

## Bathing water results 2010 – Cyprus

### 1. Reporting and assessment

This report gives a general overview of bathing water quality in Cyprus during the 2010 bathing season. Cyprus has reported under the Directive 2006/7/EC since 2008.

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 are applied. 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:

- **Class CI:** 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 CG:** 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 NC:** Not compliant with the mandatory value of the Directive 76/160/EEC for *Escherichia coli*;
- **Class B:** Banned or closed (temporary or throughout the season);
- **Class NF:** Insufficiently sampled;
- **Class NS:** Not sampled.

The new bathing water directive (2006/7/EC) requires Member States to start sampling shortly before the start of the bathing season. It also requires that the interval between sampling should not exceed one month. In the assessment of bathing water quality in 2010 the maximum days between two samples considered were 32 days. The new directive also requires that the first sample must be taken shortly before the start of a bathing season. However, in the assessment of bathing water quality in 2010, the first sample could be taken not later than 10 days after the start of the bathing season. If this was a case, the second sample should have been taken no later than 32 days after the start of the bathing season. The bathing water is classified as insufficiently sampled or not sampled when the pre-season sample is missing or when the difference between two consecutive samples is larger than 32 days.

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

For all bathing waters the bathing season lasted six months, from 1 May to 31 October 2010.

A total of 112 bathing waters were monitored in Cyprus during the 2010 bathing season, all coastal waters.

With 112 bathing waters Cyprus accounts for about 0.5 % 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 bathing waters increased since the start of the reporting from 100 in 2004 to 112 in 2010. Two new bathing waters were added to the list in 2010 compared to the previous year and one was temporarily de-listed.

### 3. Bathing water quality

The results of the bathing water quality in Cyprus for the period 2004-2009 as reported in the past reporting years and for the bathing season of 2010 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](http://ec.europa.eu/environment/water/water-bathing/index_en.html); Water and Health/Bathing Water/2005-2010 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 the 2008 and 2009 bathing seasons).

The graph shows, for coastal bathing waters:

- 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).

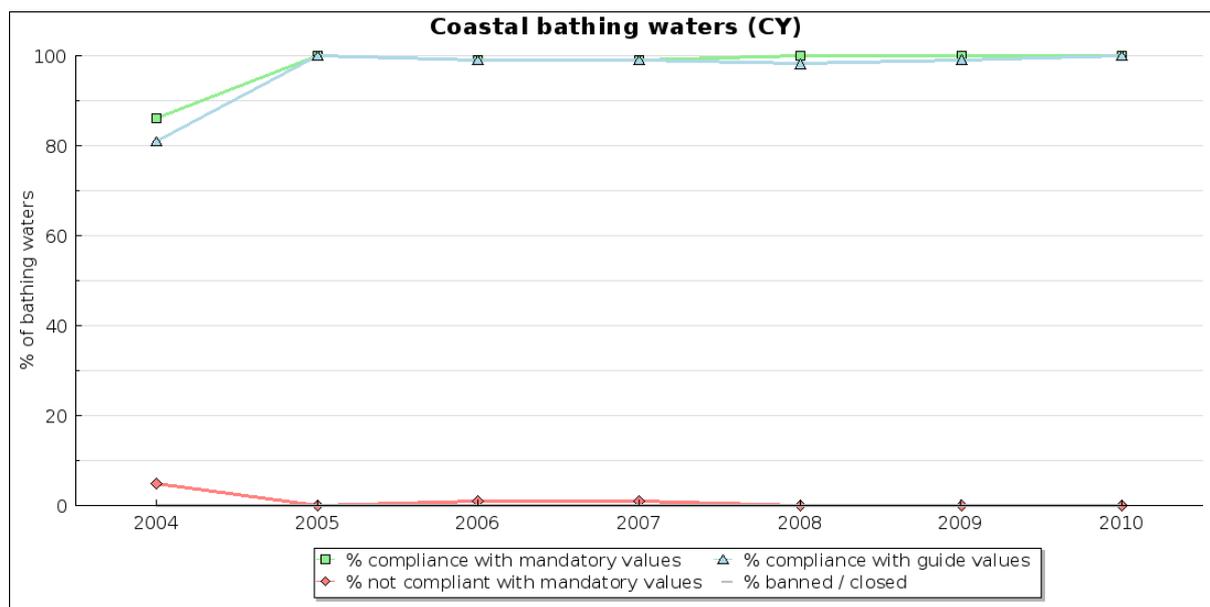
Table 1 shows the same information in absolute numbers and in percentages for coastal bathing waters. The numbers and percentages of insufficiently sampled or not sampled bathing waters are also presented.

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

In Cyprus, 100 % of the coastal bathing waters met the mandatory water quality, the same as in 2009. The rate of compliance with the guide values also reached 100 % compared to 99.1 % in 2009. Since the start of reporting in 2004, no coastal bathing water had to be closed during the season.

Cyprus has excellent bathing water quality since 2005. All bathing waters complied with the mandatory values in 2005 and again since 2008. In 2006 and 2007, only one bathing site was not compliant with the mandatory values. In 2005 and 2010, all bathing waters were also compliant with the guide values. In other years, only one bathing site did not comply with the guide values, except in 2008 with two such bathing waters.

**Figure 1: Results of bathing water quality in Cyprus from 2004 to 2010**



**Table 1: Results of bathing water quality in Cyprus from 2004 to 2010**

CY												
		Total number of bathing waters	Compliance with guide and mandatory values*		Compliance with mandatory values		Not compliant		Banned/closed temporarily or throughout the season		Insufficiently sampled or not sampled	
			number	%	number	%	number	%	number	%	number	%
Coastal bathing waters	2004	100	81	81.0	86	86.0	5	5	0	0	9	9
	2005	100	100	100.0	100	100.0	0	0	0	0	0	0
	2006	100	99	99.0	99	99.0	1	1	0	0	0	0
	2007	100	99	99.0	99	99.0	1	1	0	0	0	0
	2008	111	109	98.2	111	100.0	0	0	0	0	0	0
	2009	111	110	99.1	111	100.0	0	0	0	0	0	0
	2010	112	112	100.0	112	100.0	0	0	0	0	0	0

\*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 (2004-2007) or the mandatory value for *Escherichia coli* (2008-2010).

**Map 1: Bathing waters reported during the 2010 bathing season in Cyprus**



**Bathing water quality**

- |   |  |
|---|--|
| Coastal/transitional bathing waters     | □ No data  |
| ● Compliant with guide values           | ■ Outside data coverage (data available, not presented on the map) |
| ● Compliant with mandatory values       |  |
| ● Closed*                               |  |
| ● Insufficiently sampled or not sampled |  |
| ● 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: EEA, WFD Article 3; Bathing waters data and coordinates: Cypriot authorities

## **4. Important information as provided by the Cypriot authorities**

### **Monitoring**

For the 2010 bathing season, Cyprus has implemented monitoring of bathing water quality under the new Directive 2006/7/EC for the parameters “intestinal enterococci” and “*Escherichia coli*”. The monitoring calendar, established before the start of the 2010 bathing season was uploaded to the website of the Department of Environment for easy public access. Monitoring took place no later than 4 days after the date specified in the monitoring calendar.

A total of 112 coastal areas were monitored in Cyprus during the 2010 bathing season. The coastal areas monitored cover all the coastal area of the Republic of Cyprus in which the Government of Cyprus exercises effective control and are used for bathing.

All 112 bathing areas were monitored monthly and once before the start of the bathing season without missing any samplings. For the blue flag bathing areas (58 sites) that correspond to 52 % of the bathing water sites at least 10 samples were selected from each other. A total of 979 samples were collected and analyzed using the standard reference methods specified in the Directive 2006/7/EC. At least 7 samples were selected for all bathing areas. For the blue flag areas at least 10 samples were selected.

In the case of non-compliance with the guide values, the sampling was repeated within 72 hours of the event to investigate possible pollution problem. In case of compliance, another sample was taken 7 days after the end of the short term pollution in order to replace the initial sample. Additionally for the cases of non-compliance with the standards of excellent quality, an effort was made to repeat the sampling within 72 hours to investigate if there was a possible pollution problem and take appropriate measures. Short term pollution was reported in 11 cases at 11 bathing waters. The short term pollution incidents were investigated and no land based source was detected. The pollution was most probably due to illegal dumping of waste from a boat or a ship.

### **Analytical methods**

For the “*Escherichia coli*” analysis the ISO 9308-3:1999 Water quality – Detection and enumeration of *Escherichia coli* and coliform bacteria – Part 3: Miniaturized method (Most Probable Number) for the detection and enumeration of *E. coli* in surface and waster water” is used.

For the “intestinal enterococci” analysis, the ISO 7899-2 (2000) Water quality- Detection and enumeration of intestinal enterococci – Part 2: Membrane filtration method” is used.

### **Results**

It can be observed that all bathing areas continued to be sufficiently sampled. The results indicate that all (100 %) of the bathing areas continued the excellent record of compliance with the mandatory values and the most stringent guide values.

### **Public consultation**

For the 2010 bathing season, Cyprus has implemented the requirements of the Directive 2006/7/EC regarding the review and updating of the list of bathing areas. The procedure for public consultation used in Cyprus included the following steps:

1. Written communications with all local authorities involved.
2. Uploading the list of 2009 bathing waters to the website of the Department of Environment for a period of 4 weeks (10/2/10-12/3/10) in order for the public to have the opportunity to formulated suggestions remarks or complains.
3. Press releases to local newspapers to inform the public of the procedure urging the public to participate in the preparation of the list of 2010 bathing waters.
4. Two district conferences (Larnaka-Ammochostos, Lemesos-Pafos-Nicosia) with the participation of involved municipalities and communities, District Administration, National Jury of Blue Flag, implementing authorities (Department of Environment, Department of Medical and Public Health Services and the General Laboratory).

5. Communications with involved local authorities and site visits to the proposed new bathing waters.
6. National conference of all parties involved including Governmental Departments, the Union of Cyprus Communities, the Union of Cyprus Municipalities, NGOs, Cyprus Tourism Organization, National Jury of Blue Flag, etc.
7. Meeting of the Committee of the implementing authorities (Department of Environment, Department of Medical and Public Health Services and the General Laboratory) to evaluate the suggestions and proposals and to prepare a draft list of bathing areas.
8. Establishment of the final list of bathing waters.
9. Notification of the EC of the list of bathing waters before the start of the 2010 bathing season (28<sup>th</sup> April 2010) and report through EIONET (identified bathing water excel sheet).
10. Uploading of the list of bathing waters to the website of the Department of Environment (<http://www.moa.gov.cy/moa/agriculture.nsf/0/807db3b3579ca382c22573c2005fdf42?OpenDocument>)

Comparing the list of 2010 bathing areas to that of 2009, 111 bathing waters remained the same, two new bathing sites were added and one bathing site was temporarily excluded. The two new bathing waters (code: CY000512900000069, name: PANAYIES; code: CY0006133000000142, name: KAPHIZIS) were proposed by local authorities during public participation due to increased use of the sites by bathers. One bathing water (code: CY0001457000000154, name: KARAFKA) was proposed during public participation procedure for temporal exclusion from the list for the bathing season 2010 since there are plans for coastal works nearby and the site will not be available for bathing.

### **Public information**

The list of bathing areas was established following the public consultation procedure as described above. The monitoring calendar was uploaded at the beginning of the bathing season on the website of the Department of Environment.

All monitoring results and other related information are available to the public on registers held by the Department of Medical and Public Health Services and the Environment Service or through the website of the Department of Environment.

The 2010 Annual Report on the quality of bathing water in Cyprus to the E.U will be published and will also be uploaded on the Internet through the web site of the Department of Environment.

Additionally a press release of the bathing water 2010 results and media publication is planned in the spring of 2011.

Bathing water profiles are also available to the public through the website of the Department of Environment.

### **Improvement schemes**

The 2010 bathing water results indicated that all (100%) of the bathing waters continued the excellent record of compliance with the mandatory values as well as the more stringent guide values. Therefore, no improvement schemes were deemed necessary.

It is worth mentioning that the Cyprus climatic conditions (increased sunlight and high temperature) and the salinity of the coastal waters in the Eastern Mediterranean are quite unfavorable to the survival of microorganisms.

### **Wastewater treatment**

Wastewater treatment plants are in operation for the 4 large agglomerations on the coast of Cyprus. Wastewater effluent is almost entirely reused for irrigation. There is no disposal of untreated wastewater (municipal or industrial) to the sea. Two of these treatment plants, i.e. the Limassol/ Amathousa STP and the Larnaca STP, periodically dispose tertiary treated effluent to the sea during the winter months. The Urban Wastewater Treatment Directive (91/271/EEC) is under full implementation. Two sensitive areas have been designated.

## Treatment of diffuse sources of pollution

In implementing the Nitrates Directive (91/676/EEC) in 2009, five nitrate-vulnerable zones have been designated. An action program has been developed for these areas, aimed at preventing and reducing nitrate pollution from agricultural sources. The analysis of pressures to water bodies performed under Article 5 of the WFD, has verified the occurrence of sea water intrusion in groundwater bodies in the coastal areas and, therefore, the limited influx of nutrients from aquifers to the sea. There is, however, some influx from runoff from agricultural areas during periods of heavy rainfall. Implementation of the action program of 2008 to 2012 will further reduce this source of pollution to the sea.

The report by the Cypriot authorities to the European Commission in regard to bathing water quality in Cyprus for the 2010 bathing season can be obtained from

[http://cdr.eionet.europa.eu/cy/eu/nbwd/envtr2mlq/Bathing\\_Water\\_Quality\\_Cyprus\\_Report\\_for\\_2010.pdf](http://cdr.eionet.europa.eu/cy/eu/nbwd/envtr2mlq/Bathing_Water_Quality_Cyprus_Report_for_2010.pdf)

## 5. More information on bathing water quality in Europe

Of the more than 21 000 bathing areas monitored throughout the European Union in 2010, two-thirds were in coastal waters and the rest in rivers and lakes. The largest number of coastal bathing waters can be found in Italy, Greece, France, Spain and Denmark, while Germany and France have the highest number of inland bathing waters.

During recent years, including the 2010 bathing season, majority of Member States have adjusted their monitoring programmes to meet the requirements of the new bathing water directive (2006/7/EC). Luxembourg was the first country to report under this Directive in 2007. Cyprus, Denmark, Estonia, Finland, Germany, Hungary, Latvia, Lithuania, Slovakia, Spain and Sweden started to report under the new directive in 2008. Malta and the Netherlands started to report in 2009, while Austria, Belgium - Walloon Region, France, Greece, Italy, Portugal and Slovenia reported under this Directive for the first time in 2010. Historical data of two microbiological parameters, *Escherichia coli* and intestinal enterococci were sent by Sweden (since 2005), Luxembourg and Malta (since 2006), Belgium - Walloon Region, Greece, Hungary and Portugal (since 2007), and France (since 2009). To conclude, 20 Member States and the Walloon Region of Belgium monitored and reported under the new directive (Directive 2006/7/EC) in 2010.

Assessment of the status of all bathing waters in 2010 under the rules of the new directive (Directive 2006/7/EC) is made for Luxembourg, Malta and Hungary. Assessment of the bathing water quality on a country level for the other countries that reported under the new directive has been done using transition rules. Bathing water quality for individual bathing waters having four year set of data can be seen on the interactive maps and data viewer that are described below.

Three non-EU countries, Croatia, Montenegro and Switzerland have reported monitoring results under the new directive. Switzerland sent data on *Escherichia coli* for all bathing waters but only for some data on intestinal enterococci.

Overall in 2010, 92.1 % of Europe's coastal bathing waters and 90.2 % of inland bathing waters met the minimum water quality standards set by the bathing water directives. During recent years there has been deterioration in bathing water quality but still more than nine in ten bathing waters meet the minimum quality standards. The share of non compliant bathing waters was 1.2 % for coastal bathing waters and 2.8 % for inland bathing waters. The decrease reflects in part year to year variation but also indicates that further work is necessary to ensure that the quality of bathing waters is constantly improved and maintained.

More information on bathing water quality in the European Member States, including the EU summary report, the reports for 27 Member States, Croatia, Montenegro 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](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 Institute for Water of the Republic of Slovenia (IWRIS), a partner in the EEA European Topic Centre on Inland, Coastal and Marine Waters (ETC/ICM) has produced the reports for the bathing seasons from the

2008 bathing season on. Countries have collaborated in the assessment of bathing water quality and supplied additional information when needed.

### **Interactive information on bathing water quality**

The bathing water section of the Water Information System for Europe (WISE), which is accessible at the EEA bathing water website, allows users to view the quality of the bathing water at more than 22 000 coastal beaches and inland bathing waters across Europe. Users can check bathing water quality on an interactive map or can download data for a selected country or region and make comparisons with previous years.

The WISE map viewer (<http://www.eea.europa.eu/themes/water/interactive/bathing>) is an online map viewer for visualisation of European spatial water data. It includes a lot of interactive layers, allowing water themes to be visualised at different scales. Broad resolutions display the aggregated data by Member State. At finer resolutions the locations of monitoring stations are displayed.

The WISE Bathing Water Quality data viewer (<http://www.eea.europa.eu/themes/water/status-and-monitoring/bathing-water-data-viewer>) combines text and graphical visualisation, providing a quick check on locations and statistics on the quality of coastal and freshwater bathing waters. It also documents how bathing waters have changed throughout Europe in recent years and provides a full summary of Europe's bathing water quality. Users can search information at three spatial levels - country, region and province - and observe specific bathing water locations on the Google Earth, Google maps or Bing maps.

The Eye On Earth - Water Watch application (<http://www.eea.europa.eu/data-and-maps/explore-interactive-maps/eye-on-earth>) allows users to zoom in on a given section of the coast, riverbank or lake, both in street map or, where available, bird's eye viewing formats. A 'traffic-light' indicator (red, amber, green) of bathing water quality, based on the official bathing water data, is put alongside the ratings of people who have visited the bathing site, including any comments users wish to make. For historical data Water Watch uses a simplified index of bathing water quality data. The Czech Republic, Estonia, Finland (one municipality), Hungary, Lithuania, Luxembourg, Malta, the Netherlands, Norway (one municipality), Slovenia, Slovakia and England and Wales were also sending near real time information on bathing water quality to the Eye On Earth application. The bathing water quality from Austria, Belgium, Bulgaria, Croatia, Denmark, France, Germany, Ireland, Italy, Poland, Portugal, Spain, Sweden and Scotland and Northern Ireland was also presented on Eye on Earth Water Watch.

### **National and local information on bathing water quality**

In order to make information to the public more effective, all EU countries have national or local web portals with detailed information for each bathing site. Websites generally include a map search function and public access to the monitoring results both in real time and for previous seasons.

### **Information on EU bathing water legislation**

EU Member States will have to comply with the stricter and more ambitious requirements laid out in Directive 2006/7/EC by 2015 at the latest. The new legislation requires more effective monitoring and management of bathing waters, greater public participation and improved information dissemination. By March 2011 Member States have to have established bathing water profiles. More on the new legislation can be found on the European Commission's websites and on <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:064:0037:0051:EN:PDF>.