CHEMICAL SAFETY IN HUNGARY – NEW NATIONAL PROFILE

Summary

Budapest
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[1] The summary is an abstract of the document entitled: "Chemical Safety in Hungary – New National Profile, 2006", comprising of ca. 450 pages, with more than 100 single and composite diagrams, and 32 colour or black and white figures. Editing of the summary and the background matters, including the preparation of the final version was carried out by the National Co-ordinator, the preparation of the individual chapters was performed by the heads of the working groups. All members of the working groups took part in provision of data and compiling of the material for the background document. Both the summary and the background material were adopted at the plenary session (June 28, 2006) of all contributors after thorough discussion of amendments proposed. The collection of data for the Profile was closed on December 31, 2004 concerning statistical years, June 30, 2005, in recording notable chemical safety-related events, and December 31, 2005, in the analysis of pertinent laws and regulations being in force.

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Governmental and non-governmental institutions and organizations participating in the development of the Profile

The experts compiling the National Profile (and the Summary) represented a total of 66 governmental and non-governmental organisations. Their list can be found in the extenso document entitled “Chemical Safety in Hungary – New National Profile”.

Translated by Ms. Orsolya Demeter

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[2] The names of laws, governmental and non-governmental organisations, institutions, laboratories, etc., occurring more frequently in the document are written out in full the first time, and all the abbreviations are indicated; afterwards, the abbreviations are used in most cases; we will only deviate from the consistent use of already established abbreviations where the use of an abbreviation interferes with the transparency or distinctness of the document. Please refer to the separate list of abbreviations (pp. 129–131).

I. INTRODUCTION

The first National Profile of Chemical Safety in Hungary was prepared in 1997. The years that have passed since, have, on the one hand, confirmed that the implementation of the recommendations made for the government on the basis of the analysis of the contents of the National Profile and its conclusions resulted in a significant development in chemical safety in Hungary. On the other hand, the advances of this period have changed the structure and functioning of chemical safety to such an extent that an analysis of the present state became necessary. Having the results of this analysis it seems obvious to draw conclusions that could underlie recommendations for further development.

The significance of this basic issue is underlined by the achievements listed below that profoundly changed Hungary's status in the international relations as well as the "regional" and global strategies of chemical safety.

- One of the first acts on chemical safety in the World was adopted in Hungary in 2000 (hereinafter: ACSH = Act on Chemical Safety of Hungary).
- In preparation for joining the European Union (EU), ACSH and the regulations ensuring its implementation were drawn up to be compatible with the Community regulations on chemical safety.
- Hungary has been a member of NATO since 1999.
- Hungary became a full member of EU on May 1, 2004.
- The member countries of the United Nations adopted the Millennium Development Goals.
- In 2001 EU adopted a new chemicals policy.
- Significant advance has been made in the elaboration of programme areas A–F of Chapter 19 of Agenda 21[3], (e.g. development of global harmonization).
- The resolutions of the Johannesburg World Summit on Sustainable Development defined a new direction for the development of chemical safety, a Strategic Approach to International Chemical Management (SAICM).

Since 1997, the events mentioned above together with the effects and phenomena of globalisation, that have evidently reached Hungary, have induced so radical changes (economic, social, environmental, etc.) that they have "overwritten" the requirements of our chemical safety, including its institutional and operational systems. In order to meet this challenge, the recent development of our chemical safety, its achievements and faults should be recognized and analysed, and its strongest, best functioning areas (legislation, institutions, laboratories, expertise, field work, etc.) must be identified. Based on this analysis, we aimed to draw conclusions and elaborate recommendations that would further strengthen our national chemical safety, and with the help of which we could even more successfully contribute to the development of global chemical safety.

[3] Agenda 21: Tasks for the 21st Century. The document of Rio Earth Summit / UN Conference on Environment and Development. Rio de Janeiro. 1992; it is commonly cited as Agenda 21.

The structure of the National Profile invariably follows the Guidelines developed by the UN Institute for Training and Research (UNITAR). However, taking into account the events and facts of decisive significance listed above, and further problems gaining increasingly greater importance such as the ageing population of the country and the decreasing number of inhabitants, or terrorism that has become a global threat, new chapters have been also added to the Profile justifying the amendments of our future chemical safety policy.

We will commit ourselves to taking part in the development of the new EU comprehensive re-regulation (Registration, Evaluation, Authorization, and Restriction of Chemicals – hereinafter: REACH) of chemicals, and we will take all measures to ensure proper implementation of this regulation. Separate chapters are devoted *i*) to present the situation in Hungary of programme area "F" of Agenda 21, causing significant problems worldwide, *ii*) to the national issues to prevent and eliminate emergencies of chemical origin (including chemical terrorism), and *iii*) to the study of the very important problem of children's chemical safety that is also on the agenda of the Intergovernmental Forum on Chemical Safety (IFCS).

The update of the Profile – similarly to the development of the first National Profile – is based on the work of the widest possible range of those working in the field of chemical safety and all those committing themselves to chemical safety. Representatives of all pertinent government organisations (ministries and their institutions) were asked to participate, and representatives from industry, various non-governmental organisations (scientific and educational institutions, institutes, public interest groups) were invited. The Summary – as mentioned previously – is an abstract of this document.

Agenda 21, the Intergovernmental Forum on Chemical Safety and Hungary

The action programm linked to the basic document of the United Nations Conference on Environment and Development held in Rio de Janeiro, June 14, 1992, entitled "Tasks for the 21st Century" is better known as Agenda 21. IFCS was established in Stockholm, in 1994, as a result of the Earth Summit in Rio and Agenda 21, so that under its guidance and with its contribution, the countries of the World could implement the tasks drawn up in Programme Areas A to F defined in Chapter 19 of Agenda 21. Hungary has been contributing to the work of IFCS as a founding member since 1994. Within its framework, Hungary developed its first National Profile and delegating one of the Vice Presidents organised and helped the work of the Central and Eastern European Region of the Forum, took part in the activities of the Forum Standing Committee and the development of the programmes of IFCS. The most important achievement of the country is that the ideas of IFCS have successfully been transplanted into the establishment of the institutional and regulatory system aiming to improve national chemical safety.

The influence of IFCS can readily be seen in ACSH[4] adopted in 2000, one of the first of its kind in the World; the National Institute for Chemical Safety was established in Hungary (also among the first few of its kind in the World), and a professionally strong chemical safety surveillance was set up with the support of PHARE. The representative of Hungary was honoured with the IFCS Award of Merit for his work (2003); in 2006, the IFCS Forum V will be held in Budapest.

Hungary is a Member of the European Union

Hungary has been a Member of the EU since May 1, 2004. Naturally, the country strives to tackle tasks arising from its membership with work of the highest possible level and effectiveness. The EU – which takes by far into account the recommendations, resolutions and strategies (e.g., the Millennium Development Goals, Globally Harmonized System for the Classification and Labelling of Chemicals [GHS], and SAICM) of the UN (including WHO, ILO, UNEP, FAO, UNIDO, IFCS, IPCS, and other intergovernmental organisations) as well as those of economic organisations of decisive significance (e.g., OECD) – has established a well-planned, efficient, well-functioning institutional, regulatory, and executive system for the sound management of dangerous substances.

The EU has every reason to expect its Member States to adhere to it. Accordingly, Hungary is participating in the development of the new dangerous substances policy of EU and in its putting into a legal act (regulation).

The new chemicals policy of the European Union

Chemicals bring about benefits on which modern society is entirely dependent, for example in food production, medicines, biocides, textiles, cars, etc. The chemical industry is also Europe's third largest manufacturing industry. It employs 1.7 million people directly and up to 3 million jobs are dependent on it. On the other hand, certain chemicals have caused serious damage both to human health resulting in suffering and premature death and to the environment; for example: asbestos can cause lung cancer and mesothelioma; benzene may lead to leukemia; abundant use of DDT leads to damage of reproduction in birds. Though these substances have been totally banned or significantly restricted, however, other substances have elicited new problems. The incidence of some diseases, e.g., testicular cancer in young men and allergies, has significantly increased over the last decades (there is justified concern that certain chemicals play a causative role for allergies). Recently high levels of persistent potential endocrine disrupting chemicals have been demonstrated in several marine mammalian species inhabiting oceanic waters. Understandably, the public is worried when getting information on the phthalate con-

[4] Its structure and concept differ from the acts on dangerous substance prevalent in other countries – in the EU Member States, too –, while it maximally fulfils the requirements of the Community legal acts on this issue.

tent of the toys of their children and about increasing amounts of the flame retardant pentabromo diphenyl ether in human breast milk[5]. The examples expose the weaknesses of the current EU chemicals policy.

Increasing concern that current EU chemicals policy had not provided sufficient protection led to a debate at the informal session of Council of Environment Ministers in Chester in April 1998. Recognising that a review of the current policy of chemicals was necessary the Commission made a commitment to assess the operation of four important legal instruments governing chemicals in the Community. The report on the findings was adopted by the Commission in November 1998 and welcomed by the Council in December 1998.

In view of the findings the Commission held a Brainstorming with more than 150 stakeholders in February 1999 – regulators, scientists, industry, environmental and consumer NGOs, as well as representatives from applicant countries – providing the Commission with an all-round view of the problems and potential solutions.

As to the most important problems, here we would like to stress the following:

- the body of knowledge on existing chemical substances is insufficient;
- the required risk assessment (imposed on the authorities) is slow and resource intensive;
- the so-called downstream users, industrial, formulating, small and individual enterprises, etc. have no obligation, at all, to provide data or information, therefore there are no adequate data of their activities with dangerous substances (i.e., on the exposure resulting from the industrial use). Moreover, further information from industry can only be requested if the authorities have proven that a given substance poses significant danger of being harmful to health or environment! Therefore, few substances only undergo risk assessment;
- the system of responsibility is insufficient, although in principle the polluter should pay! However, it is almost impossible or impossible to find, the "polluter" (due to delayed toxic effects, combined exposure, knowledge of ineffective concentration levels, small value of compensation, etc.).

After identifying the problems, the objectives of the new strategy have been defined. The main objective has been the sustainable development to be realized within the framework of the Single Market. To this end, the following need to be achieved:

- protection of human health and the environment;
- maintaining and increasing competitiveness in the EU chemicals industry;
- preventing fragmentation of the inner market;
- transparency of information flow, its channelling to the consumers and its feeding back (downstream information, upwards flow, complete lifecycle);
- integration with international efforts; the global nature of the chemicals industry and transboundary impact of certain substances have made chemical safety on international issue;

[5] These chemicals were the subject of Commission proposals for bans; legislative measures have alredy been taken.

– promotion of non-animal testing;
– conformity with EU international obligations under the WTO.

As recommended by the Committee, one of the highlighted key elements of the proposed strategy was that by 2012 all existing and new substances should be submitted to a unified test system. The following were also identified as important key elements:

– the implementation should be done in several steps based on the significance of exposure;
– the liability for safety lies with the industry;
– the liability should be extended along the entire line of manufacturing;
– substances causing strong concern should only be licensed after registration;
– dangerous substances should be replaced by less dangerous or non-dangerous ones.

The analysis of the situation, conclusions, objectives, the strategy to be developed, key elements of the latter, the way and schedule of their implementation were published in the so-called White Paper – Strategy for a future Chemicals Policy. It was approved by the European Commission [COM (2001) 88], the EU Council, and the EU Parliament in 2001. The implementation of the concept of the White Paper, or rather, its drafting into a regulation under title Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) was defined as a task. Its publication and enforcement are expected in 2007 and 2008, respectively, and its implementation will start in 2008, of course, in several stages according to the original plans.

Hungary – in accordance with its EU Membership – fully supports the introduction of REACH and is ready to entirely comply with it.

II. ANALYSIS OF THE STATE OF CHEMICAL SAFETY IN HUNGARY

1. National background information

Objective: *to provide general background information on the country at a national and regional level*

The infrastructure, operation and regulation of chemical safety in Hungary are closely linked to Hungary's geographic, political demographic, industrial, and agricultural characteristics. The area of Hungary (93 000 km^2) is 1% of the total area of Europe; it is bordered by Slovakia on the North, the Ukraine on the North-East, Rumania on the East, Serbia on the South-East, Croatia on the South, Slovenia on the South-West and Austria on the West (*Fig. 1*). Its climate is temperate, it is poor in natural resources, 83% of its area is crop land and 17% other.

Central Hungary: Budapest and Pest county
Central Transdanubia: Fejér, Komárom-Esztergom and Veszprém counties
Western-Transdanubia: Győr-Moson-Sopron, Vas and Zala counties
Southern-Transdanubia: Baranya, Somogy and Tolna counties
Northern-Hungary: Borsod-Abaúj-Zemplén, Heves and Nógrád counties
Northern Great Plain: Hajdú-Bihar, Jász-Nagykun-Szolnok and Szabolcs-Szatmár-Bereg counties
Southern Great Plain: Bács-Kiskun, Békés and Csongrád counties

Fig. 1. Administrative divisions and planning-statistical regions of Hungary. Organization of the regions is the task of the present governmental period (2006–2010); SLOV: Slovenia

Hungary has been a full-fledged member state of the European Union since May 1, 2004; it is a republic, a sovereign, democratic constitutional state. It has a population of slightly over 10 million (2.2% of the total population of the EU); most of whom speak Hungarian as their mother tongue; the proportion of native and migrant ethnic minorities is about 1%. Sixty-five percent of the population lives in the capital and in the provincial cities. The ageing of the population has continuously been accelerating – slightly slower from 1950 to 1960, at a faster rate since then –, the proportion of those over 60 years of age is 21%. The population has been decreasing at an ever increasing rate, birth rate is 9.7/1000, and the number of live births per thousand is less than the EU average. The increase of the ageing index (*Fig. 2*) also points to the ageing of the population and the decrease in the number of live births.

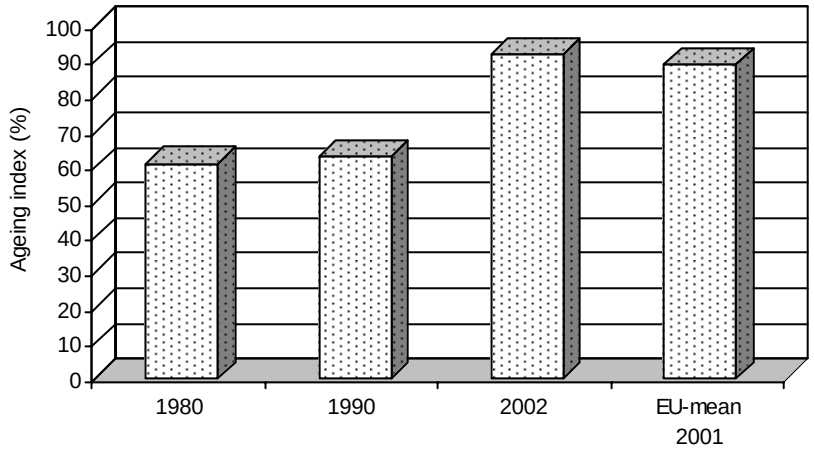


Fig. 2. The trend of ageing in Hungary. Ageing index =

$$= \frac{population(number)\ aged\ \ 65 - x\ year}{population(number)\ aged\ \ 0 - 14\ year} \times 100(\%)$$

is shown on the ordinate as a function of increasing years. In 2002 the index was already above the 2001 mean of EU-15. The reason of this is only partly due to the increased proportion of the ageing population (numerator); on the other part, the index was significantly increased, because the proportion of the population aged 0–14 years (denominator) decreased, due to the decreased birth rate; population aged 65–x years: number of the population aged 65 years and older. Source: HCSO, Budapest, 2004

Mortality rates are high in the case of both sexes (13.1‰); mortality rates are 14.3‰ for males, and 12.1‰ for females. Life expectancy at birth is 68.6 years for males and 76.9 years for females. Diseases of the cardiovascular system are responsible for slightly more than half of all deaths, while malignant tumours are responsible for slightly over a quarter. The most common tumour is the malignant degeneration affecting the respiratory system (*Fig. 3*).

The work force numbers 3.9 million, the unemployment rate was 6.1% in 2004; an increase in the number of unemployed entrant graduates is a new phenomenon. The rate of employment shows regional differences.

In Hungary, characteristically to the market economy that has evolved as a result of the changes in the political, social, and economic systems that took place in 1989, 70% of the gross added value of the country's economy is created by domestic private or multinational enterprises. The role of community ownership is still decisive in the area of non-market sectors (health care, social services, education). The number of registered enterprises is almost 1.2 million, with 69% having less than 20 employees. The number of large companies (≥ 500 employees) is below 1%. 90% of employees are employed full-time.

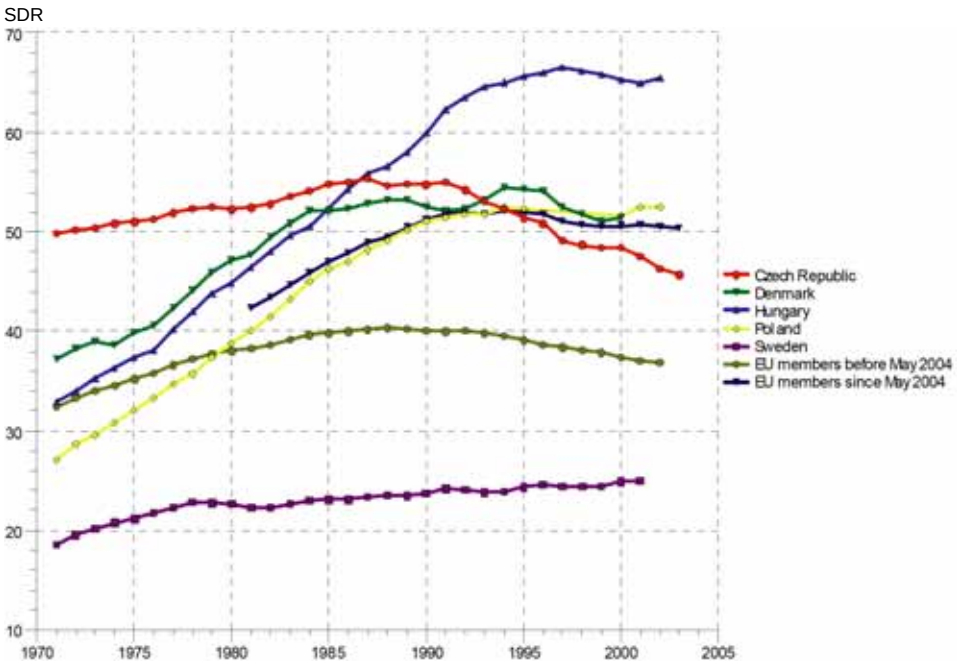


Fig. 3. Mortality of the malignant tumours of the respiratory organs. Trachea/ bronchus/lung cancer, all ages per 100000; SDR: standardized death rate. Source: HFA-Database 2006, WHO/Europe

Gross domestic product (GDP) grew by 12.0% between 2000 and 2003 and by 4% in 2004. The ratios of consumption and accumulation within the GDP have changed considerably. The level of development of the Hungarian economy in 2002 amounted to 60% of the EU average. Regarding investment pattern according to economic type, in the past few years there was an increase in the ratio of investments into private economic activities; considering the various sectors, there was a boom in investments into real-estate, (economic) services and processing industry. Investments into agriculture, administration, education, health care and other services decreased (*Fig. 4*).

Hungary's energy consumption alternately increased and decreased in the years between 2000 and 2004; an increasing ratio of energy sources has come from imports. Regarding economic sectors, energy use by industry and construction increased significantly, while that of agriculture decreased.

The economic significance of industry has been growing steadily, annual volume increase was 6.4% in 2003, and 7.4% in 2004. Industrial output grew by more than 15%, which is due to external demand (*Fig. 5*).

The contribution of agriculture to added value in Hungary is higher than the EU average; the biggest growth in yield is in the cereal crops. The size of areas under ecological farming has been growing at a small, but steady scale, but its ratio is less

than the EU average (2.0% vs. 3.7%) Hungary does not support the introduction of genetically modified organisms. The volume of animal husbandry and production of animal products have decreased, the volume of state purchases of agricultural products has hardly changed compared to 1999 (*Fig. 6*).

Moderate growth can be observed in the volume of investments into state subsidized soil conservation and soil amelioration, and in the area of environmental investments. The output value of environmental investments – mainly sewage treatment – was 162 milliard (thousand million) HUF in 2003.

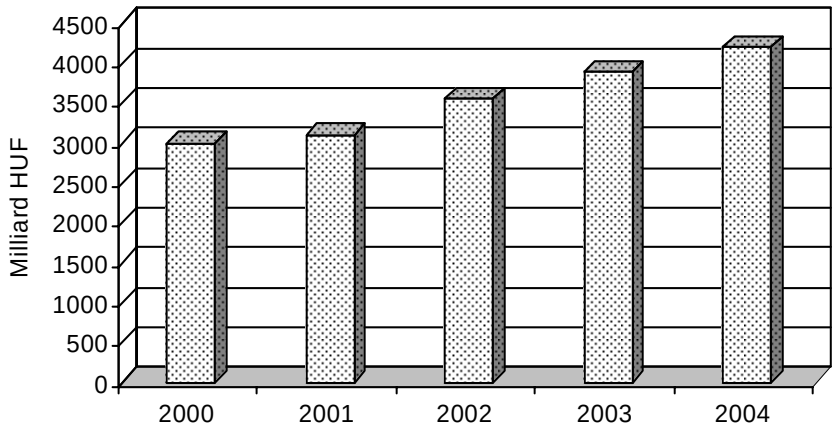


Fig. 4. Yearly values performed by national economy investments between 2000 and 2004; the growth is significant. Source: HCSO, Budapest, 2005

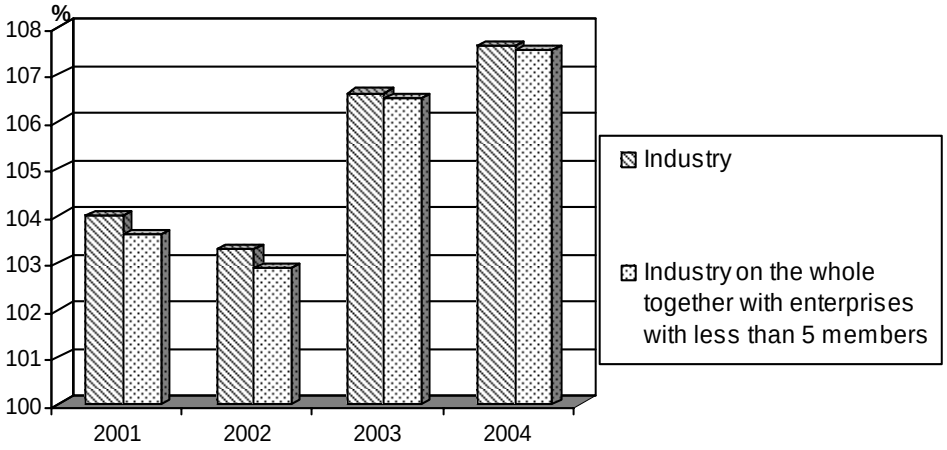


Fig. 5. Volume indices of industrial production between 2001 and 2004 (at comparative prices, %). The basis of calculation is the monthly mean of the year 2000. Source: HCSO, Budapest, 2005

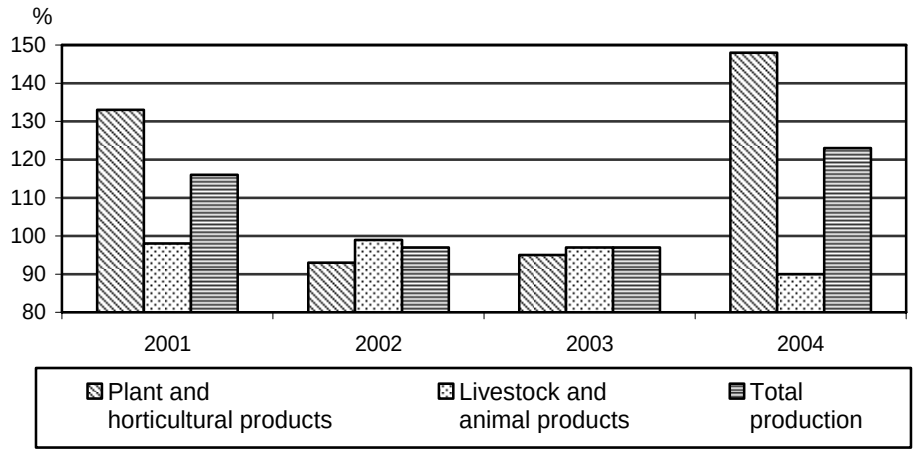


Fig. 6. Volume indices of gross agricultural production. Previous year = 100,0%. Source: HCSO, Budapest, 2005

The production volume of national industry as well as the quantity of chemicals, pollutants emitted can be expected to grow following the reassuring economic upsurge of the past few years. It is important to pay attention to the fact that the industrial (agricultural or service) activities of the evolved small and medium sized entrepreneurial class numbering several hundreds of thousand occasionally lacks labour protection or other administrative control (non-organised work takes place within the confines of the grey or black economy). Although the productivity of several of these is below expected levels, we must be aware that a decrease in the output of the economy does not, per se, go hand in hand with a decrease in the volume of chemical emission. That is, the volume of production does not exclusively determine the volume of pollution emitted. Therefore it is a task of extreme importance to properly manage and reduce the health and environmental risks caused by chemical pollution accompanying our "economy in transition".

2. Main characteristics of the production, import, export, and the use of chemicals

Objective: *to provide basic information on chemicals resulting from production and import, as well as on the use and export of chemicals*

In Hungary, the chemical industry is one of the most important branches of the economy; producing 4.8–5% of the gross national product (*Fig. 7*). The Hungarian chemical industry has a tradition of over 120 years, and is still a sound propelling force of economic development today. Its products have an influence on technical standard and development in virtually all areas of the economy. The advanced state of the chemical industry is related to, among others, the traditionally high stan-

dard of secondary and higher education. Four Nobel-prize winning chemists received their secondary and university education in Hungary. Occupational health and accident data of the Hungarian chemical industry are better than the Western European average. Acquisition of certifications according to ISO 14001 went fast and smoothly. The two branches of determinative size of the Hungarian chemical industry are plastics production and the pharmaceutical industry (*Table 1, Fig. 8*).

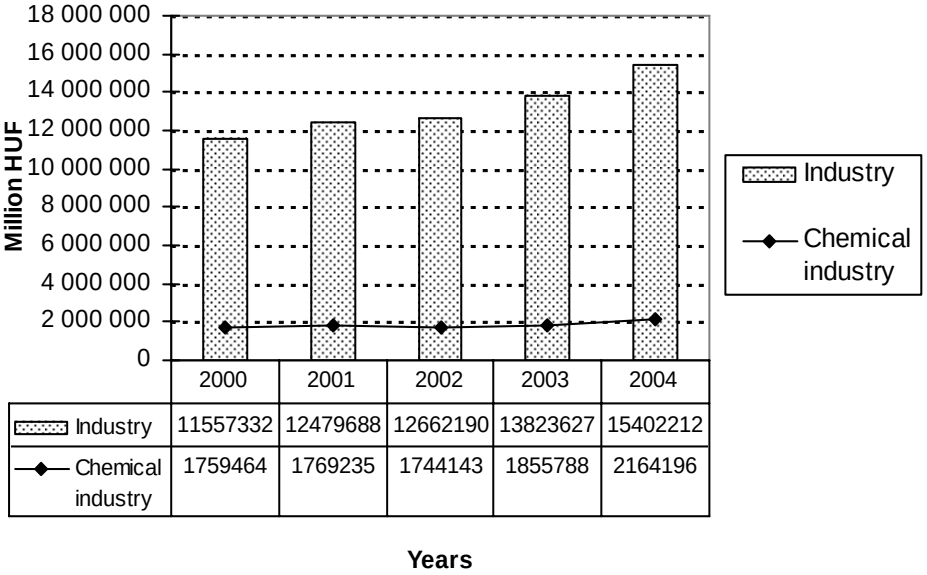


Fig. 7. Current production value of industry and chemical industry in Hungary between 2000 and 2004. Source: MET, HCSO, Budapest, 2005

Significant changes in the structure of local chemical production are not expected in the years to come (*Tables 1* and *2*). Chemical risks can be reduced by the upgrading of production technologies, introduction of new processes, as well as by the management of waste in compliance with legal provisions. With the introduction of REACH, marketing will become more strictly controlled, registration will become more precise, and there will be more frequent controls, as a result of which measures more direct than currently can be taken towards uses with less risk. Projects will undergo stricter environmental consideration, mainly to identify the long term effects, as well as to filter out the harmful processes in time.

Domestic pesticide production has fallen, significant growth cannot be expected. Practically all of the annual pesticide demand of the agriculture is provided through imports. As a result, a decrease in the chemical risk arising from production can be expected, while the environmental and health burden of the pesticides used in the previous years will remain. Therefore professional action should be concentrated mainly on aspects of use and waste management improving human and environmental safety, with emphasis placed on issues concerning food safety (*Tables 3* and *4*).

TABLE 1. Structure of the chemical industry and the weight it represents within industry as a whole, by production value at current prices (CHEMICAL INDUSTRY: TEÁOR 23–24–25)

Description	1995[+]	2000[++]	2001[++]	2002[++]	2003[++]	2004
Industry, MHUF	**3 394 186**	**11 557 332**	**12 479 688**	**12 662 190**	**13 823 627**	**15 402 212**
%	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Chemical industry, MHUF	**651 416**	**1 759 464**	**1 769 235**	**1 744 143**	**1 855 788**	**2 164 196**
%	**19.2**	**15.2**	**14.2**	**13.8**	**13.4**	**14.05**
Out of this:						
Oil processing %	**6.4**	**5.6**	**4.6**	**4.0**	**3.6**	**4.5**
Production of chemical materials and products %	**9.6**	**6.5**	**6.2**	**6.2**	**6.4**	**6.3**
Out of this:						
Production of plastics	3.4	2.4	1.9	2.0	1.9	2.0
Medicine production	3.0	2.1	2.2	2.3	2.6	2.5
Pesticide Production*	0.5	0.1	0.1	0.1	0.1	0.1
Manufacture of rubber and plastic products	**3.2**	**3.0**	**3.4**	**3.5**	**3.4**	**3.2**
Out of this:						
Manufacture of plastic products	2.6	2.3	2.6	2.7	2.6	2.4
Manufacture of rubber products	0.6	0.7	0.8	0.8	0.8	0.8

[+] Companies with >20 employees; [++] companies with 5 employees and over; * This has been called Production of agricultural chemical products since 2000 (does not include chemical fertilisers) Source: MET, HCSO, 2005

Risk arising from the use of pesticides is reduced by the fact that pesticide use is assisted by an organisation for plant protection created 50 years ago. The institution organised on county level primarily assists in the practical use of plant protective technological processes, as well as continuously monitors the marketing, use and quality of pesticides, and pesticide residues in produce and the various compartments of the environment.

Updating the waste management regulations, adoption of Community legal acts resulted in numerous favourable changes. Rate of formation of waste in general, and industrial waste in particular, has decreased significantly due to the introduction and effective application of the principle of prevention. Economic incentives and support for waste recycling technologies, development and use of products made by waste recycling helped promote the ever more determining presence of low-waste technologies, use of resources and product development aiming to reduce hazardousness, durable and recyclable goods, products readily usable as waste, thereby reducing annual waste formation, significantly increasing the rate of recycling. The overhaul of the product fee system, the obligation to take back (e.g., used computers), selective waste collection, development of the waste recycling industry, and the special targeted programmes have a beneficial effect on more effi-

cient waste management. Out of the ordinary organisational, safety, and management, measures were introduced in the case of wastes needing special management (those containing PCB and PTC, electronics, waste oil, accumulators, batteries, asbestos, pesticides, etc.). Significant advances were made in the development of comprehensive registration, data provision, and informatics systems.

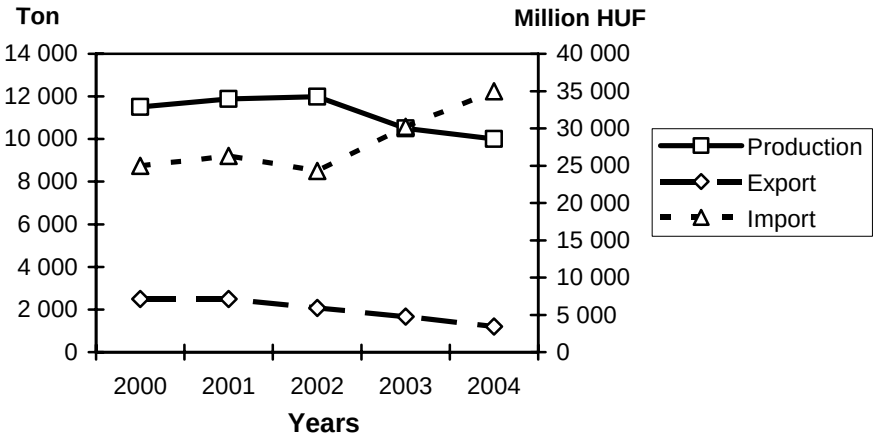


Fig. 8. Turnover and production data of the pharmaceutical industry in Hungary between 2000–2004. Source: MET, HCSO, Budapest, 2005

TABLE 2. Sales data of the chemical industry products

Name	1995	2000	2001	2002	2003	2004
Chemical industry sales MHUF	641 479	1 727 656	1 769 747	1 750 747	1 841 023	2 135 908
Out of this: domestic	397 211	1 003 450	999 190	943 200	968 330	1 120 691
export	244 268	724 205	770 557	807 547	872 693	1 015 217
Ratio of domestic sales by chemical industry out of the total for	22.0	23.3	22.0	20.5	20.3	22.3
Ratio of exports by chemical industry out of the total for the processing industry %	22.6	11.8	11.4	11.8	11.5	11.7
Sectors with a more than 20% weight in chemical industry exports:						
– ratio of oil processing exports out of total export sales by the chemical industry	22.9%	20.6%	–	–	–	–
– ratio of plastics production exports out of total export sales by the chemical industry	25.7%	22.5%	–	–	–	–
– ratio of pharmaceuticals exports out of total export sales by the chemical industry	21.2%	21.0%	23.4%	24.2%	27.2%	27.4%

Source: MET, 2005

TABLE 3. Sales of pesticides (quantity in active ingredients, value in finished goods) (Sources of data: producers, license owners)

Pesticide	2002		2003		2004[+]	
	t	MHUF	t	MHUF	t	MHUF
Herbicides	4 262	27 558	4 505	28 328	4 724	28 593
Insecticides	1 378	8 129	1 271	9 413	2 395	10 035
Fungicides	3 633	14 029	2 877	10 884	3 360	15 521
Other	712	1 123	846	1 051	576	986
Total	9 985	50 839	9 499	49 676	11 055	55 135
* Total	8 230	45 432	7 457	45 749	9 940	60 138[+]

[+] New distributors started providing data in 2004, which resulted in a ca. 15% increase compared to the previous years. Source: MET, 2005

* Based on data collected from wholesalers. Quantitative and value data are usually 15–20% lower than data provided by manufacturers.

TABLE 4. Per capita chemical use in the years: 1995, 2000, 2001, 2002, 2003 and 2004.

Name	1995	2000	2001	2002	2003	2004
Per capita oil processing product production (kg/person)	671	520	607	465	487	433
Per capita production of plastic based paints and varnishes (kg/person)	6.2	7.2	7.4	7.4	7.3	7.3
Per capita plastic use (kg/person)[+]	40	68	70	78	77.8	79.6
Per capita chemical fertiliser use (kg/person)[++]	40	24.7	20	24.3	40	120.5
Per capita pesticide use (kg active ingredient/person)[+++]	0.9	0.9	0.9	0.8	0.7	1.0
Per capita detergent and cleaning agent use (kg/person)[++++]	0.9	0.9	0.9	0.8	0.7	1.0

[+] MMSZ data; [++] MAVESZ data estimated on the basis of KSH and Kopint Datorg data; [+++] NISZ data; [++++] KOZMOS data. Source: Hungarian Statistical Yearbooks, HCSO

3. Primary concerns in connection with the production, import, export, and use of chemicals

Objective: *to present an overview of the nature of problems related to the production, trade, and use of chemicals, and chemicals or categories of chemicals causing problems, as far as they are known*

Besides indoor air pollutants, asbestos, heavy metals (mainly lead), carcinogenic chemicals, persistent organic pollutants (POPs), endocrine disruptors, and sensitiz-

ing chemical substances acting as allergens present severe problems awaiting resolution from the aspect of environmental health. The decline in the number of annually reported and approved diseases of occupational origin (among these poisonings of occupational origin, malignant degenerations caused by chemicals) and in the number of cases of overexposure (*Fig. 9*), present only a partial reflection at most of the problems indicated in employees.

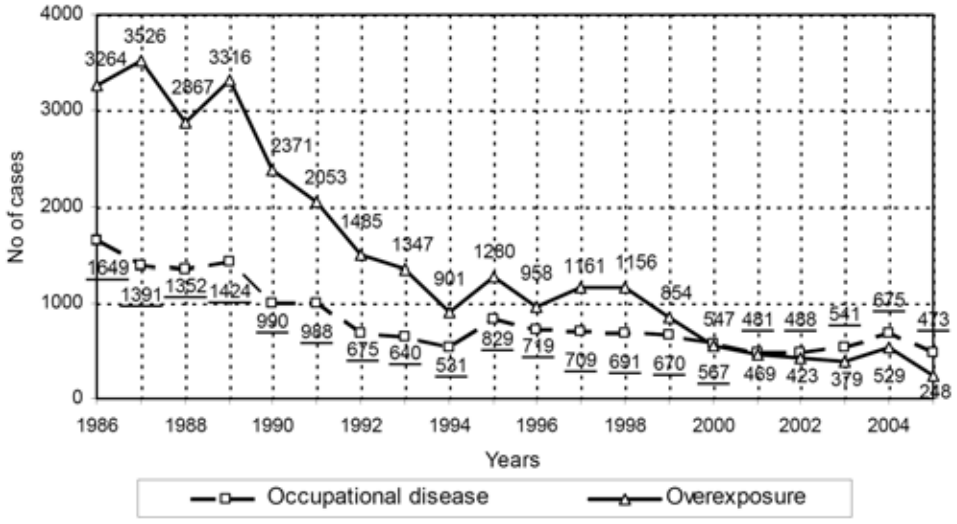


Fig. 9. Number of occupational diseases and cases of overexposure reported in 1986–2005. Source: NCPH-NIOH Annual Reports

It can be established that the production, transport of chemicals accumulates in a few regions. Most of the chemical industry is concentrated into 3 areas (Budapest, Miskolc–Kazincbarcika–Tiszaújváros, and Balatonfűzfő–Inota–Várpalota).

Road, rail, air, and water traffic, transport junctions, aboveground traffic that is exclusive or predominant in large cities, streets that are too narrow compared to the volume of traffic represent living environment pollutant and public health problems; these problems affect mainly the 1/5–1/6th of the total population that live in the capital.

Regarding the three pillars (economy, environment, society) of sustainable development, the state of health of the population (children, adults, elderly) and of all members of the world of labour (employees, employers, and those working in non-organised conditions) has a special significance. Despite the updated, new regulations, the number of accidental poisonings in the 0–14-year age group is still significant (10.13% of all poisonings! – *Table 5*) – partly due to successful education not extending to all age groups, partly to the inadequate observation of the regulations, partly due to the lack of proper rigour in supervising.

TABLE 5. Poisonings in children

Age group (years)	Poisonings (2003)		Poisonings (2004)		Poisonings (2005)	
	Number	% of all poisonings	Number	% of all poisonings	Number	% of all poisonings
< 1	165	1.0	74	0.5	24	0.2
1–4	764	4.6	896	6.6	932	7.3
5–14	809	4.9	662	4.9	622	4.8
0–14	1 738	10.5	1 632	12.0	1 578	12.3

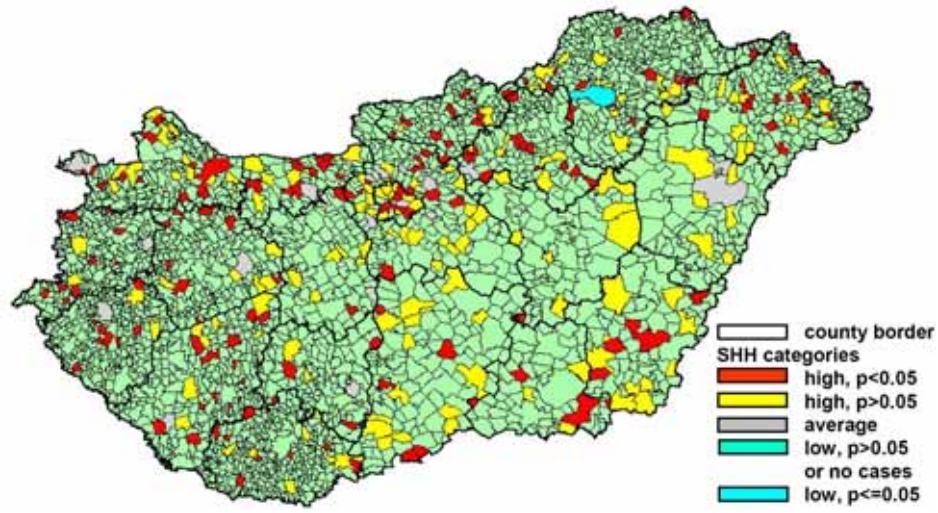
Source: NCPH-NICS (HTIS) Annual Reports

In this country, acute poisonings caused by hazardous substances (accidental poisonings) sometimes, subacute, chronic, delayed systematic (mutagenic, carcinogenic, reprotoxic), or local (allergies, diseases caused by irritation) toxic effects more often, go undiagnosed and/or unreported – similar to occupational diseases and on-the-job accidents with other etiologies. This impedes sustainable development, increases risk of health damage and is an obstacle to health protection in the world of labour. Causes: partly shortcomings in training, partly the lack of interest or indeed, counter-interest on the part of those reporting (worker who has been poisoned/who got sick, employer, diagnosing physician) in filing a report. Lack of knowledge is often the cause of accidental poisonings in adults as well.

Conditions needed to create a safe environment, that is not harmful to health, must be improved. Aside from reducing the pollution of air, water, and soil, sound management of obsolete chemicals, hazardous waste and residues, and asbestos removal must be continued to be furthered; besides identification of sites needing asbestos removal – sources of asbestos exposure – the identification, location of mesotheliomas caused by asbestos must also be carried out (*Fig. 10*). With respect to environmental protection, special significance must be assigned to the phasing out of substances depleting the stratospheric ozone layer (freons), and to the suppression of POP substance emissions. Issues adopted among the National Environmental Damage Relief Programme (the resolution of which are the responsibility of the state), as well as the relevant priorities of more large scale national programmes, long-term policies (e.g., national environmental health programme, long term health development policy, national labour protection programme, food-safety programme) are of similarly special significance. It would also be useful to consider the further development of the programmes, taking into account the geographical situation of the area. More productive work could be carried out, better achievements made, thinking in regional terms, in the case of Hungary this means taking into account the entirety of the Carpathian Basin and the mutual solutions of problems arising from this.

The fact that the obligation to license only applies to a few categories of chemicals (pesticides, biocides, food-additives) presents a problem in the sale and use of hazardous substances. Restriction by refusing the license application is only possible within this range. Further legal possibilities for restriction and banning are applied in accordance with Community regulations.

Mesothelioma mortality, males aged 0–100 years, 1986–2003



Mesothelioma mortality, females aged 0–100 years, 1986–2003

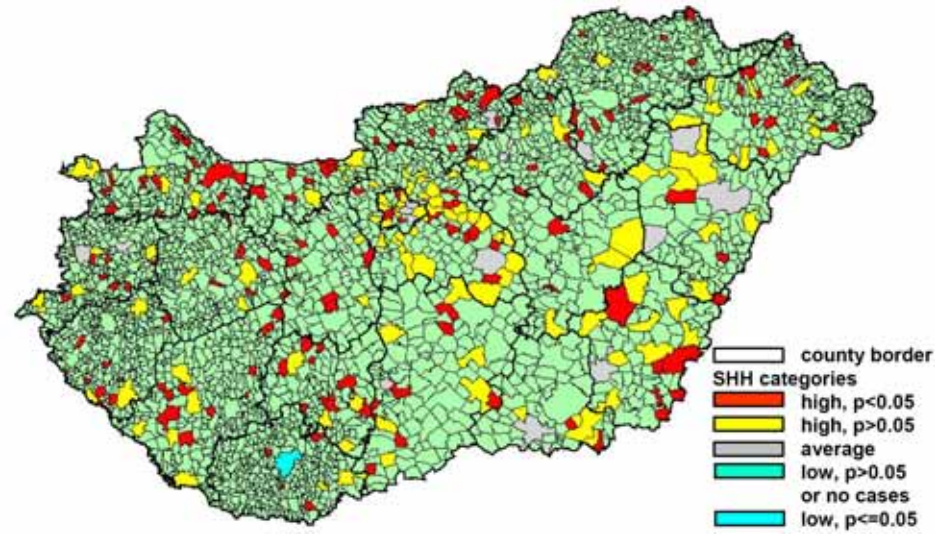


Fig. 10. Regional and/or small-regional distribution of mesothelioma cases by gender in Hungary presented by geographical information method. The figure on the one hand, indicates the necessity of continuation of asbestos removal, on the other hand, it calls attention to that identification of exposure sources needs further study. Red colour indicates significant clustering of cases. Source: NCPH-NIOH, NCPH-NIEH, 2005

To summarize: in our opinion the information available are adequate to establish the relative priorities – shown above – of the problems existing in chemical man-

agement. Based on the data available, there are no significant differences in opinion among the various groups (governmental, non-governmental organisations) regarding the priorities defined.

4. Legal instruments and so-called non-legal regulatory mechanisms for managing chemicals

Objective: *to review legal instruments and other mechanisms regulating the management of chemicals, to describe and analyse the application, compliance with, effectiveness of these regulations and mechanisms, as well as to reveal the strengths and weaknesses of this area and any deficiencies*

Significant developments were made in the legal regulation of chemical safety in Hungary since the National Profile of Chemical Safety was compiled in 1997, such as

- ACSH was prepared and adopted in 2000 it has been in force since January 1, 2001;
- ACSH, the related implementation statutes, and the legal regulations covering additional areas of chemical safety ensure complete correspondence with Community legal acts in the area, the regulation of all phases of the lifecycle of chemical substances (*Fig. 11*), as well their proper implementation (*Fig. 12*);
- statutes in force in the area of chemical safety completely parallel the relevant OECD regulations;
- Hungary has ratified all international conventions serving chemical safety (Rotterdam Convention, Basel Convention, Stockholm Convention, Aarhus Convention, etc.; ILO agreements aimed at chemical safety at the workplace);
- Hungary takes into consideration the recommendations of meetings, congresses affecting chemical safety (e.g., 1992 Rio Earth Summit; 2002 Johannesburg World Summit on Sustainable Development) and those of major international organisations (WHO, ILO, UNEP, UNIDO, FAO, IFCS, UNITAR).

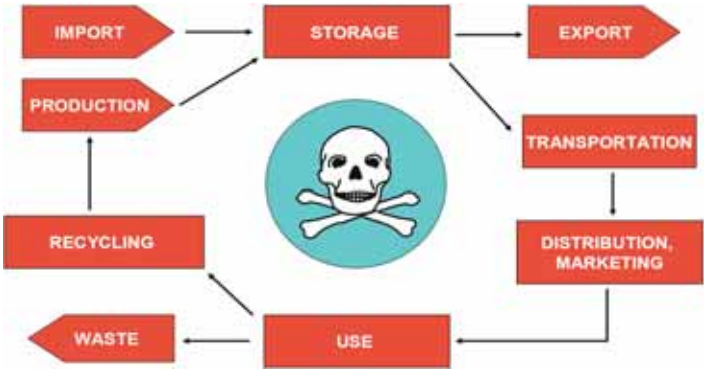


Fig. 11. Life cycle of chemicals. Life cycle refers to one country, where it begins either with the production or import of the chemical and ends with recycling or turning it into waste. Source: UNITAR Guide, Geneva, 1996

Elements of the Act on Chemical Safety of Hungary

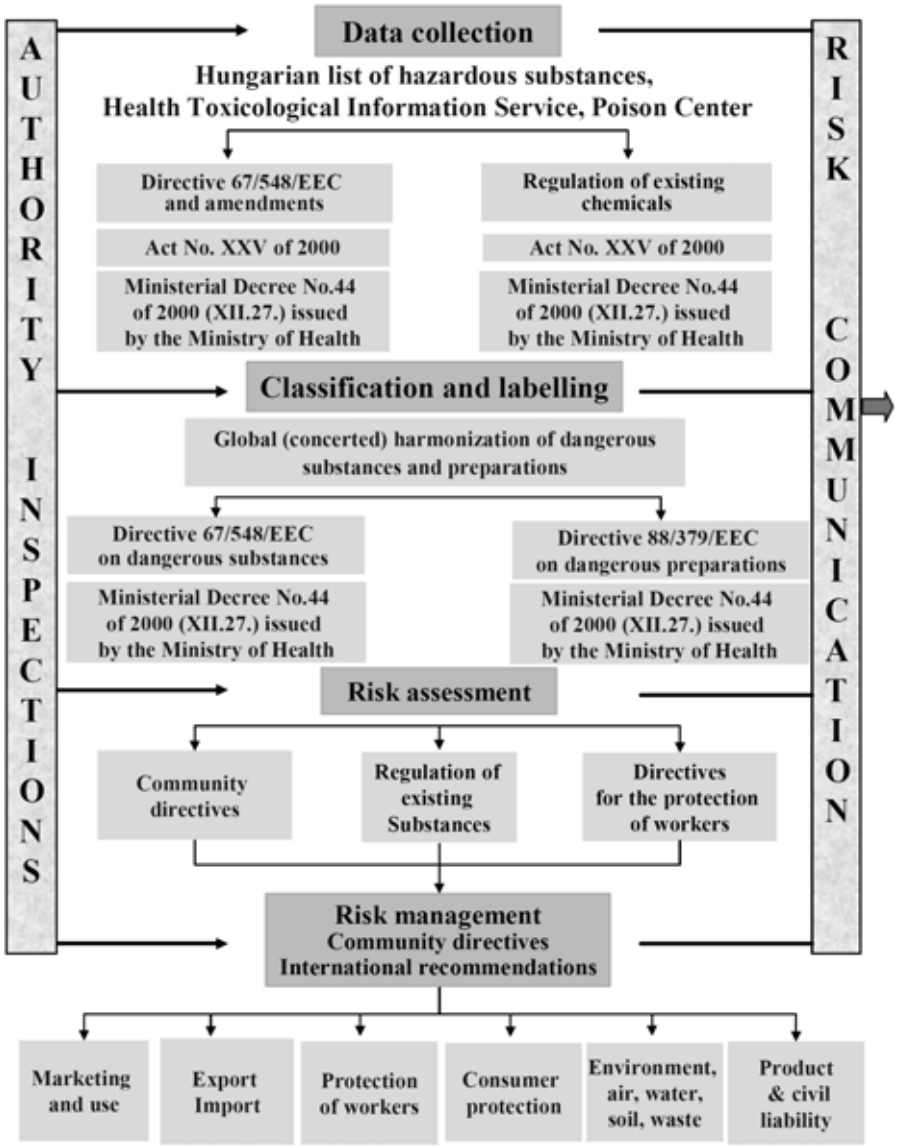


Fig. 12. The structure of the Act on Chemical Safety of Hungary is similar to the regulation recommended by the EU, but it is completed with the prescriptions for authority inspection and risk communication, furthermore, with the regulation of the institutional system ensuring the implementation of chemical safety, shown in Fig. 13. *Source: Gy. Ungváry: Occupational Medicine. Medicina, Budapest, 2000, 2004 (In Hungarian)*

In addition to industrial substances and products, the regulation of the entire life-cycles of pesticides, soil improving and yield improving substances, materials, biocides, medicines, foodstuff and food additives, and other materials (veterinary products, feeds, drugs, psychotropic substances, drug-precursors, cosmetic substances, detergents and cleaning agents, war materials, pyrotechnical substances and products) is provided in accordance with Community legal acts.

The transportation of dangerous substances complies with international regulations, and the regulation of managing waste and obsolete chemicals complies with EU policies.

The 1997 National Profile mentions 163 regulations pertaining to the management of dangerous substances and the issues of chemical safety. The updating of the regulations and the harmonization according to EU requirements resulted in an increase in the number of regulations. The legal regulation now consists of the stipulations of 224 acts, decrees of government and various ministers, and international conventions. The regulation is over-divergent, difficult to review, the statutes sometimes overlap. There is no perfect internal harmonization regarding domestic regulations (in some statutes different technical terms are used to denote the same definition).

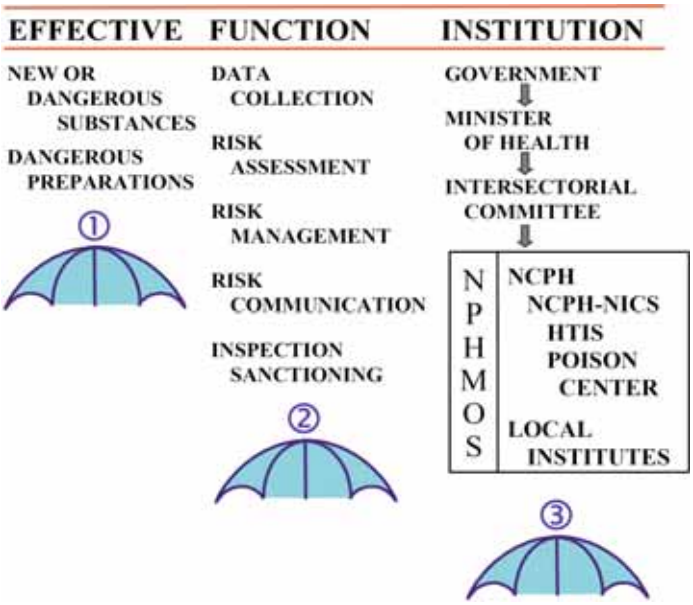


Fig. 13. Act on Chemical Safety of Hungary is a multiple composite umbrella act. In addition to covering the dangerous substances and dangerous preparations it regulates the steps of risk analysis and outlines the institutional system of chemical safety. The part of institutional system of chemical safety related to health care is outlined in the figure. However, many other ministries and inspectorates do their work in the field of chemical safety. Source: Gy. Ungváry: Occupational Medicine. Medicina, Budapest, 2000, 2004 (In Hungarian)

Fortunately, non-governmental organisations are playing a more significant role in the operation of chemical safety. By means of non-legal regulatory mechanisms (see: Chapter II, item 6), the non-governmental organisations promote the progress of chemical safety in the country.

To summarize: the regulation of chemical safety is comprehensive, covering all sectors of the sound management of chemicals; it is also detailed, the regulation applies sanctions for each individual chemical substance, and assists sound management (*Figs. 12* and *13*).

5. Ministries, agencies, and other institutions having a role in the management of chemicals

Objective: *description and analysis of the mandates and the programmes of ministries and other governmental institutions responsible for the various areas of chemical safety and the management of chemicals*

The governments formed following the economic, social, political transition shaped their structure and duties on the basis of solving the most important and current problems. Four governments have been in office since 1997 when the so-called National Profile was elaborated. The current government came into office in June 2006. The ministries playing a decisive role in chemical safety (Health, Environment, Economy, and Agriculture) have continuously existed (aside from the occasional changes of name).

Upon reviewing the responsibilities of the various ministries related to the different phases of the whole life cycle of chemicals from their manufacture/import until waste formation (*Fig. 11*), it can be seen that the MH, MEPW, MJ, MEL, MARD, MET, MD, MYFSAEO, MFA and MF all have responsibilities stipulated by law, through one or more, or all groups of chemicals (*Table 6*).

When examining which ministry has responsibilities related to which group of chemicals, it is apparent that the MH, MEPW and MI are the ones that have legally specified obligations in the case of all groups of chemicals; the MET also has legal responsibilities in the case of almost all groups of chemicals. The MD, MEL, MARD and MF all have legally specified tasks in the case of one or more groups of substances (*Table 7*).

The various Ministries carry out their legal responsibilities by means of the institutions and authorities operating under their supervision. Namely the National Directorate General for the Prevention of Disasters and the county Directorates for the Prevention of Disasters, the Civil Protection Directorate of Budapest, the competent professional municipal fire services and the competent notaries are under the supervision of the Ministry of Interior, the National Labour Inspectorate and its inspectorates of local jurisdiction under the supervision of the Ministry of Employment and Labour; the Ministry of Agriculture and Rural Development oversees the National Food Investigation Institute, the National Institute for Agricultural Quality Control, the Department of Plant Protection and Soil Conservation and the Plant

Protection and Soil Conservation services, the Animal Health and Food Control Stations and the Institute for Veterinary Medicinal Products. The Road Management and Coordination Directorate, Mining Bureau of Hungary, as well as the Hungarian Trade Licensing Office operate under the supervision of the Ministry of Economy and Transport, the Committee on the Licensing of Foreign Trade in Military Equipment operates under the supervision of the Ministry of Defence, the Consumer Protection Inspectorate is supervised by the Ministry of Youth, Family, Social Affairs and Equal Opportunity, the National Inspectorate for the Protection of the Environment, Nature and Water and its 12 inspectorates of local jurisdiction are supervised by the Ministry of the Environmental Protection and Water, and the Hungarian Customs and Finance Guard operates under the supervision of the Ministry of Finance.

TABLE 6. Responsibilities of ministries in the phases of life cycle of chemicals

Life cycle period/relevant ministry	Import	Production	Storage	Transportation	Distribution, (marketing, trade)	Use, management	Waste
MARD	x	x	x	x	x	x	x
MD	x	x	x	x	x	x	–
ME	–	–	–	–	–	–	–
MEL	–	x	x	x	x	x	x
MEPW	x	x	x	x	x	x	x
MET	x	x	x	x	x	x	x
MF	x	x	x	x	x	x	–
MFA	x	x	x	x	x	x	–
MH	x	x	x	x	x	x	x
MI	x	x	x	x	x	x	x
MJ	–	–	–	–	–	–	–
MYFSAEO	–	–	–	–	x	x	–

"x" indicates that a ministry has legally specified obligation related to the regulation of any life cycle period of any chemical. "–" means that the ministry does not have legally specified obligation related to the given activity. MH, MEPW, MI, MEL, MARD and MET have responsibilities related to all life cycle periods of one or more dangerous chemicals. **MARD**: Ministry of Agriculture and Rural Development; **MD**: Ministry of Defence; **ME**: Ministry of Education; **MEL**: Ministry of Employment and Labour; **MEPW**: Ministry of Environmental Protection and Water; **MET**: Ministry of Economy and Transport; **MF**: Ministry of Finance; **MFA**: Ministry of Foreign Affairs; **MH**: Ministry of Health; **MI**: Ministry of Interior; **MJ**: Ministry of Justice; **MYFSAEO**: Ministry of Youth, Family, Social Affairs and Equal Opportunity.

TABLE 7. Responsibilities of ministries related to the different groups of substances

Group of substances/ Relevant ministry	1	2	3	4	5	6	7	8	9	10	11	12
MARD	x	x	x	–	x	–	x	x	x	x	x	–
MD	–	–	–	–	–	–	–	–	–	–	–	x
ME	–	–	–	–	–	–	–	–	–	–	–	–
MEL	x	–	–	x	x	–	–	–	–	–	–	–
MEPW	x	x	x	x	x	x	x	x	x	x	x	x
MET	x	x	x	x	x	x	x	x	x	–	x	x
MF	x	–	–	x	x	–	–	x	–	–	x	x
MFA	–	–	–	–	–	–	–	–	–	–	–	–
MH	x	x	x	x	x	x	x	x	x	x	x	x
MI	x	x	x	x	x	x	x	x	x	x	x	x
MJ	–	–	–	–	–	–	–	–	–	–	–	–
MYFSAEO	–	–	–	–	–	–	–	–	x	x	x	–

1 pesticides; 2 feeds; 3 yield-improving substances; 4 industrial chemicals; 5 biocides; 6 medicines; 7 veterinary products; 8 drugs, psychotropic substances, drug precursors; 9 cosmetic substances; 10 foodstuff; 11 detergents and cleaning agents; 12 other chemicals (war materials, pyrotechnical materials and products). "x" indicates that a ministry has legally specified obligation related to the regulation of any life cycle period of any chemical. "–" means that the ministry does not have legally specified obligation related to the given activity, this, however, this does not mean that the ministry has no role in chemical safety (see text). MH, MEPW, MI, MEL, MARD and MET have responsibilities related to all life cycle periods of one or more dangerous chemicals. Note: In the line of MEL "x" mark is true in case of cosmetic substances, detergents and cleaning supplies if also raw material production is taken into account. See the abbreviations of the names of ministries in the legend of *Table 6* and in the list of abbreviations (pp. 129–131).

According to the ACSH, surveillance of the field of chemical safety – leaving the past (before 2000) competencies of the other authorities untouched – is carried out by the National Public Health and Medical Officers' Service (NPHMOS) operating under the direction of the Ministry of Health. Partly (and mainly) due to this, partly because health care traditionally has significant tasks in carrying out activities, control related to many chemicals (e.g., industrial chemicals, pesticides, medicines), the Ministry of Health has the most diversified institutional system in order to properly manage hazardous substances and products. Besides NPHMOS mentioned above, the Office of Authorisation and Administration Procedures of the Ministry of Health, as well as the National Institute of Pharmacy all operate under its supervision. NPHMOS is directed by the Chief Medical Officer of State via the Office of the Chief Medical Officer of State (OCMOS). The József Fodor National

Centre for Public Health (NCPH), NCPH National Institute of Chemical Safety and NCPH National Institute for Occupational Health operate within NPHMOS; the National Institute for Food Safety and Nutrition (NIFSN), the National Centre for Epidemiology, and the institutes of local jurisdiction (of the capital, 19 county and 136 municipal)[6] are divisions of NPHMOS. It is important to add that the Hungarian Food Safety Office operates under the supervision of the Minister of Health.

The occupational health service should be highlighted from the services, organisations working in the field of chemical safety, performing the specific tasks of the management of chemicals; its structure is practical (able to serve both large and tiny enterprises), the staff is well qualified; however, the efficiency of its operation needs to be improved. These services are operated by the employers.

The monitoring of chemical contamination of the working environment and of the toxic load of the workplace of the employees is obligatory and is of acceptable efficiency (it is the responsibility of the employer). The control of the air and water in the living and natural environment is a state responsibility; the efficiency of performing the tasks is adequate/good; the control of indoor contamination has not been resolved. The control of foodstuffs has strengthened and became more organised. Control of pesticide residues, industrial safety can be deemed good. The development of the detailed map of soil contamination has only begun in the country.

In summary: it can be stated that surveillance of chemical safety – and in it, the sound management of the widest variety of dangerous substances (industrial, agricultural, biocides, medicines, etc.), and food safety – is taken care of by numerous ministries and the institutional systems thereof. The offices, institutions, laboratories, etc. of these institutional systems, the experts working in the institutions provide significant support for the work of the inspectorates; by performing consulting, laboratory, educational, advisory, primary and secondary prevention tasks, these institutions strengthen national chemical safety. The institutional system of chemical safety is too diversified, however its efficacy is hard to judge. It seems practical to evaluate transparency, simplification, uniform management, efficiency, effectiveness with the help of effect studies.

6. Activities of industry, public interest groups and the scientific sector

Objective: *functions and overview of non-governmental organisations, for the support of national efforts in the management of chemicals*

The government provides appropriate information to non-governmental organisations. The acts, decrees, and important announcements concerning sound chemical management and chemical safety are published in the Hungarian Official Journal, the Official Journal of the Ministries, specialist journals, newspapers, and on the radio and TV. Playing a significant role in this work on the part of the government is one of the institutes of the Ministry of Health, the National Institute of Chemical

[6] The modernisation, regional reorganisation of NPHMOS has begun; data are from 2004.

Safety (NICS) of the József Fodor National Centre for Public Health (NCPH). The Health Toxicological Information Service (HTIS) operates within its framework. The Ministry of Health also operates the Chemical Safety Information System (CSIS), established with PHARE funds, in NCPH. Besides governmental organisations, HTIS and CSIS must also provide information to industry (for a fee) and to the general public (free of charge) as well. CSIS is liaising with international intergovernmental organisations (e.g., WHO, ILO, UNEP, FAO, UNIDO, IPCS, IFCS) as well as with OECD, EU (RAS-BICHAT), also with the major information systems (e.g., GINC, INFOCAP). CSIS is able to transmit information from these sources not only to governmental, but to non-governmental organisations as well. There is insufficient data on the efficacy of this latter information service.

Non-governmental organisations, such as trade unions, employee and employer organisations have the opportunity to submit opinions on decrees proposed in chemical safety and the sound management of chemicals – prior to publication – to the National Interest Conciliation Council and its Labour Protection Committee. The non-governmental organisations are represented in the interministerial committee working in the area of chemical safety.

Regulations pass through the Committee stage by consensus or majority votes. Therefore, the Government strives to take overall opinions into account.

The social organisations have become familiar with, and are able to provide opinion on the acts, decrees under development during the administrative reconciliation phase, or the preceding public discussion. Recognition and consideration of their opinions are – in their view – still not adequate.

Of the non-governmental organisations (industry, scientific circles, social organisations), industry is more and more capable of informing the public, and this is increasingly accepted by public opinion. The Hungarian chemical industry itself, by having joined several international voluntary programmes – Responsible Care, Chemical Industry's Warning and Information Centre (CIWIC), actively cooperates in the strengthening of chemical safety, beyond what is required by law. Through the CIWIC network, industry regularly plays a role in the prevention of accidents during the transport of chemicals and the prevention of damages.

The participation of the Hungarian scientific-research institutional system – university and academics – in the activities related to the sound management of chemicals is lagging behind at the moment, despite having considerable traditions, and despite its professional standard and significant intellectual capacities. These research centres are able to encourage the expansion of the research capacity of the government but much more targeted support (with funding tenders) is needed for this to materialise.

The achievements of trade unions in transmitting information are significant. The activity of public organisations has undergone major development, but their efficacy must be improved further.

In summary: the foundation of chemical safety has been established. Furthermore, it can be stated that the cooperation between the government and non-governmental organisations in the field of sound chemical management has been achieved and is increasingly successful with the involvement of industry and the

trade unions. The research and university institutions could provide significant assistance to governmental and other non-governmental organisations in the scientific formulation of chemical safety, in the professional education of chemical safety, in guaranteeing the professionalism of information and the enlargement of its data content. The public organisations play an increasingly important role in the dissemination of information and education.

7. Interministerial committees and coordinating mechanisms

Objective: *to describe and analyse mechanisms that promote cooperation between ministries, offices, and other relevant governmental and non-governmental bodies in the field of sound chemical management*

Different ministries are responsible for the various areas of sound chemical management and chemical safety in Hungary, but the cooperation between the ministries in the management of chemicals has a tradition going back several decades (licensing of pesticides, yield and, soil improvement products). Commendable cooperation developed between the Ministries of Health and Agriculture in 1992, in the regulation of the sound management of dangerous substances, and in the voluntary introduction of the PIC procedure. During the mid1990s, an informal interministerial committee, with the participation of the various ministries and non-governmental organisations, started working – on a voluntary basis – on the preparation of first the National Profile, followed by ACSH, on an initiative of the National Institute for Occupational Health, followed by the Ministry of Health. ACSH called for the creation of an interministerial committee operating in the field of chemical safety. The structure and tasks of this are regulated by a government decree. There is a legally regulated cooperation regarding the PIC procedure, as well as the Rotterdam Convention. The national tasks necessary for the preparation of official briefings by the EU Committee in the PIC procedure, are carried out by the National PIC Committee, with the involvement of the competent ministries, institutions, customs organisations, non-governmental organisations (see also: Chapter II., item 13).

The following interministerial committees operate in the area of chemical safety and its bordering areas: Interministerial Committee Coordinating Chemical Safety; PIC Committee; Conciliation Council for the Licensing of Pesticides; Interministerial Committee supervising the National Centre for the Prevention of Industrial Accidents; Interministerial Committee on Narcotic Drugs; Government Coordination Committee (to prevent severe accidents involving dangerous substances); POP Interministerial Committee.

The action of the Interministerial Committee Coordinating Chemical Safety has improved cooperation between the ministries. Its efficacy could further be improved by the creation of a flow of information between the sectors, based on regulations, as well as linkage to the international data bases of the area.

The European Interministerial Cooperation Committee, which plays a decisive role in the preparation of the REACH and GHS regulations on a Member State ba-

sis, functions well and successfully. The work of the Governmental Coordination Committee (its role, among others, is the prevention of severe accidents involving dangerous substances) is effective. The Conciliation Council for the Licensing of Pesticides, that plays a role in the prevention of undesirable harmful effects of pesticides to the environment and to health, also has a successful past going back several decades.

The flow of information between the industrial trade organisations and the government bodies has improved in the past few years. The preparedness of the various professional organisations is of a higher level, since they were forced to become familiar with the various Community legal acts, and to analyse the experiences of their international partners during the process of Community legal harmonisation. The willingness on the part of the Government to receive issues raised by the industry has increased; this is obviously due to the recognition and acceptance of the European practice. Trust in the other has also strengthened along these processes, resulting in a higher level of work in both law-making and practical implementation.

Conditions for the involvement of industry, scientific institutions, and other non-governmental organisations in the harmonisation mechanisms are good, but a government initiative is needed for this. Opportunities are also good for the operation of ad hoc working groups for the development of specific issues. There was a commendable cooperation between the governmental and non-governmental organisations during the development of ACSH. The cooperation with the industry and public interest groups was especially good.

On the whole, it can be stated that the basic mechanisms for the cooperation between the governmental and non-governmental organisations have evolved. Most of the interministerial committees function effectively; their achievements can be traced in the development of sound management of chemicals. The relationship between the currently operating mechanisms – the so-called formal intersectorial cooperation – needs further development.

8. Availability and use of data

Objective: *to provide an overview of the availability of data related to the management of chemicals and its infrastructure, and to analyse how the information is used to reduce national and local chemical risks*

Increasing use of information technology in the country indicated in the 1997 Profile continued to gain momentum. Together with computer technology, ministerial and institutional activities relating to chemical safety (including activities related to regulation, control, information), as well as laboratory work have taken place. The technical and information infrastructure needed to accomplish the provision and processing of data, and information tasks relating to the sound management of chemicals, as stipulated by law, has been established.

The obligations cover the most important sectors of chemical safety. Obligations are understandably diverse with reference to dangerous substances and preparations. Apart from fulfilling obligations stipulated by Community legal acts (classification, labelling, register of substances classified by the EU, etc.), it should be emphasized that a register of substances exists in the country. Therefore, the registration of dangerous substances and dangerous preparations used for any activity is compulsory. More than 70,000 dangerous substances and preparations are documented in the product register. There is a data provision, data processing, reporting and/or notification obligation in cases of poisoning {health care}[7], for the parameters of chemical safety at the workplace (limit values, environmental and biological monitoring for cases of overexposure, occupational poisonings, risk assessment) {health care}[7], for the characteristics of air quality (environmental concentration, emissions, limit values, local sources of pollution) {environmental protection, health care – to a lesser extent}[7], the determining parameters of drinking and surface waters {health care}[7], data related to wastes {environmental protection}[7], information related to pesticides {agriculture, health care – to a lesser extent}[7], register of activities with dangerous substances {health care}[7], specific data of dangerous industrial activities, hazardous installations {economy}[7], protection against severe accidents involving dangerous substances {interior, National Directorate General for the Prevention of Disasters, Government Coordination Committee}[7]. Please refer to the detailed document of the Profile with regards to other obligations (e.g., food safety, medicine safety, cosmetics, biocides).

Regional collection and processing of data, and the reports and information prepared on the basis thereof are wide-ranging. This information is available to those preparing decisions, decision makers, non-governmental organisations, and the public as defined by law. The quantity and quality of the data is sufficient to enable those preparing decisions and decision makers to substantiate the maintenance and necessary modification of chemical safety.

Besides regional data, data from international literature and international information data bases are available in sufficient quantity and quality. Please refer to *Fig. 14* regarding the dissemination of information. The efficiency of the dissemination of information (principally in target areas belonging to the ministries or in bordering areas) needs to be improved. It would be advisable to make the (socalled intersectorial) flow of information between the various data bases more fluent, or, in some cases, to widen this.

[7] {} the ministry, institution, or committee responsible for the task

Fig. 14. Organisational structure of the Chemical Safety Information System (CSIS) developed with PHARE support, which is closely connected to Health Toxicological Information Service (HTIS), operating in NCPH, within this in NCPH-NICS, for several decades. Flow of information is bidirectional between blocks numbered I–V. Within block III there is also a bidirectional information flow between its parts; the Poison Center and Product Register are operated also here. The aim of CSIS: on the one hand, the processing and full-scale intersectorial distribution of information received from the international organisations, ministries, (mainly) in the country, on the other hand, computerized support of information exchange. The system supports also the operation of the Poison Center and the Product Register. Source: CPRI-NCPH-OCMOS

As mentioned previously, the necessary information systems, data bases at the various ministries have been established. Here, we would, on the one hand, like to highlight the Chemical Safety Information System (*Fig. 14*) established with support from PHARE in NCPH-NICS, and, on the other hand, the establishment of the

EPER-PRTR data base[8]. The environmental protection information in EPER-PRTR is of public interest. The gradual publication and dissemination of data on the internet is a legal obligation administered by the Ministry of the Environment.

In summary: the infrastructure and mechanism of the provision and processing of data and provision of information related to the sound management of chemicals has been established. The availability and use of data and information is ensured for those preparing decisions, decision makers, as well as for non-governmental organisations and the general public. This enables the reduction of national and local risks of chemical origin. Risk management is supported by the fact that efficient exchange of information has been established in the country with EU Member States and dominant international organisations.

9. Technical infrastructure

Objective: *to provide an overview of the national technical infrastructure related to the management of chemicals*

This chapter presents the nationwide laboratory system serving national chemical safety operated by the government. The chemical analyses laboratories established with PHARE support within NPHMOS (one central, six regional) must be highlighted. As an administrative task, this performs the nationwide monitoring of chemical water safety, as well as – in cooperation with the laboratories of the waterworks – monitoring, analysis of the chemical pollution of surface and drinking waters, development of strategies to prevent risks of damage to health caused by water, and their control. This system also provides diagnosis of havarias, disasters, terrorist acts of chemical nature, and their follow-up (identification of chemical contamination in question, measurement of levels harmful to health, determination of "rehabilitation" levels) (*Figs. 15* and *16*). This activity is of significant importance from a national security point of view as well. The capacity and potential of this laboratory system could be utilized to a larger extent and more comprehensively if required.

Besides drinking and surface waters, the most significant and most frequent sources of risks of damage to health of chemical pollution are foodstuffs. In accordance with Community legal acts, Hungary attaches more and more significance to achieving chemical food safety. The two pillars of the technical infrastructure of food safety are the laboratory system of about 900 employees operating under the direction of MARD, and the professionally independent central institute of national competency, the National Institute for Food Safety and Nutrition (NIFSN), operating under the supervision of MH, and under the direction of the Office of the Chief Medical Officer. The regional laboratories of NPHMOS established with PHARE

[8] Note: The Commission passed a resolution making it obligatory for the Member States that the enterprises within the scope of the relevant directive provide environmental protection – so-called EPER – data at stated intervals, which are then summarized by the Commission. The Hungarian EPER data are available on the website of the MEPW from July 2004.

support (*Fig. 15*) provide significant assistance to NIFSN staff of about 30 working in the field of chemical food safety. The laboratories of MH chiefly work in investigating the heavy metal contamination of food additives, mycotoxins, and foodstuffs serving special nutritional needs. The laboratory system of NIFSN will start operating with up-to-date analysis and informatics by the end of 2006, thanks to further PHARE support.

Decentres and their area of coverage

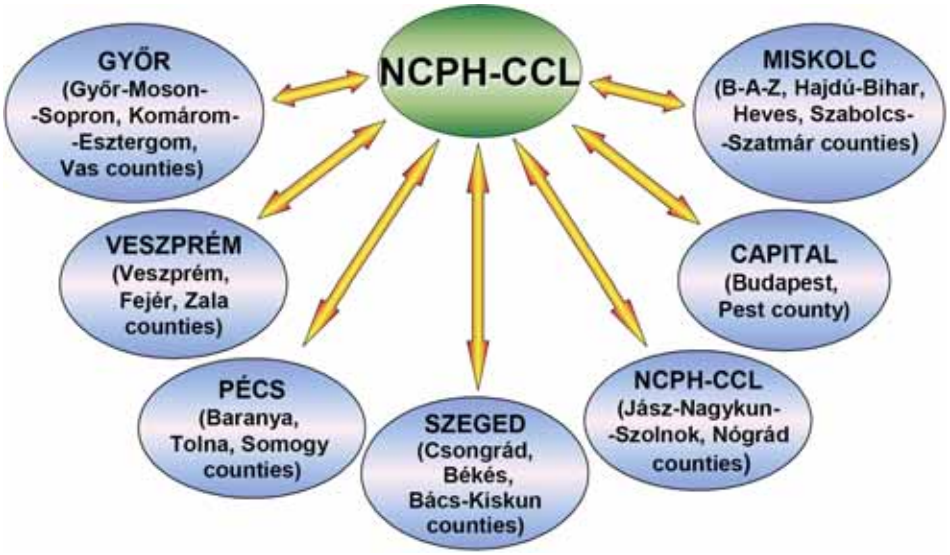


Fig 15. Laboratory system in NPHMOS developed with PHARE support. It was planned to establish a top laboratory in NCPH, and regional laboratories in Győr, Veszprém, Pécs, Szeged and Miskolc; the capital region, not included in the original concept, was organised later. According to the original plan this latter region would had been covered by NCPHCCL, in addition to its other laboratory functions. Source: NCPH Organisational and Operational Regulation; Gy. Ungváry: Occupational Medicine. Medicina, Budapest, 2004 (In Hungarian)

The monitoring of medicines is carried out under the directive of the National Institute of Pharmacy (NIP) and under the supervision of MH. The laboratories are part of the European Directorate for the Quality Control of Medicines Network. Their tasks are the analysis of quality problems, side effects, market control studies, and studies prior to registration. Besides laboratory studies, NIP also provides ongoing training for analysts and assistants working in the field. Although equipped with the most frequently used and most important instruments in medicine analysis, the instrumentation of the laboratories needs to be expanded and modernised in many respects.

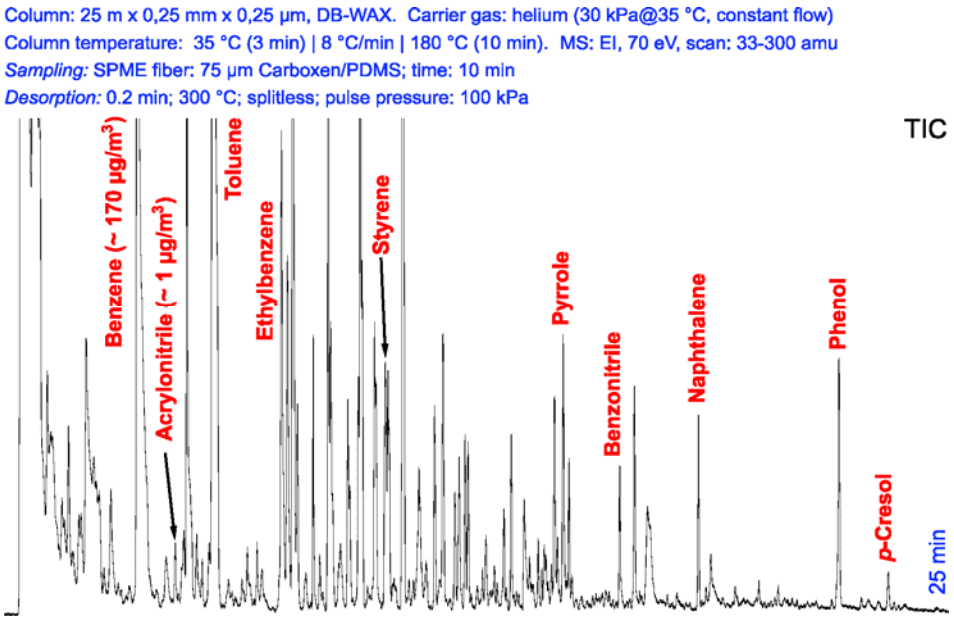


Fig. 16. Air sample taken at the surroundings of a cold store on fire, at 25 m from the pocket of fire. The chromatogram shows that among the numerous pollutants carcinogens are present, with similar frequency and quantity, as in tobacco smoke. Sampling and analysis was done by the NCPH-CCL (original curve 2004)

Experimental toxicology is an important element of the technical infrastructure. Physicochemical (mammalian) toxicological, ecotoxicological practical activity and expertise are of essential importance for the testing, classification, labelling control of chemicals, and for considering licensing of dangerous substances. Connected with chemical safety, an experimental toxicology unit operates within NCPH, which cooperates with the previously mentioned central analytical chemistry laboratory established with PHARE support. The clinical laboratory and the epidemiology and risk assessment units also operate within NCPH. The significance of experimental toxicological expertise increases during the implementation of REACH, the evaluation of biocides. Experimental toxicology is of decisive importance in the notification of new substances, licensing of pesticides, safety studies of medicines (the provision of this latter is a task of the manufacturers, importers, sellers). The development and modernisation of the experimental toxicology activity and experimental toxicological expertise is necessary.

MYFSAEO, MD, MJ, MEPW, and their institutions operate their own laboratory systems to perform their specific tasks.

University and research institute laboratories, though operating at high standards, have no role imposed by the state in chemical safety. Their importance is unique in the development and adaptation of techniques, in research and in the

training of specialists. This chapter presents comprehensive information about these, including the higher education on chemical safety – providing proper vocational and postgraduate training for professionals working in chemical safety and other specialties – (see also: Chapter II, items 11 and 15).

Private laboratories, accredited in the various areas of chemical safety, that significantly hasten the completion of the necessary studies, started to undergo rapid development during the last few years.

In summary: the technical infrastructure (analytical chemistry instruments, laboratories, toxicology laboratories, information systems – for this latter, please refer to: Chapter II, item 8.) –, necessary for the sound management of chemicals has undergone significant development. The procurement of instruments and the development of laboratories that are still needed in several areas – mainly in chemical food safety – are in progress. The technical infrastructure is capable of ensuring chemical safety for the country, under a planned, unified laboratory strategy utilising laboratory capacities efficiently and in a practical manner, and under unified and professional management.

10. International linkages

Objective: *to seek participation in and cooperation with international organisations related to the sound management of chemicals and to aim for an integrated approach at the national level*

The activity of Hungary in the implementation of international conventions has been significant in the past. This has further increased in the last 5-6 years. The implementation of international conventions is achieved by passing national laws. Appointment of institutions and authorities took place within a reasonable time period.

The government and the governmental organisations have obligations within the EU and OECD. Hungary has commitments, and participated in treaties, or conventions. She has undertaken projects with international organisations such as WHO, UNEP, ILO, FAO, UNIDO, UNITAR, IFCS, IARC, and IPCS in the area of chemical safety. She has bilateral or multilateral research co-operations with EU Member States and several countries outside the EU.

The aim is to establish a comprehensive national programme comprising the National Environmental Programme, the National Environmental Health Programme, the Public Health Programme, and other national programmes (e.g., food safety, waste management, labour protection programmes). Where there is a possibility (e.g., labour protection, public health), the national programmes link up with the programmes of the EU or of international organisations.

The implementation of international conventions in Hungary has been successful.

The international organisations and agencies further improve co-ordination, communication, and adaptation in the execution of various training programmes. A problem to be resolved is that observations and conclusions of the international programmes should, in every case, reach the professionals in detail and others in essence.

In summary: Hungary actively maintains her international relations in the area of chemical safety. Hungary participates in the development of international conventions, fulfils her obligations arising from her memberships (UN, WHO, ILO, UNEP, UNIDO, IFCS, IPCS, EU, OECD), and is involved in international programmes and in numerous bilateral and multilateral research co-operations. Hungary is one of the founding members of IFCS. Her government representative held the position of one of the vice-presidents of the Forum and led the work of the Central and Eastern European Region.

11. Awareness, knowledge of the employees and the public

Objective: *to review mechanisms that are available to inform and educate employees and the public on the risks related to the production, import, export, management, and the use of chemicals and waste*

This chapter summarises the regulations, programmes, and activities aimed at achieving the following:

- information for workers/employees to protect their health and safety against risks posed by chemicals;
- information for the public to protect against environmental and health risks posed by chemicals, as well as harmful effects endangering their safety (including ways to guard against the acute and chronic effects of chemicals);
- increasing public awareness and educating the public to participate in national environmental initiatives.

The contents of this chapter is closely related to activities (e.g., education, vocational training, data bases, review of pertinent information system) presented in numerous other subsections.

The obligation to acquire the most important information is stipulated by laws, as well as the adjoined regulations, for both the workers (employees, those involved in non-organised work) and the public.

The Public Health Programme, the National Labour Protection Programme, and the exercises conducted by the chemical industry to combat chemical accidents and havarias are aimed at achieving similar goals.

The occupational health service performs important activities towards informing employees; this service is regularly in touch with ca. 90% of the employees.

A labour safety and occupational health information service operates in the country. This service is available free of charge by telephone during regular office hours.

NCPH provides information for the public through its website, via HTIS and through its own publications.

Professional advice for the public in straightforward language is provided through HTIS on a freephone service available 24/7 (see also Chapter II, item 8). Unfortunately, public interest could only be raised moderately.

The printed and electronic press, TV and radio rarely deal with the issues of chemical safety except in extraordinary events.

The National Profile, introduced in 1997, inspired the development of the chemical safety act and regulations. Improvement could be observed in the role of chemical safety, in professional activities (risk analysis, etc.), and in the formation of a multilevel approach. Future projects and responding to new challenges require a lot of effort.

It seems reasonable to carry out a change in philosophy in raising awareness for chemical safety. While continuing to improve knowledge of employees/workers, much more emphasis must be placed on shaping public knowledge. The development of a mid-range action programme, with annual action plans, with the co-operation of governmental, professional, civil organisations, the media, and providing the necessary financial resources is justified. The Interministerial Committee could act as co-ordinator and organiser.

It would seem appropriate to rely on the professionals of occupational health, chemical safety surveillance, the federations of local governments, the professionals of the environmental protection committees operating at local governments, and local information sources (newspapers, cable TV, internet cafes) in a targeted manner. The conscious approach with consumer protection must also be made much more organised.

In summary: mechanisms have been established in Hungary that are appropriate for educating, training, and providing information to workers and the public regarding the sound management of chemicals. This has been achieved through regulations, democratic organisations (interest advocate council, employer and employee representation, etc.), civil organisations, and governmental institutions.

12. Resources available and needed for chemical management

Objective: *review of resources related to the various aspects of chemical management (including human and financial resources) available to the government and analysis of the resources needed*

Hungary has consciously developed its chemical safety policy taking into account the recommendations and requirements of international organisations (initially WHO, ILO, UNEP, FAO, UNIDO, IPCS, and later IOMC, IFCS, OECD, EU). This policy was first drafted in ministerial and government decrees in the 1980s and 1990s, then in an act (ACSH) in 2000. At the same time, professional and authoritative institutions were established.

The following merit highlighting:

- The ministries and their executors operate at a professional level. They enlist the services of independent experts. The costs of this are primarily covered by the state budget.
- Chemical safety at medium and large size chemical industrial enterprises (including the pharmaceutical industry) is provided through the operation of independent labour protection, fire service, environmental protection, technical

safety, and transport organisations. The numbers of staff at these organisations vary according to the level of hazard and size of the enterprise. Engineers, who, in most cases also have specialist engineering qualifications, have the most important assignments.

The chemical industrial enterprises include financial resources needed to maintain and continuously develop chemical safety in their annual financial budget, and, for the most part manage chemicals in a quality assured manner, from their acquisition or production until their destruction or disposal.

- An independent National Institute of Chemical Safety began operating in NCPH at the time of its founding (1998). Up-to-date information data bases (with local and international links), chemical and toxicological risk assessment, and rapid response units were created in the Institute. It is financed for the most part by the state budget, and, to a smaller extent, from the operating profits of NCPH.
- The chemical safety control of foodstuffs is provided through a laboratory system financed by the state budget and operating incomes. Most of the laboratories operate under the supervision of MARD and a smaller number under that of MH.
- The scientific and university background of chemical safety in the country is notable.
- Control is carried out by the specially trained chemical safety inspectors of NPHMOS. Their work is carried out by the inspectorates attached to MARD and MEPW, as well as the Consumer Protection Agency. Inspectorates working in the border areas are attached to MF. Exceptional events are the responsibility of the National Directorate General for the Prevention of Disasters in MI.

With regards to financial, technical, and human resources, it can be noted that:

- financing is done mostly through the state budget, and to a smaller extent from business incomes;
- there are significant differences between the ministries in the distribution of finance needed for state tasks; within the sector on health care, the budget available to tackling chemical safety is extremely modest;
- there seems to be a lack of professionals to perform the new, so-called national (competent) authority tasks – that are of an expert, coordinative nature – that emerged with becoming an EU Member State;
- chemical safety belongs to too many ministries. There exists a large number of regulations; there is the issue of comprehensive directives. Then there is a lack of training for professionals (experimental toxicologists, clinical toxicologists, risk analysts, risk assessors, risk managers, communication professionals). These are all problems to be overcome.

In summary: technical conditions and human resources necessary to operate chemical safety are provided for by the state. The system is primarily financed by the state budget. Upon analysis of the activity and the infrastructural conditions, we

come to the conclusion that as time advances, despite increasing and/or changing tasks, it is proper training, modernisation of the infrastructure, strong and professional supervisory work that will be needed to maintain and develop efficient chemical safety, not the numerical expansion of human resources.

13. Illegal transport of chemicals

Objective: *safe transport of dangerous substances within the country and across borders, prevention of illegal international traffic of poisonous/dangerous products*

Shipping and transport is an indispensable part of the manufacture and use of chemicals. Special safety conditions pertaining to the transport of dangerous substances are stipulated in international regulations. The regulation of the transport of dangerous substances in Hungary conforms to up-to-date international practice. The safety regulation of the transport of dangerous substances aims at being preventive. The serious industrial accidents of the past decades have drawn the attention of industrialised countries to the fact that the prevention of these must be included in their industrial policy and environmental protection strategies.

The police force, disaster prevention, environmental and transport inspectorates cooperate with one another in a manner well defined by law with the introduction of their joint control of the transport of dangerous substances. The creation of a communication platform (formal and informal) between the cooperating organisations, within which the flow of information, utilization of observations may bring about an increase in the effectiveness of the controls, may be necessary.

Disaster prevention does much to ensure a high level protection of the public and the environment by increasing the safety of the transport of dangerous substances and their systematic control.

According to information available, dangerous products (e.g., toxic chemicals) can only be transported through official border crossings. There is no evidence that there has been any violation of this regulation. Dangerous substances for sale can only enter EU countries through official border crossings with ADR control by the customs authorities with the help of a detailed control list.

A cooperation agreement has been drawn up between the National Customs and Finance Guard and the József Fodor National Centre for Public Health, through which it has become possible to provide information on unidentified chemicals and allow priority laboratory identification of these, in order to ensure safe transport of dangerous materials across borders and to protect public health and the environment.

A good control method for the transit of expressly dangerous substances getting across the borders is the PIC procedure. The number of notifications connected to the procedure is small; the reason for this is that Hungary does not export or import any materials on the Convention PIC list. Considering however, that the relevant Community legal act (regulation) broadens the range of substances on the PIC register, this activity will mean more work for the designated national authorities in the

future, and will require more efficient functioning from the National PIC Committee as well (see also: Chapter II, item 7).

In summary: based on available information, dangerous products (e.g., industrial or agricultural materials under domestic or international restriction or ban) are not transported across borders, except through official border crossings. The control exercised by the PIC procedure and the Rotterdam Convention operates in the country. The means to identify unidentified substances transiting through the country on the basis of information or in a laboratory are available.

14. Prevention of chemical threats (acts of terror, havarias, and disasters)

Objective: *analysis of the effectiveness of preventing chemical threats – fast recognition of threats, rapid alerting of those affected, fast and efficient response of those participating in prevention*

The number of unexpected events causing severe damage to human health is growing at an alarming rate worldwide. The organisations responsible for chemical safety must be prepared for the recognition, diagnosis, and resolution of the consequences of unexpected events of chemical origin.

Almost 3 million people died worldwide as a result of natural disasters during the last 20 years. Since 1990, 6 million people have died in armed conflicts, and the global extent of diseases connected with these is noticeably increasing. Numerous people died as a result of acts of terror during the past few years.

Any of the stages of the life cycle of chemicals (production, storage, transport, sale, processing, use, waste generation, waste management and recycling) carries the risk of severe industrial accidents and unexpected incidents. The realised risk of a materialised threat (major accident, havaria, disaster) not only affects human life at the site of the event (factory, warehouse, road, railroad, etc.), but also severely jeopardizes the environment, causing significant property damage.

Prevention of and protection against such unexpected incidents arising from industrial accidents/other sources (e.g., act of chemical terror) is a complex activity, which includes the technical tasks of prevention, the mitigation of the adverse effects of the unexpected incidents as well as the protection, if needed, first aid, transport, medical attention of the people (employees, public, those taking part in prevention – physicians, nurses, safety technicians, disaster prevention professionals, fire-fighters, policemen, other experts taking part in prevention).

Until now Hungary has managed primarily natural disasters, but unexpected incidents of other origin must now increasingly be faced. Among these are the harmful health effects of serious accidents involving dangerous substances, severe pollution of rivers entering the country, and chemical agents (banned chemicals, war materials) entering the country through illegal trafficking or acts of terror. The increasing use of chemical attack is noticeable, not only in acts of terror but in countermeasures against acts of terror (e.g., attack in the Tokyo underground, ending of the theatre occupation in Moscow).

The frequent occurrence of food poisonings threatening large numbers of consumers is also worthy of note.

The directing of the prevention of unexpected incidents is the task of the disaster prevention services and the local prevention committees in Hungary. Prevention of disasters is carried out by the professionals of the Fire Fighters and Civil Protection Services that are part of the Disaster Prevention system. These services work to prevent disasters and resolve the aftermath of severe disasters, and, in line with these, perform tasks connected with the protection of the public and their immediate care. Properly equipped and trained, Emergency Investigation Teams are responsible for investigating accidents connected with chemicals (assessment of endangered area, determination of parameters characteristic of danger, on-site alerting of population, their rescue and evacuation, cooperation with other interventionists, first-aid providers). Provision of first aid to those poisoned, their transportation, and medical attention is the responsibility of health care. The system operates fast and reliably. The National Supervising Authority System of the SEVESO II Directive has been established (*Fig. 17.*).

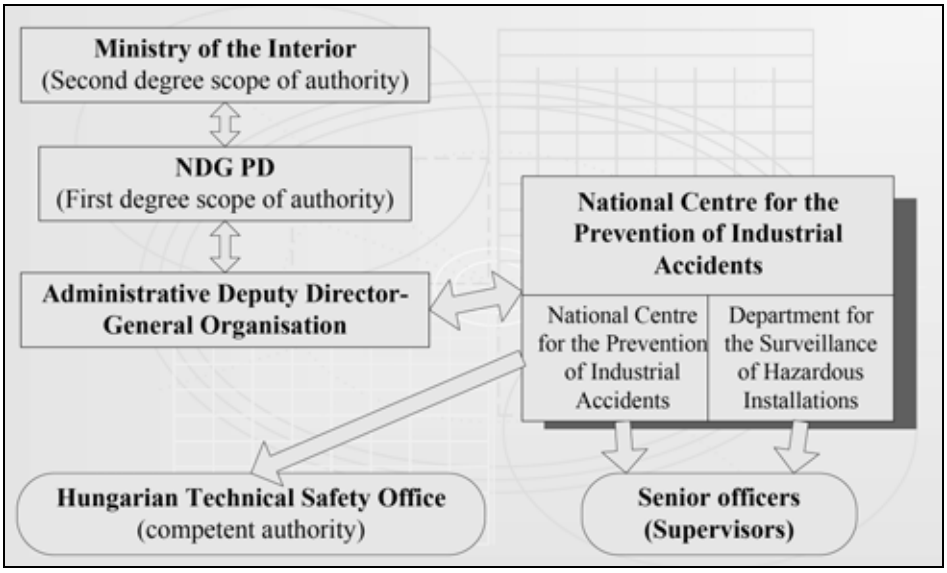


Fig. 17. The supervisory authority system for the implementation of the SEVESO II Directive. Source: National Directorate General for the Prevention of Disasters (NDG PD), Ministry of the Interior

Prevention of chemical threats (acts of terror, disasters, havarias) and rapid alert system have been organised/established within health care. As mentioned previously, a rapid response system consisting of regional laboratories supervised by a "top-laboratory", and an up-to-date information system has been established within NPHMOS, with PHARE support. These operate under the direction of the Office of

the Chief Medical Officer/NCPH, with the professional involvement of the latter. This work is completed by the activities of the task forces (mobile sampling, mobile and fixed risk assessment and management, and analytical chemical and toxicology laboratory groups) established and trained in NCPH. This system is able to liaise and cooperate with both EU RAS BICHAT and national protection systems through a hotline. Financing of the operation of the system places an extra burden on the state budget.

In summary: the supervision and execution of the prevention of extraordinary events under the direction of the disaster prevention is effective. The rapid alert and rapid response systems of health care were established during the past few years. These must be further improved.

15. Chemical safety education, chemical safety of children

Objective: *first to demonstrate that the chemical safety of children also requires special measures due to their susceptibility and risk that far exceeds that of adults, second, to demonstrate the state of chemical safety education and then to develop a recommendation to prepare children with an understanding of chemical safety*

The chapter draws attention to the fact that children are significantly more susceptible to dangerous substances than adults because of different biological and physical characteristics (e.g., respiratory minute volume, calorie and fluid requirement, {faster} dermal absorption, body area/body mass ratio significantly exceeding those of adults). The chapter also highlights the greater risks of exposure to dangerous substances of children because of their behavioural characteristics (e.g., hand-mouth activity, lack of fear).

The chapter draws attention to the fact that the education of chemical safety in primary and secondary schools is a legal obligation (ACSH).

Chemical safety knowledge of children below school age is non-existent – although the number of children suffering poisoning is significant at this age. The situation is the same in the above 3-4 year age group, when the most important basics can be taught. This is why improving the knowledge of parents and getting them to comprehend their responsibility in this respect is (also) exceptionally important.

The chemical safety knowledge of primary and secondary school pupils in Hungary has increased in the 2000s, but still does not reach desirable levels.

Chemistry teachers need the help of chemical safety professionals (e.g., training, checking of school books by chemical safety professionals). Beyond this, education administrative, maintenance attention, organisation (e.g., for the disposal of unidentifiable, old, unusable chemicals stockpiled in storage room, collection, storage of waste) are needed. Experiments need to be developed in which dangerous substances could be replaced. To this end, training needs to be organised and training aids are required.

In the past few years, NCPH contributed to the broadening of the chemical safety knowledge of teachers and university students by providing Hungarian trans-

lations of WHO materials. NCPH has also published a booklet on which to base the chemical safety knowledge of secondary school students. An important achievement is that NCPH developed and prepared board games which are suitable to provide basic chemical safety knowledge to children in the final year of kindergarten and in the first forms of primary school (*Figs. 18* and *19*).

Fig. 18. Title page of the Hungarian translation of the training reference book titled: "Hazardous Chemicals in Human and Environmental Health: Resource Book for School, College and University Students" published by IPCS (2000), published in Hungarian with the permission of WHO. With the help of the Ministry of Education, the document has been distributed to all teachers of secondary schools and it has been published in Hungarian at the website of NCPH. Source: WHO, NCPH

It can be established that professional training in the school system is adequate. Significant, high standard training on chemical safety is carried out in the areas of vocational training and technical colleges as well as those of technician training and higher education. The laying of the foundations of chemical safety is the training of chemical engineers, chemists, chemistry teachers, specialised chemists (agriculture, health care, etc.), which is done in universities and colleges. However, very little is said on the subject of chemical safety, its institutional and regulatory system during graduate training in universities and colleges, and in specialist areas not connected with chemical safety or other bordering areas.

Vocational training and continuing professional education of specialists (inspectors, occupational health physicians, occupational hygienists, and safety specialists) participating in the supervision of chemical safety is provided.

Specialist education and training on chemical and chemical safety is varied and of a high standard.

NPHMOS has developed the curriculum and has begun the programme of chemical safety surveillance training. Training needs to be repeated regularly (every 2–4 years). Supervisors must receive continuing professional education annually.

Fig. 19. Puzzle on the danger symbols of chemicals entitled: "Where have you seen these, what do they mean?" for kindergarten and young schoolchildren aiming at the playful learning of basic chemical safety knowledge. Source: NCPH (2005)

In summary: the country finds the organising of the chemical safety of children a task of exceptional importance. Hungary also finds the wide-scale professional and public recognition of chemical safety exceptionally important. In this respect, opportunity is presented to all age groups of the population to familiarize themselves with chemical safety through regulations and educational literature material.

III. RECOMMENDATIONS FOR THE DEVELOPMENT OF CHEMICAL SAFETY IN HUNGARY

- ***Recommendations for solving tasks arising from EU Membership and international obligations***

Hungary

i) in agreement with the new EU chemicals policy, in accordance with her membership obligations, participates in the development of REACH effectuating the tasks and is committed to its implementation;
ii) in accord with the intergovernmental organisations of UN (WHO, ILO, UNEP, FAO, UNIDO, IFCS) as well as with the resolutions of the Johannesburg World Summit on Sustainable Development, answering to the supporting expectations of OECD and EU, participates in the development of the EU regulation instituting GHS, and will ensure the implementation of this regulation;
iii) with regards to the resolution of the Johannesburg World Summit on Sustainable Development – in accordance with the expectations of the OECD and the EU – supports the implementation of the most important objectives of SAICM;
iv) will continue to participate in the activities of IFCS, and having the consent the previous and current governments, is going to organise the IFCS Forum V in Budapest and upon its request will be ready to accept the Presidency of the IFCS for the next 3-year term.

- ***Recommendations for solving domestic problems***

Legislation and institutional system

1. ACSH should be fit in with REACH and GHS, but its concept should be preserved

– Chemical safety is an indefeasible right of everyone living or staying in Hungary.
– ACSH effectively regulates protection of the public by taking into account the vulnerability of individuals (children, elderly, pregnant women, nursing mothers, invalids, disabled, those suffering from somatic or mental anomalies).
– The involvement, role, and responsibility of non-governmental organisations (industry, scientific institutions, universities, and public interest groups) in strengthening chemical safety and continuous updating of pertinent regulations must be fostered. The basis of updating should be the analysis of the effects of social, economic, and environmental changes on chemical safety; it should define the priorities for 3–5 year periods.

- ACSH stipulates the reduction of risks caused by hazardous substances, its execution should also be promoted by incentive systems assisted by voluntary programmes of industrial and civil organisations.
- ACSH or the regulations issued under its mandate ensure the implementation of REACH and GHS regulations, while retaining the basic concept of ACSH (sanctions of ACSH should also apply to those infringing on the protection of health at the workplace or dwelling, as well as on the environment) in the case of groups of substances and preparations that are not within the scope of REACH, e.g., pesticides, medicines, and biocides.
- With the updating of ACSH, the currently too fragmented regulation system of chemical safety should be made more unified and transparent.

2. Control, institution system, and monitoring activity of chemical safety should be uniform and efficient

2.1. Uniform and free of overlap control

The activities and efficiency of ministries, government agencies running and controlling the various sectors of chemical safety should be reviewed. Since almost all ministries are involved under the current system, coordination, and concentration of tasks, the operative activities of inter-ministerial organizations should be strengthened where necessary (where the activities are of complementary nature, synergies should be stressed and parallelisms should be eliminated).

2.2. Establishing more efficient but cost-saving, transparent, and independent surveillance that is free from overlaps

Almost all existing inspectorates take part in the control of chemical safety.
It would be expedient to evaluate (e.g. with targeted effect studies, cost-benefit assessment, controlling) the structure, tasks, adequacy of staff to tasks, and efficiency of surveillance.

The following principles should be taken into account:

- the authority should not pursue for-fee services within its scope of competence;
- in its scope of activities, the authority should not be subordinated to the ministry that is "responsible" for the production of the given area; the authority should be independent and unbiased;
- there should be no parallelisms in the work of the authorities.

2.2.1. Uniform approach to the development of a uniform surveillance system of chemical safety

Administrative inspection can only be performed by specially trained, graduated inspectors who have extended and detailed knowledge of the regulatory professional tasks of the area (chemical safety) to be inspected.

The currently fragmented (divided between the most diverse highest authorities: Ministries of Health, Environmental Protection and Water, Interior, Employment and Labour, Agriculture and Rural Development, Economy and Transport, Defence, Youth, Family, Social Affairs and Equal Opportunity, Foreign Affairs and Finance; and other authorities as: NPHMOS, Food Safety, Consumer Protection Inspectorate, Hungarian Labour Inspectorate, Mining Bureau of Hungary, National Directorate General for the Prevention of Disasters, Police Force, Hungarian Customs and Finance Guard) chemical safety inspection cannot have (and does not have) an overview of national chemical safety as a whole; the flow of relevant information among the separately acting partial inspectorates is not continuous, consequently there is no uniform control can be achieved. However, it must be added that the scope of chemical safety is extremely diversified professionally, issues arising in the various segments need specific solutions. A professional familiar with a segment can obviously make the right decision without being in possession of the complex knowledge of chemical safety. However, in the long run, specific solutions must fit in with the system and expectations of national and global chemical safety. Therefore,

- on the one hand, making surveillance work less expensive, more efficient, more professional, more transparent and independent could be achieved by more rational construction and uniform control of the inspectorates, by specific training to inspectors in the knowledge of chemical safety as well as by submitting annual reports on chemical safety to the Parliament;
- on the other hand, in order to perform the tasks of chemical safety, an institution is needed that integrates the diversified areas of chemical safety and has proper competence to pass effective measures. It is important to have such an institutional structure that guarantees independency and unbiasedness.

2.3. Ensuring the activities of background institutions

The functioning of background institutions performing the theoretical, practical, educational, and scientific research tasks of the ministries and inspectorates running them must be ensured.

2.3.1. Authorized (administrative, educational, and research) laboratories necessary for chemical safety

It would be expedient to examine the task-related costs and resources of the background laboratories, the scope of current tasks, and the benefit achieved. Thereafter, the laboratory tasks necessary for the operability of chemical safety must be defined and the national chemical safety laboratory concept and strategy updated. [Taking into account the evaluation of effect-studies/ controlling, it would be desirable to establish how many laboratories should operate for which tasks, using what methods, with what professional and instrumental capacities, under whose professional guidance, in what form (public/private services), with what resources, according to what kind of plan (e.g. business plan) and determined by whom?]

Information and educational body of knowledge

3. Development of chemical safety data bases and promotion of intersectorial information flow

In the past few years, a large number of high value toxicological and chemical safety databases were established in the country. However, the owners (governmental organisations, civil organisations, and industry) of the databases have not tried to establish a regular flow of information between them.

- It would be practical to achieve continuous (24/7) intra- and inter-sectorial information flow between the data bases of governmental organisations (including those of EU and EU Member State) via legal provisions.
- Extensive promotional materials should be used to get the public to use the information provided via a toll-free line, available 24 hours a day. In order to reach the largest possible number of people, it is important that the information available on flyers, in booklets, via the internet be in Hungarian, i.e., the language the population readily understands.
- Media should play a larger role in providing information to the public. News and analyses related to chemical safety should be more validated and balanced than they currently are.

4. Training of chemical safety professionals should be in institutions of higher education

Training and brush-up courses of chemical safety supervisor must be revised and improved. In clinical and experimental toxicology (including physico-chemical toxicology, in vivo mammalian toxicology, ecotoxicology, and alternative toxicology) postgraduate courses for physicians must be established. The undergraduate and graduate training of inspectors and experimental toxicologists should adhere to Bologna System granting BSc and MSc degrees. In all courses, the particular knowledge of specific areas must get due emphasis.

5. Providing the population with chemical safety knowledge during their whole life (from kindergarten age until old age)

The laying of the foundations of national chemical safety education in primary, secondary and higher education as well as at workplace and public levels have begun during the past few years. At the same time, it is evident that the level of education displays significant differences (e.g., between various schools or regions), but it is lagging behind the optimal one almost everywhere. In order to ensure free access to basic knowledge of chemical safety, which is an indefeasible right of the country's population, pertinent education must be provided for

- kindergartners and primary school pupils,
- those in the upper years of compulsory education,
- secondary school and vocational school students,

– college and university students,
– employees, and for the
– public.

The education should correspond to age and management of risks to be expected.

Development of proper attitude of future employees/workers towards chemical safety must be founded in kindergarten and primary school, i.e., in the youngest age groups. This training and education are stipulated by ACSH: education of chemical safety is compulsory and is included in the National Basic Curriculum.

6. Chemical safety at the workplace and in the living environment must be developed in accordance with as its outstanding chapter

– The goal to be achieved: to protect the health of workers (organised, as well as those working in non-organised conditions) from acute, chronic, and delayed toxic effect (poisonings) of occupational and/or environmental origin. The introduction of risk-proportionate insurance among employees (in accordance with the National Programme of Labour Protection) seems desirable. In non-organised work, the principle of "polluter or the one responsible for the damage to health pays" should be exercised.
– Guaranteeing the chemical safety of the public – particularly children, elderly, and vulnerable groups (pregnant women, chronically sick persons) – with respect to the biological, physiological, and behavioural features of the various groups, should be stipulated by law that should include the taskrelated obligations and the necessary solutions (e.g., education, risk-reducing measures).

Practical tasks

7. Development of rapid alert and response system, organizational enforcement of the priorities of health care tasks. Improvement and operation of Poison Centre

Leaving the principle and practice of the currently functioning system of disaster prevention untouched, but continuously updating it, the Hungarian health care rapid alert and action system (which includes care and rehabilitation activities as well) must be improved in accordance with the principles and practice of the EU Health Security Committee.

– According to the international recommendations, the full-scale development of the Poison Centre operating as part of health care is of fundamental importance.
– In the case of havarias, disasters, and acts of terror, it would be useful to mandate, by law, the so-called point "0" cross-sectional (immediately following the extraordinary event) and prospective epidemiological studies.

8. Prevention of illegal transport, import/export, and sale of contaminated materials (foodstuffs)

In order to identify substances illegally entering the country, it is definitely important to develop a data base dealing with the issue, as well as to provide adequate laboratory capacity for the bodies taking part in this task.

The problem of foodstuffs imported with special tropical contaminants, which is not illegal but is without any precedent in the previous years, has been added to the problems of illegal transport. It could be solved by more accurate information and more frequent laboratory examinations. Provision of financial, instrumental conditions, and of manpower for food safety examinations of a sufficient number and accuracy at all times is an important task.

Increased attention must be paid to the prevention and sanctioning of the appropriation of dangerous materials subject to licensing (e.g., sales of category I pesticides). (The unauthorised use of these can involve significant risk of damage to the environment and health.)

9. Further practical problems deserving increased attention

- Prevention of childhood poisonings, establishment of chemical safety for children;
- prevention of tumorous diseases due to the working and living environment;
- reduction of the frequency of allergies caused by chemicals;
- monitoring of indoor air pollution, prevention of their effects harmful to health;
- reducing the formation of greenhouse gases;
- elimination of POP compounds in counties where this has not been done yet;
- completion of asbestos elimination;
- prevention of the pollution of soil and surface waters caused by chemical warehouses, and waste incinerators;
- collection, management of chemical wastes, with particular attention to the public.

Research issues

10. The objectives of the economy and environmental protection must be better co-ordinated with the developments and opportunities provided by scientific research and technology!

In this respect, attention should be paid to

- the predictability and control by monitoring of the impact, and interactions of certain products (substances, preparations) of the chemical industry, and wastes harmful to health and environment; the understanding of biochemical processes taking place in the human body, as well as in the environment due to naturally occurring and/or dangerous substances; mapping of delayed (long-

term) effects; the possibility to detect, in time, processes harmful to health or the environment; achieving prevalence of clean technologies, and development of green chemistry;
- the development of research bases that means in part the development of infrastructure and partly the planned provision for the new generation in the research and education. It should be noted, on the one part, that there is no innovation without basic and applied research, and, on the other part, that neither toxicological or chemical safety expertise of adequate standard nor education of adequate efficiency can be accomplished in the absence of research activity.

General recommendations

11. It is necessary to monitor the implementation of the recommendations of the National Profile and to extend the operative activities and licences of the Interministerial Committee operating in the area of Chemical Safety, while leaving its current tasks and licences untouched. The Interministerial Committee should
- assess and evaluate the state, achievements and issues to be solved of chemical safety in written form once a year and present the findings of the assessment to the Parliament in an official course to be defined;
- update the statistical data rows and list of chemical safety-related regulations of the National Profile generated in the second half of the preceding and the first half of the current years by March 31 of the last year and September 30 of the current year, respectively.

LIST OF ABBREVIATIONS

ACSH	Act on Chemical Safety of Hungary
ADR	Accord européen relatif au transport international des merchandises Dangereuses par Route International Carriage of Dangerous Goods by Road
Agenda 21	Agenda 21: Tasks for the 21st Century. The document of Rio Earth Summit / UN Conference on Environment and Development. Rio de Janeiro, 1992
BSc	Bachelor of Science
CIWIC	Chemical Industry's Warning and Information Centre
COM	European Commission
CPRI	Central Physics Research Institute
CSIS	Chemical Safety Information System (established with PHARE support in the NCPH NICS, where it operates together with the HTIS)
EINECS	European Inventory of Existing Commercial Substances
ELINCS	European List of Notified Chemicals Substances
EPER	European Pollutant Emission Register
EPER-PRTR	EPER-Pollutant Release and Transfer Registers
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
GCC	Government Coordination Committee
GDP	Gross Domestic Product
GHS	Global Harmonisation System (for the Classification and Labelling of Chemicals)
GINC	Global Information Network on Chemicals
HACCP	Hazard Analysis Critical Control Point
HCSO	Hungarian Central Statistical Office
HLPI	Hungarian Labour Protection Inspectorate
HMPO	Hungarian Main Police Office
HTIS	Health Toxicological Information Service (operates in the NCPH-NICS)
IARC	International Agency for Research on Cancer
IFCS	Intergovernmental Forum on Chemical Safety
ILO	International Labour Organisation
INFOCAP	Information Exchange Network on Capacity Building for the Sound Management of Chemicals
IOMC	Inter-Organisation Programme for the Sound Management of Chemicals
IPCS	International Programme on Chemical Safety
ISO	International Standard Organisation

KOZMOS	Hungarian Cosmetics and Household Chemicals Association (Hungarian abbreviation)
MARD	Ministry of Agriculture and Rural Development
MAVESZ	Hungarian Chemical Industry Association (Hungarian abbreviation)
MBH	Mining Bureau of Hungary
MD	Ministry of Defence
ME	Ministry of Education
MEL	Ministry of Employment and Labour
MET	Ministry of Economy and Transport
MEPW	Ministry of Environmental Protection and Water
MFA	Ministry of Foreign Affairs
MF	Ministry of Finance
MF-HCFG	Hungarian Customs and Finance Guard of the Ministry of Finance
MH	Ministry of Health
MHUF	Million Hungarian Forint
MI	Ministry of the Interior
MI NDGPD	MI, National Directorate General for the Prevention of Disasters
MJ	Ministry of Justice and Law Enforcement
MMSZ	Hungarian Plastics Industry Association (Hungarian abbreviation)
MrdHUF	Milliard (thousand million) Hungarian Forint
MSc	Master of Science
MYFSAEO	Ministry of Youth, Social, Family Affairs and Equal Opportunity
NATO	North Atlantic Treaty Organisation
NCPH	József Fodor National Centre for Public Health
NCPH- NICS	National Institute of Chemical Safety
NCPH-NIEH	National Institute of Environmental Health of NCPH
NDP PD	National Directorate General for the Prevention Disasters
NIFSN	National Institute for Food Safety and Nutrition
NIP	National Institute of Pharmacy
NISZ	Association of Pesticide Manufacturers and Importers (Hungarian abbreviation)
NPHMOS	National Public Health and Medical Officers' Service
NPLP	National Programme of Labour Protection
NWMP	National Waste Management Programme
OCMOS	Office of the Chief Medical Officer of State
OECD	Organization for Economic Cooperation and Development
OOR-NCPH	Organisational and Operational Rules of the National Centre for Public Health
PCB	Polychlorinated biphenyl
PCT	Polychlorinated triphenyl
PHARE	Poland – Hungary Aid for Reconstruction of the Economy (Programme of Community Aid to the Countries of Central and Eastern Europe)
PIC	Prior Informed Consent Procedure

NCPH-CCL	Central Chemical Laboratory in NCPH
NCPH-NIOH	National Institute of Occupational Health of NCPH
POP	Persistent Organic Pollutants
Profile	Chemical Safety in Hungary – New National Profile
RAS-BICHAT	Rapid Alert System – Biological, Chemical Attack and Threats (EU)
RASFF	Rapid Alert System for Food of the European Union
REACH	Registration, Evaluation Authorization and Restriction of Chemicals (EU regulation in the making)
SAICM	Strategic Approach to International Chemical Management
TEÁOR	Standardized System of the Classification of Activities by Branch (Hungarian abbreviation)
UN	United Nations
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organisation
UNITAR	United Nations Institute for Training and Research
WHO	World Health Organisation
WTO	World Trade Organisation