



Sept. 8, 2017

Connie Dou, Water Quality Monitoring and Assessment Section  
Iowa Department of Natural Resources  
502 East 9<sup>th</sup> Street  
Des Moines, IA 50319  
*Via email:* [Connie.Dou@dnr.iowa.gov](mailto:Connie.Dou@dnr.iowa.gov)

**Re: Proposed revision of Iowa's recreational water quality criteria for E. coli**

Dear Ms. Dou:

Please accept these comments on behalf of the Environmental Law and Policy Center (ELPC) and the Iowa Environmental Council (IEC), an alliance of over sixty Iowa environmental organizations whose members boat, fish, paddle and swim in waters throughout the state, on the proposed revision of Iowa's bacteria water quality standards for recreational waters. IEC and ELPC are concerned that the proposed less stringent criteria are not protective of public health, do not satisfy federal regulations, and are inconsistent with the goals of the Clean Water Act. Our concerns are explained below.

**I. The proposed water quality criteria are not sufficiently protective.**

Iowa's existing bacteria water quality criteria for Recreational Use Classes A1, A2 and A3 consist of two components: a geometric mean criterion and a single sample maximum value. This is consistent with EPA's 1986 recommended criteria for enterococci and *E.coli* in recreational waters. The Environmental Protection Commission (EPC) recently announced that it is proposing to remove the single sample maximum limit from Iowa's water quality standards. However, according to the Environmental Protection Agency (EPA), such a change will result in water quality criteria that are not sufficiently protective of public health.

Section 304(a)(1) of the Clean Water Act directs EPA to publish recommended water quality criteria that accurately reflects the latest scientific knowledge on the effects of the presence of pollutants in water on human health and welfare, including recreation. In 2012, EPA issued revised recommended final recreational water quality criteria (RWQC) for the protection of primary contact recreation in both coastal and non-coastal waters.<sup>1</sup> The revised RWQC recommendations

are based upon the results of studies conducted under §104(v) of the Clean Water Act for the purpose of protecting human health in coastal waters, as well as “consideration of all available information relating to the effects of fecal contamination on public health,” according to the 2012 bacteria criteria document.<sup>ii</sup>

The 2012 RWQC, like the 1986 criteria, recommend using culturable *E. coli* and enterococci as indicators of fecal contamination. The revised criteria also retain a geometric mean (GM) value as one of its components. Unlike the 1986 criteria, however, the 2012 RWQC do not include recommended single sample maximum (SSM) values. Instead, the revised RWQC include a new statistical threshold value, or STV. The STV is to be used *in conjunction with* the recommended GM value to evaluate ambient water quality in recreational waters. EPA derived the STV from the observed pooled variance of the fecal indicator bacteria reported in epidemiological studies.<sup>iii</sup> EPA explains the role of the STV component in the recommended RWQC as follows:

“EPA’s criteria recommendations are both for a GM and STV (rather than just a GM or just an STV) because used together they would indicate whether the water quality is protective of the designated use of primary contact recreation. Using the GM alone would not reflect spikes in water quality because the GM alone is not sensitive to them.”<sup>iv</sup>

As explained in the 2012 criteria document, the distribution of fecal indicator bacteria (FIB) in water is “highly variable,” fluctuating widely with weather and hydrological conditions.<sup>v</sup> To be sufficiently protective, RWQC must support both the long-term health of the water body and protect against a range and frequency of short-term spikes that would be likely to cause human illness. People do not recreate in “average” water quality, they swim or go tubing in the water quality on a particular day. EPA’s recommended criteria use the STV in conjunction with the GM to “help ensure the FIB densities in recreational waters correspond to a water quality level protective of the designated use of primary contact recreation by constraining the number of high water quality values [exceeding the STV].”<sup>vi</sup>

Despite EPA expressly stating that using the GM value alone is not sufficiently protective of primary contact recreation, the EPC is proposing revised water quality criteria (WQC) that rely only on this value to protect Iowans from becoming ill in waters designated for swimming and other primary contact activities. IEC and ELPC are concerned that recreational WQC based on the GM alone will not adequately protect the public, including children who may be more exposed and/or more sensitive to pathogens in these waters. According to EPA’s epidemiological data, children aged ten years and younger showed a higher rate of illnesses than adults in fresh water. The 2012 recommendations are based on the general population, which includes children.<sup>vii</sup>

Comment 1: Please explain why DNR believes the proposed *E. coli* WQC consisting of a GM component alone is sufficiently protective of public health, contrary to the 2012 EPA recommendations.

## **II. The proposed revised water quality criteria do not satisfy federal regulations.**

The Clean Water Act's implementing regulations require that when a state adopts new or revised water quality criteria into its water quality standards, they must be scientifically defensible and protective of the designated uses of the waterbodies. EPA's regulation § 131.11(b)(1) provides, "In establishing criteria, states should (1) Establish numerical values based on (i) 304(a) Guidance; or (ii) 304(a) Guidance modified to reflect site-specific conditions; or (iii) Other scientifically defensible methods."

The 2012 criteria document includes two sets of RWQC, each including both a GM value and correlated STV.<sup>viii</sup> The less protective criteria, when attained, are predicted to result in an illness rate of 36 per 1,000 primary contact recreators. The more protective criteria have a projected estimated illness rate of 32 per 1,000 individuals. EPA believes both criteria sets to be protective of the designated use of primary contact recreation, and recommends that states make a "risk management decision regarding illness rate to determine which set of criteria values (both a GM and related STV) to adopt into their WQS" and apply statewide.<sup>ix</sup> In addition, Section 6 of the 2012 criteria document discusses tools for states to derive alternative, site-specific criteria.

The EPC's proposed WQC for Class A1 and A3 waters in Iowa consist only of a GM value of 126 organisms per 100 milliliters of water. This is the value (126 cfu/100 mL) of the GM component of the *less* protective set of EPA's 2012 recommended RWQC.<sup>x</sup> The Notice of Intended Action for the proposed rulemaking does not indicate that EPC has used any of the EPA-recommended tools and methods (including sanitary surveys, predictive models, and approaches for developing criteria using alternative fecal indicators and/or methods)<sup>xi</sup> to develop alternative criteria. Nor does the NOIA cite any epidemiological data to demonstrate the level of protection provided by the proposed criteria.

The NOIA provides the following rationale for the proposed bacteria WQC: "The Commission has determined that the single sample maximum value is overly stringent and is not an appropriate measure for water quality assessment and permitting purposes. The geometric mean *E. coli* criterion is a more appropriate measure and will be retained." A separate explanation for the proposed change from DNR states that the proposed revision "will better align Iowa's standard with the science upon which the EPA *Escherichia coli* (*E. coli*) standard was based and with our Iowa NPDES permitting rules."<sup>xii</sup>

EPA has indeed determined that the SSM values in its 30-year old recommended criteria are outdated. EPA explains that it has removed the SSM from its recommended criteria because “treating the SSM as a never to be exceeded value for such an evaluation [of recreational water] would impart a level of protection much more stringent than intended by the 1986 criteria GM value.”<sup>xiii</sup> That is why EPA has *replaced* the SSM with another value that serves the same purpose of protecting against spikes in bacteria levels. However, in contrast to the SSM, each statistical threshold value EPA developed for its revised RWQC is associated with the same level of public health protection as its corresponding GM value.<sup>xiv</sup>

The Commission’s concerns about the SSM being overly stringent would be addressed if Iowa adopted one of the 2012 sets of recommended RWQC. The STV component of each set of the 2012 criteria is less stringent than the SSM in Iowa’s existing criteria for primary contact recreation (A1 and A3), yet are still deemed sufficiently protective, based on epidemiological studies. Specifically, EPA based their recommendations on the risk of illness (illness rates) from the NEEAR study definition of GI illness.<sup>xv</sup> This EPA/CDC joint effort has resulted in the publication of a number of peer-reviewed articles, and so is (by definition) scientifically valid and sound.<sup>xvi</sup>

By contrast, neither DNR nor the EPC has provided any explanation for the decision to simply eliminate the overly stringent SSM and not replace it with the recommended STV that corresponds to the GM value selected. There is no evidence that the proposed revised criteria consisting of GM values alone are scientifically defensible and protective of the designated uses of the water bodies, as required by EPA regulations.

Comment 2: Please cite the scientific studies, sanitary surveys or other data that are the basis for the proposed revised *E. coli* water quality criteria for A1, A2 and A3 waters.

Comment 3: In the absence of a scientifically valid justification for the proposed criteria, to address concerns about the SSM being overly stringent the Commission should adopt one of the sets of the 2012 recommended RWQC. The STV component of each set of the 2012 criteria is less stringent than the SSM in Iowa’s existing criteria for primary contact recreation (A1 and A3), yet still sufficiently protective of public health.

### **III. The proposed changes are inconsistent with the goals of the Clean Water Act.**

One of the main goals of the Clean Water Act is to protect and restore waters for swimming. CWA § 101(a). The proposed revised water quality criteria are not consistent with this goal. First, as explained above, the proposed criteria are not sufficiently protective of primary contact uses, because they rely on a GM value alone, which would not protect swimmers from high level spikes in bacteria. Second, the proposed criteria will result in fewer polluted water bodies being

restored to water quality safe for swimming, because states are only required to develop TMDLs or “Water Quality Improvement Plans” for waters assessed as impaired.

IEC has conducted a detailed review of waters on the draft 2016 list of impaired waters that, according to the Fiscal Impact Statement accompanying the rulemaking, would be removed from the impaired waters list pursuant to the proposed change. By assessing recreational waters using the GM value alone, IEC has determined that we will fail to identify and address problems from occasional (or in some cases, even somewhat frequent) high spikes in bacteria that present a significantly elevated risk of illness on some days. Waters affected by the proposed rulemaking include 10 lakes with public beaches as well as 13 river segments in Category 5 that are impaired and need a Total Maximum Daily Load (TMDL) restoration plan to address high spikes in bacteria for “significantly greater than 10%” of samples. Presumably also affected (but not included in the fiscal analysis) will be 3 lakes and 3 river segments in Category 4 for impaired waters that have a TMDL restoration plan approved by EPA. All of these waters were assessed and listed as impaired based on repeated high spikes of bacteria, so they would no longer be targeted for restoration work if the bacteria SSM criteria is eliminated. (Please see “Waters Affected by Proposed Change to Bacteria Water Quality Standards,” attached as Appendix B.)

DNR has stated that it intends to continue to use the SSM for the purpose of public beach notifications. Retaining the SSM for beach notifications while removing it from Iowa’s water quality standards will not sufficiently protect public health. The public beach monitoring program only includes selected lakes and reservoirs; it does not monitor any rivers or streams used by the public for swimming, tubing, and other primary contact recreation activities. It also does not include all lakes with recreational designated uses.

In addition, the public beach program consists only of monitoring a subset of recreational waters and posting public beach advisories during the summer months (between Memorial Day and Labor Day). It is not a regulatory program. Waters assessed as too polluted for safe recreation through this program are not added to Iowa’s list of impaired waters, and thus no plan is created to improve water quality. As a result, the program does not fulfill the Clean Water Act’s goal of protecting *and restoring* water quality for swimming.

As Congress recognized when it wrote the Clean Water Act, the public rivers, creeks, lakes and ponds of a state belong to all of its residents. Every Iowan has the right to use and enjoy these waters without being made sick by others’ pollution. Iowans look to the Department of Natural Resources, one of the most trusted institutions in the state, to uphold Clean Water Act protections on their behalf.

Comment 4: Please clarify whether restorative efforts will continue for the 3 lakes and 3 river segments currently listed as impaired due to violations of the SSM criteria for which a TMDL restoration plan has already been developed and approved by EPA (see Appendix B).

Comment 5: Please explain why DNR believes monitoring and assessing for short-term spikes in *E. coli* bacteria at certain lakes and reservoirs with public beaches, and no rivers designated for primary contact recreational uses, is sufficient to protect public health.

**Conclusion**

Bacteria contamination is a serious and growing water quality concern in Iowa. At a time when more waters are impaired by bacteria than by any other cause, IEC and ELPC strongly object to weakening protections for public health. To adequately protect primary contact recreation and comply with the requirements of the Clean Water Act, DNR should either leave the current Single Sample Maximum (SSM) *E. coli* bacteria standard in place, or replace it with the EPA recommended Statistical Threshold Value (STV). Adopting the EPA recommendation would result in a change in Iowa's current primary contact SSM limit of 235 cfu/100 ml to the less stringent STV limit of 410 cfu/100ml. This would address the Commission's and DNR's concern that the SSM limit is overly stringent, while still providing important protection against additional illnesses for swimmers exposed to high level spikes of bacteria.

Sincerely,



Clare Kernek  
Staff Attorney  
Iowa Environmental Council  
[Kernek@iaenvironment.org](mailto:Kernek@iaenvironment.org)



Josh Mandelbaum  
Staff Attorney  
Environmental Law & Policy Center  
[jmandelbaum@elpc.org](mailto:jmandelbaum@elpc.org)

---

<sup>i</sup> USEPA (U.S. Environmental Protection Agency). 2012. Recreational Water Quality Criteria. EPA 820-F-12-058. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

<sup>ii</sup> *Id.*, at Forward.

<sup>iii</sup> USEPA (U.S. Environmental Protection Agency). 2012. Recreational Water Quality Criteria, Sec. 3.6.2 The 2012 RWQC, at 39.

<sup>iv</sup> *Id.*

<sup>v</sup> *Id.*

<sup>vi</sup> *Id.*

<sup>vii</sup> USEPA (U.S. Environmental Protection Agency). 2012. Recreational Water Quality Criteria, at 3.

<sup>viii</sup> USEPA, (U.S. Environmental Protection Agency). 2012. Recreational Water Quality Criteria, Table 4. Recommended 2012 RWQC, at 43.

<sup>ix</sup> USEPA (U.S. Environmental Protection Agency). 2012. Recreational Water Quality Criteria, Sec. 4.0 Recreational Water Quality Criteria, at 43.

<sup>x</sup> USEPA, (U.S. Environmental Protection Agency). 2012. Recreational Water Quality Criteria, Table 4. Recommended 2012 RWQC, at 43.

<sup>xi</sup> See USEPA, (U.S. Environmental Protection Agency). 2012. Recreational Water Quality Criteria, Sec. 6.2 Tools for Developing Alternative Criteria, at 48.

<sup>xii</sup> Tack, Jon C. Letter to Carolyn Raffensperger, Chair, Sierra Club Iowa Chapter. August 15, 2017. Shared via electronic message from Jon Tack, DNR, to Susan Heathcote, IEC. August 16, 2017. Email.

<sup>xiii</sup> USEPA (U.S. Environmental Protection Agency). 2012. Recreational Water Quality Criteria, Sec. 3.6.1 EPA's 1986 Ambient Water Quality Criteria for Bacteria, at 39.

<sup>xiv</sup> USEPA (U.S. Environmental Protection Agency). 2012. Recreational Water Quality Criteria, Sec. 3.6.2 The 2012 RWQC, at 39.

<sup>xv</sup> Epidemiological investigations at U.S. beaches conducted in 2003, 2004, 2005, 2007 and 2009 are referred to collectively as the National Epidemiological and Environmental Assessment of Recreational Water or "NEEAR" Study.

<sup>xvi</sup> See USEPA, (U.S. Environmental Protection Agency). 2012. Recreational Water Quality Criteria, at 15-32.