytical methods in domestic and foreign forensic practice. Below is a brief overview of expert tasks solved using modern instrumental analytical methods in domestic and foreign forensic practice. One of the urgent tasks of ballistic examination is to establish the time of a shot from og non-shooting weapons. In the Russian Federal Center for Forensic Science (RFTSSE) developed appropriate procedure for hunting rifles. It is

based on the determination of the content of nitric oxide in the bore - one of the gaseous products formed during firing (shot products) and measurement of degassing kinetics barrel during storage after a shotIt is based on the determination of the content of nitric oxide in the bore - one of gaseous products formed during firing (shot products) and measurement of degassing kinetics barrel in storage after firing. Nitric oxide is determined by reaction with a selective nitronyl nitroxide indicator applied to chromatographic plates, which are daily placed for various times in the bore. This reaction can be controlled in two ways.

- spectrophotometric in the UV region and the method

EPR. The calculation of the date of the shot is carried out according to the time establishing a stationary concentration of nitric oxide in the bore. It has been experimentally proven that this parameter is constant for a specific weapon, subject to the same conditions for shooting and storing the gun after it. Under the most favorable circumstances of storage and presentation of weapons for examination, the date of the shot can be determined with an accuracy of ± 1 day. Foreign criminologists also showed the possibility of determining the prescription of a shot from hunting rifles and rifles by the content of other products of a shot in the gas phase inside the barrel or ilz. Sampling from the gas phase is carried out by the method of solid-phase microextraction, and for For chemical analysis, two analytical systems are used: a gas chromatograph with a detector that selectively operates in the mode of analysis of nitro and nitroso compounds, and a gas chromatograph with flame ionization (or mass spectrometric) detector. These methods make it possible to detect a large amount of volatile compounds that are products of the combustion of gunpowder or that are part of the gunpowder. Two were selected for analysis. compounds (one not identified, the other naphthalene), the change in the content of which over time (kinetic dependence) can be used to estimate the time of the last shot. To study the shot products in order to solve tasks about the fact of shooting and carrying weapons in forensics, the following methods are used: scanning electron microscopy (electron probe analysis), atomic absorption spectroscopy, neutron activation analysis, mass spectrometry with inductively coupled plasma and capillary electrophoresis. To detect and determine traces of shot products on various objects (bullets, clothes, hands, hair), the most effective use of scanning electronic microscopes equipped with x-ray spectrometers. At the same time, microparticles, transferred to adhesive tape from the media. By using automated search and analysis system from of the entire mass of the extracted particles, microparticles are selected (visually invisible and in the field of view of the light microscope), which belong to the products of the shot according to the characteristic morphological features (size, shape) and elemental composition (a

set of elements corresponding to the equipment of cartridges when fired from a specific weapon). To study the products of a shot on clothes and in the hands of the shooter, atomic absorption spectroscopy (electrothermal version) is widely used. This method determines the content of such elements as antimony, lead and barium, which are included in the primer composition of ammunition. When clothing research is done appropriate fabric clippings (depending on the type of weapon, the products of the shot are localized in certain areas clothes), which are kept in dilute nitric acid and in the resulting solutions determine elements characteristic of shot products. The concentration of antimony, barium and lead in extracts shot products obtained from hand washings are also determined by inductively coupled plasma mass spectrometry. Analytical The advantages of this method are the absence of mutual influences of swab components, low detection limits, wide range of linear dependence of the analytical signal on concentration substances, short duration of analysis and high measurement accuracy. With the help of the indicated methods of the problem about the fact shooting and carrying weapons are decided subject to the absence of a background content of the elements to be determined in household pollutants present on the clothes and hands of the shooter.

CONCLUSION:

In conclusion: it is currently difficult to imagine forensics without chemicals. Serious research is currently underway in this area. We tried to approach these scientific approaches from our point of view.

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