



Pennsylvania AWWA

American Water Works Association

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August 5, 2022

Environmental Quality Board
P.O. Box 8477
Harrisburg, PA 17105-8477
[eComments](#)
RegComments@pa.gov

RE: Water Quality Standard for Manganese and Implementation (#7-553)

Dear Environmental Quality Board:

The Pennsylvania-Section, American Water Works Association (PA-AWWA) consists of 1,700 + members representing all classes of water utilities in Pennsylvania, including those owned by investors, authorities, and municipalities, plus regulators, vendors, contractors, engineers, and others dedicated to promoting the health and welfare of Pennsylvania by providing affordable drinking water of superior quality and sufficient quantity. The Water Utility Council of AWWA (WUC) includes representatives from the National Association of Water Companies, Pennsylvania Chapter; Pennsylvania Municipal Authorities Association; Pennsylvania Rural Water Association; and Water Works Operators' Association of Pennsylvania.

The WUC supports the above referenced Final Rulemaking on Water Quality Standard for Manganese and Implementation (#7-553) to amend Chapters 93 and 96 (relating to water quality standards; and water quality standards implementation).

The final rulemaking includes a new numeric human health criterion for manganese of 0.3 mg/L in Chapter 93.8 - Water Quality Criteria for Toxic Substances and would delete the existing 1 mg/L standard because it is not protective of human health. The new 0.3 mg/L toxic health standard would apply to all discharges going into surface waters, just as the existing 1 mg/L standard.

Specifically, the WUC **supports** the amendments to delete manganese from Table 3 in § 93.7ⁱ (relating to specific water quality criteria) and adding manganese to Table 5 in § 93.8cⁱⁱ (relating to human health and aquatic life criteria for toxic substances).

The Department of Environmental Protection (DEP) reviewed the effects of manganese on human health and determined that current science shows manganese is harmful to human health as a possible nervous

system toxin with implications to early childhood development at levels that are less than the threshold levels that impact aquatic life.

DEP believes the new 0.3 mg/L toxic health standard will protect human health from the neurotoxicological effects of manganese, as well as ensure adequate protection of all water uses. Both the Water Resources Advisory Committee (WRAC)ⁱⁱⁱ and Small Water Systems Technical Assistance Center (TAC) Advisory Board^{iv} voted to support the 0.3 mg/L standard proposed by DEP, while acknowledging the 2017 law moving the point of compliance. Both the WRAC and the renamed “Public Water System Technical Assistance Center (TAC) Board” did so again when presented with the final rulemaking:

A motion to approve the Manganese criterion of 0.3 mg/l and point of compliance at the point of discharge as presented by DEP staff on November 18, 2021. The motion was approved with a 12-2 majority. (WRAC)^v

Similarly, at its February 8, 2022, meeting, the TAC unanimously adopted the following Motion: “The PWS TAC Board supports advancing this final-form rulemaking to EQB for consideration as it was presented to TAC.”^{vi}

The U.S. Environmental Protection Agency (EPA) expects states to address levels above 0.3 mg/L because the EPA Health Advisory includes a 10-day limit of 0.3 mg/L for infants. EPA also expects states to require corrective actions, including Public Notification (PN).

Therefore, the **DEP is in the process of updating its guidance document** “*Situations Requiring One-Hour Reporting to the Department of Environmental Protection*”^{vii} to clarify that a water supplier shall notify DEP within 1 hour of discovery if there is an exceedance of an EPA Health Advisory for a secondary or unregulated contaminant in the finished water including:

“Manganese: Manganese has a lifetime advisory level of 0.3 mg/L, and a 1-day and 10-day health advisory level of 1 mg/L. For bottle-fed infants younger than six months, EPA has established a 10-day health advisory level of 0.3 mg/L.”

The WUC **supports the final rulemaking in maintaining the current point of compliance for manganese**, in all surface waters (that is near the point of discharge), as stated in § 96.3 (c).^{viii}

Water suppliers have been greatly concerned with the legislative provision included in the Administrative Code (Act 40 of 2017) to require the EQB to set a water quality standard for manganese. **Act 40 would have shifted the burden for treating manganese discharges from mine sites and other sources from those polluting the water to those using the water, like public water suppliers.** The consequence would have put the entire burden of meeting the manganese standard on water suppliers at a significant cost, as the 1 mg/L standard is **20 times** the level of manganese that water suppliers can have in their water supplies (**.05 mg/L**) in accordance with EPA and DEP’s secondary maximum contaminant levels (SMCLs).^{ix} Pennsylvania enforces SMCLs, as they assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor complaints.

At relatively low concentrations (0.02 mg/L or greater), manganese can cause discolored water (usually black or dark red/brown), staining of laundry and plumbing fixtures and increased turbidity. At higher levels, manganese can create a metallic taste in water (0.1 mg/L or greater). These are significant concerns for both water customers and water suppliers.

Moreover, the WUC strongly disagrees with those commentators who believe that moving the point of compliance to the potable water supply withdrawal benefits industry (i.e., mining) with no adverse impact on public water suppliers. With respect to costs, we offer the following examples from the drinking water industry:

The Reading Area Water Authority

The Reading Area Water Authority's (RAWA) Maiden Creek Filter Plant treats raw influent manganese in a two-step process. First by the addition of powdered carbon to adsorb the manganese ions, and then second by the addition of potassium permanganate to oxidize the manganese. The chemical addition of carbon is also used for taste and odor control, while the addition of the potassium permanganate acts to aid in the oxidization for pretreatment without creating disinfection byproducts.

Last year, RAWA spent \$163,671.29 on carbon and \$3,756.64 on potassium permanganate. RAWA is budgeted in 2022 for \$155,000 and \$49,750 respectively. RAWA's potassium permanganate stocks were high at the start of 2021, explaining the difference.

RAWA is investigating optimizing the feed points of these chemicals as part of the Partnership for Safe Drinking Water program.

Aqua Pennsylvania

Aqua Pennsylvania's Shenango Water Treatment Plant currently feeds sodium permanganate upstream of the filters to oxidize and remove manganese. This is done seasonally, when possible, to avoid the use of filter-top chlorine which contributes to disinfection byproduct (DBP) formation.

In addition, chlorine dioxide is also fed upstream of the filters for additional oxidation and removal of manganese and organics as needed. On average, Aqua spends \$120,000 - \$140,000 each year on these chemicals with rising costs of sodium permanganate due to supply chain challenges.

Pennsylvania American Water

Pennsylvania American Water has 66 permitted water supply systems. Based on a high-level assessment, they identified up to 16 plants which could be challenged if confronted with increased levels of raw water manganese.

At least eight (8) of those plants would have a higher probability of occurrence and be negatively impacted to the point of requiring treatment plant modifications.

Modifications could include additional chemical feed, clarification and/or solids handling systems. The aggregate capacity of the 8 identified plants is in the range of 40 MGD.

Pennsylvania American Water estimates that the plant upgrade would range in the \$1- \$1.5 million per MGD range, equating to an overall one-time capital investment in the \$40- \$60 *million range.

This figure* does not include the anticipated 5-10 percent (\$700,000 - \$1.4 M) annual increase in chemical costs or monitoring.

In addition, a recent article in Opflow entitled, “Beware of Legacy Manganese Issues in Distribution Systems,”^x highlighted that “the need to consider and deal with manganese (Mn) doesn’t simply end at the treatment plant. Significant legacy issues involving Mn accumulation can occur within the distribution system, even in systems that treat for Mn or have low levels of Mn in their water sources. Notably, the current secondary maximum contaminant level of 0.05 mg/L for Mn doesn’t safeguard against its accumulation in the distribution system.” “Legacy Mn represents Mn previously loaded into the distribution system that ended up as deposits on pipe walls, in storage tanks, and in premise plumbing. Under certain conditions, legacy Mn can be remobilized (released) back into the bulk water and result in elevated Mn levels that reach customer taps.”^{xi}

Therefore, water suppliers monitor for manganese in their source water to make sure they can properly treat it before it becomes a problem and implement source-to-tap strategies to limit Mn in their distribution system. **Moving the point of compliance for manganese would result in higher levels of manganese in the source water causing water systems to experience increases in monitoring costs and increases in treatment costs due to the need to modify existing treatment processes or to provide additional treatment.** For example, DEP staff informed the WRAC that 280 of the 340 surface water treatment plants in the state would have to evaluate whether to make treatment changes if the manganese compliance point were moved without the addition of a stricter standard upstream.^{xii} This would be particularly burdensome on small water systems that may lack the resources necessary to make capital improvements to their treatment process.

Finally, it is also important to note that manganese does not degrade – **dilution is NOT the solution** – so it must be addressed through treatment or mitigation at the point of discharge. Moving the point of compliance serves no purpose other than to shift the cost of treatment from the discharger to the water supplier and its customers.

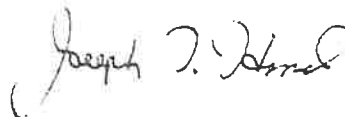
Even the **0.3 mg/L** standard in the final rulemaking would still be significant for water suppliers who also have a National Pollutant Discharge Elimination System (NPDES) permit, as they must be in compliance for manganese when they filter backwash and discharge under their permit. However, meeting the standard in their NPDES permit would not be as costly to water suppliers as it would if the Act 40 change to 1 mg/L at the point of water supply intake was implemented.

The WUC appreciates the opportunity to comment on this Final Rulemaking.

Respectfully submitted,



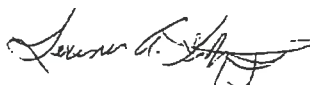
Tim Trout
PA-AWWA



JT Hand
NAWC-PA



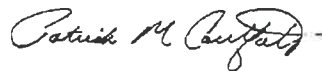
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¹ 25 Pa Code Chapter 93.7

<http://www.pacodeandbulletin.gov/Display/pacode?file=/secure/pacode/data/025/chapter93/s93.7.html&d=reduce>

² 25 Pa Code Chapter 93.8c

<http://www.pacodeandbulletin.gov/Display/pacode?file=/secure/pacode/data/025/chapter93/s93.8c.html&d=reduce>

³ Minutes of the July 25, 2019 Meeting of the Water Resources Advisory Committee (WRAC)

<http://files.dep.state.pa.us/PublicParticipation/Advisory%20Committees/AdvCommPortalFiles/WRAC/2019/103019/DraftMinutes07.25.19.pdf>

⁴ Minutes of the August 8, 2019 Meeting of the Small Water Systems Technical Assistance Center (TAC) Advisory Board

http://files.dep.state.pa.us/PublicParticipation/Advisory%20Committees/AdvCommPortalFiles/TAC/2019/November14/draft%20Minutes_Aug%208%202019%20TAC%20meeting.pdf

⁵ Minutes of the November 18, 2021 Meeting of the Water Resources Advisory Committee (WRAC)

https://files.dep.state.pa.us/PublicParticipation/Advisory%20Committees/AdvCommPortalFiles/WRAC/2022/012022/02_DRAFT_WRAC_MEETING_MINUTES_-_NOVEMBER_18_2021_REVISED_12.14.2021.pdf

⁶ Minutes of the February 8, 2022, Meeting of the Public Water System Technical Assistance Center (TAC) Board

https://files.dep.state.pa.us/PublicParticipation/Advisory%20Committees/AdvCommPortalFiles/TAC/2022/DRAFT_Minutes_Feb_8_2022_TAC_meeting.pdf

⁷ Situations Requiring One-Hour Reporting to the Department of Environmental Protection

http://files.dep.state.pa.us/PublicParticipation/Advisory%20Committees/AdvCommPortalFiles/TAC/2020/Julv/DRAFT%20TGD%201_Jul2020%20Meeting.pdf

⁸ 25 Pa Code Chapter 96.3

<http://www.pacodeandbulletin.gov/Display/pacode?file=/secure/pacode/data/025/chapter96/s96.3.html&d=reduce>

⁹ USEPA, Secondary Drinking Water Standards: Guidance for Nuisance Chemicals

<https://www.epa.gov/sdwa/secondary-drinking-water-standards-guidance-nuisance-chemicals>

^x “Beware of Legacy Manganese Issues in Distribution Systems,” Andrew S. Hill and France Lemieux, *Opflow*, Volume 48, No. 1, January-February 2022, pages 16-21 www.awwa.org/opflow

^{xi} IBID

^{xii} “Pa. DEP to propose stricter manganese standard as studies suggest risks to children,” *Pittsburgh Post-Gazette*, 9/23/2019 <https://www.post-gazette.com/business/powersource/2019/09/23/Pennsylvania-DEP-water-manganese-standard-health-coal-pollution-rules/stories/201909220048>