# AARMS

## Academic and Applied Research in Military Science

Volume 4
Issue 1
2005

From the Contents:

Cohesion regions in the Czech Republic and EU funds utilization options
by Martina and Renáta Halásková

The demographical consequences of the "Ethnic Cleansing" in the former Yugoslavia
by Ferenc A. Szabó

The military participation of the Austro-Hungarian Monarchy in the settlement of the Scutari-crisis
by Tibor Balla

The military justice system of the South African National Defence Force with specific reference to the Court of Military Judges
by Anne-Marie Myburgh

Editor-in-Chief: József Solymosi
Associate Editors: László Halász
János Matus

MIKLÓS ZRÍNYI NATIONAL DEFENCE UNIVERSITY

AARMS

Volume 4
Issue 1
2005

# Contents

Sándor Kolossa: Civil–Military Cooperation in combatting international terrorism .....3–7
Sándor Kolossa: "Brave new world…" or terrorism today … ..... 9–16
Martina Halásková, Renáta Halásková: Cohesion regions in the Czech Republic and EU funds utilization options..... 17–29
László Komjáthy, Zoltán Grósz: Road transportation of hazardous materials ..... 31–36
Ferenc A. Szabó: The demographical consequences of the "Ethnic Cleansing" in the territories of former Yugoslavia ..... 37–48
Ákos Simon, Sándor Kiss, Rezső Pellérdi: Destruction of Chemical Weapons in NATO Armed Forces ..... 49–55
Szilárd Lakatos: Changes in the act on the public procurement in Hungary ..... 57–61
J. Róbert Bedros, Sándor Szoboszlay, Balázs Kriszt: Bioterrorism – are we ready to face it? In the shadow of facts and presumptions. Part 2: Blasting microbes ..... 63–81
Rudolf Urban: Integrated management: Environmental and process approach ..... 83–91
Tibor Balla: The military participation of the Austro-Hungarian Monarchy in the settlement of the Scutari-crisis ..... 93–110
Oszkár Cziva: Hungarian experiences in production and transportation of hazardous materials ..... 111–118
Anne-Marie Myburgh: The military justice system of the South African National Defence Force with specific reference to the Court of Mili tary Judges..... 119–124
Imre Porkoláb: Lessons learned from the security challenges in Iraq ..... 125–140
Zoltán Kovács, Árpád Vincze: Primary locational data collection methods for GIS applied for protection against serious industrial accidents related to dangerous substances ..... 141–159
Iztok Podbregar: Lobbying in certain functions of personal management ..... 161–170
László Földi, Imre Madar: Impact of the weapons of mass destruction in asymmetric warfare ..... 171–181
András Szabó: Vision of the future: Network Centric War fare and its application in the Hungarian Defence Forces..... 183–190
Zoltán Szakács, Péter Köves: Screening for the obstructive sleep apnea syndrome among guards in alternating work shifts..... 191–199

ISSN 1588-8789

AARMS
Vol. 4, No. 1 (2005) 31–36



# Road transportation of hazardous materials

LÁSZLÓ KOMJÁTHY[a], ZOLTÁN GRÓSZ[b]

[a] *Miklós Zrínyi National Defence University, Budapest, Hungary*
[b] *Ministry of Interior Hungarian Disaster, Management Training Center, Budapest, Hungary*

*Road transportation of dangerous goods nowadays in Hungary is the second largest risk source after the demolition of floods. More than half of firemen's relief activities are emanated from engineering rescue at road accidents. The number of road accidents with dangerous goods was dramatically increased in the past few years and it is still growing. The engineering rescue emanating from these accidents causes more and more difficult task for the firemen brigades. We have been summarized in this article the basic principles and tasks of disaster relief and engineering rescue for firemen brigades. We have been proposed a possible solution for supervising and controlling of the road transportation activities with hazardous materials.*

## Introduction

Accidents during the transportation of hazardous materials (hereinafter HM) may pose a serious threat for the population, environment and people who take part in rescue actions.

We can often see pictures in the media of an overturned tanktruck, a lorry carrying hazardous waste material scattering its load in a densely populated area or a crashed lorry with acid tanks. We are relieved to learn that nobody was injured but the damage both to property and the environment is significant. The transportation of HM is the activity that causes disasters more and more often. So safe transportation of these materials is a crutial point in road transport in general since it is unavoidable during the life cycle of these products.

How big is the threat it poses on the roads?

According to the road accident figures in Hungary the numbers of the accidents envolving HM that required technical assistance has been growing in the last few years (see Figure 1).

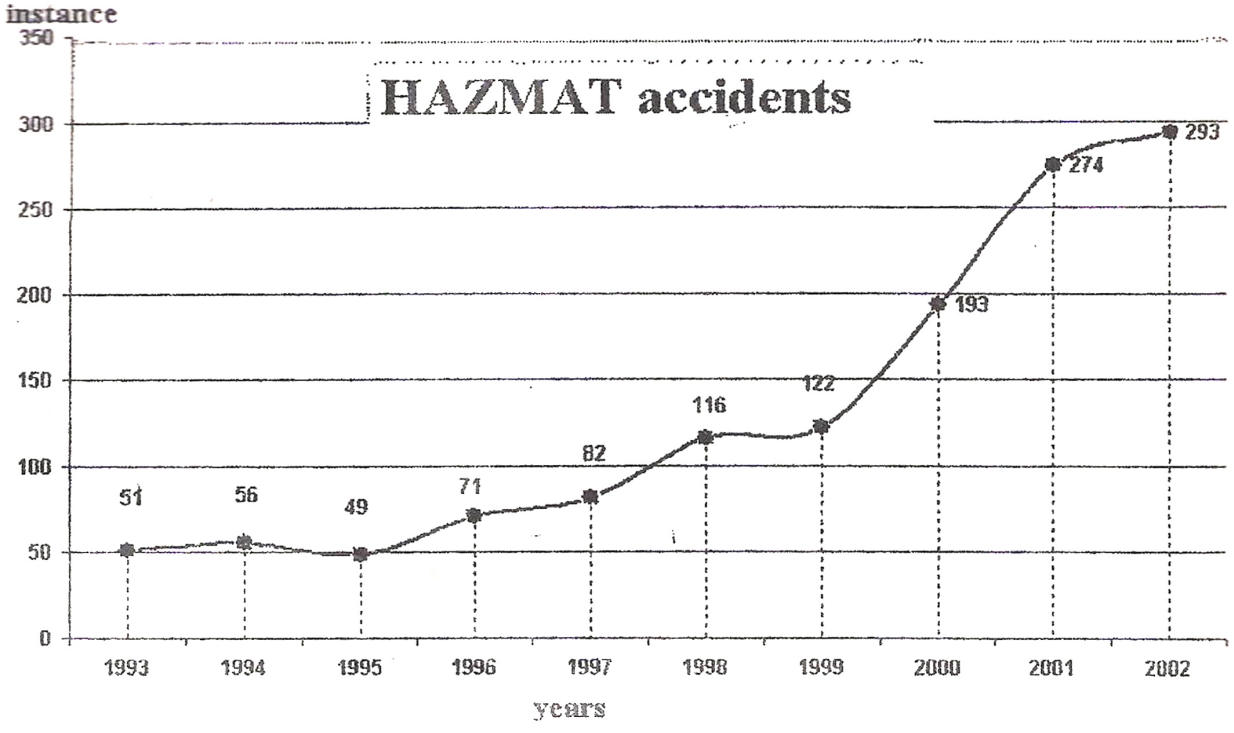



Figure 1. HAZMAT accidents

Roads exposed to the highest risk are motorways M0, M1, M3, M5 and main roads 3, 5, 6, 8 (see Figure 2).




Figure 2. Main roads in Hungary exposed to the highest risk

Some of the most frequent hazardous substances are:

- PB gas
- Acetylene
- Chlorine
- Formic acid
- Fuel (gas, petrol)
- Nitric acid

While transporting these substances three types of accidents might occur:

(I) A common road accident in which the transport vehicle is damaged

(II) A chemical accident when the HM is spilt off the vehicle and causes damage in the environment but without the vehicle is getting damaged.

(III) The combination of the two. Due to a road accident HM is released from the vehicle. It has a damaging effect on human life and health, the natural and the built up environment.

Naturally all three types of accidents must be prevented or the risks of these accidents must be reduced to a minimum.

What are the causes of these accidents?

- condition of roads
- the lack of infrastructure
- the violation of the Highway Code
- ignorance of road signs, etc.

## Tasks of personnel in the rescue and cleaning up operation

1. Road accidents are usually reported within a short time because they are spectacular so easily observed. In most cases the accidents are reported to the national emergency services by phone. However in Hungary the problem is the way telephone companies devide the country into areas is different from divisions that emergency services use.

It might cause significant delays in the relevant emergency unit receiving the alert.

2. Going to the scene emergency services begin to collect information. So the officer-in-charge of the rescue relief team has information about the state of the scene, the optimal route, the weather conditions and the circumstances of the accident.

3. Having arrived at the scene the most important task is to assess the situation. The crew must find out if there are casualties, whether people are threatened by HM, weather the HM was escaped and if so, what is the extent of the pollution, how fast is its

spreading and which way can its spread prevented. This information determines the orders of the officer-in-charge at the scene.

4. According to the assessment the officer determines the equipment and personel required to carry out the rescue operation and he also determines the strategy including health and safety rules of the crew, the organisation of shifts and the supervision.

5. The order of the tasks is also determined by the officer-in-charge, such as the rescue of casualties or people exposed to immediate danger, extinguishing the fire, saving material assets, the prevention of the HM from seeping into the water supply system or the sewage system, prevention of HM spreading, collection of spilt HM by using absorbent materials, neutralization, removal of wreckage and restoring the infrastructure.

6. A frequent way of HM removing is using absorbent material. Removing a liquid can be difficult so it must be transformed into a solid material. This procedure is mainly used on hard surfaces. When the HM has spilt over the soil it must be removed urgently to prevent it from seeping into it. In this case the upper layer of the ground must also be removed. Generally we use pearlite or if not available sometimes sand. In this procedure the absorbent material also becomes hazardous so it must be handled as such.

7. In the accidents of transportation of HM the most frequent rescue procedure is the transfer of the hazardous material by pumping. It is a dangerous activity itself so special equipment must be used. In most cases we need special hosepipes, appliances, pumps, safety devices.

8. If necessary, measures to protect civilians must be implemented. For example: sounding the alarm system, ensuring individual and collective protection, evacuation.

9. Having restored traffic after a large scale accident involving HM, the after-effect remain visible for a long time. For example the surface of the road is discoloured; the plants along the road are dead. These signs indicate that not all of the hazardous materials have been removed or their removal has not even been attempted.

Unfortunately in Hungary it happens rather frequently. The main problem is that the rescue team does not know the original state of the road environment. They do not have details on that particular area environmental protection because the place of a future accident can not be foreseen. These authorities which should cover the costs of the clean up and restoration announce that there is no damage to the environment. After years it appears that the pollution left behind has caused an ecological disaster. Damage liquidating team might have also contributed to these negative consiquences.

## Options of controlling the transport of hazardous materials

A vehicle transporting HM from abroad ('transit' vehicle) is provided with a route permit at the Hungarian border at a request that must be made in advance.

A vehicle with HM cargo in inland traffic is provided with a route plan and permission before starting.

They are also equipped with a GPS and a schedule.

The computers in the monitoring center of the relevant athority continuously display and follow the positions of vehicles in a digital map.Their planned routes are permanently compared to their actual positions. The deviance is registered and when its limit is exceeded the center is alerted.

This way we can avoid losing the cargo from sight which can happen due to breaking down, getting lost or unauthorised modification of the itenerary.

## Summary

These days catastrophes are not only caused by the forces of nature but also by human activities i.e. the expansion of industry and the transportation of hazardous materials, which threaten human health and life, material assets, built up areas and the quality of the natural environment.

In the given situation, in order to reduce damage caused by fire or human activites all social stratums must join forces.

Amongst the most significant causes of disasters are accidents with hazardous materials, which should by no means be underestimated.

Serious consequences can also occur as a result of the transportation of such hazardous materials.

Concerning these materials serious measures must be taken:

- Recognition of the hazardous materials
- Learning the tasks of chemical safety
- Recognition and knowledge of the rules regarding the transportation of hazardous materials .
- Protective measures regarding hazardous materials
- Recognition and knowledge of correct procedure regarding hazardous materials
- The putting into practice of the above mentioned
- A knowledge of the necessary technical equipment and system and what is indispensable, developing technology

## References

*Acts* XXXI/1996; LXXIV/1999; XXV/2000
*Decrees of Goverment* 2/2001 (I.17); 1/2002 (I.11.); 2/2002 (I. 11.)
*Decrees of Ministry* 1/1975 (II.5.)KPM-BM; 122/1989(XII.5.) MT; 18/1995 (VI.6.)IKM;41/200(XII.27) EüM; 8/2002(I.30.)KöViM; 1/2003(I.9.) BM