



# 2012 Recreational Water Quality Criteria

## Summary

EPA has released its 2012 recreational water quality criteria (RWQC) recommendations for protecting human health in all coastal and non-coastal waters designated for primary contact recreation use. EPA provides two sets of recommended criteria. Primary contact recreation is protected if either set of criteria recommendations are adopted into state water quality standards.

These recommendations are intended as guidance to states, territories and authorized tribes in developing water quality standards to protect swimmers from exposure to water that contains organisms that indicate the presence of fecal contamination.

## Background

EPA last issued ambient water quality criteria recommendations for recreational waters in 1986. EPA issues such recommendations under the authority of the Clean Water Act (CWA). Amendments to the CWA by the Beaches Environmental Assessment and Coastal Health (BEACH) Act of 2000 direct EPA to conduct studies associated with pathogens and human health, and to publish new or revised criteria recommendations for pathogens and pathogen indicators based on those studies. These 2012 RWQC meet those requirements.

The 2012 RWQC rely on the latest research and science, including studies that show a link between illness and fecal contamination in recreational waters. They are based on the use of two bacterial indicators of fecal contamination, *E. coli* and enterococci. The new criteria are designed to protect primary contact recreation, including swimming, bathing, surfing, water skiing, tubing, water play by children, and similar water contact activities where a high degree of bodily contact with the water, immersion and ingestion are likely.

## What are the recommendations?

The 2012 RWQC offer two sets of numeric concentration thresholds, either of which would protect the designated use of primary contact recreation and, therefore, would protect the public from exposure to harmful levels of pathogens. Illness rates upon which these recommendations are based use the National Epidemiological and Environmental Assessment of Recreational Water (NEEAR) definition of gastrointestinal illness, which is not limited to illnesses which exhibit a fever.

The RWQC consist of three components: magnitude, duration and frequency. The magnitude of the bacterial indicators are described by both a geometric mean (GM) and a statistical threshold value (STV) for the bacteria samples. The STV approximates the 90th percentile of the water quality distribution and is intended to be a value that should not be exceeded by more than 10 percent of the samples taken. The table summarizes the magnitude component of the recommendations. All three components are explained in more detail in the sections below.

CRITERIA ELEMENTS	Recommendation 1 Estimated Illness Rate 36/1,000		Recommendation 2 Estimated Illness Rate 32/1,000	
	GM (cfu/100 mL)	STV (cfu/100 mL)	GM (cfu/100 mL)	STV (cfu/100 mL)
Enterococci (marine & fresh)	35	130	30	110
<i>E. coli</i> (fresh)	126	410	100	320

Water quality criteria recommendations are intended as guidance in establishing new or revised water quality standards. They are not regulations themselves. States and authorized tribes have the discretion to adopt, where appropriate, other scientifically defensible water quality criteria that differ from EPA's recommended criteria.

### RECOMMENDATION 1: MAGNITUDE

**Enterococci:** Culturable enterococci at a

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geometric mean (GM) of 35 colony forming units (CFU per 100 milliliters (mL) and a statistical threshold value (STV) of 130 cfu per 100 mL, measured using *EPA Method 1600*, or any other equivalent method that measures culturable enterococci.

**E. coli:** Culturable *E. coli* at a GM of 126 cfu per 100 mL and an STV of 410 cfu per 100 mL measured using *EPA Method 1603*, or any other equivalent method that measures culturable *E. coli*.

#### *RECOMMENDATION 2: MAGNITUDE*

**Enterococci:** Culturable enterococci at a GM of 30 cfu per 100 mL and an STV of 110 cfu per 100 mL, measured using *EPA Method 1600*, or any other equivalent method that measures culturable enterococci.

**E. coli:** Culturable *E. coli* at a GM of 100 cfu per 100 mL and an STV of 320 cfu per 100 mL measured using *EPA Method 1603*, or any other equivalent method that measures culturable *E. coli*.

#### *FOR BOTH RECOMMENDATIONS*

**Duration and Frequency:** The waterbody GM should not be greater than the selected GM magnitude in any 30-day interval. There should not be greater than a ten percent excursion frequency of the selected STV magnitude in the same 30-day interval.

#### **How are these criteria different from the 1986 criteria?**

**Similar Protection for Fresh and Marine Waters:** The EPA used an analysis of NEEAR water quality data to refine the illness rate estimate for the recommended marine criterion for enterococci. The 2012 RWQC values now protect public health similarly in both marine and fresh waters.

**A New Measurement Value:** EPA is introducing a new term, Statistical Threshold Value (STV), to be used in conjunction with the recommended GM value.

**New Early Alert Tool:** In addition to recommending criteria values, EPA is now also

providing states with Beach Action Values (BAVs) for use in notification programs. The BAV is provided for states to use as a precautionary tool to provide an early alert to beachgoers, including families with children.

**A Single Level of Beach Use:** The 1986 bacteria criteria document included four single sample maximum (SSM) values appropriate for different levels of beach usage (use intensities). In the 2012 RWQC, EPA removed those recommendations and instead provided states with optional, precautionary BAVs for use in monitoring and notification programs.

**More Tools for Assessing and Managing Recreational Waters:** EPA is providing information on tools for evaluating and managing recreational waters, such as predictive modeling and sanitary surveys. The Agency is also providing tools for developing site-specific criteria such as epidemiological studies, quantitative microbial risk assessment, and use of alternative indicators or methods. The EPA has developed and validated a molecular testing method using quantitative polymerase chain reaction (qPCR) as a rapid analytical technique for the detection of enterococci in recreational water (EPA Method 1611). For the purposes of beach monitoring, a state may use a qPCR method on a site-specific basis.

#### **Where can I find more information?**

EPA has put the 2012 RWQC document, support documents, and the Federal Register Notice, in the docket (Docket identification No. EPA-HQ-OW-2011-0466) which can be accessed via EPA's website at <http://water.epa.gov/scitech/swguidance/standards/criteria/health/recreation/index.cfm>.

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