European Environment Agency

Bathing water results 2009 – Finland

1. Introduction

This report gives a general overview of bathing water quality in Finland during the 2009 bathing season. Finland reported under the Directive 2006/7/EC in 2008 and 2009 bathing season.

Before the necessary data set for assessment of bathing water quality under the Directive 2006/7/EC is compiled (data for three or four consecutive years) the rules for transition period assessment is done. This means that the classification of bathing waters is defined on the basis of concentrations of intestinal enterococci and *Escherichia coli* that are reported under the Directive 2006/7/EC. The limit values for the classification are taken from the Directive 76/160/EEC. For the conversion of reported parameters under the Directive 2006/7/EC, Article 13.3 of the Directive 2006/7/EC foresees that the parameter *Escherichia coli*, reported under the Directive 2006/7/EC, is assumed to be equivalent to the parameter faecal coliforms of the Directive 76/160/EEC. The parameter intestinal enterococci reported under the Directive 2006/7/EC is assumed to be equivalent to the parameter faecal streptococci.

The results are classified in the following categories:

- Compliant with the mandatory value of the Directive 76/160/EEC for *Escherichia coli* and not compliant with the guide values of the Directive 76/160/EEC for *Escherichia coli* or intestinal enterococci (class CI);
- Compliant with the mandatory value of the Directive 76/160/EEC for *Escherichia coli* and the more stringent guide values for the *Escherichia coli* and intestinal enterococci (class CG);
- Not compliant with the mandatory value of the Directive 76/160/EEC for *Escherichia coli* (class NC);
- Banned or closed (temporarily or throughout the season) (class B).

This year the interval between two samples during the bathing season should not be larger than 41 days. The interval is longer than 31 days as defined in the Directive 2006/7/EC, since we are approaching the year 2012 only when the assessment rules will be in full compliance with the rules of this Directive. Furthermore, the first sample that should be taken shortly before the start of the bathing season could be taken even 10 days after the start of the bathing season.

2. Length of bathing season and number of bathing waters

For all bathing waters the bathing season lasted 2.5 months, from 15 June to 31 August 2009, except for one coastal bathing water and six freshwater bathing waters that opened on 25 June and closed on 15 August.

A total of 339 bathing waters were monitored in Finland during the 2009 bathing season, of which 85 were coastal bathing waters and 254 freshwater bathing waters (15 on rivers; 239 on lakes). Three freshwater bathing waters were insufficiently sampled.

With 339 bathing waters Finland accounts for about 1.6% of the reported bathing waters of the European Union.

The evolution of the reported number of bathing waters since monitoring of the water quality began under the Directive 76/160/EEC and the Directive 2006/7/EC is presented in Table 1. There is a significant decrease in number of freshwater bathing waters since the start of the reporting from 378 freshwater bathing waters in 1995 to 254 in 2009. There were eight less freshwater bathing waters in 2009 than in the previous year: five new bathing waters were added to the list and 13 were de-listed. The number of coastal bathing waters fluctuated in the period 1995-2007 between 93 in 1999 and 120 in 2001. It decreased afterwards to 85 in 2008 and 2009. In 2009, one new bathing water was added to the list and one was de-listed.

3. Results of bathing water quality

The results of the bathing water quality in Finland for the period 1995-2008 as reported in the past reporting years and for the bathing season of 2009 are presented in Figure 1. The previous reports are available on the European Commission's bathing water quality website (http://ec.europa.eu/environment/water/water-bathing/index_en.html; Water and Health/Bathing Water/ 2005-2009 reports) and the European Environment Agency's bathing water website (http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water; reports for 2008 bathing season).

The graphs show, for coastal and freshwater bathing waters separately:

- The percentage of bathing waters that comply with the guide values (class CG, blue line);
- The percentage of bathing waters that comply with the mandatory values (class CI, green line);
- The percentage of bathing waters that do not comply with the mandatory values (class NC, red line);
- The percentage of bathing waters that are banned or closed (temporarily or throughout the season) (class B, grey line).

Table 1 shows the same information in absolute numbers and in percentages separately for coastal and freshwater bathing waters. Table 2 shows the bathing water quality results for 2009 season in Finland for all bathing waters.

Map 1 shows the location of the reported bathing waters in Finland. The location of the bathing waters is based on the geographic coordinates reported by the Finnish authorities.

Figure 1: Results of bathing water quality in Finland from 1995 to 2009

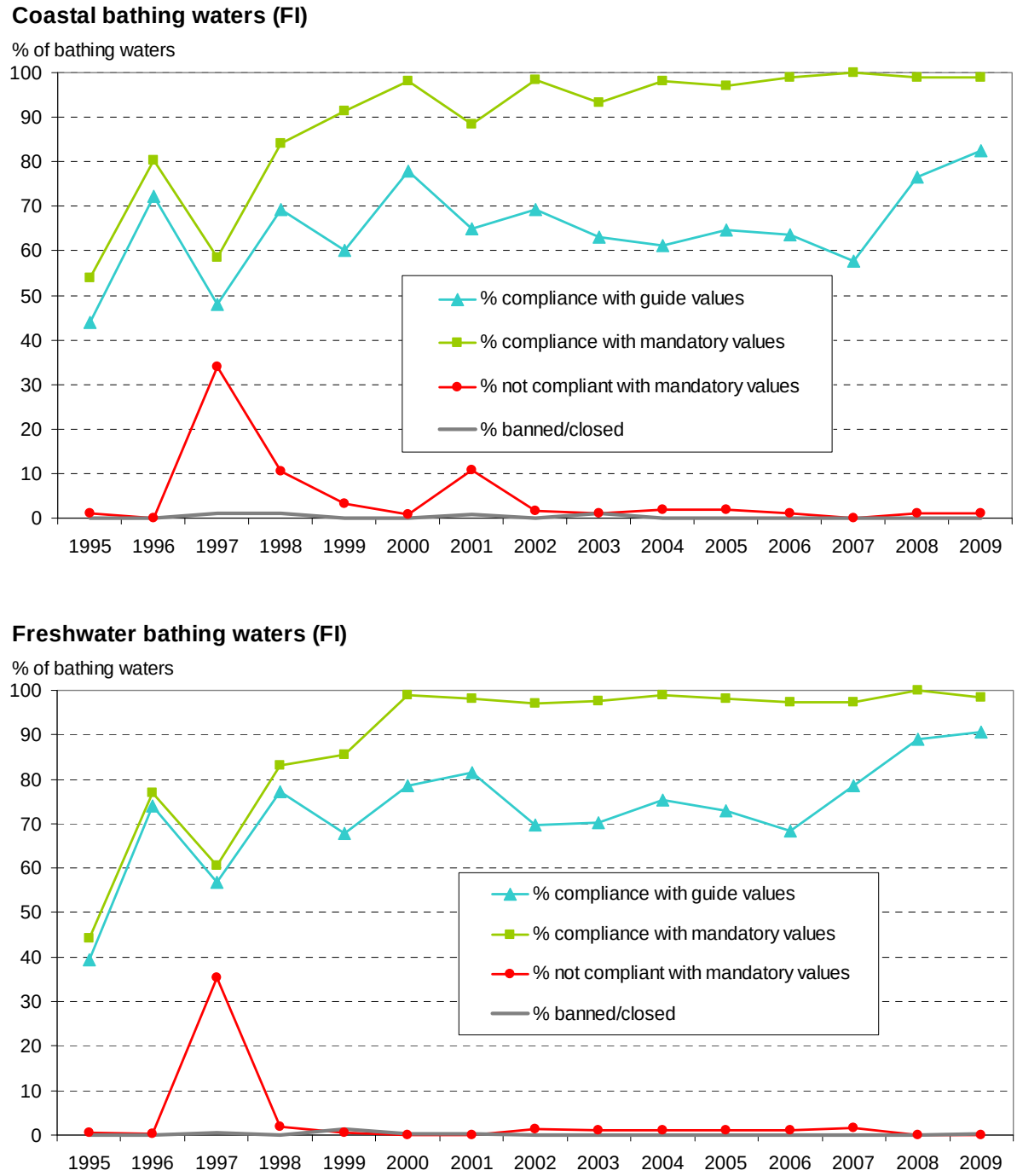


Table 1: Results of bathing water quality in Finland from 1995 to 2009

FI										
		Total number of bathing waters	Compliance with guide values		Compliance with mandatory values		Not compliant		Banned/closed temporarily or throughout the season	
			Number	%	Number	%	Number	%	Number	%
Coastal bathing waters	1995	100	44	44.0	54	54.0	1	1.0	0	0.0
	1996	101	73	72.3	81	80.2	0	0.0	0	0.0
	1997	94	45	47.9	55	58.5	32	34.0	1	1.1
	1998	94	65	69.1	79	84.0	10	10.6	1	1.1
	1999	93	56	60.2	85	91.4	3	3.2	0	0.0
	2000	113	88	77.9	111	98.2	1	0.9	0	0.0
	2001	120	78	65.0	106	88.3	13	10.8	1	0.8
	2002	117	81	69.2	115	98.3	2	1.7	0	0.0
	2003	103	65	63.1	96	93.2	1	1.0	1	1.0
	2004	103	63	61.2	101	98.1	2	1.9	0	0.0
	2005	99	64	64.6	96	97.0	2	2.0	0	0.0
	2006	99	63	63.6	98	99.0	1	1.0	0	0.0
	2007	99	57	57.6	99	100.0	0	0.0	0	0.0
	2008*	85	65	76.5	84	98.8	1	1.2	0	0.0
	2009	85	70	82.4	84	98.8	1	1.2	0	0.0
Freshwater bathing waters	1995	378	149	39.4	167	44.2	2	0.5	0	0.0
	1996	391	289	73.9	301	77.0	1	0.3	0	0.0
	1997	360	205	56.9	218	60.6	127	35.3	2	0.6
	1998	357	276	77.3	297	83.2	7	2.0	0	0.0
	1999	343	233	67.9	293	85.4	2	0.6	5	1.5
	2000	332	261	78.6	328	98.8	0	0.0	1	0.3
	2001	314	256	81.5	308	98.1	0	0.0	1	0.3
	2002	305	213	69.8	296	97.0	4	1.3	0	0.0
	2003	292	205	70.2	285	97.6	3	1.0	0	0.0
	2004	285	215	75.4	282	98.9	3	1.1	0	0.0
	2005	280	204	72.9	275	98.2	3	1.1	0	0.0
	2006	274	187	68.2	267	97.4	3	1.1	0	0.0
	2007	266	209	78.6	259	97.4	4	1.5	0	0.0
	2008*	262	233	88.9	262	100.0	0	0.0	0	0.0
	2009	254	230	90.6	250	98.4	0	0.0	1	0.4

Note: Bathing waters which were insufficiently sampled or not sampled according to the Bathing Water Directive or the New Bathing Water Directive were not included in this table. Therefore, in some cases, the sum of the different categories will not be equal to the total number of bathing waters. Bathing waters which were compliant with the guide values were also compliant with the mandatory values for five parameters under the Directive 76/160/EEC (1995-2007) or the mandatory value for *Escherichia coli* (2008, 2009).

* : Changes after official report for 2008 bathing season.

Table 2: Results of bathing water quality for all bathing waters in Finland in 2009

FI										
		Total number of bathing waters	Compliance with guide values		Compliance with mandatory value for *Escherichia coli*		Not compliant		Banned/closed temporarily or throughout the season	
			Number	%	Number	%	Number	%	Number	%
Bathing waters	2009	339	300	88.5	334	98.5	1	0.3	1	0.3

Note: Bathing waters which were insufficiently sampled according the New Bathing Water Directive were not included in this table. Therefore the sum of the different categories is not equal to the total number of bathing waters. Bathing waters which were compliant with the guide values were also compliant with the mandatory value for *Escherichia coli.*

4. Development of bathing water quality

Coastal bathing waters

In Finland, 98.8% of the coastal bathing waters met the mandatory water quality in 2009, the same as in the previous year. The compliance with the guide values was 82.4%, which is an increase of 5.9%. One bathing water (1.2%) was non-compliant with the mandatory value for *Escherichia coli*, the same as in 2008. Since 2004, no coastal bathing water had to be closed during the season.

The compliance rate with the mandatory values and guide values fluctuated strongly between 1995 and 2003. Since 2004, the compliance rate with the mandatory values became fairly stable, reaching close to 100%. 100% compliance was reached in 2007. The compliance rate with the guide values reached above 70% in 2008 and above 80% in 2009 after fluctuating around 60% since 2003.

Freshwater bathing waters

98.4% of the freshwater bathing waters met the mandatory water quality in 2009. This is a decrease compared to the previous year, when 100% of the bathing waters were in compliance. The rate of compliance with the guide values was 90.6%, which is an increase of 1.7%. No bathing water was non-compliant with the mandatory value for *Escherichia coli*, the same as in 2008. One freshwater bathing water (0.4%) was closed during the season.

Overall, the compliance rate increased in the period from 1995 till 2000. The percentages of freshwater bathing waters complying with the mandatory quality values reached a constant level of about 98% since 2000, except in 2008 (100%). The percentage of bathing waters compliant with the more stringent guide values was fluctuating between 67.9% in 1999 and 81.5% in 2001 from 1998 to 2007. Since 2008, the compliance with the guide values reached about 90%.

5. General information as provided by the Finnish authorities

Monitoring of bathing water

Municipal health protection authorities are responsible for taking care of quality surveillance of bathing water. According to the legislation no fewer than four (or three) samples are to be taken per bathing season including one sample around two weeks before the start of a bathing season. Sampling dates are to be distributed throughout the bathing season with the interval between sampling dates never exceeding one month.

De-listing of bathing waters

In 2009, one coastal bathing water and 13 freshwater bathing waters were reported as de-listed due to low number of bathers - below 100 bathers in a day. The quality of these bathing waters was excellent, classification cg in 2008, except for two bathing waters the classification was ci. As small bathing areas they will be monitored according to national regulations. These regulations include e.g. requirements for frequent monitoring, quality of bathing water and public information. More information

on reasons for de-listing of each bathing water is available in the report of bathing water quality for the 2009 bathing season by the Finnish authorities, table BW_2009_IdentifiedBW, attribute Change (http://cdr.eionet.europa.eu/fi/eu/bathing/envsi5eeg/FI_BW_2009_IdentifiedBW.xls).

Temporary blooms of cyanobacteria

Temporary bloom of cyanobacteria appeared at 11 bathing waters. The following management measures were taken: public information at all bathing sites, public information on the local newspaper (three bathing waters), public information on the Internet (two bathing waters) and additional analyses/inspections of the occurrence of cyanobacteria at six bathing waters. Bathing was temporarily prohibited in one bathing area, FI142164003 (Lamminjarvi), for three weeks because of cyanobacterial bloom. The prohibition started on 7 August 2009.

Short term pollution

Five bathing waters were affected by short term pollution. Temporary high concentrations of *E. coli* and intestinal enterococci in a bathing water sample were detected after bathing water samples taken according to the monitoring calendar have been analyzed. After that municipal authorities started management measures to protect bathers' health (public information) and to investigate the reasons for high microbiological numbers. They took some additional microbiological analyses of bathing water. A brief description of pollution and management measures taken for each bathing water is available in the report of bathing water quality for the 2009 bathing season by the Finnish authorities, table BWQD_2009_SeasonalInfo, attribute ManMeas (http://cdr.eionet.europa.eu/fi/eu/bathing/envswqjkq/BWQ_2009_Finland_SeasonalInfo.xls).

Public participation

Municipal health protection authorities establish a list of locally identified public bathing waters before the start of a bathing season. Municipal authorities arrange opportunities for public to get information on the implementation of the bathing water legislation and on the list of public bathing waters. The list can e.g. be displayed at the official notice board or published using appropriate media. Public has then opportunity to formulate proposals and comments on the list.

The final list of public bathing areas having a large number of bathers is to be reported to the European Commission before the start of each bathing season. In Finland, large number of bathers is considered to be more than 100 bathers in a day.

Information to the public

Information is disseminated mainly at the public bathing area and in the Internet. The most recent monitoring results and their assessments are in general displayed at public bathing area.

Wastewater treatment in urban areas

Finland has a long and successful history of water pollution control. Some of the large towns started to construct sewerage networks and wastewater treatment plants already during the first decades of the 20th century. The Water Act, enacted in 1961, initiated a comprehensive process of wastewater treatment plant construction in small towns and even in villages. Already in 1985 every town and village with more than 200 inhabitants had a treatment plant. At present, all collected wastewaters in Finland receive efficient biological-chemical treatment with national mean reduction values of about 97% for organic load, 95% for phosphorus and 54% for nitrogen. The results of the best plants are even better. A new Governmental Decree on urban wastewater treatment entered into force in November 2006.

Regulations and technologies for rural areas

A new era in solving pollution problems in sparsely settled areas began when a comprehensive new Environmental Protection Act came into force in March 2000. The Act, covering also small discharges that may cause pollution of surface waters or groundwater, made it possible to enact a special decree

for more strict regulation of onsite wastewater systems and their effluents. The government approved such a decree in June 2003 and it entered into force in January 2004.

The decree includes treatment requirements that are given based on specific person-equivalent load values. The basic reduction requirement is a decrease of 90% of the organic load (BOD_7), 85% of phosphorus and 40% of nitrogen. Somewhat lower reduction values may be used in areas not sensitive for pollution. All new wastewater treatment systems shall meet the new requirements. The decree also covers the wastewater systems in existing houses but because it would have been impossible to carry out the needed improvements simultaneously, the decree includes a provision for a transitional period of ten years.

The Finnish manufacturers have been very active in developing materials and treatment plants that are able or help to fulfil the requirements of the decree. Numerous systems showed good results in a recently finished monitoring project. There were only a few problems with the organic load and slightly more with nitrogen removal. Many methods and package plant types achieved also good results in phosphorus removal, which is usually considered to be difficult for small onsite systems. At present, there is also a research station in Finland with the official status of a notified body for testing small wastewater treatment plants according to the European standard EN 12566-3.

Guidelines for water protection up to 2015

The Finnish environment authorities have recently prepared new guidelines for water protection measures. Several background studies were published in 2006-2007 and a governmental decision-in-principle on water protection policy outlines to 2015 was accepted. This programme defines actions designed to ensure that Finland`s inland waters, coastal waters and groundwater are in good ecological state, and to prevent any deterioration in their state. The outlines are intended to facilitate the drafting of regional water management plans, and they will also support the EU marine strategy, and the preparation and implementation of a joint action plan for the protection of the Baltic Sea.

6. More information on bathing water quality in the European Union

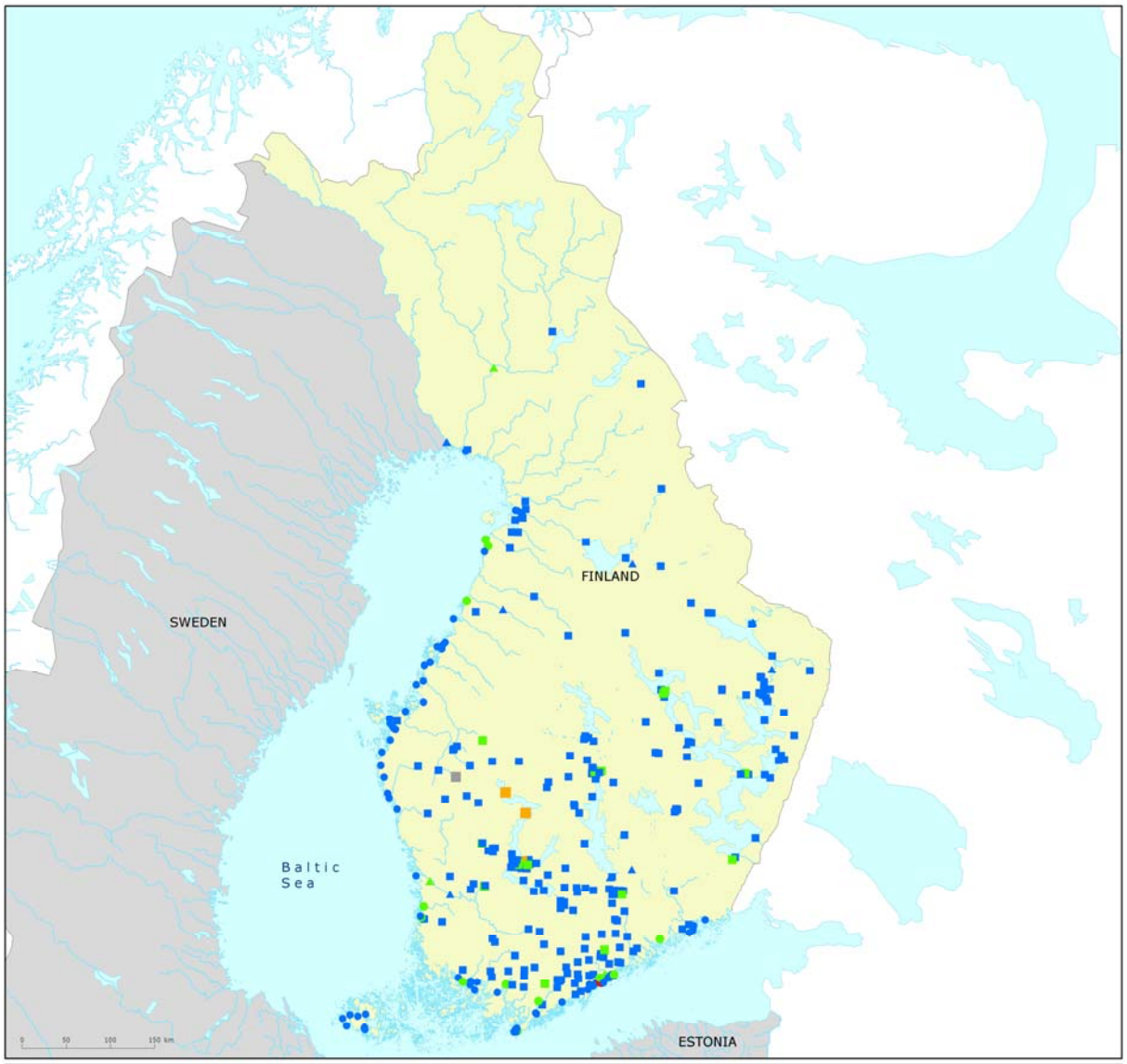
More information on bathing water quality in the European Member States, including the EU summary report, the reports for 27 Member States, Croatia and Switzerland, can be found on the European Commission's bathing water quality website (http://ec.europa.eu/environment/water/water-bathing/index_en.html) and the European Environment Agency's bathing water website (http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water). The reports for the bathing seasons of 2008 and 2009 have been produced by the Institute for Water of the Republic of Slovenia (IWRS), a partner in the EEA European Topic Centre on Water (ETC/W). Countries have collaborated in the assessment of bathing water quality and supplied additional information when needed.

By 2015, Member States will have to comply with the stricter and more ambitious requirements laid out in the New Bathing Water Directive (Directive 2006/7/EC). This Directive requires more effective monitoring and management of bathing waters, greater public participation and improved information. More information on the new Directive can be found on the bathing water quality website and on http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:064:0037:0051:EN:PDF.

Cyprus, Denmark, Estonia, Finland, Germany, Hungary, Latvia, Lithuania, Slovakia, Spain and Sweden started to report according to more stringent new requirements in 2008 bathing season. Malta and the Netherlands started to report in 2009 bathing season under the new requirements. Sweden and Malta also sent data for three previous bathing seasons under the new requirements. Luxembourg started to monitor under the new requirements in 2006 bathing season, while reported for the first time in 2007 bathing season.

WISE - Water Information System for Europe (www.water.europa.eu) is a gateway to all water related information. Among other water related data, information on individual bathing water quality can be found in the WISE map viewer and WISE Bathing Water Quality data viewer through interactive maps and graphs (http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water).

Map 1: Bathing waters reported during the 2009 bathing season in Finland



Note: * banned or closed (temporarily or throughout the season)
More data on bathing water quality on: http://www.eea.europa.eu/themes/water/mapviewers/bathing

Source: National boundaries: GISCO; Large rivers and lakes: EEA, WFD Article 3; Bathing waters data and coordinates: Finnish authorities