

Bathing water results 2009 – Germany

1. Introduction

This report gives a general overview of bathing water quality in Germany during the 2009 bathing season. Germany 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

Coastal bathing waters opened on 15 or 20 May or 1 June 2009, except for three bathing waters opened on 8 and 9 May and 1 July respectively. These bathing waters closed on 10, 14 or 15 September 2009. Freshwater bathing waters opened in May or June 2009, except for 12 bathing waters opened in April and 22 bathing waters opened in July. These bathing waters closed in August or September 2009. Most freshwater bathing waters opened in June and closed in September.

A total of 2 279 bathing waters were reported in Germany during the 2009 bathing season, of which 373 were coastal (355) or transitional bathing waters (18) and 1 906 freshwater bathing waters (31 on rivers; 1 875 on lakes). Four freshwater bathing waters were insufficiently sampled.

With 2 279 bathing waters Germany accounts for about 10.6% 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. The number of reported freshwater bathing waters increased since the start of the reporting from 1 514 in 1991 to 1 906 in 2009. Meanwhile, the number of freshwater bathing waters had decreased from 1 915 in 1994 to 1 553 in 2005. There were 16 more freshwater bathing waters in 2009 than in the previous year: 22 new bathing waters were added to the list, two were re-opened and seven were de-listed. In addition, three bathing waters were re-opened in 2009 after a closure in 2008. The number of reported coastal

bathing waters decreased since the start of reporting from 440 in 1991 to 351 in 2006 and 2007. It increased afterwards to 373 in 2008 and 2009. However, the total number of reported coastal bathing waters in 2009 was still lower than the numbers reported till 2005. In 2009, one new bathing water was added to the list compared to the previous year and one was de-listed. The new bathing water was opened after the list of bathing waters was reported before the start of the 2009 bathing season.

3. Results of bathing water quality

The results of the bathing water quality in Germany for the period 1991-2008 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:

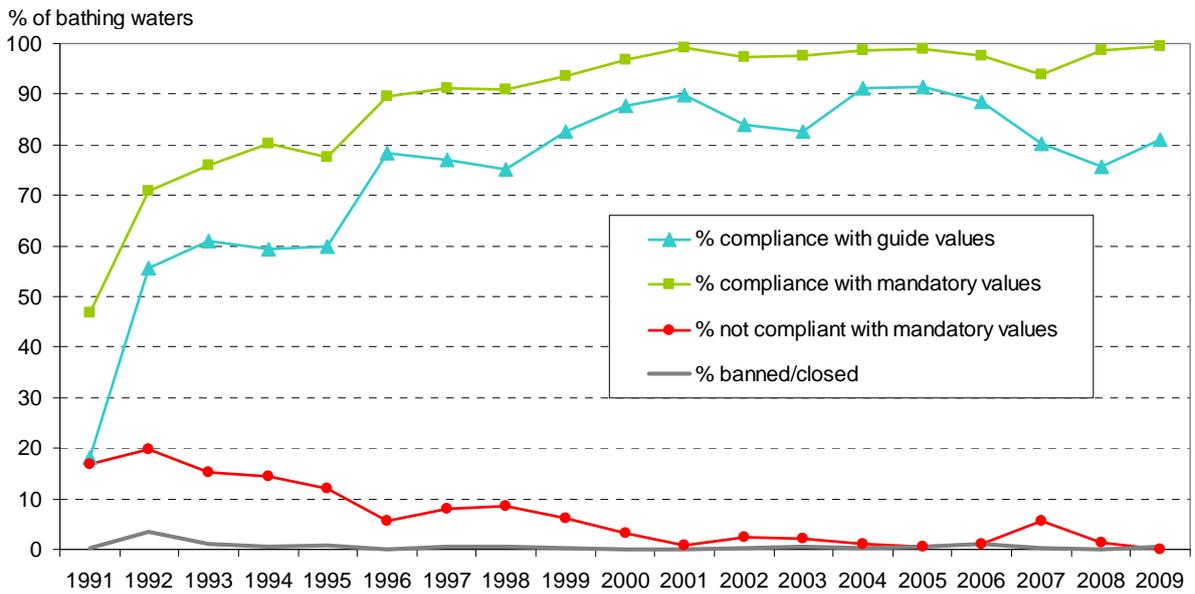
- The percentage of bathing waters that comply with the guide values (class CG, blue line);
- The percentage of bathing waters that comply with the mandatory values (class CI, green line);
- The percentage of bathing waters that do not comply with the mandatory values (class NC, red line);
- The percentage 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 Germany for all bathing waters.

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

Figure 1: Results of bathing water quality in Germany from 1991 to 2009

Coastal bathing waters (DE)



Freshwater bathing waters (DE)

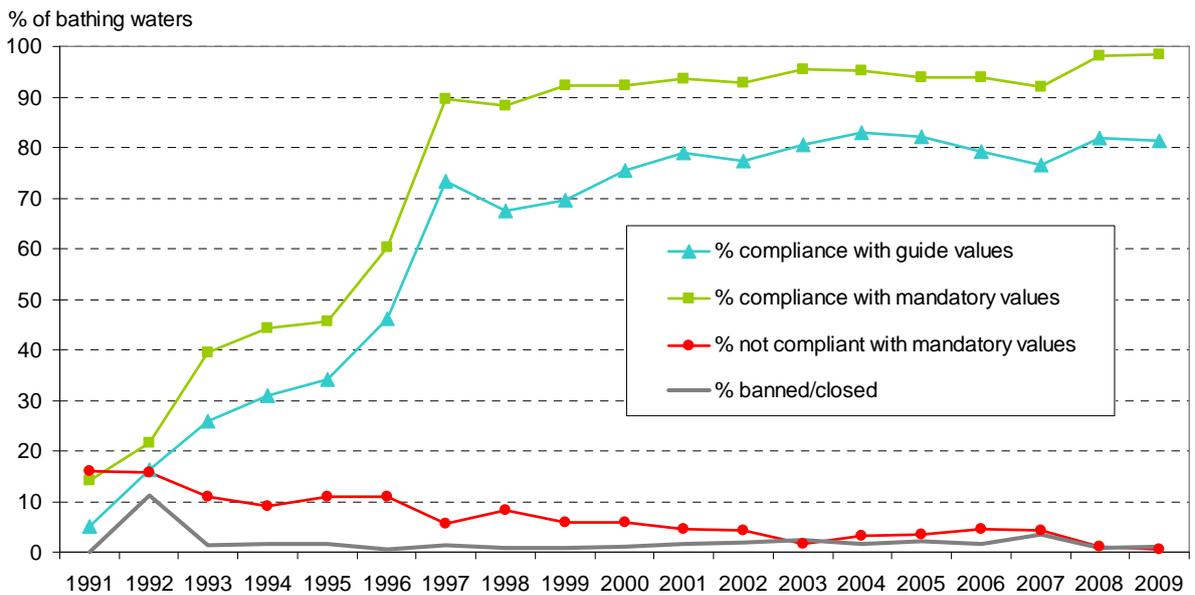


Table 1: Results of bathing water quality in Germany from 1991 to 2009

DE										
		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	1991	440	80	18.2	206	46.8	74	16.8	1	0.2
	1992	441	245	55.6	313	71.0	87	19.7	15	3.4
	1993	437	266	60.9	332	76.0	67	15.3	5	1.1
	1994	444	263	59.2	356	80.2	64	14.4	2	0.5
	1995	440	263	59.8	341	77.5	53	12.0	3	0.7
	1996	428	335	78.3	383	89.5	24	5.6	0	0.0
	1997	416	320	76.9	379	91.1	33	7.9	2	0.5
	1998	417	313	75.1	379	90.9	36	8.6	2	0.5
	1999	414	342	82.6	387	93.5	26	6.3	1	0.2
	2000	411	360	87.6	398	96.8	13	3.2	0	0.0
	2001	409	367	89.7	406	99.3	3	0.7	0	0.0
	2002	404	339	83.9	393	97.3	10	2.5	1	0.2
	2003	394	326	82.7	384	97.5	8	2.0	2	0.5
	2004	390	356	91.3	385	98.7	4	1.0	1	0.3
	2005	389	356	91.5	385	99.0	2	0.5	2	0.5
	2006	351	311	88.6	343	97.7	4	1.1	4	1.1
	2007	351	282	80.3	329	93.7	20	5.7	1	0.3
	2008	373	282	75.6	368	98.7	5	1.3	0	0.0
2009	373	302	81.0	371	99.5	0	0.0	2	0.5	
Freshwater bathing waters	1991	1514	78	5.2	213	14.1	244	16.1	2	0.1
	1992	1820	295	16.2	394	21.6	284	15.6	203	11.2
	1993	1701	439	25.8	672	39.5	188	11.1	23	1.4
	1994	1915	592	30.9	846	44.2	172	9.0	31	1.6
	1995	1828	623	34.1	836	45.7	200	10.9	27	1.5
	1996	1808	832	46.0	1090	60.3	197	10.9	9	0.5
	1997	1723	1265	73.4	1545	89.7	97	5.6	24	1.4
	1998	1656	1118	67.5	1462	88.3	137	8.3	13	0.8
	1999	1639	1141	69.6	1514	92.4	97	5.9	15	0.9
	2000	1615	1217	75.4	1490	92.3	94	5.8	16	1.0
	2001	1601	1265	79.0	1498	93.6	74	4.6	26	1.6
	2002	1592	1232	77.4	1478	92.8	66	4.1	30	1.9
	2003	1572	1264	80.4	1500	95.4	26	1.7	37	2.4
	2004	1561	1296	83.0	1484	95.1	48	3.1	24	1.5
	2005	1553	1275	82.1	1459	93.9	55	3.5	34	2.2
	2006	1564	1238	79.2	1467	93.8	70	4.5	25	1.6
	2007	1588	1217	76.6	1462	92.1	67	4.2	54	3.4
	2008	1890	1547	81.9	1857	98.3	20	1.1	13	0.7
2009	1906	1548	81.2	1875	98.4	9	0.5	18	0.9	

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 (1991-2007) or the mandatory value for *Escherichia coli* (2008, 2009).

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

DE										
		Total number of bathing waters	Compliance with guide values		Compliance with mandatory value for <i>Escherichia coli</i>		Not compliant		Banned/closed temporarily or throughout the season	
			Number	%	Number	%	Number	%	Number	%
Bathing waters	2009	2279	1850	81.2	2246	98.6	9	0.4	20	0.9

Note: Bathing waters which were insufficiently sampled according to 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 Germany, 99.5% of the coastal bathing waters met the mandatory water quality in 2009. This is a slight increase of 0.8% compared to the previous year. The rate of compliance with the guide values was 81%, which is an increase of 5.4%. No bathing water was non-compliant with the mandatory value for *Escherichia coli* compared to five bathing waters (1.3%) in 2008. Two coastal bathing waters (0.5%) were closed during the season.

In the early 90's the water quality in coastal bathing waters was rather low, with around 15% of the bathing waters not compliant with the mandatory values. The German authorities have taken measures to improve the overall water quality. These resulted in improved water quality as can be seen in the increasing compliance results from 1992 onwards. The low compliance rate in the early 90's is partly also explained by the large number of insufficiently sampled bathing waters. The compliance rate with the mandatory values in 2007 was the lowest since 2000; non-compliance was often due to the parameter total coliform bacteria. The compliance rate with the guide values in 2008 - which for the first time also included the parameter intestinal enterococci - was the lowest since 2000. Since the start of the reporting in 1991, one or more coastal bathing waters were closed during the season (except for the 1996, 2000, 2001 and 2008 season), accounting for less than 1% of the bathing waters for the most seasons.

Freshwater bathing waters

98.4% of the freshwater bathing waters were in compliance with the mandatory water quality in 2009. This is approximately the same as in the previous year (+ 0.1%). 81.2% of the bathing waters met the guide values, which is a slight decrease (- 0.7%). The number of bathing waters non-compliant with the mandatory value for *Escherichia coli* decreased from 20 (1.1%) to nine bathing waters (0.5%). 18 freshwater bathing waters (0.9%) had to be closed during the season compared to 13 (0.7%) in 2008.

Similarly as for the coastal bathing waters, the compliance rate was low for the freshwater bathing waters in the early 90's. As for the coastal bathing waters, this was largely due to the high number of insufficiently sampled bathing waters. From 1992 onward we see an overall increase in the water quality. Beginning with the 2001 bathing season Germany reached a constant low level of non-compliant freshwater bathing waters below 5%. The mandatory water quality was met in minimum 92% of the bathing waters since 1999. Since 2000, the bathing waters compliant with the more stringent guide values are fluctuating between 75.4% in 2000 and 83% in 2004. Since the start of the reporting in 1991, closed freshwater bathing waters were reported. For the most seasons, the percentage of closed bathing waters was below 3%.

5. General information as provided by the German authorities

In Germany, the 16 federal states of the Federal Republic of Germany – the Länder - are responsible for monitoring of bathing waters. There are extended bathing waters in Germany where the authorities regularly take several (2-3) samples per sampling date (day) at different places in order to better detect possible problems with pollution.

De-listing and closing of bathing waters

Eight bathing waters (one coastal and seven freshwater) were de-listed in 2009 bathing season due to various reasons.

Transitional bathing water: Dollartstrand Wybelsum - Knock (DENI_PR_TK25_2608_01) was de-listed (closed) due to a change in infrastructure (rock fill at the shore, main road closed, industrial area in progress).

Bathing waters on lake: Fuldasee Bad Hersfeld (DEHE_PR_0020) was de-listed since there was no bathing since 2008 because of long lasting cyanobacteria blooming due to massive eutrophication.

Bathing water on lake: Freibad Huels/Am Seil (DENW_PR_0031) was de-listed because it is an artificial confined water body with chlorination (no bathing water according to Article 1(3) of the Directive 2006/7/EC).

Bathing waters on lakes: Eurostrand (DENI_PR_TK25_2823_01), Hemmingen - Arnummer See Deni (PR_TK25_3624_05) and Naherholungszentrum Copitz (DESN_PR_0025) were de-listed because of number of bathers decreasing since several years or number of bathers was permanently low. In addition, Naherholungszentrum Copitz is not a bathing water according to Article 1(3) of the Directive 2006/7/EC.

Bathing waters on rivers: Nied, Rehlingen-Siersburg, Wackenmühle (DESL_PR_04001) and Nied, Rehlingen-Siersburg, Eimersdorf (DESL_PR_04003) have been closed for several years and were de-listed because of uncertain water quality.

Eight bathing waters (one coastal and seven freshwater) were closed for the whole bathing season. Four of them were not monitored.

Coastal bathing water: Ostsee, Eldena, Strandbad (DEMV_PR_1_0831) was closed due to restauration work.

Bathing water on river: Nied, Rehlingen-Siersburg, Siersburg Campingplatz (DESL_PR_04002) was closed as in the years before due to uncertain water quality.

Six bathing waters on lakes were closed due to ongoing renovation/remediation work.

Bibersfeld, Starkholzbacher See (DEBW_PR_0310): renovation, reopening probably 2011.

Badeweiher Gegenbach, Breitenberg, Nordufer (DEBY_PR_PA_0361): remediation activities (draining and desludging).

Gederner See, Campingpark (DEHE_PR_0065): renovation and remediation work.

Eichbaumsee; Badeplatz Nord (DEHH_PR_5900_102606008) and Eichbaumsee; Badeplatz Ost (DEHH_PR_5900_102606009): ongoing remediation work, phosphate precipitation is planned for 2010.

Talsperre Pirk (DESN_PR_0005): remediation work.

In addition, 12 bathing waters were temporarily closed, of which 10 were freshwater bathing waters on lakes and one on river (Schwoerstadt, Rhein Beim Schwimmbad) and one coastal (transitional) bathing water (Nordseebadestrand Upleward). They were closed due to various reasons:

- renovation (Erzgrube, Stausee Erzgrube, Vorsperre (DEBW_PR_0098));
- floods (Fichtenberg, Diebachsee Badestelle (DEBW_PR_0219), Murrhardt, Waldsee Fornsbach (DEBW_PR_0277));
- microbial contamination (Schwoerstadt, Rhein Beim Schwimmbad (DEBW_PR_0169), Nordseebadestrand Upleward (DENI_PR_TK25_2508_01));
- massive growth of *Elodea nuttallii* (Perfstausee Breidenstein (DEHE_PR_0044));
- cyanobacteria (Dechsendorfer Weiher, Erlangen, Dechsendorf, Westufer (DEBY_PR_ERH_0052), Ortswiesensee, Lichtenfels, Oberwallenstadt (DEBY_PR_LIF_0042), Schultheisweiher (DEHE_PR_0047), Helenensee - Grossenkneten (DENI_PR_TK25_3014_02), Natelsheidese - Bissendorf (DENI_PR_TK25_3424_01));
- landslide (Concordia See (DEST_PR_0051)).

Bathing waters were closed from 14 days to more than 100 days, except for one bathing water that was closed eight days due to microbial contamination.

Abnormal situation was reported at one bathing water.

Information for and participation of the public

Visitors are notified of bathing water quality by results displayed at the site itself and in tourist offices. Many local and regional authorities publish the information in their own reports, brochures and maps. During the bathing season, specific information and the latest sampling results are released to the media. Increasing use is being made by the Länder of websites to give the public and media access to regularly updated information. These sites include background information on monitoring and the significance of health parameters as well as brief descriptions of the bathing waters and details provided by the local and regional authorities. The results are updated every week but special measures – such as bathing bans – are announced within 24 h. The links to websites of the Länder can be found at <http://www.umweltbundesamt.de/gesundheit-e/badegewaesser/index.htm>. Following the demands of the new Directive, public participation especially concerning the list of bathing waters is realized e.g. by invitations through internet and news papers.

Wastewater treatment and treatment of diffuse pollution sources

Sewage treatment connection rate in Germany is 96 % (2007 figure) varying from 84 % to 100 % in the 16 Länder. Wastewater is treated in about 10 000 wastewater treatment plants. Minimum quality standards for chemical parameters in treated wastewater depend on the size of the treatment plant and are regulated by law. An increasing number of wastewater treatment plants are being upgraded to include tertiary treatment. The 2001 Act on prevention and control of infectious diseases also makes provisions for health quality parameters for treated wastewater but no microbiological standards have been set. As ever greater quantities of wastewater are being processed, health hazards due to diffuse pollution of bathing waters are becoming more apparent. The relevant authorities are becoming increasingly aware of the situation and take efforts for identification and remediation of diffuse pollution sources. Storm water overflow retention and treatment is a major issue in improving bathing water quality.

Significant management measures for more than 500 bathing waters can be obtained from the report of bathing water quality for the 2009 bathing season by the German authorities, table BWQD_SeasonallInfo, attribute ManMeas (http://cdr.eionet.europa.eu/de/eu/bathing/envsyobla/BWQ_2009_DATA_ACQUISITION_DE.xls).

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.

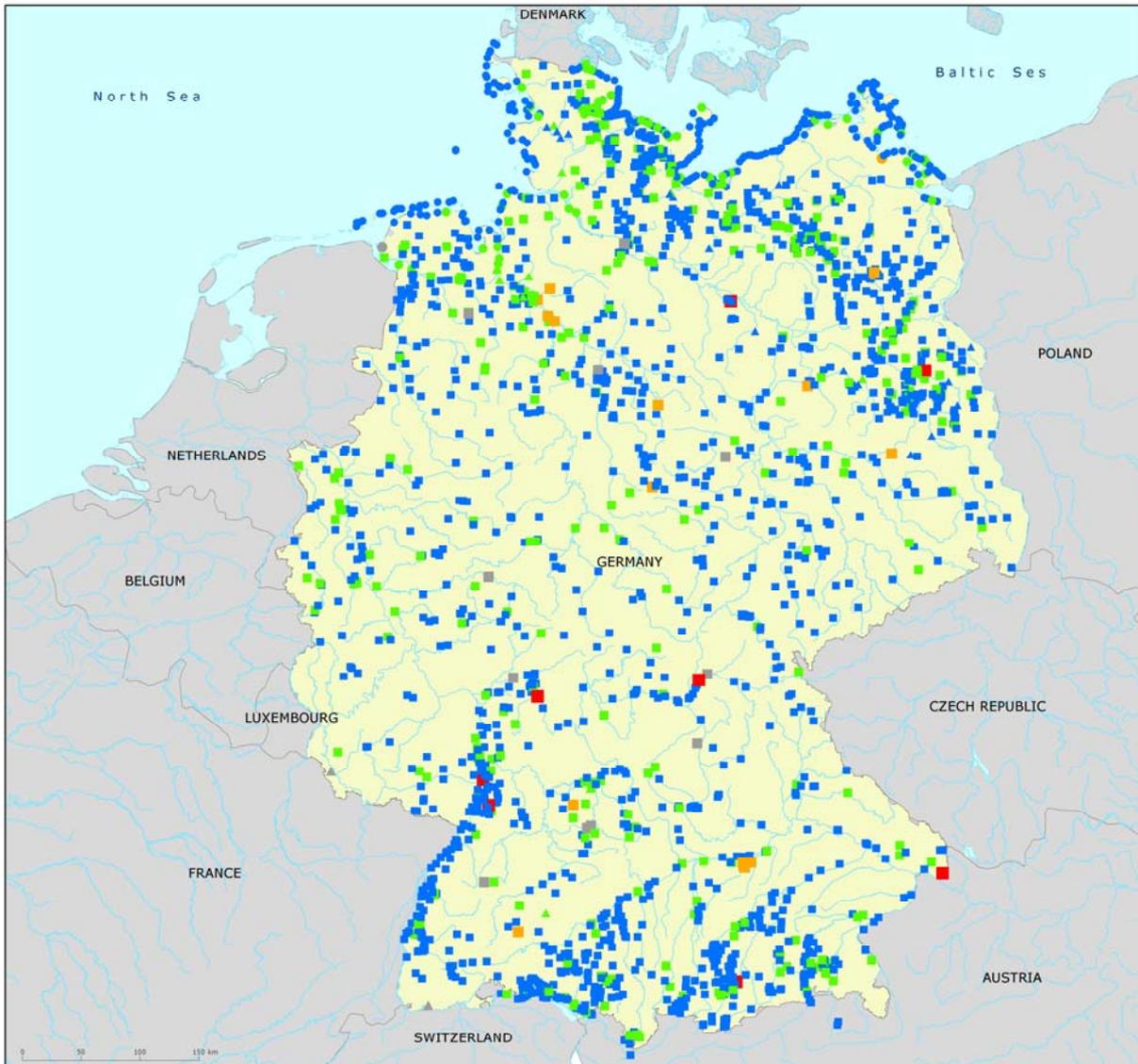
By 2015, Member States will have to comply with the stricter and more ambitious requirements laid out in the New Bathing Water Directive (Directive 2006/7/EC). This Directive requires more effective monitoring and management of bathing waters, greater public participation and improved information. More 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 Germany



Bathing water quality			No data
Bathing waters on rivers	Bathing waters on lakes	Coastal/transitional bathing waters	□ No data
▲ Compliant with guide values	■ Compliant with guide values	● Compliant with guide values	■ Outside data coverage (data available, not presented on the map)
▲ Compliant with mandatory values	■ Compliant with mandatory values	● Compliant with mandatory values	
▲ Closed*	■ Closed*	● Closed*	
▲ Insufficiently sampled or not sampled	■ Insufficiently sampled or not sampled	● Insufficiently sampled or not sampled	
▲ Not compliant with mandatory values	■ Not compliant with mandatory values	● Not compliant with mandatory values	

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: ECA, WFD Article 3; Bathing waters data and coordinates: German authorities