

Environmental Groups comments on Triennial Review

August 7th, 2023

Sent via email to EPA.PublicHearingCom@illinois.gov

Illinois EPA
attn Jeff Guy, Hearing Officer
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

RE: Triennial Review

Dear Mr. Guy and other Illinois EPA staff,

The undersigned Environmental Organizations see a critical need to revise a number of Illinois water quality standards as it is plain that the current antiquated standards are resulting in permits, impairment listings and total maximum daily load calculations that are inadequate to protect Illinois drinking water and fishable/swimmable uses.

In Illinois, all but a few waters are designated "general use" which includes aquatic life, wildlife, agricultural use, most industrial uses, aesthetic quality and primary contact. 35 Ill. Adm. Code 302.202 The applicable federal regulations are clear that:

States must adopt those water quality criteria that protect the designated use. Such criteria must be based on a sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For waters with multiple use designations, the criteria shall support the most sensitive use. 40 CFR 131.11(a)(1)

Further, under 40 CFR 131.20(a):

If a State does not adopt new or revised criteria for which EPA has published new or updated CWA 304(a) recommendations, then the State shall provide an explanation, when it submits the results of its review to the Regional Administrator consistent with CWA section 303(c)(1)

Given the antiquity of certain Illinois standards and the more recent publication of new or updated CWA 304(a) criteria, Illinois EPA should consider at least ammonia, chloride, and lake nitrogen and phosphorus under 40 CFR 131.20(a). We explore some of these topics in greater detail below, however, any standard with updated CWA 304(a) should be updated. The US EPA has done the work to produce standards, the Illinois EPA should follow suit and adopt them.

Regarding Prioritization

During the public hearings on July 6th, 2023, Illinois EPA stated its intention to limit itself to three topics for this Triennial Review process. The agency should not artificially constrain itself to such a limited review. As an agency of the State of Illinois, Illinois EPA has a constitutional duty to protect Illinois waters and residents to ensure a healthful environment. It must adopt protective water quality criteria based on current and sound scientific rationale. 40 CFR 131.11(a). If Illinois EPA only selects three topics to review, it will fall far short of that requirement. In light of the serious and pressing water quality issues throughout the state, the Environmental Organizations strongly urge Illinois EPA conduct a comprehensive and rigorous review of Illinois standards, rather than limiting itself to three topics.

In no particular order, the signed Environmental Organizations encourage Illinois EPA to take on all of the items listed below in the Triennial Review.

Updates to Subpart F

Updating 35 IL Admin. Code 302 Subpart F: Procedures for Determining Water Quality Criteria is a high priority given that many of our most troubling water quality issues, like PFAS, do not have numeric water quality standards in place. The current procedures need to be updated so IEPA can derive numeric expressions from Illinois narrative WQS that are based on the latest science, federal policies and guidelines that will be sufficiently protective of human health and the environment. 35 IL Admin Code 302 Subpart F has not been updated in over 30 years. These old procedures require IEPA to use certain toxicity data (acute and chronic toxicity, bioconcentration, and human health thresholds) and to develop numeric criteria in a specific way. As IEPA experienced in working on PFAS, these out of date procedures can hinder the agency's ability to derive numeric criteria for parameters that don't have water quality standards. Unfortunately, this can result in derived criteria that are not sufficiently protective of human health and the environment. It is a high priority to update Subpart F because there are so many important pollutants which IEPA needs to derive toxicity standards for. Failing to upgrade this procedural machinery can have very real impacts on human health and the environment.

Update Chloride WQS

Increased concentrations of chloride caused by the use of road deicing salts, agricultural practices, and mining operations have been observed across Illinois (Kelly 2012)¹ and the northern United States (Corsi et al 2015)². These elevated chloride levels are a major threat and

¹ Kelly, W.R., S.V. Panno, and K. Hackley. 2012. The sources, distribution, and trends in chloride in the waters of Illinois. Illinois State Water Survey, Bulletin B-74, Prairie Research Institute, University of Illinois at Urbana-Champaign, Champaign, Illinois

² Corsi, S.R, Cicco, L.A, Lutz, M A., Hirsch R M. River chloride trends in snow-affected urban watersheds: increasing concentrations outpace urban growth rate and are common among all seasons Science of The Total Environment Volume 508, 1 March 2015, Pages 488-497

limiter to the biodiversity and functioning of Illinois rivers, streams, and lakes, including Lake Michigan. Increasing chloride concentrations have also been documented in Illinoisan groundwater, contaminating drinking water (Kelly 2008).³

Recent studies have also correlated increased chloride concentrations with increased dissolved phosphorus concentrations in rivers and streams (McIssac et al. 2022).⁴ It is hypothesized that increased chloride concentrations may have a role in desorbing phosphate ions from sediment leading to an increased water column dissolved phosphorus concentration potentially worsening nuisance conditions such as excessive algal blooms and plant growth.

Illinois currently has a single-value water quality standard of 500 mg/L for General Use Waters and this WQS has not been revised in decades. The US EPA adopted the current chloride water criterion of 860 mg/L (acute) and 230 mg/L (chronic) in 1988. Communications from the US EPA indicate that the Agency is currently working on an update to the chloride criterion that is expected to be more restrictive than the current criteria. A growing body of research including Miltner (2021)⁵ and MBI (2023)⁶ suggest that the existing Illinois chloride WQS, and even the lower US EPA chronic chloride criteria, are not sufficiently protective of aquatic health. Thus, updates to the chloride WQS should be a priority of the IEPA and the IPCB during the Triennial Review.

PFAS WQS

IEPA should use the Triennial Review process to adopt numeric water quality standards for perfluorooctanoic acid (“PFOA”), perfluorooctane sulfonic acid (“PFOS”), perfluorohexane sulfonic acid (“PFHxS”), hexafluoropropylene oxide dimer acid and its ammonium salt (“GenX”), perfluorononanoic acid (“PFNA”), and perfluorobutane sulfonic acid (“PFBS”). These standards are needed to protect human health and aquatic life throughout Illinois. These standards are also necessary to inform development of NPDES limits in concert with proposed MCLs of 4ppt for both PFOA & PFOS, and the proposed MCLs for PFPFHxS, Gen X, PFNA, and PFBS.⁷ A significant number of community water systems (CWS) will need to add treatment processes to

³ Kelly, W.R. 2008. Long-term trends in chloride concentrations in shallow aquifers near Chicago. *Ground Water* 46(5): 772-781.

⁴ McIssaac, G.F., T.O. Hodson, M. Markus, R. Bhattarai, and D.C. Kim. 2022. “Spatial and Temporal Variations in Phosphorus Loads in the Illinois River Basin, Illinois USA.” *JAWRA Journal of the American Water Resources Association* 1–16. <https://doi.org/10.1111/1752-1688.13054>.

⁵ Miltner R. Assessing the Impacts of Chloride and Sulfate Ions on Macroinvertebrate Communities in Ohio Streams. *Water*. 2021; 13(13):1815. <https://doi.org/10.3390/w13131815>

⁶ Midwest Biodiversity Institute (MBI). 2023. Integrated Prioritization System (IPS) for Northeastern Illinois: Technical Documentation and Atlas of Stressor Relationships. Technical Report MBI/2020-5-10. Project Number 10180900. Columbus, OH 43221-0561. 157 pp. + appendices

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<https://www.federalregister.gov/documents/2023/03/29/2023-05471/pfas-national-primary-drinking-water-regulation-rulemaking#addresses>

Environmental Groups comments on Triennial Review

meet the proposed MCLs for these PFAS substances, and the majority of CWS⁸ may need to add treatment if IEPA adopts the current human health advisory goal of 2ppt for PFOA⁹. Treatment processes commonly considered for PFAS removal will generate PFAS-containing waste streams such as reverse osmosis reject in NPDES wastewater discharge or media disposal that should be managed to prevent recycling of PFAS in the environment and food chain. Draft PFOA & PFOS WQS are presented in Table 1.*

Source: EPA Fact Sheet: Draft Aquatic Life Ambient Water Quality Criteria for PFOA & PFOS

www.epa.gov/system/files/documents/2022-04/pfoa-pfos-draft-factsheet-2022.pdf

IEPA should use the Triennial Review process to adopt numeric water quality standards for PFOA and PFOS in concert with proposed MCLs of 4ppt for both PFOA & PFOS. A significant number of community water systems (CWS) will need to add treatment processes to meet the 4ppt PFOA & PFOS, and the majority of CWS¹⁰ may need to add treatment if IEPA adopts the current human health advisory goal of 2ppt¹¹. Treatment processes commonly considered for PFAS removal will generate PFAS-containing waste streams such as reverse osmosis reject in NPDES wastewater discharge or media disposal that should be managed to prevent recycling of PFAS in the environment and food chain. Standards should also be developed for PFAS concentrations in wastewater treatment biosolids to guide reuse as compost on edible crops. Draft PFOA & PFOS WQS are presented in Table 1.

⁸ IEPA 2022 PFAS Sampling Data

<https://illinois-epa.maps.arcgis.com/apps/dashboards/bd611162a7f74cfe88b6928c926416c3>

⁹ <https://epa.illinois.gov/topics/water-quality/pfas/pfas-healthadvisory.html>

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Table 1. Draft Recommended Freshwater Aquatic Life Water Quality Criteria for PFOA and PFOS

Criteria Component	Acute Water Column (CMC) ¹	Chronic Water Column (CCC) ²	Invertebrate Whole-Body	Fish Whole-Body	Fish Muscle
PFOA Magnitude	49 mg/L	0.094 mg/L	1.11 mg/kg ww	6.10 mg/kg ww	0.125 mg/kg ww
PFOS Magnitude	3.0 mg/L	0.0084 mg/L	0.937 mg/kg ww	6.75 mg/kg ww	2.91 mg/kg ww
Duration	1-hour average	4-day average	Instantaneous ³		
Frequency	Not to be exceeded more than once in three years, on average	Not to be exceeded more than once in three years, on average	Not to be exceeded more than once in ten years, on average		

¹ Criterion Maximum Concentration.

² Criterion Continuous Concentration.

³ Tissue data provide instantaneous point measurements that reflect integrative accumulation of PFOA or PFOS over time and space in aquatic life population(s) at a given site.

Source: [EPA Fact Sheet: Draft Aquatic Life Ambient Water Quality Criteria for PFOA & PFOS](http://www.epa.gov/system/files/documents/2022-04/pfoa-pfos-draft-factsheet-2022.pdf)
www.epa.gov/system/files/documents/2022-04/pfoa-pfos-draft-factsheet-2022.pdf

Lake Numeric Nutrient Criteria

We recommend expanding the numeric nutrient topic to include not only numeric nutrient criteria for lakes but also for flowing waters, rivers and streams. US EPA has been encouraging States to adopt numeric nutrient criteria for all waters for decades. Recently, US EPA Assistant Administrator for Water Radhika Fox, encouraged states to couple innovative approaches with Bipartisan Infrastructure Law funding for clean water state revolving funds with “more robust adoption of numeric nutrient criteria into water quality standards.” On August 13, 2021, US EPA published final numeric water quality criteria recommendations for nitrogen and phosphorus under the Clean Water Act for lakes and reservoirs and published implementation materials to help states adopt these recommendations.¹² US EPA published ambient water quality criteria recommendations for rivers and streams in this region and technical guidance in 2000.¹³ US EPA expects States to develop numeric nutrient criteria for lakes and reservoirs, rivers and streams, estuarine and coastal areas, and wetlands because excessive levels of nutrients are a major reason why as much as half of the surface waters surveyed in this country do not meet water quality objectives, such as full support of aquatic life. Currently, Illinois only has a partial Phosphorus criteria (0.05 mg/L)¹⁴ for large lakes and reservoirs (20 acres or larger), a Nitrate

¹² 86 FR 44712 (August 13, 2021);

<https://www.epa.gov/system/files/documents/2021-08/nutrient-lakes-reservoirs-report-final.pdf>

¹³ <https://www.epa.gov/sites/default/files/documents/rivers6.pdf> ;

<https://www.epa.gov/sites/default/files/2018-10/documents/nutrient-criteria-manual-rivers-streams.pdf>

¹⁴ 35 IL Admin Code 302.205

standard (10 mg/L NO₃) for lakes and drinking water reservoirs¹⁵ and no numeric nutrient criteria for rivers and streams.

Excess nutrients are triggering rising incidences of harmful algal blooms (HABs) in Illinois wetlands, lakes and ponds. They also threaten rivers, streams and impounded rivers and streams. In 2015, an HAB extended 650 miles along the Ohio River through six states—Illinois, Indiana, Kentucky, Ohio, Pennsylvania, and West Virginia—and threatened the source of drinking water for over 5 million people.¹⁶ Excess nitrogen poses a threat to drinking water including increased risk of colorectal and bladder cancer, thyroid disease, methemoglobinemia (“blue baby syndrome”) and neural tube defects. Numeric criteria will help Illinois monitor nutrient inputs and improve the listing of impaired waters, aid in the development of NPDES permits and TMDLs, and help IEPA reporting on the Nutrient Loss Reduction Strategy. Wisconsin has developed numeric nutrient criteria for lakes and reservoirs as well as flowing waters (rivers and streams) and Region 5 may provide technical assistance.

We urge IEPA to adopt numeric nutrient criteria for lakes and reservoirs and flowing waters. Criteria regarding nitrate toxicity should also be considered in light of studies showing a cancer risk and toxicity to aquatic life at levels of nitrate below 10 mg/L.

Designated Use

The importance of updating the designated uses for human recreation in the Chicago Area Waterway System (CAWS) and the South Branch of the Chicago River (Bubbly Creek) cannot be overstated, particularly when considering that these waterways have historically faced significant pollution challenges, disproportionately affecting nearby communities, often comprised of low-income and marginalized residents.

Water quality directly impacts the safety and enjoyment of recreational activities in the CAWS and Bubbly Creek. To ensure that residents can safely engage in water-based activities such as rowing, fishing, and kayaking, it is essential to recognize ongoing efforts to improve and maintain water quality by making sure the designated uses are appropriate to protect the people already using these waterways.

Ensuring that the water in the CAWS and Bubbly Creek is safe will contribute to the work being done to address the historic impact of pollution on marginalized communities. Historically, disadvantaged communities have been denied access to clean and safe recreational spaces, limiting their opportunities for outdoor activities and healthy leisure. By protecting the improvements to these waterways, the IEPA can play a key role in providing inclusive recreational spaces that promote physical and mental well-being, foster community cohesion,

¹⁵ 35 IL Admin Code 302.304

¹⁶ EPA Office of Inspector General Report, “EPA Needs an Agencywide Strategic Action Plan to Address Harmful Algal Blooms” (September 29, 2021), https://www.epa.gov/system/files/documents/2021-09/_epaoig_20210929-21-e-0264.pdf

Environmental Groups comments on Triennial Review

and bridge the gap in environmental opportunities between different neighborhoods, getting us closer to equal access to safe recreational opportunities for all residents.

Throughout this process the IEPA must prioritize engagement with local residents, particularly those who have been disproportionately affected by environmental degradation. Collaborative efforts involving community members, non-profit organizations, government agencies, and industry stakeholders are crucial in developing sustainable solutions that address pollution sources while meeting the needs and concerns of everyone.

Establishing appropriate designated uses in the CAWS and Bubbly Creek is crucial for recreation to continue to expand and thrive while also contributing to a more equitable distribution of environmental benefits for all residents. By prioritizing the well-being and environmental rights of all communities, the IEPA can create a more just and sustainable future that recognizes the current use and protects the recreational potential of our publicly owned waterways.

Thank you for considering these comments. If you have any questions, please email Andrew Rehn (arehn@prairierivers.org).