

NAGY Zsolt

nagyzsolt105@gmail.com

SAFE INTERVENTION OF FIREMEN IN THE EVENT OF ACCIDENTS OCCURRED ON PUBLIC ROADS

Abstract

One of the important tasks for the fire-fighting units is to perform remediation in technical rescue which occurs especially in traffic accidents, averting and liquidating their further consequences. During technical rescues the staff is exposed to several risk factors, particularly during fending off damage in a traffic accident. It is indispensable to analyse the firefighting interventions, a deeper level of examination of the professional criteria and the expansion of cooperation with the partner organizations to complete safe and efficient technical rescue missions. After the evaluation of information, useful experiences and ways forward solutions should be incorporated in the training as well as in practice. I analysed thorough traffic accidents, my aim was to demonstrate the diversity of accident elimination and to draw attention to the specific features of safety interventions.

A kárfelszámolást végző tűzoltóegységek egyik fontos feladata a műszaki mentések végrehajtása, ezen belül legnagyobb számban a közlekedési balesetek, azok további következményeinek elhárítása, és felszámolása. A műszaki mentések során az állomány számos veszélyforrásnak van kitéve különösen a közutakon bekövetkezett balesetek kárelhárítása közben. A biztonságos és hatékony műszaki mentési feladatok végzéséhez elengedhetetlen a tűzoltóbeavatkozások elemzése, szakmai szempontok szerinti mélyebb szintű vizsgálata, a társszervekkel történő együttműködés bővítése. Az információk értékelése után pedig a hasznos tapasztalatokat, előremutató megoldásokat be kell építeni a képzésbe, valamint a gyakorlatba. Írásomban részletesen elemeztem a közlekedési baleseteket, célom volt bemutatni a balesetek felszámolásának sokrétűségét, felhívni a figyelmet a beavatkozások biztonságának sajátosságaira.

Keywords: *traffic accidents, safe technical rescue, cooperation, analysis of intervention, training ~ közlekedési baleset, biztonságos műszaki mentés, együttműködés, beavatkozás-elemzés, képzés*

INTRODUCTION

Namely I am currently on total duty at Győr-Moson-Sopron County Disaster Management, Disaster Management Branch of Győr, Professional Fire Department, which plays prominent role in certified processing and the determination of the primary test criteria of analysing the effects of road accidents. It is a main consideration for the actuator staff to possess sufficient knowledge and proficiency during rescues as well as the technical skills required for device management, practical experience during rescues [1]. Of course, the implementation of these conditions is based on training courses.

The primary aspect should be the planning of a safe intervention, which is summarised in a tactical management form by the rescue leader.

For the rescue leader it is exceptionally difficult to plan the steps of the remediation according to the information received from the operation management during marching, and defining tasks by taking new data obtained during exploration, into consideration before the start of intervention. The degree of the alarm should be modified and additional forces and equipment are required to move to site [2].

The initiation of the firemen interventions are made more difficult by the circumstance that the fire vehicle should approach the scene safely among vehicles travelling at high speed or besides jammed traffic. In particular, regarding to the number of accidents occurred on highways it could be concluded, that approaching the scene of accident can cause problem several times. To eliminate these situations successfully drivers need to have a high degree of driving technique skills.

Obviously, not all events require intervention from firefighters, but it is recommended to deal with all the aspects of technical rescue, its special problems, and the analysis of interventions. With submitting my experiences I would like to support the strenuousness of the rescue masters, who are enhancing the success of intervention with the application of research results and with the compliance of safety rules, promoting the development of complex problem solving [3].

CHARACTERISTICS OF TRAFFIC IN HUNGARY, OCCURRENCE OF ACCIDENTS

A traffic accident—according to the definition of The Central Statistical Office (CSO) —is unexpected, not deliberately caused traffic incident, which could occur death, personal injury or property damage as a consequence. Safe and undisrupted road transport is an important social interest. Its basic condition is to keep the traffic laws and to expect from others to observe those. The status of transport infrastructure and technical failures could also cause traffic accidents besides ignoring the rules.

The number of accidents is influenced by the size of vehicle fleet, composition, status, quality of the roads and behaviour in traffic. A lot of tightening has occurred among the rules for traffic safety in the past few years.

Highlighting the important factors, according to the "zero tolerance" where the driver is under any minor influence of alcohol the driver's license will be taken immediately. The principle of strict liability has been introduced since 2007, whereby the operator of the vehicle is responsible for violations of certain traffic rules committed by the specific vehicle.

Fines for road offenses have been also increased and the highway code have been modified at several points to prevent accidents. The worst form of the outcome of accidents is which ends with death.

In Hungary the transport policy until 2003-2015 has set the goal that the number of fatal accidents should be reduced by twenty per cent till 2010, by fifty per cent till 2015. The rate reduction which should be achieved till 2010 has already been fulfilled in 2008, which was greatly contributed to the development of the highway network.

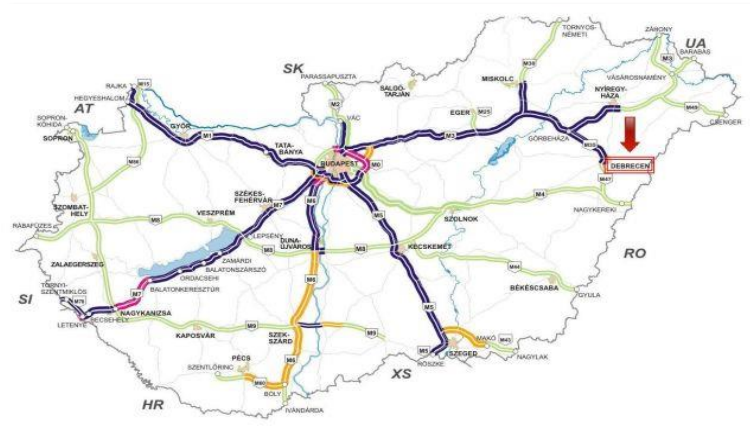


Illustration 1. Highway network of Hungary
 Source: The website of Central Statistical Office (CSO), www.ksh.hu

Vehicle traffic is growing annually on average between 3-5% in Hungary, the running performance of cars is rising about 3%, running performance of trucks rises about 3% per year annually. Most recently the growth in traffic is redounded by the two new EU member states, Romania and Bulgaria, encompassing a growing number of freight and passenger cars arriving. Last year the Romanian-Hungarian border was crossed by 6% more car than before. The cross-border traffic exceeded 3.8 million vehicles. The traffic is heavier in Pest county highway and on the main roads. The load of roads decreases from the capital, but near a larger city the density of the vehicles increases again.

Thus roads are taken over 30.000 vehicles per a day surrounding Miskolc, Szeged or Pécs.

The busiest part of the country is the M7 and M1 common introductory section of Budapest, where more than 100,000 cars a day are passing through, of which are about 7,000 wagons [4].

Among the 27 members of States of the European Union, Hungary has the fourth densest road network (roads 211 km / 100 km²) area, if the total length of the road network (200,961 kilometres) compared to the national territory.

In light of the figures it is our duty to review this area, which requires practice of fire-fighting, because it is clearly shown from the national statistics of fire-fighting marching that technical backups are presented in a large number in this segment.

Life-saving actions occur more often during traffic accidents than during fire-fighting.

The improved active and passive safety systems in vehicles means an increasing difficulty and challenge for the rescue teams, because special devices are available, but mostly time is the biggest enemy when rescuing the injured.

This area must be made more efficient simply because the distressed citizen requires.

THE STRUCTURE OF THE NATIONAL ROAD NETWORK

Domestic road stock includes of public roads and private roads. Public roads consist of national roads owned by the state, and local roads owned by municipalities. It is an important aspect during firefighter interventions that it can be safely and professionally intervene on almost every stretch of the road. The following figure shows the structure of the roads in Hungary, which reflects the potential occurrence of road accidents as well.

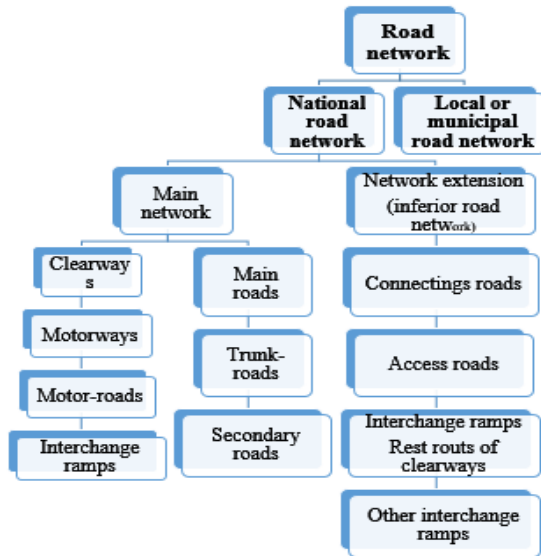


Illustration 2. Road network of Hungary
Source: own composition

The vast parts of accidents are caused by driving error. Drivers are not aware of their own abilities, or physical laws. Conscious response develops slowly because of a lot of information flow at high speed toward the driver.

Muscle reaction time should also be added to the time required to offer after-action phenomena perception. So-called intelligent vehicle systems installed in new vehicles can send a warning, based on the information collected from the vehicle and its environment, or it can intervene, it supports the driver but can also override him. It performs operation which is contrary to the intention of the driver.

I examined the number of road accidents, which happened in the area of competence of the Győr-Moson-Sopron County Disaster Management Directory in the past five years and compared the number of injured and deceased.

It can be concluded, that it is important to approach security and tactical point of view about the proficiency of remediation in order to protect the firefighters intervened because the relatively high number of road accidents.

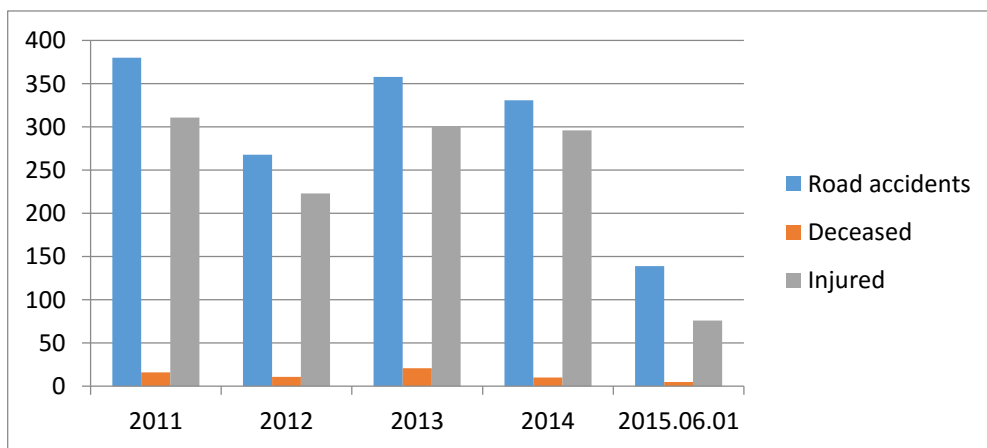


Illustration 3. Road accidents, happened in the area of competence of the Győr-Moson-Sopron County Disaster Management

Source: Own data collection (2011. 01.01-2015. 06.01) using Interior Ministry National Civil Protection DG (BM OKF) integrated on-line disaster management web-reporting program

THE TASKS OF INSURANCE LOCATION

The basic requirement during interventions of firemen, physical safety of rescuers must be ensured at all stages of the procedure.

Implementation of technical backup may vary because of the multifarious road network structure in Hungary.

Clearing an inferior road accident is less endangering than accident remediation on highways. Firefighter interference will not occur at any location, until the rescue leader does not define the ensuring of the intervening forces.

During remediation occurred on highways State Motorway Management Company (henceforward: AAK), and the highway police are available.

The highway operators are obliged to retreat site when the removal of dirt, table alignment, ditch sliding, regardless of whether the firemen made the intervention or not.

Accidents occurred on highways according to their extent can be divided into two main parts: traffic accidents occurred on single track or double-track road.

In case of accidents, AAK carries out traffic diversion tasks, which comprises the following steps: there are placed out traffic signs 500-600 m away from the case of other hazards or accidents, bottleneck boards each 50 meters, speed limit signs at 100-80-60 km/h, avoidance direction signs and buoys on the track of the road, where the accurate accident happened. These indications would normally be sufficient, if the accident affected only one direction and there would be no complete roadblock.

If the accident affects the other direction, the nearest highway engineering's will carry out the traffic restrictions on the other track. However, this is associated with a loss of time, which is not allowed in the primary intervention.

Whether traffic diversion or restriction is needed on the spot, this task falls within the competence of the police. When the absence of police force befalls, fire department implements the task if they are the first to arrive to the accident's scene. [5].

STEPS OF THE PROFESSIONAL TECHNICAL RESCUE

In order that the decision-maker has the suitable alternatives, the certain levels of protection and the associated appropriate protective equipment must be previously determined [6].

The leaders of fire-fighting units must constantly monitor the physical safety of their own and the rescuers, because the elimination of accidents takes place in dangerous conditions. One of the main dangers are heavy traffic and speeding vehicles, which are intensified in the approach of the spot [7].

The following steps should be taken into account considering the severity of technical backups the firemen intervention is more unsafe on highways and expressway sections:

- In case of fire and any other incidents occurred on highways it is very important to select the most appropriate ramp, and to determinate the correct approach route.
- Determination of the correct order of marching, damage site approaching from several directions.
- Traffic obstruction should be calculated when approaching the site, or else the technical rescue will be obstructed. Therefore, it is advisable to occasionally crash the opposite direction of the traffic lane, or by-route to approach the scene.(Marching against traffic could only happen if the node is near, the traffic is completely stopped and it is ratified.)
- Upon arrival to the spot rescue leader's first task is to explore and ensure the intervention site.

- Traffic diversion, road closure, location insurance are performed by the police, on highways these obligations are The State Motorway Management's and motorway police's responsibility. Participants in the rescue could count on the road operators help only in a later stage of the rescue on national roads.
- The rescue leader may ask for further road closure and traffic diversion from the police. Incident occurred on highways, full road closure is inevitable to ensure safety as the damage relates to both directions.
- In any case, the spot should be protected by deflector buoys and the actuator staff should be protected with the installation location of fire fighting vehicles.
- The damage spot should be left enough space for both firefighters and ambulance to perform rescue missions also for the arriving units, and the possibility of transporting the injured must be ensured. Election of installation sites must be taken into account as described above.
- Fire fighters should be supported with high-visibility clothing besides safe working conditions.
- An accident occurred by hazardous material which could cause death. The ambulance cannot approach the spot of damage in the absence of suitable protective equipment, so the firefighters have to rescue the injured, who will get medical care after the rescue [8].
- Fitting must be avoided through the barrier, which separates the opposite directions of the road, because it requires additional on-site insurance during technical rescue.
- Safe motion is important on the track-body, lighting instances of damage at limited visibility, which is feasible with vehicle mounted or using installed light masts during intervention.
- Ensuring venue should be maintained during the entire period of technical rescue, because in many cases AAK or the police are not enough. Scope of venue can vary widely, the load could stray on several hundred meters the search of the person who flew out of the vehicle is also done within tens of meters.
- Cleaning the consequences of an accident is necessary in order to ensure further safe transport (for example: chemical decontamination, debris removal, road washing, road securing).

EXPANSION OF PROFESSIONAL SKILLS

Participants in technical rescues need to follow the rules they acquired and must be continually updated by trainings [9]. Each and every intervention differs which makes the specialty of this activity, because a fire fighter is exposed to various risks.

One of the most important feature of an effective remedial work is the professional knowledge and the practical experience of the rescue leaders and enforcers. Situational exercises should be organized to vivify the acquired the oretical knowledge, possibly by stimulating life-like situations. This experience gain could be usefully applied to future interventions [10].

SUMMARY

In this professional study I presented the versatility of traffic accidents, to draw attention to the specific features of safety interventions, the importance of professional standards expansion and retention.

Leaders have the opportunity to develop their decision-making skills through interventions made for special trainings and practices [11].

The main purpose of training firefighting / rescue leaders is to highlight such events, where extensive professional interest is shown.

In my point of view, the biggest risk factor of the effectiveness of interventions is the lack of skills and experience required from the firefighting / rescue leaders.

It would be an important task to place more emphasis on this particular training in the current education system which would facilitate the work of the intervention managers while liquidating road accidents.

References:

- [1] Kuti Rajmund: A műszaki mentésekhez használható eszközök bemutatása, fejlődésük áttekintése, Védelem Online: Tűz- és Katasztrófavédelmi Szakkönyvtár, 60, pp 1-12. 2007, URL cím: <http://www.vedelem.hu/letoltes/tanulmany/tan60.pdf> (Letöltés: 2015.04.28.)
- [2] Kuti Rajmund: A műszaki mentéshez szükséges erők és eszközök közelítő számítása, CD Kiadvány, ISSN 1785-2595, Complex Kiadó Kft. 2010.
- [3] Kuti Rajmund: Komplex műszaki mentések tervezésének lehetőségei, Védelem Online, <http://www.vedelem.hu/letoltes/tanulmany/tan233.pdf> (Letöltés: 2015.04.28.)
- [4] Központi Statisztikai Hivatal adatai, https://www.ksh.hu/szallitas_kozlekedes (Letöltés: 2015.05.20.)
- [5] Attila Bartovics: Az autópályákról tűzoltói szempontból, figyelemmel a beavatkozás biztonságára, a társszervekkel való együttműködésre, az autópálya RST elkészítésének szükségességére. www.vedelem.hu/letoltes/tanulmany/tan277.pdf (Letöltés:2015.05.20)
- [6] Földi László mk. szds: Az egyéni vegyvédelmi védőeszközök fejlesztésének lehetőségei a Magyar Honvédségben, különös tekintettel alkalmazhatóságukra vegyi katasztrófák elhárítása esetén http://www.zmne.hu/tanszekek/vegyi/docs/fiatkut/FL_0107.htm (Letöltés: 2015.05.21)
- [7] Rajmund Kuti: Műszaki Mentések I.-II- Egyetemi jegyzet, ZMNE Budapest, 2007.
- [8] Rajmund Kuti - Géza Zólyomi: Intézkedési algoritmus veszélyes anyag balesetek felszámolásához, Védelemkatasztrófa- tűz- és polgári védelmi szemle, XV. évf. 4. szám 14-15. o. 2008. ISSN 1218-2958, URL cím: <http://vedelem.hu/letoltes/ujzag/v200804.pdf> (Letöltés:2015.05.20)
- [9] Galina Horváth – Rajmund Kuti: *Об опыте базовой подготовки профессиональных пожарных к проведению аварийно-спасательных работ в Венгерской Республике, УДК 614.8, АКАДЕМИЯ ГПС МЧС России (Москва 2011), Orosz Állami Tűzoltó Akadémia tudományos kiadványa, URL: <http://agps-2006.narod.ru/ttb/2010-5/03-05-10.ttb.pdf> (Letöltés:2015.05.20)*
- [10] Kuti Rajmund: A tűzoltóképzés sajátosságai Ausztriában, Védelem katasztrófa- tűz- és polgári védelmi szemle, XV. évf. 6. szám 30-31. o. 2008. ISSN 1218-2958, URL cím: <http://vedelem.hu/letoltes/ujzag/v200806.pdf> (Letöltés:2015.05.20)

- [11] Nagy Zsolt: A tűzoltás-mentés vezetők döntéshozatali hatékonyságának kérdései, Védelem Online, <http://vedelem.hu/letoltes/tanulmany/tan488.pdf>, (Letöltés: 2015. 04. 28.)