

Possible use of the VERIK system in disaster relief of road accidents during transportation of dangerous goods

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Expansion of borders of the European Union has been followed by the increasing amount of road transportation of dangerous goods among the member countries together with statistical increasing of accidents with them. To react for this challenge beside the responsible organisations new specialised units were founded. In parallel with this, the Committee of the European Chemical Industry Association has been launched a special program to form a unified emergency response system which covers the continent.

We would like to point in this article the relation between the units working on emergency response coordination and the Hungarian representative of this international program called VERIK system. In addition, making conclusions we want to form advices for the future widening of this liaison.

Introduction

Implementation of the SEVESO II Directive and professional operation in the interest of application of tasks written in related legislations in Hungary were done as consequences of the law enforced on 1st June 2002¹ (article IV.) and the executive decree² for its fulfillment. Based on these regulations in Hungarian chemical industry the affected 106 dangerous factory has been divided to 43 upper and 63 lower tier establishments. The limit values for different dangerous chemicals were slightly modified by the executive decree 18/2006 (26th January), so the number of upper and lower tier establishments was also changed. Because there are no evaluated results yet, we are still counting with the old figures in this article.

Overviewing the dangerous establishments by regions or by counties it can be seen, that the distribution of these industrial units is balanced. The areas of Budapest (16 dangerous establishments) and County of Borsod-Abaúj-Zemplén (11 dangerous establishments) can be called as highlighted. Sorting by branches of chemical industry there are 26% belongs to the gas industry, 20–20% each to the general chemical industry, agriculture and food industry, 19% to the oil industry, 6–6% each to the pharmaceutical industry and storage and 2% goes to the power plants.³

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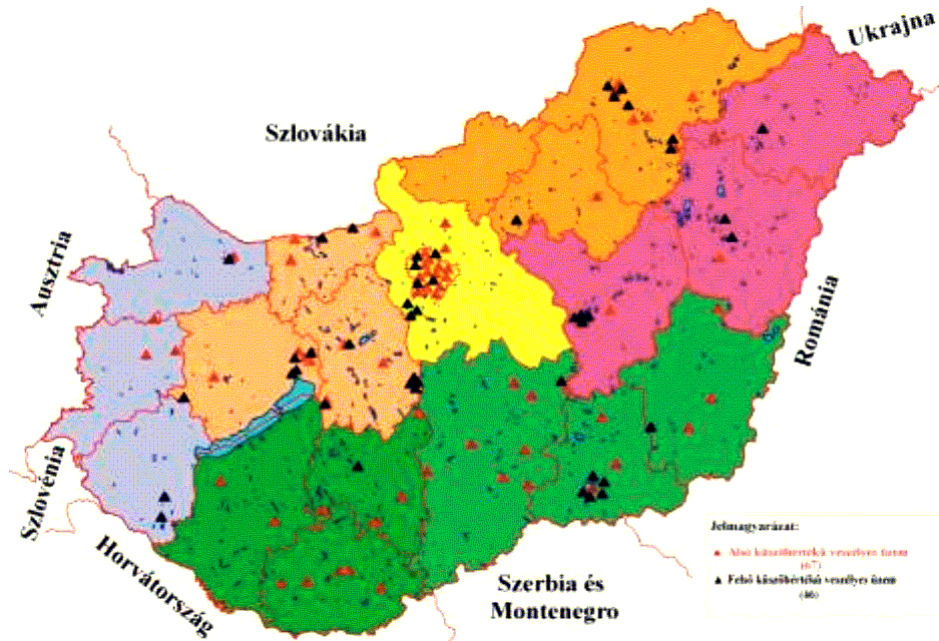


Figure 1. Dangerous establishments in Hungary
Source: OKF

Chemical industry went through an enormous improvement during the past 50–60 years, and as a consequence of the freedom of commerce the transportation of dangerous goods, substances and wastes has been growing rapidly. Growing of cargo caused increased number of accidents, breakdowns and failures.

Disaster relief of chemical accidents is a complex series of work with a demand of specialized knowledge and equipment, which nowadays is a responsibility of disaster management forces, and the intervention is one of the major tasks of the Fire Brigades.

Conditions of disaster relief are greatly improved at present. Regional Engineering Rescue Bases and Emergency Reconnaissance Groups were established, and toolboxes of rescue are also fairly improved. In the field of individual protection equipment also a great step forward can be seen, but there are still special tasks, which demand outer expertise. This expertise can be simply provided from the origin, it means by the manufacturers, by the factories.

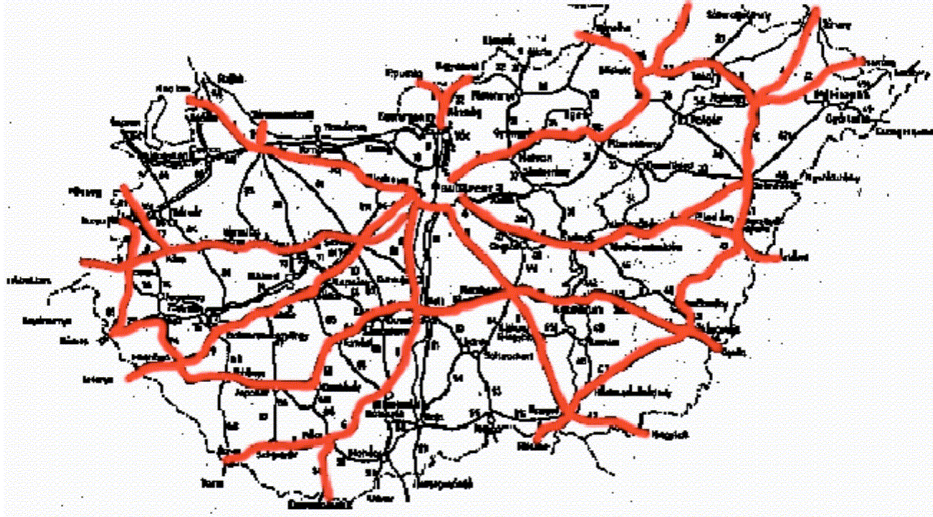


Figure 2. Main routes of dangerous cargoes in Hungary
Source: FER VERIK

The conditions of the defense were progressed in the past time. The Engineering Rescue Bases and Emergency Reconnaissance Groups has been established, and the resources of the prevention has been grown, but there are still tasks, that permanently needs help to the solution. This help had been provided, by the most sharp, the emissive sources, the producers, the factories.

The given chemical assistance first was happened spontaneously, after that on the basis of individual cooperative agreement. The absence of national system was damaged the effectiveness a lot. This fact – as a constraint – was realized by the MÁV RT, when the Chemical Guard Service was established.

At the chemical industry like the primary owner this has been followed much later. The companies has established their own emergency response organizations, but the lack of cooperation and coordination blocked the powerful help in the chemical averting.

International Chemical Environment (ICE)

In the most part of the highly developed, western countries for more than one and a half decade had happened the coordination of the response forces of chemical industry, in this way the effective support and amplification of the single countries.

The growing of the EU, respectively the rising of the trading between the member countries had dropped up the idea of a global, continent-wide, unified emergency response system. The European Council of Chemical Industry (CEFIC) starts the system establishing program by the name of International Chemical Environment (ICE) in 1991.

The working of the system

The ICE is voluntary obligated chemical response help program of the European chemical industry. Within the scope the member countries' chemical industry give an assist for the authorities in accident prevention on the field transporting of hazardous goods.

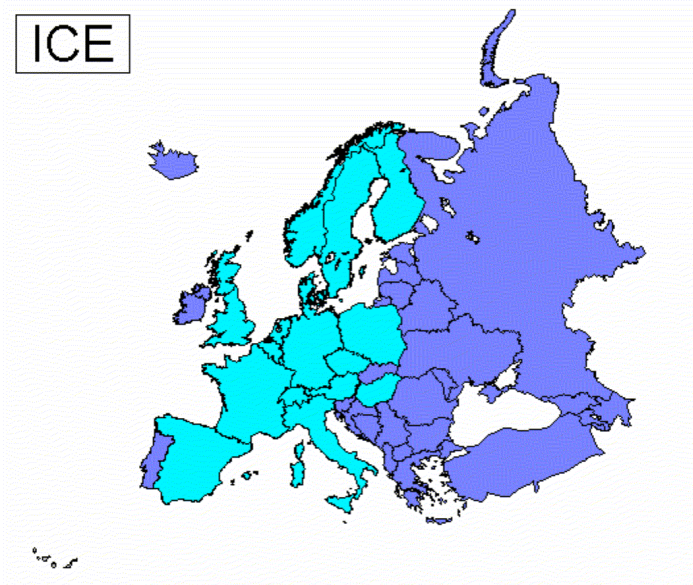


Figure 3. The members of ICE
Source: <http://www.cefic.org>

The ICE Center from Brussels do:

- Coordination of country-wide systems.
- Organization of the exchange of information in the field of transporting hazardous goods.
- Database actualization and addition in the field of chemical goods.
- Participation in the EU's law making process.
- Organization of training the national centers.

The ICE member countries (Table 1) have individual systems. The communication between each – other flown through the national centers, the official language of the communication is English.

Table 1. Members of ICE
Source: FER VERIK

Country	Name of system	National centers	Number of companies
Austria	TUIS	BASF – Ludwigshafen	30
Belgium	Belintra	BASF – Antwerp	60
Czech Republic	TRINS	Chemopetrol – Litvinov	10
Denmark	RVK	Emergency Agency – Copenhagen	25
Finland	Finterc	Emergency Centre – Helsinki	30
France	Transaid	CEDRE – Brest (only international calls)	160
Germany	TUIS	BASF – Ludwigshafen	130
Hungary	VERIK	MOL – Százhalombatta	7
Italy	SET	Enichem – Porto Marghera	70
Netherlands	TRC	DCMR – Rotterdam	15
Norway		Norwegian Pollution Control Authority	20
Poland	SPOT	PKN Orlen – Plock	10
Slovakia	DINS	DUSLO – Sala	10
Spain	CERET	Civil Protection – Madrid	90
Sweden	ERC	Poison Centre – Stockholm	100
Switzerland	AC Schutz	Novartis – Basel	35
United Kingdom	Chemsafe	NCEC – Culham	170

The vital questions of the activity (responsibility, insurance, competence) have been ordered in the greatest number of the country level enactments.

The cost of giving assistance has been taken care by transportation Co.

The organization has 17 European member countries, but close connections have been bond with the similar systems of the USA and CANADA, and the information center of maritime and logistical organizations. Hungary takes part in the realization of ICE program.

ICE's centers are operating and giving assistance in 3 levels:

First level: Free advising information by new technical instruments.

Second level: In situ advise for a fee.

Third level: In situ relief for a fee.

Within the ICE the assistance between member countries numerous times is on first level but it has been occurred third level either (Table 2). Any appealing center with the collaboration of the national centers can achieve the dangerous goods databases of fellow centers and can get information from the producer within half an hour.

Table 2. Interventions of some centers of ICE in 1998–1999
Source: FER VERIK

Levels	Austrian		Belgian		Germany		Italian		Spanish		Swedish	
	98	99	98	99	98	99	98	99	98	99	98	99
I. Level	11	25	–	–	914	896	38	54	3	1	8	7
II. Level	–	4	–	–	52	55	–	–	1	–	–	–
III. Level	5	4	15	12	241	222	7	6	2	2	–	–
Total	16	33	15	12	1207	1173	45	60	6	3	8	7

The VERIK system

Between the ICE member countries Hungary is presented by the VERIK (Alarm and Information Centers of Chemical Industry) system. The Hungarian chemical companies voluntary started the VERIK assistance system in 1998.

Formation of the system

The Hungarian Chemical Industry Coalition (MAVESZ) has begun to prepare a similar system of TUIS, as the joining of the ICE s Program. The FER protection Union of Százhalombatta was designated in 1995 to create the national- wide connection supporting center (Table 3). The denomination VERIK was accepted in January of 1996, and in this year the MAVESZ had started to edit the VERIK handbook. The system has formed on 28th March 1998.

Table 3. Parts of VERIK system
Source: FER VERIK

Name of company	Name of town	Accepting level
BORSODCHEM	Kazincbarcika	I.
EUROFOAM HUNGARY Kft	Sajóbábony	I.
BUDAPESTI VEGYI MŰVEK	Budapest	I.–II.
NITROGÉN MŰVEK	Pét	I.–II.
NITRO (KÉMIA 2000) VÉD Kft.	Balatonfüzfő	I.–II.
TISZAI VEGYI KOMBINÁT	Tiszaújváros	I.–II.–III.
MOL FER TŰZOLTÓSÁG	Százhalombatta	I.–II.–III.

The structure and operation of VERIK

Each member centers are operating individually with MAVESZ coordination. The VERIK as a ICE member, although give assistance in three levels. The members operate in different, individually taken levels.

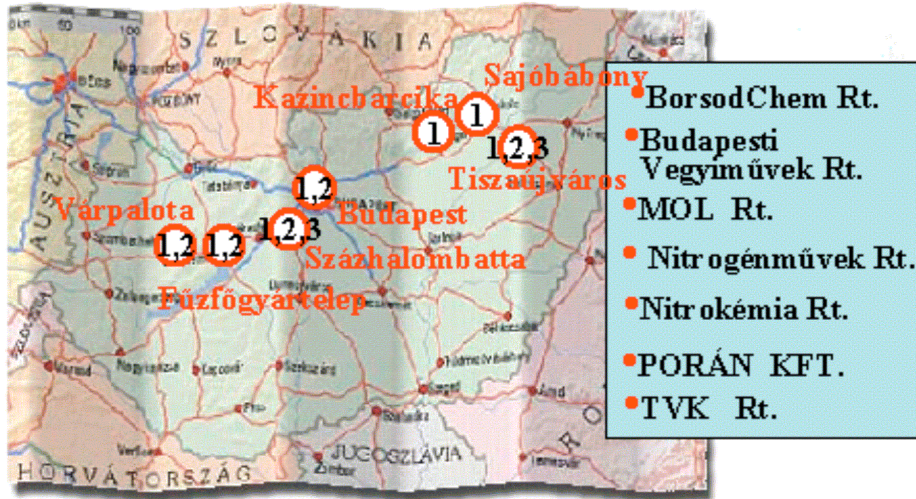


Figure 4.: The VERIK system
Source: FER VERIK

The System closely cooperates with MÁV Chemical Preventive Service, rules of operating and the events of employment are in the VERIK handbook.

Giving assistance

The centers could be employed mainly to purchase necessary information, achieving expert advice on the field of handling materials, and executing special chemical protection tasks.

From the centers of the systems the FER VERIK center was involved in the most actions. We want to explain the system's recent activity through the daily routine of our national center:

- FER Fire department operating in 24 hours duty;
- Daily contact with hazardous goods (CH);
- Minimum 3 persons per team;
- The wards on duty speaks English and German;

- They do their emergency duties beneath firefighter tasks.

Rules of giving assistance

- *First level:* signal duty involving, 5 minutes delay of grace for VERIK wards on duty.
- *Second – Third levels:*
 - 2+1 person proceed (+1 expert or commander out of duty);
 - The commanding and responsibility belongs to the local forces, The VERIK just gives assistance.

Training jobs

- Training Chemical Reconnaissance Groups;
- Participation in other exercises.

Other activities

For the ask of CEFIC they made the Hungarian translation of ERICards (Emergency Response Intervention Cards).

Tools and equipment

Level 1:

- Telephone and fax machine;
- Softwares, databases;
- The Canadian MSDS database;
- Material sheets of the refinery;
- Different center's data sheet;
- BASF data sheet;
- ICE (TUIS) database.

Level 2 and 3:

- reconnaissance, risk handling, personal protection;
- designate the danger zone, measuring the concentration of gas (essentially the oil-refinery's goods);
- pumping inflammable fluids;
- pumping combustible gases (not liquefied gas);
- unpressuring and torching liquefied gas and vapor tanks (pots);
- temporary stopping of smaller flows;
- collecting and swiping materials;
- stopping runnings;
- condensing steams and gases;
- elevating, tilting or wrenching as connecting tasks.

Tools:

- DEPA's pump (150–300 liters/min.);
- Stumps, transmission pieces;
- Collecting tanks;
- Stuffing tools;
- Elevators, elevatory bolsters;
- Wipe-up matters;
- Surveying instruments;
- Digital thermometers;
- Mobil torch (BORSODCHEM, TVK);
- Elevating tools;
- Protection equipment (Full body and breathing protection).

Expansion of immediate future

- Acquiring special pumps (against acid, hot and thick matters);
- Acquiring pumping vehicle for hazardous goods.

Interlock the VERIK to the hazardous goods accidents avert

According to effective regulations at present: “The fire-fighting and technical rescue mission are the local governments’ compulsory public-utility task, which have official, governmental or voluntary fire brigades, that have emergency response tasks.” In case of any road hazardous transporting accident the first proceeding units are the firefighters.

Follow the classical intervention method, the officer in command who arriving at the place first, has to take the necessary steps after he check, value the transporting letters and the colors, numbers of the label, anything what is necessary.

The most frequent problems are aroused because of the lack of marks, documents, when there aren't available data bases about the goods of transporting for fire-fighting commander, concerning the existing equipments not enough to intervention.

In the spirit of universalism in many instances overcharged fire, special vehicles aren't any possibilities to take more equipment, as well as now the training system isn't demand to become adept at different chemical knowledge from the firefighters. This isn't their job also, because the operative regulators have just demanded general fire and technical rescue tasks from the member of fire brigades, and fire- vehicles.

Having been realized the problem, from the year of 1990 the national vocational guidance has been starting to create the Engineering Rescue Bases at the marked Fire Brigades. Since the 1st April 2002. 9 Fire Brigades has taken care their tasks in

50–80 km radius covering our home. Employments are free of charge, in case of the rescue tools aren't available at the fire fighter commander, not capable of executing the rescue tasks (own, the nearest fire fighter vehicles, tools, equipments). At the Base there is a crane, a rescue vehicle, furthermore an exchangeable vehicle body for engineering rescue or chemical accident defensive containers, with well trained staff. The chemical container pack of the general type is touched in my subject, has just got few in number of protective wear, sparkless gears, pumps, drying and stuffing materials, trap-trough tanks to wind up a small accidents.

The Emergency Reconnaissance Groups in 15 groups have been the chemical defensive accident parts since 2000. These well trained, equipped groups are able to give limited information to the fire fighter commander about the risk of the disaster area, but they haven't got equipments to help the effective rescue.

Sum up the guarding against an ensuing hazardous matter's accident we can realize for the lack of the matter of expertise, and the special's equipments. As long as the Emergency Reconnaissance Groups have operated with continuous rising number of alarming, until then the centers of VERIK have been able to give account of stagnant searching in the past 9 years (Table 4).

Table 4. Centers of VERIK data of alarming
Source: FER VERIK

Sort of information	1996	1997	1998	1999	2000	2001	2001	2003	2004	Total
Intervention	2	6	4	8	10	14	5	8	10	67
Material information (not intervention)	5	6	4	15	7	14	13	11	14	89
Practices	3	9	7	3	0	0	1	0	0	23
Orientation, connection	0	2	2	1	2	1	2	0	0	10
Control call	0	0	0	2	3	5	6	6	6	28
Total:	10	23	17	29	22	34	27	25	30	217

The National Directorate General for Disaster Management admitting the special supply of importance creates synergy agreement with the VERIK on the 9 November in 2004. The agreement includes within the chemical relief part from the VERIK:

- Graciously information help using the local and foreign (ICE) databases.
- At hazardous goods transporting accident connect with the producer, and the manufacturer in English.
- As requested they intervene in the accident with their special tools for first-cost.

We think that, the synergy agreement has been closed so at the defending play a maintain part's organism have been activated for the VERIK system doubly employ. This guess is wrong. Till this document writing, events of the year 2005 the VERIK system in the following manner was formed:

- 2 times, 2 testcalling (Norway, Sweden)
- 5 times, I. level (detect the matter, asking phone number)
- 1 time, III. level (DENSO Székesfehérvár, measuring of isodecane gas concentration).

Within the VERIK system the existing problems have been increasing together with the outer uninteresting. We would like to reveal shortly these problems which was sounded at the 2nd VERIK council. It was ordered on the 25th November 2004 at the Center of VERIK, where one of the authors of this article was present and took part in it, too.

István Keresztes (MAVESZ): He proposed for solving problem to reconstruct the VERIK handbook, which wasn't occurred as a reason for the lack of money, and raising the members of system.

László Pimper (FER): Lack of the tank-trucks made the things difficult for country helping.

József Boer (TVK): They had done a phone estimation, which was closed with a very bad result. They couldn't make any contact with 4 centers.

Jenő Farkas (NITROVÉD): The base of supporting was broken up. They asked help to popularize the VERIK at the follower companies.

Gyula Bihari (BORSODCHEM): He has accepted III. level assistance responsibility for only their own transports, because he fears the legal consequences (The member of NITROGÉN MŰVEK had joined).

Suggested tasks to the more effective working of the VERIK system

- Make stronger the Hungarian Chemical Council's integrating activity, activation of the existing members of the System, making better organization.
- Within the members of ICE, the Hungarian VERIK has the least member companies. Enlarge the System with the help of making the propaganda stronger (own, and ÖTM OKF) and finding the companies of upper and lower thresholds.
- Using the outer propaganda to acquaint the people with the potential, possibilities of VERIK with the primary intervening Fire Brigades at the hazardous goods accidents, this way join the system of emergency.

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