MINISTRY OF THE ENVIRONMENT OF THE SLOVAK REPUBLIC

STATE OF THE ENVIRONMENT REPORT

SLOVAK REPUBLIC 2005

Exploitation of nuclear energy must be justified by the contribution, which would counterbalance eventual risks originating from such activities, especially in comparison with other ways, which can be used to reach the same goal.

§ 3 par. 3 of the Act No. 541/2004 Coll. on Peaceful Exploitation of Nuclear Energy (Nuclear Act)

ENVIRONMENTAL RISK FACTORS

• PHYSICAL RISK FACTORS

Radiation protection

Institutions dealing with radiation protection and safety of ionising radiation sources **in the SR**:

- **Slovak Hydro-meteorological Institute** (SHMI)
- **Office of Civil Protection** (OCP SR)
- **Armed forces of the Slovak Republic** (ASR)
- **Slovenské elektrárne, a.s.** (Slovak electric power plants) (SE) that operate the nuclear power facilities of Jaslovské Bohunice NPP EBO) and Mochovce (NPP EMO) also monitor the radiation situation in the vicinity of these facilities
- **Nuclear Regulatory Authority** (NRA SR)
- **Ministry of Health of the SR** (MoH SR)
- **Headquarters of radiation monitoring network of SR** (HRMN SR)

♦ **Air dose equivalent rate**

Pursuant to HRMN SR, input of the external photon dose equivalent in air **H** (nSv.h^{-1}) in 2005 in the early alarm networks of in the whole SR territory reached the average value of 117.2 nSv.h^{-1}. Average annual effective dose **E** (μSv) for the whole SR territory was 782.25 μSv in 2005.

♦ **Air Contamination**

Air contamination has continually been monitored by measuring the volume activity of individual radio nuclides in **aerosols** extracted in the ground atmospheric level. Their ^{137}Cs concentration in Slovakia in 2005 reached the maximum level of 19.8 ± 1.5 μBq.m^{-3}.

In 2005, no major air contamination by radionuclides was detected, ^{137}Cs radionuclide concentration in **radioactive fallout,** originating in the upper atmospheric layers as a result of nuclear weapons tests, was at the level of 3.2 ± 0.6 $Bq.m^{-2}$ in Slovakia.

- **Contamination of other environmental elements**

Soil contamination by the ^{137}Cs radionuclide in 2005 was at 158.5 ± 32 $Bq.kg^{-1}$. Average activity of the ^{137}Cs radionuclide **in water** in 2005 was below 5.27 $mBq.l^{-1}$. Tritium activity **in surface water** was at the level of 179.5 ± 3.4 $Bq.l^{-1}$. Tritium activity **in drinking water** in 2005 was 116 ± 3.1 $Bq.l^{-1}$.

- **Contamination of foodstuff and agricultural products**

Of all man-made radionuclides, in 2005, just like in the previous years, it was possible to detect in food samples only the ^{137}Cs radionuclide. Its contents in all measured commodities – excluding grasses and fungi – were around the level of units of $Bq.kg^{-1}$, or rather $Bq.l^{-1}$.

- **Radon and its radioactive decay products**

The largest source of **natural ionising radiation** is **Radon** and the **products of its radioactive change.**

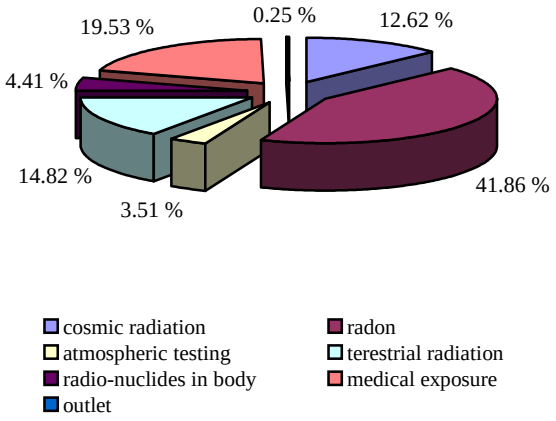
Outcomes from the volume Radon activity (OAR) monitoring in the SR households suggest that the areas with most OAR exposition are on the territory of East Slovakia – in the area of Slovenské Rudohorie. Highest values of the equivalent volume Radon activity (EOAR) were recorded inside old family houses with no cellar, especially in the ground-level rooms. This fact suggests that the main Radon source in the SR households is Radon found in the soil air. This relates to the increased Uranium concentrations in the geological aquifer, as well as to the geological structure of territory.

Radiation load of the population from natural radio-nuclides in year 2005

Source of radiation	Radiation load	
	Person (mSv)	Population (10^5 manSv)
Natural background together.	**2.40**	**650**
from that:		
- cosmic radiation	0.39	
- terestrial gama radiation	0.46	
- radio-nuclides in body	0.23	
- radon and the products of mutation	1.30	
Medical exposure together.	-	**165**
from that:	0.59	90
- diagnostics	-	75
- radiotherapy		
Atmospheric testing of nuclear weapons	-	30
Radio-nuclides outlet	-	2

Source: PHA SR

Percentage of individual sources of radiation of the population in the year 2005



Source: PHA SR

Average OAR values with estimated average whole-year effective E dose per capita from Radon exposition in households in individual regions in 2004

Region	OAR ($Bq.m^{-3}$)	E (mSv)
Bratislavský	53	0.88
Trnavský	88	1.47
Trenčiansky	98	1.64
Nitriansky	140	2.35
Žilinský	103	1.72
Banskobystrický	145	2.44
Prešovský	93	1.55
Košický	133	2.23
SR	**108**	**1.81**

Source: PHA SR

Districts with highest average OAR values – with estimated average whole-year effective dose per capita from exposition to Radon and its daughter compounds in residential areas in 2004

Region	OAR ($Bq.m^{-3}$)	E (mSv)
Rožňava	318	5.33
Krupina	268	4.49
Zlaté Moravce	260	4.37
Rimavská Sobota	255	4.28
Gelnica	215	3.61
Košice okolie	210	3.53
Banská Štiavnica	208	3.49
Brezno	200	3.36
Veľký Krtíš	190	3.19
Spišská Nová Ves	188	3.15

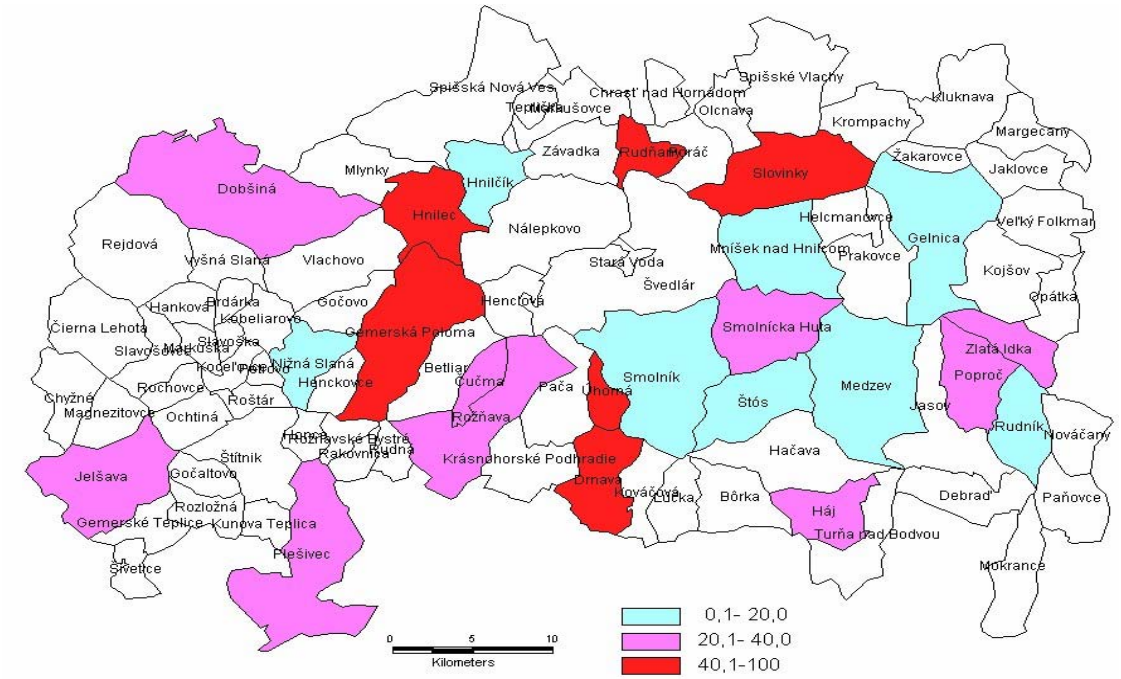
Source: PHA SR

Additional lungs cancer deceases for 100 thousand inhabitants annually as result of exposure of population to radon in indoor facilities

Region	Men	Women	Population
Bratislavský	9.60	4.37	6.87
Trnavský	15.94	7.25	14.42
Trenčiansky	17.75	8.07	12.71
Nitriansky	25.35	11.54	18.16
Žilinský	18.65	8.49	13.36
Banskobystrický	26.26	11.95	18.81
Prešovský	16.84	7.67	12.06
Košický	24.08	10.96	17.25
SR	**19.56**	**8.90**	**14.00**

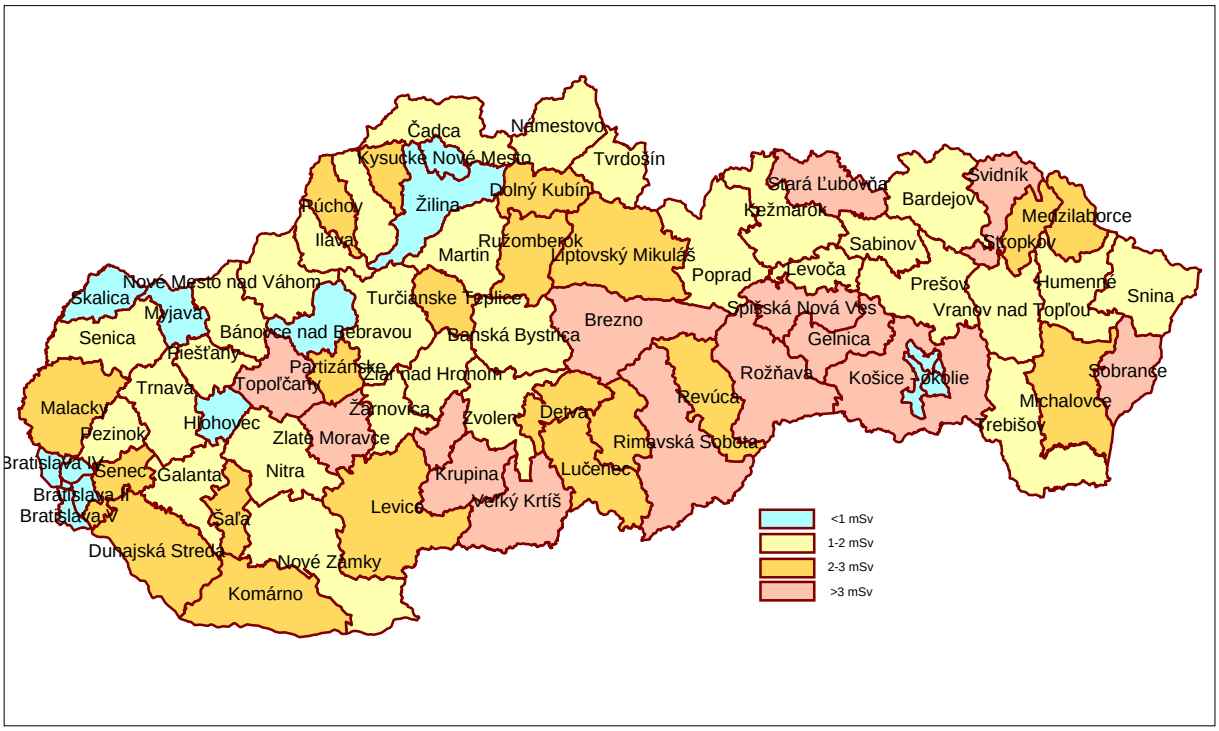
Source: PHA SR

Overview of districts by percentage of residential areas that extend beyond the reach of the OAR area



Source: PHA SR

Average year long effective amount for one inhabitant from inhalation of radon and its filial products in residential places in the regions of SR in year 2004



Source: PHA SR

Nuclear institutions

List of operated nuclear power plants in the SR

Nuclear Power Plant (NPP)	Start of operation	Reactor type	Operator
NPP Bohunice V-1	1978, 1980	VVER 440/230	SE
NPP Bohunice V-2	1984, 1985	VVER 440/213	SE
NPP Mochovce 1,2	1998, 1999	VVER 440/213	SE

Source: SE

State Inspection of Nuclear Safety with handling radioactive waste and burnt nuclear fuel is carried out by the **Office of Nuclear Supervisions of the SR** (NRA SR). The Act No. 541/2004 Coll. on peaceful exploitation of nuclear energy (**"Atomic Act"**) is the basic instrument for peaceful use of nuclear energy. NRA SR is an independent central state administration authority, headed by the Chief Officer. The **Institute of Public Health** (PHA SR) ensures **state supervision over radiation safety** under the Act No. 272/1994 Coll., as amended.

Slovakia is a signatory to all major international agreements and conventions in the area of peaceful exploitation of nuclear energy.

- **Activity of nuclear institutions in SR**

NPP V-1 Bohunice (NPP EBO V-1)

Since 1990, the NPP EBO V-1 has permanently been implementing safety improvements in order to increase nuclear safety in this power plant, following the recommendations of the International Atomic Energy Agency (IAEA). Although the planned activities of the programme to ensure safety were ended in 2000, much attention is still paid to further increasing of nuclear safety.

With both NPP – EBO V-1 blocks in operation in 2005, there were 8 occurrences, 6 of them within the INES 0 degree, and none in the INES 1 degree. Total number of occurrences has been successfully reduced to the level of previous years. The number of fast automatic shutdowns – that equalled to zero in 2005, showed analogical positive tendency.

NPP V-2 Bohunice (NPP EBO V-2)

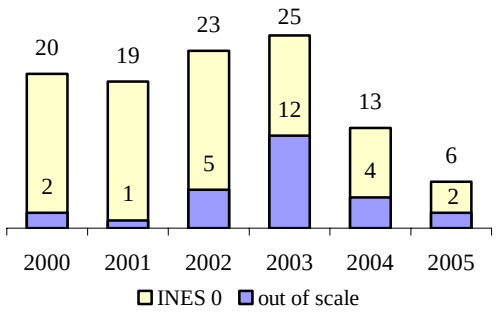
In 2005, the NPP V-2 blocks met the demands of the energy control centre. These NPP blocks served as the heat source to distribute heat to Trnava, Hlohovec, and Leopoldov.

The programme called "Modernisation and increase of the NPP V-2 safety" implemented a number of tasks performed on NPP V-2 over the course of the year. Pursuant to the decision of the NRA SR to modernize the NPP V-2 blocks, inspectors supervised project changes to the equipment, relating to nuclear safety. All works and tests were carried out in accordance with agreed strategies, deadlines, and in good quality. Tightness of the hermetic zone is greater than the required limit value.

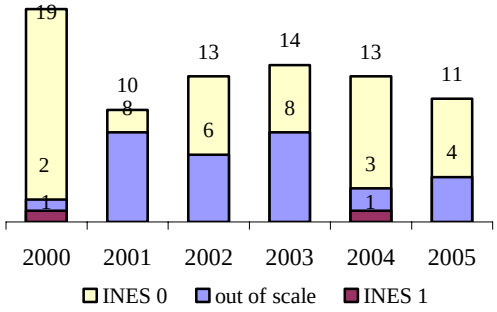
In 2005, there were 15 operation occurrences, including 11 under the INES 0 degree, on both NPP EBO V-2 blocks. Four occurrences were outside the INES classification scale. Fast automatic shutdowns were not recorded.

Based on the results of control activities and assessment of the safety indicators, together with inspection activities, NRA SR evaluated the operation of both NPP V-2 blocks as safe and reliable.

Trend in the count of events noticed on blocks of NPP Bohunice V-1



Trend in the count of events noticed on blocks of NPP Bohunice V-2



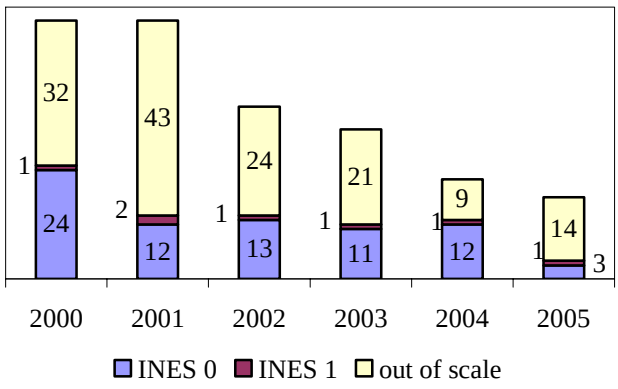
Source: NRA SR

NPP Mochovce (NPP EMO)

NPP Mochovce (NPP EMO) consists of two VVER 440 blocks with V213 reactors with increased safety. First block began operation in 1998, second block in April, 2000.

Number and type of occurrences in 2005 did not show any unusual technical malfunctions. In terms of nuclear safety, systems and devices functioned reliably the whole year. During 2005, there was one occurrence of insufficient in one of the hermetic areas, as a result of a failure to comply with effective limits and conditions of safe operation. While the nuclear safety was not put at risk, because of inappropriate personnel response and poor internal policies, assessment of the safety significance of the occurrence was increased from degree 0 (i.e. deviation) to degree 1 (i.e. malfunction) under the INES international scale. There were 18 occurrences in NPP Mochovce, including 3 under INES 0, and 1 under INES 1. No automatic shutdown of reactor occurred in either of the blocks.

Trend in the count of events noticed on blocks of NPP Mochovce



Source: NRA SR

♦ **Storage of spent nuclear fuel and radioactive waste**

Burnt nuclear fuel (BNF) is defined as a fuel irradiated in the reactor's active zone and permanently taken out of the zone. Basic principles of the strategy for handling **burnt nuclear waste** (BNF) and **radioactive waste** (RAW) are found in SR Government Resolutions No. 930/1992, No. 190/1994, and No. 5/2001.

Burnt nuclear waste is stored in special containers. Current storage capacity is 14 112 pcs of burnt nuclear waste. The programme of gradual translation of burnt nuclear fuel from the original T-12 containers to KZ-48 compacted containers continued in 2005.

♦ **Handling with radioactive waste**

In Slovakia, **radioactive waste** (RAW) is defined as unused material that due to its radionuclide content or contamination by radionuclides cannot be introduced into environment.

Handling of radioactive waste constitutes an integrated system that includes the collection, separation, storage, processing, treatment, manipulation, and discharge of radioactive waste.

Processing and treatment of radioactive waste includes activities leading to the increased safety and economic effectiveness in handling radioactive waste, as well activities that prepare radioactive waste to be discharged or stored.

Major part of these activities is concentrated in a nuclear facility of Technologies for processing and treatment of radioactive waste, operated by SE-VYZ. The mentioned nuclear facility includes two bituminisation lines, and the Bohunice processing centre of radioactive waste. Bituminisation lines with the capacity of 120 l/h are designed to bituminize concentrations from the VVER and NPP-1 nuclear power plants types into 200-liters barrels.

Transportation of radioactive waste makes it possible to connect individual elements within the radioactive waste handling system. Procedure of licensing radioactive waste transport consists of two steps. First step is to approve the type of transport device, while the second step is to approve radioactive waste transport inside this facility.

More than 200 pcs of fibre-concrete containers were transported to the national discharge site of radioactive waste. During the year 2005, major occurrences that would lead to accidents or malfunctions did not occur at the radioactive waste handling or transport facilities.

Discharge is the final step in the process of radioactive waste handling. Packaged forms of radioactive waste are permanently placed at the site of radioactive waste discharge.

National discharge site of radioactive waste Mochovce is designed to receive packaged forms of low to medium-active radioactive waste. This discharge site is of the surface type, designed to receive solid and solidified low to medium-radioactive waste from the operation of nuclear facilities and other institutions in the SR, that deal with activities producing radioactive waste. As of the end of 2005, there were 1 000 pcs of fibre-concrete containers for low to medium-active radioactive waste placed

here. Recent calculations show that the blocks of individual power plants will produce 2 500 t of burnt nuclear fuel and 3 700 t of radioactive waste over their projected lifetime. Current effective legislation does not allow these volumes to be placed at the National discharge site of radioactive waste. Today, there are plans to place the burnt nuclear fuel together with this type radioactive waste in the **underground discharge site.**

Noise and vibrations

Results from monitoring the noise load on public in selected Slovak cities in 2005, based on equivalent noise levels from road transport

Region - population	External noise level		Number of persons
Košice Idanská ul.	>55 dBA	1	
	>60 dBA	2	
	>65 dBA	3	**cca. 600**
	>70 dBA	4	
	>75 dBA	5	
Žilina	>55 dBA	1	
	>60 dBA	2	
	>65 dBA (69.2 dB)	3	**532**
	>70 dBA	4	
	>75 dBA	5	
Žilina bilingv. gymn.	>55 dBA	1	
	>60 dBA	2	
	>65 dBA (66.4 dB)	3	**600**
	>70 dBA	4	
	>75 dBA	5	
Čadca Horelica	**>55 dBA (56.5 dB)**	1	**8**
	>60 dBA	2	
	>65 dBA	3	
	>70 dBA	4	
	>75 dBA	5	

Source: SHI SR

A selected dangerous chemical substance and a selected dangerous chemical agents, use of which should be limited, can be introduced to market on condition they will not be harmful for human life and health and for the environment...

§ 28 par. 3 of the Act No. 163/2001 Coll. on Chemical Substances and Chemical Agents as subsequently amended

• CHEMICAL RISK FACTORS

Chemical substance

In the area of chemical substances management, the MoE SR ensured and coordinated activities in cooperation with the Ministry of Economy SR, Ministry of Health SR, Centre for chemical substances and products (Centrum), and Federation of Chemical and Pharmaceutical Industry of the SR. These activities relate to the implementation and transposition of the EU legislation into the SR legal system through adopting EU directives and ordinances on chemical substances and chemical products (chemicals) and biocides, in accordance with the SR legislation.

On the basis of a meeting of the SR authorities that control compliance with the National Council of the SR Act No.163/2001 Coll., the MoE SR defined, together with other responsible institutions, conditions to implement control system for introducing chemical substances to environmental market. Involved are also authorities that carry out inspection and implement the system of international inspection activities within the EU – the CLEEN system.

MoE SR is actively involved in the SAICM Programme (Strategic Access to International Chemicals Management) founded by the UNEP Executive Board in 2002. This process is carried out under the leadership of UNEP, in cooperation with the International Forum for Chemical Safety (IFCS) and the Inter-Organization Programme for the Sound Management of Chemicals (IOMC). SAICM creates chemical policies not only for the EU states, but also for other countries. Objective of the SAICM is to use chemical substances in appropriate way during their lifecycle. In the future, this objective will be carried out through the REACH directive and through a change to the Directive No 67/548/EEC on the approximation of laws, other legislation, and measures relating to classification,

packaging, and labelling of hazardous compounds. Next SAICM objective is to ensure that the chemicals be used and produced by methods that minimize significant adverse effects on human health and environment. REACH will meet this objective by making the information on alternative substances or technologies available to business persons within the authorisation process. “Rigorous control” of all used chemicals as well as their alternatives will be a critical activity that will ensure meeting the mentioned objective within the REACH system.

Xenobiotics in the food chain

Monitoring of xenobiotics collects information on the status and trends in pollution of individual components of environment, as well as information on health safety of local foods. Results from the monitoring, including the risk assessment, serve as a basis for adoption of preventive measures.

Testing for xenobiotics is carried out by testing organisations under the valid legislation, with the goal to prevent the flow of unacceptable foods to the consumer. Results from the tests serve as the basis for adopting immediate decisions.

- **Monitoring of xenobiotics in the food chain**

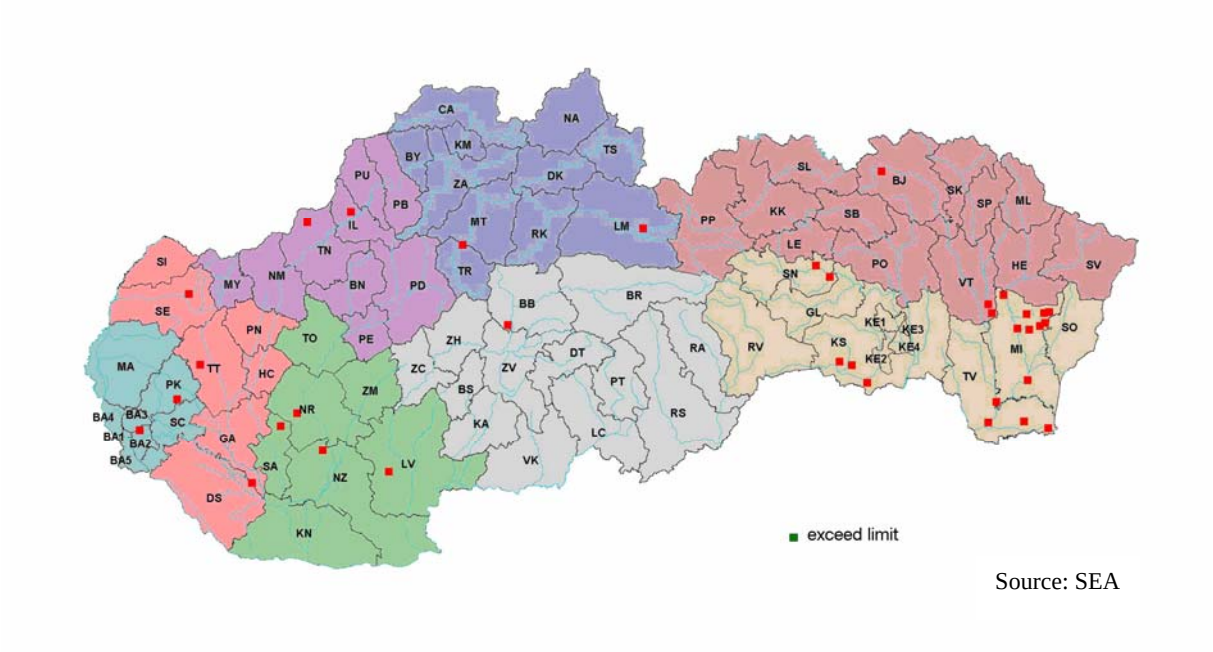
Partial monitoring system called: **Xenobiotic in foods and forage** is composed of three subsystems:

- Co-ordinated focus-specific monitoring (CFM) has been used since 1991.
- Consumption pool monitoring (CPM) has been used since 1993.
- Monitoring of game, wildlife, and fishes (MGF) has been implemented since 1995.

Partial monitoring system has been connected to the GEMS/FOOD EURO international monitoring system since 1994.

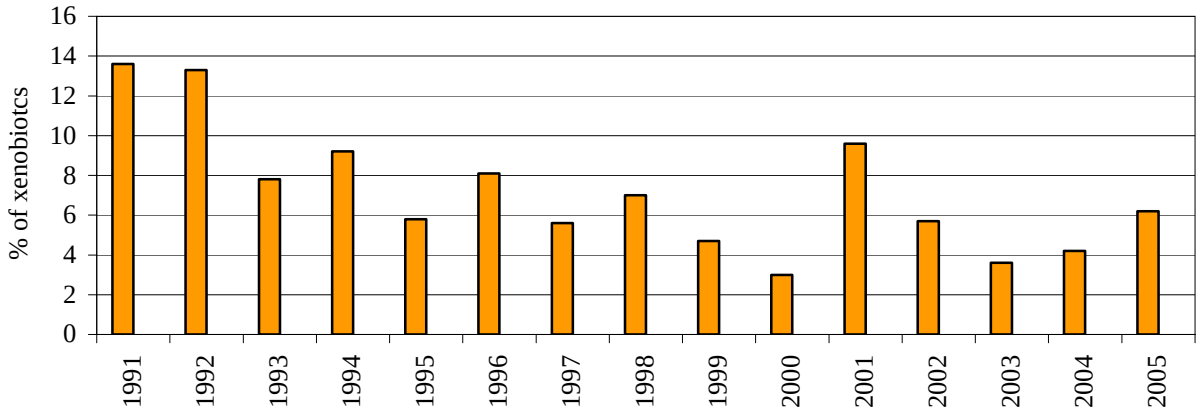
Coordinated focus-specific monitoring (CFM) has the objective to determine actual mutual relationship between the degree of contamination of agricultural land, irrigation water, feeding water, crop and animal production, within the primary agricultural production, and obtain information on the contamination of individual food chain components.

Monitored sites within the CPM with occurrence of the exceeding values of the xenobiotics in all monitored commodities in 2005



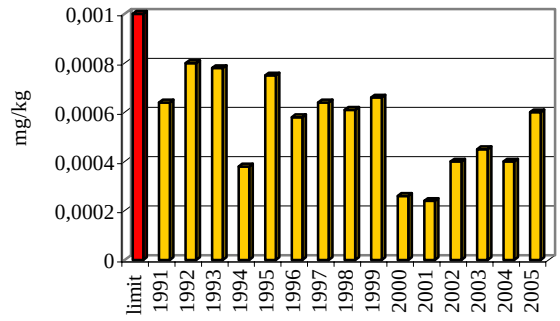
Source: SEA

Comparison of percentage changes of the limit-exceeding samples of all xenobiotics since 1991 in all commodities together (in percentage)

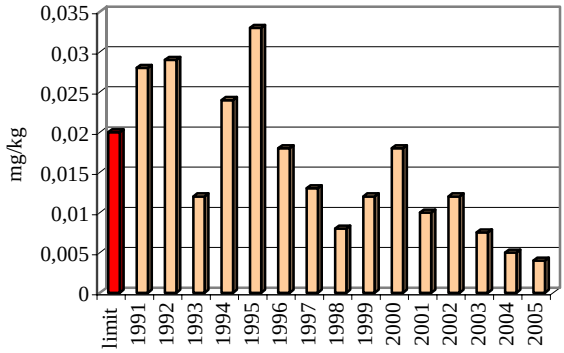


Source: FoRI SR

Comparison of the average findings of mercury in milk



Comparison of the average findings of lead in milk



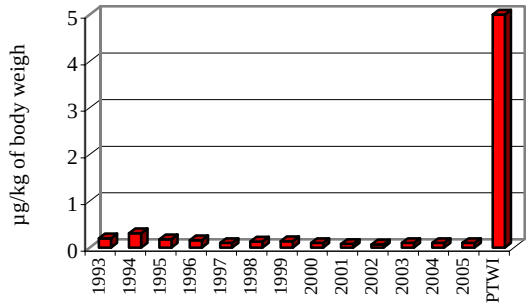
Source: FoRI SR

Objective of the **Consumption pool monitoring (CPM)** is to obtain data on contamination of foods in the consumer network in places with appr. 20 000 inhabitants and various forms of settlement. Samples are purchased from the commercial network twice a year (May, September) at 10 Slovak sites classified as heavily-contaminated, medium-contaminated, and relatively clean areas.

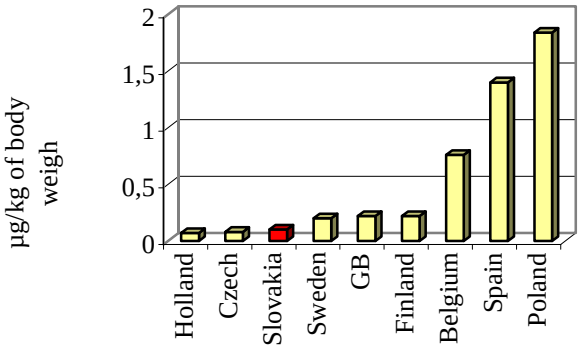
In 2005, 27 basic food items were sampled within the consumption pool (based on statistical consumption) together with drinking water samples from public water supplies.

MSK focuses primarily on determining the intake of individual xenobiotics into the human organism, in order to assess exposition of the population and compare it with the permitted tolerable weakly intake (PTWI) as well as acceptable daily intake (ADI).

Weekly income of mercury to human organism in individual years of CMS realization

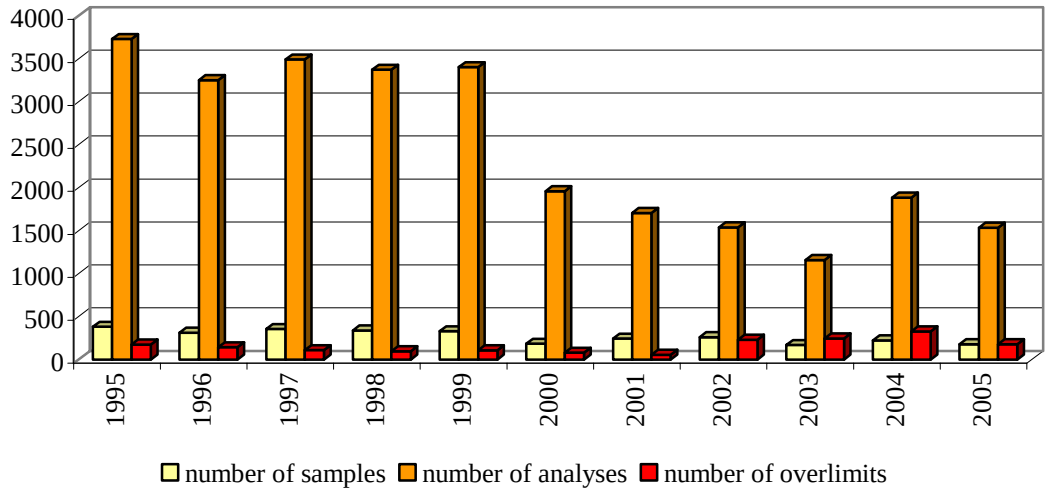


Comparison of weekly income of mercury to human body in SR with other countries



Source: FoRI SR

Comparison of number of analyses and over limits at hoof game 1995 - 2003



Source: SVFA SR

Compared with available international data, the SR may be considered among countries with **lowest values** of weekly intake of arsenic, cadmium, mercury, chrome, nickel, lead, and nitrates by the human organism.

Monitoring of game, wildlife, and fishes (Ministry of Health SR) in 2005 tested 178 samples of clove-hoofed game, hunting fish, fungi, lichens, small feather game, and water. Of 1 535 analyses, 179 exceeded the limit values. Samples of the PCB congeners from regular monitoring of fish from the Zemplínska Šírava and the surround rivers of this region were again detected in Eastern Slovakia. Control of dioxins in fishes was also included into the monitoring scheme of 2005. The found limit-exceeding values call for a need to continue with monitoring of these pollutants as well.

- **Control of xenobiotics in food chain**

31 210 samples (230 663 analyses from domestic production) come from monitoring of xenobiotic compounds in soil, water, forage, raw material, and food of the plant and animal origin in 2005. Of these, 1 226 did not meet the valid sanitary limits for the monitored parameters. The analysis included 2 016 soil samples, inputs to soil and plant material, 9 575 water samples, 1 217 forage samples, and 18 403 food samples. Further, tested were 4 447 imported samples, 115 samples of exceptional cases, and 18 030 samples under agrochemical soil testing. Water showed the greatest number of limit-exceeding events.

*While **handling waste** or otherwise treating waste everyone shall be obliged to protect human health and the environment.*

§ 18 par. 1 of the Act No. 223/2001 Coll. on Waste, including several changed and subsequently amended other laws

• WASTE AND WASTE MANAGEMENT

Initial situation

The year 2005 was a breakthrough year for the area of waste management for various reasons. It was the last implementation year of the SR **Programme of Waste Management by 2005**, and at the same time the initial year for the preparation of the new SR Programme of **Waste Management for the years 2006-2010.**

Funds for the development of the waste management infrastructure in 2005 were available from 3 sources: Environment Fund, Recycling Fund, and from the EU Structural Funds operated by the Basic Infrastructure Programme. For the first time, projects from the structural funds could be submitted all year long.

One of the **major legal changes** include the Act No.733/2004 Coll. that amends the Act No. 223/2001 Coll. on waste and amendments to subsequent legislation as amended. The SR used this Act to implement the European Parliament and Council Regulation 2002/95/EC **on limited use of certain hazardous compounds in electrical and electronic devices**, and the European Parliament and Council Regulation 2002/96/EC **on waste from electrical and electronic devices**.

A major change was introduced in the area of **old vehicles treatment**. The possibility to keep the old vehicle through a sworn statement ceased to be effective as from January 1, 2006.

The new regulation of Act No. 223/2001 Coll. on waste and amendment to subsequent legislation as amended came into effect on January 1, 2005. The new law **spells out the obligation to stabilize certain waste categories before their disposal on landfills**.

Balancing of waste generation

Regional Information System on Waste (RISW) operated by the SEA assessed the waste generated in 2005, with the exception of the municipal waste, which is assessed by the SO SR.

Waste treatment activities

Code	Treatment activities
R1	Used mainly as fuel or to extract energy through different approach
R2	Solvent reclamation/regeneration
R3	Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes)
R4	Recycling or reclamation of metals and metal compounds
R5	Recycling or reclamation of other inorganic material
R6	Regeneration of acids and bases
R7	Recovery of components used for pollution abatement
R8	Recovery of components from catalysers
R9	Oil re-refining or other re-uses of soil
R10	Treatment of soil to benefit the agricultural production or to improve environment
R11	Use of waste obtained from the activities R1 to R10
R12	Treatment of waste generated by any of the R1 to R11 activities
R13	Storing of waste before using any of the R1 to R12 activities (besides temporary storage prior to collection at the place of waste generation)

Waste disposal activities

Code	Disposal activity
D1	Underground or surface waste disposal. (e.g. landfill)
D2	Treatment by soil processes (e.g. biodegradation of liquid or sludge waste in soil, etc.)
D3	Depth injection (e.g. injection of extractable waste into wells, salt mines or natural disposal sites, etc.)
D4	Disposal into surface tanks (e.g. disposal of liquid or sludge waste into pits, ponds, or lagoons, etc.)
D5	Specially engineered landfills (e.g. placement into separate cells with treated wall surfaces that are covered and insulated one from another and from environment, etc.)
D6	Discharging and dumping into water recipients, besides seas and oceans
D7	Discharging and dumping into seas and oceans, including disposal to ocean bottom
D8	Biological treatment non-specified in this annex that generates compounds and mixtures eliminated by any of the D1 to D12 activities
D9	Physical-chemical treatment non-specified in this annex that generates compounds and mixtures eliminated by any of the D1 to D12 activities. (e.g. vaporizing, drying, calcinations, e.g.)
D10	Incineration on land
D11	Incineration at sea
D12	Permanent storage (e.g. placing of containers in mines, etc.)
D13	Mixing or blending prior to any of the D1 to D12 activities
D14	Placing into other packaging prior to any of the D1 to D12 activities
D15	Storage before implementing any of the D1 to D14 activities (besides temporary storage prior to collection at the place of waste generation)

Since 2003, **waste generation balance** has been distributed over 2 tables. First table shows the volumes of generated waste on the basis of notifications from waste producers, while the second table shows just those waste volumes that are located on the market, i.e. the producers had to submit waste for recovery or disposal to the authorities dealing with waste handling, pursuant to waste law.

Waste volumes located on the market represent the initial statistical basis for monitoring the waste management trend.

Waste generation (t)

Waste category	Amount (t)
Hazardous waste	694 471
Other waste	16 113 196
Municipal waste	1 558 263
Total	**18 365 930**

Source: SEA, SO SR

Generation of waste located on the market (t)

Waste category	Amount (t)
Hazardous waste	561 247
Other waste	8 809 928
Municipal waste	1 558 263
Total	**10 929 438**

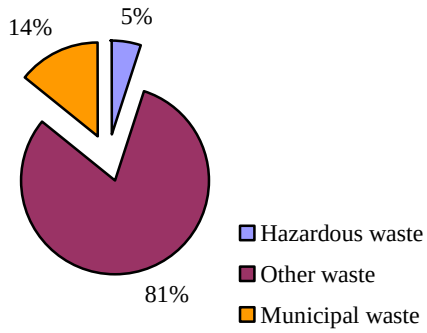
Source: SEA, SO SR

Compared to 2004, **increase in waste located on the market was more than 16 %**. The following chart shows the percentage share of individual waste categories. Other waste (O) shows 81 % share, which is traditionally the greatest share on the waste generation market. Significant increase existed in hazardous waste generation (H) by 30 %, compared to the previous year.

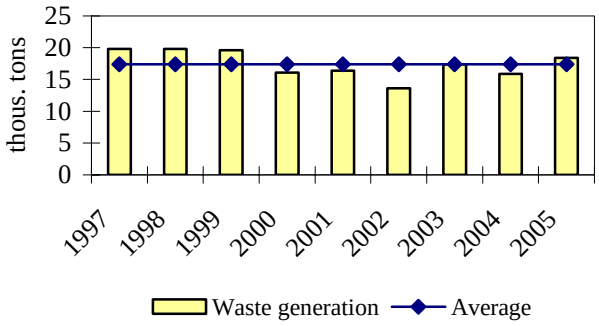
Municipal waste includes both waste categories (O and H). However, it is necessary to separate the category of municipal waste considering the unique character of its regime, typical of municipal waste.

Long-term trend in waste generation points to the fact that total waste generation has remained relatively uniform over the recent years.

Percentage of waste categories



Waste generation in SR from 1997 to 2005



Source: SEA

In the area of waste generation **by economic activities** classification, **manufacturing industry** has been the **dominating** component over the recent years, **with 64 %** share on total waste

generation. Sector of construction follows with 10 %, commercial services with 9 %, agriculture with 7 %, and waste water treatment and waste disposal with 4 %.

Waste generation by particular economic sectors in 2005 (t)

Economic sector	Total	Hazardous waste	Other waste
Agriculture	661 068.24	15 174.84	645 893.40
Fishery	842.91	35.25	807.66
Industry total	6 048 208.08	304 265.55	5 743 942.52
Building industry	950 926.19	8 635.21	942 290.98
Trade	854 462.84	58 228.04	796 234.80
Hotels and restaurants	1 743.33	61.23	1 682.10
Transport and communications	151 461.17	94 654.22	56 806.95
Banking and insurance sector	99.38	55.79	43.60
Activities in domain of real estate	84 804.66	10 734.23	74 070.43
Public administration and defence	17 668.69	2 375.31	15 293.38
Education	903.96	134.65	769.30
Health service	68 544.33	2 595.54	65 948.80
Waste water treatment and waste disposal	361 549.05	62 570.86	298 978.19
Unknown	168 892.12	1 726.11	167 166.00

Source: SEA

Compared to 2004, major changes exist in industrial manufacturing, with waste generation decreasing approximately by 539 000 tons, and commercial activities generating 518 000 tons of waste more.

Waste treatment

The MoE SR Resolution No.509/2002 Coll., and the MoE SR Resolution No. 128/2004 Coll. which amend the MoE SR Resolution No. 283/2001 Coll. on execution of a number of provisions of the waste law, introduced into the system the codes of handling **Z -waste collection through temporary waste disposal prior to further handling at the generation site**, **O - handing over of waste to another subject for its further treatment or recovery, and DO - handing over of waste for domestic use**. Consequently, compared to 2004, waste handling and disposal activities **dropped by as much as 879 000 tons**. On the other hand, there was an 80 % increase in waste handling and its handing over for household use.

Handling with waste by means DO, O and Z codes (t)

Disposal code	Activity	Total	Hazardous	Others
DO	Handing over of waste for domestic use	178 613.06	68.33	178 544.72
O	Handing over to another subject	783 195.80	33 423.30	749 772.50
Z	Storage of waste	107 640.24	7 222.00	100 418.25

Source: SEA

Waste recovery

There were **4 783 664 tons of waste recovered** in the SR in 2005. This represents **44 % of total volume of waste** located on the market. Compared to 2004, this represents **17 % increase** in waste recovery. The R4 activity - recycling or reclamation of metals and metal compounds, dominates among the methods of waste recovery, with 31 %. There are also R10 activities – treatment of soil to obtain benefits for agricultural activities or to improve environment, with 15 %, R3 activities – recycling or reclamation of organic substances not used as solvents (including composting and other biological transformation processes), with 12 %, R5 activities - recycling or reclamation of other inorganic material, with 7 %, and R1 activities - using as fuel or obtaining energy through other ways, with 6 %, that significantly influence waste recovery.

Waste recovery following codes R1 – R13 in year 2005 (t)

Code of recovery	Total	Hazardous waste	Other waste
R01	304 003.27	14 791.51	289 211.76
R02	5 521.11	4 411.18	1 109.93
R03	579 146.72	13 183.59	565 963.13
R04	1 459 172.39	13 124.18	1 446 048.21
R05	357 898.27	3 383.28	354 514.98
R06	4 959.75	4 919.45	40.30
R07	1 128.81	224.71	904.10
R08	2 168.00	2 142.60	25.40
R09	13 475.21	13 420.32	54.89
R10	712 512.72	565.48	711 947.23
R11	416 465.18	74 944.26	341 520.92
R12	12 127.98	1 770.73	10 357.25
R13	915 084.54	10 858.91	904 225.63
Total	**4 783 663.94**	**157 740.21**	**4 625 923.73**

Source: SEA

In 2005, **the Recycling Fund** contributed with 20 million SKK more to business projects of waste collection, recovery, and treatment than in 2004, representing more than **484 million SKK in total**. The Fund contributed for separated waste collection in towns and villages in 2005, by almost 34 million SKK. Municipalities receive a contribution for separated documented recovered waste. This contribution in 2005 remained at the same level of 1 500 to 1 800 SKK per ton.

Contributions received from the Recycling Fund (SKK)

Sector/Year	2002	2003	2004	2005
Used batteries and accumulators	0	14 665 664	6 123 789	27 762 392
Waste oils	0	25 978 911	13 513 450	31 838 929
Used tyres	0	55 526 823	31 938 861	52 227 842
Multi-layer combined material	0	11 200 000	6 011 426	15 788 362
Electrical and electronic devices	0	108 444 952	31 809 571	43 873 057
Plastics	0	45 331 744	97 465 327	85 257 226

Mercury-containing sources of light	0	3 376 397	1 747 720	1 788 973
Paper	0	66 861 855	66 541 864	63 043 210
Glass	0	6 662 395	26 397 285	36 443 376
Vehicles	0	20 708 446	73 828 884	50 661 866
Metal packaging	0	0	12 385 467	6 909 123
General sector	0	16 673 117	69 584 229	34 684 182
Proposals of municipalities for contribution	0	5 031 880	27 467 030	33 956 530
Total	**0**	**380 462 184**	**464 814 903**	**484 235 068**

Source: RF

Environmental fund contributed with the sum of 75 400 000 SKK to the development of waste management in 2005, 82 projects out of 156 applications received the funding.

The EU Structural Funds contributed with significant funding to the development of the waste management infrastructure in 2005, under the Basic Infrastructure Operation Programme. Total approved sum exceeds 783 000 000 SKK, while 5 508 000 SKK was approved for development of waste separation activities.

Waste disposal

Pursuant to the waste management hierarchy and concepts on the EC level, waste disposal is considered to be the last and least acceptable way of waste handling.

Waste disposal following codes D1 – D15 in year 2005 (t)

Code of disposal	Total	Hazardous waste	Other waste
D01	2 888 359.46	130 586.60	2 757 772.85
D02	67 230.63	47 793.25	19 437.38
D05	1 869.02	299.57	1 569.45
D08	40 607.39	15 096.45	25 510.93
D09	91 196.44	67 651.09	23 545.35
D10	102 936.89	85 642.79	17 294.10
D11	7.23	0.02	7.21
D12	0.25	0.25	0.0
D13	4 623.56	176.43	4 447.13
D14	1 619.12	1 618.94	0.18
D15	38 707.28	13 927.53	24 779.75

Source: SEA

D-1 activities – underground or surface waste disposal, i.e. landfilling, **has the greatest share** on this situation, **with 89 % share** on all totally eliminated waste. Of total volume of waste located on the market, 26 % of waste was disposed of through the D1 method. It is important to add that compared to the previous year, volumes of landfill waste dropped by 1 700 000 tons, which is a reduction by 37 %.

Number of landfills towards 31.12.2005

Region	Number			
	H	O	I	Total
Bratislava	2	6	2	10
Trnava	1	18	3	22
Trenčin	1	15	3	19
Nitra	2	20	2	24
Žilina	1	16	3	20
Banska Bystrica	1	21	2	24
Prešov	1	22	1	24
Košice	3	12	3	18
Total	**12**	**130**	**19**	**161**

Source: SEA

H – landfill for hazardous waste
O – landfill for non-hazardous waste
I – landfill for inert waste

Of all waste disposal mechanisms, the **D10 method** – Incineration on land, contributes to waste disposal **by 3 %,** and **the D9 method** – Physical-chemical treatment **with 3 %** as well. Number of partial or total waste incineration facilities was 40, which is less than in 2004 by 5 facilities.

For a number of years, incineration capacities for the municipal sector include only facilities in Bratislava and Košice. Both facilities use the heat from waste incineration.

Number of waste incineration and facilities for waste incineration in SR towards 31.12.2005

Region	MW	IW	HoW	CIW	Total
Bratislava	1	4	1	1	7
Nitra	0	1	4	0	5
Trenčin	0	2	5	2	9
Trnava	0		2	0	2
Banska Bystrica	0	2	2	0	4
Žilina	0	3	2	1	6
Košice	1	1	0	0	2
Prešov	0	2	2	1	5
Total	**2**	**15**	**18**	**5**	**40**

Source: SEA

MW – municipal waste
IW – industrial waste
HoW – hospital waste
CIW – facilities for waste co-incineration

Waste from electrical and electronic devices

Act No. 733/2004 Coll. implemented the following directives into the SR legal code: Directive No. 2002/96/EC on waste from electrical and electronic devices, and Directive No. 2002/95/EC on limited use of certain hazardous compounds in electrical and electronic devices. This legislation introduced the system of handling electrical devices and electric waste in the SR. Producers of these devices are bound by this legislation to comply with collection, recovery or recycling of electrical waste for 10 categories.

Processing of waste from electrical and electronic devices may be carried out only by those subjects that are authorised by the MoE SR. There are 12 subjects in Slovakia that are authorised to process waste from electrical and electronic devices.

Summary reports by producers of electrical devices for the year 2005

Category under Annex 3 of the waste law	Introduced to market (kg)	Collected (kg)	Processed (kg)	Recovered (kg)	Recycled (kg)
1. Big domestic appliances	24 043 679.75	1 862 639.33	1 815 167.31	1 674 978.79	1 646 427.33
2. Small domestic appliances	3 074 754.98	191 225.63	175 236.63	132 789.10	120 621.62
3. IT and telecommunication devices	4 285 317.16	283 949.01	275 224.81	192 574.50	153 164.69
4. Consumer electronic devices	9 551 813.65	1 100 853.27	1 083 008.93	678 312.98	302 664.10
5. Sources of light	2 742 566.29	25 896.33	25 779.94	10 220.29	8 943.17
5a.Gass lamps	684 905.40	68 438.10	64 249.10	55 519.49	55 516.49
Total (5+5a)	3 427 471.69	94 334.43	90 029.04	65 739.78	64 459.66
6. Electrical and electronic instruments	2 639 798.06	24 088.46	24 156.38	15 358.78	13 731.10
7. Toys, devices designated for sport and recreational use	225 937.86	2 470.43	2 470.43	2 021.40	1 867.58
8. Medical devices	236 230.27	0.00	0.00	0.00	0.00
9. Machines for monitoring and testing	38 958.47	280.00	280.00	250.00	250.00
10. Vending machines	148 518.00	0.00	0.00	0.00	0.00

Source: SEA

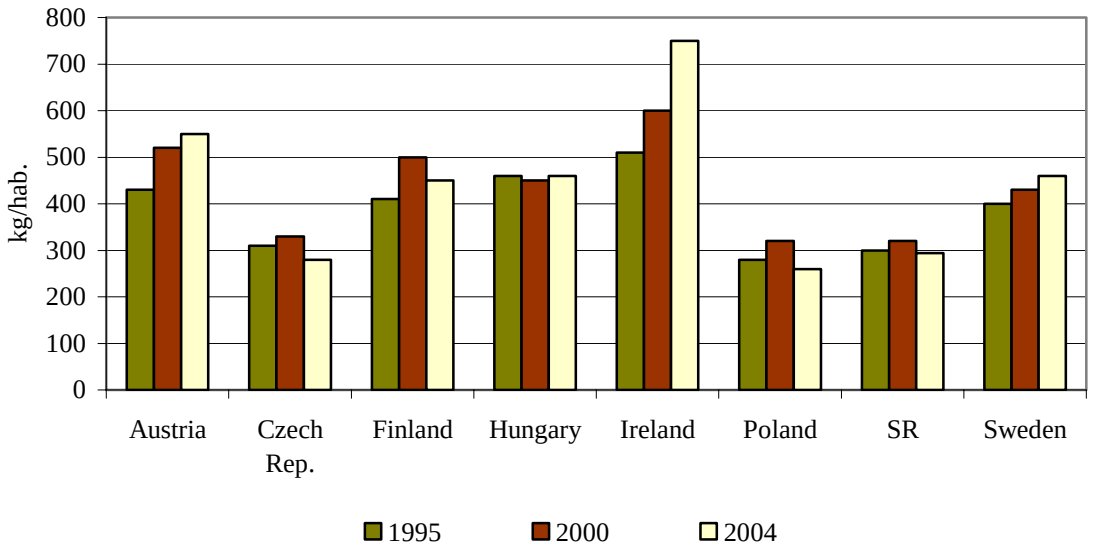
Municipal waste

According to data from the SO SR, there were **1 558 263 tons of total municipal waste** generated in Slovakia in 2005. This volume represents **289 kg of municipal waste per capita.** Compared to 2004, this is a reduction by 5 kg per capita. Of total amount of municipal waste, **major part (as much as 92 %) is disposed of through waste disposal**, while municipal **waste recovery is only 3 %**. Long-term waste **disposal on landfills** (79 %) is the **most frequent method** of municipal waste handling.

In terms of **municipal waste composition**, mixed municipal waste (72 %) together with bulky waste (9 %) constitutes the major component of municipal waste. Biologically degradable waste from gardens and parks (i.e. green waste) was 4 %.

According to the SO SR, **volume of separated municipal waste per capita is 16 kg**, which means that the level of municipal waste separation is increasing; however, still not sufficient. Volume of **recovered municipal waste per capita is 7 kg**. An effective system that takes into consideration the quality of separated waste components and the subsequent connection to recovery capacities will soon have to be created. The European Union financial structures may provide a significant assistance in the area of separated waste collection, which, together with the Recycling and Environment Fund will represent still greater opportunity for municipalities to obtain funding to introduce the separated collection duty as from January 1, 2010.

Municipal waste generation – international comparison (kg/habitant)



Source: OECD

Municipal waste generation and disposal (t)

Region	Total	D01	D02	D05	D09	D10	D12	D13	D15	DO	O
Bratislava	**261 037.93**	102 478.01	1 202.37		271.20	124 522.10					21 742.15
Trnava	**221 066.59**	207 572.61				2.00					8 484.22
Trenčin	**165 423.38**	152 531.13	2.00	0.10	2.89		250.00	5.98	30.27		5 266.69
Nitra	**218 168.64**	205 988.44	62.72		0.03	27.10			254.80	0.16	5 511.15
Žilina	**198 101.51**	188 254.74									6 559.09
Banska Bystrica	**169 272.72**	153 111.87									12 070.06
Prešov	**162 275.56**	135 643.43	100.25	296.52		254.14			13 006.56		8 023.72
Košice	**162 916.61**	80 989.64	7.16	27.52		55 938.24		2 817.44	2 194.46		17 684.85

Region	R01	R02	R03	R04	R05	R06	R07	R09	R10	R11	R12	R13	Z
Bratislava	12.80		8 465.03	31.09	841.31					0.80		1 471.07	
Trnava	46.80		1 877.19	107.31	685.58		8.17					195.99	2 086.72
Trenčin	360.66		2 019.46	432.42	1 497.73			0.83	61.70	246.79		2 627.53	87.20
Nitra	40.70	0.16	3 037.31	154.17	1 099.80			0.50	264.30	373.12	8.21	99.10	1 246.87
Žilina	3.63		1 427.53	265.29	1 149.60			7.50				138.81	295.32
Banska Bystrica	1 625.28	0.65	961.65	51.99	673.38	0.12		0.18			1.02	31.65	744.87
Prešov	11.80		2 613.10	236.78	544.60	0.30	0.30		65.40	1.00	3.53	1 210.91	263.22
Košice	4.25		442.85	86.05	466.86	0.48	1.50	1.37	2.70	3.99	400.11	1 681.00	166.14

Source: SO SR

Packaging and waste from packaging

In 2005, the adopted Directive 2005/20/EC which amends Directive 94/62/EC on packaging and waste from packaging, outlined out the possibility of **transitional period until 2012** for the SR, Cyprus, Czech Republic, Estonia, Hungary, Lithuania, and Slovenia. In case of Malta, it is by 2013, while for Poland and Latvia it is by 2015.

On 1. June, 2005, the SR Government Order No. 220/2005 Coll. became effective. The Resolution defines obligatory limits for packaging waste recovery and for the scope of its recycling in relation to total weight of packaging waste. This also includes the MoE SR Regulation No. 210/2005 Coll. on execution of a number of the packaging law provisions, which supersedes the MoE SR Regulation No. 5/2003 Coll. All this was the result of the amended Act No. 529/2002 Coll. on packaging.

Obligatory limits for packaging waste recovery in relation to total weight of packaging waste

Packaging material (%)	2005	2007	2009	2011	2012
Paper	36	45	61	65	68
Glass	40	43	46	50	60
Plastics	28	38	40	45	48
Metals	20	25	35	50	55
Wood	0	0	0	25	35
Total	32.3	39.4	49	56	60

Source: MoE SR

Obligatory limits for the packaging waste recycling in relation to total weight of packaging waste

Packaging material (%)	2005	2007	2009	2011	2012
Paper	30	40	56	58	60
Glass	40	43	46	50	60
Plastics	20	30	35	40	45
Metals	20	25	35	50	55
Wood	0	0	0	15	25
Total	28	35.6	46	50	55

Source: MoE SR

Volumes of packaging waste generated in the SR and recovered or incinerated in waste incinerators with energy recovery technologies (t)

Material		Packaging waste	Recovered waste or waste incinerated with energy recovery						
			Material recycling	Other forms of recycling	Recycling total	Energy recovery	Other forms of recovery	Waste incineration with energy recovery	Waste and energy recovery and waste incineration in total
Glass		100 000	26 500		26 500				26 500
Plastics		50 000	8 000		8 000			8 286	16 286
Paper/cardboard		200 000	100 000		100 000			12 521	112 521
Metals	**Aluminium**								
	Steel								
	Total	10 800	1 723		1 723				1 723
Wood		9 587	2 900		2 900	1 100			4 000
Other									
Total		381 387	139 123	0	139 123	1 100	0	20 807	161 030

Source: MoE SR

Trans-boundary movement – import, export and transit of waste

For its decisions to transport waste over national borders in 2005, the MoE SR applied the EEC Council Regulation No. 259/1993 on the supervision and control of shipments of waste within, into and out of the European Community (Council Directive 259/93) taking into account the Treaty of Accession of the SR to the EU, and the relevant national legislation. In accordance with the Treaty of Accession of the SR to the EU, the MoE SR made decisions in 2005 also to import waste classified under the Green Waste Register (Annex II of Government Order No. 295/93) for its recovery.

Over the course of 2005, the MoE SR issued **129 decisions on trans-boundary transport of waste**, including **105 import licenses, 18 export licenses, 4 licenses for transit transport of waste**, and two decisions objecting the import of waste. Objections were raised against the import of agro-chemical waste including hazardous compounds from Poland that was to be disposed of in the territory of the SR. The other case involved the import of municipal waste from Austria to the SR, to be recovered through the R3 activities at a facility that did not have a valid license for the R3 waste recovery.

Summary of the number of effective licenses for trans-boundary transport of waste, issued in 2005

Issued in year	Import	Export	Transit	Total
2005	46	5	2	**53**
2005 -2006	59	13	2	**74**
Total	105	18	4	**127**

Source: SEA

Number of issued licenses for waste import in 2005 was 83 % of total number of issued licenses for trans-boundary transport of waste. Increase in the number of decisions to import waste was the result of the fact that also the waste under the Green Waste Register had be licensed by the MoE SR. Issued licenses in 2005 for trans-boundary waste transport, i.e. import, export, and transit of waste, allowed **1 077 472 tons of waste to be transported**.

- **Waste import**

Licensed import of 1 034 140 tons of waste related to the waste under the Green Waste Register, Yellow Waste Register (Annex III of Government Order No. 259/93) and to the waste impossible to classify under any annex of the Council Regulation 259/93 (the last amounting to 54 000 t).

Issued licenses to import waste in 2005 allowed to import waste from 13 countries, including 7 EU countries (818 960 t of waste) and 6 non-EU countries (215 180 t of waste).

- **Waste export**

Licenses to export waste in 2005 involved 14 categories of waste under the Green Waste Register (6 categories) and the Yellow Waste Register (8 categories). Waste export was licensed for

Belgium, Czech Republic, Poland (40 %), Austria, German Federal Republic, Ukraine (45 %), and Great Britain, **totalling 33 540 t**, which includes 18 440 t to the EU countries.

Total permitted volumes of waste by individual countries

Country/ISO code	Import to SR (t)	Export from SR (t)
Belgium	-	3 300
Belorussia	130	-
Czech republic	188 000	300
Netherlands	1 100	-
Kazakhstan	20 000	-
Hungary	334 200	-
Poland	149 000	13 300
Austria	113 670	18
Romania	60 000	-
Russia	80 000	-
Germany	32 740	1 482
Switzerland	4 000	-
Ukraine	51 050	15 100
Great Britain	250	40
Total	**1 034 140**	**33 540**

Source: SEA

In terms of total waste licensed for export, (1 034 140 t) in 2005, import from Hungary amounted to one third of the licensed import from the other twelve countries.

- **Waste transit**

MoE SR decisions for transit transport issued in 2005 made it possible to transport 3 waste categories, including 2 waste categories classified under the Green Waste Register, and one waste category classified under the Yellow Waste Register.

Decisions of the MoE SR for transit of waste in 2005 allowed transport through the SR territory to the Federal Republic of Germany (792 t), Hungary (6 500 t), and Romania (2 500 t). Waste – AA 170 – lead accumulators, whole or shredded – from Hungary was routed to the Czech Republic and the Federal Republic of Germany. Purpose of this transport was to recover waste at the facilities located in the destination countries. Waste export from the Federal Republic of Germany was licensed for the GO 050 category – disposable photo cameras without batteries, to Romania, through the Czech Republic, Slovak Republic, and Hungary. Transit of iron or steel waste (GA 430) was possible from Romania to Poland.

***Fire** is every undesirable burning, by which damages of property or environment emerge, or which results in death or injured person or killed animal; fire is also undesirable burning, which endangers lives or health of people, animals, property or environment.*

§ 2 par. 1 letter a/ of the Act No. 314/2001 Coll. on Prevention from Fires

• NATURAL AND TECHNOLOGICAL HAZARDS

Accidental deterioration of water quality

According to the SEI statistics on emergency deterioration or a threat to water quality (WQEDA) in 2005, there was a reduction in the number of these occurrences, compared to the previous year - especially in case of the surface water. However, this number is still significant.

Special declination or quality menace of water of the SR in the years 1993 - 2005

Year	WQEDA recorded by SEI	Special deterioration of water					
		Surface			Ground		
		Total number	Watercourses and basins	Water courses	Total number	Pollution	Endanger-ment
1993	142	95	3	12	47	10	37
1994	121	82	5	7	39	10	29
1995	129	73	5	11	56	8	48
1996	117	71	1	10	46	7	39
1997	109	63	0	6	46	14	32
1998	117	66	2	1	51	10	41
1999	98	61	2	9	37	3	34
2000	82	55	2	9	27	3	24
2001	71	46	1	4	25	1	24
2002	127	87	1	6	40	5	35
2003	176	134	2	3	42	0	42
2004	137	89	1	10	48	11	37
2005	119	66	2	5	53	2	51

Source: SEI

In terms of water-threatening compounds (WTC), exceptional deterioration of water quality in a long run has been caused mainly by crude oil compounds - as was also the case in 2005. Wastewater has smaller impact on WQEDA, together with livestock excrements, insoluble substances, alkali, pesticides, other toxic substances, most of all those WTC in which it was impossible to determine the category.

Progress in number of WQEDA according to the sort of WTC in the years 1993 – 2005

Sorts of water deteriorative substances:	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Oil substances	63	76	69	50	61	54	33	40	64	59	70	63
Alkalis	3	3	5	10	3	5	2	2	5	3	1	0
Pesticides	1	0	1	1	3	1	0	0	1	0	3	0
Excrements of farm animals	9	11	14	8	3	7	5	4	9	21	15	14
Silage fluids	0	0	1	1	0	2	4	0	2	1	1	0
Industrial fertilisers	0	1	0	0	0	0	0	0	0	1	0	0
Other toxic substances	5	5	1	5	0	6	12	5	3	3	0	4
Insoluble substances	4	6	4	8	7	1	5	2	6	11	3	4
Waste water	6	1	6	11	17	6	10	10	17	35	20	10
Other substances	13	10	9	6	6	4	2	1	3	7	10	8
Water detrimental substances impossible to determine	17	16	7	9	17	12	9	7	17	35	14	10

Source: SEI

Major causes of accidental deterioration of water quality and 2005 included traffic and transportation (45 cases), and human factor (21 cases).

Scheme about WQEDA arose out of area of SR, caused by foreign organizations or unknown originator in the years 1993 – 2005

Year	WQEDA caused or originated (number)					
	Outside the SR territory		Foreign organizations		Unknown originator	
	Number	%	Number	%	Number	%
1993	7	4.9	7	4.9	44	31.0
1994	2	1.7	2	1.7	44	36.4
1995	5	3.9	3	2.3	28	21.7
1996	3	2.6	3	2.6	23	19.7
1997	1	0.5	6	5.5	20	18.4
1998	0	0	7	6	28	23.9
1999	3	3.1	3	3.1	27	27.6
2000	5	6.1	1	1.2	28	34.1
2001	0	0	3	4.2	16	22.5
2002	1	0.7	4	3.1	35	27.5
2003	2	1.1	8	4.5	52	29.5
2004	7	5.1	8	5.8	36	26.3
2005	3	2.5	15	12.6	33	27.7

Source: SEI

Summary of the WQEDA causes recorded by the SEI in 1993 – 2005

	Events by causes of their origin:	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1.	Breaching the technological and work discipline	25	34	20	35	29	20	14	15	17	43	16	21
2.	Poor state of the device caused by:												
	2A lack of maintenance and spare parts	14	12	11	10	10	6	7	4	8	14	9	6
	2B inappropriate technical architecture	12	9	11	4	4	11	5	9	11	12	8	13
	2C inadequate capacity of storage unit and emergency tanks	0	3	3	0	1	2	1	1	6	3	4	5
3.	Emergency event : 3A fire	2	3	2	0	0	0	0	0	1	1	3	2
	3B explosion					1	0	1	1	0	3	0	0
4	Impact of the climate: 4A climate factors	6	4	15	4	1	5	3	0	5	12	5	1
	4B oxygen deficit					0	0	1	0	0	0		0
5.	Traffic and transportation : 5A traffic	16	14	20	28	24	14	11	9	28	28	19	40
	5B transportation					9	6	1	1	6	2	2	5

6.	**Event outside the territory of the Slovak Republic**	2	5	3	1	0	3	5	0	0	2	7	3
7.	**Other**	13	29	14	13	15	15	14	18	21	19	37	7
8.	**Unknown**	32	16	18	13	23	16	19	0	24	37	27	16

Source: SEI

Scheme of the most significant WQEDA caused in the year 2005

Year	Date	Place of occurrence, object	Cause of event	Aftermath of event
2005	23. 8.	Hriňová, Slatina stream, former ZŤS site	Cyanide, cadmium, zinc, nickel, chromium, copper - released at destruction works - galvanizing	Approximately 1 200 kg of fishes dead along 13.1 km
	7.8.	WWTP, OKTAN Kežmarok, Poprad stream	Release of contaminated wastewater at increased rainfall activity	Contamination of the border stream by the oil compounds

Source: SEI

Accidental deterioration of air quality

In 2005, Air Protection Inspectorate Division, recorded five events that caused deterioration in air quality (ADA). The following table shows a trend in the number of Air Quality Endangerment and Deterioration Accidents recorded by the SEI.

The following table shows the most critical ADA cases.

Summary of the major events (accidents) leading to exceptional deterioration or threatening of air quality in 2005

Year	Date	Place of occurrence, object	Cause of accident	Aftermath of accident
2005	22. 5. – 1.6.	DZ Koksovňa, U.S.Steel Košice, inc., VKB 3	Malfunction of the exit dust conveyor number 776 at dry dust removal from gases from the coke extrusion at VKB 3	PM release of 39.22 tons
	18.6.	DZ Energetika, U.S. Steel Košice, inc.	Outage in burning kiln gas caused by extinguishing of flame and subsequent release of non-burnt kiln gas	Release of non-burnt kiln gas of approximately 10 000 m^3

Source: SEI

Trends in number of ADA in years 1993 - 2005

Year	Recorded events	Accidental deterioration or endangerment of air quality (ADA)	
		Deterioration	Endangerment
1994	1	1	-
1995	9	8	1
1996	5	5	-
1997	7	7	-
1998	5	5	-
1999	3	3	-
2000	4	3	1
2001	1	1	-
2002	4	4	-
2003	3	3	-
2004	1	1	-
2005	5	5	-

Source: SEI

Trends in number of ADA by air contaminant types in years 1995 to 2005

Type of pollutant	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
SO_2	2	2	1	1	2	1	1	-	1	-
NO_x	2	2	1	1	1	1	1	-	1	-
SPM	2	1	1	1	2	1	1	2	1	1
CO	2	1	1	1	1	1	-	1	1	-
C_{org}	2	1	1	1	1	-	-	-	1	-
H_2S	-	1	-	-	-	-	-	-	-	-
NH_3	-	-	-	-	-	-	1	-	-	-
Vinylchlo-ride	-	-	1	-	-	-	-	-	-	-
chlorine	-	-	-	-	1	-	-	-	-	-
HCl	-	-	-	-	-	-	-	-	-	1
CO_2	-	-	-	-	-	-	-	-	-	1

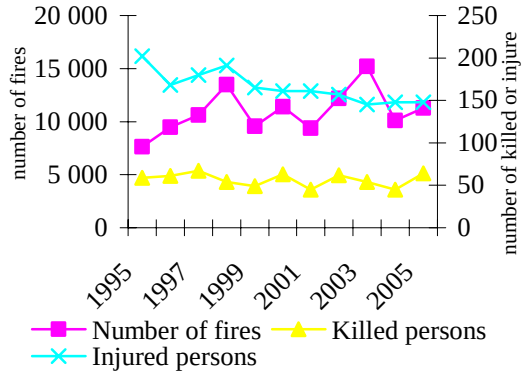
Source: SEI

Fire risk

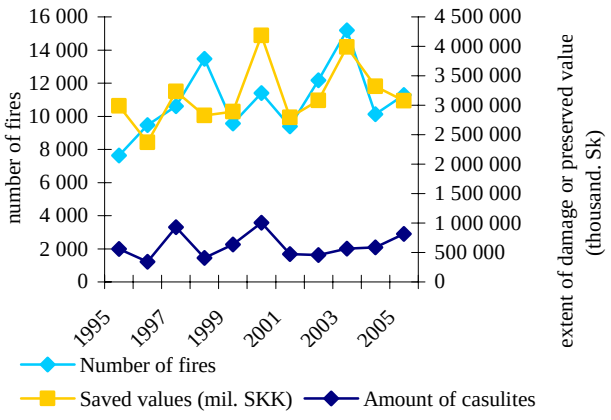
11 294 fires causing 64 casualties and 166 injured were documented in the SR in **2005**. Direct material damage reached 813 494 900 SKK, while the volume of preserved values was calculated at 3 074 208 000 SKK.

In terms of damage caused by fires in individual sectors of economic activities, **most fires were documented** in the area of **agriculture**, just like in the previous years. There were 2 481 fires in agriculture causing direct material damage of about 39.1 million SKK, 2 casualties and 4 injured. In terms of fire statistics, **household management** shows the second greatest number of fires-1 821 fires occasioning direct material damage at about 129 million. SKK, killing 41 people. Least number of fires was recorded in the **commercial** sector**,** with 132 direct material damage totalling 43.3 mil. SKK.

Relationship between number of fires and number of killed or injured persons in the years 1995 - 2005



Relationship between number of fires and number of casualties or amount of saved values in the years 1995 - 2005



Source: SEI

Floods

Floods and natural phenomena with impact made stronger by human activities. Since 1997, the territory of the Slovak Republic has experienced annual floods of great magnitude. In terms of time and space, the floods are distributed unevenly. Spring floods are caused by long-term intensive rainfalls or by a sudden warm weather with rapid melting of snow. The floods of June and July are caused by intensive local rainfalls.

In 2005, there were 237 municipalities afflicted by floods. 791 residential houses were flooded. This number included 74 destroyed or temporarily uninhabitable houses. Further, 35 administrative buildings schools and medical facilities were flooded, together with 35 production facilities, 715 household wells, 8 770.5 hectares of the agricultural land, 22 hectares of the forest land, and 445 hectares of land inside the towns and villages. The floods damaged 68 bridges and 69 benches, together with 96.5 km of river bank fortification, and 131 km of dams. 2 411 inhabitants felt the aftermath of the floods, including 125 persons who had to be evacuated. 99 inhabitants temporarily lost their housing. 62 people were rescued during rescue operations.

Floods aftermath over the period of 1999-2005

Year	Number of flood stricken residential areas	Flooded Territories (ha)	Damages by floods (mil. SKK)	Costs (mil. SKK)		Total costs and damages (mil. SKK)
				Rescue activities	Maintenance and safety activities	
1999	682	181 433	4 460.90	58.30	65.10	4 584.30
2001	379	22 993	1 960.60	57.10	32.10	2 049.80
2002	156	8 678	1 525.70	58.10	50.10	1 639.90*
2003	41	744	43.90	5.69	4.20	53.79
2004	333	13 717	1 051.80	37.23	102.93	1 191.96
2005	237	9 237	800.46	67.82	80.64	948.92

* including also the sum of 6.0 mil. SKK – cost of anti-mosquito chemical spray treatment Source: SEI