Ministry of the Environment
of the Czech Republic

Water
OF THE CZECH REPUBLIC
in a Nutshell

Ministry of the Environment
of the Czech Republic

Index

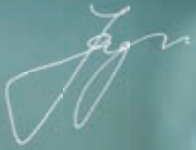
Dear readers,

In Your hands, you have the summary of the information on water protection in the Czech Republic. The summary was prepared by the water protection department of the Ministry of the Environment which is a central water right office in this sector. The main objective of the brochure is to describe the progress of the water status since 1990. The goals already fulfilled are also described.

The brochure is in particular aimed at water duality, the way of its monitoring, measures against pollution, flood protection, description of the significant emergency situations and the way of overcoming them, the progress in the legislative acts and in the programmes of measures including the view to the future. General information concerning international agreements and relations in the water sector are also mentioned.

We believe that this brochure will help You to extend or round off Your knowledge in the sphere of the water protection.

On the behalf of the authors



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Water Director
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The Czech Republic is situated on the watershed of three seas The North, the Baltic and Black sea. Nearly all major rivers outflow water to the neighbouring states. As a result, all water sources in the Czech Republic are fully dependent on the rainfalls.

Assorted data concerning water in the Czech Republic in the last years are in the Table 1. The territory of the Czech Republic is divided in to three international river basins, which are: The Elbe (67% of the territory), The Danube (27% of the territory) and The Odra (6% of the territory).

Generally the territory of the Czech Republic is divided in to the following eight catchment areas: the Upper Vltava, the Lower Vltava, the Berounka, the Upper and Middle Elbe, the Ohře and the Lower Elbe, the Odra, the Morava and the Dyje. Geographical distribution is depicted in Figure 1.

Item in mil. m^3	Annual values					
	1992	1997	2001	2002	2006	2007
Rainfall	48 186	57 809	63 960	71 298	55 837	59 544
Evapotranspiration	36 159	39 859	48 537	48 533	37 617	46 194
Annual inflow	492	653	761	1 341	1 070	637
Annual outflow	12 519	18 603	16 184	24 106	19 290	13 987
Sources of surface water	3882	6200	6 600	6 506	5 317	4 673
Usable sources of ground water	950	1430	1 440	1 625	1 338	1 244

Table 1 Water sources in the Czech Republic (in the years 1992 - 2007) *Source: VÚV T.G.M., v.v.i.*

Figure 1 Map of the river basins and river basin districts

Figure 2 Map of the international river basins

Quality of the Surface Water

The quality of the surface water is historically compared with the two-year period 1991 – 1992 when the consecutive steps leading to the reparation of the water status were started. In the long-time period the improvement of the quality of the surface waters can be clearly observed. Deviations from the before mentioned trend, obviously negative, were caused by the changes in the target values of the surface water quality parameters.

The map of the water quality of the selected watercourses is compiled and presented for two-year period 1991 – 1992 (Figure 3) and for two-

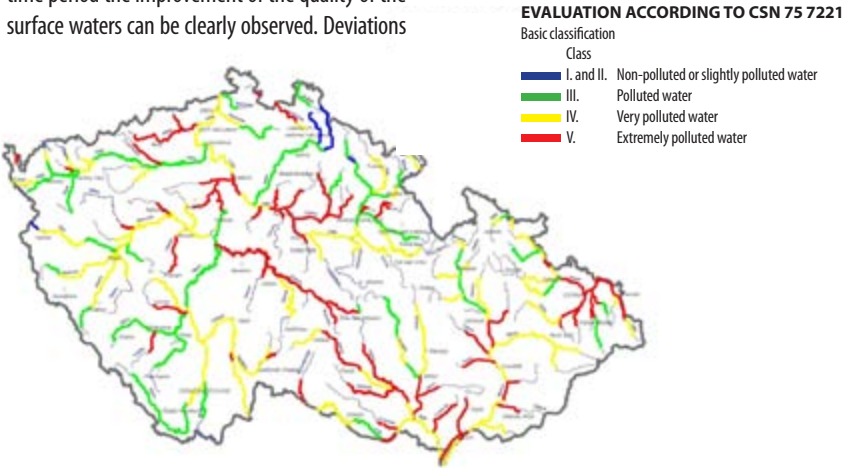


Figure 3 Quality of surface waters in the two-year interval 1991 – 1992 according to CSN 75 7221 *Source: VÚV T.G.M., v.v.i., based on data from CHMI*

year – period 2006 – 2007 (Figure 4). The evaluation was prepared according to standard CSN 75 7221 Water quality – Classification of the surface water quality.

Evaluation is based on the 300 monitoring points of the surface waters. In each point 16 physical-chemical parameters, 4 microbiological and biological parameters, 10 parameters concerning specific organic substances, 10 parameters concerning metals and metalloids and 6 radiological parameters are monitored.

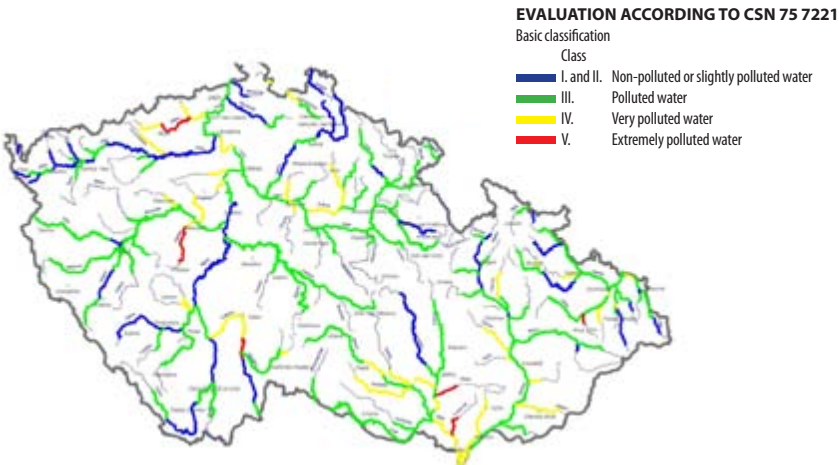


Figure 4 Quality of surface waters in the two-year interval 2006 – 2007 according to CSN 75 7221

Source: VÚV T.G.M., v.v.i., based on data from CHMI

Quality of the Ground Water

In 2007 year, State monitoring network monitored and evaluated ground water quality through 461 objects from which there was 138 springs, 147 shallow wells, and 176 deep wells. Totally, 226 parameters were monitored twice a year, obviously in the spring and autumn.

Criterions for ground water quality evaluation are based on the decree No. 252/2004 Coll. which sets hygienic requirements for drinking and warm water and frequency and range of controls of the drinking water. Concentration of the nitrogenous substances in the ground water is described in Figure 5.

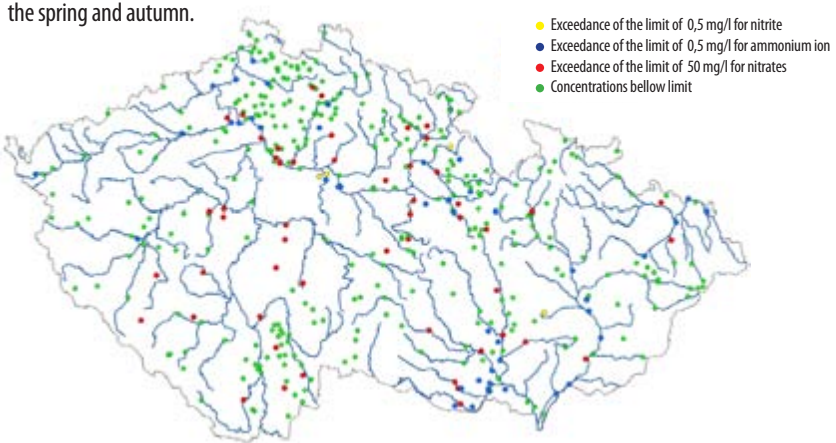


Figure 5 Map of excessive concentrations of nitrogenous substances in ground waters *Source: CHMI*

Monitoring the Water Status in the Czech Republic

The data on quality and quantity of the water are monitored in the Czech Republic since the 1960s. The new system of the monitoring is being implemented since 2007 with the main aim to get complex overview on the water status in the Czech Republic. General thesis of the new system of monitoring is set by Water Framework Directive 2000/60/EEC.

New system must accomplish:

- compliance with Water Framework Directive requirements,
- review of the water status of the Czech Republic which will be reported to the European Commission in regular intervals,
- optimization of current monitoring networks,
- preservation of the data relationship with the older monitoring networks,
- comparability of the data obtained throughout the Czech Republic.

Data from the State monitoring network operated by Czech hydro meteorological institute are used for annual evaluation of the surface and ground water status

Monitoring the water status is operated according to Methodological directive of the water protection department and the department of water management policy for monitoring water pursuant to to section 4 paragraph 21 Act No 254/2001 Coll. On water and change in some acts (the Water Act) from 19. 12. 2006. The principles of pursuing and the essentials of monitoring programmes pursuant to the Framework Directive and technical essentials of the result processing of these programmes are defined by Framework program of monitoring.

Pursuant to the rules of the Framework programme of monitoring, monitoring waters by all types of monitoring is carried out, pursuant to the Framework directive: situational, operational, investigative, quantitative state and referential conditions.

Monitoring of surface water duality was covered in 2007 by the programmes of the situational and operational surface water monitoring. The profiles of the state network of monitoring the quality of water in water courses were divided into two groups:

- profiles of situational monitoring (profiles on significant watercourses representing coherent bigger catchment areas of these watercourses),
- profiles of operational monitoring (other profiles).

Figure 6 Overview of the situational monitoring

In the programme of situational monitoring a total of 1 332 samples of water, 184 samples of wash – loads, 94 samples of sediments and 143 samples of biomass on 111 profiles of state network was taken and analyzed in the CR. Also 442 samples of biological components for evaluation of ecological state of water were taken. In the programme of operational monitoring 24 858 samples of water, 210 samples of wash – loads and 20 samples of sediments in 1 287 profiles (of this 300 profiles of state network) were taken and analyzed.

Programme of monitoring of the quantitative state was carried out on 505 profiles of running water and 48 reservoirs.

The programme of monitoring of the quantitative state of ground water was pursued on 2 000 objects from the network of groundwater monitoring. The monitoring was carried out 1 x a week, or 1 x a day in automated monitoring.

Source: VÚV T.G.M., v.v.i.

Status of the Monitoring Systems

Till 2006
State Monitoring Network (operated by CHMI)
Water Quality
Water Management Balance
Monitoring the River Basin Management
for the Administration Use
(River boards, s.e., ZVHS, Forest, s.e. and other)
Nitrate Directive (ZVHS)
Other

Since 2007
Situational monitoring (all the Czech Republic)
Surface Water
Ground Water

Quantitative monitoring (all the Czech Republic)
Surface Water
Ground Water

Operational Monitoring (river basin districts)
The Upper and Middle Elbe
The Vltava, The Berounka
The Ohře and The Lower Elbe
The Odra
Morava and Dyje

Investigative monitoring (all the Czech Republic)
Solution of Immediate Situations
Based on Requests

Monitored Parameters and Their Evaluation

ECOLOGICAL STATUS
Biological Parameters
Macrophysics
Phytobenthos
Phytoplankton
Macrozoobenthos
Fish and Fauna
Hydro-morphological parameters
Hydrological Regime
River Continuity
Morphological Conditions
Physico-chemical parameters
General parameters
Specific non-synthetic pollutants
Specific synthetic pollutants

CHEMICAL STATUS
Priority Substances Set by Framework Directive due to Their Toxicity, Persistency and Bioaccumulation Potential

INFORMATION SYSTEM ARROW (www.ochranavod.cz)

(database for collection, evaluation and geographical visualization of the water status)

EVALUATION OF WATER STATUS

Sources of Pollution

Sources of pollution are divided into point and diffuse sources.

Point sources of pollution are mainly water treatment plants which can be further classified as communal and industrial. The category of point sources also contains all other sources which are from the point of their localization on the watercourse strictly defined both by the place and the amount of discharged pollution.

Discharges of the waste waters throughout the time are depicted in the Figure 7.

For the evaluation of the extent of pollution and its effect on the surface water quality caused by particular point source it is necessary to distinguish between produced pollution and discharged pollution. Produced pollution means the amount of pollution in waste water before treatment. Discharged pollution means pollution after treatment.

In the context of the EU and OECD requirements produced pollution is under increasing attention in the Czech Republic. The data from the

River Boards, s.e.	Sewage systems		Agriculture		Power generation		Industry		Total	
	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.
Elbe	184,6	527	0,03	1	578,45	20	110,94	203	875,34	815
Vltava	273,4	628	1,35	6	18,94	20	58,92	161	369,16	1264
Ohře	80,3	265	0	0	21,09	16	100,79	170	261,46	478
Odra	112,1	306	0,02	1	5,32	1	68,54	56	191,12	476
Morava	200,05	834	0,09	3	92,99	3	22,87	170	322,18	1048
Total	850,45	2560	1,49	11	716,76	60	362,07	760	2 019,26	4081

Table 2 Discharges of waste and mine water into surface water in 2007 in mil. m^3 in amounts above 6 000m^3/year or 500 m^3/month

Source: MoA, VÚV T.G.M., v.v.i., River Boards s.e.

point sources are collected. By such a collection all databases concerning produced pollution are replenished and refined.

The amounts of produced and discharged pollution for selected parameters of pollution in 2007 are stated in the Table 3. In comparison with previous years the amounts of produced and discharged pollution are decreasing even in a long-term aspect. The most important drop is at the COD parameter, where the annual drop is around 5%.

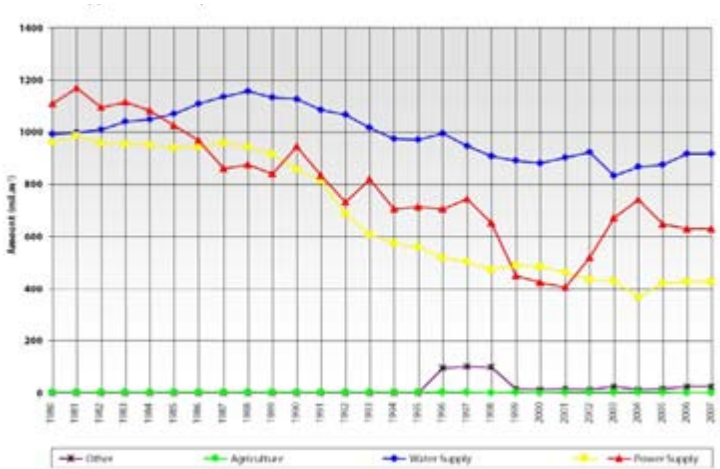


Figure 7 Discharges of waste waters in the Czech Republic in the years 1980 – 2007

Source: MoA, VÚV T.G.M., v.v.i., River Boards s.e.

Sources of Pollution

Between the years 1990 and 2007 there was a drop in discharged pollution in the indicators BOD_5 by 94,7%, COD by 88%, SS by 90% and DIS by 14,6%. In the years 1990 – 2007 there was also success in reducing the amount of dangerous and extremely dangerous unhealthy substances. There was also a significant drop in nutrients (nitrogen, phosphorus) as a result of the fact that the biological removal of nitrogen and biological or chemical elimination of phosphorus are applied in a targeted manner in the technology of waste water treatment in new and intensified waste water treatment plants. The course of the drop of the discharged pollution is depicted in Figures 9 and 10.

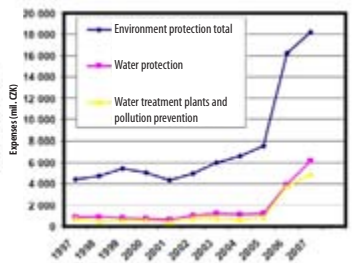


Figure 8 Funding of the water protection

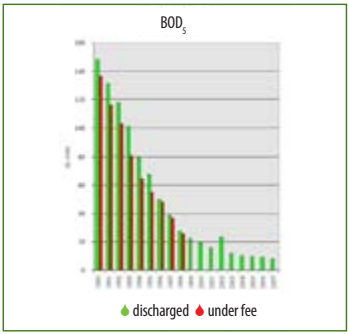
The sector of water protection was financed through SEF by 995,819 mil CZK including co-financing from European funds (902,740 mil. CZK donation, 93,079 mil. CZK loans). Within the programmes of MoA, the sum of 720,823 mil. CZK (720,823 mil. CZK donation, 0 mil. CZK loans) was used for building-up and technical renewal of sewage systems and water treatment plants.

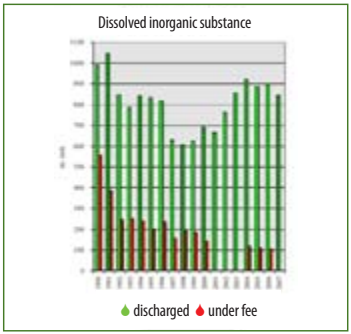
Figure 8 shows the evolution of the financing of the environmental protection and namely water protection with separate finances used for the support of water treatment plants construction.

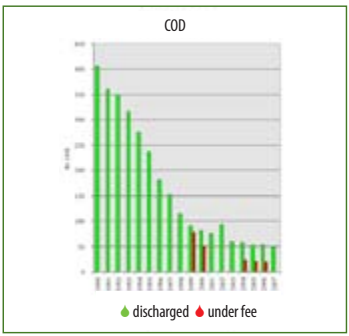
Table 3 Produced and discharged pollution from point sources in 2007

Pollution	Parameter of pollution	Parameter of pollution		
		BOD	COD	suspended solids
produced	$t.r^{-1}$	248 739	591 320	294 944
discharged	$t.r^{-1}$	7 858	48 874	16 074
difference	%	96,8	91,7	94,6

Source: MoA, VÚV T.G.M., v.v.i., River Boards s.e.







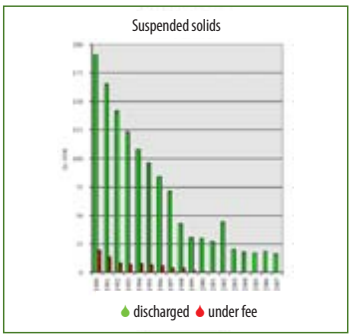


Figure 9 and 10 Discharged and charged pollution in the years 1990 – 2007

Source: MoA, VÚV T.G.M., v.v.i., River Boards s.e.

Vulnerable Zones

Based on the requirements of the European Nitrate Directive for the purpose of reducing nitrogen emissions into the water, Government Order No 103/2003 Coll. set so called vulnerable zones and the conditions for the use and storage of fertilizers and livestock manure, variation of crop-plants and maintaining soil protection against erosion were set In such areas, where agriculture is the main polluter of the ground and surface water by nitrates, measures were set to eliminate such pollution.

In 2007, the previously mentioned Order was amended by Government Order No 219/2007 Coll. from 11. 7. 2007 which amends Government Order No 103/2003 Coll. on the designation of vulnerable zones and on the use and storage of fertilizers and livestock manure, crop rotation, and the implementation of erosion control measures in these zones. The whole appendix I of this Order was changed. The Appendix contents the names of the affected areas and their codes.

Quality of the surface and ground water is also affected by diffuse pollution – mainly by pollution from the agriculture, atmospheric deposition and erosion. Importance of the diffuse pollution increases as the point sources of pollution are continuously decreasing. The diffuse sources of pollution are important namely for nitrate, pesticides and acidification, phosphorus is not such a big problem from this point.

The proportion of diffuse sources vary throughout the Czech Republic and is dependent on the density of population, amount of discharged waste waters, intensity of agriculture and level of atmospheric deposition.

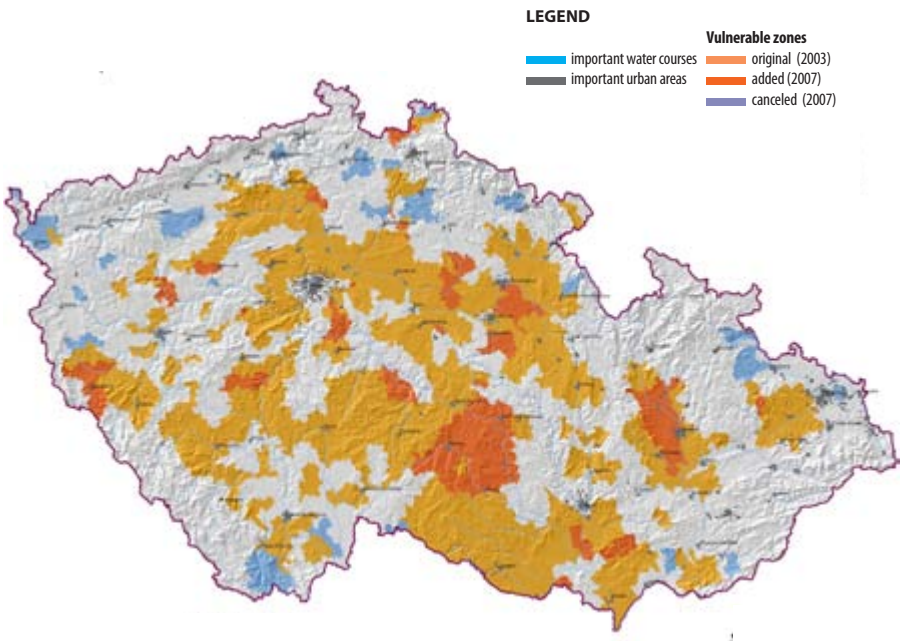


Figure 11 Map of the vulnerable areas according to nitrate directive

Source: MoA, VÚV T.G.M., v.v.i., River Boards s.e.

Flood Protection

Floods are natural phenomena which present the largest natural danger for the Czech Republic. Floods caused not only large material damage but also casualties on the people living in the affected areas and also extensive devastation of the countryside which might be connected with ecological accidents. All these aspects come into being during the catastrophic floods caused by prolonged rainfall in summer 1997 and 2002, the impacts of which were evaluated by MoE. The consequences of these floods showed that the society is still very vulnerable to the floods because simultaneously with the development of the

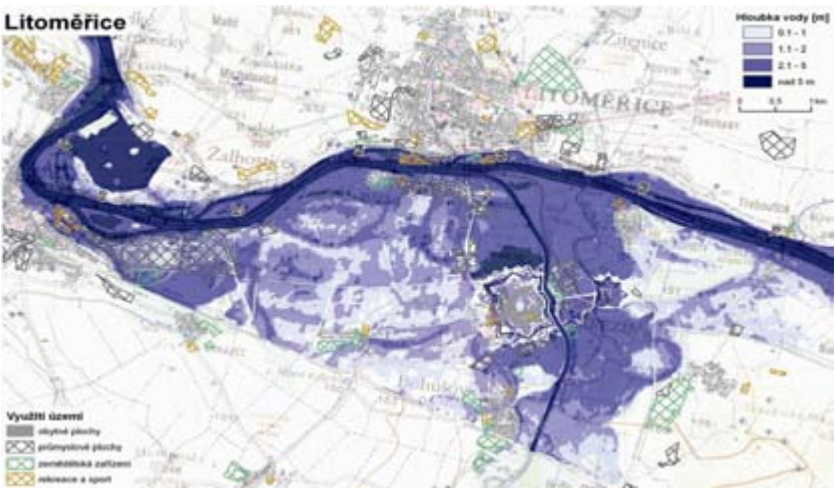


Figure 12 Example of the map of the flood districts

water management in the last 100 years also the areas potentially threatened by floods were continuously used for the expansion of the towns and villages, industry and agriculture. The damages caused by floods are described in the Table 4.

Strategy of the flood protection on the territory of the Czech Republic comes from the fact that the floods on their own cannot be prevented but their impact can be reduced by suitable measures. Measures of preventive character are preferred. These measures include good preparation on flood protection i.e. actual and well-arranged flood event management plan, training of standard situations, understanding the endangered areas and respective activities of the administrative authorities. Inconsiderable is also construction of flood pools, polders and suitable changes of watercourses mainly in urban areas.

Flood event management plan represents basic document for flood protection and all respective authorities are obliged to follow it while managing flood situations. When the flood situation is set as a critical situation (it should be situations which are not mentioned in flood event management plan, i.e. floods greater than Q_{100} or special floods) all respective situations should be solved according to crisis plans (Act No 240/2000 Coll.) Lately, modern instruments are being used and for some parts of the Czech Republic digital flood event management plan exist. These

Figure 13 Flood event management plan of the Czech Republic

Figure 14 Floods information service

plans might by actualized by responsible authorities via internet. Some of their parts are open to the public and some closed (for example flood protection autority and their contact details). Appearance of the flood event management plan is depicted in Figure 13.

The most important thing for the flood protection is a prompt information on the danger of flood risk. For that reason Forecasting flood service was established. This service is operated by CHMI in cooperation with River Boards. The main goal of the service is to asses whether the flow in particular profile means flood risk. The service with its forecasts starts from the actual forecast of rainfall, using rainfall-outflow model, saturation of the river basin and anticipated manipulations on the important waterworks. Important warning profiles (category A and B) are also connected to the internet (http://hydro.chmi.cz/hpps/). Current data on water status and flows on this webpage correspond to 140 warning profiles and the data are updated twice a day or during the flood even more. Forecasts of the water status and flows on the Internet are reported for 43 profiles. River Boards also inform on actual status on their respective watercourses and reservoirs on the information portal WATER (www.voda.gov.cz). Software presentation of the flood forecast service is shown in Figure 15.

To provide sufficient information for flood authorities to ensure good management of the flood

Figure 15 Floods information service

Figure 16 Software processing of flood information service

risks and measures on all levels, early warning of the population, flood authorities organize flood information service in which all other participants of flood protection take part. Flood authorities on the communal level i organize patrols in case of need. Moreover, owners of the waterworks are obliged to inform about danger of special flood not only flood authorities but also Fireguard rescue service and in case of the danger of delay endangered persons and corporations. Presentation of Flood information service is depicted in Figure 16.

Location and character of the Czech territory predestinates the country for the international cooperation in flood protection. Such a cooperation develops in a long-term aspect on the level of International Commissions for the protection of large rivers (Elbe, Danube, Odra) These commissions have already created number of documents from which the most important is Action Plan of a Flood Protection in the River Elbe Basin, Action Plan of a Flood Protection in the river Odra basin and Action plan of a Sustainable Flood Protection in the River Danube basin. These documents contain also the dates for the preparation of common reports on fulfilling particular measures. It is supposed that in connection with the newly adopted Directive on the assessment and Management of Flood Risks and its links to Water Framework Directive the common evaluation and planning of the new measures will be unified at least by the year 2015.

Flood situation [year/ month]	Casualties	Property damage [mld. CZK]
1996 / May	0	1,8
1996 / September	0	0,4
1997 / July	60	62,7
1998 / July	10	1,8
2000 / March	3	3,8
2001 / July	0	1
2002 / July	2	2
2002 / August	17	73,1
2006 / March	9	6
Total 1997 – 2007	101	153,1

Table 4 Damage caused by flood situations since 1996

Accidents

Legislative measures concerning prevention against accidents involving water environment are summarized both in the Water Act and in the Decree No 450/2005 Coll. on essential elements of the use of harmful substances and essential elements of the emergency plan, the method and scope of accident reporting, their amelioration and elimination of their harmful effects. The Decree describes all actions necessary to ensure good prevention against accidents involving losses of polluting substances into the water environment.

In 2007 CEI inspected 181 accidents during which water was polluted or the quality of surface or ground water was endangered. In comparison with 2006 there were 24 less accidents in 2007. The overview of the number of accidents and their basic assignment is depicted in Table 6.

Number of accidents in 2007 divided by the sector which caused them is summarized in Table 6. The highest number of accidents was caused by traffic sector, with 44 accidents, it represents 24,3% of all the accidents. Another inconsiderable group is formed by the accidents for which it was not possible to find a causer.

From the overview presented in Table 7 it is apparent that 55,8% of accidents were caused by oil and its products. Other group with high number of accidents is that concerning waste waters – 9,9%. Chemical substances without metals caused 7,2% of all accidents. For 13,8% of accidents the character of the escaped pollutant was not depicted.

Year	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007
Accidents total	598	243	166	163	246	316	306	264	205	181
Ground water accidents	217	74	35	34	12	15	12	9	4	6
Oil accidents	312	134	64	67	121	137	140	135	101	101

Table 5 Accident pollution in the years 1990 – 2007

Origin of the source	No. of accidents	%
Ground traffic and pipeline transport	44	24,3
Removal of the waste waters and solid waste	7	3,8
Agriculture, hunting and related acivities	7	3,8
Production of metals including metallurgical	5	2,6
Production of food and drinks	4	2,2
Production of machinery	2	1,1
Power generation and transport of gas	2	1,1
Water traffic	2	1,1
Other	24	13,7
Not-classified activities	84	46,3

Table 6 Accidents in 2007 according to the origin of the source

Pollution	No. of accidents	%
Oil	101	55,8
Waste water	18	9,9
Chemical substances excluding heavy matals	13	7,2
Waste from livestock production	6	3,3
Sludge and suspended solids	6	3,3
Food products	4	2,2
Chlorinated hydro-carbons	1	0,6
Heavy metals	1	0,6
Other substances	6	3,3
Pollution not detected	25	12,5

Table 7 Accidents in 2007 according to the type of leaked pollution

Figure 17 Ostramo: industrial estate of former refinery

Figure 18 Trutnov: accidental loss of oil to the ground water and river Úpa, 2007

Figure 19 České Meziříčí: accidental loss of whitewash from sugar refinery to the Dědina river, 2007

Photo: CEI

Figure 20 Accident of the oil pipeline Družba near Čáslav, 2006

Figure 21 Pozďátky: acidic landfill water with the content of heavy metals outleting to the Pračinec stream

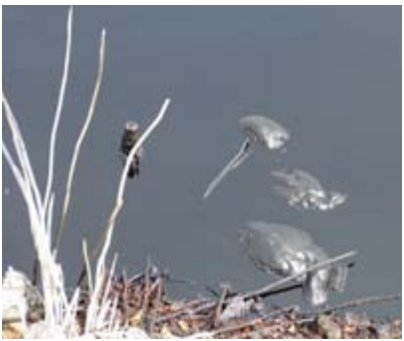


Figure 22 Ostramo: sludge lagoon of former refinery

Figure 23 Ostramo: sludge lagoon of former refinery *Photo: CEI*

Legislation in the Water sector

The main legislation in the water protection sector is Act No 254/2001 Coll. on Water and Amendments to Some Acts (The Water Act) as amended, and its implementing regulations, i.e. government orders, decrees and methodical directives. Water Act specifies basic approach for the protection of water environment and also regulates some other activities such as construction of new waterworks, discharges of waste water, permissions for water abstraction etc.. Important implementing regulations are as follows:

- Government Order No 61/2003 Coll. on the indicators and values of permissible pollution of surface water and wastewater, mandatory elements of the permits for discharge of wastewater into surface water and into sewerage systems, and on sensitive area as amended by 229/2007 Coll.,
- Government Order No 103/2003 Coll. on the designation of vulnerable zones and on the use and storage of fertilizers and livestock manure, crop rotation, and the implementation of erosion control measures in these zones,
- Government Order No 71/2003 Coll. establishing surface waters which are suitable for the life and reproduction of indigenous species of fish and other aquatic fauna and determining and evaluating the quality of these waters,
- Decree No 142/2005 Coll. on planning in the water sector,
- Decree No 450/2005 Coll. on essential elements of the use of harmful substances and essential elements of the emergency plan, the method and scope of accident reporting, their amelioration and elimination of their harmful effects,
- Decree No Decree 540/2005 Coll. amending Decree No 221/2004 Coll. which lays down the lists of hazardous chemical substances and hazardous chemical preparations whose placement on the market is prohibited or whose placement on the market, into circulation, or using is limited. Amending Decree No 109/2005 Coll.

Programmes and Measures for Decreasing the Surface Water Pollution

Government of the Czech Republic ratified River Basin Management Plan by the Decision No 562 from 23. 5. 2007 and then (3. 10. 2007) released mandatory part of the River Basin Management Plans by its Order No 262/2007 Coll. Publication of the Mandatory Part of the River Basin Management Plan of the Czech Republic.

River Basin Management Plan of the Czech Republic includes the framework and the specific goals and the framework measures to achieve such goals for the following parts of the public interests:

- protection of the water as a part of the environment,
- flood protection and protection against other harmful effects of the water,
- sustainable use of the water and water management for ensuring the requirements of water management services, especially for the abstraction of drinking water. Requirement on the compilation of the river basin management plans comes from the Water Framework Directive. Based on such plans and related programmes of measures, the so called good water status should be achieved by the year 2027.

Information System WATER of the Czech Republic

Since 2005 Ministry of the Environment and Ministry of the Agriculture governs interdepartmental project called Information system of the Public Service – WATER.

The main aim of the project is to administer sufficient amount of information about water for the specialists community as well as and the general public. The information must be sufficient for decision-making, education and common awareness, preferably in a unified and effective way and at one site.

Water management information portal www.voda.gov.cz is divided into three basic folds:

- Actual information on the water status, flows on the significant watercourses, water quality and rainfalls,
- Evidence of the Information system of the public service which provides information on water law decisions,
- Project ISVS Water which provides information on the status of the surface and ground water.

Action Programme according to Directive of the Council 91/676/EEC (Nitrate Directive)

Action Programme represents the system of obligatory measures for vulnerable zones (paragraph 33 of the Water Act) the main goal of which is the reduction of the outwash of nitrogen into the surface and ground water.

Action Programme is published by Government Order No 103/2003 Coll. as a use and storage of the fertilizers and livestock manure, crop rotation, and the implementation of erosion control measures in these zones.

According to Article 5 of the Nitrate Directive the Action program is 4 – year period and then its achievements are evaluated and the programme is revised. The first Action Programme was published for the period 2004 – 2007.

On the 25. 2. 2008 the second amendment of the Government Order No 103/2003 Coll. was agreed under the No 108/2008 Coll. (2. Action Programme for the period 2008/2011) which revised 1. Action Programme on the basis of evaluation of its effectivity in the praxis.

The basic measures of the Action Programme in the Czech Republic which is compiled according to Annex III of the Nitrate Directive are following:

- period when the use of specific sort of fertilizers and livestock manure is forbidden,
- assignment of the minimal capacities of the storages of the livestock manure which enables its

storage for the period in which its use is restricted,

- reduction of application of fertilizers and livestock manure according to gloop management praxis especially considering soil – climatic conditions (type of soil, elevation of the ground, temperature, rainfalls),
- methods of use and maintenance of the soil (on the steep, under flooding, flooded, frozen land and in the vicinity of the water),
- measures mentioned in the Action Programme must ensure that in any agricultural company in the vulnerable zone the average amount of annually applied livestock manure and organic or organic - mineral fertilizers which contain more the 170 kg of nitrogen/year/ha will not be exceeded.

Programme for the Reduction of the Pollution of the Surface Water by Dangerous Substances

Decision of the Government of the Czech Republic No 339 from 14. 4. 2004 ratified the Programme for Reduction of the Pollution of the Surface Water by Dangerous Substances. The obligation to compile such a programme comes from the Article 6 of the Water Framework Directive.

Programme for the reduction of the pollution of the surface water is valid for the whole territory of the Czech Republic since 14. 4. 2004 till 31. 12. 2009.

The programme involves all substances which are stated in Annex I of the Water Act. The programme specifies main measures related to the water protection and other measures not directly relating to the water protection but in its final effect they contribute to it.

The results of the programme are regular overviews of the legislation related to the use of dangerous substances even not in the context to the water environment. These conclusions are important instruments for preparation of the new legislation.

The Programme for the Reduction of the Pollution of the Surface Waters Suitable for the Life and Reproduction of Indigenous Species of Fish and Other Aquatic Fauna

Government Order No 71/2003 Coll. amended by Government Order No 169/2006 Coll. establishes surface waters which are suitable for the life and reproduction of indigenous species of fish and other aquatic fauna and determining and evaluating the quality of these waters.

Surface water is divided in carp and salmon water to enable better protection against pollution and improvement of the water quality so that the water will be suitable for the life of the original species which ensure natural diversity or the species the presence of which is evolutive.

The Order also amends the method of determination and evaluation of the status of the mentioned surface waters.

Programme for the reduction of pollution of the surface water which includes the list of surface waters and the parameters in which these waters do not fulfil the assigned quality standards is described in paragraph 4a of the before mentioned Government Order. The list on its own is a part of Annex III of the Order.

In November 2006, the Bulletin of the Ministry of the Environment published a Common Methodical Directive of the MoE and MoA to support the programme for the reduction of pollution of the surface waters which are suitable for the life and reproduction of indigenous species of fish and other aquatic fauna.

Figure 24

International Cooperation in the Water Sector

International Cooperation in the Water Sector of the Czech Republic is based on the following points:

- cooperation in the scope of European community,
- cooperation based on international conventions and treaties.

It is the competence of water protection department of the MoE to ensure such cooperation. The international cooperation of the Czech Republic is based on the international conventions and treaties and comes out in its basis from the "UNECE Convention concerning protection and using border watercourses and international lakes" in which the Czech Republic is a contracting party. According to the convention the international cooperation in the water sector should inter alia be realized through international treaties which administer cooperation of the states in the river basins or through bilateral agreements which are contracted by the countries with common border water.

International cooperation in the water protection sector based on the hydrological water basins of the rivers which cross borders of several countries is realized by international agreements for the Elbe, the Danube and the Odra protection.

Although the Czech Republic is not a coastal country, it shares, in this way, the responsibility for the protection of The North, The Black and The Baltic seas.

As 30% of the Czech Republic borders comprise watercourses, bilateral cooperation on border watercourses is an important part of the international cooperation in the water sector. Border water means both watercourses which form the border and those which cross it. The Czech Republic has a long-term experience with such a form of cooperation. The cooperation is realized by bilateral international agreements or by international treaties and conventions concerning cooperation on the border water. The implementation of such a treaty is ensured by bilateral commissions for water management issues on the border water and eventually by representatives of the contracting countries for the border water.

Convention EEC/OSN about the Protection and Using Border Watercourses and International Lakes

European Economic Commission OSN solve many problems concerning both quality and quantity of the water and especially high burden of water by pollutants, inadequate requirements on the utilization of water sources, increasing risk of droughts and floods, contamination of water with risk of impact on human health. The effort to solve such a problem is complicated by their impact not only at national but even at international level. More than 150 big rivers and 50 large lakes in the scope of UNECE create or cross borders between two or more countries. 20 European countries is dependent on water sources of the neighbouring countries from more then 10% and 5 countries are dependent on water coming from neighbouring countries up the stream from more then 75%. Countries in the area are aware of the necessity of cooperation on the reasonable and equal use of water sources. The countries are aware that they share the same water sources and they must rely on each other while setting up the most effective solutions. The momentum for starting such a positive stance was the start of the international cooperation in the scope of UNECE Convention concerning protection and using border watercourses and international lakes (come in to effect on October 1996). The Czech Republic is a contracting country since 2000.

In the present time these main programme areas of UNECE Convention are in effect:

- Support of the Convention, its activities and consultations,
- Integrated management of the water sources and related ecosystems,
- Monitoring and evaluation,
- Climatic change,
- Protection of water crossing the borders against industrial accidents,
- Water and human health.

Two other documents were prepared as the scope of activities related to the implementation of UNECE Convention must solve the most important international problems with the impact on the water status, related ecosystems and human health. They are Protocol on Water and Health prepared in cooperation with World Health Organization and Protocol on Liability for Industrial Accidents on Waters exceeding borders of the countries prepared in cooperation with the activities of Convention on Accidents. The Czech Republic was one of the first countries to ratify the Protocol on Water and Health, which came into effect in August 2005.

Figure 25

Multilateral International Cooperation on the Protection of International River Basins

Modern principles of water protection based on hydrological river basins of rivers exceeding country borders of several states were applied in the Czech Republic in 1990 as the cooperation on the Elbe protection started according to the Agreement concerning International commission for the Elbe protection. Some time later began the preparation of the Convention on the Cooperation for Water Protection and Sustainable Use of the Danube and the Convention on the International Commission for Protection of the Odra against Pollution.

- Agreement on International Commission for the Elbe Protection from 8. 10. 1990, entered into force on 13. 8. 1993,
- Convention on Cooperation for Water Protection and Sustainable Use of the Danube from

29. 6. 1994, entered into force 22. 10. 1995, Ratified by Czech Republic on 10. 3. 1995,

- Convention on the International Commission for Protection of the Odra against Pollution from 11. 4. 1996, entered into force 28. 4. 1999.

Cooperation on water protection in complex international catchments is promoted in the Czech Republic in concordance with the strategy of water protection and is based on the principle of complex protection of both surface and ground water in hydrological river basins or hydro geological districts. Multilateral international cooperation by means of international commissions on the Elbe, the Danube and the Odra protection concentrates on:

- Allowance of water use, especially drawing of drinking water by bank infiltration,
- Agricultural use of water and sediments,
- Pursuit of achieving natural or natural-like water ecosystem,
- Reduction of the pollution of the Elbe, the Danube and the Odra,
- Reduction of the pollution of the North, Black and Baltic sea,
- Prevention of accidents and its impacts,
- Coordination of WFD implementation,
- Flood control.

Bilateral Foreign Agreements, Contracts and Conventions for the Cooperation on Border Water

The total length of the Czech Republic borders is 2290 km, from which 738 km is wet border. It means that more then 30% of the border is formed by watercourses and lakes.

The cooperation of the Czech Republic on border water with the neighbouring countries is specified by bilateral agreements, contracts and conventions. Their fulfilment is ensured by bilateral commissions or representatives for water management questions on border rivers.

Contract between the Czech Republic and the Federal Republic of Germany on Cooperation on Border Waters in the Field of Water Management was signed in December 1995 and entered into force 25. 10. 1997

Contract between the Czechoslovak Socialist Republic and the Republic of Austria on Adjustment of Water Management Questions on Border Waters was signed on 7. 12. 1967 and entered into force 18. 3. 1970

Convention between the government of the Czechoslovak Republic and the government of People´ Republic of Poland on Cooperation on Border Waters was signed on 21. 3. 1958 and entered into force 7. 8. 1958

Agreement between the government of the Czech Republic and the government of the Slovak Republic on Cooperation on Border Waters was signed and entered into force 16. 12. 1999

Figure 26 River Basins of Elbe, Dunaje and Odra with highlighted country borders

Figure 27 Map of UNECE member states

Abbreviations

AOPK	Agency for Nature Conservation and Landscape Protection of the Czech Republic
BOD_5	Biological oxygen demand
CHMI	Czech hydro meteorological institute
CEI	Czech Environmental Inspectorate
WWTP	Waste water treatment plant
ČSN	Czech national standard
DOC	dissolved organic carbon
EI	equivalent inhabitant
EU	European Union
COD	Chemical oxygen demand
IRP	Integrated register of pollution
ISVS	Information system of the administration
MoA	Ministry of Agriculture
MoE	Ministry of the Environment
SS	suspended substances
OECD	Organization for Economic Co-operation and Development
Protocol	Protocol concerning water and health
SEF	State environmental fund
UNDP	United Nations Development Program
UNECE Convention	UNECE Convention concerning protection and using border watercourses and international lakes
VÚV T.G.M., v.v.i.	T. G. Masaryk Water Research Institute, Public Research Institution

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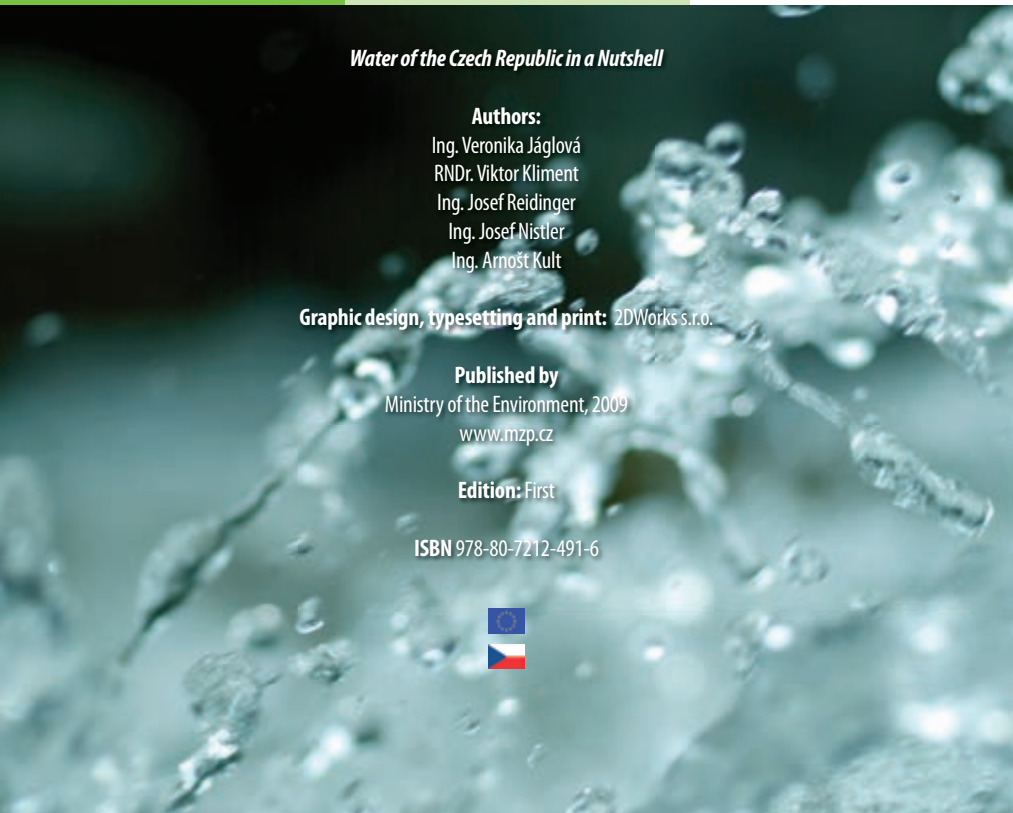

Water of the Czech Republic in a Nutshell

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