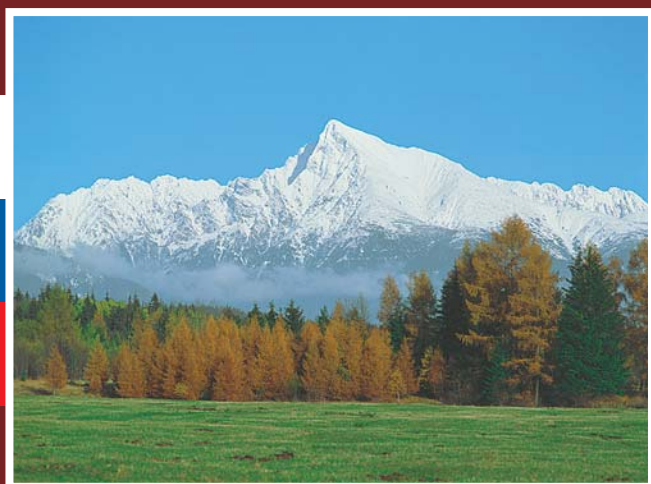


***Ministry of the Environment
of the Slovak Republic***



***STATE OF THE ENVIRONMENT
REPORT
SLOVAK REPUBLIC 2007***



***Slovak Environmental
Agency***





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

◆ **Air dose equivalent rate**

Input of the external photon dose equivalent in air H ($\text{nSv}\cdot\text{h}^{-1}$) in 2006 in the early alarm networks of in the whole SR territory reached the average value of $107.1 \text{ nSv}\cdot\text{h}^{-1}$. Average annual effective dose E (μSv) for the whole SR territory was $937 \mu\text{Sv}$ in 2006.

◆ **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 2006 reached average value $5 \mu\text{Bq}\cdot\text{m}^{-3}$.

In 2006, no major air contamination by man-made radionuclides was detected, ^{137}Cs radionuclide concentration in **radioactive fallout**, originating in the upper atmospheric layers as a result of nuclear weapons tests, was about $3.5 \text{ Bq}\cdot\text{m}^{-2}$ in Slovakia.

◆ **Contamination of other environmental compounds**

Average soil contamination by the ^{137}Cs radionuclide in 2006 was about $2.8 \text{ Bq}\cdot\text{kg}^{-1}$. Average activity of the ^{137}Cs radionuclide **in water** in 2006 was below $0.01 \text{ mBq}\cdot\text{l}^{-1}$. Average tritium activity **in water** was at the level of $2.2 \text{ Bq}\cdot\text{l}^{-1}$.

◆ Contamination of foodstuff and agricultural products

Of all man-made radionuclides, in 2006, 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 basic public health legislation on protection against the adverse effects of ionizing radiation is Act No. 126/2006 on **public health and amendments to other laws**, which superseded the former Act and Resolution.

Source of radiation	Radiation load	
	Person (mSv)	Population (10^5 manSv)
Natural background together. from that:	2.94	650
- cosmic radiation	0.39	
- terrestrial gama radiation	0.46	
- radio-nuclides in body	0.29	
- radon and the products of mutation	1.80	
Medical exposure together. from that:		
- diagnostics	0.8 – 1.0	
- radiotherapy	-	
Atmospheric testing of nuclear weapons	-	30
Radio-nuclides outlet	-	2

Source: PHA SR

Nuclear institutions

Nuclear Regulatory Authority (NRA SR) is an independent central state administration authority, headed by the Chief Officer. In 2007, atomic law restatement was discussed in four parliament committees and subsequently approved. Act that amends and supplements the atomic Act No. 541/2004 Coll. as amended, was adopted on 7.2.2007 and published in Collection of Laws of SR on March 7, 2007. NRA SR drafted an amendment to the atomic law as part of its legislative activities in 2007. The amendment is based on transposition of EU Council Directive 2006/117 Euratom on supervision and controls at transboundary transport of radioactive waste and burnt nuclear fuel.

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: NRA SR

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

First NPP block of Bohunice V-1 was put out of operation in December 2006 and in 2007 was in regime 5, i.e. fuel in the reactor and the primary circuit cooled by natural circulation. Second NPP V-1 block in Bohunice was in operation in 2007 according to demands of Slovak energy control centre.

In 2007, NPP – EBO V-1 detected 7 occurrences, 3 of them within the INES 0 degree, and none in the INES 1 degree.

NPP V-2 Bohunice

Both NPP Bohunice V-2 blocks in 2007 operated with new type of core fuel with the content of second-generation gadolinium that contributes to a more efficient use of fuel and more balanced distribution of output in the reactor's active zone. Implementation of periodic assessment of nuclear safety at NPP V2 in Bohunice after 10 years of operation was major event in 2007. Preliminary results of NRA SR assessment suggest that current condition of nuclear safety of NPP V-2 Bohunice after the completion of MOD V-2 modernization program, implementation of corrective measures and elimination of faults detected by test can be a good starting point for safe operation of NPP V-2 Bohunice until the next periodic nuclear safety assessment.

In 2007, both NPP V-2 blocks detected 21 operation occurrences, 18 of them assessed under the INES 0 degree.

NPP Mochovce 1,2

In 2007 in NPP Mochovce 1,2 planned shutdowns were implemented at the blocks for overhauls and fuel changes. Both shutdowns were implemented as planned.

There were two major operation events in NPP Mochovce 1,2 in 2007. The first event relates to insufficient sealing of primary circuit (PC) return valve, while the second event relates to faults in set paths for measuring sealing characteristics of PC equipment division planes.

In 2007, there were 13 occurrences in NPP Mochovce, 5 of which were classified under the INES 0 degree.

Nuclear power plants under construction

At present, one atomic power plant is under construction in Slovakia - NPP Mochovce 3,4 in the ownership of SE, inc..

NPP Mochovce 3, 4

Conservation and protection works on 3rd and 4th blocks of NPP Mochovce continued also in 2007. NRA SR periodically controls and assesses their condition. Planning works began in 2007 as a result of a decision of the owner of the plant. Their result should involve continuing construction of blocks 3 and 4.

Nuclear power plants to be phased out

In 2007, one atomic plant – NPP A-1 in Bohunice was phased out. After the SE inc. division, the plant became the ownership of JAVYS, inc. Block 1 of the NPP Bohunice V-1 that terminated output operation in 2006 as a result of government decision on early termination of operation of NPP Bohunice V-1 blocks in 2006-2008.

Operated nuclear facilities

Jaslovské Bohunice temporary storage of burnt fuel stores burnt fuel from the NPP V-1, NPP V – 2, and NPP Mochovce 1,2, before its transport to the re-processing plant or before its permanent storage. In 2007, program of gradual translation of burnt nuclear fuel from original T-12 tanks to new KZ – 48 tanks was terminated. This gradually increases storing capacity of storage.

Technology of processing and treatment of radioactive nuclear waste (RAW), Jaslovské Bohunice includes two bitumen lines, cement line, and the Bohunické RAW processing centre. Bitumen lines with the capacity of 120 l/h are designed to process RAW concentrates from the operation of nuclear power plants. RAW is processed into 200 litre barrels placed into fiber-concrete containers before its final storage. In 2007, a decision to launch the operation of discontinual line designated to fix ions and sludge into bituminous matrix was issued.

National discharge site of radioactive waste Mochovce is a multi-barrier discharge site of the surface type, designed for final storage of solid and solidified RAW generated at the operation and phaseout of NPP, at research institutes, in laboratories, and in hospitals in Slovakia. As of the end of 2006, there were more than 1200 pcs of fiber-concrete containers for low to medium-active radioactive waste stored in this facility.

Nuclear facilities under construction

Final processing of liquid radioactive waste (RAW) sludge, Mochovce is in the ownership of JAVYS, inc. and aims at final processing of liquid radioactive waste from the operation of NPP Mochovce into the form appropriate to be stored within radioactive waste deposit. Technology consists of two individual processes involving bituminization and cementation. In 2007, NRA SR assessed documentation that served as a basis for issued permit for test operation of this nuclear facility. The authority was inspected in order to verify its present condition and readiness for test operation. In 2007, this nuclear facility still did not operate in permanent mode.

Nuclear facilities to be phased out

VUJE, inc. owns two experimental nuclear facilities – bituminization line and RAO incinerator, both in the I-st. stage of phase-out.

◆ **Handling with radioactive waste**

Handling of radioactive waste constitutes an integrated system that includes the collection, separation, storage, processing, treatment, manipulation, and discharge of radioactive waste. Current policy of handling radioactive waste in the SR builds on the following steps:

- treatment of RAO into an acceptable form to be contained or stored over longer time periods,
- depositing low and medium radioactive RAO into a surface discharge site and a long-term storage of RAO unacceptable to be deposited at the surface discharge site,
- survey and development of subterranean storage of burnt nuclear fuel and RAO unacceptable to be deposited at the surface storage site.





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

Centre for chemical substances and products (CCHSP), is the national authority in the area of chemicals and products. Its mission is to manage the safety of chemical substances, products and detergents, in relation to their introduction to market, as well as authorization and registration of biocidal products in accordance with the EU legislation for life and health protection, and in compliance with environmental protection principles. MoE SR has continued in its close cooperation with the supervising authority over the chemical legislation (SR Ministry of Economy).

On June 1, 2007, a new EC Regulation 1907/2006 became effective in all EU member states. This legislation addresses registration, evaluation, authorisation, and restriction of chemical substances (REACH) and also establishes the European Chemical Agency. This legislation amends and supplements Directive 1999/45/EC and supersedes Council Regulation (EEC) 793/93 and Commission Regulation (EC) 1488/94, Council Directive 76/769/EEC, and Commission directives 91/155/EEC, 93/67/EEC, 93/105/EC, and 2000/21/EC (hereinafter only „the REACH regulation“). Over the last two decades and in light of new, progressive technologies, management of chemicals was re-evaluated and the Ministry of Environment of SR subsequently implemented impact assessment in line with the coming Slovak legislation related to environmental protection. In compliance with the provisions of REACH, businesses that produce or import chemicals will be responsible to adopt necessary risk management measures that follow the assessed risks associated with their chemicals, based on information on these substances. This regulation established the European Chemical Agency (hereinafter only "agency"), which will control chemical substances. It will be necessary to restructure restrictions regarding the use of certain chemicals and to substitute the effective Council Directive 76/769/EEC.

Changes arising from the amended Council Directive 67/548/EEC will be transposed and subsequently implemented by the SR Ministry of Economy into the Slovak legal system. This will specifically be done through novelization of Act 163/2001 Coll. on chemical substances and chemicals as amended. **Important objective of the REACH regulation is to encourage substituting hazardous chemicals with less hazardous chemicals or technologies wherever there are suitable alternatives. However, also these alternatives must be very strictly controlled and monitored. Environmental control and monitoring will be the responsibility of the SR Ministry of Environment, through its organizations.**

The **Rotterdam Convention** on prior informed consent procedure for certain hazardous chemicals and pesticides in international trade is a major international law instrument to improve international regulation of trade with certain hazardous substances and pesticides. This Convention entered in effect **for Slovakia on April 26, 2007**. The Rotterdam Convention represents a suitable instrument to limit the use of hazardous chemical substances at global level.

SAICM

Ministry of Foreign Affairs of Slovak Republic nominated the Ministry of Environment, department of environmental risk management, to be the national contact site for Strategic approach to international chemicals management (SAICM) in Slovakia. In 2007, MoE SR was involved in preparing the strategy and participated in workshops of the SAICM organizations.

POPs-management

POPs-management in SR involves relevant activities as part of the initial phase of international document implementation pursuant to EC Regulation 850/2004 on POPs, amended by Council Regulation (EC) 1195/2006, Council (EC) Regulation 172/2007, and Commission (EC) Regulation 323/2007. In 2007, Commission Decision 2001/639/EC which establishes common format for submitting determined and measured data and information.

Priorities of this area include elimination of POPs-pesticides and PCB-containing waste. With regard to the need for funds to address this issue, there is a possibility to receive a contribution from **The Environment Operational Programme, the Waste Management Priority Axis 4** being part of the 4.3. operational objective, focused on environment-friendly hazardous waste handling approaches.

Xenobiotics in the food chain

Limits published in the Slovak Food Codex that are compatible with the EU limits regulate the volumes of xenobiotic substances added to food to extend its life cycle, improve technological production concept, aroma, colouring agents, as well as contaminants from industrial production and environmental pollution.

Monitoring of the occurrence of xenobiotic substances in the components of environment and the products of agricultural and food production is carried out in two ways – through a random control, and a regular monitoring.

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 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.

♦ **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.

45 132 samples were extracted over the entire monitored period (17 years), containing **2 827** limit-exceeding samples, which represents **6.3%**. Monitoring was carried out for 668 agricultural subjects (in 75 districts), analyzing soil samples from 457,000 ha. **In 2007**, total number of **1 549 samples** were extracted from 626 hunts and subsequently analysed for content of chemicals, nitrates, and nitrites. Monitoring was implemented for 51 agricultural subjects in 37 districts, with analysis of the soil samples from 28 994 ha, including the crop produced from this soil.

Summary of results from Coordinated Target Monitoring in 2007

Commodity	No. of analyses	No. of samples	No. of limit-exceeding samples of IS	% IS	Xenobiotic substances
Soil	5 836	958	0	0	
Water	1 564	182	2	1.1	
Including:					
Water for irrigation purposes	972	108	0	0	

Water for feeding	592	74	2	2.7	Nitrates
Forage	2 931	388	0	0	
Including:					
Forage from hunts	1 960	303	0	0	
Trough forage samples	971	85	0	0	
Raw matter	3 148	389	0	0	
Including:					
Raw matter of plant origin	1 096	180	0	0	
Raw matter of animal origin	2 052	209	0	0	

Source: FoRI SR

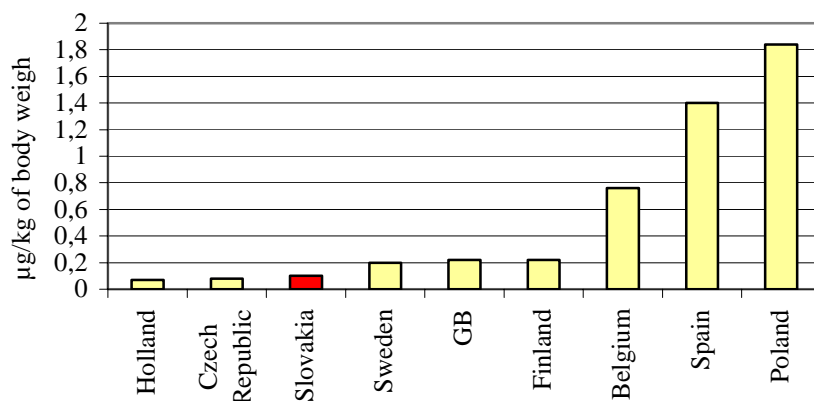
We can say that in terms of the overall assessment of contamination by all xenobiotic substances at once per individual commodities, percentage of the limit-exceeding samples dropped **since 1991**, while it must be noted that the limit values have been changing over the period of 16 years.

The major selected chemical contaminants include cadmium, nitrates, nitrites, and PCB.

Objective of the **Consumption pool monitoring (CPM)** is to obtain data on contamination of foods within the consumer network and subsequently assess exposition of the population to the monitored contaminants. Samples are purchased from the commercial network twice a year (May, September) at 10 Slovak sites. 27 basic food items is 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).

Over the period of **fifteen years, 10 931 samples** were analysed, including **510 samples**, i.e. **4.7%** that exceeded permitted limit values, especially in nitrates, chemical elements, and pesticides. **In 2007, 554 samples** were analysed, including **16 samples** (i.e. **2.9 %**) that were unacceptable.

Comparison of the weekly absorption of mercury by the human organism between Slovakia and other world countries



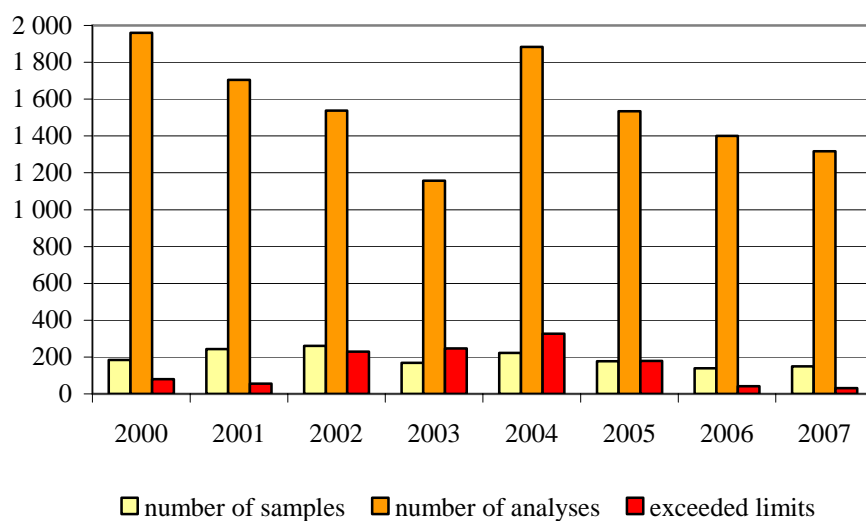
Source: FoRI

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 is carried out in order to continue collecting data and information on impacts of ecological factors of the external environment on a selected type of game in designated regions of Slovakia. In 2007, monitoring continued with its focus on acquiring information on environmental loads, especially on the occurrence of levels of contaminants such as PCB, persistent organic pollutants, dioxins, and high-risk substances in fish caught from rivers and lakes of the east-Slovakia region.

Over the period of **thirteen years, 3 355 samples** were extracted within the monitoring, of which **21.6%** did not comply with the limit values. Greatest number of non-compliant samples over the whole monitored period was detected for chemical elements and PCBs. In **2007, 149 samples** were extracted, of which **21.5%** exceeded the limits.

Comparison of number of samples, analyses, and exceeded limits (total) for the years 2000-2007



Source: SVA SR





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 2007 was the second year of meeting the objectives of the Programme of Waste Management of the Slovak Republic for the years 2006-2010.

Balance of waste generation

Waste generation (t)

Waste category	Amount (t)
Hazardous waste	663 299.73
Other waste	14 456 137.35
Municipal waste	1 668 648.31
Total	16 788 085.39

Source: SEA, SO SR

Generation of waste located on the market (t)

Waste category	Amount (t)
Hazardous waste	525 165.60
Other waste	8 740 682.17
Municipal waste	1 668 648.31
Total	10 934 469.08

Source: SEA, SO SR

Compared to 2006, the annual increment in waste put on the market is about 25 %. **Other waste** is the greatest waste category responsible for this situation, with as much as 29 % annual increment.

The increase existed in hazardous waste generation by 2 %, 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.

In the area of waste generation by **economic activities** classification, **manufacturing industry** has been the **dominating** component over the recent years, **with 55 %** share. Sector of building industry follows with 22 %, agriculture with 7 %, and trade with 4 % share. It is necessary notice that the amount of waste by particular economic sectors is not calculated municipal waste.

Waste generation by particular economic sectors in 2007 (t)

Economic sector	Total	Hazardous waste	Other waste
Agriculture	649 497.45	12 635.65	636 861.80
Fishery	671.72	0.22	671.50
Industry total	5 053 345.77	332 868.92	4 720 476.85
Building industry	2 039 422.02	27 550.74	2 011 871.28
Trade	367 973.00	29 891.34	338 081.65
Hotels and restaurants	2 997.88	114.98	2 882.90
Transport and communications	137 291.70	67 544.56	69 747.14
Banking and insurance sector	324.10	83.79	240.31
Activities in domain of real estate	244 324.30	5 920.98	238 403.32
Public administration and defence	27 367.31	1 086.45	26 280.86
Education	1 592.38	103.43	1 488.95
Health service	245 418.98	2 743.51	242 675.47
Waste water treatment and waste disposal	257 669.54	37 053.29	220 616.25
Unknown	237 951.61	7 567.72	230 383.88
Total	9 265 847.76	525 165.60	8 740 682.17

Source: SEA

Waste treatment**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).

Waste disposing

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	81 572.52	1 051.81	80 520.71
O	Handing over to another subject	425 564.59	19 824.73	405 739.86
Z	Storage of waste	314 199.58	20 365.65	293 833.93
Total		821 336.69	41 242.19	780 094.50

Source: SEA

Waste recovery

There were **3 483 168 tons of waste recovered** in the SR in 2006. This represents **32 % of total volume of waste** located on the market. R10 activities – treatment of soil for the purposes of agricultural returns or for improving the environment show a has the greatest share on waste reclamation (22 %). R5 activity – Recycling or re-extraction of other inorganic compounds show a 21 % share, R3 activities – Recycling or re-extraction of organic compounds that are not used as solvents (including composting and other biological transformation processes) show a 15 % share.

Waste recovery following codes R1 – R13 in year 2007 (t)

Code of recovery	Total	Hazardous waste	Other waste
R01	161 752.17	7 144.84	154 607.34
R02	3 313.61	3 230.05	83.55
R03	527 963.82	19 367.36	508 596.46
R04	468 079.98	9 457.25	458 622.73
R05	738 631.66	3 920.26	734 711.39
R06	677.69	362.37	315.32
R07	491.24	37.05	454.19
R08	2 367.00	2 345.00	22.00
R09	12 275.93	12 244.48	31.45
R10	757 041.65	5 751.94	751 289.71
R11	133 711.78	450.20	133 261.58
R12	79 789.42	6 357.12	73 432.30
R13	597 072.26	27 383.14	569 689.12
Total	3 483 168.21	98 051.07	3 385 117.14

Source: SEA

Waste disposal

Of total volumes of generated waste, **45 % of waste was disposed**, which in absolute numbers means **4 961 342.87 tons of waste**. Dominance of landfill waste is a historical rule, with a 86 % share on total waste disposal. As of December 31, 2007, there were 151 landfills operated in Slovakia.

Number of landfills (towards 31.12.2007)

Region	Hazardous waste landfills	Landfills for not hazardous waste	Inert waste landfills	Total
Bratislava	2	11	2	15
Trnava	2	11	1	14
Trenčín	1	15	3	19
Nitra	3	18	2	23
Žilina	0	16	2	18
Banská Bystrica	1	19	2	22
Prešov	1	20	1	22
Košice	3	13	2	18
Total	13	123	15	151

Source: SEA

Waste disposal following codes D1 – D15 in year 2007 (t)

Code of disposal	Total	Hazardous waste	Others waste
D01	4 269 207.25	132 287.24	4 136 920.02
D02	136 485.98	93 195.47	43 290.50
D03	10.22	10.22	0.0
D05	130.36	60.71	69.65
D08	69 839.40	34 942.33	34 897.07
D09	107 154.34	84 323.14	22 831.20
D10	84 588.95	27 501.64	57 087.31
D11	38.22	27.90	10.32
D12	137.83	25.53	112.30
D13	14 690.86	90.00	14 600.86
D14	1 350.13	405.29	944.84
D15	277 709.33	13 002.86	264 706.46
Total	4 961 342.87	385 872.33	395 260.02

Source: SEA

The important share of waste disposal, with 3 %, has D2 method, following D8 method, biological treatment which is generated wastes disposed by methods marked as D1 to D12 and method D10 – incineration on land contributes by 2 %.

Waste from electrical and electronic equipment (WEEE)

Summary reports by producers of electrical equipment for the year 2007

Category under Annex 3 of the waste law	Introduced to market (kg)	Collected (kg)	Processed (kg)	Recovered (kg)	Recycled (kg)
1. Big domestic appliances	28 624 066	8 499 804	8 311 204	7 212 313	7 160 955
2. Small domestic appliances	3 260 568	744 171	744 171	594 830	572 308
3. IT and telecommunication devices	5 408 045	1 933 154	1 933 214	1 713 828	1 668 720
4. Consumer electronic devices	6 085 362	1 623 252	1 623 146	1 405 323	1 348 850
5. Sources of light	3 044 460	49 889	172 929	163 457	155 989
5a. Gas lamps	312 951	163 332	163 332	146 550	146 550
6. Electrical and electronic instruments	2 025 628	71 169	71 169	63 293	57 223
7. Toys, devices designated for sport and recreational use	90 603	3 686	3 686	2 874	2 518
8. Medical devices	69 644	67 413	67 413	57 608	57 294
9. Machines for monitoring and testing	32 006	28 202	25 375	21 590	21 449
10. Vending machines	97 381	17 461 126	97 495	87 296	86 606
	49 050 713	30 645 198	13 213 134	11 468 963	11 278 462

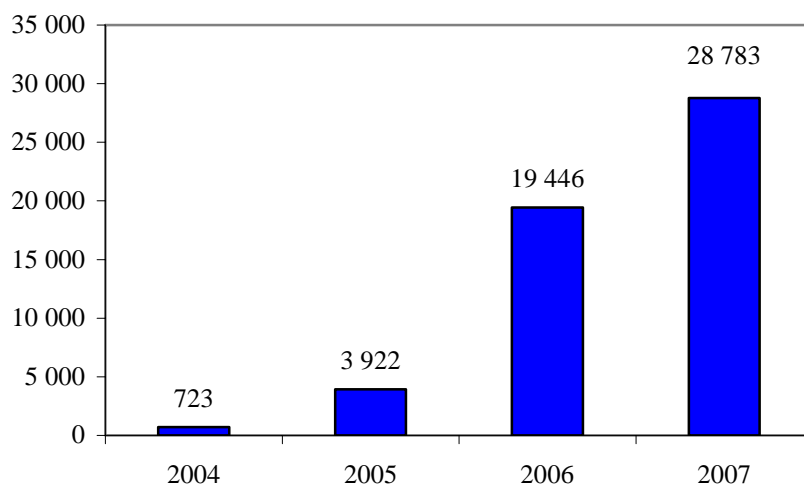
Source: SEA

There were placed on the market 49 thousand tons of electrical devices in Slovakia in 2007 (9 kg per inhabitant). Amount of collected WEEE was approx. 30.6 thousand tons (5.6 kg per inhabitant).

Old vehicle

There were 28 783 old vehicles processed in 2007.

Processed old vehicle (amount of cars)



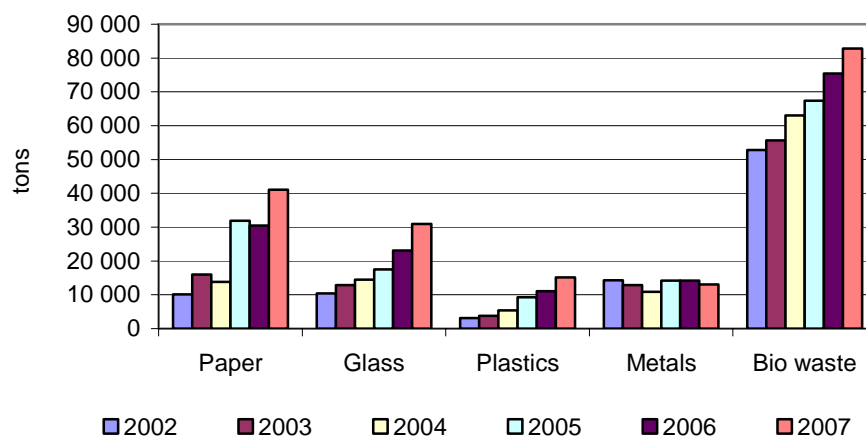
Municipal waste

According to data from the SO SR, there were **1 668 648 tons of total municipal waste** generated in Slovakia in 2007. Greatest municipal waste (MW) production was recorded in the Bratislava region, with 21 816 tons of KO more than in 2006. Least MW was produced in the region of Banská Bystrica. This volume represents **309 kg of municipal waste per capita**. Compared to 2006, this is an increase by 8 kg per capita. Long-term waste **disposal on landfills** (76 %) is the **most frequent method** of municipal waste handling, following by incineration with energy recovery (7 %) and composting by 5 % and incineration 4 %.

In terms of **municipal waste composition**, mixed municipal waste (71 %) constitutes the major component of municipal waste together with bulky waste (9 %), small construction waste (6 %). Biologically degradable waste was 5 % and waste from street cleaning was 3 %

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 the same as in 2006. Volume of **recovered municipal waste per capita increased by 15 kg**.

Separated waste collection (t)



Source: SO SR

Financial mechanisms of waste management

◆ Recycling fund

The recycling fund completed its sixth-year existence in 2007.

Revenues from producers and importers of taxed commodities in 2007 represented more than 593 million SKK, which is 28 million more than in 2006. In 2007, the Recycling fund acknowledged more than 1 680 applications for funding from municipalities and businesses. In total, 647.5 million

SKK were approved for the applicants, which is by 282.5 million SKK more than in 2006. Recycling fund also acknowledged 1 330 applications of municipalities for the obligatory contribution to separated waste, in the sum of 1 300 to 1 800 SKK per ton of waste to be reclaimed. To this end, more than 63 million SKK were designated in 2007, which is an increase by more than 46 million SKK.

Thanks to the fund's financial contribution in 2007, Slovak Republic could, through contractual obligations of its recipients - businesses and municipalities - collect and separate 212 000 tons of waste. More than 134 000 tons of waste material was reclaimed through the fund's contribution. Subjects that received contribution from the fund collected and processed more than 28 000 old vehicles. In relation to projects implemented through the fund in 2007, increment in the newly-created jobs reached 148. Since 2002, total number of these new jobs has reached 930.

◆ Environmental Fund

In 2007, the Environmental Fund in the area of waste management, 74 applicants funded, with the amount of 198 mil. SKK.

Packaging and waste from packaging

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	Recycling total	Other recovery methods	Waste incineration with energy recovery	Waste and energy recovery and waste incineration in total
Glass	98 033	14 329	14 329	984	-	15 313
Plastics	59 981	23 830	23 830	-	3 236	27 066
Paper/cardboard	110 244	67 072	67 072	-	2 702	69 774
Metals	4 460	1 311	272	272	1583	-
	9 939	2 123	362	362	2 485	-
	14 399	3 434	634	634	4 068	-
Wood	17 858	471	471	-	1 411	1 882
Total	300 515	109 136	109 136	1 618	7 349	118 103

Source: MoE SR

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

Over the period of 1.1.2007 to 31.12.2007, the MoE SR issued **151 decisions on trans-boundary transport of waste.**

Summary of the number of effective licenses for trans-boundary transport of waste, issued in 2007 (t)

Issued in year	Import	Export	Transit	Total
2007	41	7	3	51
2007- 2008	74	18	8	100
Total	115	25	11	151

Source: SEA

Total permitted volumes of waste by individual countries (t)

Country	Import to SR (t)	Export from SR (t)	Transit (t)
Belgium	-	5 500	-
Czech Republic	318 690	700	-
Netherlands	350	-	1 092
Croatia	500	-	-
Japan	100	-	-
Hungary	48 200	-	8 100
Poland	340 800	207 900	-
Austria	143 680	-	20 800
Romania	-	-	400
Italy	-	-	5 000
Germany	60 500	194	40 792
Switzerland	500	-	-
Ukraine	34 050	26 350	-
Great Britain	-	90	-
Total	947 370	240 734	76 184

Source: SEA





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

In 2007, there was an increased number of occurrences that deteriorated the quality of surface and ground water. SEI alone registered 157 of emergency deteriorations or threats to water quality (EDW).

Special deterioration or quality menace of water of the SR in the years 1994-2007

Year	EDW recorded by SEI	Special deterioration of water					
		Surface			Ground		
		Total number	Watercourses and basins	Water courses	Total number	Pollution	Endangerment
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
2006	151	94	0	3	57	6	51
2007	157	97	1	4	60	4	56

Source: SEI

In 2007 again, in terms of hazardous compounds, deterioration of water quality was caused mainly by crude oil compounds in 76 cases (48.7 %), waste water in 24 cases (15.2 %), and in 26 cases (16.5 %) no contaminant was detected. Livestock excrements in 12 cases (7.6 %), insoluble substances, caustic alkali, pesticides, and other toxic substances have smaller impact on EDW.

Progress in number of EDW according to the sort of HC in the years 1994-2007

Sorts of water deteriorative substances	1994	1996	1999	2000	2001	2002	2003	2004	2005	2006	2007
Oil substances	63	69	54	33	40	64	59	70	63	69	76
Alkalis	3	5	5	2	2	5	3	1	0	3	4
Pesticides	1	1	1	0	0	1	0	3	0	2	0
Excrements of farm animals	9	14	7	5	4	9	21	15	14	14	12
Silage fluids	0	1	2	4	0	2	1	1	0	0	0
Industrial fertilisers	0	0	0	0	0	0	1	0	0	0	0
Other toxic substances	5	1	6	12	5	3	3	0	4	4	5
Insoluble substances	4	4	1	5	2	6	11	3	4	3	3
Waste water	6	6	6	10	10	17	35	20	10	28	24
Other substances	13	9	4	2	1	3	7	10	8	6	7
Water detrimental substances impossible to determine	17	7	12	9	7	17	35	14	10	22	26

Source: SEI

In 2007, no emergency deterioration of water quality outside the Slovak territory was recorded. Unknown originators (30.6 %) and so-called foreign organisations (10.8 %) represent stable contributors to emergency deterioration of water quality.

Just like in the previous years, in 2007, human factor and poor technical condition of equipment or facilities for hazardous substances were the most frequent causes for EDW. High number of EDW was caused by transport (50) and transfer of hazardous substances (4).

Accidental deterioration of air quality

In 2007, Air Protection Inspectorate Division of SEI, recorded only one event that caused deterioration in air quality.

Summary of the major events (accidents) leading to exceptional deterioration or threatening of air quality in 2007

Year	Date	Place of occurrence, object	Cause of accident	Aftermath of accident
2007	24.03.07	SLOVALCO, Ltd. Žiar nad Hronom Anódka – AN operation	Fire caused as consequence of increased temperature of flues in the pipeline of the kiln	Excessive escape of emissions into the atmosphere SO ₂ , NO _x , PM, CO, F, HF, tar

Source: SEI

In 2006, Air Protection Inspectorate Division of SEI, recorded eight events that caused deterioration in air quality. Causes for EDW included insufficient tightness on supply pipes (2), extremely low ambient air temperature (2), malfunction of electro-engine of the suction devise, fire, and faulty manipulation at HCL compaction. Only one incident is still under investigation.

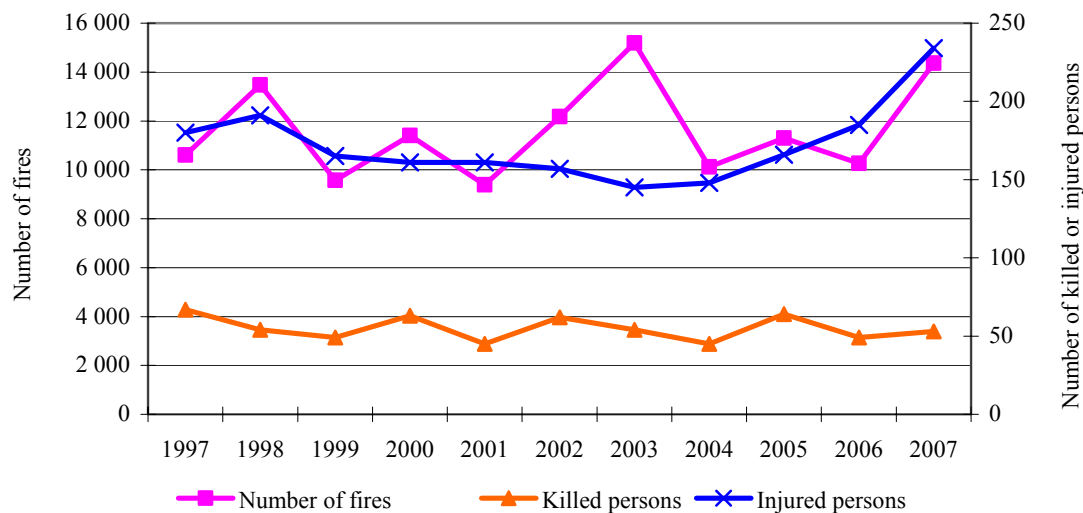
Fire risk

In **2007** were documented in the SR **14 366** fires, causing 53 casualties and 234 injured. Direct material damage reached 1 413 570.8 thous. SKK, while the volume of preserved values was calculated at 5 515 255 thous. SKK.

In terms of damage cause by fires in individual industrial sectors, **most fires occurred again in agriculture** - 3 018, with direct material damage of app. 53.3 mil. SKK, 2 deaths and 7 injured persons. **Households** occupy the second place in fire statistics by number of occurred fires, with 2 048 fires killing 37 people, and 169.2 mil. SKK in direct material damage. Least number of fires was recorded in the **trade** sector, with 133 fires, and 24.2 mil. SKK in direct material damage.

From the perspective of administrative distribution of territory, **most fires** occurred in 2007 in the Košice region (2 872), while **least** fires were recorded in the Trenčín region (1 079). **Greatest damage** due to the occurrence of fires was recorded in the Žilina region (45 715.4 thous. SKK) and the **least** in the Trenčín region (66 276.5 thous. SKK).

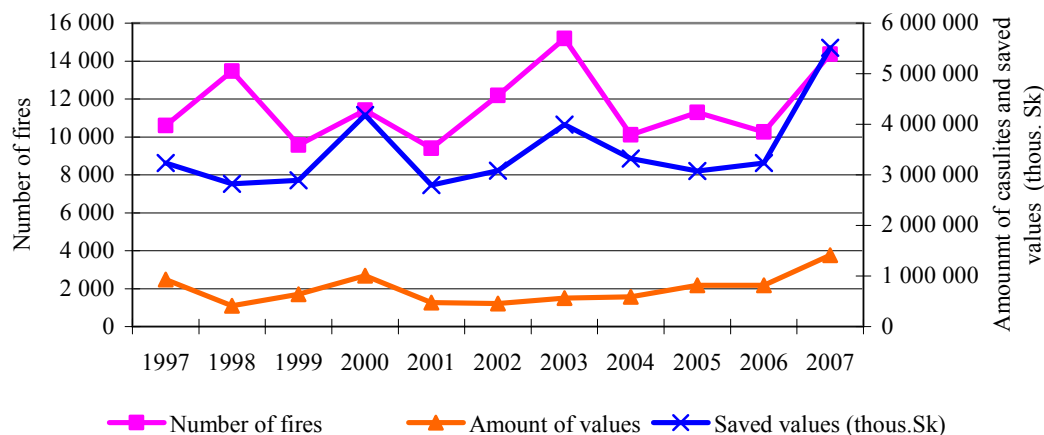
Relationship between number of fires and number of killed or injured persons in 1997-2007



Source: FPRS MoI SR



Relationship between number of fires and number of casualties or amount of saved values in 1997-2007



Source: FPRS MoI SR

Floods

In 2007, there were 60 municipalities affected by floods. 2 277 inhabitants felt the aftermath of the floods, including 37 persons who had to be evacuated.

Total cost and damages by floods in the SR in 2007 amounted to 125.107 mil. SKK, including the rescue costs of 9.137 mil. SKK, and safety works of 3.393 mil. SKK.

Material damage amounted to 74 912 thous. SKK, damage to private citizens' property was 6 792 thous. SKK, and damage to municipal property was 54 900 thous. SKK, damage to higher territorial governing units was 13 220 thous. SKK. Flood prevention construction measures at water courses were damaged, resulting in damages at 34 665 thous. SKK.

Floods aftermath over the period of 1999-2007

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
2006	512	30 730	2 425.90	180.35	193.40	2 799.64
2007	60	339	109.58	9.14	6.39	125.11

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

Source: MoA SR, MoE SR