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ASSESSMENT OF THE AUTHORITY EXPERIENCES RELATED TO THE SUPERVISION OF DANGEROUS GOODS TRANSPORTATION

Absztrakt

The development of the Hungarian system of industrial safety has more than 15-year's history. The aim of this article to overview the measures related to the development of the legislative area for industrial safety in the field of dangerous goods transportation and draw the potential experiences from this progress.

Az iparbiztonsági szabályozásnak a katasztrófavédelem rendszerében történő fejlődése több mint 15 évre tekint vissza Magyarországon. Jelen cikk célja áttekintést adni az iparbiztonsági jogterület veszélyes szállítmányok felügyeletével kapcsolatos fejlődési intézkedéseiről és levonni a fejlődésben rejlő hatósági és szakmai tapasztalatokat.

Keywords: *industrial safety; transport accidents; transportation of dangerous goods; disaster management ~ iparbiztonság, szállítási balesetek, veszélyes áru szállítás, katasztrófavédelem*

INTRODUCTION

Hungary's geographical location is very favourable and has an important role in the transportation to and from the eastern and southern countries. As a result of this, transit shipments are also significant in addition to the domestic transportation, therefore transport infrastructure has a very important role in our country.

Transportation of dangerous goods is happening mostly on road but is getting more and more popular on railways, inland waterways and by air as well. International rules and regulations by the European Union of the different transportation methods have been integrated into the Hungarian legislation. EU regulations based on the international convention about the transportation of dangerous goods has been implemented to the Hungarian law system around the millennium. [1] Disaster management authority has gained significant enforcement experiences on inspecting the transportation of dangerous goods.

The authors have made a brief historical review and technical analysis on the supervision of the transportation of dangerous shipments in their previous articles, especially on the changes in law and the strengthening of the legal institution. In this article the experiences of the implementing measures on the supervision of dangerous goods will be analysed.

ANALYSIS OF THE LAW ENFORCEMENT EXPERIENCES ON SUPERVISION OF DANGEROUS SHIPMENTS 2001-2011

Disaster management is involved in the designation process of the routes of transportation and the inspection of vehicles on these routes since 18th June, 2001. The number of route designations is between 600-800 decisions per year which decisions arrived to the bodies in standby of disaster management. The number of announcements have increased along with the intensity of control. Although good standing was not unified among the entities. The system was hardly working due to the lack of central database and electronic (via internet) announcements.

Regional bodies of the National Directorate General for Disaster Management, Ministry of Interior (NDGDM, MoI), the National Transport Authority, the law enforcement and the customs administration have done the inspections together and also separately between 2001 and 2011. The bodies in concern do the inspections on transportation of dangerous goods based on the so-called Guide for Complex Control and Fine since 2010. [2]

The number of controls on transportation of dangerous goods on road doubled between 2002 and 2005. Income from the fines also increased significantly between 2007 and 2009 along with the number of inspections. The average number of inspections was 1000 per year. The performance of the regional bodies entitled for inspections has been checked both by quantity and quality (efficiency).

The performance depended on the commitment of the regional body's management, on the personal and technical conditions and also on the endangerment of the territory due to the dangerous shipments. All regional bodies completed the minimal number of inspections that had been determined in advance. The below diagram shows the quantity of inspections of dangerous shipments on road between 2002 and 2011.

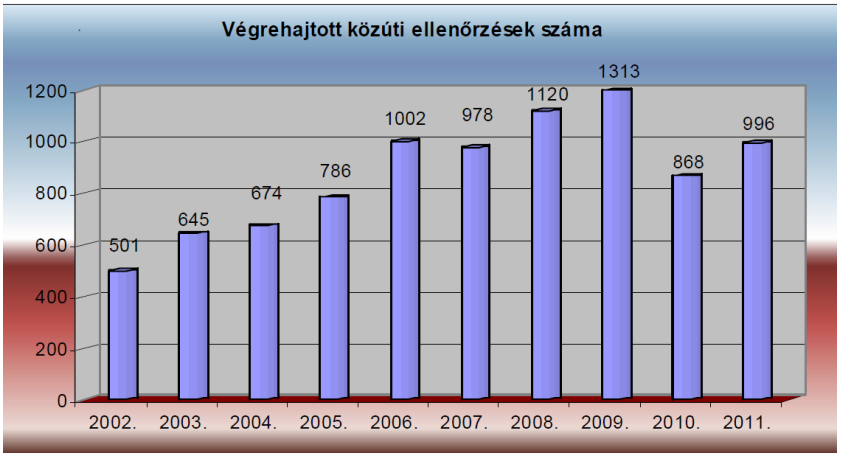

Figure 1. Quantity of inspections of dangerous shipments on road between 2002 and 2011, source: NDGDM 2012

The number of inspected vehicles has continuously increased. The average quantity of inspections was around 2000 vehicle/year. The years of 2008 and 2009 were outstanding. Inspection of unmarked vehicles served the goal of the detection of irregularities which was around 10,000 a year.

Efficiency of the inspections has been influenced by the place and time of the inspections along with the volume of traffic. It happened with many regional bodies that during the inspections there were no or only a few vehicles carrying dangerous goods because there are not many places suitable for conducting the inspections and delivery companies try to avoid them as soon as they get information about the inspections. These cases can only be solved by increasing the number of inspections and changing the places frequently. The differences between the effectiveness of different directorates are also significant, there are big discrepancies between the numbers of detected irregularities. [3]

Quantity of inspected ADR vehicles can be seen at the below diagram.

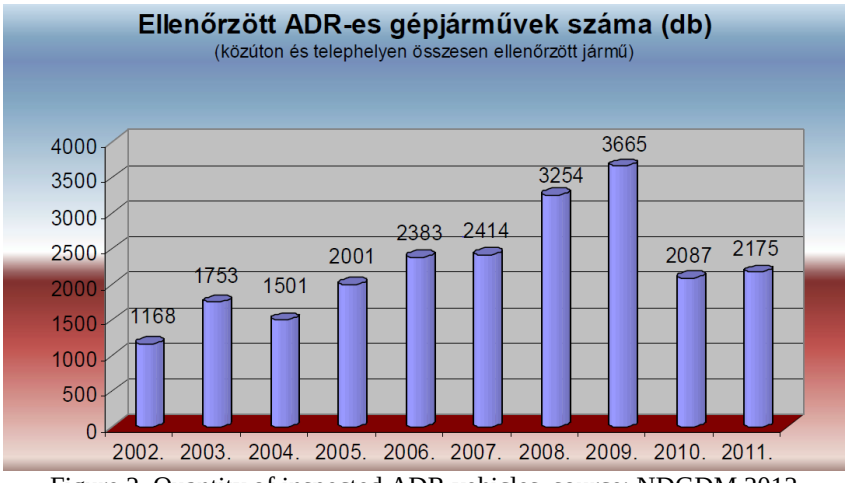

Figure 2. Quantity of inspected ADR vehicles, source: NDGDM 2012

Average number of inspections during the analysed period was 2000 ADR vehicle/year. Outstanding performance in the usage of fine revenue was in 2008-2009.

Based on the experiences the highest number of irregularities were detected among the smaller domestic transport companies and among the foreign companies coming from the European Economic Area's member states. There were several irregularities according to the

ADR 1.1.3.6 paragraph among the suppliers delivering goods under specified limits that make an exemption.

There were significant differences between directorates regarding the detection of irregularities and efficiency of inspections. By reviewing the statistics of the directorates, findings show a big discrepancy (1.5–27%). [3]

Quantity of detected irregularities during inspections can be described by the changes of relative number of failures. This yearly indicator has continuously decreased in the analysed period. The reason behind it is mainly the improvement of good conduct due to the supervision and inspections.

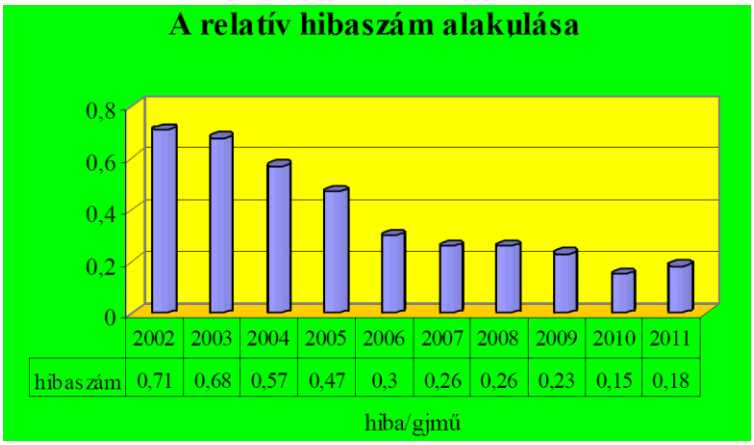

Figure 3. Changes of relative number of failures, source: NDGDM 2012

The most common irregularities are related to the inappropriate management of waybills, the fire extinguishers and the securement of cargo. Lack of written instructions, inappropriate labelling of vehicles and packages were outstanding but lack of protective equipment, warning devices or their validity has been expired or their disfunction were also significant. Unfortunately it is still common that multiple irregularities can be detected with the same vehicle.

Cooperative bodies in the inspections were the police, the transport authority, the tax and customs and the fire service.

Inspections affecting several counties at the same time - including alternative routes - were conducted in a higher quantity each year. Regional bodies of the National Transport Authority, the law enforcement, motorway police, customs administration and governmental fire service also participated in the controls.

During the inspections of transportation on road the partner organizations checked the compliance with the rules that fall under their own tasks and responsibilities while the directorates of disaster management controlled the transportation according to the ADR. The experiences of the complex inspections show that these kind of cross-regional controls are useful and justified even without involving the partner organizations.

Site inspections have been conducted 60-600 times where the directorates also checked the vehicles. Site inspections were mainly conducted only by the directorates of disaster managements, although some of the partner organizations also attended.

Organisations whose industrial sites were inspected strive to be law-abiding and at the same time, cost-effective as much as possible. In many cases, dangerous goods safety advisor contracts were signed before the inspections. Public safety plans were also under scrutiny during inspections. It was general experience that the majority of irregularities could be avoided with site inspections, so they were to be made more frequent. Another reason for site

inspections is that some establishments try to store their dangerous materials at industrial facilities with unsettled issues or at smaller sites probably in an effort to avoid being in the scope of regulations on dangerous establishments.

The greatest series of inspections within the examined period was the so-called "Green Commando" series between 2005 and 2006. The country-wide series of inspections were organised by the Ministries of Interior and of Environment and Water, with the involvement of other affected ministries, and coordinated by NDGDM. The aim of the inspections, which were held in all counties, was to prevent environmentally harmful events and accidents involving dangerous materials.

After 2010, illegal refilling and selling of LPG cylinders were added to the range of inspections. These special tasks were carried out by the authorities as part of exceptional ADR inspections in cooperation with domestic distributors.

At checks of road transport of dangerous goods, professionals conducted awareness raising as a legal instrument for authorities. Fines were set in about 200 instances annually in the case of major or multiple infringements. Altogether, the fines amounted to HUF 100-300 million each year. A third of the cases were taken to the second instance, while on average, 5% of them were discussed at administrative judicial proceedings.

Until 2011, directorates carried out 10-30 inspections a year on road accidents where vehicles transporting dangerous goods were involved. Based on the inspection findings, it can be concluded that in most cases violation of traffic rules or inattention led to the road accidents. Furthermore, it was found that occasionally poor handling of goods (e.g. cargo is not secured properly, etc.) can also be blamed. However, as regards rail incidents, they were caused by leakages almost without exception and some of them even escalated to major incidents.

Before 2011, NDGDM MoI did not conduct inspections of dangerous goods transport by inland waterway, rail and air. Nevertheless, they were involved in professional tasks, which are described below.

NDGDM MoI paid special attention to the safety of establishments that fall out of the scope of the legislation. Enforcing RID provisions is the responsibility of the National Transport Authority. Earlier, the Railway Chemical Response Unit of the Hungarian State Railways used to be in charge of this task. Between 2010 and 2011, NDGDM MoI carried out a Pilot Project to ensure that marshalling yards comply with the requirements to create Emergency Response Plans.

Between 2006 and 2007 NDGDM MoI took part in the project called "Monitoring Dangerous Goods Transport on the Danube", where experts on dangerous goods transport determined the disaster management services to be applied in the system of River Information Services (RIS) on the Danube.

REVIEW OF LEGAL EXPERIENCES RELATED TO THE SUPERVISION OF DANGEROUS SHIPMENTS 2012-2015

The government recognised the society's need for public safety and, as a result, created the legislative background that allowed the disaster management authority to conduct inspections on rail and water transport of dangerous goods – in addition to road transport – starting from 1 January 2012.

The newly emerging tasks and powers in 2012 related to the new transport sub-branches required extending the earlier structure of industrial safety and also developing the system of industrial safety organisations and procedures. [4]

The Director-General issued a new instruction at the end of 2011 that contains authority procedures in the field of dangerous goods transport and many others, thus regulating the unitary application of the methodology and the procedures. Most of the regional directorates have been applying them successfully ever since.

Centralising the fire departments and creating the disaster management branches directly managing them made it possible to increase the number of disaster management staff to be engaged in checks of transport of dangerous goods – primarily road transport.

A three-day series of inspections of road, rail and inland waterway transport, the so-called "DISASTER" is carried out from time to time, coordinated by NDGDM MoI but involving three other partner authorities (National Tax and Customs Administration, Hungarian Police Headquarters and National Transport Authority). [5]

As regards road transport, typically the most problems spotted were with the documents, goods handling and labelling as well as the equipment. In the case of rail transport, the most problems were found with the notifications, but incorrect labelling and leakages were also common. Similarly, water transport inspections revealed irregularities mainly with the documents and the equipment.

For the sake of more successful inspections of inland waterway transport, the Mohács Branch of the Baranya County Disaster Management Directorate established a vessel inspection team in 2012, whose members continuously check vessels transporting dangerous goods. Their centre is located in the premises of the Water Border Crossing Point in Mohács.

In the field of dangerous goods transport, there is still a significant disparity between the directorates in the identification of shortcomings and in the effectiveness of the inspections.

Personnel conditions for inspections are constantly changing as a result of workforce fluctuations at the regional organs, so courses and trainings have to be organised.

Legislation changes in the authority powers coming into effect on 4 June 2013 put local organs in charge of inspections, which previously had been done exclusively by regional organs. From 2013, review procedures at the second instance are performed by regional organs instead of the central organ, NDGDM MoI. Based on the legislation coming into effect at the end of 2014, local organs of disaster management became authorities of the first instance in the field of dangerous goods transport by road, as well. It is also possible for disaster management organs to conduct checks on one another's jurisdiction.

When studying the period between 2002 and 2014, it becomes clear that both the number of dangerous good transport inspections on the road and the number of inspected vehicles are gradually growing. The extent of the growth has been considerable since the introduction of the second disaster management act, which is shown in the figures below.

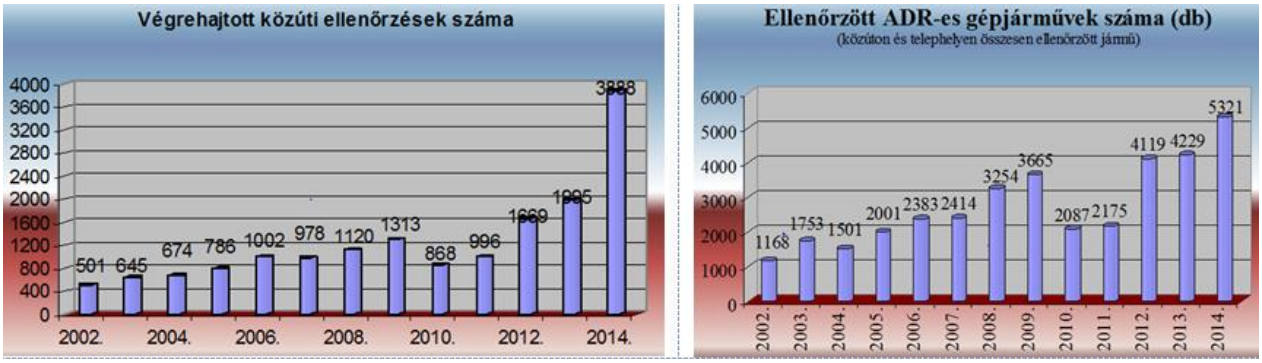

Figure 5. Number of ADR inspections and inspected vehicles [5]

After 2012, inspections that were not performed independently still involved experts from the following partner authorities: police (51%), transport authority (26%) and the National Tax and Customs Administration (16%). In 2014, experts from the National Food Chain Safety Office took part in most joint site inspections. [5]

The following table shows quantitative changes in the inspections of dangerous goods transport by road compared to 2002, 2006, 2009 and 2011, which can be considered base years.

Table 1. Figures of road inspections, source: NDGDM MoI, 2015 [5]

Inspections of Dangerous Goods Transport	**2002**	**2006**	**2009**	**2011**	**2012**	**2013**	**2014**
ADR road transport inspections							
Number of inspections	501	1002	1313	996	1669	1625	3888
Number of inspected vehicles	n/a	n/a	10970	13964	35000	35428	31780
Number of ADR vehicles	1168	2383	3665	2175	4242	4229	5321
Number of defective vehicles	581	362	370	165	317	405	384
Relative number of errors	0.71	0.3	0.23	0.18	0.15	0.13	0.11
Number of site inspections	65	166	322	588	612	654	1114
Number of penalty decisions	not authorised	not authorised	353	233	237	499	645
Number of second-instance decisions	not authorised	not authorised	137	70	100	144	163
Total amount of penalties (million HUF)	not authorised	not authorised	212.45	98	148.55	188.650	215.240
Number of court proceedings	not authorised	not authorised	17	6	13	23	44
Number of inspected accidents	n/a	8	13	27	36	17	32
The inspecting authority (in the first instance)	Regional body	Regional body	Regional body	Regional body	Regional body	Regional body	Local body

Based on the table, it can be stated that the figures related to authority inspections steadily increased. The year of 2011 represents the average performance of inspections under the effect of the first disaster management act. After the second disaster management act came into force, a substantial growth can be seen in the figures, which is most probably due to the authority activity's drop in the public administration level. Local organs replaced regional ones as authorities of the first instance in the integrated organisation. Another reason is the country-wide series of inspections called "Disaster", which embraces all means of transportation.

Relatively less data is available about the quality of the inspections (effectiveness). Occasionally, there are substantial differences between the numbers of irregularities found by the regional and the local organs, which can be explained with differences in staff preparedness. For more effective checks, driving up the quality of the trainings is necessary.

The following table depicts the effectiveness of the inspections in the past three years in the field of dangerous goods transport by rail.

Table 2. Figures of rail inspections, source: NDGDM MoI, 2015

Inspections of Dangerous Goods Transport	2012	2013	2014
RID rail transport inspections			
Number of inspections	705	987	1291
Number of inspected vehicles	15600	20670	23468
Number of RID vehicles	6760	7935	13375
Number of defective vehicles	181	448	341
Number of site inspections	61	110	228
Number of authority decisions	126	135	139
Number of second-instance decisions	36	17	20
Total amount of penalties (million HUF)	13.35	31.23	30.01
Number of court proceedings	2	4	0
Number of accidents	32	16	13

Among the irregularities that were spotted, incorrect documentation ranks first, followed by the lack of labelling and improper use. Some other breaches were typical to the means of transport and a small number of them fell into a “miscellaneous” category. [5]

The table below shows the effectiveness of the inspections in the last three years in the field of dangerous goods transport by inland waterway.

Table 3. Figures of inland waterway inspections, source: NDGDM MoI [5]

Inspections of Dangerous Goods Transport	2012	2013	2014
ADN inland waterway transport inspections			
Number of inspections	315	498	725
Number of inspected vehicles	1200	2388	2488
Number of ADN vehicles	365	435	985
Number of defective vehicles	56	27	26
Number of site inspections	5	14	28
Number of authority decisions	51	37	32
Number of second-instance decisions	6	9	2
Total amount of penalties (million HUF)	17.15	12.81	6.42
Number of court proceedings	0	0	0
Number of accidents	1	1	0

Similarly, the volume of inspections grew in the field of dangerous goods transport by inland waterway.

It is true for both means of transport that disaster management authority is steadily strengthening its activities, which is reflected in better coordination and effectiveness of supervision.

The figure below displays figures related to the incidents between 2012 and 2015 and their inspections.

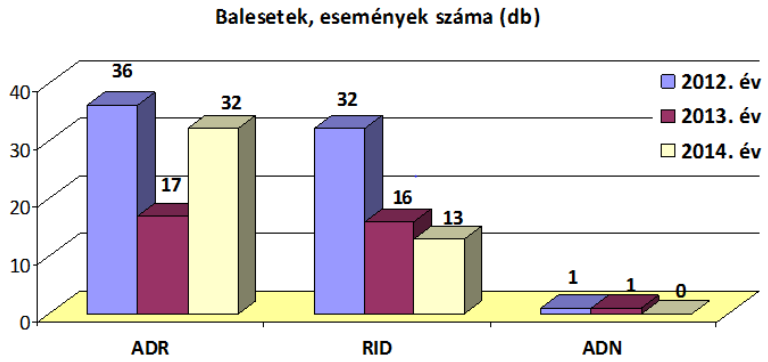

Figure 6. Number of inspected accidents and incidents, source: NDGDM MoI, 2015 [5]

As regards the number of incidents where vehicles transporting dangerous goods were involved, the figures between 2012 and 2015 show a tendency to decrease in all the three means of transport. However, road transport shows some slight variation. [5]

Authority Data Collection System (HADAR) launched on 1 January 2013 took over the tasks of Dangerous Goods Transport Information System (VÁSZIR). HADAR basically relies on the registry elements developed in VÁSZIR. The software Statinfo is still available for the inspectors on the scene.

The modification to the disaster management act that came into force in February 2014 allowed the government to issue decrees on the storage of dangerous materials and goods on site. The draft decree has been drawn up, but its referral to the government has been delayed for an indefinite time after a public administration consultation. The decree will include regulations on how to register, package and label dangerous goods. In addition, it also covers availability of back-up equipment, storage of different types of dangerous goods together as well as the rules of authority inspections.

Since 2012, disaster management has been authorised by law to check dangerous goods transport by air, but it is only since Hungary adopted ICAO Technical Instructions on 1 January 2015 (containing detailed rules on dangerous goods transport by air) that breaches can be sanctioned. Based on this new legislation, primarily six directorates are involved in the inspections (Capital Disaster Management Directorate, County Directorates in Pest, Hajdú, Zala, Baranya and Győr-Moson-Sopron counties). The other directorates may be involved in the so-called "aerial truck" inspections, back-up airports, unauthorised transports, etc. [5]

Manuals on the inspection of dangerous goods transport are prepared by working groups whose members are experts and inspectorate generals from regional bodies. The manual for road transport is already available for inspectors, while the ones for rail and inland waterway will be ready by the end of the year.

CONCLUSIONS AND RECOMMENDATIONS

The presence of disaster management authority in the inspection of dangerous goods transport still poses a highly important task, which greatly facilitates safe transport, and thereby, public safety. Inspection findings and public feedback justify the need for disaster management to continue to act as an independent authority in the checks of dangerous goods transport.

It is apparent that inspections on the road and fining carried out by the disaster management authority underwent smooth progress between 2001 and 2012 and became a renowned field. In 2010, supervisory activities on dangerous establishments and transport, whose high quality was also recognised by the EU, became the foundations of the new set of tasks and instruments of industrial safety.

Due to the legislative preparatory works and institutional development between 2010 and 2012, a more dynamic and strengthened industrial safety authority has been functioning within disaster management since 1 January 2012. Since then, supervision of dangerous consignments has belonged to the field of industrial safety with extended powers and its activities cover all means of transport since the beginning of 2015.

The inspection and fining system in all means of transport relies on the experiences gained in the legislative preparatory works and institutional development related to road transport between 2001 and 2012.

Apparently, the implementation institutions function effectively and the personnel and technical conditions are mostly available. The Institution of Disaster Management (of the National University of Public Service) and the Disaster Management Training Centre are key players in the training of professionals. A balanced relationship exists with the partner authorities, interest associations and safety advisory associations. In 2012 the Industrial Safety Advisory Board was established (at NDGDM MoI), which together with the relevant department at the Institution of Disaster Management (at NUPS) perform and support professional and scientific work.

Currently in Hungary, local organs of disaster management perform inspections of dangerous goods transport in the whole jurisdiction of the regional organ. Checks may be expected in road traffic (road transport), on the railways, at freight stations, at border inspection posts, at railway facilities (rail transport), on national and international waterways, at ports, at berths (waterway transport) and at other related premises. When transported by air, dangerous goods listed in the legislation can be checked whether they are promptly prepared for the flight. Moreover, local and regional bodies of disaster management are also entitled to act as an independent authority when checking dangerous goods that arrived by air but nor forwarded directly by air.

Based on the assessment of road accidents, it can be concluded that the major cause of accidents are basically traffic violations or inattention, but occasionally infringements in goods handling also occur. Rail incidents reveal that their primary cause is leaking in loading and unloading fittings as well as the unsatisfactory technical conditions of tank wagons and the lack of their proper maintenance.

The volume of disaster management inspections significantly increased in the examined period of 15 years, with the quantitative indicators notably rising once the unitary organisation for disaster management was established in 2012. We have to continue to pay special attention to creating the professional conditions for the authorities to achieve unitary application of law and more effective inspections.

Concerning the prevention of transport accidents, the response to them and the recovery of damages, the following professional recommendations can be made to further develop disaster management activities.

Differentiated road tolls, a special fare for ADR consignments (posing a significant risk to public safety) – as a collateral to cover the costs of preventing, responding to and recovering from transport accidents.

Keeping track of dangerous consignments posing a significant risk to public safety based on notification requirements. A compulsory liability insurance system is worth developing. Inspection of ADR consignments has to cover foreign consignments and irregular transportation activities to a greater extent.

ADR inspections can be made more effective by centralising authority activities under the auspices of disaster management, although it requires high-level trainings and technical equipment along with an increased number of staff.

To improve technical conditions of storage, it is suggested that goods are stored in warehouses built and equipped specifically for this purpose instead of buildings and areas unfit for this use and under irregular circumstances.

The current method for the designation of dangerous goods routes cannot be considered a modern procedure any more. Instead, in EU countries the Highway Codes are a popular way to control traffic. It is important to note the need for risk assessments of public roads, freight stations and dangerous goods ports, similarly to the practice in western countries.

The use of a tracking device to monitor the movement of dangerous goods has not gained enough ground yet in the field of authority inspections, this technology is mainly applied to ensure the security of the cargo.

Creating an online interface where dangerous goods transport can be notified is also recommended. Air consignments would be the first to undergo this change, followed by the other means of transport.

The overall conclusion is that, in accordance with the requirements of the EU, international organisations and the Hungarian government, the supervision of dangerous shipments in Hungary ensures the protection of human life and health, the environment and material property, thus contributing to public safety in Hungary as set out in the Basic Law.

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