

## HUNGARIAN SYSTEM FOR SUPERVISION OF DANGEROUS SHIPMENTS

Lajos KÁTAI-URBÁN - Zoltán LÉVAI - Katalin SIBALINNÉ FEKETE - Gyula VASS

### ABSTRACT

*The development of the Hungarian system for industrial safety has a history of 15 years. The legal regulation on industrial safety getting into force on 1-st of January 2012. Beyond the supervision of hazardous activities and critical infrastructure elements, there is also appeared disaster management tasks of the authorities linked with the shipments of dangerous goods. Based on general overview of the vulnerability of Hungary by dangerous goods transport activities, this article introduce the development process of the regulation on the supervision of dangerous goods shipments in Hungary, and draw the potential experiences of this progress.*

### KEY WORDS

*Industrial safety, transport accidents; transportation of dangerous goods; disaster management*

### INTRODUCTION

The development of the Hungarian system for industrial safety has a history of 15 years. The legal regulation on industrial safety getting into force on 1-st of January 2012. In our days it is especially important and a complex task at the same time to protect the public on high level. Industrial safety embraces four special fields in Hungary: the supervision of dangerous establishments, the control of the transportation of dangerous goods, the protection of critical infrastructure and the prevention of nuclear accidents.

There are new tasks and competences of industrial safety specified in the disaster management act. One of the major result of this work is the extension of the controlling and fining authorisations of the disaster management authority with regard to the transportation of dangerous goods by rail, air and inland waterways. These new tasks and competences and their efficient and successful implementation requires the extension of the previously operated structure of industrial safety and the establishment of an organisation for industrial safety and code of procedure.

Beyond the supervision of hazardous activities and critical infrastructure elements, there are also appeared disaster management tasks of the authorities linked with the shipments of dangerous goods. Based on general overview of the vulnerability of Hungary by dangerous goods transport activities, this paper introduces the development process of the regulation on the supervision of dangerous goods shipments in Hungary, and draw the potential experiences of this progress. [1]

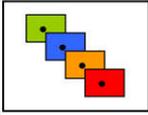
### 1. ASSESSMENT OF THE RISKS OF DANGEROUS SHIPMENTS IN HUNGARY

In terms of industrial safety, we shall evaluate manmade disasters, major accidents and other events endangering human health and life, the environment and critical assets affecting, from the point of view of the disaster management act, „critical system components” covered by the regulations about critical systems and installations or related to “dangerous activities”, or the “transportation of dangerous goods”.

The transportation of dangerous goods (as mobile hazard sources) is differentiated in almost all technical literature in Hungary by transportation on public road, by railway, inland waterways and air transport.

#### Transportation of dangerous goods

In Hungary the transport of dangerous goods mainly happens on main road and on rail. The track of transport in most cases leads through built-up area in which case the population is exposed to increased danger because of the quality of the transported dangerous substances. The main tracks are not only used for inland transport, but because of our geographical location also for the European transit traffic. In Hungary approximately 20% of railroad transport is dangerous



goods transport. Its big advantage compared to main roads transport is a more economical transport of high quantity for a long distance.

In Hungary in 2011 it meant 33 700 million tons of km main road transport and 8 800 million tons of km railway transport. Because 20% of Hungarian railway transport's capacity is dangerous goods transport, catastrophic situations cause a real problem and their solving requires careful preparation. In our country water transport is the less significant part of transport. The use of harbor infrastructure is low, their services are way below the European standard. For the safer and economical travel on the Danube its water path needs significant improvement. On the Hungarian part of the Danube's water path seven harbors are dangerous in putting goods. Hungary has approximately 1500-1600 km water path, which can be travelled by boat. On our main rivers there is also passenger- and goods transporting – the last takes up 5% of the national goods transporting [1].

In the air transportation, two civil airports may receive and send dangerous goods. The airports have permission for service of terrestrial goods and for handling of dangerous goods. In Hungary, volume of air transport is not outstanding within Europe: on our biggest airport there happened about 100 000 landing–take-off (LTO) events. Otherwise, the volume of this decreased permanently in the latest few years: from 2005 it relapsed by about 15%. Nevertheless it is stated as to be remarkable, so we have to get ready for a catastrophe originating from an airplane crash [1].

According to the figure below it can be stated in 2011, that the share of main road goods transport (67%) is still 3 times more than the share of railway transport (18%) [1].

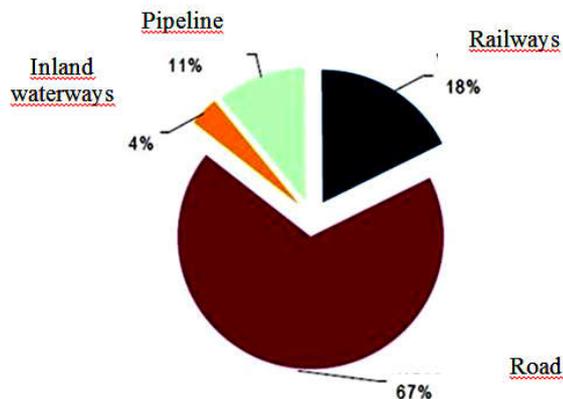


Figure 1. Share of goods transport capacity in Hungary (2011) Source: [www.ksh.hu](http://www.ksh.hu)

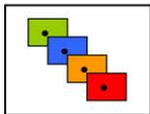
There is a difference of opinion among experts as to whether the rail or road transport of dangerous goods represents a higher degree of danger for those living in the area concerned. In terms of transport mode's preferences there are no special transportation authority measures or provisions in the territory of the EU member states. In general it can be stated that it is mainly economical and logistic considerations that play a role in the selection of individual transportation modes. However it is sure that in case of the transportation of significant volumes over a long distance (more than 200 km) rail transportation services and facilities are preferred.

#### Installations used for the transportation of dangerous goods

Installations used for the transportation of dangerous goods can be divided into five groups in line with the transportation methods, as follows: Installations used for the road transportation of dangerous goods; Installations used for railway transportation; Installations used for the transportation over inland waterways; installations used for the preparation of air transport; Installations used for transportation by pipeline.

As installations used for the road transportation of dangerous goods warehouses used for the storage of dangerous goods in ADR packaging are recorded. Almost all warehouse facilities that are of great significance in terms of logistics are located in the agglomeration of Budapest. This is otherwise also logical, as most of the consumption and business life is concentrated in Budapest and in its direct surroundings. From this region the products desired can be transported to any point of the country within 2-3 hours.

Installations used for railway transportation are first of all marshaling yards that do not belong to the group of establishments involving dangerous substances. These installations shall prepare an internal emergency management plan



in line with “Regulation concerning the International Carriage of Dangerous Goods by Rail, RID” 1.10 and this plan regulates basically the consequence mitigation and prevention rules of the Seveso Directive applied to safety reports. On the basis of the data of Hungarian Railways identified a total of 14 yards in the area of Hungary, the most significant ones are the yards in Budapest (Ferencváros), Miskolc, Szolnok and Záhony [2].

Another major type of the installations of rail transport are the switching yards and sidings of establishments producing, processing and storing dangerous substances. Switching yards located in the area of establishments involving dangerous substances or in the area of below tier establishments or sidings closely related to the sites pose major hazards. Sidings connected to sites can cause individual and significant dangers, as there is a high number of wagons there without any physical protection, without the supervision of the operator and of the authority. Railway-public road transshipment facilities can be establishment dealing with dangerous substances or establishments not classified. The most significant operating establishment is in Budapest (Bilk Kombiterminál Zrt.). During the transshipment of containers the fact that the safety of containers arriving at the terminal depends on the variable quality of dispatch in Hungary or abroad and on the technical condition of the wagons is a frequent problem [2].

Loading and unloading facilities of establishments involving dangerous substances and ports dealing also with dangerous substances are registered as installations used for inland waterway transportation. In Hungary there are loading and unloading installations at the petroleum port in Csepel (MOL Csepel base site, and Oil Tanking Kft), at MOL Plc. Danube Refinery in Százhalombatta and at the site of Lukoil in Dunaföldvár. In case of the facilities used for the preparation of air transport the warehouses used for the storage of dangerous goods at the airport (Liszt Ferenc Airport) are registered, which cause, due to the relatively low material quantities, no significant danger compared to other transportation methods. [2]

## 2. INTERNATIONAL LEGAL REGULATION OF THE SUPERVISION OF DANGEROUS GOODS SHIPMENTS IN HUNGARY

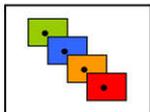
Special safety conditions of dangerous goods transport are laid down in the Hungarian legislation. Interstate (international) agreements bind us to observe them in international transport. The international standards are strict, yet very up-to-date. Rail, road, inland waterway (not sea) as well as sea and air transport have their own regulations regarding the transport of dangerous goods. Legislation adopted by the EU member states are based on international legislation.



Figure 2. International regulations on dangerous goods transport (source: UN ECE)

The Committee of Experts on the Transport of Dangerous Goods of the United Nations Economic and Social Council (ECOSOC) sets the safety requirements for the transportation of the most common dangerous materials by every mode of transport. The requirements are updated and published every two years under the title of Recommendations on the Transport of Dangerous Goods — Model Regulations, also called as Orange Book.

The first issue, published in 1957, included the criteria for identifying dangerous goods, packaging, labelling and accompanying documents. The UN Recommendations are not legally binding, but they provide a basis to develop



requirements specific to the modes of transport. The UN Recommendations consist of two volumes: model regulations and criteria for tests. The Committee of Experts recommends the up-to-date safety requirements to the governments and international organisations in charge of regulating the various modes of transport. These organisations are the following: United Nations Economic Commission for Europe (UN ECE) in road and inland waterway transport, Intergovernmental Organisation for International Carriage by Rail (OTIF) in rail transport, International Maritime Organisation (IMO) in sea transport, and International Civil Aviation Organization (ICAO) in air transport.

International agreements on the transportation of dangerous goods have been concluded on each mode of transport on the basis of the UN recommendations:

- The European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) was done on 30 September 1957 in Geneva, reviewed every two years. Hungary joined the agreement in 1979.
- Regulation concerning International Carriage by Rail (RID), appearing as Appendix C of the Convention concerning International Carriage by Rail (COTIF), was signed on 3 June 1999 in Vilnius, modified later. Its counterpart in Eastern-Europe is the Agreement on International Freight Transportation by Railways, currently in effect.
- Carriage of Dangerous Goods by Inland Waterways (ADN) was concluded on 26 May 2000 in Geneva, modified later.
- Annex 18 of the Convention on International Civil Aviation is the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO TI). The agreement was proclaimed in Hungary by the Legislative Decree No. 25 of 1971, while the annexes by the Decree No. 20/1997 (X.21.) of the Minister of Water, Transport and Communications. International Air Transport Association Dangerous Goods Regulations (IATA DGR) is widely used by airlines.
- International Maritime Dangerous Goods Code (IMDG Code) is in Chapter VII, Part A of the international agreement called International Convention for the Safety of Life at Sea (SOLAS). [3]

Based on legal experiences, in order to deal with practical difficulties encountered, legislation is repeatedly reviewed and periodically (usually every two years) modified in line with technical committee recommendations.

Directive 2008/68/EC of the European Parliament and of the Council on the inland transport of dangerous goods is adopted regarding the transport of dangerous goods by road, rail and inland waterway. Directive 95/50/EC on uniform procedures for checks on the transport of dangerous goods by road sets out requirements for the checks on road transport of dangerous goods.

### **3. NATIONAL LEGAL REGULATION OF THE SUPERVISION OF DANGEROUS GOODS SHIPMENTS IN HUNGARY**

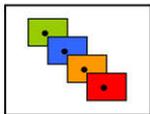
National legislation is based on the adaptation of the regulations on the checks laid down in international agreements, in line with EU requirements. The authority's power to check is included in the laws specific to each mode of transport and their implementing regulations.

Between 1990 and 2007 the regulation on the designation of dangerous goods routes were applied, which made it possible for the affected authorities to monitor the movement of dangerous goods. In 2005 public safety measure were added to the international agreements on the transport of dangerous goods (Chapter 1.10 of ADR, RID and ADN). Companies producing, dispatching, delivering or storing dangerous goods - along with other participants of the transportation - present a considerable risk to public safety, so they are obliged to prepare a security plan.

In line with the Ministry of National Development Decree 25/2014. (IV. 30.) on the safety advisor for the transport of dangerous goods, heads of companies engaged in the transport of dangerous goods by road, rail or inland waterway are entitled to appoint a minimum of one safety advisor in writing.

According to the road transport law, the transport authority, police, disaster management and customs authorities are entitled to check and impose fines regarding the transport of dangerous goods, the carrier, the road vehicle and its crew, the dispatcher of the goods, the temporary storage, the packager, the loader, the recipient and the appointment and qualification of the safety advisor. The decree on the uniform procedures for checks on the transport of dangerous goods by road, coming into effect on 1 March 2002, is considered a basic implementing regulation. In disaster management, its local authority is entitled to conduct checks. The local authority of disaster management may conduct independent checks on the area of another disaster management authority, with the prior consent of the central organ of the disaster management authority. The checklist for inspections is specified in the annex to the decree. The authority may take samples of goods for laboratory examination. In the case of infringement, the authority imposes sanctions and immobilizes the vehicle, in line with a separate decree of fine.

Following the 2001 modification of the decree on the designation of the route of vehicles transporting dangerous goods by road, the regional organisations of the of National Directorate General for Disaster Management Ministry of the Interior (NDGDM) have been involved in the authority checks of dangerous goods transport by road. After its proposals for law modifications were approved, disaster management gained independent right to check and fine on 1 May 2007.



Development of this field gained momentum between 2007-2009, greatly supported by the income from penalties. By the end of 2009, disaster management had become a decisive element of checks on road transport of dangerous goods, recognised by other cooperating authorities. Extensive professional experience accumulated and excellent working relations were established with the partner authorities, consultant and interest organisations.

After the income from penalties came to a halt in 2010, the volume of checks slightly decreased until in 2011 it started to continue steadily. A system of cooperation between inspection authorities was established, coordinated by the transport authority. A crucial element of the development concept of disaster management was the extension of the right to check and fine dangerous goods transport by road to all modes of transport as part of industrial safety. By the end of 2011, the legislation was approved, the institution system of industrial safety was created, and the methodological, human and technical conditions were available.

After 1 January 2012, with the second disaster management act coming into force, the modifications in the acts on transport and the new inspection regulation created the legal background for disaster management to act as an independent authority in the following activities: check dangerous goods transport by rail, inland waterway and air, impose fines, investigate incidents and take measures to prevent emergencies.

The Act of 2011 concerning disaster management and amending certain related acts (Disaster Management Act), by modifying the laws on transport, created the legal background for disaster management to carry out independent checks on the transport of dangerous goods by rail, inland waterway and air as well, together with imposing fines and inspecting accidents. The implementing decree of transport laws was introduced in 2011 as well. Companies involved in rail transport are subject to notification requirement to disaster management concerning their transport activities. Based on the act on air transport, the implementing decree concerning the air transport of dangerous goods entered into force on 1 January 2015. It covers the rules of authority checks and fines imposed by disaster management, empowering it with the licence to check, fine and to carry out on-the-spot actions related to air transport. The local or regional bodies of disaster management may carry out independent checks on air transport of dangerous goods. The checks can be performed by them on the area of other disaster management authorities as well, with the consent of the central organ of disaster management.

For investigation of harmful effects of major-accidents involving dangerous substances are in first instance the Disaster Management Mobil Laboratories (DMML) are designated. In Hungary there are 20 DMML-s operating, which tasks are the estimation of zones endangered, collecting and forwarding of data and information about hazards, co-operation in quick alarm of the public, co-operation with other operative bodies, furthermore at site polluted with chemical or radioactive substances with co-operation in giving professional advise for first aid. The vehicles of DMML-s are equipped with chemical detectors and automatic gas-detectors, micro meteorological measuring station, scavenger materials and personal protective equipments.

The National Inspectorate General for Industrial Safety, NDGDM receives professional support from the Industrial Safety Advisory Council, NDGDM as well as the Institute of Disaster Management, National University of Public Service (IDM, NUPS). The Institute of Disaster Management, National University of Public Service was founded on 1 January 2012. The new disaster management course was launched in the school year of 2013/2014, one of its specialisations being industrial safety for full-time and correspondent students. Industrial safety course material was included in the defence administration MSc. Starting from the school year of 2016/2017, subjects will be available with their curricula focusing on actual industrial safety. At the Doctoral School of Military Engineering, NUPS industrial safety specialists may launch research topics or subjects. [4] [5]

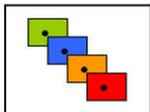
#### **4. CONCLUSIONS**

Hungary's geographical location is rather favourable, it plays an important role in the transportation to and from countries in the East and South. Transportation of a significant amount of dangerous goods takes place mainly by road, by rail, and increasingly by manageable waterways and by air.

Even when the first disaster management act came into force in 2000, the prevention of transport accidents involving dangerous goods together with the quick and professional response to them in order to protect the citizens and the environment were considered significant tasks. Professional bodies of disaster management paid special attention to the constant development of human and technical conditions of prevention, preparedness and responses.

The activities of the disaster management authority connected to checks and fines on road underwent continuous progress between 2001 and 2012 and became a recognised field within industrial safety. Its supervision over dangerous establishments and shipments in 2010, demonstrating a high level of expertise, provided a basis for developing a new system of tasks and instruments of industrial safety.

Due to the legislation preparatory work and institutional development between 2010 and 2012, the industrial safety authority became more dynamic and stronger after 1 January 2012. Since this date, coordinating the activities related to dangerous shipments is incorporated into industrial safety, empowered with more authority. Since early 2015, its activities extend to all modes of transport. Developing the system of checks and sanctions covering every mode of transport



was supported by experiences gathered between 2001 and 2012 on legislation preparatory work and law application connected to road 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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