

**AUTHOR'S PRESENTATION
OF DOCTORAL (PhD) DISSERTATION**

HORVÁTH GALINA VLAGYIMIROVNA

doctoral (PhD) author's presentation and official referee's reports
of doctoral (PhD) dissertation titled:

**Training and educational tasks of preparations for firefighting,
rescue operations of fire brigade
in the transformed system of the disaster management**

Budapest
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NATIONAL UNIVERSITY OF PUBLIC SERVICE

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IDENTIFICATION OF THE SCIENTIFIC PROBLEM

Experiences gained during the three decades since the change of regime can prove that the social-political and economic changes go on relatively quickly, however transformation in the area of human administration needs more time. Modern education and training of human resources is an indispensable condition for developing the human resources, and this applies onto every segment of the society, but within that primarily onto the public sector and with this sector onto the law enforcement segment and people serving at the law enforcement bodies.

Disaster management is a new segment in the law enforcement administration that emerged in Hungary at the millennium. Not only increasing professional requirements, but rapid changes going on in the country's society, economy and public administration required revision and modernisation of the education and training system and harmonisation with the EU laws. The legal background changed and thus also the system of legal norms covering disaster management, organisation and operations.

Simultaneously with the development of the new system for disaster management transformation of the professional training and education, and within that, preparation of firemen was also launched. Introduction of the standardised public service career also supports the critical significance of this issue, because the first clearly requires harmonisation and standardisation of various training systems. I think this is quite important because during elimination of serious natural disasters and civilisation disasters coordinated operations of sister organisations have an eminent significance when performing interventions against increasing illegal migration wave and danger of terrorist acts.

Information and statistical data collected during the two decades can also clearly support claim on international level that events of fire and damage cause more and more losses to the economies of the industrial countries. The damage is estimated as 1% of the GDP.[1] Nature and composition of events that require firemen's intervention is continuously changing. During the past two decades the number of technical rescues has been steadily rising while the number of fire events has been decreasing. This is the typical tendency in most developed countries, including also Hungary.

Events of technical rescues and fires have become almost daily routine, where primarily human lives must be saved, in addition to material values. Consequently, we should specifically focus onto improving the capabilities and skills of the staff, developing the problem-solving skills and appropriate management and procession of mental or psychological stress.

The current fireman pool needs wide range of knowledge and skills in order to successfully face the difficulties and challenges. Training in general is not sufficient, permanent further training and specialisation is required.

Firemen have a great task also in killing fire and extraordinary natural events evolving due to effects of climatic change. Fallen trees, cellars flooded with water give more and more work due to devastating storms. Elimination of accidents related with transported dangerous substance need special equipment and tools, protective equipment and skills from the intervening squads.

In the past period the fire brigade also had to keep pace with the new challenges and in this respect major developments have been implemented. New vehicles and equipment have been commissioned that are applicable also on technical rescue operations, significant changes have been introduced in the area of personal protective equipment (PPE), and the IT background of interventions has also been updated.

State-of-the-art clothing, helmet, air supply device have been acquired and telemetric remote control system is no longer a dream either, providing precise and real-time data for the firefighting commanders on the physical status of members of the intervening staff, air consumption and time spent in action. New equipment has opened several new opportunities for the firemen for more efficient intervention, nevertheless their application also presents new challenges.

Despite the above we must accept that human resources with strong motivation and modern competencies cannot be replaced even with any large scale technical projects, vehicle and IT and other developments involving domestic and EU resources and securing budgetary support. Establishment and operation of modern and standardised training, further training, and special education system is an indispensable condition for this goal.

Quality of skills acquired during education and training can be indeed measured and verified only in a critical situation. Domestic and international experiences demonstrate that securing a well-thought-out, well-organised and comprehensive preparatory background is indispensable for implementing professional interventions that can minimise consequential damages and secondary losses.

The above described problem is not specific to Hungary. Experiences captured from international training mechanisms I have studied and analysed as well as thanks to my international relations can prove that we need continuously update special education needs, various trainings integrated, and maintain a standardised law enforcement preparation system while securing priority to the professional requirements.

Having analysed processes of the past decades we can summarise that measures required for the referred new tasks have been in due time implemented in the area of education and training. However just like every training, this is not for good and can and should be developed and updated in line with ever-changing demands.

Focusing onto processes going on in the society, economy and public administration and major changes in the country's exposure to disaster I am quite convinced that preparation and permanent further training mechanisms of disaster management experts – including also the staff engaged in rescue and fire protection services – should be carefully analysed and studied.

Accordingly, the subject of this dissertation: **Training and educational tasks of preparations for firefighting, rescue operations of fire brigade in the transformed system of the disaster management.**

RESEARCH TARGETS

- 1) Review of organisational development of the Hungarian special training for fireman covering its legal regulatory system, management and organisational system as well as system of equipment pool, and to draw conclusions for optimising the present fire protection system.
- 2) Analysis and assessment of international fire protection statistic data, fire protection and high-level special training system of selected countries, and on this basis defining potential development directors for the domestic high-level training system.
- 3) Discovery of changing safety risks affecting Hungary, new factors emerging in country's exposure to disaster, and on this basis analysing the personal and technical conditions established and available in the present fire protection system.
- 4) Analysis of equipment pool for firefighting and technical rescue practical training and drills, specifically analysing the operating experiences of the training bases.
- 5) Collection of experiences related to efficiency, strengths and weaknesses of implementing the fireman training in a standardised law enforcement modular training system, opportunities for further developments, and on this basis elaborating proposals on improving the applicability of the system.

RESEARCH HYPOTHESES

- 1) The organisational development of the domestic fire brigade and its special training system had in every phase to be in compliance with the actual requirements expected from the then relevant fire protection, including the following: professional, organisational and management, and personal and technical requirements.
- 2) International experiences that emerged in connection with fire protection organisational, management and high-level special training systems and are typically in place in the European and overseas states and are adjusted to economic, social and technical changes occurring in the past two decades can be useful for further developing the domestic fire protection training system.
- 3) A modern modular fire protection training system that is inter-operable between law enforcement bodies can meet the safety challenges and natural and technological disaster risks Hungary is exposed to, as well as the system of fire protection law, institutions, facilities and equipment designed for managing these risks and challenges.
- 4) Organisation and application of training centres on national and local levels that can provide high-level practical training will be a pre-condition for efficient fire protection.
- 5) Primary experiences from a standardised modular law enforcement training for fireman can be surveyed and studied applying an empiric questionnaire research involving the students in such training, and thus we can acquire direct information regarding the potential directions of further developments for the training system.

RESEARCH METHODS

The following main research methods were applied in order to achieve the research targets:

- Preparation of an individual study and research plan in order to realise my scientific targets;
- Analysis and study of laws, regulations and procedures related to the research topic;
- Study of domestic and international professional literature, publications, studies and the results of the latest researches related to the research topic, comparative data analysis, information analysis, synthesis;

- Study and critical analysis of the presently existing training tool / equipment pool and applied education / training methods;
- Analysis and study of training systems, specific experiences and results of neighbouring counties, other European Union member states, and other selected countries, including drawing the relevant conclusions and lessons;
- Collection of experiences, exchange of opinions and views and holding consultations with researchers and practical experts working in the field of training and education;
- Focused research in libraries and through Hungarian and foreign language databases available on the internet;
- Survey using own-developed satisfaction questionnaires aiming at the students and drawing conclusions and elaborating proposals based on the analysis of the results.

Data collection and procession work was completed in 2016 December.

BRIEF DESCRIPTION OF THE RESEARCH BROKEN DOWN TO SECTIONS

The main targets of this thesis included the analysis and assessment of operations of the fireman education and training in the standardised disaster management, where history of organisational development, the relevant international professional experience of fire brigades, as well as opportunities for the evolution and development of domestic legal regulation and internal regulation of disaster management were analysed broken down to each section.

As part of the scientific research work domestic and international publications addressing the relevant topics and legal and other norms were reviewed and processed, conclusions were drawn; own experiences were collected, processed and assessed primarily in the area of the establishment of a new modular training system in disaster management bodies; and satisfaction surveys were held among the students using empiric research methods.

The scientific targets were processed in four essential sections.

The sections present the detailed description of the problem and the relevant norms, details of the recommended method, and finally the summary, i.e. presentation of conclusions.

In Section One the author reviewed and assessed the organisational development of the Hungarian fire protection special training system, and as a result she concluded that professional, organisational and management, personal and technical requirements against fire protection determine the conditions for developing a special training system.

This Section provides the scientific foundation for the subsequent parts of the dissertation.

Section Two presents the most significant result of the thesis, because here the author submitted a specific proposal on opportunities for potential application of international experiences gained from the analysis of international fire protection statistical data and fire protection organisational, management and training models also in the domestic high-level special training.

Section Three addresses the assessment of Hungary's safety challenges and disaster exposure. The author has the view that the new modular training system introduced in 2011 is provably applicable for successfully securing the personal (training and education) conditions required for the operation of the domestic fire protection system (in line with the said challenges and exposure). Conditions required for the preparation (training) for firefighting and special rescue operations are also analysed in this Section. The second part of Section Three addresses the need for establishing local rescue centres in addition to the central special disaster management body and submits recommendations for the conditions of its application in the national system.

Section Four identified the operational experiences of fireman training implemented in a standardised modular law enforcement training system using an empiric research method for satisfaction survey of the students. The author presented specific proposals for the directions of further developments in the training system.

Research results presented in the four sections of the dissertation can support the author's research hypothesis, which were aiming at the analysis of the fireman education and training operating in the standardised disaster management system.

SUMMARISED CONCLUSIONS

1. Based on the analysis of fire protection training history we can conclude that in Hungary the special training – considering the then prevailing economic, technical, political, organisational and other changes – has been continuously developed in accordance with the requirements of the given era.
2. The new special area of disaster management, namely the law enforcement administration, started operating at the turn of the century. The disaster management educating concept was introduced in the 2003/2004 curricula and consisted of basic, medium and high-level education built on each other. The education was transformed to a modular structure and competence-based system in 2008, as this could be reflecting the best the requirements of the new professional structure, the era and the special areas. On this basis we can state that occurring changes required the establishment of new legal foundations and operating system for the special area.

3. The Act on Services was enacted in 1996 and it reflected the changes generated by the increasing need for experts holding official high-level professional qualifications.

Act XXXI. of 1996, the Act on Fire Protection, Technical Rescue and Fire Brigades provided that technical rescue is the responsibility of fire brigades, and this required development and expansion of technical basis and equipment pool of fire brigades, and theoretical and practical training of experts holding adequate skills.

4. Act LXXIV. of 1999, the Act on Disaster Protection, Management, Organisation and Protection against Serious Industrial Accidents related to Dangerous Substances was enacted at the turn of the century, and as a consequence fire brigades and civil protection bodies took over disaster management and civil protection management, branch-level supervision of fire protection and professional supervision of fire brigade operations on national and regional/local levels as disaster management directorates. The Ministry of the Interior was established in 2010 and it introduced a new professional training concept.

The steps required by the new task were in due time implemented in the area of education-training. However, just like every training this is not for good either and can and should be developed in line with ever-changing demands. This process is going on also today.

5. Efficiency of training for the intervening staffs can be improved and modern special education system can be established and its continuous and robust operation is possible only, if all the required personal, material and organisational conditions are secured and improved. Education facilities can be established only when the relevant personal and material conditions have been ensured, as underlined by laws in effect during the period analysed in this Section.

If these conditions are not secured, fire brigades responsible for rescue operations in the country are unable to meet the challenges of the era and the legal requirements.

6. Fire and damage events cause increasing losses to the economies of industrial countries. Nature and composition of events that require fire brigade's intervention is continuously changing in most developed countries. In the past 15 years the number of fire events has been declining whereas the number of technical rescue cases has been steadily increasing.

7. Qualitative composition of the fire brigade staff can influence upon the level of fire protection in the given country, thus the countries I have analysed dedicate special attention to improve the level of special education, modernise the equipment pool of training bases and improve the professional qualification of the trainers.

8. The present training system of fire brigades and rescue teams is very variable, and this can be explained with rapid changes going on in the area of safety affecting both technical and education areas.
9. There are several factors having effect onto the fire protection system and they vary country-to-country and they also include the organisation of the given country's regional / local and public administration system, the level of economic, industrial and technical development as well as the historic traditions. Structure and operational principles of fire brigades can also have impacts upon the fireman training and education.
10. In most countries the training system contains the basic, medium and higher level education, and further or postgraduate training courses and various special courses, but sometimes there is an education in modular system. Special education comprises in every country several elements built onto each other in conformity with local demands.
11. High-level qualification can be acquired in institutions of higher learning of law enforcement and civil education. In several states firemen also provide medical aid in addition to fire fighting and technical rescue. There are voluntary fire brigades in most of the countries. The headcount of voluntary firemen is several times higher than the number of professional firemen in several countries and here the quality of qualification of the voluntary teams is close to that of the professional squads.
12. Comparison of the analysed countries can verify the hypothesis stating that protection based on professionals and appropriate training and education system is in totality good and safe. Operations of professional fire brigades should be supplemented with well-prepared, ready-to-action and cooperative voluntary teams.
13. Training needs of the voluntary teams and changes in alert composition require continuous changes, modernisation and further developments of the training and education system, as well as enlarging the benefits granted for voluntary work.
14. During training courses the role of exercises or drills will become more important. Well-equipped training-education bases with highly qualified trainee should be established and maintained in order to improve the level of education and to organise the exercises or drills.

15. Dynamic changes that have occurred in Hungary in the past couple of years required rapid and flexible response. Emergence and propagation of new risk factors had effects into changes in the country's safety status. Hungary's exposure has gone and keeps on going through continuous changes in respect of both safety and national security. Among dangers threatening the country terrorism and expanding mass destruction arms present new type of challenges.

Disaster management should cope with this as a threat against the civil population, and it should also participate in eliminating any potentially arising negative consequences and in securing supply for the general public.

16. Special attention and focus should be dedicated to the education, training and further training of the control and intervening staffs in order to ensure trouble-free and efficient remediation of fire and damage. The logistic background needs developments, and training bases need to be equipped with technical equipment pool, various drill sites and qualified trainers also for the training of the intervening staff so that such bases can be involved into the elaboration of normative and legal foundations, in addition to the theoretical and practical education and training.

17. Changing safety status, new challenges and sources of dangers that had not been in place before or that occurred with lower level of probability demands for the transformation of the existing education system and, as a consequence, training and special education of firemen should be also modified and further developed.

18. The law enforcement career model was introduced on the 1st of July, 2015. When this new system was developed, efforts were also made to establish among the three special areas of operations, and this also has effects onto the transformation of the training system. As a result of the new modular education system based on shared foundations law enforcement positions have become inter-operable. The new type and standardised education system can provide the new entrants into the law enforcement career with the chance for acquiring basic skills that cannot be obtained in other institutions. Such acquired skills are dispensable for building a successful professional carrier, as all law enforcement bodies operate in compliance with standardised guidelines, rules and norms.

19. Technical development of fire brigades will continue as it is the indispensable pre-condition for performing the more and more complex operations. As set out in the new development strategy this process will between 2015-2020 focus onto two key areas. One of the areas to be developed is the modernisation of vehicle technical equipment pool, while the other is development of personal protective equipment and gears.

Regarding technical development continuous development of training and professional skills of the intervening staff is indispensable not only for securing professional and safe application of modern equipment but also for their maintenance.

20. Efficient training also requires practical preparations in addition to theoretical education. A well-equipped central base having all the required technical equipment and qualified trainer pool is indispensable for practicing the knowledge and skills acquired during theoretical education, and this base can also play the role of professional methodology and coordination centre on national level. In Hungary the Disaster Management Education Centre plays the role of such central base.

21. It is not reasonable and is impossible to pursue in one central base an education that takes the local characteristic features into consideration and requires special knowledge and skills. As specified in the approved education concept, after completing the basic law enforcement module the professional preparation of firemen will continue primarily on the KOK and the Regional Education Centres (TOK). TOKs are not yet in operation as education bases. Moreover, the designated bases would not be able to cover the total territory of the country due to their geographic location, thus more centres are required.

22. Large scale fire fireman barracks located in the countryside and capable of simultaneously accommodating 30-40 people may have a major role in professional but primarily in local training of firemen for local government, voluntary, and, in case of agreement, in facility firemen. The regional training bases, focusing onto actual local demands, will bring education closer to the location of intervention.

23. The responsibility for securing the required conditions cannot be, of course, fully transferred onto the given county disaster management directorates; and central financing, management, coordination, and standardised education and training programs and requirement system will be also required.

24. Special operations, like intervention related to dangerous substances based on preparatory training and special qualification related to industrial safety. Without basic special knowledge and skills even operations within the narrower sense of the specialisation cannot be performed. However, fundamentals can be acquired if standardised, consistently processed and coordinated methodology, requirement system and evaluation criteria are secured.

Main responsibilities of the said central training base will include the procession of these requirements, ensuring compliance with them and providing local further training for the local trainers.

25. Students' satisfaction surveys demonstrated that every education/training had high added value but certain training elements need to be supplemented and expanded. Regarding fresh entrants organisation has an extraordinarily great emphasis – arising from their positions, but the need for practical exercises and drills, and higher number of hours for professional subjects as well as education of communication and psychological skills also emerge.

26. Vocation should be continuously improved, strengthened, incentivised also among staff members on higher professional levels, perhaps new methods might be also tested in this field.

27. Students participating in higher-level training courses – who have already acquired professional skills and experiences – identified specific demands for material conditions and stronger IT background. Consequently, the higher the professional knowledge students have the higher their requirements are regarding the quality of education and training. This is why I have the view that differentiated attitude and approach to organisation and delivery of education and training is indispensable for various professional groups, taking the students' different needs and specialities arising from their profession into account.

NEW SCIENTIFIC RESULTS

- 1) *As a result of comparative analysis and critical assessment* of the Hungarian and international fire protection special training systems ***I could prove*** that professional, organisational and management, personal and technical requirements set out against fire protection determine the conditions for evolving the special education and training system, as well as that ***I have defined*** the international elements that can be adapted into domestic education and training based onto the analysis of international fire protection statistics and organisational, management and training models of fire protection.
- 2) Following the assessment of Hungary's safety challenges and exposure to disaster ***I could prove*** that the new modular education training system (introduced in 2011) can secure the personal (training and education) conditions for the operations of domestic fire protection system – in conformity with the said challenges and exposure.
- 3) ***I have analysed*** the conditions required for the preparations for firefighting and rescue operations, and thus ***I could prove*** that regional rescue centres should be established in addition to the central special management directorates, and then, based on my studies, ***I have prepared*** the conditions for applying them in the national system.

- 4) **I have identified** the operational experiences of the firemen training in a modular-based standardised law enforcement education system using the empiric method of students' satisfaction survey, and based on the results *I have specifically identified* the directions of further development of the education system.

PRACTICAL APPLICABILITY OF THE RESEARCH RESULTS; RECOMMENDATIONS OF THE DISSERTATION

- 1 Results of the research work can be mainly used in the development of fire protection, firefighting and technical rescue operations which can be primarily realised in the field of preparation, education and training.
- 2 Analyses and studies completed in the dissertation may be used for identifying the directions of further research in the field of fire protection education, training and high-level education and for implementing further research tasks.
- 3 The relevant parts of my dissertation can be used, after performing the required restructuring and editing work, as a chapter for presenting the given topic, textbook, teaching aid, professional description or topic proposal for initiating further research in the education and training system of the National University of Public Service Disaster Management Institute, Army Technical Postgraduate Institute, Disaster Management Education Centre, Szent István University Ybl Miklós Faculty of Architecture Fire and Disaster Management Institute and other institutions of higher learning and in disaster management organisations and fire brigades operating in Hungary.

LIST OF PUBLICATIONS PREPARED BY THE PHD CANDIDATE RELATED TO THE TOPIC OF THE THESIS

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1. Horváth Galina, Kuti Rajmund: Задачи руководителя аварийно-спасательных работ по ликвидации аварий при перевозке опасных веществ автотранспортом
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(1): pp. 30-34. (2017) ISSN 2071-9116

2. R. Kuti; G. Zólyomi; G. Horvath; R. Molnár: Опасность взрывов пылевоздушных смесей и возможность их профилактики в пищевой промышленности POZHARY I CHREZVYCHAJNYE SITUACII: PREDOTVRASHENIE LIKVIDACIA 2016:(1) pp. 71-77. (2016) ISSN 2071-9116
3. I. Berki; G. Horvath: 60 лет будапештскому Музею защиты от катастроф. 60 years of History of the Budapest Disaster Management Museum. POZHARY I CHREZVYCHAJNYE SITUACII: PREDOTVRASHENIE LIKVIDACIA 2:(3-4) pp. 28-35. (2015) ISSN 2071-9116
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5. I. Berki; G. Horvath: The Hungarian fire fireman training from the end of World War II until 1958. POZHARY I CHREZVYCHAJNYE SITUACII: PREDOTVRASHENIE LIKVIDACIA 3: pp. 35-38. (2013) ISSN 2071-9116
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8. Horváth Galina: Analysis of basic training for technical rescue operations at professional fire brigades in Hungary. TEKHNOLOGII TEKHNOSFERNOJ BEZOPASNOSTI 5:(29) pp. 3-11. (2010) ISSN 2071-9116
9. Horváth Galina: Analysis of opportunities for establishing central training bases for firefighting and technical rescue training. О создании базового национального центра обучения защите от катастроф, пожаров и чрезвычайных ситуаций TEKHNOLOGII TEKHNOSFERNOJ BEZOPASNOSTI 6:(34) pp. 1-8. (2010) ISSN 2071-9116

10. Kuti Rajmund, Horváth Galina: Об опыте базовой подготовки профессиональных пожарных к проведению аварийно-спасательных работ в Венгерской Республике. *TEKHNOLÓGIAI TEKHNOSFERNOJ BEZOPASNOSTI* 5:(33) pp. 1-6. (2010) ISSN 2071-9116

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12. Bleszity János; Horváth Galina: International experiences in rescue and fire protection operations. *BOLYAI SZEMLE* XXIV:(3) pp. 91-103. (2015) ISSN 1416-1443
13. Berki Imre, Horváth Galina: History of the Hungarian firemen training. *BOLYAI SZEMLE* 2014:(3) pp. 62-85. (2014) ISSN 1416-1443
14. Horváth Galina: Role of the fire brigade in the occurrence of terrorist attack. *HADMÉRNÖK* 1: pp. 145-154. (2011) ISSN 1788-1919

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15. Horváth Galina: About the need for establishing a central training base specialised for firefighting and technical rescue training on national level. *FLORIAN PRESS* 6:(34) pp. 1-8. (2012)

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16. G. Horvath; I. Berki: О реформе профессионального образования в области предотвращения и ликвидации катастроф в венгрии. In: Twenty Second International Scientific-Technical Conference "SAFETY SYSTEMS – 2013". Venue and date of the Conference: Moscow, Russia, 2013.11.28 Moscow: Academy of State Fire Service of RMEC, 2013. pp. 323-327.
17. Zólyomi Géza, Horváth Galina: Методика использования и правила безопасности мобильного вентилятора при тушении закрытых пожаров. In: Teterin (szerk.) Материалы двадцатой научно-технической конференции "Системы безопасности – 2011". Venue and date of the Conference: Moscow, Russia Moscow: Academy of State Fire Service of RMEC, 2011. pp. 147-151.

18. Horváth Galina, Cziva Oszkár: Обучение защите в чрезвычайных ситуациях на основании опыта главного управления пожарной охраны г. Будапешта. In: I Teterin (szerk.) Материалы восемнадцатой научно-технической конференции "Системы безопасности". Venue and date of the Conference: Moscow, Russia Moscow: Academy of State Fire Service of RMEC, 2009. pp. 201-203.

PROFESSIONAL SCIENTIFIC CURRICULUM VITAE OF THE PHD CANDIDATE

Name: Horváth Galina Vlagyimirovna

Place and date of birth: Moscow (Soviet Union), May 29, 1961.

Education:

1983: diploma of the Moscow State University of History and Archive, Faculty of Technical Scientific Information – first class honours with distinction

2007: certificate of basic fireman training course at KOK

2008: -ban certificate of disaster management and fire protection organisation (officer) training course at KOK.

Language: Russian advanced level „C” and French intermediate level „C” certificate.

Professional career:

Worked for nearly 20 years in various foreign trade companies as sales executive, and as part-time news editor and broadcaster in the Hungarian Radio Zrt.

Between 2005-2012 worked in the Budapest Municipal Fire Brigade Headquarters, Secretariat Department as senior officer.

From 2012 worked in the Manager Training, Further Training and Science Management Department, Monitoring and Further Training Section of the Ministry of the Interior, as senior officer transferred from the National Directorate General for Disaster Management of the Ministry of the Interior.

Awards and orders: SERVICE DECORATION recognising 10-year service and eminent performance in Disaster Management as a professional officer.

Budapest, August 25, 2017.

Horváth Galina Vlagyimirovna