



MINISTRY OF
ENVIRONMENT
ENERGY &
CLIMATE
CHANGE

Special Secretariat for Water

BATHING WATER QUALITY IN GREECE

Reference year 2012



MAY 2013

Bathing water Quality in Greece

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INTRODUCTION

Bathing water quality for year 2012 was monitored and assessed in the framework of the *Monitoring Programme of Bathing Water Quality* that was implemented under the supervision of the Special Secretariat for Water of the Ministry for the Environment, Energy and Climate Change. This project was announced and assigned for the years 2011 to 2012.

The implementation of the 2012 monitoring programme was based on the provisions of the Directive 2006/7/EC concerning the management of bathing water quality and repealing Directive 76/160/EEC, which is incorporated to Greek legislation with the Ministerial Decree 8600/416/E103/2009 (Official Journal of the Greek Government 356B/2009).

The *length of the bathing season for 2012* was identified with ministerial decision from June 1st to October 31st.

In total *2155 bathing water sites* were monitored, from which 6 are located to inland waters (lakes) and the rest 2149 to coastal waters.

The *quality parameters* monitored were selected in accordance to the obligations of the Directive 2006/7/EC and other additional parameters and may be distinguished in two groups:

- ✓ *Microbiological*: “Escherichia coli” and “Intestinal enterococci”, determined in accordance to the reference methods of analysis of Annex I of the Directive 2006/7/EC and
- ✓ *Physicochemical*: colour, mineral oils, tarry residues, seaweed, jelly-fish and

floating material.

The programme was implemented as scheduled during the bathing water season for 2012, without delays and with the frequency that is specified in Directive 2006/7/EC.

To each bathing water site *6 samples* were collected, one pre-seasonal and five samples distributed throughout the bathing season, with the interval between sampling dates never exceeding 31 days.

The coordinates and the description of all monitoring sites were rechecked in order to be determined with accuracy for the easier approach by any interested citizen.

RESULTS ASSESSMENT 2012

The **bathing water quality assessment** was performed according to the provisions of article 4 and Annex I of the Directive 2006/7/EC on the basis of the set of bathing water quality data compiled for 2012 in relation to that bathing season and the three preceding bathing seasons (i.e. 2009-2011) based upon percentile evaluation of the log10 normal probability density function of microbiological data as prescribed in Annex II.

As a result of the aforementioned analysis bathing waters have been classified to the following categories/classes:

Class	Definition
1	Excellent quality
2	Good quality
3	Sufficient quality
4	Poor quality

From the 2155 bathing waters identified in Greece προέκυψαν the following results:

- **2009** bathing waters are classified as **“excellent quality”**. Two of them are located in inland waters and 2041 in coastal waters.
- **114** bathing waters are classified as **“good quality”**. Four of them are located in inland waters and 87 in coastal waters.
- **26** bathing waters are classified as **“sufficient quality”** and all of them are in coastal waters.
- **6** bathing waters are classified as **“poor quality”** and all of them are in coastal waters.

At the following figure and table are shown **the results of the assessment of year 2012** on the basis of the set of bathing water quality data compiled in relation to the current bathing season and the three preceding bathing seasons.

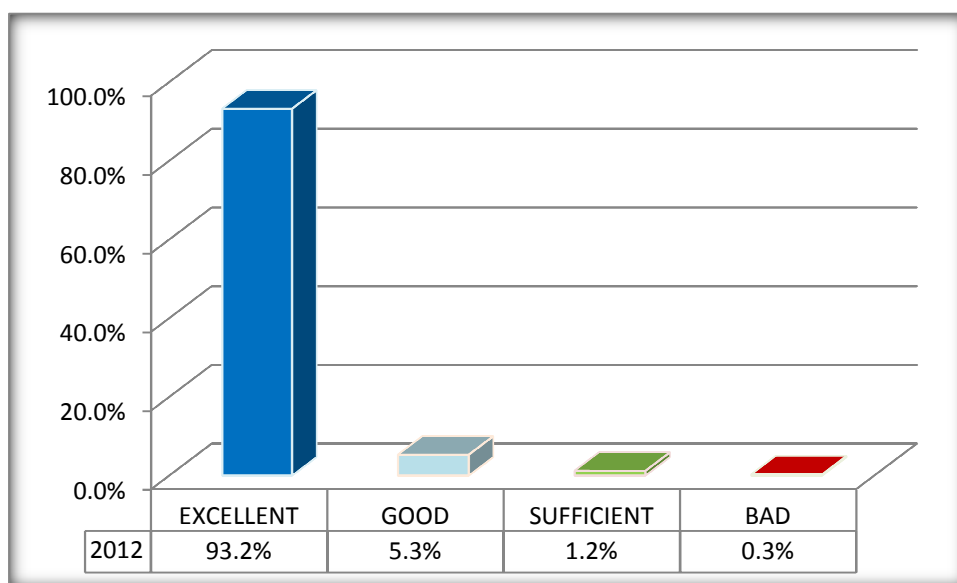


Figure 1: Bathing waters classification according to Directive 2006/7/EC for year 2012

Table 1: Classification of bathing waters for year 2012 according to the requirements of the Directive 2006/7/EC

No of points	Class	Definition	% Percentage
2009	Class 1	excellent quality	93,2%
114	Class 2	good quality	5,3%
26	Class 3	sufficient quality	1,2%
6	Class 4	poor quality	0,3%

Inland bathing waters In Greece are few as compared to the large number of coastal bathing waters. In the monitoring network of year 2012, six bathing sites in inland waters are included (4 of them are in Lake Vouliagmeni and the remaining 2 in Vegoritida lake). The classification of inland bathing waters in the assessment year 2012 is presented below.

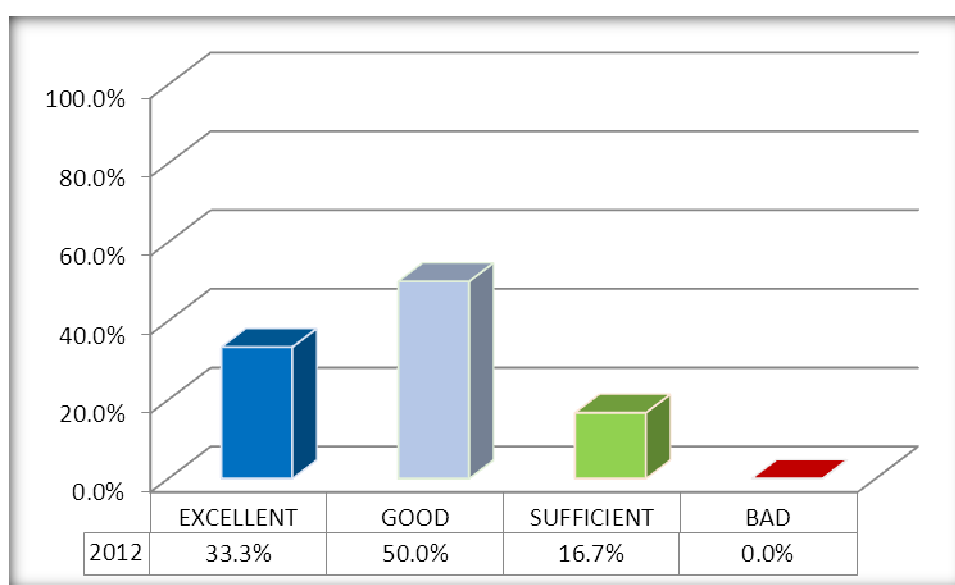


Figure 2: Inland bathing waters classification (6 bathing waters) according to Directive 2006/7/EC for year 2012

Table 2: Classification of inland bathing waters for year 2012 according to the requirements of the Directive 2006/7/EC

No of points	Class	Definition	% Percentage
2	Class 1	excellent quality	33,3%
3	Class 2	good quality	50,0%
1	Class 3	sufficient quality	16,7%

From the 2155 bathing waters identified in Greece 2149 correspond to coastal bathing waters. As a result of the bathing water quality assessment the main conclusion is related to the excellent bathing water quality of approximately 93,4 % of coastal bathing waters, as it is referred to Figure 3.

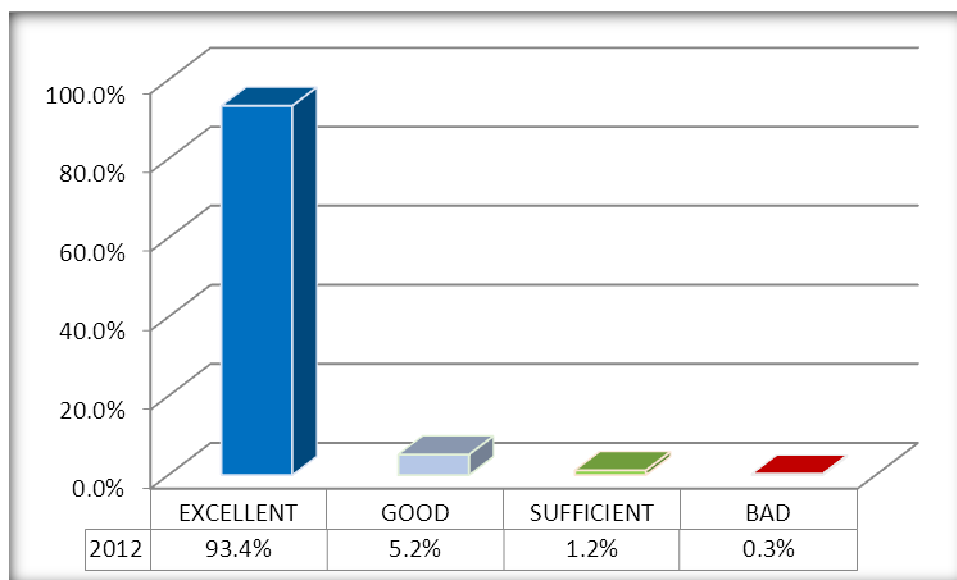


Figure 3: Coastal bathing waters classification according to Directive 2006/7/EC for year 2012

Table 3: Classification of coastal bathing waters for year 2012 according to the requirements of the Directive 2006/7/EC

No of points	Class	Definition	% Percentage
2007	Class 1	excellent quality	93,4%
111	Class 2	good quality	5,1%
25	Class 3	sufficient quality	1,2%
6	Class 4	poor quality	0,3%

The 6 coastal bathing water sites (Table 3) which were classified as "poor quality" are the following:

	Monitoring site code	Description
1	GR1270110464111801	PORTO KARRAS - MARINA PORTO KARRAS
2	GR2320010113010201	DAFNI - HOTEL

		TZAKI
3	GR2540060116060301	GYTHEIO 1 - PLAZ PROKOU-NATIONAL STADIUM OF GYTHEIO
4	GR2320010113010101	AGYIA - CAMPING PATRA
5	GR4220030182030201	CHORA – KAMARA / ANDROS
6	GR2320010113010202	BOZAITIKA - ACHAIA

The aforementioned classification (Tables 1,2,3) is a result of the statistical analysis of the monitoring results of years **2009-2012**, as it is performed according the provisions of the Directive 2006/7/EC.

The deterioration of the bathing water quality in these points is attributed mainly to the quality of the monitoring results of the previous three years, whereas bathing quality of the 2012 bathing season was improved in most cases.

For bathing water sites that are classified as “poor quality”, should be taken appropriate **management measures** during the bathing water season of 2013, including a bathing prohibition or advice against bathing, if needed, in order to prevent health hazards.

REGISTER OF THE GREEK BATHING WATER PROFILES

In 2012 the **Register of the Greek Bathing Water Profiles** was completed under the supervision of the Special Secretariat for Water, following the requirements of the Directive 2006/7/EC (article 6 and Annex III).

The aim of the **Register of Bathing Water Profiles** is to describe and present the basic characteristics of the coasts, identify the pollution sources that may affect water quality and assess the magnitude of the effects. The Register serves also as a guide for selecting appropriate measures in order to minimise the impact of pressures in bathing waters and allows for a more efficient



management of resources.

For this purpose an **interactive website** related to the Registry is operational and presents the **1480 Greek bathing water profiles**, aiming at the same time to inform the public regarding the bathing water quality and the appropriate measures taken, but also accommodate comments and responses by the website visitors.

The main target of all the efforts made is related to the **achievement of at least sufficient bathing water quality by the end of 2015**. All relevant data and information are available through the web-site <http://www.bathingwaterprofiles.gr/>.

EVOLUTION OF BATHING WATER QUALITY IN GREECE

Greece since 1990 has systematically monitored the bathing water quality. The Directive applied until 2010 was the Directive 76/160/EEC. Since 2010, Special Secretariat for Water began to assess bathing waters in accordance with the new Directive 2006/7/EC, but for reasons of delay starting *the Program* in 2010 (July-October 2010) the European Commission followed its own assessment according to Directive 76/160/EEC. The results of the EU assessment are described in the following figures.

The results of the bathing water quality in Greece for the period 1990-2010, according to the evaluation process described in the Directive 76/160/EEC, are presented in the Figures 4 and 5 with different colors:

- The percentage of bathing waters that comply with the guide values (blue line)

- The percentage of bathing waters that comply with the mandatory values (green line)
- The percentage of bathing waters that do not comply with the mandatory values (red line).

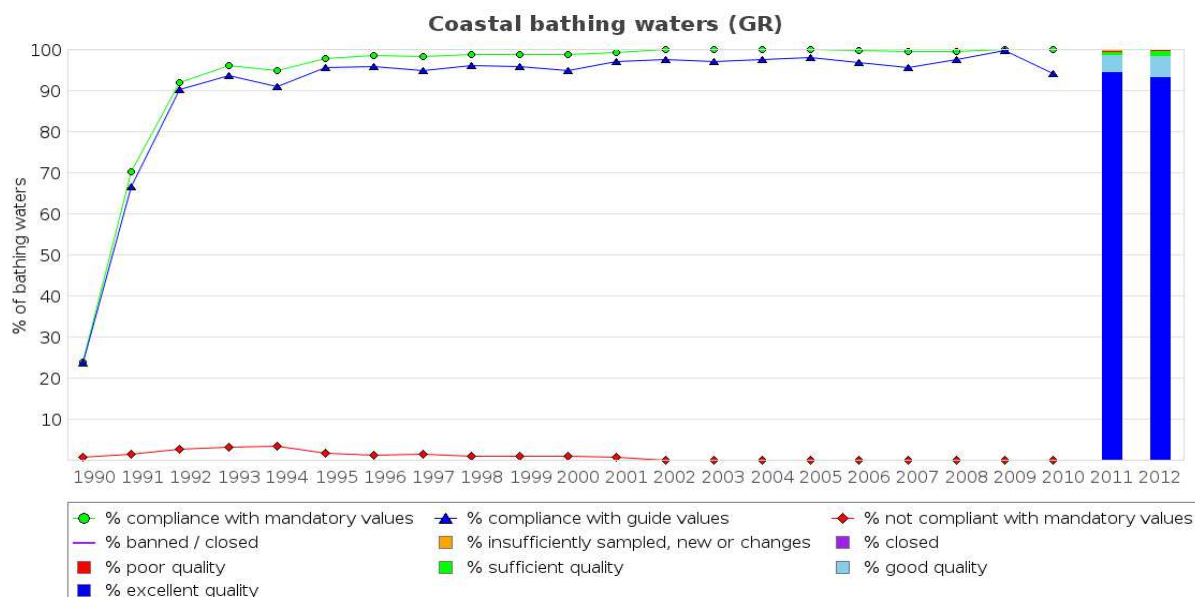


Figure 4 : Coastal bathing water quality according to Directive 76/160/EC, for the period 1990-2012

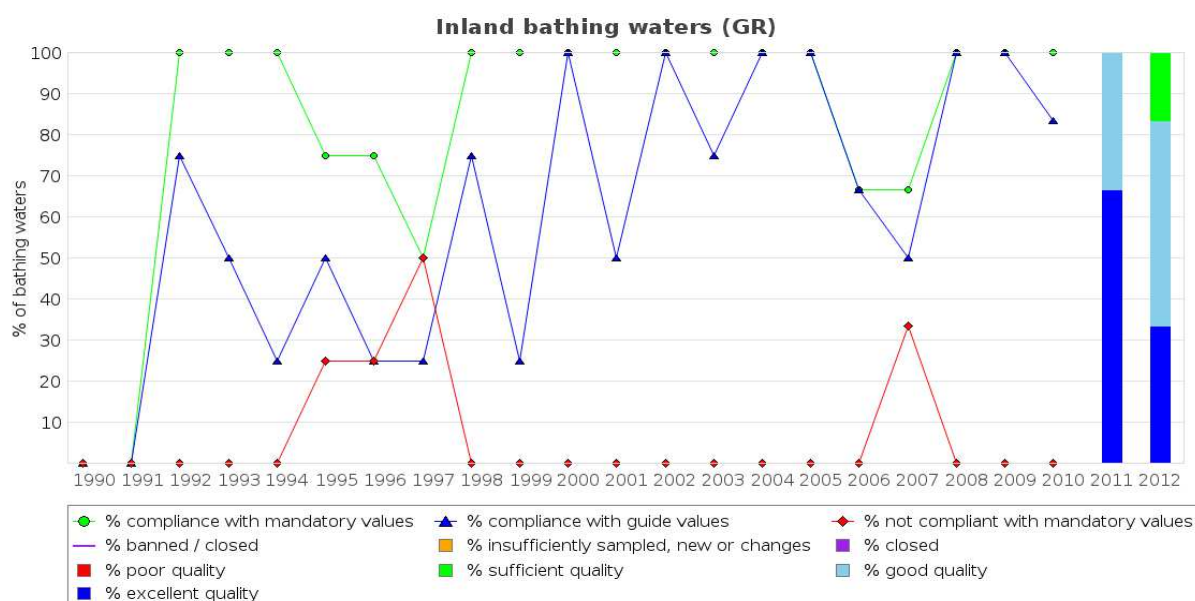


Figure 5: Inland bathing water quality according to Directive 76/160/EC, for the period 1990-2012¹

¹ <http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water>

The diagrams demonstrate that the Greek rate of compliance even with the stricter guide values of Directive 76/160/EEC (blue line) exceeds 93% since 1995.

Inland water bodies show sharp quality fluctuations due to the small number of monitored points (only 6 points). However, Greece conforms since 1998 for inland water bodies as well with the mandatory values of Directive 76/160/EEC by 100% (green line) with the exception of years 2006 and 2007 when it complied by 66.7%.

USEFUL LINKS

<i>Ministry of Environment, Energy and Climate Change (MEECC)- Aquatic Environment – Bathing Waters</i>	http://www.ypeka.gr/Default.aspx?tabid=253&locale=el-GR&language=en-US=el-GR
<i>MEECC - Greek Bathing Water Profiles Registry</i>	http://www.bathingwaterprofiles.gr/
<i>MEECC–Bathing Water quality in Greece- Reference year 2010</i>	http://www.ypeka.gr/LinkClick.aspx?fileticket=hyzfiYpedSw%3d&tabid=253&language=en-US
<i>MEECC- National Environment Information Network (NEIN)</i>	amappl1.e-per.gr/
<i>European Commission – Bathing water quality</i>	http://ec.europa.eu/environment/water/water-bathing/index_en.html
<i>European Environmental Agency- Country reports</i>	http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water
<i>European Environmental Agency – Guidelines on assessment under the New Bathing Water Directive and transition period</i>	http://glossary.en.eea.europa.eu/terminology/sitesearch?term=guidelines+on+assessment+under+the+Bathing+water+directive+and+transition+period
<i>European Environmental Agency - Central Data Repository</i>	http://cdr.eionet.europa.eu/gr/eu/nbwd
<i>European Environment Agency –Monitoring of air and bathing water quality (Eye on Earth)</i>	http://eyeonearth.eu/

CONTACT DETAILS

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<http://www.bathingwaterprofiles.gr/>

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



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

Map with the monitoring sites of the 2012 bathing season