

Bathing water results 2012 – Croatia

1. Reporting and assessment

In 2012 the Croatian authorities reported under Directive 2006/7/EC provisions a list of their bathing waters, start and end of bathing season for each bathing water, short term pollution events, events impacting bathing water quality and measured values of concentrations of two microbiological parameters — intestinal enterococci and *Escherichia coli* (also known as *E. coli*). This report gives a general overview of bathing water quality in Croatia for the 2012 bathing season. Croatia has reported under the Directive 2006/7/EC since 2009 for coastal bathing water quality. Reporting on inland bathing water quality under the Directive 2006/7/EC started in 2011.

When four consecutive years of samples of intestinal enterococci and *Escherichia coli* for bathing water are available, the assessment is done according to assessment rules of the new bathing water Directive 2006/7/EC. The Annex IV of the directive requires a sample to be taken shortly before the start of the bathing season. Sampling dates are to be distributed throughout the bathing season, with the interval between sampling dates never exceeding one month. Taking into account one pre-season sample, no fewer than four samples are to be taken and analysed per bathing season. Three samples need to be taken and analysed per bathing season in the case of bathing water with either bathing season not exceeding eight weeks or being situated in a region subject to special geographical constraints. The result of such monitoring is used to build up the sets of bathing water quality data. The number of samples for the assessment period should thus be at least 16 or 12 if season duration is less than eight weeks or the region is subject to special geographical constraints.

Bathing water quality in 2012 season in Croatia is assessed under the rules of the new bathing water Directive 2006/7/EC. The new Directive assessment provisions are transformed into the following technical rules: a) one pre-season sample should be available, b) the interval between sampling dates in 2012 should never exceed 35 days, provided that the next sampling is done according to the monitoring calendar; c) the yearly number of samples in the previous years should be four or three if bathing season does not exceed eight weeks.

Bathing waters quality classes according to the Directive 2006/7/EC are 'excellent', 'good', 'sufficient' and 'poor'. Bathing waters are classified on the basis of the percentile values for microbiological enumerations falling in the certain class given in Annex I of the Directive. Some bathing waters cannot be classified according to their quality but are instead classified as 'insufficiently sampled', 'new', 'changes' and 'closed'.

The bathing water is classified as 'insufficiently sampled' in 2012 if pre-season sample is missing, sampling frequency is not satisfied or the set of data is not complete. If the bathing water is newly identified and the data set is not complete yet, it is classified as 'new'. If changes that affect quality occur and the data set is not complete yet, it is classified as 'changes'. Temporarily closed bathing waters or closed bathing waters throughout 2012 season are classified if there is a complete set of data available. Otherwise, they are classified as 'closed'.

2. Length of bathing season and number of bathing waters

The sampling season lasted 135 days, from 14 May to 29 September 2012. Official bathing season starts (according national regulation) on 1 June with one pre-season sampling for coastal bathing waters. As regards inland waters, the bathing season started in the period of 1 to 25 June 2012, and ended in the period of 21 August to 15 September 2012.

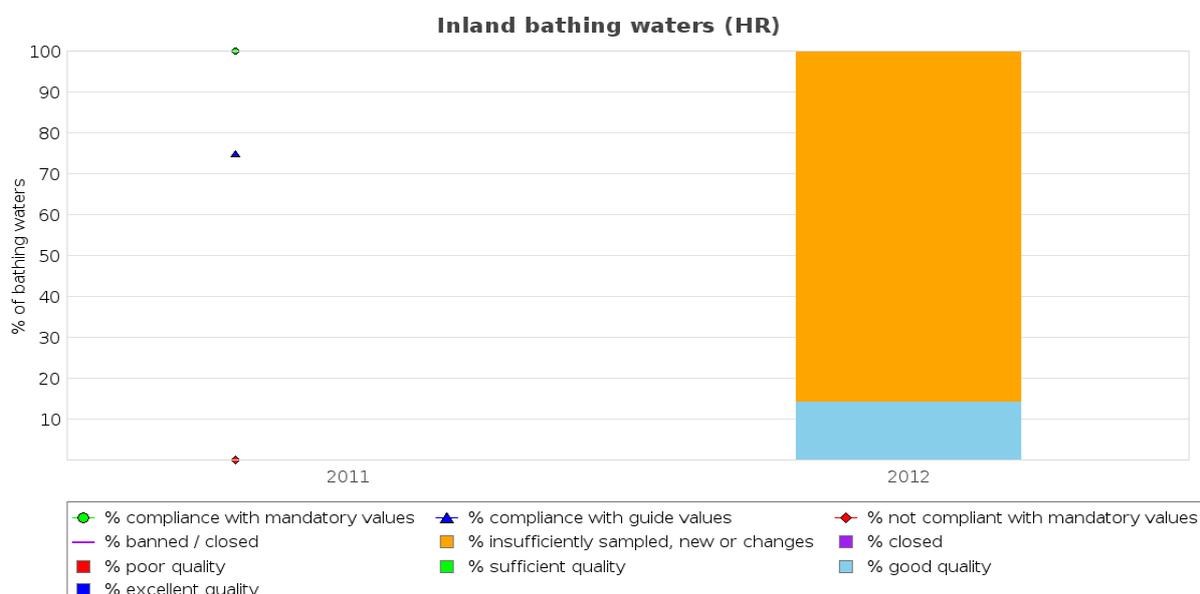
A total of 919 bathing waters were monitored in Croatia during the 2012 bathing season, of which 912 were coastal (886) or transitional (26) bathing waters and seven were inland bathing waters (four on rivers; three on lakes). No coastal and no inland bathing waters were reported as de-listed (permanently closed) compared to the previous year. Seven coastal and three inland bathing waters were added to the list, classified as new (not yet classification possible).

3. Bathing water quality

The results of the bathing water quality in Croatia for the period 2009-2012 are presented in Figure 1¹. Monitoring on coastal bathing water quality in Croatia under Regulation on coastal bathing water quality (O.G. 73/08) started in 2009 bathing season, but monitoring on inland water bathing quality is under another regulation (Ordinance on inland water bathing quality, O.G 51/10) and it started in 2011 bathing season.

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) and the European Environment Agency's bathing water website (<http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water>).

Figure 1: Results of bathing water quality in Croatia from 2009 to 2012.



¹ The graphs show the classification during transition period, for coastal and inland bathing waters from 2009 to 2011:

- 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 value for *Escherichia coli* (class CI, green line);
- The percentage of bathing waters that do not comply with the mandatory value for *Escherichia coli* (class NC, red line);
- The percentage of bathing waters that are banned or closed (class B, violet line).

The same graphs show the classification under the Directive 2006/7/EC, for coastal and inland bathing waters for 2012:

- The percentage of bathing waters that have excellent quality (dark blue bar);
- The percentage of bathing waters that have good quality (light blue bar);
- The percentage of bathing waters that have sufficient quality (green bar);
- The percentage of bathing waters that have poor quality (red bar);
- The percentage of bathing waters that are closed (violet bar);
- The percentage of bathing waters that are insufficiently sampled, new or with changes (orange bar).

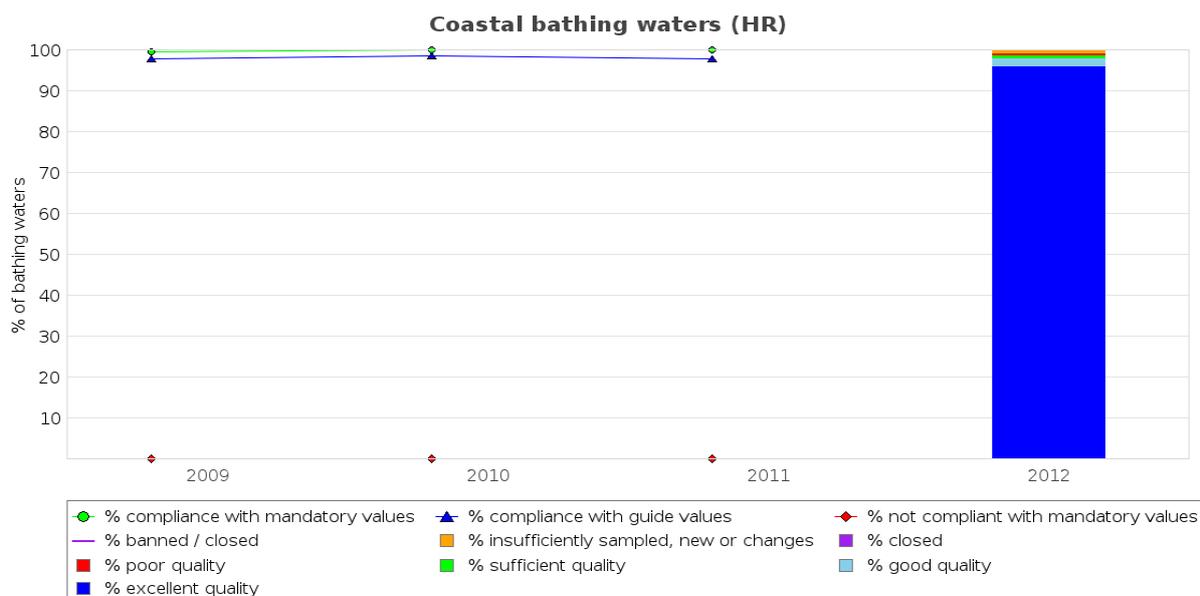


Table 1 and Table 2 show results of bathing water quality for coastal, inland and all bathing waters from 2009 on as assessed in the previous annual reports and under the Directive 2006/7/EC for the 2012 season. A map given in Appendix 1 shows the location and quality of the bathing waters.

Coastal bathing waters

For the purpose of commenting the improvement or deterioration of bathing water quality from 2011, excellent quality is compared with compliance with the guide values; good quality and sufficient quality are compared with compliance with the mandatory value for *Escherichia coli* and not the guide values; poor quality is compared with not compliant with mandatory value for *Escherichia coli*.

96.1 % of bathing waters in Croatia were in excellent quality. This is a decrease of 1.6 % compared to 2011 guide values category. 2.0 % of bathing waters were classified as good quality and additional 0.9 % as sufficient quality (0.6 % increase from 2011). Three bathing waters were in poor quality, compared to none in 2011.

Inland bathing waters

Monitoring on inland bathing waters began in the 2011 season. Bathing waters are classified as new, except for one bathing water that had 16 samples and was in good quality.

Table 1: Results of bathing water quality in Croatia. Assessment during transition period.

HR												
		Total number of bathing waters	Compliance with guide and mandatory values*		Compliance with mandatory value		Not compliant		Banned/closed		Insufficiently sampled or not sampled	
			number	%	number	%	number	%	number	%	number	%
Coastal bathing waters	2009	905	886	97.9	901	99.6	0	0.0	0	0.0	4	0.4
	2010	913	900	98.6	913	100.0	0	0.0	0	0.0	0	0.0
	2011	906	886	97.8	906	100.0	0	0.0	0	0.0	0	0.0
	2012											
Inland bathing waters	2009											
	2010											
	2011	4	3	75.0	4	100.0	0	0.0	0	0.0	0	0.0
	2012											
All bathing waters	2009	905	886	97.9	901	99.6	0	0.0	0	0.0	4	0.4
	2010	913	900	98.6	913	100.0	0	0.0	0	0.0	0	0.0
	2011	910	889	97.7	910	100.0	0	0.0	0	0.0	0	0.0
	2012											

*Bathing waters which were compliant with the guide values were also compliant with the mandatory value for *Escherichia coli*.

Table 2: Results of bathing water quality in Croatia for 2012. Assessment under Directive 2006/7/EC.

		Total number of bathing waters	Excellent quality		Good quality		Sufficient quality		Poor quality		Closed		Insufficiently sampled		New		Changes	
			number	%	number	%	number	%	number	%	number	%	number	%	number	%	number	%
Coastal bathing waters	2009																	
	2010																	
	2011																	
	2012	912	876	96.1	18	2.0	8	0.9	3	0.3	0	0.0	0	0.0	7	0.8	0	0.0
Inland bathing waters	2009																	
	2010																	
	2011																	
	2012	7	0	0.0	1	14.3	0	0.0	0	0.0	0	0.0	0	0.0	6	85.7	0	0.0
All bathing waters	2009																	
	2010																	
	2011																	
	2012	919	876	95.3	19	2.1	8	0.9	3	0.3	0	0.0	0	0.0	13	1.4	0	0.0

4. Important information as provided by the Croatian authorities

Bathing water quality monitoring is carried out under Regulation on coastal bathing water quality (OG 73/08) and Regulation on bathing water quality (NN 51/10). Regulations set out standards for bathing water quality at the coastal, transitional and inland beaches, establish the limit values for microbiological parameters and other characteristics of the coastal, transitional and inland waters. In order to achieve the require standards, management measures for the bathing waters were established.

The bathing season in Croatia is the period from 1 June until 15 September, unless due to weather conditions and local customs, the representative body of the county issues a decision on the bathing season lasting for a longer time. Monitoring of bathing water quality at sea beaches lasts from 15 May until 30 September. Before each bathing season the county is obliged to determine sampling points. Before the start of each bathing season the authorised person is obliged to determine monitoring calendar consistent with the relevant administrative body in the county. Bathing water monitoring has to start no later than four days from the date specified in the calendar.

Based on bathing water quality monitoring results individual, annual and final assessments are made. The individual assessment is determined after each analysis carried out during the bathing season, according to the limit values for the microbiological parameters referred by the Regulation.

The annual assessment is determined after the end of the bathing season, based on a set of data on bathing water quality for that particular bathing season, according to the limit values for the microbiological parameters referred by the Regulation.

The final assessment is determined after the end of the last bathing season and the three preceding bathing seasons, according to the limit values for the microbiological parameters referred by the Regulation, based on a data set of at least 28 samples for each sampling point.

Monitoring data are available for public on <http://www.izor.hr/bathing/>. Moreover, users are allowed to make comments and suggestion considering each bathing water, to propose new sampling points, to get additional information of the beaches and even to report on possible sudden and short term pollutions. The web application for mobile phones and other small screen devices was produced, as preparation for bathing season 2012. Bathing water profiles are available for majority of bathing waters as well.

As written in the national report on quality of coastal bathing waters, the project "Coastal Cities Water Pollution Control Project" is on-going. It includes 47 subprojects for construction and modernization of sewage systems and waste water treatment along the coast of the mainland and islands. The project has a long-term character and will be implemented in three phases. The completion of the second phase of the project is expected by the end of September 2014. By the end of the third phase it is envisaged that all Croatian coast and islands will be adequately covered with sewage systems and waste water treatment plants. The situation is already improved in the area around the cities Rijeka, Opatija, Zadar and Šibenik-Knin which are evident from the trend of bathing water quality improvement. The sub-project, "Strengthening the of the coastal water monitoring network ", is also implemented by "Hrvatske Vode" and the Ministry of Environmental and Nature Protection and will be finished by the September 2014.

The Croatian authorities have provided additional detailed information in two reports to the European Commission:

- http://cdr.eionet.europa.eu/hr/eu/colsxzgg/envungwmw/lzvjestaj_o_kakvoci_mora_za_kupanje_RH_2012.pdf
- http://cdr.eionet.europa.eu/hr/eu/colsxzgg/envungwmw/lzvjestaj_o_kakvoci_vode_za_kupanje_rijeka-jezera_RH_2012.pdf

There were three bathing waters in 2012 with quality classified as poor (Table 3).

Table 3: Poor quality bathing waters.

BWID	BW name	2012 status
HR-BWC-COAST-HR3-7164	AC STUPICE - JUZNO OD POLUOTOKA	poor
HR-BWC-COAST-HR4-2057	GOJACA	poor
HR-BWC-COAST-HR4-2058	KAMP	poor

Nine short-term pollution events have been reported, shown in Table 4.

Table 4: List of bathing waters with short term pollution events in the Croatia in the 2012 bathing season.

Unique Identification Code of Bathing Water	Bathing Water Name	River Basin District	Bathing Water Category	Short-term pollution
HR-BWC-COAST-HR3-6018	Hotel Internacional	Adriatic river basin	Coastal	2012-08-22 - 2012-08-24
HR-BWC-COAST-HR3-7075	Hoteli Lotos - Ispod hotela	Adriatic river basin	Coastal	2012-08-07 - 2012-08-09
HR-BWC-COAST-HR3-7100	AC Amarin - Ispod aquagana	Adriatic river basin	Coastal	2012-06-22 - 2012-06-24
HR-BWC-COAST-HR3-7157	Pjescana Uvala - Plaza	Adriatic river basin	Coastal	2012-08-07 - 2012-08-08
HR-BWC-COAST-HR3-7164	AC Stupice - Juzno od poluotoka	Adriatic river basin	Coastal	2012-08-06 - 2012-08-08
HR-BWC-COAST-HR4-1031	Lopud-Grand hotel	Adriatic river basin	Coastal	2012-07-30 - 2012-08-01
HR-BWC-COAST-HR4-2058	Kamp	Adriatic river basin	Coastal	2012-07-17 - 2012-07-21
HR-BWC-COAST-HR4-2064	K. Stari Djardin	Adriatic river basin	Coastal	2012-07-17 - 2012-07-21
HR-BWI-INLAND_1600KFT1	Korana Foginovo kupalište	Danube River Basin District	River	2012-06-26 - 2012-06-29

5. General information on bathing water quality in Europe in 2012

Out of more than 22 000 bathing areas monitored throughout Europe in 2012, around two thirds were in coastal waters and the rest were in rivers and lakes. In the 2012 bathing season, the monitoring of bathing sites has been adjusted to the provisions in the EU's new bathing water directive (Directive 2006/7/EC). The sampling of water quality in most of the bathing water sites meets the frequency standards (this involves a pre-season sample of the water quality, followed up by monthly samples thereafter). As regards assessment, the provisions in the new bathing water directive have been applied in 19 European countries (Belgium, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Spain, Spain, Sweden). This involved taking data from four years of monitoring to make the 2012 assessment. For the remaining ten countries, the 2012 assessment has been carried out under a set of transitional rules that do not yet meet all the requirements of the new directive using the results from the 2012 monitoring.

In 2012, the quality of 94 % of all bathing waters met at least the minimum 'mandatory' level (corresponding to a rating of sufficient quality under the new directive). Bathing water quality improved at 1.8 % of sites in 2012 compared with 2011, and at 2.5 % of sites compared with 2010. There has also been a marked decline compared with 2011 in the number of bathing waters that were closed or that prohibited bathing.

In 2012, 95.3 % of coastal bathing waters in the EU-27 achieved the minimum quality standards requested by the EU directives — an increase of 2.0 % compared with 2011. The share of coastal

bathing waters with excellent quality (or complying with the guide values) in 2012 reached 81.2 % (an increase of 0.9 % from 2011).

The percentage of inland bathing waters with excellent quality is 72 % in 2012, a 1.6 % increase from 2011. In 2012, 91 % of inland bathing waters in the European Union had good or sufficient quality. This is a 1.0 % point increase from 2011. Only 2.3 % of inland bathing waters in the EU did not satisfy the minimum quality level. This is 0.1 % decrease from the previous year, continuing the slow but steady reduction in the percentage of poor quality bathing waters.

The "European bathing water quality in 2012" report presents the results and trends in bathing water quality in 2012 in Europe (<http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water>). More information on bathing water quality as prepared for all reporting countries can be found on the European Environment Agency's bathing water website. The reports for the 2012 season have been produced by TC Vode, European Topic Center ICM Waters partner with support of the Institute for Water of the Republic of Slovenia (IWRIS). Countries have collaborated in the assessment of bathing water quality and supplied additional information when needed.

6. Interactive information on bathing water quality in Europe

The bathing water section of the Water Information System for Europe (WISE), which is accessible at the EEA bathing water website (<http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water>), allows users to view the bathing water quality at more than 22 000 coastal beaches and inland sites across Europe. Users can check bathing water quality on an interactive map, download data for a selected country or region, and make comparisons with previous years.

The Eye on Earth — Water Watch application (<http://eyeonearth.org/map/WaterWatch/>) allows users to zoom in on a section of coast, riverbank or lake, both in street map or, where available, bird's eye viewing formats.

The data on bathing water quality in 2012 and previous years can also be viewed in WISE bathing water data viewer, an application prepared by TC Vode (<http://bwd.eea.europa.eu/>).

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 water site. Websites generally include a map search function and public access to the monitoring results both in real time and for previous seasons. Citizens now have access to more bathing water information than ever, giving them the tools to become more actively involved in protecting the environment and helping to improve Europe's bathing areas.

Appendix 1

Map 1: Bathing waters reported during the 2012 bathing season in Croatia



Source: National boundaries: EEA; Large rivers and lakes: EEA; Bathing waters data and coordinates: Croatian authorities