IDEXX Summary 2V

Topic	The quality of drinking water in the European Union 2005-2007
Title	Synthesis report on the quality of drinking water in the Member States of the European Union in the period 2005-2007 Directive 98/83/EC
Source	European Union
Date	December 2011

Highlights

• In this report, eight EU countries mentioned the Colilert method as alternative for *E. coli* and Coliform bacteria for the drinking water control in the period 2005 – 2007 (see page 11 & 17). Colilert* was used in Belgium, Czech Republic, Cyprus, Denmark, Germany, Ireland, Poland and Spain.

• The Directive 98/83/EC allows Member States to use other methods for microbiological analyses than those mentioned in the Directive if it can be demonstrated that such methods produce results that are at least as reliable as the methods mentioned in the Directive. The alternative method that was declared to be used by most Member States is the Colilert*-18 / Quanti-Tray* method. Fifteen Member States reported that they only used the methods in the Directive, while eight mentioned the Colilert method as alternative for *E. coli* and Coliform bacteria.

• In Germany, where Colilert is used, there seemed to be an improvement in water quality for some parameters; *E. coli*, Enterococci, Coliform bacteria and turbidity. Using Colilert-18 has not a negative impact on the water quality

• Report is attached or can be found using this link: https://circabc.europa.eu/sd/d/b580866d-8eb7-4937-9a97-d3d3485d046e/2005-2007%20SynthesisReport.pdf

The quality of drinking water in the European Union 2005-2007

Synthesis report on the quality of drinking water in the Member States of the European Union in the period 2005-2007 Directive 98/83/EC

December 2011

KWR Watercycle Research Institute

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December 2012

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The quality of drinking water in the European Union 2005-2007

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1 Preface

The Drinking Water Directive[1] (hereinafter referred to as "the Directive") is a cornerstone of EU water legislation. Its objective is to protect human health from the adverse effects of any contamination of water intended for human consumption by ensuring that it is wholesome and clean.

Every three years the Member States have to report to the European Commission on the quality of the water intended for human consumption within their territory in relation to the Directive. Reporting requirements are regulated in Article 13 of the Directive and as well in Commission Decision 95/337/EEC of 25 July 1995 amending Decision 92/446/EEC of 27 July 1992 concerning questionnaires relating to directives in the water sector. A reporting format was agreed upon between the Commission and the Member States[2].

For each reporting period the European Commission produces and publishes a synthesis report that is based on the information provided by the Member States.

This synthesis report covers the returns from Member States on the Drinking Water Directive for the fifth reporting period, covering the years 2005-2007.

The Commission published already four reports corresponding to the following reporting periods: 1993-1995; 1996-1998; 1999-2001; 2002-2004. All reports are available on the website of the European Commission, http://ec.europa.eu/environment/water/water-drink/index_en.html.

All information on the drinking water quality situation in the Member States presented in this synthesis report has been submitted to the responsible authorities in the Member States for comments prior to publication.

It should be noted that the information is not complete in terms of the number of Member States reporting and amount of the information requested.

When looking at the results from the individual Member States and even more when trying to compare compliance levels between Member States it is very important to consider a series of constraints which have to be faced in preparing the present report linked to the incomparability of the data submitted by the various Member States. Incomparability is due to amongst others various levels of compliance with the monitoring and reporting requirements, the lack of harmonized sampling and monitoring methods and the fact that not all Member States sample at the legal points of compliance.

[1] Directive 98/83/EC, OJ L330/32 of 5.12.1998
[2] http://ec.europa.eu/environment/water

List of abbreviations

WSZ	Water Supply Zone as defined in the Drinking Water Directive 98/83/EC
DWD	Drinking Water Directive (in force 98/83/EC)
n.a.	not applicable
n.i.	no information.
CDR	Central Data Repository
Large WSZ	Large WSZ in the sense of the DWD supplying more than 1000 m^3 of water per day or supplying more than 5000 persons. Subject to three annual reporting to the EC.
Small WSZ	WSZ supplying less than 1000 m^3 of water per day and supplying less than 5000 persons.
BaP	Benzo(a)Pyrene
Tri+Tetra	Tri and tetrachloroethene
THM	Trihalomethanes
CC	Colony Count
PAH	Polycyclic Aromatic Hydrocarbons
pH	hydrogen ion concentration
TOC	Total Organic Carbon
TID	Total Indicative Dose
AA	acrylamide
VC	vinylchloride
ECH	epichlorohydrin

Acronyms used for the EU Member States

BE	Belgium
BG	Bulgaria
CZ	Czech Republic
DK	Denmark
DE	Germany
EE	Estonia
IE	Ireland
EL	Greece
ES	Spain
FR	France
IT	Italy
CY	Cyprus
LV	Latvia
LT	Lithuania
LU	Luxembourg
HU	Hungary
MT	Malta
NL	Netherlands
AT	Austria
PL	Poland
PT	Portugal
RO	Romania
SI	Slovenia
SK	Slovakia
FI	Finland
SE	Sweden
UK	United Kingdom

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2 Introduction

The 98/83/EC Drinking Water Directive came into force in 1998 and replaced the Directive 80/778/EEC. All 27 Member States of the EU have transposed the new Directive in their national legislation (transposition) and they have to comply with the requirements of the Directive (implementation).

Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption is intended to protect human health by laying down healthiness and purity requirements which must be met by drinking water within the Community. It applies to all water intended for human consumption apart from natural mineral waters and waters which are medicinal products.

The Directive:

- Allows Member States to exempt water supplies serving less than 50 persons or providing less than 10 m^3 of drinking water per day as an average and water in food-processing undertakings where the quality of water cannot affect the wholesomeness of the foodstuff in its finished form.

- Sets quality standards for drinking water quality at the tap (microbiological, chemical and organoleptic parameters) and the general obligation that drinking water must be wholesome and clean,

- Obliges Member States to regular monitoring of drinking water quality, to take remedial action in case the monitoring reveals problems and to provide to consumers adequate and up-to-date information on their drinking water quality.

The Directive sets standards for the most common organisms and substances (so-called parameters) that can be found in drinking water. In the Directive a total of 48 microbiological and chemical parameters must be monitored and tested regularly. In general, WHO guidelines for drinking water and the opinion of the Commission's Scientific Advisory Committee are used as a basis for the standards in the Directive.

Member States may, for a limited time deviate from chemical quality standards specified in Annex I. This process is called "derogation". Derogations can be granted, provided it does not constitute a potential danger to human health and provided that the supply of water intended for human consumption in the area concerned cannot be maintained by any other reasonable means.

The materials used in new installations for preparing and distributing drinking water may not continue to be present in drinking water beyond a strictly necessary level.

Every three years Member States publish a report on the quality of drinking water for its consumers. On the basis of those reports the Commission publishes every three years a synthesis report on the quality of water intended for human consumption in the Community.

3 Overall assessment

Information covered by reporting under the Directive refers to:

(i) general information on Member States' drinking water supply arrangements;
(ii) information on non-compliance;
(iii) information on exemptions from the provisions of the Directive;
(iv) information on drinking water alternative methods use by the Member States;
(v) monitoring information on water supply zones;
(vi) summary information on drinking water quality in water supply zones (WSZ) at a national level, including information given on product specified parameters (Acrylamide, Epichlorohydrin and Vinylchloride);
(vii) up-to-date information on the quality of water intended for human consumption

The main findings and tendencies at European level are summarised below, without necessarily comparing the performances of the Member States

1. Information on population and volumes of water supplies, as well as sources of water

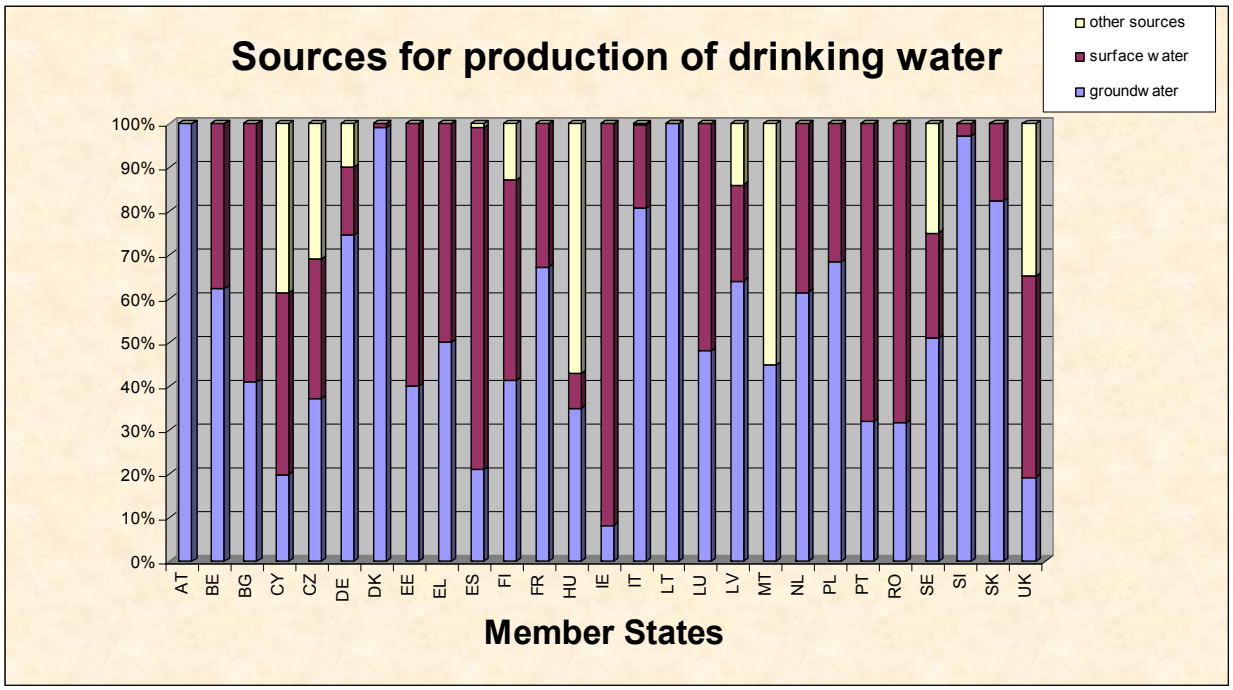
The total population in the 27 EU Member States in the 2005-2007 period was approximately 491 million people. The reported residential population supplied by large WSZs in the EU Member States was 417.58 million, which was approximately 85% of the total EU population. There were 15930 large water supply zones in the 27 European Member States in 2007 and the total volume of water supplied by these WSZs was 36547 million m^3 per year, this equaled 87.6 m^3 per person per year or 240 litres per person per day across Europe.

Five Member States supplied (nearly) all residents through large water supply zones (Cyprus, Spain, Malta, the Netherlands and the United Kingdom). Belgium, Italy, Poland, Portugal, Ireland, Bulgaria and Germany reported the use of large water supplies for providing water to more than 80% of the population.

Rather low percentages were reported for Romania, Latvia and Lithuania, namely less than 60% of the resident population was supplied by large WSZs.

In twelve of the Member States groundwater was the major source for the production of drinking water. Three Member States produced all drinking water, 99 to 100% from groundwater. Six Member States mostly relied on surface water, with the highest percentages in Ireland and Spain. Luxembourg and Greece had approximately equal contributions from groundwater and surface water sources.

A number of Member States used other water sources mostly a combination of groundwater and surface water, Aquifer Storage and Recovery (ASR) and bank filtration. There were two Member States, Malta and Cyprus that had a significant contribution from seawater or saline groundwater (Graph 1 below).



Graph 1 Sources of raw water used for the production of drinking water, percentage contribution of the various raw water sources

2. Water quality and non-compliance with the Directive's parametric values

The Directive distinguishes three groups of parameters, the microbiological parameters, the chemical parameters and the indicator parameters.

Overall, drinking water in the European Union generally had a high level of compliance with the parametric values in the DWD. There was one MS (the Netherlands) where all parameters had a compliance level between 99 and 100%. In table 3 the levels of compliance for all MS (except Italy and Sweden) are presented for the three parameter groups, microbiological, chemical and indicator parameters.

Non-compliance is presented in this overview at national level in the EU Member States with the list of parameters accounted at country level (all water supply zones where the parameter was relevant) which caused non-compliance in the reported period. This gives the comparative magnitude of the problem posed by a parameter at the Member State level without looking into the detailed reasons for the non-compliance.

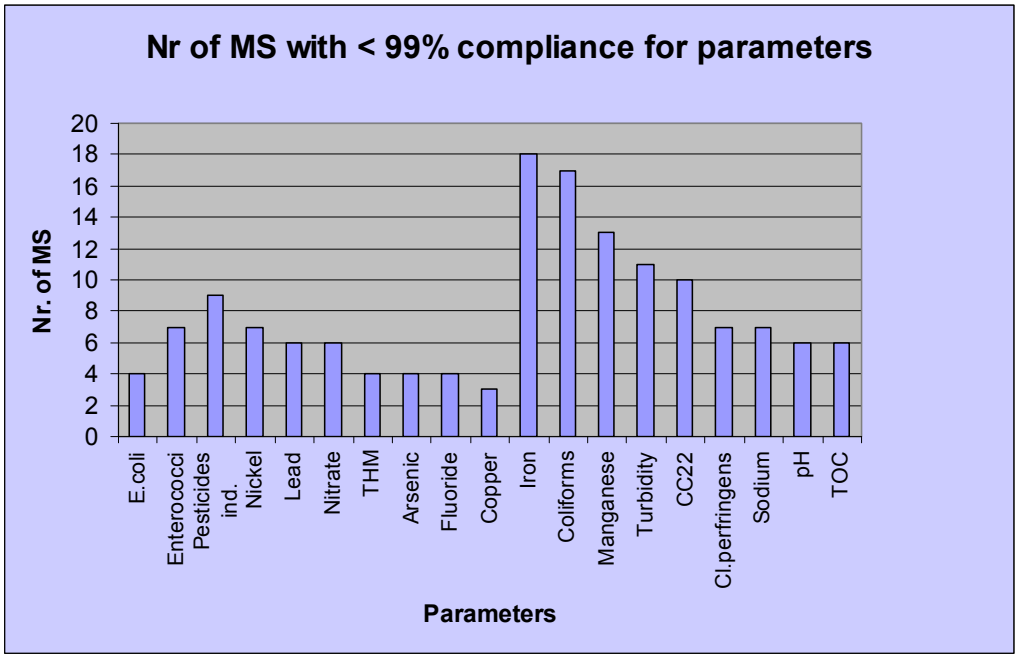
A number of indicator parameters do not have a numeric value specified in the Directive; in that case some Member States set a value at national level. Not all Member States reported on the level of (non)-compliance with the indicator parameters that have no numeric value in the Directive, such as colour, taste, odor, colony count, TOC, (Total Organic Carbon) coliform bacteria and turbidity. Other Member States did not report non-compliance with indicator parameters as they considered it a mere indication that needs investigation rather than a real non-compliance with the Directive.

In addition to the different reporting results on indicator parameters there was the added problem of incomparability of data due to many reasons, but mostly because of significant differences between Member States in monitoring effort and the lack of harmonized sampling

and monitoring efforts and the fact that not all Member States took samples at the consumers' tap.

Graph 5 gives a summary of the Member States that had less than 99% compliance at national level for the Directive's parameters. The graph refers to all three types of parameters listed in the Directive.

Graph 5 The number of Member States that have <99% compliance at national level for DWD parameters



Parameters that most frequently caused non-compliance in more than 1% of samples taken overall at national level were often indicator parameters, such as iron, coliform bacteria, manganese, turbidity and colony count.

Chemical parameters that often caused non-compliance were individual pesticides, nickel, lead, nitrate, THM (trihalomethanes), arsenic and fluoride.

The microbiological parameter Enterococci caused non-compliance in seven Member States and in four Member States the parameter *E.coli* also caused non-compliance.

Table 3 Percentages of compliance at national level in the Member States (2005-2007)

MS	Microbiological parameters	Chemical parameters	Indicator parameters	All parameters 95-100%
AT	95-100	90-100	95-100	
BE	95-100	95-100	95-100	X
BG	99-100	95-100	95-100	X
CZ	99-100	99-100	<90-100	
CY	95-100	90-100	<90-100	
DK	99-100	90-100	<90-100	
DE	99-100	95-100	95-100	X
EE	100	<90-100	<90-100	
FI	99-100	95-100	95-100	X
FR	99-100	95-100	95-100	X
EL	99-100	95-100	95-100	X
HU	95-100	<90-100	<90-100	
IE	99-100	95-100	90-100	
IT				
LV	95-100	95-100	<90-100	
LU	99-100	95-100	95-100	X
LT	100	<90-100	<90-100	
MT	100	95-100	<90-100	
NL	99-100	99-100	99-100	X
PL	95-100	95-100	<90-100	
PT	99-100	95-100	95-100	X
RO	99-100	<90-100	95-100	
SK	95-100	99-100	90-100	
SI	95-100	99-100	90-100	
SP	99-100	95-100	<90-100	
SE				
UK	99-100	95-100	95-100	X

For this report the following codification has been established:
99 – 100 % calculated rate of compliance with the parametric values
95-100 % calculated rate of compliance with the parametric values
90 – 100 % calculated rate of compliance with the parametric values
< 90-100% calculated rate of compliance with the parametric values

As regards the **microbiological parameters**, all Member States reported between 95-100 compliance, out of which seventeen Member States had a compliance level of 99 – 100%.

Concerning the **chemical parameters**, eighteen Member States reported compliance of between 95-100 % and even between 99-100% in the case of four Member States. Three Member States reported compliance between 90-100% and four Member States reported compliance of below 90%.

For the **indicator parameters** there were twelve Member States that had a compliance percentage between 95 and 100% which included one Member State with a compliance level between 99 and 100%. Three Member States scored between 90 and 100% and ten Member States scored percentages of below 90 %.

The last column indicates the Member States that had a compliance level above 95%for microbiological, chemical and indicator parameters. This level of compliance with all parameters in the Directive was reported by ten MS (BE, BG, D, FIN, F, EL, LUX, NL, PT, UK). Again it is important to take into account the (non)-compliance with the monitoring requirements that were not met by all the Member States.

When non-compliance is found there is a need to investigate the source and the nature of the non-compliance (structural or incidental) and remedial actions need to be taken to solve the problem. Structural problems with microbiological quality of drinking water can originate from poor source water quality, inadequate treatment of the water or substandard integrity of the distribution network. Incidental occurrence of microbiological problems can be caused by an accident such as a pipe burst or a leakage, a problem at the treatment plant e.g. with disinfection steps or a problem within the premises that have been used for sampling.

Where further improvement in the chemical quality of drinking water is needed, the action that should be taken depends on the parameter and the cause. A distinction has to be made between parameters that relate to human activity such as nitrate and pesticides that should be addressed through better agricultural practice and in the short-term by introduction of additional treatment or a change of source. In the case of chemical quality that is linked to the use of materials such as lead, copper and nickel problems are often related to the in-house installation and can only be solved through conditioning of the water to make it less aggressive and information to the public of the proper use of materials and actions they can take to avoid too high levels in their drinking water. Some geogenic compounds that naturally occur in the underground as fluoride and arsenic can only be addressed by additional treatment or a change of source water. And finally chemical quality related to treatment of water THM (trihalomethanes) and fluoride can only be addressed by more adequate treatment processes.

3. Exemptions of the application of the Directive

Articles 3.2.a and 3.2.b of the Directive 98/83/EC offer the Member States the possibility to exempt water supplied within their territory from the requirements in the Directive. Water types can be exempted either on the basis of the size of the supply or the use of the water. Exemptions are not allowed for water that is supplied to the public or as part of a commercial activity regardless of the size of the supply.

No information on exemptions was received from four Member States: Greece, Poland, the Netherlands and Italy. None of the types of water were reported to be exempted in ten Member States: Austria, Cyprus, Denmark, Germany, Latvia, Malta, Portugal, Romania, Slovak Republic and Slovenia.

In total nine Member States used the exemption of small types of water supply zones in the Directive (Belgium, Estonia, Finland, France, Hungary, Ireland, Sweden, United Kingdom and Spain). Finally four Member States had some other type of exemptions: Bulgaria, Czech Republic, Luxembourg and Lithuania. (See table 1 below)

Table 1 Types of water exempted in the Member States

Member States	Waters exempted	Comments
Belgium, Estonia, Finland, France, Hungary, Ireland Sweden, United Kingdom, Spain	Exempted in line with DWD 3.2.a smaller than $10m^3$/day or less than 50 people	Spain: as in the DWD except when there is a danger to human health.
Bulgaria, Czech Republic, Luxembourg, Lithuania	Other types of exemptions	Bulgaria: local sources not connected to a drinking water supply system. Czech republic: small ones included but not private wells for one household and no commercial use. Luxembourg: Private water supplies except those falling under a public domain (i.e. where public may have access to the supply) Lithuania: Individual sources not used for public or commercial water supply.
Austria, Cyprus, Denmark, Germany, Latvia, Malta, Portugal, Romania, Slovak Republic, Slovenia	None exempted	
Greece, the Netherlands Poland, Italy	No information given	

4. Reporting on microbiological methods and alternative methods

The Directive allows Member States to use other methods for microbiological analyses than those mentioned in the Directive if it can be demonstrated that such methods produce results that are at least as reliable as the methods mentioned in the Directive.

The method that was declared to be used by most Member States is the Colilert 18 Quantitray® method. Fifteen Member States reported that they only used the methods in the Directive, while eight mentioned the Colilert method as alternative for E.coli and Coliform bacteria. Portugal did not report which alternative method was used.

Other methods besides Colilert were used in the Netherlands, Germany, Cyprus, Spain and Sweden.

5. Reporting on non-compliance with monitoring frequencies

The Guidance Document[3] on reporting required information on annual monitoring frequency in water supply zones not compliant with the monitoring frequency. Member States were asked to provide at water supply zone level information on the number of analyses carried out compared to the number of analyses required by the Directive (Annex II, Table A.1 (including footnotes 1,2 3), A2 and Table B1 (including footnote 2,3 4). Member States only had to give information on WSZs where the monitoring frequencies were not in compliance with the requirements of the Directive. Detailed information on the compliance of the Member States with the monitoring requirements is presented in Annex II of the present report.

Compliance with the monitoring frequency is a prerequisite of assessing compliance with the parametric values and is affecting the picture that emerges from this synthesis document on how well Member States comply with the requirements for the quality of drinking water.

Four Member States (BE, MT, SI and PT) reported full compliance with the monitoring requirements. Two Member States reported minor non-compliance, namely IE and UK.

Another five Member States (AT, CZ, DE, EL and NL) did not provide information through the reporting format, but there were no indications in the data bases submitted of significant non-compliance with the monitoring frequencies.

There were gaps in monitoring and in the availability of information at national level in many Member States. Non-compliance could be due to various reasons: e.g. data were available but not at national level, sampling frequency was not sufficient or the analytical capacity was not sufficient or a combination of reasons. Non-compliance was also caused by an incorrect interpretation of the DWD and more specifically of Annex II, table B1 in the Directive. Incomplete information on the quality of drinking water made it difficult to compare data on the status of drinking water between various Member States (hence compliance with the Directive)

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3 http://circa.europa.eu/Public/irc/env/drinking_water_rev/library?l=/drinking_synthesis/2007_reportingpdf/_EN_1.0_&a=dhttp://ec.europa.eu/environment/water/water-drink/pdf/2007_05_09_guidance_doc_reporting.pdf

and implied that not all information was available to the public on the quality and safety of their drinking water. Table 2 below reflects the situation ofr each Member State.

Table 2 Information on monitoring in WSZs not compliant with the monitoring frequency

Member States	Information supplied by the MS and assessment of the data submitted	Level of compliance
Austria	Member State did not follow Guidance Document Responsible authorities assume monitoring is in line with DWD	No indications for non-compliance
Belgium	Reported to be in full compliance	Full compliance
Bulgaria	Not in compliance with DWD, improvements needed. Causes gaps in monitoring and analytical capacity. Remedial actions have started	Significant non-compliance
Czech Republic	Member State did not follow Guidance Document. The national legislation requires the same monitoring frequency as given in the DWD and legislation is enforced. As no data are provided this can not be assessed.	No indications for non-compliance
Cyprus	Not in compliance with DWD, significant non-compliance for various reasons reported by the MS. Improvements needed.	Significant non-compliance
Denmark	No information was provided on the compliance with the monitoring frequency. National authorities are confident that municipalities meet the obligations. Information on water quality is not given for individual years; some parameters are not monitored in compliance with DWD. Samples are not taken at the tap but at the water supplier and in the distribution network.	Not in compliance
Germany	Member State did not follow Guidance Document, so no information is given on non-compliance with monitoring requirements	No indications for non-compliance
Estonia	Not in compliance with DWD, improvements needed. Cause of non-compliance related to incorrect interpretation of the DWD. Remedial action is taken.	Significant non-compliance
Finland	Information on (non) compliance with monitoring requirements only available for 2007 Not in compliance with DWD, improvements needed. Corrective action has been taken. Causes of non-compliance incorrect interpretation of the directive and outdated monitoring programmes.	Not in compliance
France	Member State did not follow Guidance Document, so no information provided. Indicator parameters with no numeric value in the DWD are not reported	Not in compliance
Greece	Member State did not follow Guidance Document	No indications for non-compliance
Hungary	Incomplete information. There is no existing national database, shortage in monitoring and gaps in information supply to the national database Not in compliance with DWD, improvements needed.	Not in compliance/ Significant non-compliance
Ireland	Slight non-compliance with DWD, improvement action has been taken.	Compliance
Italy	No return submitted	No info
Latvia	Not in compliance with DWD, improvements needed. Causes incorrect interpretation of the DWD. Remedial action is taken.	Significant non-compliance
Luxembourg	Not in compliance with DWD, not all WSZs monitored correctly, one WSZ no information reported by water supplier. 2007 showed improvement.	Not in compliance
Lithuania	Not in compliance with DWD, improvements needed. Causes: not all mandatory parameters monitored in all WSZs, no	Significant non-compliance

Member States	Information supplied by the MS and assessment of the data submitted	Level of compliance
	information collected at national level on required monitoring requirements	
Malta	In compliance	Full compliance
Netherlands	Member State did not follow Guidance Document Can not be assessed. The national authority that the monitoring frequency is in line with the DWD.	No indications for non-compliance
Poland	Not in compliance with DWD, improvements needed. National authorities mention that there is a difference in interpretation of definitions in the DWD.	Significant non-compliance
Portugal	In compliance	Full compliance
Romania	Not in compliance with DWD, improvements needed. Causes gaps in monitoring and analyses and gaps in reporting to national authorities	Significant non-compliance
Slovak Republic	Not in compliance with DWD, improvements needed. Causes: technical reasons and gaps in national database	Significant non-compliance
Slovenia	In compliance with DWD	Full compliance
Spain	Not in compliance with DWD, improvements needed. Data have not yet been entered in the national information system SINAC.	Not in compliance
Sweden	Not in compliance with DWD, improvements needed.	Significant non-compliance
United Kingdom	Small non-compliance. UK does not report on non-compliance with the DWD requirements but with national (more strict) requirements.	Full compliance

6. Trends in European drinking water quality

Trends in water quality at national and EU level were difficult to establish because the reporting for the 2005-2007 period relates to the current directive in force 98/83/EC and the previous reporting periods concern the old directive 80/778/EEC. With the new Drinking Water Directive changes in the parameter list and parametric values has been introduced compared to the previous Drinking Water Directive and compared to what has been reported for the previous periods. Also the number of water supply zones that have to be reported on varies from one year to the next. The historical data for the Member States as far as there are historical data are all included in this report.

No historical data are available for Bulgaria, Cyprus, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovak Republic, Slovenia and Sweden. Italy did not submit information for this reporting period.

- **Austria**: There have been many historical data for Austrian drinking water. The same parameters caused non-compliance, but there seemedd to be some improvement with respect to Coliform bacteria, nitrate and atrazine. Problems with manganese non-compliance have emerged since the previous period. It may be said that the trend for some parameters is positive but not so for manganese.
- **Belgium**: In comparison to the previous reporting period 2002-2004 (with incomplete data for Belgium) a consistent pattern emerges as in that period the same parameters caused non-compliance at national level. In the previous reporting period 2002-2004 the parameter Coliform bacteria caused most WSZs to fail in compliance, followed by Enterococci, E.coli and iron.
- **Czech Republic**: In comparison to the previous reporting period 2002-2004 a consistent pattern emerges as in that period the same parameters caused non-compliance at national

level. However, the non-compliance with the sulphate parameter seemed to be solved and the list of non-compliant pesticides was much shorter than the previous period.

- **Denmark**: There have been historical data for Denmark and the parameters that had caused non-compliance in previous periods were very much the same as those in 2005-2007.
- **Germany**: There have been historical data available for Germany. There seemed to be an improvement in water quality for some parameters; E.coli, Enterococci, Coliform bacteria and turbidity. There has been no longer a non-compliance reported for THM (trihalomethans). The parameters that caused non-compliance in Germany were more or less the same except the THM.
- **Estonia**: Submitted a first return for the 2002-2004 period. The main non-compliant parameters were THM total, iron, chloride and manganese and turbidity as well as oxidisability and TID. The picture was very much the same as in the previous period except that for the current period it was noted TID (Total Indicative Dose of Radiation) as a new non-compliant parameter in 2 to 4 WSZs.
- **Finland**: The microbiological parameters were mostly in compliance in Finland. The chemical parameters fluoride and THM total caused non-compliance, where fluoride was a recurring problem in Finland and was also identified as such in the pervious reporting periods. Most non-compliance was caused by a number of indicator parameters, iron, manganese, Colony count 22, Coliform bacteria and the organoleptic parameters colour, odour, taste and turbidity. The results for Finland were very much the same as the previous reporting periods.
- **France**: There were many historical data for drinking water in France. There were no significant changes compared to the previous years, except that there were less WSZs with non-compliance for desethylatrazine and for atrazine.
- **Greece**: There were historical data available for Greece. In the previous reporting period the same parameters caused non-compliance; Coliform bacteria, E.coli and Enterococci.
- **Ireland**: There were historical data for Ireland available. There were historical data for Ireland and in general the parameters that cause non-compliance were very much the same, namely THM, Coliform bacteria, aluminium, colour, turbidity, iron.
- **Luxembourg**: There were very few and incomplete historical data from Luxembourg. In previous years non-compliance was caused by Colony count 22 and Coliform bacteria.
- **Netherlands**: There were historical data for the Netherlands, the data were very similar to the 2005-2007 data. There was a slightly higher number of WSZs with non-compliance for E.coli and Clostridium perfringens.
- **Portugal**: There were historical data for Portugal. The non-compliance levels were very much the same for these parameters, namely *E.coli*, nitrate, Coliform bacteria and pH, but also iron, manganese, aluminium*, Cl.perfringens*, and turbidity.
- **Spain**: There are many historical data for Spain. The number of non-compliant WSZs seems to have increased but there is much fluctuation in the number of WSZs in Spain.
- **United Kingdom**: There were many historical data for the United Kingdom. What stood out was the decrease in parameters that caused non-compliance at national level. More than 1% non-compliance was limited to two parameters THM and TOC (Total Organic Carbon). In addition the non-compliance with the THM parameter was much lower that in 2002-2004. Also the number of WSZs that showed non-compliance for THM has decreased. There was a sharp increase in non-compliant WSZS for the Coliform bacteria parameter from 5 WSZs in 2002-2004 to 117-144 WSZs in the 2005-2007 period. There was also an increase in the number of WSZs with non-compliance for iron, manganese and nitrite.

7. Reporting on information to the public

Information to the public on the quality of their drinking water is an important aspect of the Drinking Water Directive. The public is entitled to have access to information of the quality under normal circumstances but also when there is a temporary non-compliance with the quality standards in the Directive. In many Member States reference was made to a national website. However, it is not always possible to find the information on the drinking water quality. Other sources mentioned are local newsletters, the water supplier and local authorities and local media.

Austria	www.bmg.gv.at
Belgium	www.leefmilieubrussel.be www.bruxellesenvironnement.be http://environnement.wallonie.be www.vmm.be
Bulgaria	No information
Check Republic	http://www.szu.cz/tema/zivotni-prostredi/monitoring-pitne-vody
Cyprus	http://www.moh.gov.cy/moh/mphs/phs.nsf/DMLreports_gr/DMLreports_gr?OpenDocument
Denmark	www.geus.dk
Germany	http://www.umweltdaten.de/publikationen/fpdf-l/3616.pdf
Estonia	www.terviseamet.ee. (http://www.terviseamet.ee/fileadmin/dok/Keskkonnatervis/vesi/joogivesi/Jv_raport_EU2005 2007.pdf.)
Finland	www.thl.fi and www.sttv.fi
France	www.eaupotable.sante.gouv.fr
Greece	www.yyka.gov.gr
Hungary	www.antsz.hu
Ireland	www.epa.ie
Italy	No information
Latvia	www.vi.gov.lv
Luxembourg	www.eau.public.lu
Lithuania	http://www.vmvt.lt http://www.kaunovandenys.lt http://www.vanduo.lt http://www.palangosvandenys.lt http://www.siauliuvandenys.lt http://www.varenosvandenys.lt http://www.vv.lt http://www.avandenys.lt
Malta	www.wsc.com.mt
Netherlands	www.rivm.nl www.rijksoverheid.nl
Poland	www.pis.gov.pl
Portugal	www.ersar.pt
Romania	www.inspb.gov.ro
Slovak Republic	http://www.sazp.sk/public/index/go.php?id=1167&lang=sk
Slovenia	http://www.ivz.si
Spain	www.msssi.es; http://sinac.msc.es/sinac/ciudadano/CiudadanoMostrarResumenesAnualesAction.do
Sweden	www.slv.se
United Kingdom	www.dwi.gov.uk www.dwqr.org.uk www.doeni.gov.uk

4 Conclusions

The EU legislation on the quality of drinking water has been in place for more than thirty years through the two directives 80/778/EEC and 98/83/EC. Since 1993 comprehensive information was reported on the quality of drinking water in the European Union. This information has become available amongst others through the extensive monitoring and reporting requirements agreed between the Member States and the European Commission. Having this information available for almost all twenty seven EU countries has been a major achievement.

Monitoring of the quality has been only the first step towards improvement of drinking water; the next step included measures to address sub-standard quality and to further improve drinking water that complies to an even higher standard as the parametric values in the Directive are minimum standards. Information on the quality of drinking water has also been an important decision support tool for Member States to decide on priorities in investment programmes to improve water supply in accordance with the requirements of the Directive. Information on the quality of drinking water in the water supply zones in the EU Member States has resulted in a high level of compliance and thus in wholesome and clean drinking water in Europe. Some Member States still have to improve their performance as there has been significant non-compliance in monitoring of the quality of drinking water. Moreover, where no data on quality have been available, no information has been available on the level of compliance with the minimum requirements in the Directive.

As regards the current situation in the Member States, the level of compliance with the Directive and the improvements, the following conclusions could be drawn:

- On the basis of the data submitted the quality of drinking water in most EU Member States was relatively high. In summary, 10 Member States scored for all three types of parameters (microbiological, chemical and indicator) compliance levels of 95-100%. These Member States were: BE, BG, DE, FI, FR, EL, LU, NL, PT and the UK.

- However, the monitoring efforts in some Member States were not always in compliance with the requirements of the Directive. Insufficient monitoring (or reporting on monitoring results) occurred in fifteen Member States. For ten of the fifteen Member States there was significant non-compliance in montoring. Most of these cases were related to the Member States that joined the European Union in 2004 or 2007. Monitoring and reporting gaps could also be related to a lack of analytical know-how and capacity. The non-compliance with the monitoring frequencies in a number of Member States could lead to the conclusion that the percentages of compliance specified above were correct only for BE, DE, EL, PT, NL and UK.

- Drinking water in most Member States was produced from groundwater sources (twelve Member States) or from a combination of groundwater and surface water sources (seven Member States). Surface water as major source for the production of drinking water has been a reality for more than a quarter of the Member States. There has been no consistent relationship between the sources of water used and the geographic location of the Member States except for two Mediterranean countries that predominantly relied on desalination of seawater and brackish groundwater due to a shortage in fresh water availability.

- A third of the Member States exempted small water supply zones on the ground of not being part of a commercial and or public activity from the requirements of the Directive. An additional four Member States exempted water supplies on the basis of their size; this mostly concerned private and individual wells. Most Member States did not report on exemptions being in place within their territory either on the basis of the small size of the supply or the basis of the use of the water. There were no reports of water supplies being exempted on the basis of the use of the water Article 3.2.b.

- The majority of the Member States applied the methods described in the Directive for the microbiological parameters. An alternative method was often reported for the analysis of *E.coli* and coliform bacteria, namely Colilert 18 Quantitray® method.

- Establishing trends in water quality at national and EU level was still difficult, mainly due to the changes in the Directive, in particular as regards the parameter list, and parametric values which were introduced compared to the previous Directive and compared to what has been reported for previous periods.

- However, for the Member States for which historical data were available, a certain variation of the number of water supply zones was noted, not always accompanied by a justification.

- Reporting has improved through the introduction of the Water Information System for Europe (WISE) even though not all Member States used the WISE facility in EIONET. Eighteen Member States made full use of the EIONET for reporting, especially the EU-12 Member States which used EIONET, except for one Member State (Czech Republic). When the reporting was not (fully) done through EIONET it mostly concerned EU-15 Member States.

A number of challenges and improvement for the coming years were identified:

- Further increase the quality of drinking water in Member States and especially those that have high levels of non-compliance for some parameters.

- Improve the monitoring and also the reporting effort within a number of Member States. Often the national authorities did not receive the required data from the regional and local institutions. This is a matter of better national enforcement.

- Improve the analytical know-how and capacity in some of the Member States, in order to comply with the monitoring requirements.

- Harmonization of data collection (sampling, monitoring and analytical methods) at European level. This is necessary to be able to compare data from various parts of the European Union.

- Ensure data entry through WISE / EIONET by all EU Member States.

Finally, actions should be taken to shorten the time between the reporting of the Member Statess and the publication of the summary report.

Annexes

Annex I Reporting and monitoring obligations

Article 13 provides for the Commission to publish a synthesis report on the quality of water intendend for human consumption in the Community.

In accordance with the previsions of this Article, the report includes, as a minimum, all individual supplies of water exceeding 1000 m^3/day as an average or serving more than 5000 persons and covers three calendar years.

The requirements of the Directive concerning information and reporting are:

- Exemptions of the application of the Directive (Article 3.2)
- Meeting the quality standards as set in Annex I of the Directive, with the note that parameters set in Annex I, Part C are fixed only for monitoring purposes and for remedial actions and additional parameters set by the Member States (Article 5. 2 and 3)
- Monitoring programmes and sampling requirements (Article 7. 2)
- Remedial action and restriction in use in case of failure to meet the parametric values set (Article 8)
- Information provided by the Member States to the population in case they have recourse to derogations (Article 9. 6 and 7)

This reporting cycle is completely covered by the current Directive in force 98/83/EC. However, some historical data in the report relate to the previous Driking Water Direcite 80/778/EEC. With the replacement of the previous Directive some names of parameters have changed. Sometimes Member States still use the old names.

DWD 80/778/EEC	DWD 98/83/EC
Faecal streptococci	Enterococci
Faecal Coliform bacteria/FC	*E.coli*
Total Coliform bacteria/TC	Coliform bacteria
SSRC	*Cl.perfringens* including spores
Organochlorine compounds not covered by parameter 55	Trihalomethanes/THM

Further, the reporting exercise has taken into account the requirements of Commission Decision of 25 July 1995 amending Decion 92/446/EEC of 27 July 1992 concerning questionnaires relating to directive in the water sector, namely Section VII. Outline Questionnare for Directive 80/778/EEC[4].

With the view to consider the reporting obligations listed in the above mentioned documents and ensure consistency in the reporting formats used, a technical document (Guidance Document)[5]

[4] (http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1992D0446:19950824:EN:PDF

[5] http://circa.europa.eu/Public/irc/env/drinking_water_rev/library?l=/drinking_synthesis/2007_rep

has been developed by the work of a sub-group of the Drinking Water Directive Article 12 Committee.

The document should be regarded as presenting an informal consensus position on best practice agreed by all partners; however it does not necessarily represent the official, formal position of any of the partners.

This format is meant to bring reporting in line with the Water Information System for Europe (WISE), with the ultimate aim to report through the internet. A data dictionary was produced and a XML /Excel format was made available through the EIONET Central Data Repository. http://cdr.eionet.europa.eu.

A data dictionary was produced and a XML /Excel format was made available through the EIONET Central Data Repository. http://cdr.eionet.europa.eu. This Reportnet makes it possible for Member States to directly enter their data using EEA's EIONET tools. Member States reported some shortcomings of the Data Dictionary to the EC in particular, the fact that there was as yet no form of quality checking of the entries. So anything can be entered from figures, to text and photographs. This will be solved through the introduction of an automatic quality control system within EIONET.

For the fifth reporting cycle (2005, 2006 and 2007) all 27 Member States had a reporting obligation to the European Commission. However, for Romania and Bulgaria that joined the EU on the first of January 2007, there was only a reporting obligation for the year 2007.

The European Commission received information on the 2005-2007 quality of drinking water in the Member States from 26 Member States. No information was submitted by Italy. The report from Sweden could only be partly processed because of the different format used.

Reporting format used

All Member States had the possibility to use the Reportnet on the EIONET CDR. A mix of returns was received (see overview in table below), that varied from returns following the previous format of the 80/778/EEC DWD, textual files, Guidance Document based Excel returns, direct entries into EIONET and combinations of formats. When the old reporting format from the previous DWD was used not all questions that were included in the Guidance Document for reporting were answered.(See overview in table below)

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ortingpdf/_EN_1.0_&a=dhttp://ec.europa.eu/environment/water/water-drink/pdf/2007_05_09_guidance_doc_reporting.pdf

Overview of reporting methods and formats used in the 2005-2007 period

Member State	CDR format used	Combination CDR and other format	CDR format not used
Austria			CDR not used + old questionnaire
Belgium*		Combination CDR + word format	
Bulgaria	Fully		
Czech Republic		Partly CDR and word + old questionnaire used	
Cyprus	Fully		
Germany			CDR not used + old questionnaire
Denmark	Fully		
Estonia	Fully		
Spain	Fully		
France			CDR not used pdf + old questionnaire
Finland	Fully		
Greece			CDR not used + old questionnaire
Hungary	Fully		
Ireland	Fully		
Italy			No returns
Latvia	Fully		
Lithuania	Fully		
Luxembourg	Fully		
Malta	Fully		
Netherlands		Combination CDR + pdf	
Poland	Fully		
Portugal	Fully		
Romania	Fully		
Slovakia	Fully		
Slovenia	Fully		
Sweden		CDR partly + completely different reporting format	
United Kingdom	Fully		

** Belgium used different combinations for the three regions: Brussels CDR on EIONET, Walloon CDR on EIONET, Flanders combination of CDR and word format.*

The majority of the Member States (18 out of 27) used the EIONET to enter the information in the CDR (central data repository). A few Member States partly used the CDR (4 out of 27) and combined it with information in textual (pdf) format. Only a few Member States (4 out of 27) did not use the CDR and also used the old questionnaire (which is legally correct). One Member State did not report at all (Italy).

Description of the latest reporting format

Information is required to enable the Commission to have a picture of each Member State general arrangements for drinking water supply. It is anticipated that three categories of general information will be required. These will each cover the whole three-year period:

(i) general information on MS drinking water supply arrangements.
(ii) information on exemptions,
(iii) information on drinking water sampling and analysis methods.

There are three categories of data which require annual returns submitted every three years. These data shall relate only to water supply zones where the supply of water exceeds 1000 m^3 per day as an average or serving more than 5000 persons:

(i) monitoring information on water supply zones;
(ii) summary information on drinking water quality in water supply zones at a national level; and
(iii) Information on non-compliant water in water supply zones.

If a Member State wishes to supply the Commission with data relating to water supply zones where the supply of water is less than 1000 m^3 per day as an average and serving less than 5000 persons they should do so only in a completely separate report using the same principles and formats.

Article 13(1) requires that each Member State shall take the measures necessary to ensure that adequate and up-to-date information on the quality of water intended for human consumption is available to consumers. It is recommended that this should be by means of a national database on drinking water quality accessible through the internet and /or other media.

Member States are not required to report on parameters that are not in the Drinking Water Directive or on stricter national parameters i.e. where standards have been set at a tighter level than those in the Directive.

Information on derogations in place in accordance with Article 9 of the DWD (only for Annex I Part B-parameters) shall be submitted to the Commission in line with the requirements of Article 9 and does not form part of the Article 13 reporting requirements.

Incomplete information

No return was received from Italy. Sweden has used its own format and only partly used the EIONET database to submit data. The major problem with the Swedish return was the use of aggregated parameters such as microbiological quality, chemical quality etc. Belgium reported

for the three regions (Walloon, Flanders and Brussels) separately. For the production of this synthesis report the data from the three regions were combined as best as possible.

The fact that 26 of the 27 Member States submitted a report on the 2005-2007 period does not imply that the information is complete. A small number of Member States used the old reporting format (still in force) and most others used (voluntarily) the new format of the Guidance Document. Both reporting formats differ and have different questions. Also not all Member States answered all the questions.

Annex II Fact sheets individual Member States

Fact sheet 1. Drinking water in Austria in 2005-2007

General information on Member States drinking water supply arrangements[6]

Table 1.1General information on Austria 2005-2007 period

Member State	Austria
Total population in millions	8.26/8.30/8.31 million
Number of water supply zones	245/252/238
Total resident population supplied	5.531.000/5.525.759/5.560.200 * not exclusively resident population (66.8%)
Total volume of water supplied in million m3/year	451.29/452.68/444.18 million m3/year
Water sources used in percentages of the total volume	Groundwater 99.9% Surface water 0.1 %
National database on drinking water quality	www.bmg.gv.at

The data from Austria were submitted on paper and the Member States did not use the format of the Guidance Document (is not obligatory). Austria reported both on small (< 1000 m^3/day) and large (>1000 m^3/day) water supply zones and covered the years 2005, 2006 and 2007. There were approximately 8.29 million people in Austria in the three years reporting period. Austria also included tourists in the population served by large WSZs. This because due to the number of tourists and the high volume of water supplied to them some water supply zones fall under the reporting obligation (>1000 m^3 per day or more than 5000 persons).

In Austria 245/252/238 large water supply zones supplied water to 66.8% (including non residents) of the population. These large WSZs supplied 451.29/452.68/444.18 million m^3 per year. The drinking water was predominantly produced from groundwater (99.90%) and a small amount from surface water (0.10%).

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

[6] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Table 1.2 Information on exemptions, stricter and additional parameters

Waters exempted	None
Stricter national	There is only one value for nitrite of 0.1 mg/l and this value also applies at the tap. In that case it is stricter than the 0.5 value of the DWD. There is a stricter value for THM of 30 ug/l. Stricter values are in place for *E.coli,* Coliform bacteria, Enterococci and *Cl. Perfringens (Ps. Aeruginosa)* for disinfected water (0/250 ml) than for not disinfected water (0/100 ml).
Additional national parameters	*Ps. aeruginosa* for tap water Temperature

Information on exemptions

In Austria no drinking water was exempted from the requirements of the DWD either on the basis of size or on use of the water.

Stricter parameters

In Austrian national legislation there are stricter values for nitrite at the tap and THM and for disinfected water also for *E.coli*, Enterococci, *Cl.perfringens* and *Pseudomonas aeruginosa*.

Additional parameters

Austria has one additional national parameter for tap water, which is *Ps. Aeruginosa*.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD

Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. Austria uses the microbiological methods that have been defined in the DWD 98/83/EC for drinking water analyses.

Annual monitoring in water supply zones not compliant with the monitoring frequency

In the Guidance Document and in the reporting format table 4 asks Member States to report on non-compliance in monitoring effort. Austria did not supply this table or similar information as this question is not included in the old reporting format. The responsible authorities assumed the monitoring is in compliance with the requirements of the DWD.

National summary on drinking water quality

Table 1.3 National summary Austria 2005-2007 period

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	99.5	99.7	99.8
Enterococci	97.4	99.7	99.7
Chemical parameters			
Arsenic	100	100	92.9
BaP	99.3	100	100
Bromate	96.4	100	100
Copper	100	100	99.7
Lead	100	100	99.3
Nickel	100	100	98.5
Nitrate	99.5	99.4	99.3
Nitrite	100	99.8	100
Total pesticides	100	100	99.3
Indicator parameters			
Aluminium	100	99.4	100
Ammonium	100	99.8	99.9
Chloride	99.9	100	99.8
Cl.perfringens	98.5	100	100
Colour	99.7	99.7	99.8
Conductivity	100	100	99.9
pH	99.9	99.7	99.5
Iron	99.4	98.5	98.0
Manganese	98.9	98.5	97.9
Odour	100	100	99.9
Oxidisability	99.9	100	99.8
Sodium	99.9	99.9	99.9
Sulphate	100	99.6	99.8
Coliform bacteria	97.5	100	100
TID and tritium	100	100	100
All other DWD parameters had full compliance in the three reporting years.			

Additional information on individual pesticides compliance levels at national level

Pesticide	*2005*	*2006*	*2007*
Atrazine	98.0	99.3	99.0
Desethylatrazine	96.5	98.1	98.1
Dinoseb	100	100	99.2
Heptachlorepoxid	100	100	99.1

Table 1.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Enterococci	**X**		
Chemical parameters			
Arsenic			**X**
Bromate	**X**		
Nickel			**X**
Atrazine	**X**		
Desethylatrazine	**X**	**X**	**X**
Indicator parameters			
Cl.perfringens	**X**		
Iron		**X**	**X**
Manganese	**X**	**X**	**X**
Coliform bacteria	**X**		

The microbiological parameter Enterococci had more than 1% non-compliance but only in 2005. The chemical parameters that had more than 1% non-compliance are arsenic in 2007, bromate in 2005, nickel in 2007 and the pesticides atrazine in 2005 and desethylatrazine in 2005, 2006 and 2007. The indicator parameters that caused more than 1% non-compliance are manganese in all three years, iron in 2006 and 2007, *Clostridium perfringens* and Coliform bacteria in 2005.

Information on product specified parameters

Austria analysed the three product specified parameters. According to the returns none of these parameters was in non-compliance in 2005, 2006 and 2007.

Information on non-compliance of drinking water in water supply zones

We made the following observations:

- The information on year 2005 was more comprehensive than for the later years.
- Cause of non-compliance was sometimes given under the heading "Grund der Uberschreitung" but it was not always clear, sometimes there was no entry or the name of the parameter was not mentioned. Remedial action was often given but no timeframe.

Causes were not always given for two reasons; first the previous reporting format was used and secondly in the case of non-compliance with a microbiological parameter and a second compliant result in the repeated sampling the cause and remedial action were not reported by the regions.

Level of non-compliance in the water supply zones

Per parameter all WSZ that had more than 1 case of non-compliance in 2005/2006/2007were calculated. The total number of WSZs in Austria in the reporting period was 245/252/238.

Table 1.5 Number of Water Supply Zones in Austria with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	245	252	238
Microbiological parameters			
E.coli		4	
Enterococci	4	2	
Chemical parameters			
Bromate	2		
Atrazine	2		
Desethylatrazine	2		
Indicator parameters			
Ammonium			2
Cl.perfringens	1		
Iron			2
Manganese			2
CC22		1	
Coliform bacteria	11		

Few water supply zones showed non-compliance. For the microbiological parameters *E.coli* had non-compliance in 2006 and Enterococci in 2005 and 2006. In both cases this concerned a small number (2-4) of WSZs. The chemical parameters bromate, atrazine and desethylatrazine caused non-compliance in 2 WSZs in 2005. The indicator parameters ammonium, iron and manganese caused non-compliance in 2007 and Colony count 22 in 2006 and *Cl.perfringens* in 2005 in a small number (1-2) of WSZs. Coliform bacteria showed non-compliance in 11 WSZs but only in 2005.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It is a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 1.6 Maximum (peak) values found for non-compliant parameters in Austria

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
Enterococci	1-9/100ml	0/ 100 ml
Bromate	55-84 ug/l	10 ug/l
Atrazine	0.13-0.19 ug/l	0.10 ug/l
Desethylatrazine	0.16-0.19 ug/l	0.10 ug/l
Ammonium	0.68 mg/l	0.50 mg/l
Cl.perfringens	1/250 ml*	0/100 ml
Iron	1940-970 ug/l	200 ug/l
Manganese	100-680 ug/l	50 ug/l
Coliform bacteria	2-40/100ml	0/ 100 ml

*This is an incorrect report as this concerns a stricter national parameter.

Reasons for non-compliance

We can not reproduce all causes of non-compliance and the action plans MS have in this respect. We make the following observations: The cause for non-compliance was not always given by the Member State as the old reporting format was used and not the voluntary new reporting format in the Guidance Document.

Reporting on drinking water quality to the public

Information to the public was available at the national website and information on non-compliance should be given by the water supplier to the consumers concerned.

Derogations for Austria 2005-2007

Comprehensive information on derogations was mentioned in the returns.

Table 1.7 Derogations for large WSZs in Austria

Parameter	2005		2006		2007	
Type of derogation	First	Second	First	Second	First	Second
Atrazine	8		7	1	1	2
Desethylatrazine	12		10	1	1	2
Bentazon	1					

Austria gave comprehensive information on small WSZ < 1000 m^3/day and also on derogations for such WSZs.

Derogations were reported for:

- 2005 arsenic, nitrate, atrazine, desethylatrazine, desisopropylatrazine, antimony total 97 derogations for small WSZs in 2005
- 2006 arsenic, nitrate, atrazine, desethylatrazine, antimony total 98 derogations for small WSZs in 2006
- 2007 arsenic, nitrate, atrazine, desethylatrazine, antimony, fluoride total 84 derogations for small WSZs in 2007.

Historical data for Austria

National summary of monitoring results for each parameter in large wsz > 5000 people. Percentages non-compliance Austria 1996-2004 period							
Reporting year	1996-1998	1999	2000	2001	2002	2003	2004
Nr of WSZ	185	208	208	208	226	234	227
Parameter	**Percentage non-compliance at national level**						
Desethylatrazine		31.2	41.0	69.8	15.8	10.6	8.5
Desethylpropylatrazine						11.1	
Arsenic							7.1
Atrazine		22.1	33.5	42.7	6.5	2.0	2.6
TC/Coliform bacteria	2	1.2			4.3	2.5	1.7
FS/Enterococci					2.4	1.2	
Manganese	2				1.9		
Colony count 37					1.5		
Iron					1.5		
Nickel							1.5
FC/*E.coli*					1.4	1.1	
Chloride					1.3		
CC 22					1.2		
Pesticides	2						
Nitrate	2	1.1	1.5	1.7			
Magnesium		1.3	1.3	1.2			
Organichlorine compounds/THM	2						
All other parameters complied in 99% or more of the samples taken in Austria							

Total *number of water supply zones* serving more than 5000 people that exceeded the parametric value in the DWD in *more than 1 sample* Austria 1996-2004 period							
Reporting year	1996-1998	1999	2000	2001	2002	2003	2004
Nr of WSZ	No data				226	234	227
Parameter	**Number of WSZs with non-compliance**						
TC/Coliform bacteria					12	10	14
FC/*E.coli*					2	3	7
Desethylatrazine		16	16	16	5	6	3
FS/Enterococci					1	4	5
Atrazine		16	16	16	1	2	2
Nitrate						1	2
Desethylpropylatrazine					1		
Nitrite					1		
SSRC/*Clostridium perfringens*					1		
Prometryn						1	
PAH						1	

Metolchlor						1	
Iron							1
Chloride							1
Pseudomonas aeruginosa							1
Total pesticides							1

Conclusions for Austria

The microbiological parameter Enterococci had more than 1% non-compliance but only in 2005. The chemical parameters that had more than 1% non-compliance were arsenic in 2007, bromate in 2005, nickel in 2007 and the pesticides atrazine in 2005 and desethylatrazine in 2005, 2006 and 2007.
The indicator parameters that caused more than 1% non-compliance were manganese in all three years, iron in 2006 and 2007, *Clostridium perfringens* and Coliform bacteria in 2005.

The microbiological parameters *E.coli* had non-compliance in 2006 and Enterococci in 2005 and 2006. In both cases this concerned a small number of WSZs. The chemical parameters bromate, atrazine and desethylatrazine caused non-compliance in 2 WSZs in 2005. The indicator parameters ammonium, iron and manganese caused non-compliance in 2007 and colony count 22 in 2006 and *Cl.perfringens* in 2005 in a small number of WSZs. Coliform bacteria showed non-compliance in 11 WSZs but only in 2005.

In Austria the parameters that caused non-compliance at national and or WSZ level were *E.coli* and Enterococci, arsenic, bromate, nickel and the pesticides atrazine and desethylatrazine (a number of derogations were in place) and the indicator parameters ammonium, iron, manganese, *Clostridium perfringens* and coliform bacteria.

There are many historical data for Austrian drinking water. The same parameters caused non-compliance, but there seemed to be some improvement with respect to Coliform bacteria, nitrate and atrazine. Problems with manganese non-compliance have emerged since the previous period.

Austria reported that there was one parameter with more than 5% but less than 10% non-compliance which was arsenic in 2007.

Fact sheet 2. Drinking water in Belgium in 2005-2007

General information on Member States drinking water supply arrangements[7]

Table 2.1 General information on Belgium 2005-2007

Member State	Belgium	Brussels	Walloon	Flanders
Total population in millions	10.5 million	1.0	3.39/3.41/3.43	6.078
Number of water supply zones	189/197/196	2	111/119/118	76
Total resident population supplied	9.74 million (92.8%)	1.0 million	2.45/2.68/2.66 million	6.078
Total volume of water supplied in million m3/year	634/647/646	68	139/152/151	427
Water sources used in percentages of the total volume	Surface water: 37.65% Groundwater: 62.35%	15% 85%	24% 76%	46% 54%
National database on drinking water quality		www.leefmilieubrussel.be www.bruxellesenvironnement.be	http://environnement.wallonie.be/	www.vmm.be

The data from Belgium were submitted for the three regions separately. Were possible the individual data were recalculated to produce a national picture. The Brussels and the Walloon region both used the Excel format on the CDR EIONET site. The Flanders region used a combination of Excel format on CDR and word format. For the Flanders region not all data for the year 2005 were available, leaving some gaps in the national picture for that year.

Belgium had approximately 10.5 million inhabitants and 9.74 million were supplied by large water supply zones (> 1000 m^3/day or more than 5000 people). There were 189-197 of such water supply zones in Belgium that supplied around 642 million m^3 of water per year. Drinking water was produced from groundwater sources 62% and surface water 38%. The number of large WSZs in the Walloon region had decreased significantly (with 30%) since the previous reporting period 2002-2004.

[7] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 2.2 Information on exemptions, stricter and additional parameters

	Brussels	Walloon	Flanders
Waters exempted	Water supplies < 10 m^3/day or less than 50 people	Water supply zones supplying less than 10 m^3 a day or serving less than 50 persons, unless the water is supplied as part of a commercial or public activity.	Water supply zones supplying less than 10 m^3/ day or serving less than 50 persons, unless the water is supplied as part of a commercial or public activity.
Stricter national parameters	Conductivity and pH	pH and Al (are treated as B (chemical parameters with same value as in DWD)	Nitrite (stricter value at the tap)
Additional national parameters	P, free residual chlorine, temperature, Ca, Mg, Zn, total hardness	total hardness, CC37, free residual chlorine, P, K, temperature, Ca, Mg and Zn.	bromodichloromethane styrene xylene residual chlorine temperature Ca Mg P K total hardness Zn

Information on exemptions

In all three Belgian regions the following WSZs were exempted: water supply zones that supplied less than 10 m^3 a day or served less than 50 persons, unless the water was supplied as part of a commercial or public activity. In the Walloon region the remark was added that some people had their own well but in most cases they also had a connection to the public distribution network. For the Flanders region the remark was added that for the exempted water supplies an audit was requested at the first usage of the supply and then with a repeat every 10 years.

Stricter parameters

For the various regions stricter national parameters were reported for Conductivity and pH (Brussels), pH and aluminium (Walloon) and nitrite at the tap (Flanders region).

Additional parameters

In all three regions a number of parameters that are not in the DWD had been added to national legislation: phosphorus, free residual chlorine, temperature, calcium, magnesium, total hardness and Zinc. On top of that the Walloon region added Colony count 37 and potassium; the Flanders region also added potassium and bromodichloromethane, styrene and xylene.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD

Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. Belgium reported the use of the alternative method for Coliform bacteria and *E.coli*, which was the Colilert18/ Quantitray method.

Annual monitoring in water supply zones not compliant with the monitoring frequency

None of the WSZs in the three Belgian regions were reported to have non-compliance with the monitoring frequency as required in the DWD. This implied that the annual monitoring effort in Belgium was in full compliance with the DWD.

National summary on drinking water quality

Table 2.3.1 National summary Brussels Region

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
Enterococci	99.2	98.9	99.7
Chemical parameters			
Benzene	100	98.7	100
Chromium	100	100	99.6
Copper	100	100	99.9
Lead	99.1	98.5	98.4
Nickel	96.0	98.1	97.9
Indicator parameters			
Cl. perfringens	99.1	99.4	99.4
Iron	95.9	96.3	95.7
Manganese	100	100	99.7
Sodium	98.8	100	100
Coliform bacteria	99.1	99.7	99.0
Turbidity	99.9	100	99.4
All other DWD parameters had full compliance in the three reporting years.			

Table 2.3.2 National summary Walloon region

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	99.5	99.7	99.6
Enterococci	99.4	99.5	99.6
Chemical parameters			
Antimony	100	99.9	100
BaP	100	98.7	99.4
Bromate	100	100	99.8
Cyanide	99.7	100	100
Lead	99.0	98.2	98.6
Nickel	99.4	99.6	99.7

Nitrate	100	99.9	100
Nitrite WTP	99.9	99.9	100
Nitrite tap	99.9	99.9	100
Pesticides- ind.	99.6	97.7	100
Pesticides –total	100	99.7	100
PAH	100	97.5	99.8
Selenium	99.8	99.9	99.8
Tri and tetra	99.1	98.7	97.3
Indicator parameters			
Aluminium	100	100	100
Ammonium	100	99.9	100
Cl.perfringens	99.2	98.2	99.5
Colour	100	99.9	97.6
Conductivity	100	100	100
pH	98.7	99.7	99.9
Iron	97.8	98.1	99.0
Manganese	99.2	99.6	99.8
Odour	100	99.7	99.6
Sulphate	99.7	99.6	100
Sodium	99.5	99.4	99.9
CC22	99.5	99.6	99.6
Coliform bacteria	98.2	98.1	97.8
All other DWD parameters had full compliance in the three reporting years.			

Table 2.3.3 National summary Flanders region

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	98.9	99.6	99.7
Enterococci	99.0	99.7	99.8
Chemical parameters			
Antimony	99.9	99.9	100
Arsenic	99.4	100	100
BaP	100	100	99.7
Cadmium	100	99.9	100
Chromium	100	99.9	99.9
Copper	100	99.9	99.9
Cyanide	100	100	99.9
Fluoride	99.9	100	99.9
Lead	98.3	98.4	98.9
Mercury	100	99.9	100
Nickel	99.3	99.1	99.5
Nitrite WTP	100	99.9	99.9
Nitrite tap	100	99.9	100
PAH	100	99.9	99.9
Selenium	100	100	99.9
THM– Total	99.4	100	100

Indicator parameters			
Aluminium	99.9	100	99.9
Ammonium	99.9	100	100
Chloride	99.8	100	100
Cl.perfringens	99.1	99.9	99.8
Iron	97.7	97.8	97.8
Manganese	99.4	99.7	99.9
Sulphate	99.9	100	100
Sodium	99.8	98.3	98.5
Coliform bacteria	98.3	98.3	98.2
All other DWD parameters had full compliance in the three reporting years.			

Table 2.4 Parameters that had less than 99% compliance in the three regions in the three reporting years

	2005			2006			2007		
	BX	**WL**	**FL**	**BX**	**WL**	**FL**	**BX**	**WL**	**FL**
Microbiological parameters									
Enterococci			**X**	**X**					
E.coli			**X**						
Chemical parameters									
Benzene				**X**					
BaP					**X**				
Lead			**X**	**X**	**X**	**X**	**X**	**X**	**X**
Nickel	**X**			**X**			**X**		
Pesticides ind.					**X**				
PAH					**X**				
Tri and tetra					**X**			**X**	
Indicator parameters									
Cl.perfringens					**X**				
Colour								**X**	
pH		**X**							
Iron	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Sodium	**X**			**X**		**X**			**X**
Coliform bacteria		**X**	**X**		**X**	**X**		**X**	**X**

The parameters that mostly caused non-compliance in Belgium were: the chemical parameter lead and to a lesser extent nickel and the indicator parameters iron, coliform bacteria and sodium. In comparison to the previous reporting period 2002-2004 (with incomplete data for Belgium, see Annex II) a consistent pattern emerged as in that period the same parameters caused non-compliance at national level.

Information on product specified parameters

In all three Belgian regions the product specified parameters acryl amide, vinyl chloride and epichlorohydrin were handled in the same manner. For the three product specified parameters the concentration in water was obtained by a calculation (purity of the product used in drinking water production). Based on this calculation, it was impossible to exceed the parametric values.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones

For the three regions in Belgium the number of water supply zones that had more than 1 case of non-compliance was combined. The Flanders region had data available for 2006 and 2007 but not for 2005. The total number of non-compliant WSZs for 2005 only reflected the Brussels and Walloon region.

For 2005 the total number of WSZs was (113 Brussels and Walloon Region), for 2006 197 (three regions) and for 2007 196 (three regions).

Table 2.5 Number of WSZs in Belgium with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005*	2006	2007
	113	197	196
Microbiological parameters			
E.coli	4	1	2
Enterococci	2	3	3
Chemical parameters			
Lead	2	8	7
Nitrate	0	1	0
Nitrite	1	3	0
PAH	0	1	0
Selenium	1	1	1
Tri and tetra	0	1	1
Indicator parameters			
Cl.perfringens	0	1	1
pH	2	1	1
Iron	4	9	11
Manganese	2	1	2
Sulphate	0	1	0
Sodium	0	3	3
Coliform bacteria	10	14	14

* Flanders region not included no data are available for 2005

The parameters that caused non-compliance in most water supply zones in Belgium were the chemical parameter lead and the indicator parameters Coliform bacteria and iron.

There was a difference in the reporting for the three Belgian regions: For the Brussels and Flanders region, “non-compliance information” did not include non-compliances that had not been confirmed by re-sampling, in Wallonia, on the contrary, all non-compliances, confirmed or not, had been reported into the sheet “non-compliance information”; moreover, all the controls made by the suppliers had been reported, not only those at required frequency.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values do occured in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 2.6 Maximum (peak) values found for non-compliant parameters in Belgium

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	12-136/100 ml	0/ 100 ml
Enterococci	74-128/100ml	0/ 100 ml
Lead	45-241 ug/l	10 ug/l
Nickel	316-427 ug/l Brussels	20 ug/l
Nitrate	58.3 mg/l	50 mg/l
Nitrite	1.43 -86 mg/l	0.50 mg/l
PAH	1116 ug/l	0.1 ug/l
Selenium	10-11.8 ug/l	10 ug/l
Tri and tetra	15.2-17.6 ug/l	10 ug/l
Cl.perfringens	13-300 /100 ml	0/100 ml
Iron	522-5292 ug/l	200 ug/l
Manganese	118-758 ug/l	50 ug/l
Sulphate	289 mg/l	250 mg/l
Sodium	246-293 mg/l	200 mg/l
Coliform bacteria	64-300/ 100 ml	0/ 100 ml

Reasons for non-compliance

We can not reproduce all causes of non-compliance and the action plans MS had in this respect. We make the following observations:

Brussels region: In general the cause and remedial action was given but not always the time frame for remedial action. When non-complaint results were not confirmed during re-sampling no reason could be given and the cause of the replacement of old domestic pipes was required the water supplier could only give advice.

Flanders Region: the Region applied the same strategy as the Brussels region on re-sampling and confirmation. However, Flanders did report all cases of non-compliance and not only the ones confirmed during re-sampling. In most cases the information on causes, remedial actions and time frames for such action were given. Flanders added that many problems with sodium incompliance were caused by domestic water softeners. Walloon Region: gave causes and remedial actions that were foreseen together with a time planning.

Reporting on drinking water quality to the public

Brussels Region: Information on the quality of drinking water could be obtained from the Brussels website as mentioned in table 2.1. In the case of confirmed non-compliance the water supplier (BIWD-IBDE = the only supplier in Brussels) had to issue a letter to the consumers concerned. Walloon Region: Information to the public was given through the national service: Service public de Wallonie Département de l'Environnement et de l'Eau, Direction des eaux

souterraines. This information was without prejudice of the information made available to the consumers by their water supplier. Flanders region: The information to the public was made available through the national website.

Derogations for Belgium

No derogations had been reported for any of the three regions.

Historical data for Belgium

National summary of monitoring results for each parameter in large wsz > 5000 people. Percentages non-compliance Brussels region Belgium 1993-2004 period						
Year	1993-1995	1996-1998	1999-2001	2002	2003	2004
Parameter	No data	No parameter	No parameter	No parameter	No parameter	
Iron						5.3
Nickel						4.8
Lead						1.3
PAH						1.1
All other parameters complied in 99% or more of the samples taken						

National summary of monitoring results for each parameter in large wsz > 5000 people. Percentages non-compliance, Flanders region Belgium 1993-2004 period						
Year	1993-1995	1996-1998	1999-2001	2002	2003	2004
Parameter	No data	No data		No data		
Iron			4.5/4.2/4.4		2.5	1.4
Sodium			<1/6.4/<1		1.8	1.6
Lead					1.1	1.1
Phenols			27.0/24.6/4.3			
Fluoride			3.8/3.2/4.0			
Cyanides			<1/3.3/<1			
Pesticides			1.9/<1/<1			
Manganese			1.4/1.4/<1			
Nickel			<1/1.7/<1			
TC/Coliform bacteria			<1/<1/1.7			
Silver			<1/1.2/<1			
Potassium			1.4/1.1/<1			
Colour			<1/1.2/<1			
FS/Enterococci			<1/<1/1.1			
Hydrocarbons			1.2<1/<1			
Turbidity			<1/<1/1.2			
All other parameters complied in 99% or more of the samples taken or no data were submitted						

National summary of monitoring results for each parameter in large wsz > 5000 people. Percentages non-compliance, Walloon region Belgium 1993-2004 period						
Reporting year	1993-1995	1996-1998	1999-2001	2002	2003	2004
Parameter						No data
Residual chlorine			4.3	4.3	2.4	
Iron	2.0/2.0/2.8		2.1	2.2	2.1	
Sulphate			1.7	1.7	2.6	
Aluminium	25.0/6.4/3.8	1.4	3.3	3.7		
Manganese		2.1			2.6	
TC/Coliform bacteria	2.5/2.2/3.0		1.7	1.1		
THM	3.5/9.8/3.8	5.8	3.2			
Turbidity		1.8				
Nickel		1.5				
Pesticides	13.4/7.4/4.3	1.5				
All other parameters complied in 99% or more of the samples taken						

Total *number of water supply zones* serving more than 5000 people that exceeded the parametric value in the DWD in *more than 1 sample* Belgium 2002-2004 period									
Region/province	Brussels 2 wsz			Flanders (5 provinces)			Walloon 168 wsz		
Reporting year	2002	2003	2004	2002	2003	2004	2002	2003	2004
Parameter	**Number of WSZs with more than 1 case of non-compliance**								
FS/Enterococci			1	No data	3	2	14	19	No data
Lead			1		4	3	1	1	
Nickel			1		2	3			
SSRC/*Cl.perfringens*			1		1	1	1		
Iron			1		4	4	13	15	
Manganese			1		1	1	4	7	
TC/Coliform bacteria			1		4	5	40	31	
Temperature			1						
BaP					1			1	
Fluoride					2	1			
Ammonium					2				
FC/*E.coli*					3		10	19	
Nitrite					2		2	3	
Aluminium					2	2	11	3	
Sodium					4	3			
Copper						1			
THM							3	1	
Nitrate							5	2	
Sulphate							2	1	
pH						3	1		

Conclusions for Belgium

The parameters that mostly caused non-compliance in Belgium were: the chemical parameter lead and to a lesser extent nickel and the indicator parameters iron, coliform bacteria and sodium. In comparison to the previous reporting period 2002-2004 (with incomplete data for Belgium) a consistent pattern emerged as in that period the same parameters caused non-compliance at national level.

The parameters that caused non-compliance in most water supply zones in Belgium were the chemical parameter lead and the indicator parameters Coliform bacteria and iron. In the previous reporting period 2002-2004 the parameter Coliform bacteria caused most WSZs to fail in compliance, followed by Enterococci, *E.coli* and iron. Belgium reported that there were no parameters that caused more than 5% non-compliance.

Fact sheet 3: Drinking water in Bulgaria in 2005-2007

General information on Member States drinking water supply arrangements[8]

Table 3.1 General information on Bulgaria 2007

Member State	Bulgaria
Total population in millions	7.64
Number of water supply zones	235
Total resident population supplied	6.03 (78.9%)
Total volume of water supplied in million m^3/year	829
Water sources used in percentages of the total volume	Groundwater 40.94% Surface water 59.06%
National database on drinking water quality	Not provided

The returns from Bulgaria was submitted for the year 2007 only as there was no reporting obligation for the other years. The returns followed the format on CDR. Bulgaria had 7.64 million inhabitants and 6.03 million (78.9%) were supplied by large water supply zones. There were 235 large water supply zones that supplied on average 829 million m^3 of water per year to the population. Most drinking water was produced from surface water (59.06%) and from groundwater (40.94%).

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 3.2 Information on exemptions, stricter and additional parameters

Waters exempted	Requirements of the Directive are not applicable only for the water from the "local water sources", such as public or private wells, drillings, boreholes, springs, etc. when they are not connected to the drinking water supply system and the water is used from the facility at source or near by source.
Stricter national parameters Additional national parameters	Conductivity 2000 µS cm-1 at 20 °C Calcium 150 mg/l, Magnesium 80 mg/l Total Hardness 12 mgΣqv/l (mEq/l) Free Residual Chlorine 0.3-0.4 mg/l Phosphates 0.5 mg/l Zinc 5.0 mg/l, Uranium 0.06 mg/l Radium226 0.15 Bq/l, Total β-activity 2 Bq/l

[8] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Information on exemptions
Some types of water were exempted from the DWD but the text was not very clear on exactly which types of water were exempted.

Stricter parameters
Bulgaria had one stricter national parameter which is conductivity.

Additional parameters
There were nine additional national drinking water parameters in Bulgaria (see table 4.3.2).

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD
Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. Bulgaria applied the analytical methods given in the DWD.

Annual monitoring in water supply zones not compliant with the monitoring frequency
The obligatory monitoring effort was not met in many WSZ for a large number of both audit and check parameters. This was a significant shortcoming and the national authorities were well aware of this problem.
Of all 46 microbiological, chemical and indicator parameters 11 parameters were monitored in all 235 water supply zones: these parameters were: *E.coli*, nitrate, nitrite, N-formula, ammonium, colour, pH, manganese, odour, taste and Coliform bacteria. The national summary made it clear that the monitoring effort in Bulgaria needed to be improved as only a handful of parameters were monitored in all WSZ. Consequently all WSZ were not fully monitored in line with the DWD.There was an action plan to close the gap in monitoring and analyses. One example given was the investment in 7 dedicated laboratories that would be able to analyse for all the missing parameters and a bilateral twinning Grovernment2Government project with the Netherlands.

National summary on drinking water quality

Table 3.3 National summary Bulgaria 2007

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli			99.1%
Enterococci			99.1%
Chemical parameters			
Nitrate			98.8%
Nitrite WTP			100%
Nitrite tap			100%
Indicator parameters			
Aluminium			99.8%
Ammonium			100%
Cl.perfringens			99.9%
Colour			99.8%

pH	100%
Iron	99.3%
Manganese	97.5%
Odour	99.9%
Oxidisability	99.9%
Sulphate	99.7%
Taste	100%
CC22	100%
Coliform bacteria	97.1%
Turbidity	98.7%
All other DWD parameters had full compliance in the 2007 reporting year	

Table 3.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Chemical parameters			
Nitrate			**X**
Indicator parameters			
Manganese			**X**
Coliform bacteria			**X**
Turbidity			**X**

With the exception of the parameters manganese, nitrate, Coliform bacteria and turbidity the level of non-compliance was low. However, we have to bear in mind that for some parameters not many samples had been taken and analysed and this could represent a misleading picture.

Information on product specified parameters
No mention was made of the product specified parameters.

Information on non-compliance of drinking water in water supply zones
Level of non-compliance in the water supply zones
Per parameter all WSZ that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in Bulgaria was 235.

Table 3.5 Number of WSZs in Bulgaria with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
			235
Microbiological parameters			
E.coli			**45**
Enterococci			**8**
Chemical parameters			
Nitrate			**20**
Nitrite			**4**
Indicator parameters			
Aluminium			**1**
Ammonium			**1**
Colour			**12**
pH			**1**
Iron			**17**
Manganese			**11**
Odour			**3**
Oxidisability			**2**
Sulphate			**1**
Taste			**3**
CC22			**2**
Coliform bacteria			**99**
Turbidity			**25**

With the restrictions already mentioned before with respect to the monitoring effort we noticed that Coliform bacteria and *E.coli* caused non-compliance in the highest number of WSZs. The microbiological parameters *E.coli* and Enterococci both caused non-compliance in WSZs. Chemical parameters that caused non-compliance were nitrate and nitrite and indicator parameters that caused non-compliance were besides the Coliform bacteria, colour, iron, manganese, turbidity and in a few WSZS aluminium, ammonium, pH, odour, oxidisability, sulphate, taste and CC22.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 3.6 Maximum (peak) values found for non-compliant parameters in Bulgaria

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	1-224/100 ml	0/ 100 ml
Enterococci	3-24/100 ml	0/ 100 ml
Nitrate	61-128 mg/l	50 mg/l
Nitrite	0.55-1.56 mg/l	0.50 mg/l
Aluminium	250-350 ug/l	200 ug/l
Ammonium	0.67-1.3 mg/l	0.50 mg/l
Iron	260-986 ug/l	200 ug/l
Manganese	118-2910 ug/l	50 ug/l
Oxidisability	5.7 mg/l O2	5.0 mg/l O2
Sulphate	380 mg/l	250 mg/l
Coliform bacteria	1-240/100 ml	0/ 100 ml

Reasons for non-compliance

We can not reproduce all causes of non-compliance and the action plans MS had in this respect. We make the following observations:

- Causes for non-compliance were always given.
- Planned remedial actions were always given.
- Time frames were always given.

Reporting on drinking water quality to the public

Information was supplied by the Ministry of Health and at the 28 Regional Inspectorates. Information was also made available at press conferences, national seminars and conferences.

Derogations for Bulgaria

There were no derogations in place in Bulgaria.

Historical data for Bulgaria

This was the first returns submitted to the EC by Bulgaria.

Conclusions for Bulgaria 2007

The obligatory monitoring effort was not met in many WSZ for a large number of both audit and check parameters. This was a significant shortcoming and the national authorities were well aware of this problem.

The national summary made it clear that the monitoring effort in Bulgaria needed to be improved as only a handful of parameters were monitored in all WSZ. Consequently all WSZ were not fully monitored in line with the DWD.

With the exception of the parameters manganese, nitrate, Coliform bacteria and turbidity the level of non-compliance was low. However, we have to bear in mind that for some parameters not many samples had been taken and analysed.

With the restrictions we already mentioned before with respect to the monitoring effort we noticed that Coliform bacteria and *E.coli* caused non-compliance in the highest number of WSZs.

The microbiological parameters *E.coli* and Enterococci caused non-compliance in WSZs. Chemical parameters that caused non-compliance in WSZs were nitrate and nitrite and indicator

parameters that caused non-compliance were besides the Coliform bacteria, colour, iron, manganese, turbidity and in a few WSZS aluminium, ammonium, pH, odour, oxidisability, sulphate, taste and CC22.

There were no historical data available for Bulgaria.

Bulgaria did not report any parameters with more than 5% non-compliance.

Fact sheet 4: Drinking water in the Czech Republic in 2005-2007

General information on Member States drinking water supply arrangements[9]

Table 4.1 General information Czech Republic 2005-2007

Member State	Czech Republic
Total population in millions	10.4 million
Number of water supply zones	279
Total resident population supplied	7 581 080 (72.72%)
Total volume of water supplied in million m^3/year	553 million m^3 per year
Water sources used in percentages of the total volume	Groundwater 37% Surface water 32% Mix of groundwater and surface water 31%
National database on drinking water quality	**http://www.szu.cz/tema/zivotni-prostredi/monitoring-pitne-vody**

The Czech Republic prepared the 2005-2007 return on the basis of the questionnaire 95/337/EEC, as this was still the existing legal document for reporting and according to the Czech authorities the European Commission did not make a clear decision to use another (new) format such as the Guidance Document. Some of the information was submitted in Excel format in the CDR on the EIONET site. However, a lot of textual information was made available as well in Czech language and in a French translation.

The Czech Republic had 10.4 million inhabitants and 7.6 million (73%) were supplied by large water supply zones (> 1000 m^3/day or more than 5000 people). There were 279 of such water supply zones in the Czech Republic that supplied around 553 million m^3 of water per year. Drinking water was produced from groundwater sources 37%, surface water 32% and a mixture of both sources 31%. This was the second time the Czech Republic reports to the EC on the quality of drinking water.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

[9] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Table 4.2 Information on exemptions, stricter and additional parameters

Waters exempted	All water supply zones are covered as per DWD 98/83/EC, even those supplying less than 50 people. Only private wells supplying one household with no commercial use are exempted.
Stricter national parameters in accordance with Decree 252/2004 Sb. Czech Republic	TOC 5 mg/l + no abnormal change CC22 200/500/ml + no abnormal change Turbidity 5 ZF (NTU) Conductivity 125 mS/m (= 1250 µScm^{-1}) Copper 1000 µg/l (= 1 mg/l) Colour 20 mg/l Pt COD_{Mn} (oxidisability) 3 mg/l (permanganate value) Chloride 100mg/l
Additional national parameters	1. Abioseston (10 %) 2. Total algae (50 /ml) 3. Live algae (0/ml) 4. Beryllium-Be (2 µg/l) 5. Magnesium (Mg=10 mg/l – minimum if water is desalinated) 6. Free chlorine (0.3 mg/l) 7. Chlorite (ClO2-) (200 µg/l) 8. Microcystin-LR (1 µg/l) 9. Ozone (50 µg/l) 10. Silver (50 µg/l) 11. Tetrachlor**o**ethene (10 µg/l) 12. Calcium (Ca) (30 mg/l – minimum if water is desalinated) 13. Calcium and magnesium (recommended value Ca + Mg= 2-3,5 mmol/l) 14. Chloroform as individual parameter (30 µg/l) beside total THMs.

Information on exemptions

All water supply zones in the Czech Republic were covered by the DWD and none were exempted from EU and national legislation. The only exception was private wells that supplied water to one household and not being part of a commercial activity.

Stricter parameters

There were 8 additional parameters in national legislation (see table 4.2)

Additional parameters

There were 14 additional parameters in national legislation (see table 4.2).

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD

Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. In the Czech Republic only certified (accredited or

authorized) laboratories were allowed to monitor drinking water. These laboratories used the methods which are specified in decree 252/2004 annex 6 (Czech legislation). This decree is in full compliance with the DWD 98/83/EC for all microbiological parameters. The decree also allows for Escherichia coli and coliform bacteria to use Colilert®-18/Quanti-Tray ® as alternative method.

Annual monitoring in water supply zones not compliant with the monitoring frequency

In the reporting format 95/337/EEC used for the Czech returns there was no specific question on the compliance with the monitoring frequency, however, but the Czech Republic decree required the same monitoring and sampling frequency for each WSZ as per number of residents as given in the DWD. The local public health authorities checked if the operators of water supply zone fulfilled their obligation or not – if not, operators were asked to provide enough analyses otherwise they were fined.

National summary on drinking water quality

Table 4.3 National summary Czech Republic 2005-2007

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	99.7	99.7	99.8
Enterococci	99.5	99.5	99.7
Chemical parameters			
Antimony	99.8	100	100
Aresenic	99.6	99.8	99.3
Lead	99.7	100	100
Nickel	99.7	99.8	99.8
Nitrate	99.6	99.4	99.6
Nitrite	100	100	100
Tetrachloroethane	100	99.9	99.8
Indicator parameters			
Aluminium	99.2	99.4	99.6
Ammonium	100	99.9	100
Cl.perfringens	99.9	99.7	99.8
Colour	99.3	99.6	99.5
pH	98.8	99.2	99.1
Iron	92.8	92.9	93.9
Manganese	98.0	97.3	98.3
Odour	99.7	99.6	99.6
Sulphate	99.8	99.8	99.9
Taste	99.7	99.7	99.8
CC22	87.5	86.4	97.9
Coliform bacteria	98.5	98.8	99.2
TOC	99.8	99.9	99.9
Turbidity	99.4	99.5	99.5
All other DWD parameters had full compliance in the three reporting years.			

Additional information on individual pesticides compliance levels at national level

Pesticide(s)	*2005*	*2006*	*2007*
Hexazinon	99.6	100	100
Desethylatrazine	99.1	99.7	100
Atrazine	96.2	99.3	99.7
Terbutylazine	100	99.6	100

Table 4.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Chemical parameters			
Atrazine	**X**		
Indicator parameters			
pH	**X**		
Iron	**X**	**X**	**X**
Manganese	**X**	**X**	**X**
CC22	**X**	**X**	**X**
Coliform bacteria	**X**	**X**	

The parameters that mostly caused non-compliance in the Czech Republic were one of the chemical parameters-the pesticide atrazine- in 2005, the indicator parameters iron, manganese and Colony count at 22 and to a lesser extent Coliform bacteria and pH.

Information on product specified parameters

No information was provided as this question was not in the reporting format used. However, a few analyses for acrylamide and vinylchloride were mentioned in the tables with analytical results.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones

Per parameter all WSZ that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in the Czech Republic was 279

Table 4.5 Number of Water Supply Zones in the Czech Republic with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	279	279	279
Microbiological parameters			
E.coli	7	5	0
Enterococci	2	4	1
Chemical parameters			
Arsenic	1	1	2
Lead	1	0	0
Nickel	1	0	0
Nitrate	7	9	7
Nitrite	1	0	0

Atrazine	2	1	0
Desethylatrazine	0	1	0
Terbutylazine	0	1	0
Tetrachloroethene	0	0	1
Indicator parameters			
Aluminium	9	7	4
Ammonium	2	1	0
Colour	19	8	14
Cl.perfringens	1	1	1
pH	23	18	20
Iron	142	141	120
Manganese	31	36	27
Odour	8	9	13
Sulphate	1	1	1
Taste	7	11	7
CC22	34	33	35
Coliform bacteria	39	36	20
TOC	1	0	0
Turbidity	15	13	11

The parameters that caused non-compliance in most water supply zones in the Czech Republic were for the microbiological parameters *E.coli* and Enterococci in a small number of WSZs and not in all three years. For the chemical parameters it was mostly nitrate and for the indicator parameters (most problems were caused by the indicator parameters), iron, manganese, Coliform bacteria, Colony count at 22 and pH and all organoleptic parameters taste, odour, colour and turbidity. The results were comparable to the previous reporting period and especially with last year (2004) of that period.

Maximum values for non-compliant parameters

The reporting format 95/337/EEC does not ask for peak or maximum values found in drinking water quality monitoring.

Reasons for non-compliance

In the textual document there was a very general description of what was required and done in the case of non-compliance, but this was not made specific in the non-compliance tables per WSZ. Timeframes were not given. In general there was an obligation in the Czech Republic for water suppliers to inform the public in the case of health hazards.

Reporting on drinking water quality to the public

There was no information on how the public could get access to data on the quality of their drinking water. However, this type of information is not requested in the 95/337/EEC reporting format.

Derogations for the Czech Republic

Table 4.6 derogations in place in the Czech Republic in the 2005-2007 period

Name WSZ	Parameter	Unit	Derogated value	Start date	End date
Horažďovice	As	µg/l	20	24-6-2004*	1-6-2010

Second derogation granted in 2007					
Vodovod Sedlčany	As	µg/l	14	31-12-2004*	30-6-2005
Heřmanův Městec	Atrazine	µg/l	0.50	22-5-2007*	25-5-2010
Šumperk. skupinový vodovod	Atrazine	µg/l	0.30	19-6-2005*	19-6-2008
Choceň	Atrazine	µg/l	0.30	20-2-2004*	20-2-2007
Vodovod skupinový Úvaly	NO3	mg/l	80	30-9-2004*	31-12-2009
Second derogation granted in 2007					
Vodovod Hustopeče-Vranovice-VZ Vranovice	NO3	mg/l	80	5-8-2004*	31-12-2006
Frýdlant - úpravna vody Frýdlat	NO3	mg/l	70	24-9-2004*	24-9-2007
Frýdlant - úpravna vody Frýdlat	NO3	mg/l	70	25-9-2007*	24-9-2010
Vodovod Příbram-město	Terbutylazine	µg/l	0.50	19-10-2006*	30-9-2009
Vodovod Příbram-Svazek obcí	Terbutylazine	µg/l	0.50	19-10-2006*	30-9-2009

* first derogations

In the period 2005-2007 eleven first derogations were reported for the Czech Republic. Two derogations were for arsenic, three for atrazine, four for nitrate and two for terbutylatrazine. For two WSZs second derogations were granted in 2007.

Historical data for the Czech Republic

National summary of monitoring results for each parameter in large wsz > 5000 people. Percentages non-compliance Czech Republic 2002-2004 period			
Parameter	2002 % non-compliance	2003 % non-compliance	2004 % non-compliance
Iron	8.9	7.3	7.1
Nitrate	3.7	2.0	1.5
Sulphate	1.9	2.0	1.1
TC/coliform bacteria	2.7	1.7	1.4
Manganese			3.4
Colony count 22			1.9
BaP	1.3	2.9	
TOC	3.3		
VC	1.2	1.3	

THM	1.7		
FS/Enterococci	1.1		
1.2-dichloroethane		1.1	
pH	1.4		
Total pesticides		1.4	
Mercury		1.2	
Trichloroethene	1.3		
Individual pesticides			
2,4-D	11.3	12.31	
Aldicarb		[100] only one sample	
Atrazine	3.3	23.0	5.9
Bentazon	6.2		
Cyanazine	5.6		
Endosulfan	1.9		
Dichlorprop	4.3	6.2	
Heptachlor		1.2	
Hexachlorbenzene		1.2	
Lindane		2.2	
MCPA		6.2	1.1
Mecoprop	4.8	2.6	
Methoxychlor		2.0	2.9
Pentachlorphenol	71.4	29.4	
Simazine	7.2	13.4	
All other parameters complied in 99% or more of the samples taken in the Czech Republic			

Total *number of water supply zones* serving more than 5000 people that exceeded the parametric value in the DWD in *more than 1 sample* Czech Republic 2002-2004 period			
	2002	2003	2004
Number of WSZ	268	268	268
Parameter	**Number of wsz with more than 1 case of non-compliance**		
Iron	107	119	128
Manganese	41	33	41
TC/Coliform bacteria	41	32	32
pH	24	20	23
Nitrate	20	15	14
FS/Enterococci	24	19	5
Turbidity	17	17	14
Colour	10	12	18
Colony count 22	3	7	24
BaP	5	13	1
Sulphate	7	6	5
SSRC/*Clostridium perfringens*	9	2	5
Odour	2	2	8
FC/*E.coli*	7	4	2
Aluminium	6	3	4
Antimony	4	3	
Ammonium	3	2	1

Mercury	2	7	1
1.2-dichloroethane	2	4	1
Arsenic	3	3	1
Nickel	3	2	1
Cadmium	3	3	
Lead	3	3	
Trichloroethene	3	2	
THM	3	1	
TOC	2	2	
Tetrachloroethene	2	2	
Selenium	2	1	
Oxidisability	2	1	
Taste			2
Benzene		1	
Vinyl Chloride		1	
Total pesticides		1	
Individual pesticides			
Lindane	1	5	
Methoxychlor	3	4	1
Simazine	2	1	
2.4 D	2	1	
Pentachlorphenol	4	1	
Heptachlor		3	
Atrazine		3	2
Hexachlorobenzene		3	

Conclusions for the Czech Republic

As the questionnaire 95/337/EC was used for the reporting not all formats in the Guidance Document were used, this resulted in "missing" information, even though the use of the previous reporting format was legally correct. The parameters that mostly caused non-compliance in the Czech Republic were one of the chemical parameters-the pesticide atrazine-in 2005. The indicator parameters that caused non-compliance were iron, manganese and Colony count at 22 and to a lesser extent Coliform bacteria and pH. The parameters that caused non-compliance in most water supply zones in the Czech Republic were for the microbiological parameters *E.coli* and Enterococci in a small number of WSZs and not in all three years. The chemical parameter that mostly caused non-compliance was nitrate and for the indicator parameters (most problems were caused by the C parameters), iron, manganese, Coliform bacteria, Colony count at 22 and pH and all organoleptic parameters taste, odour, colour and turbidity.

In comparison to the previous reporting period 2002-2004 a consistent pattern emerged as in that period the same parameters caused non-compliance at national level. However, the non-compliance with the sulphate parameter seemed to be solved and the list of non-compliant pesticides was much shorter than the previous period. The parameters that caused non-compliance were predominantly indicator parameters: iron, manganese, Colony count 22, Coliform bacteria and pH. In a small number of water supply zones the microbiological parameters *E.coli* and Enterococci caused non-compliance. The results for the WSZs were comparable to the previous reporting period and especially with last year (2004) of that period.

The Czech Republic had derogations in place for arsenic, atrazine, nitrate and terbutylazine.

The Czech Republic reported one indicator parameter with more than 10% non-compliance with the national standards (there is no numerical value in the DWD) which was Colony count 22 in 2005 and 2006 and one parameter with more than 5% but less than 10% non-compliance which was iron in 2005, 2006 and in 2007.

Fact sheet 5: Drinking water in Cyprus in 2005-2007

General information on Member States drinking water supply arrangements[10]

Table 5.1 General information Cyprus 2005-2007 period

Member State	Cyprus
Total population in millions	0.778 million
Number of water supply zones	22
Total resident population supplied	778133
Total volume of water supplied in million m^3/year	86.1/85.4/86.3 (average 85.9)
Water sources used in percentages of the total volume	Groundwater 22.4/16.0/19.9 (average 19.4) Surface water 29.6/41.2/41.3 (average 37.4) Coastal water (seawater) 36.0/30.7/31.3 (average 32.7) Artificial Groundwater recharge 12.0/12.1/7.4 (average 10.5)
National database on drinking water quality	www.moh.gov.cy/moh/mphs/phs.nsf

The returns from Cyprus was submitted for the three reporting years 2005, 2006 and 2007 and followed the format on CDR. Cyprus had 0.778 million inhabitants. There were 22 large water supply zones that supplied on average 85.9 million m^3 of water per year to the population. Cyprus made use of desalinated sea water to meet the demands for drinking water in a country that knows periods of serious drought problems. Other sources of water were surface water from reservoirs (37.4%) and groundwater 19.4%. There was also artificial recharge of the groundwater 10.5%.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 5.2 Information on exemptions, stricter and additional parameters

Waters exempted	No waters are exempted
Stricter national	No stricter national parameters
Additional national parameters	No additional national parameters

Information on exemptions

Cyprus did not mention any type of water supply zones being exempted either on the basis of size or on the basis of the type of usage.

Stricter parameters

There were no stricter national parameters in Cyprus.

[10] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Additional parameters
There were no additional parameters in Cyprus.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD
Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. Alternative methods that were used in Cyprus: *E.coli* and coliform bacteria are Colilert 18 Quanti-Tray APHA 9223 AWWA. Information on equivalence testing had been mentioned by Cyprus.

Annual monitoring in water supply zones not compliant with the monitoring frequency
In general the number of samples taken was lower than the number of samples required in accordance with the DWD. In addition to the shortage of samples taken Cyprus reports that for a large number of parameters the monitoring frequency had not been met, such as dichloroethane, ammonium, benzene, BaP, boron, cadmium, chloride, chromium, colour, conductivity, fluoride, pH, lead, nickel, nitrate, nitrite, odour, oxidisability, PAH, pesticides, sodium, sulphates, taste, tri and tetra, THM and turbidity. The non-compliance in monitoring effort was significant and affected a large number of water supply zones.

The explanation for the non-compliance in monitoring frequency was that, the monitoring for the years 2005-2007 was designed in the most cost effective way taking into consideration previous results as well as the provisions of the Directive 98/83/EC such as §2-Audit monitoring and Note 6 of Annex II, the fact that previous monitoring had shown good water quality, the good results of monitoring under the WFD and the application of the risk-management approach for the revision of the DWD. Also it was mentioned that gaps in monitoring indicator parameters was not serious for human health. Another note stated that antimony, arsenic, bromate, copper, cyanide, mercury, selenium, aluminium, iron, manganese, tritium and total indicative dose were not monitored during the period 2005-2007 due to technical difficulties or low possibility of occurrence.
So in short there were five reasons for non-compliance with the monitoring frequency:

- Proven good quality in the past
- Monitoring programme had been designed in the most cost effective way, taking into account 98/83/EC Annex II, note 6
- Monitoring under WFD proofed good water quality
- Shortfalls in monitoring organoleptic parameters was not considered serious threat to human health
- Technical difficulties.

National summary on drinking water quality
When assessing the data on compliance levels in the national summary for Cyprus it should be realized that most of the DWD parameters were not monitored in all (22) WSZ. *Ps. aeruginosa* was monitored in Cyprus because of the country specific situation where many drinking water tanks were used. The parameter was monitored in the outlet of the drinking water tanks.

Table 5.3 National summary Cyprus 2005-2007 period

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	99%	99%	99%
Enterococci	**97%**	**97%**	**97%**
Chemical parameters			
Boron	100%	99%	100%
Fluoride	**94%**	**98%**	100%
Nitrate	100%	100%	99%
Pesticides	100%	100%	**93%**
Indicator parameters			
Chloride	**82%**	**90%**	**96%**
Sulphate	99%	**98%**	99%
Sodium	**94%**	**94%**	**97%**
CC22	**93%**	**96%**	**86%**
Coliform bacteria	**89%**	**85%**	**86%**
Ps.aeruginosa (outlet water tanks)	**97%**	99%	**98%**
All other DWD parameters had full compliance in the three reporting years.			

Additional information on individual pesticides compliance levels at national level

Pesticide	***2005***	***2006***	***2007***
Methidathion	100%	100%	**95%**

The microbiological parameter Enterococci caused more than 1% non-compliance in all three reporting years. The chemical parameter fluoride caused non-compliance in 2005 and 2006 and total and individual pesticides (methidathion) in 2007. The indicator parameters that caused more than 1% non-compliance were chloride, sodium, Coliform bacteria in all three years and sulphate in 2006. *Ps.aeruginosa* caused non-compliance in the outlet of water tanks in 2005 and 2007. The responsible authorities would like to add that the non-compliance for pesticides related to a very specific case and was a bit of an unusual problem for Cyprus.

Table 5.4 Parameters that had less than 99% compliance

	2005	**2006**	**2007**
Microbiological parameters			
Enterococci	**X**	**X**	**X**
Chemical parameters			
Fluoride	**X**	**X**	
Pesticides			**X**
Methidathion			**X**
Indicator parameters			
Chloride	**X**	**X**	**X**
Sulphate		**X**	
Sodium	**X**	**X**	**X**
CC22	**X**	**X**	**X**
Coliform bacteria	**X**	**X**	**X**
Ps.aeruginosa (outlet water tanks)	**X**		**X**

Information on product specified parameters
No information was given other than that no suitable methods existed [that is analytical methods].

Information on non-compliance of drinking water in water supply zones
Level of non-compliance in the water supply zones
Per parameter all WSZs that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in Cyprus was 22. It should be noted that not all DWD parameters were (sufficiently) monitored in all WSZs. Both microbiological parameters *E.coli* and Enterococci caused non-compliance in a significant number of WSZs (see table 4.5.5). The chemical parameters that caused most non-compliance in WSZs were fluoride, boron and nitrate and in 2007 in one WSZ by pesticides. The non-compliance caused by chemical parameters was in a few WSZs. The indicator parameters that caused non-compliance were Coliform bacteria and chloride. In a few WSZs the non-compliance was caused by sodium, CC22, *Ps. aeruginosa* and sulphate.

Table 5.5 Number of WSZs in Cyprus with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	22	22	22
Microbiological parameters			
E.coli	7	8	7
Enterococci	13	13	14
Chemical parameters			
Boron		1	
Fluoride	2	2	
Pesticides total			1
Methidathion			1
Nitrate			1
Indicator parameters			
Chloride	7	8	4
Sulphate	1	1	1
Sodium	2	2	2
CC22	2	2	4
Coliform bacteria	16	19	18
Ps.aeruginosa	2	1	3

Maximum values for non-compliant parameters
Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 5.6 Maximum (peak) values found for non-compliant parameters in Cyprus

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	1-200/ 100 ml	0/ 100 ml
Enterococci	1-100/ 100 ml	0/ 100 ml
Fluoride	2-3 mg/l	1.5 mg/l
Nitrate	58 mg/l	50 mg/l
Total pesticides	1 ug/l	0.50 ug/l
Chloride	194-542 mg/l	250 mg/l
Sulphate	261-336 mg/l	250 mg/l
Sodium	220-330 mg/l	200 mg/l
Coliform bacteria	1-201 / 100 ml	0/ 100 ml
Ps.aeruginosa	100 /250ml (water from tanks)	0/250 ml

*The maximum values for Cyprus included also the compliant results..

Reasons for non-compliance

We can not reproduce all causes of non-compliance and the action plans MS had in this respect. We make the following observations: the reasons for non-compliance were always given, together with remedial action planned if any and timeframe. The non-compliance pesticides was caused by incidental pollution, and non-compliance with chloride and sodium were due to natural conditions and the microbiological non-compliance was caused by external pollution.

Reporting on drinking water quality to the public

The information source mentioned was the national website.

Derogations for Cyprus

No derogations were in place in Cyprus in the 2005-2007 period.

Historical data for Cyprus

This was the first returns submitted by Cyprus so there were no historical data to compare.

Conclusions for Cyprus

Not all DWD parameters were (sufficiently) monitored in all WSZs.

The microbiological parameter Enterococci caused more than 1% non-compliance in all three reporting years. The chemical parameter fluoride caused non-compliance in 2005 and 2006 and total and individual pesticides (methidathion) in 2007. The indicator parameters that caused more than 1% non-compliance were chloride, sodium, Coliform bacteria in all three years and sulphate in 2006. *Ps.aeruginosa* caused non-compliance in the outlet of water tanks in 2005 and 2007. The responsible authorities did like to add that the non-compliance for pesticides related to a very specific case and was a bit of an unusual problem for Cyprus.

Both microbiological parameters *E.coli* and Enterococci caused non-compliance in a significant number of WSZs. The chemical parameters that caused most non-compliance in WSZs were fluoride, boron, nitrate and in 2007 in one WSZ by pesticides. The non-compliance caused by chemical parameters was in a few WSZs. The indicator parameters that caused non-compliance were Coliform bacteria and chloride. In a few WSZs the non-compliance was caused by sodium, CC22, *Ps. aeruginosa* and sulphate.

The DWD parameters that most often caused non-compliance in Cypriot drinking water were, the microbiological parameters *E.coli* and Enterococci and (*Ps. Aeruginosa* for drinking water supplied through water tanks), the chemical parameter fluoride, but most of all the indicator parameters Coliform bacteria, chloride, sodium and Colony count 22. There was an incident with pesticides in 2007, which according to the responsible authorities was non-typical for Cyprus.

There were three parameters in Cyprus with more than 10% non-compliance, chloride in 2005, CC22 in 2006 (against national value) and Coliform bacteria in 2005, 2006 and in 2007. There were five parameters with more than 5% but less than 10% non-compliance, fluoride in 2005, pesticides in 2007, chloride in 2006, sodium in 2005 and 2006 and CC22 in 2005 (against national value).

Fact sheet 6: Drinking water in Denmark in 2005-2007

General information on Member States drinking water supply arrangements[11]

Table 6.1 General information on Denmark 2005-2007 period

Member State	Denmark
Total population in millions	5.4
Number of water supply zones	237
Total resident population supplied	No information (in 2002-2004 this was 3.5 million) = 64.8% of the total population.
Total volume of water supplied in million m^3/year	236
Water sources used in percentages of the total volume	Groundwater > 99% Surface water <1%
National database on drinking water quality	www.geus.dk

Denmark submitted the returns for the years 2005, 2006 and 2007. Denmark used the Excel format on the CDR EIONET site and the data were submitted in the format of the Guidance Document. There were 5.4 million people in Denmark. There was no information available at national level on the number of people supplied by the large water supply zones that were reported on to the EC. There were 237 large water supply zones that supplied 236 million m^3 per year. Nearly all drinking water in Denmark was produced from groundwater.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 6.2 Information on exemptions, stricter and additional parameters in Denmark

Waters exempted	No water supply zones were exempted in Denmark.
Stricter national parameters	Clostridium perfringens 0/50 ml, Arsenic 5 µg/l 1,2-dichloroethane 1 µg/l, Nitrite 0,1 mg/l Sum of volatile organic chlorine compounds)* 3 µg/l, Trihalomethanes – total 25 µg/l, Ammonium 0,05 mg/l, Colour 5 mg Pt/l, Conductivity should at least be 30 mS/m, Hydrogen ion conc. (pH) 7-8,5, Sodium 175 mg/l, Colony count 22 ºC 200/ml, NVOC (Non-Volatile-Organic-Carbon) 4 mg/l

[11] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Additional parameters	national	Barium 700 µg/l, silver 10 µg/l, tin 1500 µg/l zinc 3000/5000 µg/l, chlorite 50 µg/l, chlorate 50 µg/l, sum of chlorite and chlorate 50 µg/l,volatile organic chlorine compounds 1 µg/l, chlorobenzenes mono-, di- og tri- 1 µg/l, alkylbenzenes 1 µg/l, naftalene 2 µg/l,MTBE 5 µg/l,1,2-dibromoethane 0.01 µg/l, total oil 10 µg/l, fluoranthene, aldrin, dieldrin, heptachlor, heptachloroepoxid 0.03 µg/l, sum of octylphenol and nonylphenol 20 µg/l, other phenols 0.5 µg/l, pentachlorophenol 0.01 µg/l, other chlor phenols 0.1 µg/l, DEHP 1 µg/l, sum of other phtahalates 5 µg/l anionic detergents 100 µg/l, acrylonitrile 0.1 µg/l formaldehyde 50 µg/l, styrene,1 µg/l, temperature should not be more than 12 ºC at the taps, dry residual 1500 mg/l. Calcium should not be more than 200 mg/l, magnesium 50 mg/l, water hardness, should be between 5-30dGH, bicarbonate should be more than 100 mg/l, phosphor 0.15 mg/l, oxygen minimum 5 mg/l, aggressive carbon dioxide 2 mg/l, hydrogen sulphide 0.05 mg/l, methane 0.01 mg/l chlorine - free and total (The content should be minimized, while respecting microbiological requirements), Colony count at 37 ºC 20/ml.

* This parameter included the sum of di- and trichloromethane, dichloroethenes, 1.2-dichloroethane, trichloroethene and trichloroethanes, tetrachloroethene and tetrachloroethanes.

Information on exemptions

There were no water supply zones exempted in Denmark. Also small water supply zones serving less then 50 persons had to meet the quality criteria for drinking water.

Stricter parameters

Denmark had many (13) stricter national values for DWD parameters (see table 4.6.2 above). NVOC was used as a substitute for TOC.

Additional parameters:

Denmark had a list of 40 additional national parameters in national legislation for drinking water. The parameters and their national values are presented in table 4.6.2 above.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD

Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. Denmark used the microbiological methods mentioned in the DWD and in addition they used the Colilert method for *E.coli* and Coliform bacteria.

Annual monitoring in water supply zones not compliant with the monitoring frequency

Denmark had not provided information on the annual monitoring in the water supply zones. In Denmark the municipalities (98 municipalities) were responsible for controlling the quality of drinking water and they were also responsible for the monitoring. The Agency for Spatial and

Environmental Planning (The agency had the overall responsibility for drinking water regulation in Denmark) was confident that the municipalities meet their obligations.

The monitoring effort per WSZ was not clear and could not be fully judged. Denmark did not monitor nitrite at the tap, because nitrite levels ex-water works were generally lower than 0.1 mg NO2/l. Denmark did not test for PAH if catchment areas were not polluted with oil, tar of asphalt products. Denmark did not report on pesticides as there was 100% compliance for the total pesticides parameter in the reporting period. Denmark reported that the parameter Enterococci was only analysed in cases where *E.coli* was found in drinking water. The major shortcoming in Danish data was the fact that reporting was not done on an annual basis. In general Denmark did not sample at the tap but ex-works and in the distribution system.

National summary on drinking water quality in Denmark 2005-2007

Table 6.3 National summary Denmark 2005-2007

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	99.6	99.8	99.7
Enterococci*	n.i.	n.i.	n.i.
Chemical parameters			
Arsenic	92.9	95.7	96.3
Copper	100	100	98.3
2,6-Dichlorbenzamid	100	100	99.6
Nitrite WTP	100	99.3	100
Indicator parameters			
Ammonium	73.6	76.4	75.8
Chloride	100	100	99.8
Colour	96.5	95.7	96.7
Conductivity	100	97.9	97.8
pH	100	99.6	99.8
Iron	98.8	98.1	96.5
Manganese	100	99.2	96.8
Odour	91.8	96.5	97.3
Taste	100	100	99.5
CC22	99.2	99.0	97.3
Coliform bacteria	95.7	93.3	88.0
TOC**	96.7	99.2	98.2
Turbidity	100	96.9	93.6
All other DWD parameters had full compliance in the three reporting years.			

* The parameter Enterococci was analysed 10 times for the three reporting years together. This was on average 3 analyses per year for the whole Member State. DK only analysed for Enterococci when *E.coli* was found in drinking water.
** Denmark analysed NVOC (Non-Volatile-Organic-Carbon) in stead of TOC. The difference between the two parameters was the possible content of volatile organic substances, e.g. benzene or volatile organic chlorine compounds.

Denmark reported against stricter national value e.g. for arsenic and for ammomium.

Table 6.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Chemical parameters			
Arsenic	X	X	X
Copper			X
Indicator parameters			
Ammonium	X	X	X
Colour	X	X	X
Conductivity		X	X
Iron	X	X	X
Manganese			X
Odour	X	X	X
CC22			X
Coliform bacteria	X	X	X
NVOC/TOC	X		X
Turbidity		X	X

Both microbiological parameters had more than 99% compliance at national level. But there was very limited information on the microbiological parameter Enterococci as it was only analysed when *E.coli* was present. The chemical parameter arsenic caused more than 1% non-compliance in all three reporting years and copper in 2007, the indicator parameters ammonium, colour, odour and Coliform bacteria in all three years and turbidity, conductivity and NVOC/TOC in two of the three years and manganese and CC22 in one of the years.

Information on product specified parameters

Vinyl chloride was analysed by Denmark, but acryl amide and epichlorohydrin were not analysed. There was no additional information available on the last two product specified parameters.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones

Per parameter all WSZ that had more than 1 case of non-compliance in 2005/2006/2007 are calculated. The total number of WSZs in Denmark is 237.

Table 6.5 Number of WSZs in Denmark with more than 1 case of non-compliance for the various parameters in the DWD. See note.

Total number of WSZs	2005	2006	2007
	237	237	237
Microbiological parameters			
E.coli	3		
Enterococci	?		
Chemical parameters			
Arsenic	2		
Indicator parameters			
Ammonium	20		
Colour	3	13	7
Iron	19		
Manganese	5		
Odour	3	12	13
Conductivity	8		
CC22	9		
Coliform bacteria	45		
Taste	0	0	2
TOC	2		
Turbidity	4		

Note to the table 6.5. Because Denmark reported on the three years combined and not for each year separately the data were presented as such. For colour, odour and taste more detailed information was given. There was a need for more information on Enterococci analyses and results.

The parameters that most often caused non-compliance in water supply zones were, for the microbiological parameters *E.coli*, in a small number of WSZs, for the chemical parameters arsenic causes non-compliance in 2 WSZs. Most frequent non-compliance was caused by a number of indicator parameters, Coliform bacteria, ammonium, iron and organoleptic parameters colour, odour, conductivity and CC22.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 6.6 Maximum (peak) values found for non-compliant parameters in Denmark

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	1-8/100 ml	0/ 100 ml
Enterococci		0/ 100 ml
Arsenic	5.3-17 ug/l	10 ug/l
2.6 dichlorobenzamid	0.13 ug/l	0.10 ug/l
Copper	13800 ug/l	2 mg/l
Ammonium	0.05-1.25 mg/l	0.50 mg/l
Chloride	270 mg/l	250 mg/l
Iron	220-4700 ug/l	200 ug/l
Manganese	60-380 ug/l	50 ug/l
Nitrite WTP	0.16 mg/l	0.10 mg/l
Coliform bacteria	1-200/100 ml	0/ 100 ml

Reasons for non-compliance

We can not reproduce all causes of non-compliance and the action plans MS have in this respect. We make the following observations. The causes for non-compliance were never mentioned in the returns, nor were the planned remedial actions and the time frame for these actions. The cause for non-compliance, planned remedial actions and time frames were information which only the municipalities (98 municipalities) had and according to the Danish regulation they were not obliged to report on this to the Agency for Spatial and Environmental Planning. The municipalities were responsible for the quality of the drinking water and for taking action in case the drinking water did not comply with the quality criteria.

Reporting on drinking water quality to the public

There is a national site with drinking water quality information.The water supplier was obliged to submit printed information on drinking water quality at least once a year either in information leaflets, newsletters or local newspapers.

Derogations for Denmark

A second derogation was reported for aluminium, Colony count 22, iron, colour, NVOC (=TOC), trihalomethanes. Third derogations were reported for colour, NVOC (TOC) and turbidity.

Historical data for Denmark

National summary of monitoring results for each parameter in large wsz > 5000 people. Percentages non-compliance Denmark: 1993-2004 period				
Parameter	1993-1995	1996-1998	1999-2001 (reported together)	2002-2004 (reported together) % ex-works and % at premises (in brackets)
Total volatile Hydrocarbons			1.7	<1 (81.8 only 11 samples)
Colony count 37 °C	1.7/0.4/1.2	2.3/3.7/2.0	4.3	3.1 (28.0)
Iron	1.7/2.0/1.7	1.8/1.8/2.3	2.8	7.8 (26.1)
Ammonium				14.8 (25.6)
Turbidity				24.5 (0)
Colour				23.7 (9.0)
Chlorophenols				23.5
Free carbondioxide			10.8	15.4 (20.8)
Nitrite				11.7 (17.5)
SSRC/*Cl.perfringens*				14.0 (0)
Colony count 21 °C	0.3/0.2/0.5	1.1/2.5/1.7	2.5	13.9 (1.8)
Zinc				0 (12.4)
BaP				11.2
Aluminium			78.6	0 (10.3)
TC/Coliform bacteria	1.3/1.0/0.8	0.9/1.7/2.0	3.0	1.2 (10.1)
Methane			25.3	7.9 (0)
Nitrate				0 (4.8)
Copper				0 (3.8)
Manganese	2.1/2.2/1.4	0.9/1.3/1.2	1.5	5.8 (1.6)
ElectroConductivity				3.1 (2.8)
Arsenic				0 (1.9)
Volatile Chlorinated Carbons				1.7 (0)
pH				1.6 (0)
Lead				0 (1.3)
Tetrachloroethene			1.6	
Temperature			4.2	
TOC			3.0	
THM			50.0	
Phosphates			42.8	
Trichloromethane			10.2	
Hydrogen sulphide			5.1	
All other parameters complied in 99% or more of the samples taken in Denmark				

Conclusions for Denmark
There were some shortcomings in the reporting and or monitoring.

Both microbiological parameters had more than 99% of compliance at national level. However, there was very limited information on Enterococci as this parameter was not monitored unless *E.coli* was detected in drinking water.The chemical parameter arsenic caused more than 1% non-compliance in all three reporting years (against stricter national value) and copper in 2007. The indicator parameters ammonium (stricter national value), colour, odour and Coliform bacteria caused non-compliance in all three years and turbidity, conductivity and TOC in two of the three years and manganese and CC22 (against national values) in one of the years.

The parameters that most often caused non-compliance in water supply zones were, for the microbiological parameters *E.coli*, in a small number of WSZs, but there was a need for more information on Enterococci and the chemical parameters arsenic caused non-compliance in 2 WSZs. Most frequent non-compliance was caused by a number of indicator parameters, Coliform bacteria, ammonium, iron and organoleptic parameters colour, odour, Conductivity and CC22. Generally the parameters for drinking water were not monitored at the tap but at the water supplier and in the distribution network.

There were historical data for Denmark available but only on level of compliance at national level not per water supply zone. The non-compliant parameters were very much the same as they are in 2005-2007. Denmark had two parameters with more than 10% non-compliance, ammonium in 2005, 2006 and 2007 and Coliform bacteria in 2007. There were four parameters with more than 5% but less than 10% non-compliance, arsenic in 2005, odour in 2005, Coliform bacteria in 2006 and turbidity in 2007. Non-compliance for ammonium and arsenic were against stricter national standards.

Fact sheet 7: Drinking water in Germany in 2005-2007

***General information on Member States drinking water supply arrangements*[12]**

Table 7.1 General information Germany 2005-2007

Member State	Germany
Total population in millions	82
Number of water supply zones	2624
Total resident population supplied	65.49 (79.9%)
Total volume of water supplied in million m^3/year	4697.47
Water sources used in percentages of the total volume	Groundwater 74.5 % Surface water 15.5 % Other (bank infiltrate and artificial groundwater) 10%
National database on drinking water quality	http://www.umweltdaten.de/publikationen/fpdf-l/3616.pdf

The data from Germany were submitted in pdf format and did not follow the tables in the Guidance Document. The reporting years were 2005, 2006 and 2007.

Germany had a total population of 82 million and 2624 large water supply zones that supplied drinking water to 65.49 million people (79.9% of the population). The total volume supplied by these large WSZs was 4697.47 million m^3 per year. Most drinking water was produced from groundwater (74.5%) and from surface water (15.5%). About 10% of drinking water came from bank infiltration and artificial groundwater.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 7.2 Information on exemptions, stricter and additional parameters

Waters exempted	All water intended for human consumption regardless of the size of the water supply and of the ownership is subjected to the German Drinking Water Ordinance.
Stricter national parameters	Colour has numeric value; Odour has threshold values; Coliform bacteria is a microbiological parameter and not an indicator parameter; Trihalomethanes 0,05 mg/l
Additional national parameters	None with parametric value see explanation below

[12] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m3 a day as an average or serving more than 5000 persons.

Information on exemptions
All water intended for human consumption regardless of the size of the water supply and of the ownership was subjected to the German Drinking Water Ordinance, which was based on the DWD.

Stricter parameters
Germany had 4 stricter national parameters. This implied a national value for colour and odour, a stricter value for THM and transferring Coliform bacteria from the indicator to the microbiological parameter group.

Additional parameters
Germany had some additional national parameters without a parametric value for the choice of materials to be used in the supply of drinking water (also inside the house).

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD
Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. The following methods were applied in Germany. The alternative microbiological methods were officially announced by the Federal Environment Agency (UBA) in Bundesgesundheits-blatt 49(2006), 1071-1072

- Coliform bacteria and E. coli to DIN EN ISO 9308-1 (reference method) or with Colilert®-18/Quanti-Tray® (alternative method)
- Enterococci to DIN EN ISO 7899-2 (reference method) or with Chromocult® Enterococci Agar (alternative method)
- Colony count 22 °C to DIN EN ISO 6222 or to TrinkwV 1990. The use of the method according to TrinkwV 1990 is a stricter provision with limit values
- Colony count 36 °C to DIN EN ISO 6222 or to TrinkwV 1990. The use of the method according to TrinkwV 1990 is a stricter provision with limit values.

Annual monitoring in water supply zones not compliant with the monitoring frequency
The monitoring effort could not be checked as the previous reporting format did not ask for such information, or as the returns stated “Monitoring efforts were not questioned according to COM decision 95/37/EC”.

National summary on drinking water quality
Germany provided two types of sampling and monitoring data, the quality ex works and in the net and the quality at the tap in in-house installations.

Table 7.3 National summary Germany 2005-2007

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons						
Parameter	Ex works and in the net 2005	In house installation and at the tap	Ex works and in the net 2006	In house installation and at the tap	Ex works and in the net 2007	In house installation and at the tap
Microbiological parameters						
E.coli	99.8	99.8	99.9	99.9	99.9	99.9
Enterococci	99.6	99.6	99.7	99.6	99,7	99,7
Chemical parameters						
Arsenic	99.9	99.9	99.9	100	100	100
BaP	100	100	99.9	100	100	100
Lead	100	98.0	99.9	98.6	100	99.0
Cadmium	100	99.9	100	99.9	100	99.8
1.2dichloroethane	100	100	99.9	100	100	100
Fluoride	100	100	100	99.9	100	100
Copper	100	98.0	100	98.3	100	99.1
Nickel	99.9	98.7	100	98.5	99.9	98.9
Nitrate	99.8	99.9	98.7	100	99.9	100
Indi. pesticides	99.8	99.5	99.8	99.9	99.8	99.7
Total pesticides	99.7	99.9	99.4	99.7	99.5	99.9
Tri and Tetra	100	100	99.8	100	100	100
THM	100	100	99.9	100	99.8	99.6
Indicator parameters						
Aluminium	99.9	100	99.9	99.9	99.9	100
Ammonium	99.9	100	100	100	100	100
Chloride	100	100	99.9	100	100	100
Cl.perfringens	99.9	99.9	99.9	99.6	99.7	99.0
Iron	98.3	97.4	98.5	97.8	99.2	98.5
Colour	99.9	99.8	99.8	99.9	100	99.6
Odour	100	100	99.9	99.9	100	100
CC22	99.5	99.0	99.5	99.3	99.7	99.6
Coliform bacteria	98.2	98.2	98.5	98.9	98.7	98.7
Manganese	98.0	99.0	97.9	99.5	99.3	99.8
TOC	99.8	99.4	99.5	99.4	99.8	99.3
Oxidisability	99.9	99.8	99.8	100	99.9	99.6
Sulphate	99.6	99.7	99.5	99.7	99.8	99.6
Turbidity	99.2	99.0	99.5	99.4	99.8	99.6
pH	100	100	99.9	99.9	100	100
All other parameters had 100% compliance in all three reporting years.						

Table 7.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Chemical parameters			
Lead(in house and at the tap only)	**X**	**X**	**X**
Copper (in house and at the tap only)	**X**	**X**	
Nickel (in house and at the tap only)	**X**	**X**	**X**
Nitrate		**X**	
Indicator parameters			
Cl. Perfringens (in house and at the tap only)			**X**
Iron	**X**	**X**	**X**
Coliform bacteria	**X**	**X**	**X**
Manganese	**X**	**X**	

Germany reported a large number of water supply zones. The number of DWD parameters that caused non-compliance in more than 1% of the samples at national level was low and a number are caused by the plumbing installation in buildings. Both microbiological parameters had more than 99% compliance. The chemical parameters that caused more than 1% non-compliance were lead, copper and nickel in in-house installations, where incoming water from the mains complied. In 2006 nitrate caused non-compliance. Four DWD indicator parameters caused more than 1% non-compliance which were iron and coliform bacteria in 2005, 2006 and 2007 (List A parameter in Germany) and also manganese in 2005 and 2006 and *Cl.perfringens* in 2007.

Information on product specified parameters

Germany actually analysed the three product specified parameters, acryl amide and epichlorohydrin and the parameters were always fully compliant and vinyl chloride nearly always > 99% of samples.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones

Per parameter all WSZ that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in Germany was 2624.

Table 7.5 Number of WSZs in Germany with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	2624	2624	2624
Microbiological parameters			
E.coli	12	3	7
Enterococci	2	0	3
Chemical parameters			
Arsenic	1	0	0
BaP	1	0	0
Copper	2	0	0
Lead	4	0	0
Nickel	4	1	2
Nitrate	2	0	1
Total pesticides	1	1	5

Chlorfenvinphos	1	0	0
2.6 Dichlorbenzamide	0	0	1
Bentazon	0	0	1
Bromacil	0	1	0
Desethylatrazine	0	1	0
Vinylchloride	0	1	1
Indicator parameters			
Aluminium	1	1	2
Ammonium	4	0	2
Chloride	0	0	1
Colour	5	3	2
Cl.perfringens	2	2	4
pH	0	1	1
Iron	27	15	14
Manganese	15	13	9
Sulphate	1	0	2
CC22	20	7	23
Coliform bacteria	52	27	31
Turbidity	26	5	5

Most non-compliance in WSZs was caused by indicator parameters: coliform bacteria, iron, manganese, Colony count and turbidity. Chemical parameters that caused non-compliance were lead, copper and nickel (due to plumbing in premises), but only in a few WSZs and mostly in 2005. There were some non-compliances caused by individual pesticides. The microbiological parameters *E.coli* and Enterococci caused non-compliance in a few WSZs.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 7.6 Maximum (peak) values found for non-compliant parameters in Germany (sometimes no max values were given, in that case the average data were used)

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	22-82/100 ml	0/ 100 ml
Enterococci	11-27/100 ml	0/ 100 ml
Arsenic	28 ug/l	10 ug/l
BaP	0.024 ug/l	0.01 ug/l
Copper	5.8 mg/l	2.0 mg/l
Lead	32 ug/l	10 ug/l
Nickel	39-155 ug/l	20 ug/l
Nitrate	51-55.9 mg/l	50 mg/l
Total pesticides	0.13-3.2 ug/l	0.50 ug/l
2,6-Dichlorbenzamid	0.19 ug/l	0.10 ug/l
Bentazon	0.14 ug/l	0.10 ug/l
Bromacil	0.12 ug/l	0.10 ug/l
Chlorvenfinvos	0.60 ug/l	0.10 ug/l
Desethylatrazine	0.12 ug/l	0.10 ug/l
Aluminium	240-370 ug/l	200 ug/l
Ammonium	0.66-5.0 mg/l	0.50 mg/l
Chloride	338 mg/l	250 mg/l
Cl.perfringens	2-38 /100 ml	0/100 ml
Iron	3300-4200 ug/l	200 ug/l
Manganese	170-1280 ug/l	50 ug/l
Sulphate	460-800 mg/l	250 mg/l
Coliform bacteria	108->300/ml	0/ 100 ml
Vinylchloride	0.8 ug/l	0.50 ug/l

Reasons for non-compliance

We can not reproduce all causes of non-compliance and the action plans MS had in this respect. We made the following observations: The information on sources of contamination planned remedial action and timeframe were mostly given in the returns. We observed that the non-compliance for the heavy metals copper, lead and nickel was often caused by in-house installations.

Reporting on drinking water quality to the public

The public received information on the quality of their drinking water and on non-compliance directly from the local authorities and the water suppliers via newspapers, internet, leaflets and other media. The Federal Environment Agency UBA announced the publication of the report 2005-2007 in a press release.

Derogations for Germany

The German returns gave extensive information on derogations in place that started in the previous reporting period and derogations that started in the current reporting period.

Table 7.7 Derogations in place in Germany in the 2005-2007 period

Derogated parameter	Number of derogations in place	Beginning in 2002-2004 period
Atrazine	3	Y
Desethylatrazine	3	Y
2,6 dichlorobenzamide	5	Y
Selenium	1	Y
Nickel	1	Y
Nitrate	1	Y
		Beginning in the 2005-2007 period
N-N dimethylsulfamide DMS	18	Y
Atrazine	5	Y
Desethylatrazine	5	Y
Bromacil	1	Y
Arsenic	2	Y
Nickel	1	Y

Historical data for Germany

National summary of monitoring results for each parameter in large wsz > 5000 people. Percentages non-compliance, Germany. 1993-2004 period								
Parameter	1993-1995	1996-1998	1999	2000	2001	2002	2003	2004
FS/Enterococci						7.3		
Organochlorine compounds/THM			8.0*	4.8*	2.0*	6.9		
Total pesticides		2.6	3.5	2.5	1.2	1.6		
Iron		2.4	1.2	1.4	1.5	1.4		1.9
Manganese		4.1	2.4	1.6	1.3	1.7		1.3
TC/Coliform bacteria							1.6	1.3
Ind. pesticides								1.5
Arsenic		1.9		1.3				
Sulphate		1.6		1.2				
Nitrate	2.3/3.4/3.2	1.4	1.1	1.1				
Hydrocarbons		1.4	1.1		1.7			
Phenols			1.4		1.7			
Lead				1.1				
Cadmium				1.1				
Chromium				1.1				
Fluoride				1.1				
Nickel				1.1				
Mercury				1.1				
PAH**				1.4				
Oxidisability					1.2			
Kjeldahl-N					2.0			
Surfactants			1.9					
All other parameters complied in 99% or more of the samples								

* 1999, 2000, 2001 THM reported separately

**PAH Polycyclic Aromatic Hydrocarbons

Total *number of water supply zones* serving more than 5000 people that exceeded the parametric value in the DWD in *more than 1 sample*. Germany 1993-2004 period

	Reporting year								
	1996	*1997*	*1998*	*1999*	*2000*	*2001*	2002	2003	2004
Nr of WSZ	2664	2664	2664	2669	2669	2669	2706	2706	2706
Parameter	**Number of wsz with more than 1 case of non-compliance**								
TC/Coliform bacteria	16	12	21	69	54	55	59	62	117
Colony count 22							30	20	51
Colony count 36							35	23	42
Iron	25	29	20	18	25	16	16	17	29
Turbidity	10	9	6	9	8	11	7	18	29
FC/*E.coli*	7	3	11	14	18	21	17	9	13
Manganese	40	37	33	33	23	14	15	12	12
Organochlorine compounds/THM	13	8	8	10/15	3/12	/9	15	2	2
FS/Enterococci				1	6	3	4	3	12
Colour				1	1	3	2	8	5
Nitrate				3	14	3	1	7	1
SSRC/*Cl.perfringens*								1	5
Nickel								6	9
Ammonium				3	3	2	4	3	1
pH							5		
Antimony								4	
Aluminium	8	4	2	2	1			3	
Desethylatrazine							2	4	1
Arsenic				1	1	1	1	1	3
Sulphate	7	9	5	2	2	1		1	2
Odour						1		2	
2.6.Dichlorbenzamid							2		
BaP								2	
Selenium								2	
Residual chlorine							2		
Tri and tetrachloroethene								1	1
EC							1		
Diethylether/phenol								1	
Prochloraz							1		
Copper									1
Benzene								1	
Lead								1	
Bromate								1	
Chloride								1	
Taste								1	
Phosphorus							1		
Potassium							1		
Pesticides	3	3	7	3	1				
Nitrite				1	1	2			
Hydrocarbons				1	1				
Potassium				2					

Magnesium Oxidisability Phosphorus					1 1 1				

Conclusions for Germany

Germany used the previous reporting format for drinking water reporting, which was legally correct. However, because of this some information could not be checked also because the return was in pdf and not Excel. The previous reporting format did not ask for information on incompliances with the monitoring frequency.

Germany reported a large number of water supply zones. The number of DWD parameters that caused non-compliance in more than 1% of the samples at national level was low and a number were caused by the plumbing installation in buildings. Both microbiological parameters had more than 99% non-compliance. The chemical parameters that caused more than 1% non-compliance were lead, copper and nickel in in-house installations, where the incoming water from the mains complied. In 2006 nitrate caused non-compliance. Four indicator parameters caused more than 1% non-compliance which were iron and coliform bacteria in 2005, 2006 and 2007 (List A parameter in Germany) and also manganese in 2005 and 2006 and *Cl.perfringens* in 2007.

Most non-compliance in WSZs was caused by some indicator parameters: coliform bacteria, iron, manganese, Colony count and turbidity. Chemical parameters that caused non-compliance were lead, copper and nickel (due to plumbing in premises), but only in a few WSZs and mostly in 2005. There were some non-compliances caused by individual pesticides. The microbiological parameters *E.coli* and Enterococci caused non-compliance in a few WSZs.

There were historical data available for Germany. There seemed to be an improvement in water quality for some parameters, *E.coli*, Enterococci, Coliform bacteria and turbidity. There was no longer a non-compliance reported for THM. The non-compliant parameters were more or less the same except the THM.

Germany reported that there were no parameters where non-compliance exceeds 5%.

Fact sheet 8: Drinking water in the Estonia in 2005-2007

General information on Member States drinking water supply arrangements[13]

Table 8.1 General information Estonia 2005-2007

Member State	Estonia
Total population in millions	1.3
Number of water supply zones	21
Total resident population supplied	0.79 (60.8%)
Total volume of water supplied in million m^3/year	46.4/46.5/46.9
Water sources used in percentages of the total volume	Groundwater 39.95% Surface water 60.05%
National database on drinking water quality	www.terviseamet.ee. (http://www.terviseamet.ee/fileadmin/dok/Keskkonnatervis/vesi/joogivesi/Jv_raport_EU20052007.pdf.)

The data from Estonia were submitted in Excel format on the CDR (Central Data Repository) EIONET site. Estonia used the data format as described in the Guidance Document (GD) on reporting under the Drinking Water Directive 98/83/EC 09052007. The reporting years were 2005, 2006 and 2007.

Estonia had a population of 1.3 million people and 21 large WSZs. The total resident population supplied by these WSZs was 0.79 million (61%). The large WSZs supplied between 46.4 and 46.9 million m^3 per year. Most drinking water was produced from surface water (60%) the remainder (40%) comes from groundwater sources.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 8.2 Information on exemptions, stricter and additional parameters

Waters exempted	Water intended for human consumption from an individual supply providing less than 10 m3 a day as an average or serving fewer than 50 persons, unless the water is supplied as part of a commercial or public activity
Stricter national parameters	None
Additional national parameters	None

[13] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Information on exemptions
Water intended for human consumption from an individual supply providing less than 10 m^3 a day as an average or serving fewer than 50 persons were exempted from EU and national legislation, unless the water was supplied as part of a commercial or public activity.

Stricter parameters
There were no stricter parameters in Estonia

Additional parameters:
There were no additional national parameters in Estonia.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD
Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. Estonia applied the microbiological methods defined in the DWD 98/83/EC and no alternative methods were used.

Annual monitoring in water supply zones not compliant with the monitoring frequency
The monitoring of the drinking water in Estonia was not compliant with the frequencies given in the DWD. Incompliance with the monitoring frequency was observed 19 (2005), 15 (2006) and 15 (2007) out of 21 WSZs. On average (2005-2007) 35 parameters were not or not sufficiently monitored in a number of water supply zones. Both check and audit parameters showed non-compliance with the monitoring frequency in WSZs (5 to 8 WSZs were not adequately monitored). Random checks showed the calculation of the number of check and audit samples required was correct. The incompliance in monitoring frequency was due to misunderstanding of Annex II and the problem will be solved for the next reporting period.

National summary on drinking water quality in Estonia

Table 8.3 National summary Estonia 2005-2007

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	100	100	100
Enterococci	100	100	100
Chemical parameters			
Copper	95.0	100	100
Fluoride	100	99.5	100
THM Total	96.8	96.8	85.2
Indicator parameters			
Aluminium	99.2	99.2	99.8
Ammonium	99.5	99.4	100
Chloride	92.9	91.5	93.2
Colour	99.7	99.9	100
Iron	94.6	95.1	65.3
Manganese	90.7	91.4	95.0
Odour	99.9	99.9	100
Oxidisability	93.3	96.0	93.9

Sulphate	99.7	99.7	99.6
Sodium	98.1	100	99.6
Taste	99.97	100	100
Turbidity	99.1	99.7	98.7
TID	14.3	27.3	62.0
All other DWD parameters had full compliance in the three reporting years.			

Table 8.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Chemical parameters			
Copper	**X**		
THM total	**X**	**X**	**X**
Indicator parameters			
Chloride	**X**	**X**	**X**
Iron	**X**	**X**	**X**
Manganese	**X**	**X**	**X**
Oxidisability	**X**	**X**	**X**
Sodium	**X**		
Turbidity			**X**
TID	**X**	**X**	**X**

The parameters that caused non-compliance in Estonia were the chemical parameters copper (2005) and trihalomethanes (THM). The microbiological parameters *E.coli* and Enterococci were in full compliance in Estonia. The indicator parameters mostly caused non-compliance and more specifically chloride, iron, manganese, oxidisability and to a lesser extent also turbidity and sodium. The radio-activity index TID caused major problems with very low compliance levels in all three reporting years. The shortcomings in monitoring effort in Estonia had to be taken into account together with the compliance levels.

Information on product specified parameters

The parameters acryl amide, epichlorohydrin and vinlychloride were not analysed by the Estonian water works. There was no mention of how these parameters were regulated and monitored in Estonia.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones

Per parameter all WSZ that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in Estonia was 21.

Table 8.5 Number of WSZs in Estonia with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	21	21	21
Microbiological parameters			
E.coli	0	0	0
Enterococci	0	0	0
Chemical parameters			
Copper	1	0	0
THM total	1	1	1
Indicator parameters			
Aluminium	1	1	0
Ammonium	1	1	0
Chloride	3	3	3
Colour	2	0	0
Iron	11	11	9
Manganese	4	4	5
Oxidisability	1	1	1
Sodium	1	0	0
Sulphate	1	0	0
Turbidity	4	6	2

The indicator parameters caused non-compliance in most water supply zones and more specifically iron and manganese, but also sodium, chloride and turbidity. Aluminium, ammonium and oxidisability caused non-compliance in one water supply zone, and sodium, colour and sulphate only in 2005. Of the chemical parameter THM total caused non-compliance in one WSZ in all three years and copper only in 2005.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 8.6 Maximum (peak) values found for non-compliant parameters in the Estonia

Parameter	**Range of maximum (peak) values**	**Parametric value in the DWD 98/83/EC**
Aluminium	210-380 ug/l	200 ug/l
Chloride	308-663 mg/l	250 mg/l
Copper	> 2 mg/l	2 mg/l
Iron	250-2510 ug/l	200 ug/l
Manganese	53-270 ug/l	50 ug/l
Sodium	208-361 mg/l	200 mg/l
Ammonium	0.61-0.71 mg/l	0.50 mg/l
Oxidisability	5.9-10.6 mg/l O2	5 mg/l O2
Sulphate	306-316 mg/l	250 mg/l
THM	178-213 ug/l	150 ug/l
Fluoride	1.6 mg/l	1.5 mg/l

Reasons for non-compliance

We can not reproduce all causes of non-compliance and the action plans MS had in this respect. We made the following observations. Estonia always reported the reasons for non-compliance and the remedial action they planned or took together with the timeframe for remedial actions.

Reporting on drinking water quality to the public

Information to the public was supplied by the National Health Inspectorate and on the homepages of the individual water supply companies.

Derogations for Estonia 2005-2007

No derogations were in place in Estonia in the 2005-2007 period.

Historical data for Estonia

National summary of monitoring results for each parameter in large wsz > 5000 people. Percentages non-compliance Estonia:2004		
Parameter	2004	comment
Manganese	8.5	Derogation No real non-compliance
Chloride	7.1	Derogation No real non-compliance
Iron	5.7	Derogation No real non-compliance
Turbidity	1.4	Derogation No real non-compliance
THM	1.6	No derogation
All other parameters complied in 99% of more of the samples taken in Estonia		

Total number of water supply zones *serving more than 5000 people that exceed the parametric value in the DWD in* more than 1 sample*. Estonia Estonia has 21 large wsz.2004*	
Reporting year 2004, 21 large WSZs	
Parameter	**Number of wsz with more than 1 case of non-compliance**
Iron	11
Turbidity	6
Manganese	5
Chloride	5
Ammonium	2
FS/Enterococci	2
TC/Coliform bacteria	2
FC/*E.coli*	1
Colour	1
Oxidisability	1
Total THM	1
Aluminium	1
Residual chlorine	1

Colony count 22	1
Odour	1
Sulphate	1
Taste	1
Boron	1

Conclusions for Estonia 2005-2007

Estonia submitted a first return for the 2002-2004 period. According to the previous returns there was one derogation in place for fluoride till the end of 2005. No new derogations were reported for the 2005-2007 period. The main non-compliant parameters were THM total, iron, chloride and manganese and turbidity as well as oxidisability and TID. The monitoring frequency was not in compliance with the requirements of the DWD. The picture was very much the same as in the previous period except that now TID featured as a new non-compliant parameter in 2 to 4 WSZs.

Estonia had three parameters with more than 10% non-compliance, THM in 2007, iron in 2007 and TID in 2005, 2006 and in 2007. There were four parameters with more than 5% but less than 10% non-compliance, chloride 2005, 2006 and 2007, iron in 2005, manganese in 2005 and 2006 and oxidisability in 2005 and 2007.

Fact sheet 9: Drinking water in the Finland in 2005-2007

General information on Member States drinking water supply arrangements[14]

Table 9.1 General information on Finland 2005-2007 period

Member State	Finland
Total population in millions	5.33
Number of water supply zones	167
Total resident population supplied	4 million (75.0%)
Total volume of water supplied in million m^3/year	337
Water sources used in percentages of the total volume	Groundwater 41.33% Surface water 45.69% Other (bank infiltrate + artificial groundwater recharge) 12.98%
National database on drinking water quality	www.thl.fi and www.sttv.fi

The data from Finland were submitted in Excel format on the CDR (Central Data Repository) EIONET site. Finland used the data format as described in the Guidance Document (GD) on reporting under the Drinking Water Directive 98/83/EC 09052007. The reporting years were 2005, 2006 and 2007.
Finland had a total population of 5.33 million, of these 4 million people (75%) were supplied by 167 large water supply zones, that together supply 337 million m^3 of water per year. Most drinking water came from surface water sources 45.7% and groundwater sources 41.3 %, while also other sources such as bank infiltrate and artificial recharge were used (12.9%) to produce drinking water.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 9.2 Information on exemptions, stricter and additional parameters in Finland

Waters exempted	Water supplies < 10 m^3/day or less than 50 people
Stricter national parameters	None
Additional national parameters	Chlorophenols (Tri-, tetra- and penta-) total 10 µg/l

Information on exemptions

[14] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

In Finland small water supply zones supplying less than 10 m^3 of water per day were exempted from EU legislation. There was, however, national legislation* for these small water supplies which included requirements for frequent monitoring, quality requirements of health-based parameters and indicators and requirements for remedial actions including public information in the case of non-compliance. The health based microbiological and chemical parameters and parametric values were the same as in the Directive. (*Decree of the Ministry of Social Affairs and Health 401/2001)

Stricter parameters
Finland had no stricter national parameters.

Additional parameters:
Finland had an additional parameter for chlorophenols (tri, tetra and penta) of 10 ug/l.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD
Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. Finland used the methods detailed in the DWD 98/83/EC for microbiological analyses.

Annual monitoring in water supply zones not compliant with the monitoring frequency
The non-compliance with the monitoring frequency had only been given for the year 2007 as the responsible authorities mentioned that such information was not available for the years 2005 and 2006. There were 50 WSZs with non-compliancy in monitoring frequency and there were 42 audit and check parameters not compliant with the monitoring frequency. The reason for the non-compliance with the monitoring frequency was misunderstanding in the interpretation of the monitoring obligations and outdated monitoring programmes. To improve the monitoring compliance new instructions and guidance had been given to WSZ and municipal health protection authorities who were responsible for frequent surveillance of drinking water quality.

National summary on drinking water quality

Table 9.3 National summary Finland 2005-2007

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	100	99.9	99.9
Enterococci	99.8	100	99.9
Chemical parameters			
Benzene	100	99.5	100
Fluoride	99.1	99.5	96.1
Nickel	100	99.8	100
Pesticides ind.	99.9	100	100
THM tot.	98.3	100	100
Tri and tetra	100	99.6	100
Indicator parameters			
Aluminium	99.8	99.8	99.6
Ammonium	100	99.9	100
Cl.perfringens	100	99.9	100
Colour	99.7	99.7	99.6
pH	99.8	99.7	99.8
Iron	98.2	98.2	98.4
Manganese	99.3	99.1	99.6
Odour	99.7	99.7	99.6
Oxidisability	100	100	99.7
Taste	99.8	99.8	99.8
CC22	98.7	98.1	98.5
Coliform bacteria	99.7	99.5	99.4
TOC	100	100	99.6
Turbidity	99.6	99.1	99.7
All other DWD parameters had full compliance in the three reporting years.			

Table 9.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Chemical parameters			
THM tot.	**X**		
Fluoride			**X**
Indicator parameters			
Iron	**X**	**X**	**X**
CC 22	**X**	**X**	**X**

The compliance for the microbiological parameters *E.coli* and Enterococci was 100% or very close to it. In general there was a high level of compliance in Finland, the only exceptions being fluoride in 2007 and THM total in 2005 and the indicator parameters iron and Colony count 22.

Information on product specified parameters

In general, polyacryl amides were not used in the treatment of water. Two water works had used polyacryl amides and determined the concentration by calculation method. The concentrations were low. In general, epoxy resins had not been used in the treatment of water or in materials. One water works did use and determined the concentration using the calculation method. The concentrations were low. In general, vinylchloride was not determined if tri or tetrachloroethenes were not found in water or it was known that vinylchloride did not leached from the used material. However, quite many water works did still analysed vinylchloride in water but did not detect it.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones

Per parameter all WSZs that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in Finland was 167.

Table 9.5 Number of Water Supply Zones in Finland with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	167	167	167
Microbiological parameters			
E.coli	0	1	1
Enterococci	0	0	0
Chemical parameters			
Fluoride	2	1	5
Pesticides ind.	1	0	0
THM total	1	0	0
Indicator parameters			
Aluminium	1	1	1
Ammonium	0	2	0
Colour	2	4	2
pH	1	1	1
Iron	20	20	16
Manganese	7	10	3
Odour	2	3	3
Oxidisability	0	0	1
Taste	2	2	1
CC22	5	4	7
Coliform bacteria	4	4	8
Turbidity	4	7	3

The microbiological parameter *E.coli* caused non-compliance in 1 WSZ in 2006 and 2007. The chemical parameter fluoride caused most problems in water supply zones. However, most non-compliance was caused by the indicator parameters such as iron, manganese, aluminium, coliform bacteria, CC22 and the organoleptic parameters taste, odour, colour and turbidity.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values do occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 9.6 Maximum (peak) values found for non-compliant parameters in Finland

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	3-127/100 ml	0/ 100 ml
Enterococci	1-45/100 ml	0/ 100 ml
Benzene	2.0 ug/l	1 ug/l
Fluoride	1.6-2.6 mg/l	1.5 mg/l
Nickel	40 ug/l	20 ug/l
Nitrite tap	0.80 mg/l	0.50 mg/l
Pesticides ind.	0.11-0.22 ug/l	0.10 ug/l
THM tot.	143 ug/l	100 ug/l
Tri and tetra	16 ug/l	10 ug/l
Aluminium	210-660 ug/l	200 ug/l
Ammonium	0.70-1.59 mg/l	0.50 mg/l
Cl.perfringens	1/100 ml	0/100 ml
Iron	210-3200 ug/l	200 ug/l
Manganese	52-420 ug/l	50 ug/l
Coliform bacteria	1-500/100 ml	0/ 100 ml

Reasons for non-compliance

We can not reproduce all causes of non-compliance and the action plans MS had in this respect. Causes and planned remedial actions for non-compliance were always given if the non-compliance was associated with the health-related parametric value (microbiological or chemical parameters). Causes and planned remedial actions for non-compliance were not always given if the non-compliance was associated with the indicator values with no health risks such as iron, manganese etc. Time frames were always given and were mostly entered as short term.

Reporting on drinking water quality to the public

Information was available from the national websites. Individual results were available from municipal health protection authorities. Some water works published individual results e.g. on their own web pages. Locally information was available from municipal health protection authorities. They also had to inform public about non-compliances and protective actions if there was a risk for harmful health effects. Water works provided information on water sources e.g. on their own web pages. Water works could have on their own web pages information on water sources including protection of raw water sources, water treatment, drinking water distribution network, quality of drinking water, constructive plans and actions, sanitation, administration, personnel etc.

Derogations for Finland 2005-2007

Finland mentioned 2 WSZs with derogations. Both derogations were for fluoride (one first derogation and one second derogation). Both derogations lasted for limited time frame, below 2 and 3 years.

Historical data for Finland

National summary of monitoring results for each parameter in large wsz > 5000 people. Percentages non-compliance. Finland 1993-2004 period								
Reporting year	1993-1995	1996	1997	1998	1999-2001	2002	2003	2004
Parameter	No data				No data			

Fluoride		26.8	24.3	26.1		11.4	11.2	4.2
Benzo(a)pyrene BaP						7.5		
Tri and tetrachloroethene						6.5		
Atrazine			27.3					2.8
Desethylatrazine								2.4
Iron		4.7	5.0	5.4		2.2	2.3	2.0
Colony Count 22°C						1.9	2.3	2.3
Manganese		3.7	3.2	3.1		1.3	1.7	1.0
SSRC/Enterococci						1.1		
Nitrite		3.8	1.9	7.3				
Aluminium		2.0	2.2	0				
Nickel			1.9	1.6				
All other parameters complied in 99% or more of the samples taken in Finland								

Total *number of water supply zones* serving more than 5000 people that exceeded the parametric value in the DWD in *more than 1 sample*. Finland 1993-2004 period								
Reporting year	1993-1995	1996	1997	1998	1999-2001	2002	2003	2004
Nr of WSZ	No data	171	171	171	No data	165	165	165
Parameter	**Number of wsz with more than 1 case of non-compliance**							
Iron		16	17	16		23	23	21
Manganese		7	8	8		12	15	11
Colony count 22°C						6	9	9
TC/Coliform bacteria		4	8	4		9	5	9
Turbidity		3		2		6	8	6
Fluoride		8	9	8		7	4	1
Odour		3	3			3	6	5
Taste						3	6	4
Colour		7	3	3		5	4	4
pH						5	3	
Aluminium		2	5	1		2	2	2
Ammonium							2	1
FC/*E.coli*		3	3	2		1		2
FC/Enterococci						2		1
Tri and tetrachloroethene						2		
BaP						2		
Atrazine*								1
Desethylatrazine**								1
SSRC/*Cl. perfringens*								1
Copper								1
Nitrite		6	5	6				

* Only 4 results ** only 3 results

Conclusions for Finland

The monitoring frequency as far as this could be checked was not always in compliance with the requirements of the DWD; this problem was addressed in Finland. The microbiological parameters were mostly in compliance in Finland. The chemical parameters fluoride and THM

total caused non-compliance, where fluoride was a recurring problem in Finland and was also identified as such in the pervious reporting periods. Most problems however, were caused by a number of indicator parameters, iron, manganese, Colony count 22, Coliform bacteria and the organoleptic parameters colour, odour, taste and turbidity. The results for Finland were very much the same as the previous reporting periods.

Finland reported that there are no parameters where non-compliance exceeds 5%.

Fact sheet 10: Drinking water in France 2005-2007

***General information on Member States drinking water supply arrangements*[15]**

Table 10.1 General information France 2005-2007

Member State	France
Total population in millions	61.6
Number of water supply zones	2293
Total resident population supplied	45274565 (73.5%)
Total volume of water supplied in million m^3/year	3800
Water sources used in percentages of the total volume	Groundwater 67.28% Surface water 32.64% Other sources 0.08%
National database on drinking water quality	www.eaupotable.sante.gouv.fr

The data from France were submitted in pdf. France did not use the format as described in the Guidance Document (GD) on reporting under the Drinking Water Directive 98/83/EC 09052007. The reporting years were 2005, 2006 and 2007.

France had a total population of 61.6 million people and 2293 large water supply zones that supplied drinking water to 45.3 million residents (73.5% of the total population). The volume of water supplied by these water supply zones was 3800 million m3 per year. The drinking water was mostly produced for groundwater 67.28% and also from surface water 32.64%. A small fraction less than 1% was produced from other sources.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 10.2 Information on exemptions, stricter and additional parameters

Waters exempted	The only exemption is in accordance with the provisions 2b of the article 3 of Directive 98/83/EC. [This is the exemption on the basis of the size of the WSZ.]
Stricter national parameters	Ammonium, pH, TOC, copper, turbidity
Additional national parameters	Barium, total microcysteine, total and free chlorine, chlorites, temperature and calcium carbonate equilibrium.

[15] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Information on exemptions
In France small water supply zones serving less than 50 persons or less than 10 m^3 of water per day were exempted.

Stricter parameters
France had stricter national parameters for ammonium, pH, TOC, copper and turbidity. Stricter parameters were set at national level for: copper (1 mg/l), pH < 9.0, turbidity and TOC numerical value, and an additional stricter value for ammonium if it was not from an original source.

Additional parameters:
There were a few additional parameters in France, such as barium, total microcysteine, total and free chlorine, chlorites, temperature and calcium carbonate equilibrium.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD
Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified.

France applied the methods mentioned in the DWD. France did not report the DWD parameter *Cl. Perfringens* but sulphite reducing clostridia including spores with the method EN 26461-2. In the returns France also mentioned both Streptococcus and Enterococci.

Annual monitoring in water supply zones not compliant with the monitoring frequency
France reported through the old reporting format there was no question in that format about incompliance with the monitoring frequency.

National summary on drinking water quality
France did not report on a number of indicator parameters (odour, taste, colour, colony count and TOC) because "for these parameters, for which there were qualitative standards in the directive 98/83/EC, the choice was made by the French authorities not to retain them within the EU report in view of the absence of specific instructions from the European Commission".

Table 10.3 National summary France 2005-2007

Compliance levels in water supply zones exceeding1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	99.7	99.7	99.8
Enterococci	99.7	99.8	99.8
Chemical parameters			
Antimony	100	99.9	100
Arsenic	97.2	97.0	96.9
BaP	100	99.9	99.9
Bromate	99.5	99.8	99.7
Copper	99.0	99.8	99.7
Fluoride	99.1	98.9	99.2
Lead	98.2	98.5	98.2
Nickel	98.0	97.0	96.9

Nitrate	99.4	99.1	99.3
Pesticides total	99.9	99.9	100
PAH	100	99.9	99.0
Selenium	98.4	98.9	98.6
Tri and tetra	99.8	99.5	99.4
THM	99.9	99.9	99.8
Indicator parameters			
Aluminium	98.7	99.0	99.2
Chloride	100	99.8	99.8
Conductivity	99.3	99.3	99.3
pH	99.9	99.9	99.3
Iron	98.7	98.8	99.1
Manganese	99.0	98.9	99.1
Oxidisability	100	98.8	99.9
Sulphate	99.7	99.7	99.7
Sodium	100	100	100
Coliform bacteria	98.8	98.7	98.8
Turbidity	97.8	97.9	98.0
All other DWD parameters had full compliance in the three reporting years.			

Additional information on individual pesticides compliance levels at national level

Pesticide	***2005***	***2006***	***2007***
Atrazine	99.6	99.6	99.7
Desethylatrazine	97.2	97.4	97.5
Desisopropylatrazine	99.9	99.9	99.8
Simazine	100	99.9	99.9
Terbutylatrazine	99.0	99.9	100
Linuron	100	100	100
Diuron	99.2	100	100
Isoproturon	100	100	100
Chlortoluron	100	100	100
Lindane	100	100	100

Table 10.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Chemical parameters			
Arsenic	**X**	**X**	**X**
Fluoride		**X**	
Lead	**X**	**X**	**X**
Nickel	**X**	**X**	**X**
Selenium	**X**	**X**	**X**
Desethylatrazine	**X**	**X**	**X**
Indicator parameters			
Aluminium	**X**		
Iron	**X**	**X**	
Manganese	**X**	**X**	
Oxidisability		**X**	
Coliform bacteria	**X**	**X**	**X**
Turbidity	**X**	**X**	**X**

In France both microbiological parameters had more than 99% compliance, non-compliance in more than 1% of all samples taken was caused by the chemical parameters arsenic, lead, nickel and selenium in all three reporting years and also by desethylatrazine and by fluoride in 2006. The indicator parameters that caused more than 1% non-compliance were iron, manganese, Coliform bacteria and turbidity in all three years and aluminium in 2005, oxidisability in 2006 only.

Information on product specified parameters

Product specified parameters were regulated in France through product specifications: their presence in water intended for human consummation at the tap was determined by calculation from the specification of the maximum migration of the constituting materials polymer or treatment products coming into contact with water. However acryl amide could be analysed in water samples if necessary, in particular in case of situations of accidental contamination of water resources identified for this substance or dysfunction, abnormality in the water treatment process.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones

Per parameter all WSZ that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in France was 2293

Table 10.5 Number of WSZs in France with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	2293	2293	2293
Microbiological parameters			
E.coli	51	50	44
Enterococci	49	35	41
Chemical parameters			
Acryl amide			1
Arsenic	9	8	10
Boron	2		
Bromate	5		3
Copper		1	
Cyanide			1
Fluoride	5	8	7
Lead	15	11	9
Nickel	14	22	27
Nitrate	30	36	24
Nitrite		1	
Pesticides Total	Yes	Yes	Yes [1]
PAH		1	
Selenium	7	6	16
Tri and tetra	3	4	4
THM	2		2
Aminotriazole	2		
AMPA	1	3	1

Atrazine	10	8	10
Desethylatrazine	39	37	34
Desisopropylatrazine	2		1
Chlordecon	3		1
Glyphosphate	1		2
Metalochlor	1		
Oxadixyl	2		
Terbutylatrazine	1	1	
2.6 dichlorobenzamide		1	
Bentazone		4	6
Diuron		1	1
2.4 D			1
Acetochlor			1
Alachlor			1
Desmethylnorflurazon			1
Dichlobenyl			1
Imazamethabenz			1
Mecoprop			1
Indicator parameters			
Aluminium	72	59	45
Ammonium	7	3	2
Cl.perfringens	196	183	165
Chloride	4	5	6
Conductivity	1		
Iron	80	67	60
Manganese	16	15	17
Sulphate	14	11	11
Coliform bacteria	272	281	254
Turbidity	164	161	148

[1]. The French returns did not mention non-compliance with total pesticides but many individual pesticides. The number of non-compliant WSZs for total pesticides was not reported, but total pesticides showed non-compliance in water supply zones.

In France both microbiological parameters *E.coli* and Enterococci had non-compliance in WSZs. The chemical parameters that caused non-compliance in WSZs were arsenic, fluoride, lead, nickel, nitrate, total pesticides, selenium and tri and tetra in all three reporting years, boron in 2005, copper, nitrite and PAH in 2006, acryl amide and cyanide in 2007 and bromate and THM both in 2005 and 2007. A number of individual pesticides caused non-compliance but AMPA, atrazine and desethylatrazine did so in all three reporting years. The other individual pesticides caused non-compliance in 1 or 2 reporting years.
The indicator parameters that caused non-compliance in France wee aluminium, ammonium, chloride, *Cl.perfringens*, iron, manganese, sulphate, Coliform bacteria and turbidity in all three reporting years and conductivity only in 2005. Most indicator parameters with no numerical value in the DWD were not reported.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 10.6 Maximum (peak) values found for non-compliant parameters in France

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	1-300/100 ml	0/ 100 ml
Enterococci	1-136/100ml	0/ 100 ml
Acryl amide	0.33 ug/l	0.10 ug/l
Arsenic	12-43 ug/l	10 ug/l
Boron	1.50 mg/l	1.0 mg/l
Bromate	30.7-72.0 ug/l	10 ug/l
Copper	4.5 mg/l	2.0 mg/l
Cyanide	87 ug/l	50 ug/l
Fluoride	1.55-3.4 mg/l	1.5 mg/l
Nickel	22-1790 ug/l	20 ug/l
Nitrate	51-120 mg/l	50 mg/l
Lead	35-406 ug/l	10 ug/l
PAH	0.53 ug/l	0.10 ug/l
Selenium	12-33 ug/l	10 ug/l
Tri and tetra	11.80-116.00 ug/l	10 ug/l
THM	156.4-306.9 ug/l	100 ug/l
Aminotriazole	0.19-0.54 ug/l	0.10 ug/l
AMPA	0.25-0.74 ug/l	0.10 ug/l
Atrazine	0.12-0.19 ug/l	0.10 ug/l
Desethylatrazine	0.11-0.42 ug/l	0.10 ug/l
Desisopropylatrazine	0.11-0.18 ug/l	0.10 ug/l
Chlordecon	0.13-0.48 ug/l	0.10 ug/l
Glyphosphate	0.22-0.84 ug/l	0.10 ug/l
Metalochlor	0.16 ug/l	0.10 ug/l
Oxadixyl	0.13 ug/l	0.10 ug/l
Terbutylatrazine	0.14-0.15 ug/l	0.10 ug/l
2.6 dichlorobenzamide	0.15 ug/l	0.10 ug/l
Bentazone	0.34-0.65 ug/l	0.10 ug/l
Diuron	0.36-0.53 ug/l	0.10 ug/l
2.4 D	0.14 ug/l	0.10 ug/l
Acetochlor	0.20 ug/l	0.10 ug/l
Alachlor	--	0.10 ug/l
Desmethylnorflurazon	0.16 ug/l	0.10 ug/l
Dichlobenyl	--	0.10 ug/l
Imazamethabenz	0.12 ug/l	0.10 ug/l
Mecoprop	--	0.10 ug/l
Aluminium	0.21-7.8 ug/l	200 ug/l
Ammonium	0.53-3.8 mg/l	0.50 mg/l
Cl.perfringens	1-200/100 ml	0/100 ml
Chloride	254-19205 mg/l	250 mg/l

Conductivity	4370 uS/cm 20	2500 uS/cm at 20 C
Iron	214-6223 ug/l	200 ug/l
Manganese	55-2100 ug/l	50 ug/l
Sulphate	256-486 mg/l	250 mg/l
Coliform bacteria	1-300/100 ml	0/ 100 ml

Reasons for non-compliance

We can not reproduce all causes of non-compliance and the action plans MS had in this respect. We madethe following observations:

- Causes for non-compliance were always given.
- Planned remedial actions were always given.
- Time frames for remedial action were not mentioned.

If the new reporting format requests information about time frames for remedial actions it will be transmitted by the French authorities.

Reporting on drinking water quality to the public

Information on the quality of drinking water was made available to the public through the national website and through the water bill.

Derogations for France

France already provided a clear and useful summary of the derogations in place. France reported for the 2005-2007 period derogations for a number of parameters.

Table 10.7 Derogations in place in France 2005-2007

Parameter	Number of derogations in place	Parameter	Number of derogations in place
Atrazine	6	Desethylatrazine	15
Tri and tetra	2	Nitrate	9
Simazine	2	Fluoride	3
Bentazon	1	2.4 D	1
Alachlor	1	AMPA	1
Dichlobenyl	1	Diuron	1
Mecoprop	1	Glyphosphate	1
Arsenic	5	Nickel	9

Historical data for France

National summary of monitoring results for each parameter in large wsz > 5000 people. Percentages non-compliance. France. 1993-2004 period												
Parameter	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Desethylatrazine							11.5	11.7	7.0	5.3	6.5	3.1
Selenium							7.5	7.3	7.2	4.0	4.4	1.3
Temperature					2.7	3.2	3.0	3.4	4.4	3.1	4.6	
Aluminium	5-6	5-6	5-6	6.3	5.7	4.3	5.0	3.8	3.2	2.8	3.0	1.8
Arsenic												3.1
Atrazine							6.2	5.1	4.8	2.6	1.9	
Manganese	1-2	1-2	1-2	2.8	3.1	2.6	2.4	2.7	2.6	2.4	2.2	1.2
Fluoride	1-2	1-2	1-2	5.1	4.4	2.1	2.4	3.0	2.0			
Iron	1-2	1-2	1-2	2.3	2.5	2.4	2.0	2.1	2.0	1.7	1.4	1.5
Nickel												1.5
Potassium	1-2	1-2	1-2	2.2	2.2	1.3			1.2	1.4	1.1	
Sodium	1-2	1-2	1-2	2.8	2.2	1.2		1.1		1.4	1.1	
Nitrate	4	4	4	2.3	2.3	2.4	2.2	2.0	2.6	1.7	1.2	
PAH											1.4	
Lead												1.4
Kjeldahl-N										1.3	1.1	
TC/Coliform bacteria	1-2	1-2	1-2	1.8	1.8	2.4	1.4	1.3	1.2			1.3
SSRC/*Cl.perfringens*												1.1
Sulphate	1-2	1-2	1-2	1.7	1.7	1.8				1.1		
Hydrocarbons	2-3	2-3	2-3	1.3		1.6			1.4		1.1	
Desisopropylatrazine							1.0	1.5				
Phenols							1.7					
Odour				4.0	3.3	3.4						
Taste				3.2	1.3	1.1						
Pesticides (total)	2.4	1.8	1.5	1.3	1.6	1.2						
FC/*E.coli*	1-2	1-2	1-2									
All other parameters complied in 99% of more of all samples taken in France												

Total *number of water supply zones* serving more than 5000 people that exceeded the parametric value in the DWD in *more than 1 sample*. France, for 1996-1998 no processed data at water supply zone level were available only at département level. 1966-2004 period

	Reporting year								
	1996	1997	1998	1999	2000	2001	2002	2003	2004
Nr of wsz	Nr of départements in which one or more water supply zone show non-compliance (total 100 départments). Only parameters failing in > 1 sample are included			2236			2288	2288	2288
Parameter	**Number of wsz with more than 1 case of non-compliance**								
Total Coliform bacteria	74	80	77	139	159	137	113	101	254
Temperature	12	19	13	43	56	55	86	280	n.a.
SSRC/*Cl.perfringens*	24	24	24	15	20	11	23	24	160
Turbidity	68	65	64	68	81	68	50	46	136
Iron	29	36	30	58	57	57	62	61	93
Faecal Coliform bacteria/*E.coli*	75	83	77	177	163	138	99	70	38
Aluminium	23	22	20	43	32	40	34	40	91
Desethylatrazine				102	108	70	67	69	55
FS/Enterococci	73	74	71	101	102	81	61	60	59
Nitrate	30	25	25	75	72	78	57	49	43
Atrazine				77	60	49	38	23	22
Potassium				2	4	9	25	29	
Manganese	19	21	22	16	24	14	17	17	26
Sulphate	10	12	9	16	14	20	21	22	14
Taste							9	10	
Nickel							1		10
Arsenic									10
Fluoride	3	4	5	12	18	15	9	7	6
Selenium				8	8	7	6	17	9
Sodium	6	4	4	4	6	4	4	8	
Chloride									8
Bromate									8
Kjeldahl-N							6	6	n.a.
Colour	2	5	7	7	5	2	6	2	
Tri and tetra									6
Odour							4	5	
Ammonium	3	4	6				4	1	4
Lead									4
Hydrocarbons	7	4	8	0	37	2	1	4	
Magnesium							2	2	
Oxidisability							0	1	n.a.
pH							1	1	1

PAH							1	2	1
EC									1
THM									1
Nitrite	11	8	9						
Individual pesticides other than atrazine and desethylatrazine									
Pesticides	43	45	43						
Diuron							5		
Chlorodecane				2	9	3	2	3	3
Terbutylazine				4	7	4	2	3	1
Desisopropylatrazine				2	14	4	2	1	2
Oxadixyl							3	2	2
Terbutylazindesethyl							2		1
Glyphosphate								1	
Terbumetondes-ethyl							1		
Dinoterb							1		
Trichlorpyr									1
2hydroxy atrazine									1
Metachlor									1
AMPA				0	7	0			
Simazine				9	3	3			
n.a. parameter not retained in the DWD									

Conclusions for France 2005-2007

In France there was more than 99% compliance with the microbiological parameters, non-compliance in more than 1% of all samples taken was caused by the chemical parameters arsenic, lead, nickel and selenium in all three reporting years and also by desethylatrazine and by fluoride in 2006. The indicator parameters that caused more than 1% non-compliance were iron, manganese, Coliform bacteria and turbidity in all three years and aluminium in 2005, oxidisability in 2006 only.

In France both microbiological parameters *E.coli* and Enterococci had non-compliance in WSZs. The chemical parameters that caused non-compliance in WSZs were arsenic, fluoride, lead, nickel, nitrate, total pesticides, selenium and tri and tetra in all three reporting years, boron in 2005, copper, nitrite and PAH in 2006, acryl amide and cyanide in 2007 and bromate and THM both in 2005 and 2007. A large list of individual pesticides caused non-compliance but AMPA, atrazine and desethylatrazine did so in all three reporting years. The other individual pesticides caused non-compliance in 1 or 2 reporting years.

The indicator parameters that caused non-compliance in France were aluminium, ammonium, chloride, Cl.perfringens, iron, manganese, sulphate, Coliform bacteria and turbidity in all three reporting years and conductivity only in 2005. Most indicator parameters with no numerical value in the DWD were not reported.

There were many historical data for drinking water in France. There were no significant changes compared to the previous years, except that there were less WSZs with non-compliance for desethylatrazine and for atrazine.

France reported that there were no parameters with more 5% non-compliance.

Fact sheet 11: Drinking water in Greece in 2005-2007

General information on Member States drinking water supply arrangements[16]

Table 11.1 General information Greece 2005-2007

Member State	Greece
Total population in millions	10.93
Number of water supply zones	96
Total resident population supplied	7.886.550 (72.1%)
Total volume of water supplied in million m^3/year	804
Water sources used in percentages of the total volume	Groundwater 50% Surface water 50%
National database on drinking water quality	www.yyka.gov.gr

Greece used the reporting format of the Directive 91/692, which was legally correct, but as a result much of the information requested in the Guidance Document was not available for Greece. Greece had an estimated population of 10.9 million people (2001 national inventory) and estimated 7.88 million residents received water from the 96 large water supply zones (72% of the total population). The 96 WSZs supplied an estimated 804 million m^3 of water per year. The drinking water in Greece was estimated to be produced from groundwater and surface water in equal amounts (50/50%).

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 11.2 Information on exemptions, stricter and additional parameters

Waters exempted	No information old reporting format used
Stricter national parameters	None
Additional national parameters	Additional paramters subject to supplementary monitoring: The pathogenic bacteria: Salmonella Pathogenic staphylococcus Bacillus agents Intestine viruses E.coli 0157 Campylobacter Agents:

[16] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

	Parasitic agents (for example Giardia Lamblia) Seaweeds Other figures agents Chemical parameters: PCBs-PCTs Phenol compounds (except pentachlorophenol) Hydrocarbons or emulsified oils Surface effective agents Phosphorus Potassium Solid residue Hydrogen Sulphide Silver

Information on exemptions
No information was available on waters exempted in Greek national legislation.

Stricter parameters
There were no stricter national parameters reported for Greece.

Additional parameters
There were additional national parameters in Greece that were subject to supplementary monitoring. These parameters were pathogenic bacteria, agents and chemical parameters (see table 11.2 above).

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD
Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. In Greece the microbiological methods specified in the DWD 98/83/EC were used for drinking water.

Annual monitoring in water supply zones not compliant with the monitoring frequency
As Greece used the previous reporting format no such information was available.

National summary on drinking water quality
The results for Greece have been summarized below in table 4.11.3. Observations: There were two sampling and monitoring programmes in Greece. After consultation with the responsible authorities the results of the two programmes were combined to produce the national summary. All parameters were monitored (we could not check compliance with the required frequency) and only those with non-compliance in any of the three years were entered in the tables.

Table 11.3 National summary Greece 2005-2007

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	99.7	99.7	99.8
Chemical parameters			
Cyanide	100	98.8	98.5
Nitrate	100	97.2	97.5
Indicator parameters			
Ammonium	99.9	100	100
Chloride	100	100	99.8
Conductivity	100	100	99.9
Iron	99.9	100	100
Manganese	99.8	99.8	99.9
Coliform bacteria	98.7	97.7	98.2
Turbidity	100	98.1	100
All other DWD parameters had full compliance in the three reporting years.			

Table11.4 Parameters that had less than 99% compliance

	2005	**2006**	**2007**
Microbiological parameters			
Chemical parameters			
Cyanide		**X**	**X**
Nitrate		**X**	**X**
Indicator parameters			
Coliform bacteria	**X**	**X**	**X**
Turbidity		**X**	

In Greece the microbiological parameters had more than 99% compliance. Non-compliance in more than 1% of all samples taken was caused by the chemical parameters cyanide and nitrate in 2006 and 2007. The indicator parameters that caused more than 1% non-compliance were Coliform bacteria in all three years and turbidity in 2006.

Information on product specified parameters

Epichlohydrin and vinylchloride were not controlled because the laboratories did not have standardized methods. Acryl amide was controlled by using a polyacrylamide resin

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones

Per parameter all WSZs that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in Greece was 96.

Table 11.5 Number of WSZs in Greece with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	96	96	96
Microbiological parameters			
E.coli	12	9	9
Enterococci	10	15	10
Chemical parameters			
Arsenic	0	1	0
Nitrate	1	3	2
Indicator parameters			
Aluminium	1	2	1
Chloride	4	4	8
Colour	0	1	0
Conductivity	1	1	2
Iron	5	2	2
Manganese	0	1	0
Sodium	0	1	1
Sulphate	2	2	1
Taste	0	1	0
CC22	1	1	1
Coliform bacteria	27	31	25
Turbidity	1	3	1

The two microbiological parameters *E.coli* and Enterococci caused non-compliance in quite a number of water supply zones. The chemical parameters nitrate caused non-compliance and in 2006 also arsenic in 1 WSZ. Most non-compliance was caused by the indicator parameters Coliform bacteria and to a lesser extent also chloride and iron. A number of indicator parameters caused non-compliance in a small number of water supply zones.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 11.6 Maximum (peak) values found for non-compliant parameters in Greece

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	1000/100 ml	0/ 100 ml
Enterococci	72/ 100 ml	0/ 100 ml
Arsenic	46 ug/l	10 ug/l
Nitrate	118 mg/l	50 mg/l
Aluminium	400 ug/l	200 ug/l
Ammonium	1.67 mg/l	0.50 mg/l
Chloride	820 mg/l	250 mg/l
Cl.perfringens	3/100 ml	0/100 ml
Conductivity	3600 uS/cm	2500 uS/cm
Iron*	430-800 ug/l	200 ug/l
Manganese	90-180 ug/l	50 ug/l
Sodium	286 mg/l	200 mg/l
Sulphate	1550 mg/l	250 mg/l
Coliform bacteria	1000/100 ml	0/ 100 ml

*Difficult to calculate as most WSZ used mg/l but some ug/l.

Reasons for non-compliance

We can not reproduce all causes of non-compliance and the action plans MS had in this respect. We made the following observations. The information on causes of non-compliance, remedial actions and time frames were given in the returns

Reporting on drinking water quality to the public

Local authorities were responsible to inform the habitants in case of non-compliance. Also the Ministry of Health was always at the disposal of people or any institution that wishes to be informed about the quality of drinking water. Circulars on the quality of drinking water were published on the website www.yyka.gov.gr and the information on Greek drinking water legislation could be found on the site www.et.gr .

Derogations for Greece 2005-2007

Extensive information was presented on derogations in place in Greece during the reporting period. There were nine derogations in place, they all concerned first derogations. The derogations were in place for the parameters:

- Arsenic 5 derogations
- Mercury 2 derogations
- Fluoride 1 derogation
- Boron 1 derogation.

The responsible authorities reported that the derogation period had ended in all cases.

Historical data for Greece

Total *number of water supply zones* serving more than 5000 people that exceeded the parametric value in the DWD in *more than 1 sample*. Greece reported on 151 WSZ 2002-2004 period			
	Reporting year 151 WSZs		
	2002	2003	2004
Parameter	**Number of wsz with more than 1 case of non-compliance**		
TC/Coliform bacteria	41	45	39
FC/*E.coli*	22	34	8
FS/Enterococci	7	10	20
Colony count 22 or 37	18	12	14
Residual chlorine	5	4	5
Magnesium	3	4	1
Chloride	2	2	4
Aluminium	3	2	2
Nitrate	2	2	3
Sulphate	2	2	2
Iron	2	2	2
Turbidity	2	1	2
Arsenic			2
Manganese	2		1
Hardness		2	
Conductivity	1	1	1
Fluoride	1	1	1
Taste			1

Conclusions for Greece

The returns from Greece used the previous reporting format and the information was mostly available as pdf in the Greek language. The monitoring effort could not be assessed as no such table existed in the old reporting format.

In Greece the microbiological parameters had more than 99% compliance at national level. Non-compliance in more than 1% of all samples taken was caused by the chemical parameters cyanide and nitrate in 2006 and 2007. The indicator parameters that caused more than 1% non-compliance were Coliform bacteria in all three years and turbidity in 2006.

The non-compliance in WSZs in Greece was caused by the microbiological parameters *E.coli* and Enterococci, the chemical parameter nitrate and in one WSZby arsenic. Most non-compliance was caused by some indicator parameters Coliform bacteria, chloride and iron.

There were some historical data available for Greece. In the previous reporting period the same parameters caused non-compliance Coliform bacteria, *E.coli* and Enterococci.

Greece reported that there were no parameters with more than 5% non-compliance.

Fact sheet 12: Drinking water in Hungary in 2005-2007

General information on Member States drinking water supply arrangements[17]

Table 12.1 General information Hungary 2005-2007

Member State	Hungary
Total population in millions	10.1
Number of water supply zones	280
Total resident population supplied	6.871.929 (68.0%)
Total volume of water supplied in million m^3/year	399
Water sources used in percentages of the total volume	Groundwater 35% Surface water 8% Bank infiltrate 46% Other 11%
National database on drinking water quality	www.antsz.hu

The data from Hungary were submitted in Excel format on the CDR (Central Data Repository) EIONET site. Hungary used the data format as described in the Guidance Document (GD) on reporting under the Drinking Water Directive 98/83/EC 09052007. The reporting years were 2005, 2006 and 2007.
Hungary had a population of 10.1 million and 280 large water supply zones (> 1000 m^3/day). These water supply zones served 6.87 million people which equaled 68% of the total population. The amount of water supplied was 399 million m^3 per year and drinking water was produced from groundwater 35%, surface water 8%, bank infiltration water 46% and from other sources 11%. The water consumption in some WSZs was rather low (< 100 lppd) because people also used private wells or saved water because of their low income.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 12.2 Information on exemptions, stricter and additional parameters Hungary

Waters exempted	Water intended for human consumption from an individual supply serving fewer than 50 persons, unless the water is supplied as part of a commercial or public activity
Stricter national parameters	THM 50 ug/l Lead 10 ug/l
Additional national parameters	cis-1,2-dichloroethene ,chlorite, bound active chlorine, colony count 37°C, *Pseudomonas aeruginosa,* hardness phenol index , mineral oils, sediment, protozoa,

[17] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

	helmints bacteria, fungi, filamentous bacteria, other bacteria, algae

Information on exemptions

In Hungary water supply zones supplying drinking water to less than 50 persons were exempted from EU and national legislation, unless the water was supplied as part of a commercial or public activity.

Stricter parameters

Hungary had 2 stricter parameters in national legislation THM and lead. The stricter value for lead had been transposed in Hungarian legislation for 2005, 2006 and 2007 onwards.

Additional parameters

Hungary had added 16 parameters for drinking water in the national legislation. See table 4.12.2.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD

Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. For *E.coli*, Coliform bacteria and Enterococci the DWD methods were used for analysis. Since the Directive 98/83/EC and the Data Dictionary only designated *E.coli* and Enterococci as microbiological parameters, methods for these parameters were presented. Hungary used the microbiological methods specified in the DWD for those two parameters.

Annual monitoring in water supply zones not compliant with the monitoring frequency

We made the following observations on non-compliance with the monitoring frequency. For a large number of parameters the number of samples required in accordance with the DWD was calculated but the entry “not attributed” was entered. This because in Hungary there was no existing database of monitoring requirements for each water supply zones, to refer to and exemptions granted for WSZs from the obligation of monitoring some parameters could have been neither consistent nor traceable in the centralized data management system. Parameters for which the monitoring was more or less in compliance were: colony count 22, chloride, Coliform bacteria, conductivity, Enterococci, *E.coli*, manganese, iron, nitrite, nitrate, ammonium, odour, colour, oxidisability, pH, sulphate, taste and turbidity.

National summary on drinking water quality

Table 12.3 National summary Hungary 2005-2007

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	99.5	99.6	99.4
Enterococci	97.8	98.1	98.8
Chemical parameters			
Arsenic	62.9	61.2	54.1
Benzene	99.5	100	100
BaP	98.5	100	100
Boron	96.7	97.2	94.6
Chromium	100	98.5	100
Cyanide	99.6	100	100
Fluoride	99.8	100	100
Lead	97.8	98.9	100
Mercury	100	98.9	99.7
Nickel	99.0	99.4	99.7
Nitrate	99.9	99.9	99.8
Nitrite water works	94.1	98.8	97.2
Nitrite tap	99.5	99.5	98.7
PAH	99.2	100	100
Selenium	100	99.7	100
Indicator parameters			
Aluminium	99.9	99.6	99.9
Ammonium	86.3	87.0	82.0
Cl.perfringens* (Clostridia analysed in HU)	98.5	98.5	98.6
Chloride	99.9	99.9	100
pH	99.8	99.8	99.9
Iron	93.8	94.3	93.2
Manganese	87.3	86.7	86.3
Oxidisability	99.5	99.2	98.9
Sodium	92.9	95.8	95.8
Sulphate	99.7	99.9	99.9
CC22	96.6	96.0	95.7
Coliform bacteria	96.9	96.7	96.7
TOC	100	99.1	86.8
Turbidity	100	99.8	99.8
All other DWD parameters had full compliance in the three reporting years.			

Comments on the national summary:

Only Colony count 22, Coliform bacteria and *E.coli* were monitored in all 280 WSZs. *Cl.perfringens* was not monitored but Clostridia were. Pesticides were measured in less than 10% of all WSZs (26 WSZs), as there was an extended regime of exemptions in Hungary as most WSZs were using deep groundwater and confined wells. Sometimes the percentage

compliance of parameters was set to 100% but the monitoring effort was not sufficient. For example: Al, Hg, Ni, conductivity, pH, SO4, Cl, NO3, N-formulae and turbidity.

Table 12.4 Parameters that had less than 99% compliance in Hungary 2005-2007

	2005	2006	2007
Microbiological parameters			
Enterococci	**X**	**X**	**X**
Chemical parameters			
Arsenic	**X**	**X**	**X**
BaP	**X**		
Boron	**X**	**X**	**X**
Chromium		**X**	
Lead	**X**	**X**	
Mercury		**X**	
Nickel	**X**		
Nitrite WTP	**X**	**X**	**X**
Nitrite tap			**X**
Indicator parameters			
Ammonium	**X**	**X**	**X**
Cl perfringens (Clostridia)	**X**	**X**	**X**
Iron	**X**	**X**	**X**
Manganese	**X**	**X**	**X**
Oxdisability			**X**
Sodium	**X**	**X**	**X**
CC22	**X**	**X**	**X**
Coliform bacteria	**X**	**X**	**X**
TOC			**X**

Hungary had a high level of non-compliance for arsenic. The microbiological parameter that caused non-compliance was Enterococci, for the chemical parameters these were mostly arsenic, boron, lead and nitrite and to a lesser extent BaP, chromium, mercury and nickel. For the indicator parameters non-compliance was noticed for ammonium, chloride, iron, manganese, sodium, CC22, Clostridia and Coliform bacteria and to a lesser extent also for oxidisability and TOC.

Information on product specified parameters

All construction materials and chemicals used in drinking water production and supply had to be authorized by the competent authorities.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones

Per parameter all WSZs that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in Hungary is 280.

Table 12.5 Number of WSZs in Hungary with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	280	280	280
Microbiological parameters			
E.coli	15	15	19
Enterococci	21	17	14
Chemical parameters			
Arsenic	56	51	55
Benzene	1	0	0
Boron	3	2	4
Chromium	0	1	0
Lead	3	1	0
Nickel	1	1	0
Nitrate	2	3	2
Nitrite ww	8	1	7
Nitrite tap	6	10	21
Indicator parameters			
Ammonium	82	88	80
Chloride	1	1	1
Cl.perfringens (clostridia in HU)	14	19	19
pH	1	1	2
Iron	74	81	94
Manganese	94	89	99
Oxidisability	4	6	9
Sodium	16	11	15
Sulphate	3	1	1
CC22	89	81	84
Coliform bacteria	86	69	100
TOC	4	3	7
Turbidity	2	6	3

Microbiological parameters that caused non-compliance in WSZs in Hungary were both *E.coli* and Enterococci. Chemical parameters that caused non-compliance in WSZs in Hungary were arsenic, nitrite and nitrate and also too a lesser extent boron, lead and nickel. Benzene and chromium sometimes caused non-compliance in one WSZ. The indicator parameters that caused non-compliance in a large number of WSZs were: ammonium, iron, manganese, CC22 and Coliform bacteria, but also in quite a few WSZs the parameters *Cl. perfringens*, sodium, TOC, turbidity, and oxidisability.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 12.6 Maximum (peak) values found for non-compliant parameters in Hungary

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	1-4000/ 100 ml	0/ 100 ml
Enterococci	1-2500/100 ml	0/ 100 ml
Arsenic	10.9-240 ug/l	10 ug/l
Boron	1.1-3.1 mg/l	1.0 mg/l
Lead	83.3 ug/l	10 ug/l
Nickel	76-594 ug/l	20 ug/l
Nitrate	55-68 mg/l	50 mg/l
Nitrite ww	0.25-2.3 mg/l	0.10 mg/l
Nitrite tap	0.51-6.8 mg/l	0.50 mg/l
Aluminium	405 ug/l	200 ug/l
Ammonium	0.51-710 mg/l	0.50 mg/l
Chloride	283-398 mg/l	250 mg/l
Conductivity	3970-5810 uS/cm	2500 uS/cm
Iron	210-6440 ug/l	200 ug/l
Manganese	60-10100 ug/l	50 ug/l
Sodium	202-404 mg/l	200 mg/l
Sulphate	266-362 mg/l	250 mg/l
Oxidisability	5.2-1764 mg/l O2	5 mg/l O2
Coliform bacteria	1-36000/100 ml	0/ 100 ml

Reasons for non-compliance

We could not reproduce all causes of non-compliance and the action plans MS had in this respect. We made the following observations: The national database did not yet contain information regarding to the causes and remedial measures for the non-compliances.

Reporting on drinking water quality to the public

Information on the quality fo drinking water was available at the national web address.

Derogations for Hungary 2005-2007

Derogations were not included in the returns but had been submitted separately.

Historical data for Hungary

There were no historical data available for Hungary.

Conclusions for Hungary 2005-2007

There was a shortage in monitoring and there were also gaps of information in the returns. This was partly because the national drinking water data management system had not been at the level that enabled the correct numeric data in all aspects of the requested report.

In Hungary there was a high level of non-compliance for arsenic due to natural geological causes. The microbiological parameter that caused non-compliance is Enterococci, for the chemical parameters these were mostly arsenic, boron, lead and nitrite and to a lesser extent BaP, chromium, mercury and nickel. For the indicator parameters non-compliance was noticed

for ammonium, chloride, iron, manganese, sodium, CC22, *Clostridia perfringens* (actually Clostridia was analysed in Hungary) and Coliform bacteria and to a lesser extent also for oxidisability and TOC.

Hungary reported four parameters with more than 10% non-compliance, arsenic, ammonium and manganese all for the years 2005, 2006 and 2007 and TOC for 2007. There were four parameters with more than 5% but less than 10% non-compliance, boron in 2007, nitrite ex works in 2005, iron in 2005, 2006 and 2007 and sodium in 2005.

Fact sheet 13: Drinking water in Ireland 2005-2007

General information on Member States drinking water supply arrangements[18]

Table 13.1 General information on the Republic of Ireland 2005-2007

Member State	Ireland
Total population in millions	4.04/4.24/4.24
Number of water supply zones	251/248/254
Total resident population supplied	3,024,187 / 3,110,931 / 3,374,591 (76%)
Total volume of water supplied in million m^3/year	552/567/612
Water sources used in percentages of the total volume	Groundwater 8.2% Surface water 91.8 %
National database on drinking water quality	www.epa.ie

The data from Ireland were submitted in Excel format on the CDR (Central Data Repository) EIONET site. They submitted three Excel documents, one for 2005, one for 2006 and one for 2007. Ireland used the data format as described in the Guidance Document (GD) on reporting under the Drinking Water Directive 98/83/EC 09052007.

The Republic of Ireland had a total population of 4.2 million people and approximately 251 large WSZs that supplied 577 million m^3 of water per year to 3.17 million people or 76% of the population. Most drinking water was produced from surface water sources (91.8%) and 8.2 % from groundwater sources.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 13.2 Information on exemptions, stricter and additional parameters

Waters exempted	Supplies that serve <50 persons (and supply less than 10 m^3/day) and that do not supply water as part of a public or commercial activity.
Stricter national parameters	Fluoride 1.0 mg/l- 0.8 mg/l Ammonium 0.3 mg/l
Additional national parameters	None

[18] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Information on exemptions

Ireland had exempted from EU and national legislation supplies that served <50 persons (and supply less than 10 m^3/day) and that did not supply water as part of a public or commercial activity.

Stricter parameters

Until the middle of 2007 the value for fluoride was 1.0 mg/l and from then onwards 0.8 mg/l. The stricter national value for fluoride applied to supplies that had artificial fluoride added to the water. For natural fluoride the DWD value of 1.5 mg/l applied. There was also a stricter national value for ammonium of 0.3 mg/l.

Additional parameters

Ireland had no additional national parameters in place.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD

Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. For *E.coli* and Coliform bacteria the Colilert method was used, for the other microbiological parameters the DWD method was used.

Annual monitoring in water supply zones not compliant with the monitoring frequency

There was a minor shortfall in monitoring nationally. Since March 2007, the EPA had enforcement powers to ensure that monitoring was carried out as required by the Irish Regulations and hence the Directive.

National summary on drinking water quality in Ireland

Table 13.3 National summary Ireland 2005-2007

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	99.4	99.4	99.7
Enterococci	99.1	99.0	99.9
Chemical parameters			
Antimony	98.8	100	100
Benzene	100	100	99.7
Bromate	99.7	100	99.7
Copper	99.9	99.7	99.0
Lead	97.8	98.1	99.5
Nickel	99.5	100	99.5
Mercury	100	99.9	99.7
Nitrate	99.9	100	100
Nitrite WTP	100	99.1	100
Nitrite tap	99.6	99.9	99.9
Pesticides total	100	99.7	99.7
Pesticides ind.	97.6	96.7	98.2

PAH	99.8	99.9	100
THM total	96.8	96.3	97.5
Indicator parameters			
Aluminium	95.1	92.7	94.9
Ammonium	100	100	99.9
Chloride	100	99.9	100
Cl.perfringens	98.4	99.0	99.3
Colour	98.1	97.4	98.2
pH	98.7	98.8	98.7
Iron	93.2	95.1	97.4
Manganese	97.5	97.8	97.0
Odour	98.4	99.6	99.8
Sodium	100	99.7	99.9
Sulphate	100	100	99.9
Taste	98.4	99.5	99.9
CC22	94.5	94.9	95.9
Coliform bacteria	93.7	93.8	94.1
TOC	100	97.5	98.3
Turbidity WTP	86.1	90.0	96.4
Turbidity tap	99.4	99.6	99.5
All other DWD parameters had full compliance in the three reporting years.			

Table 13.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Chemical parameters			
Antimony	**X**		
Lead	**X**	**X**	
Pesticides ind.	**X**	**X**	**X**
THM total	**X**	**X**	**X**
Indicator parameters			
Aluminium	**X**	**X**	**X**
Cl.perfringens	**X**	**X**	
Colour	**X**	**X**	**X**
pH	**X**	**X**	**X**
Iron	**X**	**X**	**X**
Manganese	**X**	**X**	**X**
Odour	**X**		
Taste	**X**		
CC22	**X**	**X**	**X**
Coliform bacteria	**X**	**X**	**X**
TOC		**X**	**X**
Turbidity ex works	**X**	**X**	**X**

Both microbiological parameters had more than 99% compliance in all samples taken in Ireland. Two chemical parameters, individual pesticides and total THM caused non-compliance in more than 1% of samples in the three reporting years. The chemical parameter lead had more than 1%

non-compliance in 2005 and 2006 and the chemical parameter antimony had more than 1% non-compliance in 2005. With respect to the indicator parameters non-compliance in more than 1% of the samples was caused by aluminium, colour, pH, iron, manganese, taste, CC22, Coliform bacteria and turbidity ex works (not at the tap?) and too a lesser extent, *Cl.perfringens* and TOC.

Information on product specified parameters
Sanitary authorities were recommended to use products on the List of Approved Products and Processes published by the UK Drinking Water Inspectorate. Where products used in this manner they complied with the parametric values. Where the products used were not on this list the sanitary authority calculated the maximum release of the product into the water supply and used this figure to determine compliance. There were no cases of non-compliance with the acryl amide, epichlorohydrin and vinylchloride parametric values in 2005/2006/2007.

Information on non-compliance of drinking water in water supply zones.

Level of non-compliance in the water supply zones
Per parameter all WSZ that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in Ireland was 251/248/254

Table 13.5 Number of WSZs in Ireland with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	251	248	254
Microbiological parameters			
E.coli	6	7	4
Enterococci	1	2	0
Chemical parameters			
Copper	0	1	0
Lead	3	4	0
THM total	2	6	7
Indicator parameters			
Aluminium	45	51	46
Ammonium	1	0	1
Cl.perfringens	17	12	8
Colour	27	34	28
Iron	28	21	25
Manganese	6	10	7
Odour	17	4	1
Taste	7	6	1
CC22	11	11	6
Coliform bacteria	73	65	59
TOC	0	1	1
Turbidity ex works	19	29	31
Turbidity tap	6	5	5

The microbiological parameter *E.coli* caused non-compliance in a few WSZs. The chemical parameter THM caused non-compliance in water supply zones. The indicator parameters most often caused non-compliance in water supply zones such as Coliform bacteria, aluminium,

colour, turbidity, iron, CC22, and in a small number of WSZs also *Cl.perfringens* and manganese.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 13.6 Maximum (peak) values found for non-compliant parameters in Ireland

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	36-120/100 ml	0/ 100 ml
Enterococci	1-29/100 ml	0/ 100 ml
Antimony	25.4 ug/l	5 ug/l
Benzene	3.2 ug/l	1 ug/l
Bromate	32-51 ug/l	10 ug/l
Copper	2.14-2.93 mg/l	2 mg/l
Lead	105-149 ug/l	10 ug/l
Mercury	1.2-3.2 ug/l	1.0 ug/l
Nickel	48-71 ug/l	20 ug/l
Nitrate	54.9-60.5 mg/l	50 mg/l
Nitrite ex works	0.11-6.5 mg/l	0.10 mg/l
Nitrite tap	0.63-20.0 mg/l	0.50 mg/l
PAH	0.10-0.57 ug/l	0.10 ug/l
Pesticides total	0.77-20.0 ug/l	0.50 ug/l
THM total	316-380 ug/l	100 ug/l
Aluminium	2780-5112 ug/l	200 ug/l
Ammonium	2.0-2.3 mg/l	0.50 mg/l
Chloride	417 mg/l	250 mg/l
Cl.perfringens	48-200/100 ml	0/100 ml
Iron	2496-4542 ug/l	200 ug/l
Manganese	540-895 ug/l	50 ug/l
Sulphate	255 mg/l	250 mg/l
Sodium	243-417 mg/l	200 mg/l
Coliform bacteria	1414-10463/100 ml	0/ 100 ml

Reasons for non-compliance

We can not reproduce all causes of non-compliance and the action plans MS had in this respect. We made the following observations:

- Causes for non-compliance were always given.
- Planned remedial actions were always given.
- Time frames were always given.

Reporting on drinking water quality to the public

In Ireland there was extensive reporting on information on water quality and information to the public:

- www.epa.ie/NewsCentre/ReportsPublications/Water/
- Dept of Environment, Heritage and Local Government
- Local media coverage of the annual report
- Up to date monitoring was available from each of the sanitary authorities head offices while nationally collated results were available for the year past from the Environmental Protection Agency.

Derogations for Ireland

There were no derogations in place in Ireland in 2005-2007.

Historical data for Ireland

National summary of monitoring results for each parameter in large wsz > 5000 people. Percentages non-compliance. Ireland. 1993-2004 period

Parameter	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
TC/Coliform bacteria							5.6	6.4	5.3	5.00	6.05	6.59
Aluminium	12	5	6	4.5	6.1	5.7	5.5	6.4	5.6	6.64	4.97	4.64
Iron	9	4	5	4.4	5.6	6.2	8.0	8.1	3.9	2.74	2.60	4.85
Odour	7	8	6	7.2	3.5	3.1	3.2	3.3	4.1	2.78	3.60	2.02
Taste	3	10	10	7.2	3.0	2.7	2.4	1.9	1.6	1.72	3.05	1.15
Colour	5	2	2	3.3	2.6	3.1	3.0	2.7	1.8	2.24		2.20
Manganese	8	8	4	1.2	7.4	6.5	6.0	6.0	2.1	1.90	1.50	1.33
Turbidity										1.05		
TC/FC*	4	5	5	4.5	5.6	4.5						
FC/*E.coli*								2.1	1.7			
Fluoride	16	10	9	7.5	6.2	4.0	2.9	4.1	2.8			
Heavy Metals**				1.2								
pH												
Ammonium					1.1							
All other parameters complied in 99% of more of all samples taken in Ireland												

* TC and FC total and faecal Coliform bacteria were reported together in the first two periods 1993-1995 and 1996-1998, in

** All individual heavy metals failed in < 1% of all samples

Total *number of water supply zones* serving more than 5000 people that exceeded the parametric value in the DWD in *more than 1 sample*. Ireland 1993-2004 period

Reporting year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Nr of wsz	120	120	120	120	125	116	116	115	250*
Parameter	**Number of wsz with more than 1 case of non-compliance**								
TC/Coliform bacteria					64	44	45	49	81
Aluminium	24	25	24	30	27	33	31	26	39
Odour	36	30	20	26	28	30	21	26	31
Colour	22	20	22	10	28	18	13	10	31
Iron	20	20	19	27	17	19	16	19	18
SSRC/*Cl. perfringens*									17
Turbidity	6	7	6	17	10	8	8	1	17

FC/*E.coli*					22	16	7	5	15
Manganese	7	7	11	13	11	13	12	10	8
Fluoride	40	40	26	4	40	32	19	15	2
pH							1	1	0
Taste	20	17	10	1	8	11	10	12	0
Colony count 22									8
Lead				1	0	2	1	0	3
THM									3
Copper							1	2	
Bromate									1
SSRC/Enterococci									1
Ammonium				60	1	0			1
TC+FC	44	49	44	15					
Nitrite				0	1	0			

Conclusions for Ireland

Both microbiological parameters caused more than 99% compliance at national level. Two chemical parameters, individual pesticides and total THM caused non-compliance in more than 1% of samples in the three reporting years. The chemical parameter lead had more than 1% non-compliance in 2005 and 2006 and the chemical parameter antimony had more than 1% non-compliance in 2005. With respect to the indicator parameters non-compliance in more than 1% of the samples was caused by aluminium, colour, pH, iron, manganese, taste, CC22, Coliform bacteria and turbidity ex works (not at the tap?) and too a lesser extent, *Cl.perfringens* and TOC. The microbiological parameter *E.coli* caused non-compliance in a few WSZs. The chemical parameter THM causes non-compliance in a number of water supply zones. The indicator parameters most often caused non-compliance in water supply zones such as Coliform bacteria, aluminium, colour, turbidity, iron, CC22, and in a small number of WSZs also *Cl.perfringens* and manganese.

There were historical data for Ireland and in general the parameters that caused non-compliance were very much the same.

Compliance with the parametric values for almost all of the parameters had improved in the period 2005 to 2007. Ireland reported one indicator parameter with more than 10% non-compliance, turbidity ex-works in 2005 and 2006 and two indicator parameters with more than 5% but less than 10% non-compliance, CC22 in 2005 and 2006 and Coliform bacteria in all three years.

Fact sheet14: Drinking water in Italy
No returns was submitted by Italy for the 2005-2007 period

Historical data for Italy

National summary of monitoring results for each parameter in large wsz > 5000 people. Percentages non-compliance. Italy 1993-2004 period								
	Reporting year							
Parameter	*1993-1995*	*1996-1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*
Vanadium						22.8	32.1	
PAH			1.3		14.1		14.7	
Sulphate		2	2.3			12.1	6.4	1.28
Aluminium	2-4	2	1.7			12.4	4.5	
Chloride								18.0
Colony count 22/37						7.8	10.2	2.7/1.6
Turbidity			1.4			9.2	1.2	
Dry residues						8.4	8.3	
Organochlorine compounds/THM						8.0	4.7	
Ammonium			2.1			6.7	4.1	
Nitrite			3.0			6.0	3.7	
pH						5.4	3.1	2.3
Hydrogen sulphide							5.0	
Colour						4.9	4.1	
Iron	2-3	2	4.0	1.2	1.3	3.6	4.3	2.3
Magnesium			4.4			4.3	3.3	
Fluoride						2.7	4.2	
Nitrate			2.1			3.8		
FC/*E.coli*	3-5	4	7.5	5.3	6.1	2.8	2.5	3.6
Sodium			6.0			2.1	3.6	1.5
FS/Enterococci	3-5	3	8.7	5.8	6.5	1.9	1.7	3.6
Kjeldahl-N						3.5		
Odour			1.7			3.2		
Manganese	4-7	2		1.4		2.0	2.9	2.4
Hydrocarbons			1.2	1.1	1.3		2.9	
Mercury						2.8		
Temperature			2.0				2.4	
SSRC/*Cl.perfringens*							2.4	
Cyanide						1.5	1.3	1.9
EC								1.8
Antimony						1.5	1.8	
Arsenic						1.4	1.2	1.6
Oxidisability			1.1					1.4
1.2 dichloroethene								1.4
Boron								1.2
Nickel							1.1	
Tri and tetrachloroethane								1.1
Lead			3.1					
Potassium			14.9	8.4	8.3			
Pesticides		2	7.9					
Phenols					15.1			
All other parameters comply in 99% or more of the samples taken in Italy								

Total *number of water supply zones* serving more than 5000 people that exceeded the parametric value in the DWD in *more than 1 sample*. Italy 1993-2004 period									
Reporting year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Nr of WSZ	1656	1656	1656	325	325	325	1648	1663	1719
Parameter	**Number of wsz with more than 1 case of non-compliance**								
TC/Coliform bacteria	48	49	51	30	33	32	27	23	13
FS/Enterococci	18	17	21	7	13	7	18	11	7
FC/E.coli	28	24	29	16	16	12	16	17	12
Chlorite								1	9
Iron	20	16	20	5	6	5	6	6	3
Tri- and tetrachloethene									5
Nitrate	9	15	8	9	9	5	3	4	
Organohalogen compounds/THM	7	10	7		3		4	1	2
Aluminium	13	8	7		2		3	1	3
Turbidity	12	12	8	3	1	2	2	3	1
Magnesium								3	
Temperature				2	3	2	2	2	
Colony Count 22							1	2	
Pentametylentetrazola							2		
2 metil-1,3,4-tiadiazolo									2
Manganese					2		1	1	
Sulphate								1	
SSRC/*Cl. perfringens*						2		1	1
Sodium							1	1	
CC37							1	1	
Trimetilditiofostato								1	
Copper									1
1,2 dichloroethane									1
Desethylatrazine									1
2.6 dichlorobenzamide									1
Bromacil									1
Chloride								1	
Nitrite				1	3	1			
Residual chlorine						2			

Fact sheet 15: Drinking water in Latvia in 2005-2007

General information on Member States drinking water supply arrangements[19]

Table 15.1 General information on Latvia 2005-2007

Member State	Latvia
Total population in millions	2.29 / 2.29 / 2.27
Number of water supply zones	31/31/31
Total resident population supplied	1.25 / 1.25 / 1.25 (55.1%)
Total volume of water supplied in million m^3/year	103.9/102.5/102.1
Water sources used in percentages of the total volume	Groundwater 65 / 65 / 64 Surface water 21/21/22 Artificial Groundwater Recharge 14 / 14 / 14
National database on drinking water quality	www.vi.gov.lv

The data from Latvia were submitted in Excel format on the CDR (Central Data Repository) EIONET site. Latvia used the data format as described in the Guidance Document (GD) on reporting under the Drinking Water Directive 98/83/EC 09052007. They submitted three Excel documents, one for each reporting year (2005, 2006 and 2007).

Latvia had a total population of 2.29 million people and 31 large water supply zones. These WSZs supplied approximately 102.8 million m^3 of water per year to 1.25 million people (55%). Most drinking water was produced from groundwater (65%); besides surface water 21% and artificial groundwater recharge 14%.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 15.2 Information on exemptions, stricter and additional parameters

Waters exempted	None
Stricter national	None
Additional national parameters	None

Information on exemptions

There were no waters exempted in Latvia.

Stricter parameters

There were no stricter national parameters in Latvia.

[19] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Additional parameters
There were no additional national parameters in Latvia.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD
Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. Latvia used the microbiological analytical methods as defined in the DWD and no alternative methods.

Annual monitoring in water supply zones not compliant with the monitoring frequency
All parameters except iron and *Cl.perfringens* were not monitored with the required frequency. This was typically the case for 13 to 16 out of 31 water supply zones. In many cases the number of samples taken was not in compliance due to an incorrect interpretation of the DWD and more specifically table B1 on the number of samples to be taken.

National summary on drinking water quality in Latvia

Table 15.3 National summary Latvia 2005-2007

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	100	99.5	99.9
Enterococci	100	100	97.9
Chemical parameters			
Nitrate	98.6	100	100
Indicator parameters			
pH	99.1	96.6	98.1
Iron	89.5	91.6	87.3
Colour	99.9	100	100
Odour	98.9	99.4	99.1
Ammonia	100	100	99.9
Sulphate	90.8	83.6	88.6
Taste	98.8	99.4	98.7
Coliform bacteria	99.2	97.9	98.5
Turbidity	93.0	97.6	95.1
There was a serious non-compliance in monitoring so it could not be concluded that all other DWD parameters had full compliance.			

Table 15.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Enterococci			**X**
Chemical parameters			
Nitrate	**X**		
Indicator parameters			

pH		X	X
Iron	X	X	X
Odour	X		
Sulphate	X	X	X
Taste	X		X
Coliform bacteria		X	X
Turbidity	X	X	X

As mentioned before there was non-compliance in monitoring frequency. The following parameters caused non-compliance in more than 1% of the samples taken Enterococci in 2007, the chemical parameters nitrate in 2005 and the indicator parameters sulphate and turbidity in all three years and Coliform bacteria, pH, and taste in two of the three years.

Information on product specified parameters
No information was given on the product specified parameters.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones
For each parameter all WSZ that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in Latvia was 31.

Table 15.5 Number of WSZs in Latvia with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	31	31	31
Microbiological parameters			
E.coli	0	2	0
Enterococci	0	0	1
Chemical parameters			
Indicator parameters			
Coliform bacteria	2	6	2
Iron	10	8	12
Odour	3	2	3
pH	1	1	1
Sulphate	2	2	2
Taste	2	2	2
Turbidity	7	3	7

Under the heading "non-compliance information" a small number of entries were entered through WISE. The microbiological parameter *E.coli* caused non-compliance in one WSZ in 2006 and Enterococci in one WSZ in 2007. No chemical parameters were reported to cause non-compliance. The indicator parameters that caused non-compliance were iron and turbidity and to a lesser extent also odour, sulphate, taste and Coliform bacteria.

Maximum values for non-compliant parameters
Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States.

In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 15.6 Maximum (peak) values found for non-compliant parameters in Latvia

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	24/100 ml	0/ 100 ml
Enterococci	34/100 ml	0/ 100 ml
Iron	7500-8500 ug/l	200 ug/l
Sulphate	404-491 mg/l	250 mg/l
Coliform bacteria	6-91/100 ml	0/ 100 ml

Reasons for non-compliance

We could not reproduce all causes of non-compliance and the action plans MS had in this respect. We made the following observations: the cause of non-compliance and the remedial actions to restore water quality were always entered, and also the time table for achieving compliance.

Reporting on drinking water quality to the public

The information source on drinking water quality was the national website of Latvia.

Derogations for Latvia 2005-2007

No derogations were reported for the 2005-2007 period.

Historical data for Latvia

There were no historical data for Latvia.

Conclusions for Latvia

As mentioned before there was non-compliance in monitoring frequency. The following parameters caused non-compliance in more than 1% of the samples taken Enterococci in 2007, the chemical parameters nitrate in 2005 and the indicator parameters sulphate and turbidity in all three years and Coliform bacteria, pH, and taste in two of the three years.

Under the heading non-compliance information a small number of entries were entered through WISE. The microbiological parameter *E.coli* caused non-compliance in one WSZ in 2006 and Enterococci in one WSZ in 2007. No chemical parameters were reported to cause non-compliance. The indicator parameters that caused non-compliance were iron and turbidity and to a lesser extent also odour, sulphate, taste and Coliform bacteria.

Latvia reported two parameters with more than 10% non-compliance, which were iron in 2005 and 2007, sulphate in 2006 and 2007 in addition there were three parameters with more than 5% but less than 10% non-compliance, iron in 2006, sulphate and turbidity in 2005.

Fact sheet 16: Drinking water in Luxembourg 2005-2007

General information on Member States drinking water supply arrangements[20]

Table 16.1 General information Luxembourg 2005-2007

Member State	Luxembourg
Total population in millions	0.5
Number of water supply zones	16
Total resident population supplied	387530 (77.5%)
Total volume of water supplied in million m^3/year	46.4
Water sources used in percentages of the total volume	Groundwater 48% Surface water 52%
National database on drinking water quality	www.eau.public.lu

The data from Luxembourg were submitted in Excel format on the CDR (Central Data Repository) EIONET site. Luxembourg used the data format as described in the Guidance Document (GD) on reporting under the Drinking Water Directive 98/83/EC 09052007. Luxembourg had a total population of 0.5 million people and 16 large water supply zones that supplied drinking water to 387530 people (77.5% of the population). The amount of water supplied was 46.4 million m^3 per year and was mostly produced from surface water 52% and from groundwater 48%.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 16.2 Information on exemptions, stricter and additional parameters in Luxembourg

Waters exempted	Private water supplies, except those falling under a commercial or a public domain (i.e. where public may have access to the supplied drinking water).
Stricter national parameters	Copper 1 mg/l Cn 10 ug/l THM total 50 ug/l CC22 100 CFU/ml
Additional national parameters	CC37 < 20 CFU/ml

Information on exemptions

[20] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Private water supplies in Luxembourg were exempted from the DWD and from national legislation unless they were used commercially or were in the public domain (i.e. where public could have access to the supplied drinking water).

Stricter parameters
Luxembourg had four stricter national parameters, copper, cyanide, trihalomethanes and Colony count at 22.

Additional parameters
Luxembourg had one additional parameter in national legislation, Colony count at 37.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD
Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. Luxembourg used the microbiological methods given in the Drinking Water Directive 98/83/EC for all drinking water analyses.

Annual monitoring in water supply zones not compliant with the monitoring frequency
Under the heading on "annual monitoring" no information was entered, this implied that all monitoring was in compliance with the requirements of the DWD. However, in 2005 not all WSZs were monitored for all parameters. Many parameters were only monitored in 6 WSZs. The reason was that not all water suppliers monitored correctly and also did not report in an adequate manner to the national authority. The monitoring effort increased in the following years and in 2007 most parameters were monitored in 15 WSZs. For one of the 16 WSZs no data were available because the water supplier did not report to the national authorities. This led to the conclusion that the monitoring was not in compliance or monitoring had been carried out but the reporting was in non-compliance.

National summary on drinking water quality
Table 16.3 National summary Luxembourg 2005-2007

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	100	100	99.3
Enterococci	99.7	100	100
Chemical parameters			
Nickel	100	99.8	100
PAH	100	100	97.5
Indicator parameters			
Aluminium	100	99.7	100
Ammonium	99.9	100	100
Cl.perfringens	99.8	100	100
Iron	100	100	99.7
Manganese	99.2	99.1	99.4
CC22	99.0	98.7	96.8
Coliform bacteria	99.9	99.5	99.3
Turbidity	96.4	97.1	100
All other DWD parameters had full compliance in the three reporting years.			

Table 16.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Chemical parameters			
PAH			**X**
Indicator parameters			
Colony count 22	**X**	**X**	**X**
Turbidity	**X**	**X**	

With the exception of the parameters PAH in 2007, CC22 2005, 2006 and 2007) and turbidity (2005-2006) the level of compliance was high > 99%. However, we had to bear in mind that especially in the years 2005 and 2006 not all parameters were analysed/reported in all WSZs. Except for the parameters CC22 and coliform bacteria, the non-compliance mostly occured in 1 or occasionally 2 WSZs.

Information on product specified parameters
Vinylchloride was monitored together with other organo chlorinated volatile compounds and was never detected at levels > 0.5 µg/l. With respect to acryl amide Luxembourg only allowed the use of certified materials in drinking water infrastructures.

Information on non-compliance of drinking water in water supply zones
Information on non-compliance at WSZ level was not available in Luxembourg.

Reporting on drinking water quality to the public
An annual report was published by the administration and was available on the website. The drinking water supplier had the obligation to inform consumers on a local basis.

Derogations for Luxembourg 2005-2007
In the returns no derogations were reported for Luxembourg because the first derogation was issued in 2010 only (pesticide metabolite Metolachlor-ESA).

Historical data for Luxembourg
There were very few and incomplete historical data from Luxembourg.

Number of water supply zones that show non-compliance listing the parameters that most often caused zones to fail 2002-2004 Luxembourg 2002-2004 period			
Reporting year			
Parameter	2002	2003	2004
Colony Counts 36	8	7	6
Colony Counts 22	6	6	6
TC/Coliform bacteria	5	5	5
Manganese	1		

Conclusions for Luxembourg
The return for Luxembourg was incomplete. There was non-compliance with the monitoring and the reporting requirements. For one WSZ there was no information at all. At national level a few parameters caused non-compliance, which were PAH (2007) and the indicator parameters CC22

and turbidity. There was no information at water supply zone level on (non) compliance only at national level.. In previous years non-compliance was caused by Colony count 22 and Coliform bacteria. Trend analysis was not possible due to the lack of data.

Luxembourg did not report any parameters where non-compliance exceeds 5%.

Fact sheet 17 Drinking water in Lithuania 2005-2007

General information on Member States drinking water supply arrangements[21]

Table 17.1 General information on Lithuania 2005-2007

Member State	Lithuania
Total population in millions	3.41/3.39/3.37
Number of water supply zones	61/63/63
Total resident population supplied	1.970 / 1.970 / 1.976 (57.9%)
Total volume of water supplied in million m^3/year	117/119/116
Water sources used in percentages of the total volume	Groundwater 100%
National database on drinking water quality	http://www.vmvt.lt http://www.kaunovandenys.lt http://www.vanduo.lt http://www.palangosvandenys.lt http://www.siauliuvandenys.lt http://www.varenosvandenys.lt http://www.vv.lt http://www.avandenys.lt

The data from Lithuania were submitted in Excel format on the CDR (Central Data Repository) EIONET site. They submitted three Excel documents, one for 2005, one for 2006 and one for 2007. Lithuania used the data format as described in the Guidance Document on reporting under the Drinking Water Directive 98/83/EC. The reporting years were 2005, 2006 and 2007.

Lithuania had a total population of 3.4 million people and 61 to 63 large water supply zones that supplied drinking water to 1.97 million people (57.9% of the population). The amount of drinking water supplied by these large WSZs was 116-119 million m^3 per year. All drinking water was produced from groundwater.

[21] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 17.2 Information on exemptions, stricter and additional parameters

Waters exempted	The requirements of the Directive are not applicable to drinking water from individual sources, that are not used for commercial activities or public needs
Stricter national parameters	Colour 30 mg/l Pt Turbidity 4 FTU
Additional national parameters	None

Information on exemptions

Small water supply zones being individual sources not used for public or commercial water supply were exempted.

Stricter parameters

There were two stricter national parameters in Lithuania: colour and turbidity.

Additional parameters

There were no additional national parameters in Lithuania.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD

Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. Lithuania applied all microbiological analytical methods mentioned in the DWD.

Annual monitoring in water supply zones not compliant with the monitoring frequency

Lithuania did not report any shortcomings in monitoring frequencies for any of the DWD parameters. However, it should be mentioned that according to the national authorities no information was gathered at national level on the required number of tests in accordance with DWD in years 2005, 2006 and 2007. The authorities also confirmed that not all the mandatory parameters were monitored in all WSZs. For example, in 2005 only 6 parameters were monitored in all 61 WSZs (*E.coli*, Coliform bacteria, Enterococci, iron, ammonium and conductivity), in 2006 only 4 parameters were monitored in all 63 WSZs *(E.coli*, Enterococci, iron and ammonium) in 2007 only 4 parameters were monitored in all WSZs (*E.coli*, Enterococci, Coliform bacteria and iron. The annual monitoring in water supply zones in Lithuania was often not in compliance with the requirements of the DWD.

National summary on drinking water quality Lithuania

Table 17.3 National summary Lithuania 2005-2007

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
Chemical parameters			
Fluoride	81.1	85.0	76.7
Nitrite			99.7
Indicator parameters			
Ammonium	98.8	98.0	99.4
Iron	91.7	92.1	94.3
Manganese	88.3	93.9	94.1
Oxidisability	98.1	99.0	
Sulphate	97.1	97.9	93.8
Turbidity	100	99.2	99.8
All other DWD parameters had full compliance in the three reporting years.			

Table 17.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Chemical parameters			
Fluoride	**X**	**X**	**X**
Indicator parameters			
Ammonium	**X**	**X**	
Iron	**X**	**X**	**X**
Manganese	**X**	**X**	**X**
Oxidisability	**X**		
Sulphate	**X**	**X**	**X**

The parameters that caused non-compliance in Lithuania in more than 1% of all samples taken at national level were the chemical parameter fluoride and the indicator parameters iron and manganese and sulphate and in two years also ammonium and in 2005 oxidisability. However, not all parameters were monitored in all WSZs.

Information on product specified parameters

No information was given on the product specified parameters.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones

Per parameter all WSZs that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in Lithuania was 61/63/63.

Table 17.5 Number of WSZs in Lithuania with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	61	63	63
Microbiological parameters			
Chemical parameters			
Fluoride	4	4	4
Nitrite			2
Indicator parameters			
Ammonium	4	9	4
Iron	14	21	10
Manganese	8	11	6
Oxidisability	3	1	
Sulphate	2	2	1
Turbidity	1	4	4

Parameters that caused non-compliance in WSZs were the chemical parameter fluoride and in 2007 also nitrite and the indicator parameters iron, manganese, ammonium, turbidity, sulphate and in 2005 and 2006 also oxidisability.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 17.6 Maximum (peak) values found for non-compliant parameters in Lithuania

Parameter	**Range of maximum (peak) values**	**Parametric value in the DWD 98/83/EC**
Fluoride	1.7-2.75 mg/l	1.5 mg/l
Ammonium	0.54-2.73 mg/l	0.50 mg/l
Iron	239-7119 ug/l	200 ug/l
Manganese	58-550 ug/l	50 ug/l
Oxidisability	5.5-6.7 mg/l O2	5.0 mg/l O2
Sulphate	315-835 mg/l	250 mg/l

Reasons for non-compliance

We could not reproduce all causes of non-compliance and the action plans MS had in this respect. We made the following observations:

Observations:

- Causes for non-compliance were always given.
- Planned remedial actions were always given.
- Time frames were always given.

Reporting on drinking water quality to the public
Information on the quality of drinking water was provided by national and regional state food and veterinary services (SFVS).

Derogations for Lithuania
Lithuania reported three derogations for fluoride.

Historical data for Lithuania
There were no historical data for Lithuania.

Conclusions for Lithuania
The monitoring effort was not in compliance with the requirements of the DWD. Also the national authorities did not have such information on monitoring available at national level. Many parameters were not (sufficiently) monitored.

The parameters that caused non-compliance in Lithuania in more than 1% of all samples taken at national level were the chemical parameter fluoride and the indicator parameters iron and manganese and sulphate and in two years also ammonium and in 2005 oxidisability. However, not all parameters were monitored in all WSZs.

Parameters that caused non-compliance in WSZs were the chemical parameter fluoride and in 2007 also nitrite and the indicator parameters iron, manganese, ammonium, turbidity, sulphate and in 2005 and 2006 also oxidisability.

Lithuania had two parameters with more than 10% non-compliance, manganese in 2005 and fluoride in 2005, 2006 and 2007. There were two parameters with more than 5% but less than 10% non-compliance, manganese in 2006 and 2007 and iron in all three years.

Fact sheet 18: Drinking water in Malta in 2005-2007

General information on Member States drinking water supply arrangements[22]

Table 18.1 General information Malta 2005-2007

Member State	Malta
Total population in millions	0.39 average
Number of water supply zones	13
Total resident population supplied	388477/394368 (99-100%)
Total volume of water supplied in million m^3/year	28 (2005-2006) and 27 (2007)
Water sources used in percentages of the total volume	Groundwater 43.9-44.8% Other sources 56.1-55.2 % saline groundwater from deep wells.
National database on drinking water quality	www.wsc.com.mt

The data from Malta were submitted in Excel format on the CDR (Central Data Repository) EIONET site. Malta used the data format as described in the Guidance Document (GD) on reporting under the Drinking Water Directive 98/83/EC 09052007. The reporting years were 2005, 2006 and 2007.
Malta had an estimated population of 0.39 million and 13 large water supply zones. These WSZs supplied water to 99 to 100% of the population, the volume between 27 and 28 million m^3 per year. There were two sources for the production of drinking water which were groundwater 44-45% and desalinated water from deep wells 55-56%. Malta had a large influx of tourists.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 18.2 Information on exemptions, stricter and additional parameters

Waters exempted	None
Stricter national parameters	None
Additional national parameters	None

Information on exemptions
No WSZs wereexempted from EU and national legislation.

Stricter parameters
There were no stricter national parameters for drinking water in Malta.

Additional parameters:
There were no additional parameters in the national legislation.

[22] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD

Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. The microbiological methods used in Malta were the ones mentioned in the DWD. *Cl.perfringens* was not analysed and no method was given, this because Malta did not use surface water for the production of drinking water, but only groundwater and deep saline groundwater.

Annual monitoring in water supply zones not compliant with the monitoring frequency

All monitoring (both audit and check) was performed in accordance with the requirements of the DWD 98/83/EC.

National summary on drinking water quality

Table 18.3 National summary Malta 2005-2007

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
Chemical parameters			
Nitrate	93.9	100	100
Indicator parameters			
Chloride	0.2	0	2.6
Conductivity	83.9	91.6	97.0
Iron	92.9	100	100
Sodium	35.7	51.2	0
All other DWD parameters had full compliance in the three reporting years.			

Table 18..4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Chemical parameters			
Nitrate	**X**		
Indicator parameters			
Chloride	**X**	**X**	**X**
Conductivity	**X**	**X**	**X**
Iron	**X**		
Sodium	**X**	**X**	**X**

The non-compliance in Malta was mostly related to the source and treatment of the drinking water, being groundwater from fresh and saline sources. There was one chemical parameter that caused non-compliance in more than 1% of samples which was nitrate in 2005. The chemical parameters chloride, sodium and conductivity had very high non-compliance rate in all three years and iron had non-compliance in 2005.

Information on product specified parameters

Analysis of acryl amide always gave a value less than the limit of 0.1 µg/l stipulated in the directive.

Analysis of epichlorohydrin always gave a value less than the limit of 0.1 µg/l stipulated in the directive. Analysis of vinyl chloride always gave a value less than the limit of 0.5 µg/l stipulated in the directive.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones

Per parameter all WSZs that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in Malta was 13.

Table 18.5 Number of WSZs in Malta with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	13	13	13
Microbiological parameters			
Chemical parameters			
Nitrate	3		
Indicator parameters			
Chloride	13	13	13
Conductivity	5	4	6
Sodium	9	5	13

All 13 WSZs in Malta had non-compliance for the indicator parameter chloride, many of them also for sodium and conductivity. The chemical parameters nitrate caused non-compliance in three WSZs in 2005 and not in the other two years.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 18.6 Maximum (peak) values found for non-compliant parameters in Malta

Parameter	**Range of maximum (peak) values**	**Parametric value in the DWD 98/83/EC**
Nitrate	58.5-74.6 mg/l	50 mg/l
Iron	300-380 mg/l	200 ug/l
Chloride	310-1140 mg/l	250 mg/l
Conductivity	2580-4140 uS/cm	2500 uS/cm
Sodium	220-499 mg/l	200 mg/l

Reasons for non-compliance

We could not reproduce all causes of non-compliance and the action plans MS had in this respect. We made the following observations. In the return the cause of non-compliance (agriculture for nitrate, distribution system failure for iron and nature of the sources water for sodium, chloride and EC) were given. Also mention was made of remedial action and period for

solving the problems. For the non-compliance for the salinity of the water caused by the source no short term solution was offered and they were considered to be of indicative value (indicator parameter) where no action was needed.

Reporting on drinking water quality to the public
All information was made available on the national website and on request. It was actually possible to find this information on the website and in English.

Derogations for Malta
There were no derogations in place in Malta.

Historical data for Malta
There were no historical data as Malta did not have to report in previous periods.

Conclusions for Malta
The monitoring in Malta was in compliance with the requirements of the DWD. The non-compliance caused in the quality of drinking water was mainly related to the sources of water used for the production of drinking water, chloride, sodium, electro-conductivity and in some cases nitrate and iron. There were no significant non-compliances with microbiological or chemical parameters. Malta had more than 10% non-compliance for three parameters, chloride and sodium in all three years (very low percentages of compliance) and EC in 2005. Malta had two parameters with more than 5% but less than 10% non-compliance, nitrate in 2005 and EC in 2006.

Fact sheet 19: Drinking water in the Netherlands

General information on Member States drinking water supply arrangements[23]

Table 19.1 General information the Netherlands

Member State	The Netherlands
Total population in millions	16
Number of water supply zones	215/213/213
Total resident population supplied	16 million
Total volume of water supplied in million m^3/year	1191/1210/1178
Water sources used in percentages of the total volume	Groundwater 61.4 % Surface water 38.6 %
National database on drinking water quality	www.rivm.nl www.rijksoverheid.nl

The data from The Netherlands were submitted in partly word and partly Excel format on the CDR (Central Data Repository) EIONET site. The reporting years were 2005, 2006 and 2007. Most of the comment points in this chapter were related to the use of the old reporting format

The Netherlands had total population of 16 million people that were all (100%) supplied by 213/215 large WSZs. Together the WSZs supplied on average 1193 million m^3 of water per year. Most drinking water was produced from groundwater (61.4%) and the remainder from surface water (38.6%).

[23] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 19.2 Information on exemptions, stricter and additional parameters

Waters exempted	No information (not requested in old format)
Stricter national parameters	Boron 0.5 mg/l Bromate 1.0 µg/l (in case of ozonation 5.0 as 90-percentile; max 10 µg/l) Fluoride 1.1 mg/l Lead 10 µg/l (since 1-1-2006) Nitrite 0.1 mg/l Trihalomethanes 25 µg/l (as 90-percentile; max 50 µg/l; since 1-1-2006) Ammonia 0.2 mg/l Chloride 150 mg/l Conductivity 1250 µS/cm Colony count 22 C 100 cfu/ml (yearly average geometric) Colour 20 mg/l Pt-Co standard pH 7<pH> 9.5 Sulphate 150 mg/l Sodium 150 mg/l (as yearly average with a max 200 mg/l) Turbidity 4 NTU (at the tap) 1 NTU (production plant)
Additional national parameters	Aeromonas 1000 cfu/100 ml Hardness (total) > 1 mmol (only in case of softening at the production plant) Temperature 25 C Hydrogencarboonate > 60 mg/l Oxygen > 2mg/l Zinc > 3 mg/l (after 16 hours stagnation)

Information on exemptions
This information was not requested under the old reporting format.

Stricter parameters
There were 15 stricter parameters in the Dutch national legislation. See table 4.19.2.

Additional parameters:
There were six additional parameters in the Dutch national legislation. See table 4.19.2.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD
Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. The Netherlands applied the microbiological analyses

methods as mentioned in the DWD and for coliforms/*E.coli* the method based on LSA was used. The alternative method had been reported to the EC.

Annual monitoring in water supply zones not compliant with the monitoring frequency
The old reporting format did not have a specific question on non-compliance with the monitoring frequency. When asked the responsible authorities reported that in general the number of samples for audit and check monitoring was calculated on the production volume for each production plant conform Table B1 of the DWD. For each production plant a calculation was made on the number of samples to be taken at the production plant and in the WSZ.

National summary on drinking water quality the Netherlands
Table 19.3 National summary the Netherlands 2005-2007

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	100	99.9	100
Enterococci	99.4	100	99.6
Chemical parameters			
BaP	100	99.9	99.9
Nitrate	100	99.9	99.9
Nickel	99.4	99.4	99.9
Indicator parameters			
Aluminium	99.9	100	99.7
Cl.perfringens	99.7	99.6	99.5
Colour	100	100	99.9
Iron	99.8	99.8	99.8
Manganese	99.7	99.5	99.7
Odour	100	99.9	100
Coliform bacteria	100	100	99.9
Turbidity	99.8	99.8	99.8
All other DWD parameters had full compliance in the three reporting years.			

Table 19.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Chemical parameters			
Indicator parameters			

All parameters had more than 99% compliance at national level.

Information on product specified parameters
The specified parameters acryl amide, epichlorohydrin and vinylchloride were regulated through product control according to Art. 10 of the DWD within the certification system in the Netherlands.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones

Per parameter all WSZs that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in the Netherlands varied between 213 and 215. As the Netherlands reported separately on results from production plants and WSZs and there was no easy way to link the two it was decided to give both types of information separately.

Table 19.5 Number of production plants and WSZs in the Netherlands with more than 1 case of non-compliance for the various parameters in the DWD. Per parameter all production plants and all WSZs that had more than 1 case of non-compliance in 2005/2006/2007 were calculated.

Parameter	Nr of production plants >1 case of non-compliance			Nr of WSZ with > 1 case of non-compliance		
	2005	2006	2007	2005	2006	2007
				215	213	213
E.coli	0	0	0	4	5	3
Enterococci	1	0	0	0	0	0
Bentazon	0	1	1	0	0	0
Nickel	1	1	0	1	0	0
Cl.perfringens	0	0	4	4	3	2
Colour	0	0	0	0	2	2
Iron	0	1	0	2	3	3
Manganese	2	1	2	0	1	0
Coliform bacteria	0	0	0	1	1	2
Turbidity	5	10	7	3	2	2

Microbiological parameters that caused non-compliance were *E.coli* and Enterococci (only in 2005). The chemical parameters Bentazon and nickel caused non-compliance in one WSZ and the indicator parameters that caused non-compliance were turbidity, *Cl.perfringens* and in a small number of areas also iron, manganese, colour and Coliform bacteria.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 19.6 Maximum (peak) values found for non-compliant parameters in the Netherlands

Parameter	*Range of maximum (peak) values*	*Parametric value in the DWD 98/83/EC*
E.coli	1/100 ml	0/ 100 ml
Enterococci	1-3/100 ml	0/ 100 ml
Bentazon	0.11-0.28 ug/l	0.1 ug/l
Nickel	31-32 ug/l	20 ug/l
Cl.perfringens	1-60/100 ml	0/100 ml
Iron	203-2100 ug/l	200 ug/l
Manganese	52-150 ug/l	50 ug/l
Coliform bacteria	1-31/100 ml	0/ 100 ml

Reasons for non-compliance

We could not reproduce all causes of non-compliance and the action plans MS had in this respect. We made the following observations. Causes for non-compliance were not given at individual case level but at a generic level in the text document. The old reporting format asked for a short explanation of the non-compliances. Therefore not all non-compliance details were mentioned. Most of the parameters were indicators and the reasons were mostly general like a technical incident during treatment. Planned remedial actions were never given as non-compliance was not judged as being structural and not health threatening. In the case of pesticides and nickel non-compliance new treatment steps were foreseen.

Reporting on drinking water quality to the public

The annually produced reports were posted at the web sites of the Ministry and RIVM. All water supply companies had a website where people could find quality data of the drinking water in their area (postal codes) or municipality.

Derogations for the Netherlands

The Netherlands reported 14 derogations for the 2005-2007 period, which were for colour (10 derogations derogated value 20 mg/l Pt, 3 for oxidisability derogated value 5 mg/l O_2 and 1 for nickel derogated value 20 ug/l). All derogations were due to natural geological conditions. Only the derogation for nickel was according the 98/93 DWD Table B, the others were indicator parameters (Table C).

Historical data for the Netherlands

National summary of monitoring results for each parameter in large wsz > 5000 people. Percentages non-compliance. The Netherlands, 1993-2004 period				
Parameter	1993-1995	1996-1998	1999-2001	2002-2004
	None	None	None	None

Total *number of water supply zones* serving more than 5000 people that exceeded the parametric value in the DWD in *more than 1 sample*. The Netherlands.1996-2004 period

Number of water supply zones with non-compliance, water quality leaving the treatment plant

(only parameters that failed in more than 1 sample were included)

Parameter	1996	1997	1998	1999	2000	2001	2002	2003	2004
Nr of WSZ	250	250	250	230	230	230	225	221	218
Turbidity					1		15	14	12
Manganese	3	5	4	5	3	3	2	3	2
Iron	5	5	5	6	7	4	1	1	1
Nickel						2	1	1	1
TC/Coliform bacteria	9	3	4	4	2	2			2
Trichloroacetic acid							1		1
Mecoprop				1	1	1	1		
Nitrate					1		1		
Colour					1				1
Ammonium									1
Bromacil									1
Pesticides	4	5	5						
AMPA				1					
Bentazon				2	1	1			
BAM					2	2			
Sulphate				1					
Nitrite				1	1				
Oxidisability					1				
Nitrate					1				

Number of water supply zones with non-compliance, water quality in the distribution net (consumers' tap) (only parameters that failed in more than 1 sample were included

Parameter	1996	1997	1998	1999	2000	2001	2002	2003	2004
Nr of WSZ	250	250	250	230	230	230	225	221	218
Iron	10	15	10	11	7	8	1	3	6
Turbidity				2		2	1	1	3
Manganese	2	2	2	1	2	2			3
Lead						2	3		
TC/Coliform bacteria	5	8	5	5	7	4	1	2	
Metoxuron							1		
Colour								1	1
FC/*E.coli*					1				
Nitrite					1				
Temperature				1		2			
Ammonium				1		1			

Conclusions for the Netherlands

In the Netherlands all DWD parameters had more than 99% compliance in the samples taken at national level. Due to the separate reporting on monitoring data for production plants and water

supply zones and the fact that there was no easy link between the two we included separate information on non-compliance in water ex-works and water in the WSZs.
Parameters that caused non-compliance were mostly indicator parameters such *Cl.perfringens* and turbidity. Other parameters that caused non-compliance in a small number of production plants/WSZs were *E.coli* and Enterococci (only in 2005), bentazon and nickel in one area and iron, manganese, colour and Coliform bacteria. There were historical data for the Netherlands, the data were very similar to the 2005-2007 data. There was a slightly higher number of WSZs with non-compliance for *E.coli* and *Clostridium perfringens*.

The Netherlands had no parameters with more than 5 or 10% non-compliance.

Fact sheet 20: Drinking water in Poland 2005-2007

***General information on Member States drinking water supply arrangements*[24]**

Table 20.1 General information Poland 2005-2007

Member State	Poland
Total population in millions	38.1 / 38.1 / 38.1
Number of water supply zones	2478
Total resident population supplied	34.2/ 34.4 / 34.6 (89.7 / 90,4 / 90.8 % of the total population)
Total volume of water supplied in million m^3/year	2105/2128/2085 Mm^3/year
Water sources used in percentages of the total volume	Groundwater 67.52 / 68.34 / 68.46% Surface water 32.48 / 31.66 / 31.54%
National database on drinking water quality	www.pis.gov.pl

The data from Poland were submitted in Excel format on the CDR (Central Data Repository) EIONET site. Poland used the data format as described in the Guidance Document (GD) on reporting under the Drinking Water Directive 98/83/EC 09052007. The reporting years were 2005, 2006 and 2007. Poland had a total population of 38.1 million people and had 2478 Water Supply Zones. The WSZs supplied approximately 2100 million m^3 of water per year to more than 34 million people) 90% of the total population). Drinking water was mostly produced from groundwater (68%) and from surface water (32%).

The three annual report to the EC was the first national report concerning period 2005 – 2007. This report was developed after Poland had accessed the European Union in 2004, on the basis of the national legislation from 2000, 2001 and 2002. Poland notified that the domestic legislation from that period did not implement the methodology included in the Directive. It was also important that Polish monitoring contained 58 parameters, whereas the check monitoring and audit monitoring were different from those laid down in the Directive. This caused significant non-compliances resulting from the lack of a large number of parameter analyses in all zones. The full implementation of the Directive was completed in 2010. [Journal of Laws of 2007 No. 61, item. 466, as amended]. Thus, Poland pointed out that it would be a great mistake to compare reports from other Member States because the Polish reported contains tests, ranges and parameters related to completely different legislation than specified in the Directive. Only the report of 2008-2010 will be based on the fully implemented regulations set in the Directive.

[24] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 20.2 Information on exemptions, stricter and additional parameters

Waters exempted	n.i.
Stricter national	n.i.
Additional national parameters	n.i.

Information on exemptions
No information was submitted through EIONET

Stricter parameters:
No information was submitted through EIONET

Additional parameters
No information was submitted through EIONET

Poland did not provide any information on the types of water exempted, nor on stricter and additional national parameters.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD
Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. Poland applied the microbiological methods mentioned in the DWD and for *E.coli* and the Coliform bacteria also the Colilert method.

Annual monitoring in water supply zones not compliant with the monitoring frequency
The monitoring, sampling and analytical effort did not seem to be in compliance with the DWD. A number of parameters were not adequately monitored or not at all monitored. Parameters that were in (more or less) compliance with the required monitoring frequency (calculated number equals analyses done) were Colony count 22, cadmium, Coliform bacteria, colour, conductivity, Enterococci, *E.coli*, iron, manganese, nitrate, odour, lead, pH and turbidity. The non-compliance with the monitoring frequency was due to the differences in the interpretation of definitions in the DWD according to the Polish authorities.

National summary on drinking water quality
None of the DWD parameters was monitored in all WSZs. However, this could have been caused by differences in interpretation of the DWD. In general many parameters were not monitored. In 2006 there was not one parameter with a compliance of 100%. The parameters iron, manganese and turbidity had a compliance of less than 90% for all three years (2005, 2006, and 2007)

Poland had 2478 WSZ, but according to the data in the work sheet “water supply zone” the number of WSZ was 1577/1590/1602. The latter information was used to calculate percentages (non) compliance in table 20.3.

Table 20.3 National summary Poland 2005-2007

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	98.6	98.5	99.0
Enterococci	97.6	97.0	96.8
Chemical parameters			
Antimony	100	No data	100
Arsenic	99.6	99.7	99.7
Boron	100	95.6	99.7
BaP	99.3	99.9	99.8
Bromate	100	No data	98.7
Cadmium	99.4	99.3	99.8
Chromium	99.9	100	100
Copper	100	99.9	100
Cyanide	100	No data	100
Fluoride	99.5	99.6	99.3
Mercury	97.7	98.0	99.0
Dichloroethane	No data	No data	100
Nickel	98.0	99.3	98.8
Nitrate	98.9	99.0	99.1
Nitrite WTP	99.7	99.7	99.8
Lead	98.4	99.1	99.3
Pesticides total	100	No data	100
Pesticides ind.	100	No data	99.8
PAH	99.3	99.5	99.8
Selenium	100	No data	99.9
Tri and tetra	No data	No data	99.3
THM total	100	99.8	99.9
Indicator parameters			
Aluminium	98.7	99.2	98.6
Ammonium	No data	No data	96.0
Chloride	99.5	99.9	99.8
Colour	96.2	96.8	97.2
pH	99.1	99.1	99.0
Iron	86.0	86.6	86.9
Manganese	83.8	84.8	85.7
Odour	98.8	98.2	98.1
Sulphate	97.8	98.4	99.3
Sodium	98.3	99.1	99.5
Taste	99.7	98.3	99.5
Oxidisability	95.2	98.3	97.3
CC22	90.3	88.4	87.4
Coliform bacteria	95.9	95.0	94.5
Cl.perfringens	98.1	97.7	98.6
TOC	0.00	No data	97.8
Turbidity	84.7	84.9	85.4
All other DWD parameters had full compliance in the three reporting years.			

Table 20.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
E.coli	**X**	**X**	**X**
Enterococci	**X**	**X**	**X**
Chemical parameters			
Boron		**X**	
Bromate			**X**
Mercury	**X**	**X**	
Nickel	**X**		**X**
Nitrate	**X**	**X**	
Lead	**X**		**X**
Indicator parameters			
Aluminium	**X**		**X**
Ammonium			**X**
Colour	**X**	**X**	**X**
pH			**X**
Iron	**X**	**X**	**X**
Manganese	**X**	**X**	**X**
Odour	**X**	**X**	**X**
SO4	**X**	**X**	
Sodium	**X**		
Taste		**X**	
Oxidisability	**X**	**X**	**X**
CC22	**X**	**X**	**X**
Coliform bacteria	**X**	**X**	**X**
Cl.perfringens	**X**	**X**	**X**
TOC	**X**		**X**
Turbidity	**X**	**X**	**X**

Both microbiological parameters *E.coli* and Enterococci caused more than 1% non-compliance in all three reporting years. The chemical parameters boron, bromate, mercury, nickel, nitrate and lead caused non-compliance in more than 1% of the samples in mostly 2 years (or 1 year). There were many indicator parameters that caused non-compliance in more than 1% of samples. In all three reporting years non-compliance was caused by colour, iron, manganese, odour, oxidisability, CC22, Coliform bacteria, *Cl.perfringens* and turbidity. In two years non-compliance was caused by aluminium, sulphate and TOC and in one of the reporting years by pH, sodium, ammonium and taste.

Information on product specified parameters
The returns mentioned “in accordance with DWD 98/83/EC”

Information on non-compliance of drinking water in water supply zones
Level of non-compliance in the water supply zones
Per parameter all WSZ that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in Poland was not clear.

Table 20.5 Number of WSZs in Poland with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
Not certain about nr of WSZs	1577	1590	1602
Microbiological parameters			
E.coli	169	154	124
Enterococci	77	67	280
Chemical parameters			
Arsenic	4	1	4
BaP	4		1
Boron			1
Bromate			1
Cadmium	9	3	3
Chromium	1	1	
Fluoride	7	5	7
Lead	23	13	8
Mercury		1	3
Nickel	5	1	7
Nitrate	108	95	91
Nitrite WTP	27	21	15
N-formulae	102	87	88
PAH	2	4	1
Pesticides Ind.			2
Tri+tetra			1
Indicator parameters			
Aluminium	8	9	10
Ammonium			108
Colour	344	284	258
Conductivity	1	1	1
Chloride	2	3	10
Cl.perfringens	29	31	23
pH	78	77	78
Iron	932	908	858
Manganese	944	936	881
Sodium			1
Odour	90	113	111
Oxidisability	36	7	13
Sulphate	2	5	6
Taste	18	28	9
CC22	250	262	232
Coliform bacteria	481	487	
TOC			1
Turbidity	945	991	928

Both microbiological parameters caused non-compliance in many WSZs in all three years. Non-compliance was caused by the chemical parameters nitrate, nitrite and lead in all reporting years and in a few WSZs by PAH, nickel, fluoride and arsenic. In some but not all years non-compliance was caused by the chemical parameters cadmium, chromium, boron, BaP, arsenic, bromate, mercury, pesticides and tri and tetra but in a small number of WSZs. The highest level of non-compliance with respect to the number of WSZs affected were caused by indicator parameters such as iron, manganese, turbidity, colour, CC22, Coliform bacteria, but also to a lesser extent by aluminium, *Cl.perfringens*, pH, odour, oxidisability, sulphate, taste and ammonium, conductivity, chloride, TOC, PAH and sodium.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 20.6 Maximum (peak) values found for non-compliant parameters in Poland

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	1454-4300/100 ml	0/ 100 ml
Enterococci	195-540/100 ml	0/ 100 ml
Arsenic	36-380 ug/l	10 ug/l
Boron	1.16 mg/l	1 mg/l
BaP	0.1-1 ug/l	0.010 ug/l
Bromate	33 ug/l	10 ug/l
Cadmium	20-150 ug/l	5.0 ug/l
Chromium	155-230 ug/l	50 ug/l
Fluoride	3.3-22 mg/l	1.5 mg/l
Mercury	3-91.7 ug/l	1.0 ug/l
Nickel	134-2996 ug/l	20 ug/l
Nitrate	198-767 mg/l	50 mg/l
Nitrite WTP	12.5-173 mg/l	0.10 mg/l
Aluminium	890-7005 ug/l	200 ug/l
Ammonium	19.4 mg/l	0.50 mg/l
Chloride	324-8605 mg/l	250 mg/l
Cl.perfringens	74-490 mg/l	0/100 ml
Conductivity	2760-6917 mg/l	2500 uS/cm
Iron	6700-130000 ug/l	200 ug/l
Lead	199- 290.2 ug/l	10 ug/l
Manganese	5100-14000 ug/l	50 ug/l
PAH	4.82-23.4 ug/l	0.10 ug/l
Oxidisability	25-5100 mg/l O2	5.0 mg/l O2
Pesticides ind.	9.9 ug/l	0.10 ug/l
Sodium	244 mg/l	200 mg/l
Sulphate	626-826 mg/l	250 mg/l
Coliform bacteria	24000-198630/100 ml	0/ 100 ml
Tri and tetra	166 ug/l	10 ug/l

Reasons for non-compliance

We could not reproduce all causes of non-compliance and the action plans MS had in this respect. We made the following observations:

- Causes for non-compliance were never given.
- Planned remedial actions were never given.
- Time frames were never given.

Reporting on drinking water quality to the public

Besides the national website information on the quality of the water was available at the16 Regional Sanitary Inspectorates, regional statistical offices and the local sanitary and regional inspectorates and local newspapers and from the National Institute of Public Health.

Derogations for Poland

One derogation was mentioned for fluoride (there were two more derogations for fluoride but they were not mentioned in this report according to the authorities).

Historical data for Poland

There were no historical data available for Poland.

Conclusions for Poland

None of the DWD parameters was monitored in all WSZs. In general many parameters were not analysed at all. In other words the monitoring effort in Poland was not in compliance with the requirements of the DWD. The national authorities did not agree with this conclusion.

Both microbiological parameters *E.coli* and Enterococci caused more than 1% non-compliance in all three reporting years. The chemical parameters boron, bromate, mercury, nickel, nitrate and lead caused non-compliance in more than 1% of the samples in mostly 2 years (or 1 year). There were many indicator parameters that caused non-compliance in more than 1% of samples. In all three reporting years non-compliance was caused by colour, iron, manganese, odour, oxidisability, CC22, Coliform bacteria, *Cl.perfringens* and turbidity. In two years non-compliance was caused by aluminium, sulphate and TOC and in one of the reporting years by pH, sodium, ammonium and taste.

Both microbiological parameters caused non-compliance in many WSZs in all three years. Non-compliance was caused by the chemical parameters nitrate, nitrite and lead in all reporting years and in a few WSZs by PAH, nickel, fluoride and arsenic. In some but not all years non-compliance was caused by the chemical parameters cadmium, chromium, boron, BaP, arsenic, bromate, mercury, pesticides and tri and tetra but in a small number of WSZs. The highest level of non-compliance with respect to the number of WSZs affected were caused by indicator parameters such as iron, manganese, turbidity, colour, CC22, Coliform bacteria, but also to a lesser extent by aluminium, *Cl.perfringens*, pH, odour, oxidisability, sulphate, taste and ammonium, conductivity, chloride, TOC, PAH and sodium.

Poland had four parameters with more than 10% non-compliance, iron, manganese and turbidity in all three reporting years and CC22 in 2006 and 2007. There were two parameters with more than 5% but less than 10% non-compliance, CC22 in 2005 and Coliform bacteria in 2006 and 2007.

Fact sheet 21: Drinking water in Portugal in 2005-2007

General information on Member States drinking water supply arrangements[25]

Table 21.1 General information in Portugal 2005-2007

Member State	Portugal
Total population in millions	10.7
Number of water supply zones	357/369/374
Total resident population supplied	8.437.415/8.649.680/8.760.723 (78.9/80.8/81.9%)
Total volume of water supplied in million m^3/year	724/774/777 million m^3/year
Water sources used in percentages of the total volume	Groundwater 37/35/32% Surface water 63/65/68%
National database on drinking water quality	www.ersar.pt

The data from Portugal were submitted in Excel format on the CDR (Central Data Repository) EIONET site. Portugal used the data format as described in the Guidance Document (GD) on reporting under the Drinking Water Directive 98/83/EC 09052007. Portugal reported for the years 2005, 2006 and 2007.
Portugal had a total population of 10.7 million and has 357-374 large WSZs that supplied 8.4-8.7 million people (79 to 82% of the population). The large WSZs supplied between 724 to 777 million m^3 of water per year. Drinking water in Portugal was mostly produced from surface water sources 63-68% and also from groundwater sources 32-37%.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 21.2 Information on exemptions, stricter and additional parameters

Waters exempted	None
Stricter national parameters	None
Additional national parameters	Colony Count 37 ° C No abnormal change

Information on exemptions
No water supply zones were exempted in Portugal.

Stricter parameters
There were no stricter parameters in Portuguese national legislation.

Additional parameters
There was one additional parameter in national legislation: Colony count 37.

[25] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD

Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. Portugal used the microbiological methods specified in the DWD and for E.coli and Coliform bacteria also an alternative method that was reported to the EC.

Annual monitoring in water supply zones not compliant with the monitoring frequency

The monitoring frequency compliedwith the requirements of the DWD.

National summary on drinking water quality

Table 21.3 National summary

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	99.0	99.3	99.4
Enterococci	99.1	99.3	99.6
Chemical parameters			
Nickel	99.6	99.4	98.6
Indicator parameters			
Aluminium	98.8	98.5	99.0
pH	96.6	96.1	96.3
Iron	96.8	96.6	96.1
Manganese	98.9	98.7	99.4
Coliform bacteria	97.8	97.2	97.9
Turbidity	99.3	98.8	99.1
All other DWD parameters had full compliance in the three reporting years.			

Table 21.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Chemical parameters			
Nickel			**X**
Indicator parameters			
Aluminium	**X**	**X**	**X**
pH	**X**	**X**	**X**
Iron	**X**	**X**	**X**
Manganese	**X**	**X**	
Coliform bacteria	**X**	**X**	**X**
Turbidity		**X**	

In Portugal both microbiological parameters had more than 99% compliance in all samples that were taken at national level. The chemical parameter nickel caused non-compliance in more than 1% of samples in 2007. Non-compliance in more than 1% of the samples at national level

was caused by the indicator parameters aluminium, pH, iron, Coliform bacteria and to a lesser extent by manganese and turbidity.

Information on product specified parameters
The following information was given on the product specified parameter acryl amide, vinylchloride and epichlorohydrin. Portugal was considering a National Acceptance Scheme for materials and products in contact with drinking water.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones
Per parameter all WSZs that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in Portugal is 357-374.

Table 21.5 Number of WSZs in Portugal with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	357	369	374
Microbiological parameters			
E.coli	36	41	36
Enterococci	2	3	2
Chemical parameters			
Arsenic	0	0	1
Boron	1	1	0
Nickel	0	1	3
Copper	0	1	1
Fluoride	0	0	1
Nitrate	6	7	3
Pesticides total	0	1	2
THM total	1	0	1
Indicator parameters			
Aluminium	13	18	11
Ammonium	3	1	1
Chloride	3	2	0
Colour	1	3	3
Cl.perfringens	12	11	8
pH	57	61	63
Iron	16	17	9
Manganese	18	25	16
Odour	3	5	5
Oxidisability	3	3	2
Sodium	1	0	0
Taste	4	4	4
Coliform bacteria	114	104	94
Turbidity	12	15	14

Parameters that caused non-compliance in WSZs were the microbiological parameters *E.coli* in about 10% of WSZs and Enterococci in very few WSZs. The chemical parameters that caused

non-compliance in WSZs was nitrate and in a few WSZs arsenic, boron, nickel, copper, fluoride, total pesticides and THM. The indicator parameters that caused non-compliance were the Coliform bacteria and pH, but also iron, manganese, aluminium, *Cl.perfringens*, and turbidity. A number of other indicator parameters (ammonium, chloride, colour, odour, oxidisability, sodium and taste) caused non-compliance in a small number of WSZs.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 21.6 Maximum (peak) values found for non-compliant parameters in Portugal

Parameter	***Range of maximum (peak) values***	***Parametric value in the DWD 98/83/EC***
E.coli	>300/100 ml	0/ 100 ml
Enterococci	92/100 ml	0/ 100 ml
Antimony	12,7 ug/l	5 ug/l
Arsenic	16 ug/l	10 ug/l
Benzene	7.9 ug/l	1.0 ug/l
Boron	<1,4 mg/l	1 mg/l
Cadmium	10 ug/l	5 ug/l
Copper	26 mg/l	2 mg/l
Fluoride	2.31 mg/l	1.5 mg/l
Lead	146 ug/l	10 ug/l
Mercury	22 ug/l	1.0 ug/l
Nickel	240 ug/l	20 ug/l
Nitrate	150 mg/l	50 mg/l
Nitrite tap	6,1 mg/l	0.50 mg/l
PAH	0,13 ug/l	0.10 ug/l
Pesticides total	5,2 ug/l	0.50 ug/l
THM total	516,9 ug/l	150 ug/l
Aluminium	2960 ug/l	200 ug/l
Ammonium	59 mg/l	0.50 mg/l
Chloride	360 mg/l	250 mg/l
Cl.perfringens	180/100 ml	0/100 ml
Conductivity	6360 uS/cm	2500 uS/cm
Iron	8900 ug/l	200 ug/l
Manganese	1100 ug/l	50 ug/l
Oxidisability	19,5 mg/l O2	5.0 mg/l O2
Sodium	260 mg/l	200 mg/l
Sulphate	498 mg/l	250 mg/l
Coliform bacteria	> 300/100 ml	0/ 100 ml

Reasons for non-compliance

No information was submitted on non-compliance: causes, remedial actions and deadlines for realisation. However, Portugal developed a quite good data management system for the drinking water quality results that allowed them to gather and systematize better the information.

However this new system started with the data from 2008, which implied that the information from the previous years was in paper and it was quite difficult to manage it. The main causes were the lack or inefficiency of disinfection for microbiological parameters and the quality of raw water or the materials that caused most of the chemical parameters non-compliances. The remedial actions were the implementation of disinfection or the correction of the treatment procedures.

Reporting on drinking water quality to the public

All information on drinking water was available on the national website www.ersar.pt .The municipalities made available every three months the drinking water quality data for consultation by the consumer (mandatory by law). Some of the suppliers also published these data in the Internet. Soon this informational will also be available on consumers bill in a simplified way.

Derogations for Portugal

There were no derogations in place in Portugal during the reporting years 2005-2007.

Historical data for Portugal

National summary of monitoring results for each parameter in large wsz > 5000 people. Percentages non-compliance. Portugal 1993-2004 period								
Reporting year	1993-1995	1996-1998	1999	2000	2001	2002	2003	2004
Parameter	No data	No data						
pH								3.8
Kjeldahl-N			1.5		3.3	2.3	3.5	
Aluminium			2.6	2.4	1.9	3.3	1.9	1.5
Phenols			3.8	5.6		3.3		
Iron			3.9	4.3	5.3	3.2	2.3	3.2
Temperature			3.3	3.8	2.5	1.9	3.0	
TC/Coliform bacteria			2.0	2.1	2.2	2.3	2.0	1.9
FS /Enterococci					1.1			
Hydrocarbons			4.4	3.6	5.2	1.4	1.1	
Manganese			4.4	3.5	4.6	2.1	1.5	
All other parameters complied in 99% of more of the samples taken in Portugal								

Total *number of water supply zones* serving more than 5000 people that exceeded the parametric value in the DWD in *more than 1 sample*. Portugal. 1999-2004 period						
Reporting year	1999	2000	2001	2002	2003	2004
Nr of WSZ	272	274	278	314	314	314
Parameter	**Number of wsz with more than 1 case of non-compliance**					
TC/ Coliform bacteria	62	64	67	129	134	94
FC/*E.coli*	25	28	28	65	51	35
pH				3	2	64
Temperature	14	19	24	23	36	
FS/Enterococci	13	11	12	33	27	2
Iron	9	16	17	18	20	14
Oxidisability	22	12	18	15	19	3
Manganese	10	9	8	7	8	18
SSRC/*Cl.perfringens*	13	14	13	16	14	6
Aluminium	11	17	16	15	16	9
Odour	9	13	18	15	10	9
Turbidity	7	10	9	10	12	9
Taste	8	13	14	11	6	9
Phenols	5	11		7		
Hydrocarbons	5	8	12	5	6	
Kjeldahl-N	3	3	5	3	6	
Nitrate	3	2	6	2	2	4
Ammonium	5	4	1	3	1	3
Pesticides				3		
Arsenic						2
Boron						2
Magnesium	2	1	1	1	1	
Potassium		1	2	1		
Sodium	1	1	1	1		
Alkalinity				1		
Nitrite	1	3	3	1		
Colour						1
Phosphorus				1		
Total pesticides				1		
Selenium					1	
THM						1
Chloride						1
Fluoride		1				1
Copper						1
PAH			2			
Cadmium		1				
Nickel		1				
Lead		1				

Conclusions for Portugal

The monitoring was in accordance with the requirements of the DWD. In Portugal none of the microbiological parameters caused non-compliance in more than 1% of samples. There was one

chemical parameter nickel that caused non-compliance in more than 1% of samples in 2007. Non-compliance in more than 1% of the samples at national level was mostly caused by indicator parameters aluminium, pH, iron, Coliform bacteria and to a lesser extent by manganese and turbidity.

Parameters that caused non-compliance in WSZs were the microbiological parameters *E.coli* in about 10% of WSZs and Enterococci in very few WSZs. The chemical parameters that caused non-compliance in WSZs was nitrate and in a few WSZs arsenic, boron, nickel, copper, fluoride, total pesticides and THM. The indicator parameters that caused non-compliance were the Coliform bacteria and pH, but also iron, manganese, aluminium*, Cl.perfringens*, and turbidity. A number of other indicator parameters (ammonium, chloride, colour, odour, oxidisability, sodium and taste) caused non-compliance in a small number of WSZs.

There were historical data for Portugal. The non-compliance levels were very much the same for these parameters.

Portugal reported that there are no parameters where non-compliance exceeds 5 %.

Fact sheet 22: Drinking water in Romania 2005-2007

General information on Member States drinking water supply arrangements[26]

Table 22.1 General information Romania 2005-2007

Member State	Romania
Total population in millions	20.86
Number of water supply zones	335
Total resident population supplied	10362421 49.68% of the total population
Total volume of water supplied in million m^3/year	1058.2 million m^3/year
Water sources used in percentages of the total volume	Groundwater 31.62% Surface water 68.38%
National database on drinking water quality	www.inspb.gov.ro

The data from Romania were submitted in Excel format on the CDR (Central Data Repository) EIONET site. Romania used the data format as described in the Guidance Document (GD) on reporting under the Drinking Water Directive 98/83/EC 09052007. The reporting year was 2007 as Romania did not have a reporting obligation for the years 2005 and 2006.
Romania had a total population of 20.86 million and 335 large water supply zones that supplied drinking water to 10.3 million residents (49.7% of the population). The large WSZs supplied1058.2 million m^3 per year. Drinking water was produced from surface water (68.38%) and from groundwater (31.62%).

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 22.2 Information on exemptions, stricter and additional parameters

Waters exempted	Small water supplies supplying less than 10 m^3/day or serving less than 50 persons
Stricter national parameters	Copper 0.1 mg/l Fluoride 1.2 mg/l Turbidity <= 5 NTU
Additional national parameters	Sulphate+H2S sum 100 ug/l Residual free chlorine 0.50 mg/l Hardness 5 German degrees CC 37/ml no abnormal modifications Zinc 5000 ug/l Gross α 0.1 Bq/l Gross β 1 Bq/l Free Cyanide

[26] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Information on exemptions
Water supplies serving less than 50 persons or supplying less than 10 m^3/day were exempted in national legislation.

Stricter parameters
There were stricter national parameters in Romania for copper, fluoride and turbidity (see table 22.2).

Additional parameters
There was a mention of the additional parameter easily released sulphide and H2S with a sum parameteric value of 100 ug/l. Other additional parameters were free cyanide, residual chlorine, hardness, CC37, zinc and gross α and gross β (see table 4.22.2)

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD
Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. All methods used for microbiological analyses were reported to be in accordance with the DWD.

Annual monitoring in water supply zones not compliant with the monitoring frequency
Romania reported a high number of water supply zones where the number of analyses done did not meet the number of analyses required under the DWD. This was the case for all check and all audit parameters. Romania reported to have 335 large water supply zones, but not one of the drinking water directive parameters was monitored in all 335 WSZs. The problem with the reporting on drinking water quality monitoring and results in Romania was the fact that not all data collected by the water suppliers were submitted to the national authorities. The general conclusion was that the monitoring and or reporting effort was not in compliance with the requirements of the DWD for both check and audit parameters.

National summary on drinking water quality

Table.22.3 National summary Romania

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons		
2005	2006	2007
Microbiological parameters		
E.coli		99.5
Enterococci		99.6
Chemical parameters		
Arsenic		99.3
Copper		99.9
Nitrate		99.8
Nitrite tap		99.6
Nitrite ww		99.8
Pesticides individual		65.3
Pesticides total		97.7
Lead		99.8
Indicator parameters		
Aluminium		99.3
Ammonium		98.5
Chloride		99.2
Iron		98.9
Manganese		96.8
CC22		98.6
Coliform bacteria		98.4
Turbidity		97.5
All other DWD parameters had full compliance in the three reporting years.		

Table.22.4 Parameters that had less than 99% compliance

	2007
Microbiological parameters	
Chemical parameters	
Pesticides individual	**X**
Pesticides total	**X**
Indicator parameters	
Ammonium	**X**
Iron	**X**
Manganese	**X**
Chloride	**X**
CC22	**X**
Coliform bacteria	**X**
Turbidity	**X**

Twenty two parameters showed non-compliance, all other parameters had 100% compliance. As not all WSZs were properly monitored this produced a rather unrealistic picture of the water quality. According to the returns none of the microbiological parameters caused non-compliance in more than 1% of the samples that were taken at national level. Of the chemical parameter,

pesticides both the individual pesticides and total pesticides caused non-compliance in more than 1% of the samples. Of the indicator parameters ammonium, iron, manganese, turbidity, CC22, Coliform bacteria and chloride caused non-compliance in more than 1% of the samples. As Romania reported incompliance with the monitoring frequency for all DWD parameters this fact had to be taken into account when considering the quality of drinking water and more specifically when putting the results into a European perspective.

Information on product specified parameters

Very sparse information was given on product defined parameters as acryl amide (information on two water supply zones), vinyl chloride (from one water supply zone) and epichlorohydrin.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones

Per parameter all WSZs that had more than 1 case of non-compliance in 2007 were calculated.

Table 22.5 Number of WSZs in Romania with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	335	335	335
Microbiological parameters			
E.coli			52
Enterococci			52
Chemical parameters			
Arsenic			1
Copper			1
Nitrite tap			6
Nitrite ww			4
Nitrate			4
Lead			2
Pesticides individual			10
Pesticides total			2
Indicator parameters			
Aluminium			13
Ammonium			21
Colour			7
Chloride			5
Iron			33
pH			5
Manganese			13
Odour			1
Oxidisability			9
CC22			36
Coliform bacteria			106
Turbidity			57

There were 335 WSZs in Romania. According to the data submitted non-compliance in water supply zones in Romania was caused by both microbiological parameters *E.coli* and Enterococci, by the chemical parameter pesticides, nitrite/nitrate and in a small number of WSZs by arsenic, lead and copper and the indicator parameters Coliform bacteria, turbidity, CC22, iron, manganese, aluminium, ammonium, colour, oxidisability, chloride, pH, odour.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 22.6 Maximum (peak) values found for non-compliant parameters in Romania

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	300/ 100 ml	0/ 100 ml
Enterococci	90/100 ml	0/ 100 ml
Arsenic	42 ug/l	10 ug/l
Nitrite tap	6.9 mg/l	0.5 mg/l
Nitrite ww	1.8 mg/l	0.10 mg/l
Nitrate	393 mg/l	50 mg/l
Lead	18 ug/l	10 ug/l
Pesticides individual	0.19 ug/l	0.10 ug/l
Aluminium	477 ug/l	200 ug/l
Ammonium	15 mg/l	0.50 mg/l
Iron	4800 ug/l	200 ug/l
Manganese	723 ug/l	50 ug/l
Coliform bacteria	542/100 ml	0/ 100 ml
Chloride	880 mg/l	250 mg/l
Oxidisability	34 mg/l	5.0 mg/l O2

Reasons for non-compliance

We could not reproduce all causes of non-compliance and the action plans MS have in this respect. We made the following observations:

- Causes for non-compliance were mostly but non-always given.
- Planned remedial actions were mostly but not always given.
- Time frames were mostly but not always given.

Reporting on drinking water quality to the public

Information on the quality of drinking water was only available at a centralised level at the responsible authority in Bucharest and the national website.

Derogations for Romania

No derogations were in place in Romania.

Historical data for Romania

There were no historical data available for Romania.

Conclusions for Romania

Romania only had to report for the year 2007. The data were submitted through EIONET.

Twenty two parameters showed non-compliance, all other parameters have 100%. As not all WSZs were properly monitored this produced a rather unrealistic picture of the water quality. According to the returns none of the microbiological or chemical parameters caused non-compliance in more than 1% of the samples that were taken at national level. Of the chemical parameter, pesticides both the individual pesticides and total pesticides caused non-compliance in more than 1% of the samples. Of the indicator parameters ammonium, iron, manganese, turbidity, CC22, Coliform bacteria and chloride caused non-compliance in more than 1% of the samples. As Romania reported incompliance with the monitoring frequency for all DWD

parameters this fact needed to be taken into account when considering the quality of drinking water and more specifically when putting the results into a European perspective.

There were 335 WSZs in Romania. According to the data submitted non-compliance in water supply zones in Romania was caused by both microbiological parameters *E.coli* and Enterococci, by the chemical parameter pesticides, nitrite/nitrate and in a small number of WSZs by arsenic, lead and copper and the indicator parameters and Coliform bacteria, turbidity, CC22, iron, manganese, aluminium, ammonium, colour, oxidisability, chloride, pH, odour. Not all parameters were monitored in all WSZs.

Romania reported one parameter (individual pesticides) with more than 10% non-compliance.

Fact sheet 23: Drinking water in the Slovak Republic in 2005-2007

General information on Member States drinking water supply arrangements[27]

Table 23.1 General information on Slovakia 2005-2007

Member State	Slovakia
Total population in millions	5.4
Number of water supply zones	94
Total resident population supplied	3.75 (69.4%)
Total volume of water supplied in million m^3/year	159/152/153
Water sources used in percentages of the total volume	Groundwater 82.2% Surfacewater 17.8%
National database on drinking water quality	http://www.sazp.sk/public/index/go.php?id=1167&lang=sk

The data from Slovakia were submitted in Excel format on the CDR (Central Data Repository) EIONET site. Slovakia used the data format as described in the Guidance Document (GD) on reporting under the Drinking Water Directive 98/83/EC 09052007. Slovakia had a total population of 5.4 million people and had 94 large water supply zones that supplied 3.75 million people (69.4%). The total volume of drinking water supplied was 155 million m^3 per year on average and came mainly from groundwater sources (82.2%) and the remainder from surface water sources (17.8%).

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 23.2 Information on exemptions

Waters exempted	None
Stricter national parameters	Boron 0.3 mg/l Cadmium 0.003 mg/l Copper 1 mg/l Cyanide 0.03 mg/l Chloride 100 mg/l pH 6.5-8.5 units
Additional national parameters	Colony count 37 ° C 20/ml Colourless flagellates 10 ind/ml Living organism (without Colourless flagellates) 0 ind/ml Filamentous bacteria(without Fe and Mn bacteriae) 0 ind/ml Micromycetes 0 ind/ml Dead organisms 30 ind/ml Fe and Mn bacteriae 10%

[27] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

	Abioseston 10% Silver 0,05 mg/l Dichlorbenzenes 300 µg/l Monochlorbenzene 300 µg/l Styrene 20 µg/l Tetrachlormethane 2 µg/l Toluen 700 µg/l Xylény 500 µg/l Bromdichlormethane 0,025 mg/l 2,4 - dichlorphenol 0,002 mg/l Chlordioxide 0,20 mg/l Chloritany 0,20 mg/l Chloroform 0,04 mg/l Ozone 0,05 mg/l 2,4,6 – trichlorphenol 0,2 mg/l Absorbance (254 nm, 1 cm) 0,08 Dissoluble matters 1000 mg/l Temperature 8-12ºC Zinc 3 mg/l Magnesium 10-30 mg/l Calcium more than 30 mg/l Calcium and magnesium 1,1-5 mmol/l

Information on exemptions

Each drinking water supply zone in the Slovak Republic had to meet the requirements for drinking water quality therefore there were no exempted waters.

Stricter parameters

There were six stricter parameters in the national legislation in Slovakia (see table 4.23.2)

Additional parameters

There were 29 additional parameters in the national legislation in Slovakia. (table 4.23.2).

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD

Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. Slovakia applied the microbiological methods defined in the DWD 98/83/EC.

Annual monitoring in water supply zones not compliant with the monitoring frequency

In the table that summarised the Member States' information on non-compliance with the monitoring frequency many parameters were mentioned. This indicated a shortcoming in monitoring of the drinking water in Slovakia. The reasons for in compliance with the monitoring frequency were: technical problems in some laboratories with some specific analyses e.g. boron, bromate and pesticides, not all results were entered in the national database or the monitoring was indeed not in line with the DWD. The shortcomings in monitoring had to be taken into account when looking at the results.

National summary on drinking water quality

Table 23.3 National summary Slovak Republic

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	98.4	98.1	97.9
Enterococci	99.4	99.3	99.2
Chemical parameters			
Antimony	99.4	99.9	99.8
Arsenic	99.9	99.9	100
Lead	99.9	100	100
Nickel	99.7	100	100
Nitrate	99.7	99.7	99.9
Tri and tetra	99.9	99.4	100
Indicator parameters			
Aluminium	99.9	100	100
Cl.perfringens	100	99.7	99.9
Colour	99.1	98.1	98.4
Iron	95.3	94.5	94.8
Manganese	99.4	99.7	99.1
Odour	100	99.8	99.8
Sulphate	100	99.9	99.9
CC22	99.7	99.7	99.5
Coliform bacteria	97.8	98.1	98.3
Turbidity	99.9	99.9	99.8
TID*	98.0	99.0	99.7
*Note to TID Since 2005 the monitoring of selected drinking water sources in Slovak Republic was carried out according to the fulfillment of Articles 35 and 36 Euratom Treaty, which became legally binding for SR since joining the EU. The results were annually sent to the European Commission to JRC in Ispra. Monitoring was carried out by the Authority of public health in Slovak Republic in Bratislava and by the regional authority of public health in Banska Bystrica.			
All other DWD parameters had full compliance in the three reporting years.			

Table 23.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
E.coli	**X**	**X**	**X**
Chemical parameters			
Indicator parameters			
Colour		**X**	**X**
Iron	**X**	**X**	**X**
Coliform bacteria	**X**	**X**	**X**
TID	**X**	**X**	

The parameters that caused non-compliance in drinking water in Slovakia were the microbiological parameter *E.coli* (more than 1% non-compliance in all three reporting years), none of the chemical parameters and of the indicator parameters iron, manganese and Coliform bacteria and to a lesser extent also colour. Slovakia also reported non-compliance on TID, most Member States did not report on radio-activity in drinking water in this DWD report.

Information on product specified parameters
Materials with the risk of release of acryl amide or epichlorohydrin had not been used by water utilities during water production, water improvement or water distribution.
Vinylchloride was monitored in selected WSZs, where risk of release was expected. None of the analyses was over the limit.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones
Per parameter all WSZs that had more than 1 case of non-compliance in 2005/2006/2007 are calculated. The total number of WSZs in the Slovak Republic is 94.

Table 23.5 Number of Water Supply Zones in Slovakia with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	94	94	94
Microbiological parameters			
E.coli	7	8	10
Enterococci	15	12	14
Chemical parameters			
Antimony	2	0	1
Arsenic	1	0	0
Nickel	1	0	0
Nitrate	4	5	2
Tri and tetra	0	1	0
Indicator parameters			
Colour	4	4	2
Cl.perfringens	0	1	0
Iron	30	22	22
Manganese	13	6	7
Odour	0	1	1
CC22	6	6	6
Coliform bacteria	33	25	24
Turbidity	1	4	5
TID	2	2	0

Both microbiological parameters *E.coli* and Enterococci caused non-compliance in WSZs in Slovakia. Also some chemical parameters caused non-compliance especially nitrate and in 1 or 2 WSZs also antimony, arsenic, nickel and tri and tetra. Most non-compliance was caused by a number of indicator parameters Coliform bacteria and iron and too a lesser extent also

manganese, Colony count 22, colour, turbidity and in a few WSZs non-compliance was caused by *Cl.perfringens*, odour and the radioactivity parameter TID.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 23.6 Maximum (peak) values found for non-compliant parameters in the Slovak Republic

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	1-65/ 100 ml	0/ 100 ml
Enterococci	1-88/100 ml	0/ 100 ml
Antimony	5.3 – 7 ug/l	5.0 ug/l
Arsenic	13.1 - 17 ug/l	10 ug/l
Nickel	26 ug/l	20 ug/l
Nitrate	52-80 mg/l	50 mg/l
Tri and tetra	11.6 - 12.3 ug/l	10 ug/l
Cl.perfringens	1 -3/100ml	0/100 ml
Iron	210-6370 ug/l	200 ug/l
Manganese	54 - 62 ug/l	50 ug/l
Coliform bacteria	1-1070/100 ml	0/ 100 ml
TID	0.211-0.351 mSv/year	0.20 mSv/year

Reasons for non-compliance

We could not reproduce all causes of non-compliance and the action plans MS had in this respect. We made the following observations:

- Causes for non-compliance were always given.
- Planned remedial actions were always given.
- Time frames were always given.

Reporting on drinking water quality to the public

A number of information sources for the public on the quality of drinking water were listed. Websites of particular Regional Public Health Authorities accessible from central website of Public Health Authority of the Slovak Republic (www.uvzsr.sk) www.ruvzke.sk , www.uvzsr.sk , http://www.sazp.sk and the Water research institute (www.vuvh.sk). Regional reports on drinking water quality were annually produced by Regional public health authorities. Then, the national report was produced by the Public Health Authority of the Slovak Republic. Information was also made available at public places, government institutions, and various local news papers.

Derogations for Slovakia

Slovakia reported no derogations for the 2005-2007 period.

Historical data for Slovakia

There were no historical data available for Slovakia.

Conclusions for Slovakia

For 32 of the 46 parameters in the DWD the monitoring frequency in Slovakia was not in compliance with the requirements of the DWD. This could have an effect on the results on compliance in the drinking water data.

The parameters that caused non-compliance in drinking water in Slovakia were the microbiological parameter *E.coli* and Enterococci, the chemical parameter nitrate (and in 1 or 2 WSZs also antimony, arsenic, nickel and tri and tetra). But most non-compliance was caused by the indicator parameters especially Coliform bacteria, iron, manganese and to a lesser extent also Colony count 22, colour, turbidity and in a few WSZs also by *Cl.perfringens*, odour and the radioactivity parameter TID. Slovakia also reported non-compliance on TID, most Member States did not report on radio-activity in drinking water in this DWD report. There were no historical data for the Slovak Republic.

Slovakia reported one parameter with more than 5% but less than 10% non-compliance, which was iron in 2006 and in 2007.

Fact sheet 24:Drinking water in Slovenia in 2005-2007

General information on Member States drinking water supply arrangements[28]

Table 24.1 General information Slovenia 2005-2007

Member State	Slovenia
Total population in millions	2.0
Number of water supply zones	75
Total resident population supplied	1.4 (70%)
Total volume of water supplied in million m^3/year	327
Water sources used in percentages of the total volume	Groundwater n.i. (internet 97%) Surface water n.i. (internet 3%)
National database on drinking water quality	http://www.ivz.si

The data from Slovenia were submitted in Excel format on the CDR (Central Data Repository) EIONET site. Slovenia used the data format as described in the Guidance Document (GD) on reporting under the Drinking Water Directive 98/83/EC 09052007. The population of Slovenia was 2 million and 1.4 million (70%) were supplied with drinking water from 75 large water supply zones. The amount of water supplied by these large WSZs was 327 million m^3 per year. There was no official information on the contribution of the various sources for the production of drinking water.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 24.2 Information on exemptions, stricter and additional parameters

Waters exempted	None
Stricter national parameters	None
Additional national parameters	Colony count 37 < 100 ml

Information on exemptions

No waters were exempted from the requirements of the DWD in Slovenia.

Stricter parameters

There were no stricter drinking water parameters in national legislation in Slovenia.

Additional parameters

There was one additional parameter in national legislation, which was Colony Count 37.

[28] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD

Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. Slovenia used the microbiological methods mentioned in the DWD 98/83/EC and no alternative methods.

Annual monitoring in water supply zones not compliant with the monitoring frequency

There were no entries in the table for non compliant monitoring as all monitoring was in accordance with the requirements of the DWD.

National summary on drinking water quality

Table 24.3 National summary Slovenia

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
E.coli	98	98	98
Enterococci	97	98	99
Chemical parameters			
Total pesticides	99	100	100
Nitrate	100	99	100
Tetrachloroethane			
Indicator parameters			
Aluminium	100	99	100
Cl.perfringens	99	99	99
pH	99	100	99
CC22	98	97	97
Coliform bacteria	93	94	93
All other DWD parameters have full compliance in the three reporting years.			

Additional information on individual pesticides compliance levels at national level

Pesticide	***2005***	***2006***	***2007***
Atrazine	99	99	99
Bentazon	99	100	99
Metolaklor	99	100	100
Terbutylatrzine	99	100	100
Desethylatrazine	96	99	99

Table 24.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
E.coli	**X**	**X**	**X**
Enterococci	**X**	**X**	
Chemical parameters			
Desethylatrazine	**X**		
Indicator parameters			
CC22	**X**	**X**	**X**
Coliform bacteria	**X**	**X**	**X**

The parameters that caused non-compliance at national level (in more than 1% non-compliance) were the microbiological parameters *E.coli* and Enterococci. The chemical parameter that caused non-compliance in more than 1% of the samples at national level were individual pesticides (desethylatrazine) in 2005 and the indicator parameters that caused more than 1% non-compliance were Coliform bacteria and Colony count 22.

Information on product specified parameters

No information had been submitted on how the product specified parameters were regulated in Slovenia.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones

Per parameter all WSZs that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in Slovenia was 75.

Table 24.5 Number of WSZs in Slovenia with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	75	75	75
Microbiological parameters			
E.coli	10	3	10
Enterococci	2	1	1
Chemical parameters			
Atrazine	1	1	1
Bentazon	1	0	1
Desethylatrazine	2	1	0
Terbutylatrazine	1	0	0
Metalochlor	1	0	0
Pesticides total	1	0	0
Indicator parameters			
Aluminium	0	1	0
Cl.perfringens	5	0	4
pH	2	0	3
CC22	8	9	14
Coliform bacteria	26	25	28

The microbiological parameter *E.coli* caused non-compliance in quite a number of WSZs and Enterococci in 1 or 2 WSZs. The chemical parameter individual pesticides (Atrazine, Bentazon, Desethylatrazine, Terbutylatrazine, Metalochlor) caused non-compliance in a few WSZs. Indicator parameters that caused non-compliance were Coliform bacteria, colony count 22 and in a few WSZs *Cl.perfringens*, pH and aluminium.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 24.6 Maximum (peak) values found for non-compliant parameters in Slovenia

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	3-100/100 ml	0/ 100 ml
Enterococci	2-15/100 ml	0/ 100 ml
Pesticides total	1.73 ug/l	0.50 ug/l
Atrazine	0.12-0.22 ug/l	0.10 ug/l
Desethylatrazine	0.14-0.42 ug/l	0.10 ug/l
Terbutylatrazine	0.18 ug/l	0.10 ug/l
Bentazon	0.48-0.98 ug/l	0.10 ug/l
Metalochlor	0.57 ug/l	0.10 ug/l
Aluminium	271 ug/l	200 ug/l
Cl.perfringens	11-28/100 ml	0/100 ml
Coliform bacteria	100-300/100ml	0/100 ml

Reasons for non-compliance

We could not reproduce all causes of non-compliance and the action plans MS had in this respect. We made the following observations:

- Causes for non-compliance were not always given.
- Planned remedial actions were not always given.
- Time frames were not always given.

For the pesticides the cause was mostly contamination through agricultural activity.

Reporting on drinking water quality to the public

Information was available from the national institute of public health.

Derogations for Slovenia

Slovenia reported no derogations for the 2005-2007 reporting period.

Historical data for Slovenia

There were no historical data available for Slovenia.

Conclusions for Slovenia

The responsible authorities reported that the monitoring frequency of the drinking water in Slovenia was in full compliance with the requirements of the DWD.

The microbiological parameters *E.coli* and Enterococci caused non-compliance in more than 1% of samples at national level. *E.coli* caused non-compliance in quite a number of WSZs, Enterococci only in 1 or 2 WSZs. The chemical parameter individual pesticides (Atrazine, Bentazon, Desethylatrazine, Terbutylatrazine, Metalochlor) caused non-compliance in a few WSZs. Non-compliance was also caused by the indicator parameters Coliform bacteria and Colony count 22.

Slovenia reported one parameter with more than 5% but less than 10% non-compliance, Coliform bacteria in all three reporting years.

Fact sheet 25: Drinking water in Spain in 2005-2007

General information on Member States drinking water supply arrangements[29]

Table 25.1 General information Spain 2005-2007

Member State	Spain
Total population in millions	44.1/44.7/45.2
Number of water supply zones	1500
Total resident population supplied	56.92
Total volume of water supplied in million m^3/year	5831
Water sources used in percentages of the total volume	Groundwater 21/20.9/20.9% Surface water 78/78.09/78.09% Coastal water 1/1/1% Rainwater 0.01/0.01/0.01%
National database on drinking water quality	**www.msssi.es; http://sinac.msc.es/sinac/ciudadano/CiudadanoMostrarResumenesAnualesAction.do**

The data from Spain were submitted in Excel format on the CDR (Central Data Repository) EIONET site. They submitted three Excel documents, one for 2005, one for 2006 and one for 2007. Spain used the data format as described in the Guidance Document (GD) on reporting under the Drinking Water Directive 98/83/EC 09052007.

Spain had a total population of 44 to 45 million people in the reporting years and 1500 large water supply zones. The large WSZs served a residential 56.92 million people. This was more than the total population as Spain had a large influx of tourists. We could not calculate the percentage of the total residential population served by large supplies. The large WSZs supplied 56.92 million m^3 water per year. Most drinking water was produced from surface water (78%) and from groundwater (21%), there was also some coastal water and rainwater used for the production of drinking water.

[29] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 25.2 Information on exemptions, stricter and additional parameters

Waters exempted	Exempted waters small supplies in line with the DWD, except when there is a potential risk to human health.
Stricter national parameters	Cl.perfringens NO2 CC22 Colour Odour Taste Turbidity
Additional national parameters	Microcystine 1 µg/l Bound residual chlorine 2,0 mg/l Free residual chlorine 1,0 mg/l Total alpha activity 0,1 Bq/l Total beta activity 1 Bq/l

Information on exemptions

Exempted in Spain was all water for human consumption from individual and household supplies or natural sources that supplied on average less than 10 m^3 of water daily, or served less than 50 people, except when they posed a potential risk to human health through poor water quality. In that case the health authority required local government to adopt, for these supplies, the measures necessary to comply with the provisions of Royal Decree 140/2003 of 7 February on the health criteria of drinking water.

Stricter parameters

There were 7 stricter national parameters for drinking water in Spain (see table 4.25.2), where *Cl.perfringens* had been added to the microbiological parameters with the same parametric value as in the DWD.

Additional parameters:

There were 5 additional parameters for drinking water in Spanish legislation (see table4.25.2).

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD

Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. Spain reported on two methods for microbiological analyses, for *E.coli* and Coliform bacteria: Colilert®-Quanti-Tray® and Chromocult Coliform Agar.

Annual monitoring in water supply zones not compliant with the monitoring frequency

There were many parameters with a monitoring frequency that was not in compliance with the requirements of the DWD. One of the main reasons for non-compliance with the monitoring frequency was that the data had not yet been entered in the national information system SINAC.

National summary on drinking water quality

Table 25.3 National summary Spain 2005-2007

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
Ecocci	99.9	99.8	99.9
Ecoli	99.9	99.9	99.9
Chemical parameters			
Antimony	99.9	100	100
Arsenic	99.9	99.8	100
Boron	99.4	99.1	99.9
Bromate	100	99.8	99.9
Cadmium	100	99.9	99.9
Fluoride	99.9	99.9	99.8
Nickel	99.6	99.5	99.9
Nitrate	99.9	99.9	100
Nitrite	98.8	98.6	98.7
Lead	99.9	99.9	99.8
THMtot	99.5	99.5	99.7
Indicator parameters			
Aluminium	98.7	98.9	99.0
Ammonium	99.9	99.8	99.9
Chloride	97.9	97.5	96.4
Cl.perfringens	99.8	99.8	99.8
Coliform bacteria	99.4	99.5	99.6
Conductivity	99.6	99.5	99.7
Iron	99.0	98.7	98.7
Manganese	99.4	99.8	99.8
Sodium	99.2	98.1	97.8
Odour	99.9	99.8	100
Oxidisability	99.8	100	100
pH	99.5	99.5	99.5
Sulphate	74.6	88.7	90.3
Taste	99.9	99.9	100
TOC	98.7	99.4	99.7
Turbidity	99.9	99.9	99.9
All other DWD parameters had full compliance in the three reporting years.			

Additional information on individual pesticides compliance levels at national level

	2005	*2006*	*2007*
Atrazine	99.9	99.8	100
Desethylatrazine	100	99.0	100
Clodinafop propargil	98.7	100	100
Simazine	99.7	99.9	100
Diuron	100	99.4	100
Terbutylatrazina	99.6	99.8	99.9
MCPA	100	98.1	100
2,4-D	100	100	96.0

Table 25.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Chemical parameters			
Nitrite	**X**	**X**	**X**
Desethylatrazine		**X**	
Clodinafop propargil	**X**		
MCPA		**X**	
2,4-D			**X**
Indicator parameters			
Aluminium	**X**	**X**	
Chloride	**X**	**X**	**X**
Iron		**X**	**X**
Sodium		**X**	**X**
Sulphate	**X**	**X**	**X**
TOC	**X**		

The microbiological parameters had more than 99% compliance in Spain. The chemical parameter nitrite caused non-compliance in more than 1% of samples in each of the reporting years. Also some individual pesticides caused non-compliance in some of the years, these were the pesticides Desethylatrazine (2006), Clodinafop propargil (2005), MCPA (2006) and 2,4-D (2007). The indicator parameters sulphate and chloride caused non-compliance in all three reporting years and aluminium, iron and sodium in two of the three years, while TOC was in non-compliance in 2005.

Information on product specified parameters

Spain reported that the product specified parameters acryl amide, vinylchloride and epichlorohydrin were monitored through sampling and analyses.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones

Per parameter all WSZs that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in Spain is 1500.

Table 25.5 Number of WSZs in Spain with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	1500	1500	1500
Microbiological parameters			
E.coli	13	49	13
Enterococci		6	1
Chemical parameters			
Antimony	1	2	1
Arsenic	1	10	
Boron	1	52	3
Cadmium		5	1
Fluoride	4	16	5
Nickel	5	48	3
Nitrate	10	184	21
Nitrite	8	24	1
Lead	1	2	4
Pesticides total	1		
Atrazine		6	
Diurón		3	
Terbutilatrazine	2	2	1
Destylatrazine		3	
Simazine	1		
THMtot	6	28	6
Indicator parameters			
Aluminium	57	400	67
Ammonium	12	209	12
CC22	2		1
Chloride	21	190	48
Cl.perfringens	15	55	21
Coliform bacteria	62	461	52
Colour	10	41	7
Conductivity	13	641	21
Iron	18	226	26
Manganese	4	15	4
Sodium	7	114	32
Odour	7	262	10
Oxididability	1	2	1
pH	37	824	46
Sulphate	98	917	113
Taste	7	115	10
TOC	5	13	1
Turbidity	16	75	36

Many of the parameters that caused non-compliance in WSZs in Spain had a significantly higher failure rate in 2006 compared to the other reporting years 2005 and 2007. In Spain the microbiological parameters *E.coli* and Enterococci caused non-compliance in a few WSZs. The chemical parameters that caused non-compliance in WSZs were nitrate, nickel, boron and THM

total, but also to a lesser extent by arsenic, nickel, cadmium, lead, nitrite, fluoride and individual pesticides. The indicator parameters that caused non-compliance in WSZs were aluminium, chloride, *Cl.perfringens*, Coliform bacteria, conductivity, iron, sodium, ammonium, odour, pH, sulphate, taste, and too a lesser extent also CC22, colour, manganese, oxidisability , TOC and turbidity.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 25.6 Maximum (peak) values found for non-compliant parameters in Spain

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	310-1500/ 100 ml	0/ 100 ml
Enterococci	13-7000/100 ml	0/ 100 ml
Antimony	14-27 ug/l	5.0 ug/l
Arsenic	20-94 ug/l	10 ug/l
Boron	3- 23.64 mg/l	1 mg/l
BaP	0.75-1 ug/l	0.01 ug/l
Benzene	5 ug/l	1.0 ug/l
Bromate	486-976 ug/l	10 ug/l
Cadmium	41-210 ug/l	5.0 ug/l
Chromium	141 ug/l	50 ug/l
Copper	2-45 mg/l	2.0 mg/l
1,2-Dichloroethane	3.3ug/l	3.0 ug/l
Fluoride	277-938 mg/l	1.5 mg/l
Lead	96-110 ug/l	10 ug/l
Nickel	330-506 ug/l	20 ug/l
Nitrate	99-167 mg/l	50 mg/l
Nitrite	0.9-165 mg/l	0.50 mg/l
Total pesticides	1.34-10 ug/l	0.50 ug/l
Atrazine	0.13-1.02 ug/l	0.10 ug/l
Clodinafop propargil	0.9 ug/l	0.10 ug/l
Simazine	1.34 ug/l	0.10 ug/l
Terbutylatrazine	0.211-2.787 ug/l	0.10 ug/l
Desthylatrazine	0.124 ug/l	0.10 ug/l
MCPA	0.14 ug/l	0.10 ug/l
2,4-D	31 ug/l	0.10 ug/l
THM total	261-1002 ug/l	150 ug/l
Selenium	13ug/l	10 ug/l
Aluminium	2277-3213 ug/l	200 ug/l
Ammonium	0.828-7.6 mg/l	0.50 mg/l
Chloride	1134-5706 mg/l	250 mg/l
Cl.perfringens	80-180cfu /100 ml	0/100 ml
Conductivity	7687-101780 uS/cm	2500 uS/cm
Iron	2500-5185 ug/l	200 ug/l
Manganese	163-382 ug/l	50 ug/l

Oxidisability	8.5-318 mg/l O2	5.0 mg/l
Sodium	572-2460 mg/l	200 mg/l
Sulphate	1300-2262mg/l	250 mg/l
Coliform bacteria	12000-54000 CFU/100 ml	0/ 100 ml

Reasons for non-compliance

We could not reproduce all causes of non-compliance and the action plans MS had in this respect. We made the following observations:

- Causes for non-compliance were always given.
- Planned remedial actions were never given.
- Time frames were never given.

Reporting on drinking water quality to the public

Information for the public on the quality of drinking water was available on the national website and on regional websites and through www.sinac.msc.es the national reporting system.

Derogations for Spain

There were no derogations in place in Spain in the three reporting years.

Historical data for Spain

National summary of monitoring results in small and large wsz. Percentages non-compliance. Spain 1993-2004 period												
Reporting year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Parameter												
										All wsz also <5000 people		
Sulphate	17.0	2.7	25.2	6.1	4.0	7.0	2.7	2.4	3.7	10.3	3.8	7.6
Free residual chlorine										n.a.	5.0	5.5
THM										n.a.	3.7	
Iron					2.0	1.4	1.4			1.3	2.2	1.7
Sodium	40.7	29.2	50.6	33.0	47.5	20.3	3.8	2.2	3.8	8.2		
Nitrate				2.0	2.8	3.5	3.7	3.5	2.2	3.1		
TC/Coliform bacteria						2.5				1.4		
Manganese				1.6		1.2	1.2				2.1	1.6
FS/Enterococci				1.0	1.4					2.0		1.3
Chloride											1.5	1.9
Bound residual chlorine				1.4	1.4	1.4		1.8			1.7	1.6
Aluminium						2.5	1.3		1.7		1.3	1.3
Arsenic								2.2	2.2	1.1		
EC										1.2		
Oxidiability										1.2		
Magnesium	1.9	2.6	5.2	4.2	3.3	3.3	4.0	12.5	7.1			
Temperature				5.0	2.8	1.4	6.5	8.4	4.0			
Potassium	5.4	0.2	17.5	2.4	14.6	14.2	3.1	2.9	3.3			
Phenols				1.1	9.0	4.9			10.5			
Dry residues	2.6	2.0	3.9									
All other parameters complied in 99% or more of the samples taken in Spain n.a. parameter not retained in the DWD												

Total *number of water supply zones* that exceeded the parametric value in the DWD in *more than 1 sample*. Spain 1996-2004 period

	Reporting year						
	1996-1998	1999	2000	2001	2002	2003	2004
Nr of wsz	759	842	847			285	1209
Parameter	**Number of wsz with more than 1 case of non-compliance**						
Free residual chlorine	50		166			42	236
Sulphate	59		26			4	48
Colony count 22						4	30
Aluminium	53		12			7	16
Chloride						4	14
TC/Coliform bacteria	60		106			6	13
Turbidity	15		40			8	13
Ammonium			13			7	10
EC						4	10
pH						10	52
Bound residual chlorine						9	7
SSRC/*Cl.perfringens*			10			4	8
Colour	5		5			3	6
THM						3	4
Sodium	41		15			2	3
Iron	14		7			1	3
Nitrate	35		45				5
Odour			1				3
Nitrite			6				3
Manganese	9		8			2	2
Taste			1				3
FC/*E.coli*	19		35			2	4
Boron							2
Antimony						1	1
Atrazine							1
Terbutylatrazine							1
Temperature	48		71				
Magnesium	33		29				
FS/Enterococci	19		24				
Potassium	31		19				
Fluoride			12				
Oxidisability			4				
Dry residues			4				
Pesticides			3				
Arsenic			2				

Conclusions for Spain

There was non-compliance in monitoring frequency for many parameters in Spain. The microbiological parameters had more than 99% compliance in Spain. The chemical parameter nitrite caused non-compliance in more than 1% of samples in each of the reporting years. Also

some individual pesticides caused non-compliance in some of the years such as Desethylatrazine (2006), Clodinafop propargil (2005), MCPA (2006) and 2,4-D (2007). The indicator parameters sulphate and chloride caused non-compliance in all years and aluminium, iron and sodium in 2 of the three years, while TOC was in non-compliance in 2005.

In Spain the microbiological parameters *E.coli* and Enterococci caused non-compliance in a few WSZs. The chemical parameters that caused non-compliance in WSZs were nitrate, nickel, boron and THM total, but also to a lesser extent by arsenic, nickel, cadmium, lead, nitrite, fluoride and individual pesticides. The indicator parameters that caused non-compliance in WSZs were aluminium, chloride, *Cl.perfringens*, Coliform bacteria, conductivity, iron, sodium, ammonium, odour, pH, sulphate, taste, and too a lesser extent also CC22, colour, manganese, oxidisability , TOC and turbidity. Many of the parameters that caused non-compliance in WSZs in Spain had a significantly higher failure rate in 2006 compared to the other reporting years 2005 and 2007.

There were many historical data for Spain. The number of non-compliant WSZs seemed to have increased but there was much fluctuation in the number of WSZs in Spain. Quite some parameters seemed to cause non-compliance in more WSZs than in the previous period.

Spain reported one parameter that cause non-compliance in more than 10% of samples, sulphate in 2005 and in 2006 and the same parameter caused non-compliance in more than 5% but less than 10% of the samples in 2007.

Fact sheet 26: Drinking water in Sweden in 2005-2007

***General information on Member States drinking water supply arrangements*[30]**

Table 26.1 General information for Sweden 2005-2007

Member State	Sweden
Total population in millions	9.11
Number of water supply zones	186
Total resident population supplied	6.962.932 (76.4 % of the total population)
Total volume of water supplied in million m^3/year	860
Water sources used in percentages of the total volume	Groundwater 51% Surface water 24% Artificial infiltration 25%
National database on drinking water quality	www.slv.se

Sweden had a total population of 9.11 million people and 186 large WSZs. They supplied 860 milliohm m^3 of water per year to 6.96 million people, 76.4 %of the total population. Drinking water was mostly produced from groundwater (51%), but also from surface water (24%) and artificial infiltrated water (25%). The data from Sweden were partly submitted in Excel format on the CDR (Central Data Repository) EIONET site and partly in PDF. Along the same line Sweden partly followed the format of the Guidance Document. However, no information was provided on monitoring effort, national summary and non-compliance at water supply zone level in a format that either matched the Guidance Document or could be processed in a harmonized or any other way. Sweden did not report at individual parameter level and did not report at national or at WSZ level.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

[30] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m3 a day as an average or serving more than 5000 persons.

Table 26.2 Information on exemptions, stricter and additional parameters

Waters exempted	WSZs supplying less than 10 m^3/day or serving less than 50 persons
Stricter national parameters	Coliform bacteria Nitrate THM Colony count 22 °C Aluminium Chloride Colour pH Iron Oxidisability Odour Sodium Sulphate Taste Turbidity
Additional national parameters	Radon, actinomycetes, microfungi, slow growing bacteria, calcium, chlorine, magnesium and temperature

Information on exemptions

Waters in Sweden were exempted in accordance with Article 3.2.b of the DWD 98/83/EC. This implied that the small water supply zones were exempted.

Stricter parameters

There were fifteen DWD parameters that had a stricter national standard in Swedish legislation (table 4.26.2).

Additional parameters:

There were eight additional parameters in Sweden for the quality of drinking water (table 4.26.2). Two of the additional parameters *Cl.perfringens* and Coliform bacteria were added for bottled water, they were already in the DWD for tap water.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD

Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. Sweden applied the methods given in the DWD except for Coliform bacteria and E.coli for which the SS 028167 method was used.

Annual monitoring in water supply zones not compliant with the monitoring frequency

No information was submitted.

National summary on drinking water quality

No information was submitted in a format that could be processed see introduction.

Information on product specified parameters
The product specified parameters acryl amide, epichlorohydrin and vinylchloride were controlled in Sweden through the method described in the DWD Annex I Part B note 1.

Information on non-compliance of drinking water in water supply zones
No information was submitted in a format that could be processed see introduction.

Reporting on drinking water quality to the public
On information to the public on the quality of drinking water and on non-compliance no specific sources were mentioned in the Swedish returns.

Derogations for Sweden
Sweden did not issue any derogation in the reporting period.

Historical data for Sweden
There were no historical data available for Sweden.

Conclusions for Sweden
As was the case for previous reporting periods Sweden did not submit a returns on the quality of drinking water that met any (previous reporting format or new Guidance Document) of the requirements for reporting. Some of the basic information was made available through CDR on EIONET, but not on monitoring and compliance.

There were no historical data and there is no information on percentages non-compliance at parameter level.

Fact sheet 27: Drinking water in the United Kingdom in 2005-2007

General information on Member States drinking water supply arrangements[31]

Table 27.1 General information United Kingdom 2005-2007

Member State	United Kingdom
Total population in millions	60.84/59.42/60.48
Number of water supply zones	1609/1604/1594
Total resident population supplied	59.65/60.06/60.20
Total volume of water supplied in million m^3/year	4492/4384/4395 (99.6% of the population).
Water sources used in percentages of the total volume	Groundwater 19.77/19.44/19.15% Surface water 45.49/45.58/45.92% Other water sources 34.75/34.98/34.93%
National database on drinking water quality	www.dwi.gov.uk www.dwqr.org.uk www.doeni.gov.uk

The data from the United Kingdom were submitted in Excel format on the CDR (Central Data Repository) EIONET site. The United Kingdom used the data format as described in the Guidance Document (GD) on reporting under the Drinking Water Directive 98/83/EC 09052007. The United Kingdom reported for the years 2005, 2006 and 2007. The figures for the UK comprised data for five regions, England, Wales, Northern Ireland, Scotland and Gibraltar. The United Kingdom had a total population of 60 to 61 million people and approximately 1600 water supply zones that were subject to reporting to the European Commission. These WSZs supplied approximately 4400 million m^3 of water to 60 million residents which equaled 99.6 % of the population. Most drinking water was produced from surface water sources (46%), groundwater (19%) and from other sources (35%). "Other" water sources included groundwater influenced by surface water.

Information on exemptions (Articles 3.2.a and 3.2.b DWD) and national parameters and parametric values (Article 5.2 and 5.3 DWD)

Table 27.2 Information on exemptions, stricter and additional parameters

Waters exempted	Supplies <10m^3/d as per Article 3.2(a)
Stricter national parameters	Aluminium, colour, iron, manganese, odour, sodium, taste, pH, tetrachloromethane, turbidity.
Additional national parameters	For E.coli and Coliform bacteria there are additional requirements for water treatment works and service reservoirs and there are ten additional national parameter requirements for consumers' taps.

[31] With the exception of the information on the total population in the Member State all information relates to water supply zones exceeding 1000 m^3 a day as an average or serving more than 5000 persons.

Information on exemptions
Exempted in the United Kingdom were small water supplies in accordance with the DWD.

Stricter parameters
There were a number of stricter national parameters in the United Kingdom.

Additional parameters
There were two stricter national parameters *E.coli* and Coliform bacteria for water treatment works and service reservoirs and ten additional parameter requirements at the consumers' taps.

Information on drinking water analysis methods for microbiological parameters under Article 7.5.b DWD
Article 7.5.b of the DWD states that methods other than those specified in Annex III, Part 1 may be used, providing it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified. The United Kingdom used the microbiological methods mentioned in the DWD 98/83/EC.

Annual monitoring in water supply zones not compliant with the monitoring frequency
The UK did not report on non-compliance with the monitoring frequency of the Directive. The UK reported on non-compliance with the monitoring frequency set for each water supply zone established within the UK domestic legislation (with the 100,000 maximum population cap). The Directive requirements were less strict.

National summary on drinking water quality

Table 27.3 National summary United Kingdom

Compliance levels in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons			
	2005	2006	2007
Microbiological parameters			
Enterococci	100	99.9	100
Chemical parameters			
Antimony	99.8	100	100
BaP	99.9	99.9	99.9
Bromate	99.8	99.7	100
Mercury	100	99.7	99.8
Nickel	99.5	100	100
Nitrite tap	99.9	99.9	100
Nitrite wtp	99.8	99.8	100
Nitrate	100	99.8	99.9
PAH	100	99.9	100
Lead	99.6	100	100
Pesticides Tot.	100	99.9	100
THMtot	98.2	98.7	98.0
Indicator parameters			
Aluminium	99.7	99.9	99.9
Cl.perfringens	99.8	99.9	100
Colour	99.9	100	100
pH	99.9	99.9	99.9
Iron	99.5	99.5	99.6
Manganese	99.8	99.8	99.8
CC22	99.1	99.0	99.1
Coliform bacteria	99.5	99.6	99.6
TOC	97.9	98.1	98.4
All other DWD parameters had full compliance in the three reporting years.			

The data submitted by the UK on compliance and non-compliance also included stricter national standards.

Table 27.4 Parameters that had less than 99% compliance

	2005	2006	2007
Microbiological parameters			
Chemical parameters			
THM total	**X**	**X**	**X**
Indicator parameters			
TOC	**X**	**X**	**X**

There were few parameters that have less than 99% compliance in the United Kingdom. Both microbiological parameters had more than 99% compliance and all but one (THM) chemical parameters. There was one indicator parameter with less than 99% compliance which was TOC.

Information on product specified parameters

No batch could contain more than 0.020% of free acryl amide monomer based on the active ingredient content; (ii) the dose could average no more than 0.25 mg l-1 and never exceed 0.50 mg l -1 of the active ingredient;(iii) an upper limit for the content of free acryl amide monomer had to be stated by the supplier for every batch;(iv) the method used for the analysis for free acryl amide monomer was entitled 'Determination of Acryl amide' published in the series 'Methods for the Examination of Waters and Associated Materials' by the Environment Agency. The parametric value refered to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water. This was controlled by product specification under national laws.

Epichlorohydrin had to have a concentration as low as possible and products that contain this ingredient in its formulation had to have a leachate test for this parameter carried out on it. If the result came back that the product did leach epichlorohydrin then a toxicological assessment would be carried out and if unacceptable the product would be refused approval. The parametric value refered to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water. This was controlled by product specification under national laws.

Vinylchloride had to have a concentration as low as possible and that products that contain this ingredient in its formulation had to have a leachate test for this parameter carried out on it. If the result came back that the product did leach epichlorohydrin then a toxicological assessment would be carried out and if unacceptable the product would be refused approval. The parametric value refered to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water. This was controlled by product specification under national laws.

Information on non-compliance of drinking water in water supply zones

Level of non-compliance in the water supply zones

Per parameter all WSZs that had more than 1 case of non-compliance in 2005/2006/2007 were calculated. The total number of WSZs in the United Kingdom was 1609, 1604, 1594.

Table 27.5 Number of WSZs in the United Kingdom with more than 1 case of non-compliance for the various parameters in the DWD

Total number of WSZs	2005	2006	2007
	1609	1604	1594
Microbiological parameters			
E.coli	2	3	0
Chemical parameters			
Antimony	3	0	0
BaP	0	1	0
Bromate	3	1	0
Lead	9	14	5
Nickel	2	3	0
Nitrate	0	0	2
Nitrite WTP	5	3	0
Nitrite tap	4	3	2
Pesticides ind.	0	2	1
THM total	39	32	38
Indicator parameters			
Aluminium	15	7	7
Ammonium	0	6	1
Colour	4	1	1
Cl.perfringens	1	0	0
pH	2	1	2
Iron	41	36	27
Manganese	9	12	9
Odour	0	1	0
Taste	2	0	0
Coliform bacteria	144	144	117
Turbidity	0	0	1

Parameters that caused non-compliance in WSZs were, the microbiological parameter *E.coli* in 2005 and 2006 (2-3 WSZs), the chemical parameters THM in 32-39 WSZs, lead and nitrite tap (all three years, small number of WSZs), nickel, bromate and nitrite at the WTP in 2005 and 2006, individual pesticides in 2006 and 2007, antimony, BaP and nitrate one year out of three year and the indicator parameters aluminium, colour, iron, manganese and Coliform bacteria in all three years, pH and ammonium in two years and Cl.perfringens, odour and taste in one year. All parameters except Coliform bacteria and iron only caused non-compliance in a small number of WSZs.

Maximum values for non-compliant parameters

Member States reported the maximum values they registered in non-compliant results. The peak values found were not at all representative for the general quality drinking water supplied in the Member State. It was a mere indication which peak values did occur in the EU Member States. In the table below a range of maximum values is given as they represent data on peaks in 1 to 3 years.

Table 27.6 Maximum (peak) values found for non-compliant parameters in the United Kingdom

Parameter	Range of maximum (peak) values	Parametric value in the DWD 98/83/EC
E.coli	144-201/100 ml	0/ 100 ml
Antimony	10.1 ug/l	5 ug/l
BaP	0.141 ug/l	0.010 ug/l
Bromate	37.9-66 ug/l	10 ug/l
Lead	339.6-1073.9 ug/l	10 ug/l
Nickel	37.2-108 ug/l	20 ug/l
Nitrate	53.9 mg/l	50 mg/l
Nitrite tap	0.64-0.96 mg/l	0.50 mg/l
Nitrite WTP	0.13-0.26 mg/l	0.10 mg/l
Pesticides ind	0.352-0.53 ug/l	0.10 ug/l
THM total	224.4-392 ug/l	150 ug/l
Aluminium	463-931 ug/l	200 ug/l
Ammonium	0.59-0.92 mg/l	0.50 mg/l
Cl.perfringens	1/ 100 ml	0/100 ml
Iron	1370-2390 ug/l	200 ug/l
Manganese	261-623.5 ug/l	50 ug/l
Coliform bacteria	201-999/100 ml	0/100 ml

Reasons for non-compliance

We could not reproduce all causes of non-compliance and the action plans MS had in this respect. We made the following observations: the cause of non-compliance, the remedial action and the time frame were often not given in the returns. In approximately 10 to 15% of cases this information was available.

Reporting on drinking water quality to the public

Information on the quality of drinking water was available on the national and the regional website (England and Wales, Northern Ireland and Scotland) and through various other channels: leaflets, water bills, consumer organisations and national and local press media. Also annual reports on the quality were produced and made available.

Derogations for the United Kingdom

For the 2005-2007 period the United Kingdom reported 91 first derogations in 2005, 62 first derogations and 2 second derogations in 2006, and 51 first derogations and 22 second derogations in 2007. There were no third derogations in place. The derogations concerned are summarised in table 4.27.7.

Table 27.7 Derogations in place 2005-2007 period

Parameter	No of first derogations in place			No of second derogations in place		
	2005	2006	2007	2005	2006	2007
Al	24	6				
Ni	3	3	3			
NO3	1	1	1			
Individual Pesticides	20	21	22			
THMs	43	31	24		2	22

Historical data for the United Kingdom

National summary of monitoring results for each parameter in large wsz > 5000 people. Percentages non-compliance. United Kingdom 1993-2004 period												
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Parameter												n.i.
Organochlorine compound/THM				3.7	5.1	8.1	24.2	26.8	31.4	43.7	34.6	
Aluminium							18.6	15.4	19.9	15.9	14.3	
Oxidisability						1.1	10.4	7.7		9.8	6.8	
Lead	3.1	3.2	3.4	2.4	2.1	1.8	8.0	3.1	2.7	5.5	6.2	
Iron	2	2.1	3.4	2	1.8	1.8	5.6	4.0	2.9	2.7	3.1	
PAH	3.6	4.5	4.9	3.9	3.3	3.2	1.5	2.5	1.6		1.9	
Manganese							2.8				1.6	
MCPA											1.6	
Ammonium								1.2		1.5		
Colour							1.4	1.4				
Nitrite	4.3	4.9	4.8	4	3.7	3.4						
Hydrocarbons	7.1		1.5									

Total *number of water supply zones* serving more than 5000 people that exceeded the parametric value in the DWD in *more than 1 sample*. United Kingdom 1996-2004 period									
Reporting year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Nr of WSZ	1900	1900	1900	2324	2316	2305	2284	2249	n.i.
Parameter									
Other organochlorine compounds/THM	66	83	134	73	69	67	74	52	
Iron	235	201	204	28	21	14	11	12	
Lead	37	109	91	12	6	7	11	10	
Aluminium	39	28	23	15	9	5	5	5	
TC/Coliform bacteria	105	108	78	6	5	7	5	5	
Oxidisability				5	3	1	3	3	
PAH	106	103	89	2	3	1	1	1	
FC/*E.coli*							1		
pH							1		
Ammonium					1	1	1		
MCPA								1	
Pesticides				3	3	1			
Nitrite	152	134	145						
Manganese	47	42	37						
Turbidity				1					

Conclusions for the United Kingdom

The UK did not report on non-compliance with the monitoring frequency of the Directive. The UK reported on non-compliance with the monitoring frequency set for each water supply zone established within the UK domestic legislation (with the 100,000 maximum population cap). The Directive requirements were less strict.

Almost all parameters had more than 99% compliance in the UK. There were two parameters that caused non-compliance in more than 1% of the samples in the United Kingdom, the chemical parameters total trihalomethanes and the indicator parameter TOC.

Parameters that caused non-compliance in WSZs were, the microbiological parameter *E.coli* in 2005 and 2006, the chemical parameters THM, lead and nitrite at the tap nickel, bromate and nitrite WTP in 2005 and 2006, individual pesticides in 2006 and 2007, antimony, BaP and nitrate one year out of three year and the indicator parameters aluminium, colour, iron, manganese and Coliform bacteria in all three years, pH and ammonium in 2 years and *Cl.perfringens*, odour and taste in one year. All parameters except Coliform bacteria and iron caused non-compliance in a small number of WSZs.

There were many historical data for the United Kingdom. What stood out was the decrease in parameters that caused non-compliance at national level. More than 1% non-compliance was limited to two parameters THM and TOC. In addition the non-compliance with the THM parameter was much lower that in 2002-2004. Also the number of WSZs that showed non-compliance for THM had decreased. There was a sharp increase in non-compliant WSZS for the Coliform bacteria parameter from 5 WSZs in 2002-2004 to 117-144 WSZs in the 2005-2007 period. There was also an increase in the number of WSZs with non-compliance for iron, manganese and nitrite.

The UK reported that there were no parameters where non-compliance exceeds 5% of the samples.