

COMPARATIVE EXAMPLES (COMPARATIVE MATERIAL) FOR FORENSIC EXAMINATION

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Annotation

Authors of the article intended to remind the general rules of gathering of comparative material for forensic examination. It seems that this is very clear and routine procedure performing pretrial investigation, but the forensic practice shows that due to unqualitative comparative materials every second or third identificational examination is delayed due to the request for gathering of additional qualitative comparative examples. Therefore, authors of the article presents very clear definition of comparative material, the legal bases for its gathering, general classification and peculiarities of its performance.

Keywords: comparative material, criminalistical forensic examination, identification, criminal procedure.

Introduction

The tasks of pretrial investigation require to disclose offences and to properly apply criminal law for the purpose that the person who committed and offence should be truthfully punished and nobody innocent should be sentenced. For proper exercise of said goals sometimes it is necessary to determine what persons left the traces at crime scene. For latter the comparative method should be applied and comparative examples of victims, suspects or witnesses are gathered. The performance of said procedures is obligation of pretrial investigator, prosecutor, therefore sometimes they lack general understanding what types of comparative materials may be presented, what peculiarities of each of them should be taken into account performing their gathering and what is tactics of performing of said procedure.

Definition of comparative material (examples) and their types

Gathering of comparative samples procedures are foreseen in most criminal procedure codes. For example in Criminal procedure code of the Republic of Lithuania (further – CCP of Lithuania)¹ article 144, named as obtaining of comparative examples for examination, regulates these procedures, Criminal procedure code of the Republic of Ukraine² Article 245, named as Obtaining samples for expertise, defines that if samples are needed for forensic examination, such samples shall be taken by the party to criminal proceedings, which requested expert examination or on whose motion the examination was assigned by the investigating judge. Where forensic examination is commissioned by the court, the taking of samples for it shall be carried out by the court or, on its request, by a specialist involved for this purpose. Biological samples are taken from a person in accordance with rules prescribed in Article 241 of the present Code. Should the person refuse to voluntarily provide biological samples, investigating judge, court upon motion of a party to criminal proceedings, considered in accordance with the procedure established in Articles 160–166 of the present Code, shall have the right to give permission to investigator, public prosecutor (or to oblige them if the motion was filed by defense) to take biological samples in a compulsory manner. The similar provisions related to forced gathering of samples and others may be found in CCP of Lithuania as well (article 144).

From both examples it can be concluded that the obtaining of comparative examples is independent procedural act but nevertheless it may be performed only for specific purposes – for examination purposes only, i. e. for performance of other procedural act – forensic examination. Therefore, it is closely related to the requirements and methodical rulings on different types of forensic examinations.

It should be also emphasized that comparative examples are taken only for solving of identificational tasks (in so called criminalistical forensic examinations) and they are grouped according the time of their formation into three groups:

- Free samples – examples that occurred before the pretrial investigation;
- Conditionally free samples – examples that occurred after the beginning of the pretrial investigation;

¹ Criminal procedure code of the Republic of Lithuania. *Valstybės žinios*, 2002-04-09, Nr. 37-1341, with further amendments: <https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.163482/cCRydoACqU>

² <https://rm.coe.int/16802f6016>

- Experimental samples – examples that were intentionally taken for the purpose of performance of forensic examination.

In theory the reference standards³ are excluded as separate group of examples – a comparative sample represents a particular object, such as an item of clothing, or particular person, such as sample of a body tissue such as blood, saliva, bone marrow, etc. A reference standard represents a particular type of material (for example Nylon 6.6 of a certain brand and manufacture) or a particular quantitative composition (for example, with a certain percent of titanium dioxide delustrant) and must be of known provenance. Provenance is the supporting information that attests to the history and source of the material and is the equivalent of chain-of-custody for an evidence item⁴. As a rule reference standards are obtained directly from manufacturers or other specialized institutions by the experts themselves. Drug working group of European network of forensic science institutions⁵ first of all groups reference materials, that may be used for forensic purposes into primary reference material (CRM), certified by nationally or internationally recognized institutes (NIST, BCR, NIME); secondary reference material, traceable back to primary reference materials or otherwise verified, for example through independent test method decreasing uncertainty with certificate from manufacturer and in-house or working reference material, prepared by user with traceability to primary or secondary standards or otherwise verified, for example through independent test method. Nevertheless in cited guidelines it is acknowledged, that „generally the demand for primary reference materials exceeds supply in terms of the range of materials and availability. It is rare to have a choice of primary RMs, i. e. certified reference material (CRM), and therefore the user must choose the most suitable material available, i. e. secondary reference material. It is important therefore that users understand any limitations of reference materials employed. A secondary reference material, in forensic drug analysis, is often considered as a pure material which is purchased from a reliable manufacturer together with a certificate. Even, that the manufacturer provides a certificate, the material is not certified according ISO-standards. These materials are often referred to

³ Drug working group of European network of forensic science institutions. (2016). *Guidelines on the use of reference materials in forensic drug analysis*: http://enfsi.eu/wp-content/uploads/2016/09/booklet_on_the_use_of_reference_materials_in_forensic_drug_analysis.pdf

⁴ Taupin, J. M., Cwiklik, Ch. (2011). *Scientific Protocols for Forensic examination of clothing*. 196.

⁵ Drug working group of European network of forensic science institutions. (2016). *Guidelines on the use of reference materials in forensic drug analysis*. 16: http://enfsi.eu/wp-content/uploads/2016/09/booklet_on_the_use_of_reference_materials_in_forensic_drug_analysis.pdf

as analytical standards with purity more than 98%⁶. Therefore, ENFSI DWG recommends that whenever possible, laboratories should try to obtain pure, i. e. more than 98%, reference materials. If this is not appropriate for a specific application solutions of pure substances may be used.

Bases of tactics of taking of comparative examples in pretrial investigation

Preparation for performance of obtaining of comparative examples starts when pretrial investigator or prosecutor decides that the necessity to perform identificational examination occurred. It can be reminded that criminalistical identification is defined as a process of determination of identity of the object by examination of the traces or other reflections left by the investigative object seeking to identify their relation to the offence. Identification can be performed only in respect to relatively unchanging (stable) objects.

Therefore, it is defined in theory that the comparative method involves the alignment of the relational structure between one or more targets (questioned items) and one or more sources (items of known origin). This alignment to work as a method has three requirements⁷:

1. The alignment should be structurally consistent, that is, it has to observe a one-to-one correspondence between the comparators in an argumentative structure that is the same between the comparisons (parallel connectivity). One point of comparison can be aligned with at most one other point of comparison in the target or source.
2. The comparison has to involve common relations but does not have to involve common object description.
3. Comparison are not made merely between the objects at hand but also include all the higher order “containing relations” that they may share. In biology this would relate to the evolutionary and genetic connections; for manufactured materials this would be the design factor and the supply chain of raw materials and intermediate processes that lead to a finished consumer good. The deeper the relation history, the more higher order classes that two objects share, the stronger the relationship they share and therefore the greater is the chance of a shared origin.

⁶ Drug working group of European network of forensic science institutions. (2016). *Guidelines on the use of reference materials in forensic drug analysis*. 17: http://enfsi.eu/wp-content/uploads/2016/09/booklet_on_the_use_of_reference_materials_in_forensic_drug_analysis.pdf

⁷ Houck, M. M. at al. (2016). *Materials analysis in the Forensic Science: Advanced forensic science series*. 16.

A comparison results in a type of cross-mapping of analogous traits or phenomena that have differential relational roles in two situations. A systematic mapping between source and target is a natural method for differentiating potentially ambiguous relationships. This relates to classification of the target and source, the identification of traits or features each has that place them in one or more sets of items. The cross-mapping is of these traits within a class. Once a source has been aligned to a target, candidate inferences, based on the source can be projected onto the target, such as a shared source or history. A handgun with blood on it, for example, can be compared to a bullet removed from a victim (through test firings of similar ammunition) and determined to have been the source (to some degree of certainty) of the bullet while the blood can be tested through DNA typing with the victim's known sample and be shown to have the victim as its source.

So comparative method is used for criminalistical identification to relate target and source. For that known sample materials are necessary. Therefore, the objects of identification can be the items (things), animals and people.

The comparative examples of person may be as follows:

- Examples of handwriting, signatures and written language (criminalistical investigation of handwriting)
- Examples of fingerprints, teeth, lips, ears, feet and other outer surface of human body (criminalistical trisology)
- Examples of biological origin
- Examples of speech, image, height of person (criminalistical phonoscopy, principles of video recording in criminalistics)
- Examples of odour (criminalistical odorology)
- Etc.

The comparative examples of items (things):

- Examples relating to shooting incidents (criminalistical ballistics)
- Samples of soil, fibers, plants, plastics (criminalistical investigation of materials)
- Etc.

The presented classification shows that all the examples may be prescribed to special branches of criminalistical techniques.

Due to the big diversity in identificational objects the complexity of obtaining comparative examples depends from the type of object that should be identified and complexity of actions necessary to obtain comparative samples, i. e. if there is necessity for taking of the samples to use special technologies or ask for the help of specialist, if the sampling may be performed only under

performance of forensic examination or it is enough to know special recommendations of taking of the samples, etc.

It should be emphasized that sometimes obtaining of comparative samples may be also related to some psychophysical circumstances that should be taken into account – for examples for taking of handwriting samples, it is necessary to evaluate physical and psychological condition of a person, etc⁸. The investigator should also remember that a person might refuse to give comparative material therefore the investigator should properly plan the performance of said actions.

Some types of examples, such as fingerprints and biological examples, photos and video recordings, different measurements, may be obtained even without agreement of suspect (accused person). For example article 156 of CCP of Lithuania defines that the suspect under the decision of pretrial investigator or prosecutor and accused person under the decision of the court may be photographed, video recorded or measured, his/her fingerprints or biological examples taken even without his/her consent. Furthermore, the article determines that the same actions under the decision of prosecutor may be performed with other participant of criminal procedure if procedural necessity occurs. As was mentioned above, the same regulations are foreseen in CCP of Ukraine in Articles 144 and 160–166. But such procedures may be performed only under special order – for suspect the decision of pretrial investigator or prosecutor is necessary, for accused person – court decision is necessary. If the participants agree to give the comparative examples, the procedure is easier because it is only necessary to properly document the procedure performed or acceptance of samples presented by the party.

In Lithuania said procedures is also regulated in rulings of lower rank than law. i. e. by the recommendations of Prosecutor General on order of making photography, video recording, measurement and taking of fingerprints and biogenetical examples approved by the decision No. I-192 on 3 of July, 2015⁹. Chapter III of these recommendations define that compulsory obtaining of said examples may be performed only after the beginning of pretrial investigation or during court proceedings. If the suspect or accused person agree to give samples there is no need to adopt written decision for performance of said actions. The written decision should be adopted only in cases of refusal to give samples. In latter situation the accused person or suspect should be introduced with the written decision of investigator, prosecutor or court to gather the samples in

⁸ Kurapka, E. et al. (2012). *Kriminalistika: teorija ir technika*. 542–558.

⁹ <https://www.e-tar.lt/portal/lt/legalAct/35416060215211e5b336e9064144f02a>

compulsory order. Nevertheless the refusal to give samples is not an obstacle to gather them or to use them. For examples the Supreme court of Lithuania in criminal cases No. 2K-263/2008¹⁰, 2K-23/2008 decided that in the case of refusal of the suspect to execute the decision to gather voice samples under article 144 of CCP the investigator or prosecutor may gather them using other procedural actions, for example recording his/her testimony or use samples obtained performing other special undercover actions. The only requirement for admissibility of such samples is that these special actions were performed in due manner and in compliance with legal requirements for such actions.

Fingerprints and biological samples are also included into special databases, the results of video recording and measurements may be used for performance of other procedural activities, such as presentation for recognition, etc.

Preparatory stage of performance of obtaining of comparative samples

During preparatory stage for performance of obtaining of comparative samples the investigator (prosecutor) should decide how and who may perform this procedure. As was mentioned previously, there can be three situations, depending on type of samples to be obtained:

- The samples may be obtained only as a part of forensic examination;
- The samples may be taken using special technologies or help of specialist;
- The sampling activities do not need application of any special techniques and can be performed by investigator (prosecutor) himself.

So the first task for investigator (prosecutor) is to determine the situation applicable in concrete case because further preparatory activities directly depends from that.

Samples, that may be obtained without application of special techniques are as follows:

- handwriting and written language examples for authorship determination;
- Samples that are taken using special techniques (including special kits):
- Examples of fingerprints, tooth, lips, ears, foots and other outer surface of human body – there is necessity to use special materials for gathering sad samples, sometimes it is recommended to use the help of criminalist tehinitions for performance of said actions;
- Examples of speech, image, height of person – the examples of speech and

¹⁰ <https://www.infolex.lt/teise/Default.aspx?id=20&item=doc&aktoid=87812>

voice are gathered using special recording equipment, images and height of the person is fixed using photography or video recording under the principles of criminalistical photography;

- Examples of soil, plants should be gathered using special equipment and packaging materials;
- Examples of Gunshot residues, DNA samples should be gathered using special kits;

Samples that are taken by specialist only:

- Examples of blood and other liquids of human body;
- Examples of fibers, paints (in some situations they can be a part of forensic examination);
- Examples of odor;
- Sampling that may be performed only as a part of forensic examination
- Samples for ballistics;
- Samples of drugs and other psychotropic substances;
- Samples of secured documents;
- Samples of other materials that are in limited or prohibited circulation under national legal regulations.

After the decision, what samples and in what way can be obtained the investigator (prosecutor) performs further preparatory acts. If it is decided to perform the act without the help of specialist the investigator (prosecutor) should resolve if there is necessity to use some special technologies or no. For example in the case of obtaining of handwriting experimental examples there is no need to use special technologies, the investigator (prosecutor) only should prepare empty sheets of paper, appropriate writing tool (it depends from the writing tools used in investigative object) and text which should be dictated. In other cases special technologies should be prepared – kit for obtaining DNA examples, GRS examples, recording techniques for speech and audio sampling, etc.

In addition, the preparations are different depending on type of samples to be gathered. In case of preparing for obtaining free samples (in handwriting, video and audio) the investigator, prosecutor should consider where such samples may be and prepare necessary requests for institutions to present them or to take them in compulsory way. For examples free samples of handwriting and signatures of person may be found in his/her working place, banks, at notaries offices, etc. In case of conditionally free samples usually they can be found in materials of the case, so there is only the necessity to properly fix the place (page No) of them.

In the case of using of help of specialist, the investigator (prosecutor) should

determine date, time and place for performance of said acts and to properly inform parties about said data.

Usually there is no legal requirements for the place of performance of said activities, it depends from type of comparative materials to be gathered and number of participants of said activities.

If the sampling is a part of forensic examination, investigator (prosecutor) should prepare all necessary request for performance of said action indicating institution (or concrete expert) who is appointed to perform forensic examination, to formulate tasks in the form of questions for examination and if there is national requirement to inform parties about the intention to perform forensic examination.

In addition, the situation differs depending on agreement or refusal of participant to give samples. In preparatory stage investigator should find out what is position of the person regarding sampling procedures and if it is negative, then he/she should adopt necessary written decision for compulsory performance of sampling procedures. In addition, as was mentioned above, the person concerned should be properly informed about said decision.

As was mentioned above not all samples can be taken in compulsory form – only fingerprinting and biogenetical sampling, photography, video and audio recording and measurements may be performed in compulsory way.

Performance of obtaining of comparative examples and documentation of said actions

Performing of analyzed procedural activities should be fulfilled under the recommendations formulated for gathering of separate types of comparative examples. Ordinary they are part of the methodical recommendations formulated for preparation of materials for different types of forensic examination and also are detail described in separate parts of techniques of criminalistics¹¹. Therefore in this chapter only general principles will be described and detailed regulations and rulings on how to gather comparative examples of different objects are presented in other parts of this study book.

The main task of investigator (prosecutor) who is taking comparative samples is assure their quality, integrity and adequacy in relation to investigative materials of the case.

The quality of comparative samples means that they are suitable, appropriate

¹¹ Plačiau žr.: *Teismo ekspertizės: jų skyrimas, klausimų formulavimas ir medžiagos joms rengimas*. Metodinės rekomendacijos. (2004); <https://ltec.lrv.lt/lt/metodines-rekomendacijos-ekspertiniu-tyrimu-uzsakovams-ir-kt>.

and sufficient for further investigations. Integrity and adequacy means that the authenticity of samples is clear (without any doubt), they comply to the circumstances of the case and comply with the features of investigative objects. It means, that for example if the questioned handwritten text is written with ink, comparative materials also will be gathered written in ink, if the questioned text is written by pencil, there will be also comparative examples written by pencil; comparative text will include all terms (words) used in questioned document; if the investigative record is recorded using mobile phone, the comparative samples of speech and voice also will include samples recorded through mobile phone, etc. For example for clothing it is defined that an adequate reference sample represents the composition of a material, includes all its components, reflects the range of variation and does not include anything extraneous¹².

For proper fulfillment of said requirements, packaging and identification of samples are very important as well. The general requirement for packaging is to preserve all features and characteristics of the object on the moment of its taking (obtaining, gathering). Therefore, there is separate recommendations prepared by forensic institutions in what way the samples should be packaged and how they should be identified. For example for different types of samples are recommended to use different packaging materials (sometimes usual, sometimes special) – for example for oils, soil it is recommended to use glass or plastic hermetical pots, for powdery objects it is recommended to use paper envelopes, paper envelopes should be used for handwriting samples as well, etc. It is easier when special kits for sampling are used because they include proper packaging as well.

When the samples are duly packaged, the packages also should be properly identified – there should be record about who, in what case, performing what procedural actions obtained the samples, including type of samples and from what person (if necessary).

As a rule the general requirements for packaging and identification may be found in different legal regulation – for example in Lithuania they are defined in special recommendations of Commissar general of Lithuania Police, recommendations of Prosecutor general on ordering of forensic examinations in pre-trial investigation, also they are identified in orders of performance of forensic examination in separate forensic institutions¹³.

¹² Taupin, J. M., Cwiklik. Ch. (2011). *Scientific Protocols for Forensic examination of clothing*. 196.

¹³ For example: Order No I-14 of Prosecutor General of the Republic of Lithuania of 18th of January, 2011 (With later amendments) on recommendations of ordering of forensic examination: <http://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.391197/eyJWCHERud>; Order No. 1R-311

All the procedure of obtaining of comparative examples should be documented under the requirements of criminal procedure. Usually the action is documented filling in special protocols and all the examples gathered are attached to them and form an integrate part of the case data. This requirement is very important in case when repeated examination should be performed and also for final evaluation of the court for proper decision making procedures.

The protocol as a rule should indicate all the circumstance under which the samples were gathered, including:

- Type of samples
- Person or object that were sampled
- Number of samples gathered
- The peculiarities of their packaging (if necessary) and identification
- Persons performing sampling
- Etc.

Conclusions

Comparative materials are divided into two groups – comparative samples (examples, reference material) and reference standards. The latter are obtained mainly by the forensic experts themselves.

Obtaining of comparative samples is preparatory procedure for further special examinations which can be performed independently or may constitute integrate part of forensic examination.

If it is performed independently special legal rulings regulating these procedures should be obeyed. Usually these special rulings regulate only general principles of performance of said actions and detailed regulations may be found in methodical recommendations for different types of forensic examinations.

Depending from type of comparative materials and questioned objects gathering of comparative samples may be performed by investigator (prosecutor) himself/herself with or without the help of specialist, with or without usage of special techniques or by the forensic experts.

Comparative samples should comply with quality, integrity and adequacy requirements.

LYGINAMIEJI PAVYZDŽIAI (LYGINAMOJI MEDŽIAGA) EKSPERTINIAM TYRIMUI

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Santrauka

Straipsnyje autoriai siekia priminti bendrąsias lyginamosios medžiagos rinkimo teismo ekspertizei taisykles. Atrodo, kad tai labai aiški ir įprasta procedūra bylų tyrimo ir nagrinėjimo procese, tačiau ekspertinė praktika rodo, kad dėl nekokybiškos lyginamosios medžiagos kas antra ar trečia identifikacinė ekspertizė vėluoja dėl prašymo papildomai pateikti kokybinius lyginamuosius pavyzdžius. Todėl straipsnio autoriai pateikia labai aiškų lyginamosios medžiagos apibrėžimą, jos rinkimo teisinius pagrindus, bendrą klasifikaciją ir pavyzdžių rinkimo priklausomai nuo jų rūšies, ypatumus.

Raktiniai žodžiai: lyginamoji medžiaga, kriminalistinė ekspertizė, identifikavimas, baudžiamasis procesas.