

# Bathing water results 2008 – Germany

## 1. Introduction

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

During the transition period, samples of Intestinal enterococci and Escherichia coli are reported under the Directive 2006/7/EC, but assessment is done according to the assessment rules of Directive 76/160/EEC. For the conversion of reported parameters under Directive 2006/7/EC, Article 13.3 of the Directive 2006/7/EC foresees that the parameter Escherichia coli, reported under Directive 2006/7/EC, is assumed to be equivalent to the parameter Faecal coliforms of Directive 76/160/EEC. The parameter Intestinal enterococci reported under Directive 2006/7/EC is assumed to be equivalent to the parameter Faecal streptococci. This means that the parameters Intestinal enterococci and Escherichia coli are evaluated according to the guide and mandatory standards defined in the Annex to Directive 76/160/EEC for the parameters Faecal streptococci and Faecal coliforms respectively.

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 value of the Directive 76/160/EEC for 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 (temporarily closed) or closed throughout the season (class B)

## 2. Length of bathing season and number of bathing waters

The bathing season started in May or June and ended in September 2008 for coastal bathing waters. Most freshwater bathing waters opened in May or June 2008. All of them closed in August or September.

A total of 2,263 bathing waters were monitored in Germany during the 2008 bathing season, of which 373 were coastal (354) or transitional bathing waters (19) and 1890 freshwater bathing waters (32 on rivers; 1858 on lakes).

With 2,263 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 Directive 2006/7/EC is presented in Table 1. The number of reported freshwater bathing waters increased since the start of reporting in 1991 from 1,514 to 1890 in 2008. Meanwhile, the number of freshwater bathing waters decreased from 1,915 in 1994 to 1,553 in 2005. There were 302 more freshwater bathing waters in 2008 than in the previous year. The number of reported coastal bathing waters increased from 351 in two previous years to 373 in 2008. However, the total number of reported coastal bathing waters in 2008 was still lower than the numbers reported in the period 1991 - 2005. In total, 370 new bathing waters were added to the list compared to the previous year, one was reopened and 48 were delisted.

## 3. Results of bathing water quality

The results of the bathing water quality in Germany for the period 1991-2007 as reported in 2008 report and for the bathing season of 2008 are presented in Figure 1.

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

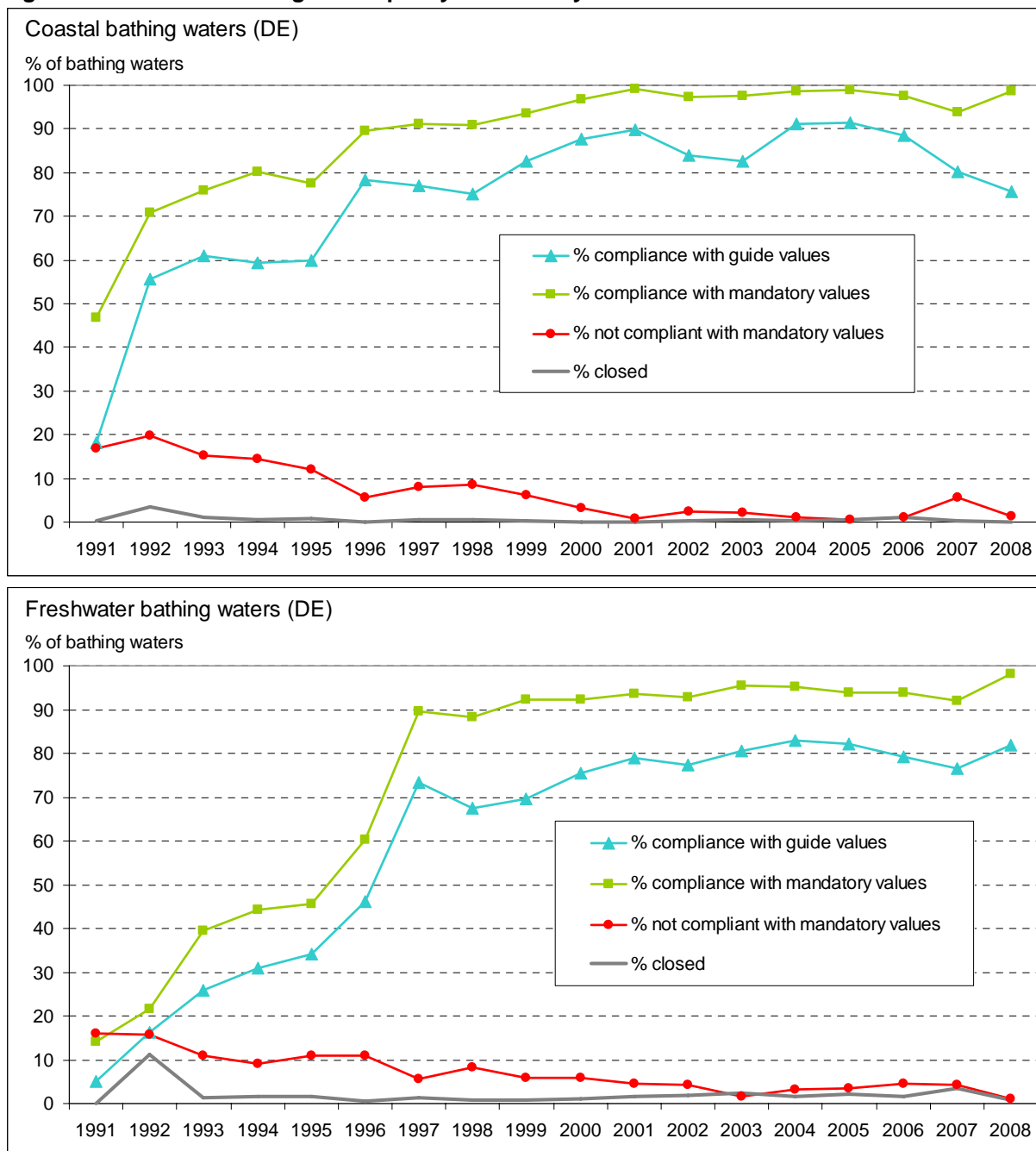
- The percentage of bathing waters that comply with the guide values (class CG, blue line),
- The percentage of bathing waters that comply with the mandatory values (class CI, green line)

- 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 (temporarily closed) or closed throughout the season (class B, grey line)

Table 1 and Table 2 show the same information in absolute numbers and in percentages separately for coastal and freshwater bathing waters. Table 3 shows the bathing water quality results for 2008 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 2008**



**Table 1: Results of bathing water quality in Germany from 1991 to 2008 as absolute numbers**

|                            |      | DE                             |                              |                                  |               |                                      |
|----------------------------|------|--------------------------------|------------------------------|----------------------------------|---------------|--------------------------------------|
|                            |      | Total number of bathing waters | Compliance with guide values | Compliance with mandatory values | Not compliant | Banned/ closed throughout the season |
| Coastal bathing waters     | 1991 | 440                            | 80                           | 206                              | 74            | 1                                    |
|                            | 1992 | 441                            | 245                          | 313                              | 87            | 15                                   |
|                            | 1993 | 437                            | 266                          | 332                              | 67            | 5                                    |
|                            | 1994 | 444                            | 263                          | 356                              | 64            | 2                                    |
|                            | 1995 | 440                            | 263                          | 341                              | 53            | 3                                    |
|                            | 1996 | 428                            | 335                          | 383                              | 24            | 0                                    |
|                            | 1997 | 416                            | 320                          | 379                              | 33            | 2                                    |
|                            | 1998 | 417                            | 313                          | 379                              | 36            | 2                                    |
|                            | 1999 | 414                            | 342                          | 387                              | 26            | 1                                    |
|                            | 2000 | 411                            | 360                          | 398                              | 13            | 0                                    |
|                            | 2001 | 409                            | 367                          | 406                              | 3             | 0                                    |
|                            | 2002 | 404                            | 339                          | 393                              | 10            | 1                                    |
|                            | 2003 | 394                            | 326                          | 384                              | 8             | 2                                    |
|                            | 2004 | 390                            | 356                          | 385                              | 4             | 1                                    |
|                            | 2005 | 389                            | 356                          | 385                              | 2             | 2                                    |
|                            | 2006 | 351                            | 311                          | 343                              | 4             | 4                                    |
|                            | 2007 | 351                            | 282                          | 329                              | 20            | 1                                    |
| 2008                       | 373  | 282                            | 368                          | 5                                | 0             |                                      |
| Fresh-water bathing waters | 1991 | 1514                           | 78                           | 213                              | 244           | 2                                    |
|                            | 1992 | 1820                           | 295                          | 394                              | 284           | 203                                  |
|                            | 1993 | 1701                           | 439                          | 672                              | 188           | 23                                   |
|                            | 1994 | 1915                           | 592                          | 846                              | 172           | 31                                   |
|                            | 1995 | 1828                           | 623                          | 836                              | 200           | 27                                   |
|                            | 1996 | 1808                           | 832                          | 1090                             | 197           | 9                                    |
|                            | 1997 | 1723                           | 1265                         | 1545                             | 97            | 24                                   |
|                            | 1998 | 1656                           | 1118                         | 1462                             | 137           | 13                                   |
|                            | 1999 | 1639                           | 1141                         | 1514                             | 97            | 15                                   |
|                            | 2000 | 1615                           | 1217                         | 1490                             | 94            | 16                                   |
|                            | 2001 | 1601                           | 1265                         | 1498                             | 74            | 26                                   |
|                            | 2002 | 1592                           | 1232                         | 1478                             | 66            | 30                                   |
|                            | 2003 | 1572                           | 1264                         | 1500                             | 26            | 37                                   |
|                            | 2004 | 1561                           | 1296                         | 1484                             | 48            | 24                                   |
|                            | 2005 | 1553                           | 1275                         | 1459                             | 55            | 34                                   |
|                            | 2006 | 1564                           | 1238                         | 1467                             | 70            | 25                                   |
|                            | 2007 | 1588                           | 1217                         | 1462                             | 67            | 54                                   |
| 2008                       | 1890 | 1547                           | 1857                         | 20                               | 13            |                                      |

Note: Bathing waters which were insufficiently sampled or not sampled according to the 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.

**Table 2: Results of bathing water quality in Germany from 1991 to 2008 as percentages**

|                            |      | DE                             |                                |                                    |                 |                                       |
|----------------------------|------|--------------------------------|--------------------------------|------------------------------------|-----------------|---------------------------------------|
|                            |      | Total number of bathing waters | % compliance with guide values | % compliance with mandatory values | % not compliant | % banned/closed throughout the season |
| Coastal bathing waters     | 1991 | 440                            | 18.2                           | 46.8                               | 16.8            | 0.2                                   |
|                            | 1992 | 441                            | 55.6                           | 71.0                               | 19.7            | 3.4                                   |
|                            | 1993 | 437                            | 60.9                           | 76.0                               | 15.3            | 1.1                                   |
|                            | 1994 | 444                            | 59.2                           | 80.2                               | 14.4            | 0.5                                   |
|                            | 1995 | 440                            | 59.8                           | 77.5                               | 12.0            | 0.7                                   |
|                            | 1996 | 428                            | 78.3                           | 89.5                               | 5.6             | 0.0                                   |
|                            | 1997 | 416                            | 76.9                           | 91.1                               | 7.9             | 0.5                                   |
|                            | 1998 | 417                            | 75.1                           | 90.9                               | 8.6             | 0.5                                   |
|                            | 1999 | 414                            | 82.6                           | 93.5                               | 6.3             | 0.2                                   |
|                            | 2000 | 411                            | 87.6                           | 96.8                               | 3.2             | 0.0                                   |
|                            | 2001 | 409                            | 89.7                           | 99.3                               | 0.7             | 0.0                                   |
|                            | 2002 | 404                            | 83.9                           | 97.3                               | 2.5             | 0.2                                   |
|                            | 2003 | 394                            | 82.7                           | 97.5                               | 2.0             | 0.5                                   |
|                            | 2004 | 390                            | 91.3                           | 98.7                               | 1.0             | 0.3                                   |
|                            | 2005 | 389                            | 91.5                           | 99.0                               | 0.5             | 0.5                                   |
|                            | 2006 | 351                            | 88.6                           | 97.7                               | 1.1             | 1.1                                   |
|                            | 2007 | 351                            | 80.3                           | 93.7                               | 5.7             | 0.3                                   |
|                            | 2008 | 373                            | 75.6                           | 98.7                               | 1.3             | 0.0                                   |
| Fresh-water bathing waters | 1991 | 1514                           | 5.2                            | 14.1                               | 16.1            | 0.1                                   |
|                            | 1992 | 1820                           | 16.2                           | 21.6                               | 15.6            | 11.2                                  |
|                            | 1993 | 1701                           | 25.8                           | 39.5                               | 11.1            | 1.4                                   |
|                            | 1994 | 1915                           | 30.9                           | 44.2                               | 9.0             | 1.6                                   |
|                            | 1995 | 1828                           | 34.1                           | 45.7                               | 10.9            | 1.5                                   |
|                            | 1996 | 1808                           | 46.0                           | 60.3                               | 10.9            | 0.5                                   |
|                            | 1997 | 1723                           | 73.4                           | 89.7                               | 5.6             | 1.4                                   |
|                            | 1998 | 1656                           | 67.5                           | 88.3                               | 8.3             | 0.8                                   |
|                            | 1999 | 1639                           | 69.6                           | 92.4                               | 5.9             | 0.9                                   |
|                            | 2000 | 1615                           | 75.4                           | 92.3                               | 5.8             | 1.0                                   |
|                            | 2001 | 1601                           | 79.0                           | 93.6                               | 4.6             | 1.6                                   |
|                            | 2002 | 1592                           | 77.4                           | 92.8                               | 4.1             | 1.9                                   |
|                            | 2003 | 1572                           | 80.4                           | 95.4                               | 1.7             | 2.4                                   |
|                            | 2004 | 1561                           | 83.0                           | 95.1                               | 3.1             | 1.5                                   |
|                            | 2005 | 1553                           | 82.1                           | 93.9                               | 3.5             | 2.2                                   |
|                            | 2006 | 1564                           | 79.2                           | 93.8                               | 4.5             | 1.6                                   |
|                            | 2007 | 1588                           | 76.6                           | 92.1                               | 4.2             | 3.4                                   |
|                            | 2008 | 1890                           | 81.9                           | 98.3                               | 1.1             | 0.7                                   |

Note: Bathing waters which were insufficiently sampled or not sampled according to the Bathing Water Directive are not included in this table. Therefore, in some cases, the sum of the percentages is not equal to 100%.

**Table 3: Results of bathing water quality for all bathing waters in Germany in 2008**

|                |      | DE                             |                              |                                  |               |                                     |
|----------------|------|--------------------------------|------------------------------|----------------------------------|---------------|-------------------------------------|
|                |      | Total number of bathing waters | Compliance with guide values | Compliance with mandatory values | Not compliant | Banned/closed throughout the season |
| Bathing Waters | 2008 | 2263                           | 1829                         | 2225                             | 25            | 13                                  |

## **4. Development of bathing water quality**

### **Coastal bathing waters**

In Germany, 98.7% of the coastal bathing waters (368) met the mandatory water quality in 2008. This is an increase compared to the previous year (+ 4.9%). The rate of the compliance with the guide values, however, decreased by 4.7%, reaching 75.6% of the bathing waters (282). The difference between the percentage of bathing waters that met the mandatory values and guide values increased to 23.1%. The percentage of the non-compliant bathing waters with the mandatory values decreased from 5.7% (20) to 1.3% (5). No bathing water was 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 guide values. The German authorities have taken measures to improve the overall water quality. These resulted in improving water quality as can be seen in the increasing compliance results from 1992 onwards. However, the low compliance rate in the early 90's is 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**

98.3% of the freshwater bathing waters (1857) were in compliance with the mandatory water quality in 2008. This is an increase compared to the previous year (+ 6.2%). 81.9% of the bathing waters met the guide values (1547), which is a similar increase as for the mandatory values (+ 5.2%). 16.4% less bathing waters met the more stringent guide values compared to the mandatory values. The non-compliant bathing waters with the mandatory values decreased by 3.2%, accounting for only 1.1% of the bathing waters (20). 13 bathing waters (0.7%) had to be closed during the season, which is a decrease by 2.7% compared to the previous season (54).

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 by the large number of insufficiently sampled bathing waters. From 1992 onward we see an overall increase in the water quality, although it took Germany till the 2001 bathing season to reach a constant level of non-compliant freshwater bathing waters below 5%. The mandatory water quality was met in minimum 92% of the bathing waters since 1999. The bathing waters compliant with the more stringent guide values are fluctuating between 75 and 83% of all the bathing waters since 2000. Since the start of the reporting in 1991, closed freshwater bathing water were reported. For the most seasons, the percentage of the 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.

### **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 areas 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. 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 new papers.

### **Wastewater treatment and treatment of diffuse pollution sources**

Sewage treatment connection rate in Germany is 93 % (2002 figure) varying from 63 % to 100 % in the 16 Länder. 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.

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

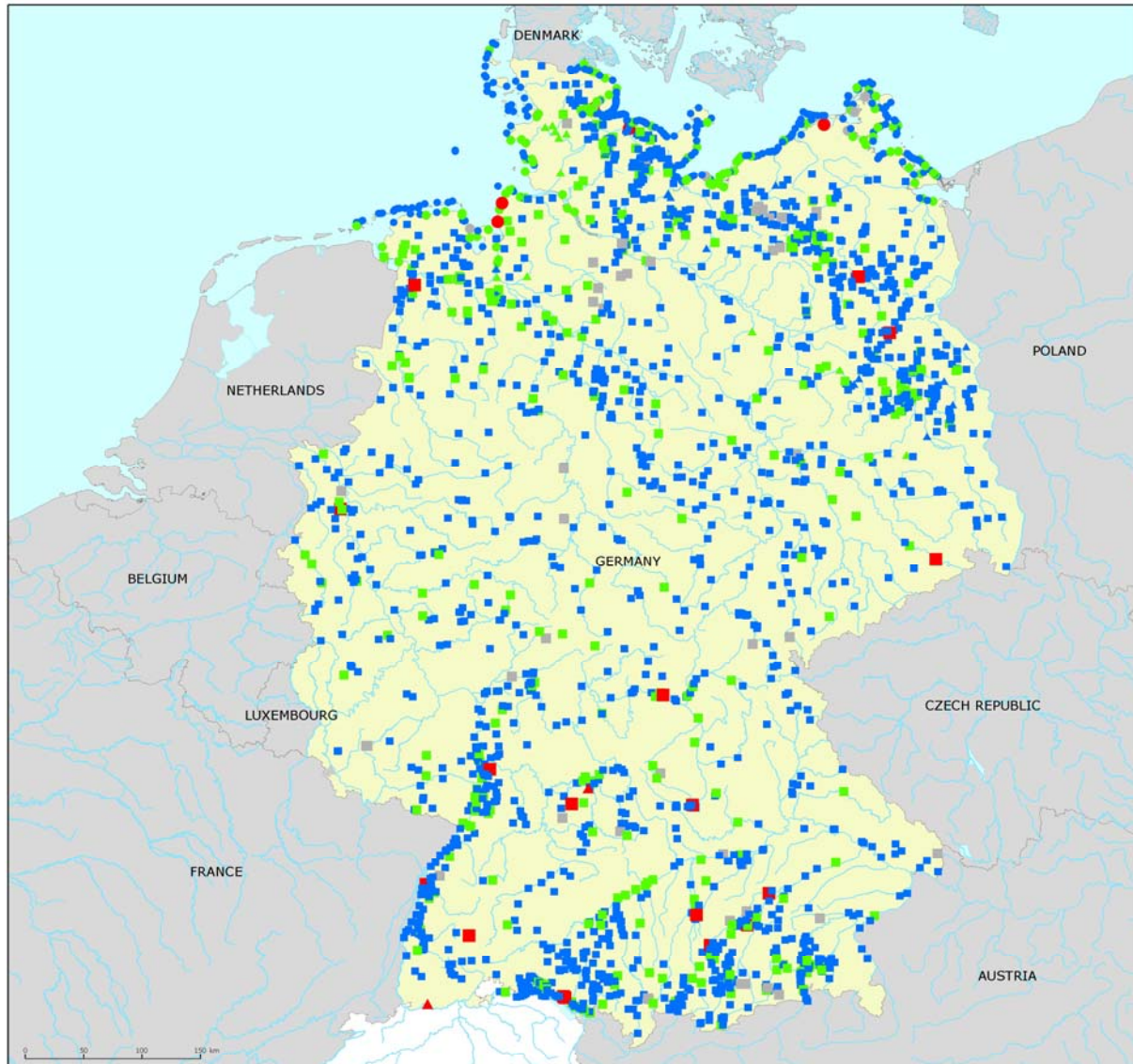
More information on bathing water quality in the European Member States, including the reports for 27 Member States and the EU summary report, can be found on the bathing water quality website ([http://ec.europa.eu/environment/water/water-bathing/index\\_en.html](http://ec.europa.eu/environment/water/water-bathing/index_en.html)).

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, while Luxembourg already started in 2007 bathing season.

WISE - Water Information System for Europe ([www.water.europa.eu](http://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 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 2008 bathing season in Germany**



| Bathing water quality                   |   |  | No data  |
|---|---|--|--|
| <b>Bathing waters on rivers</b>         | <b>Bathing waters on lakes</b>          | <b>Coastal/transitional bathing waters</b> | □ 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 (temporarily closed) or closed 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: ESA, WFD Article 3  
 Bathing waters data and coordinates: German authorities