

# PHILADELPHIA WATER DEPARTMENT

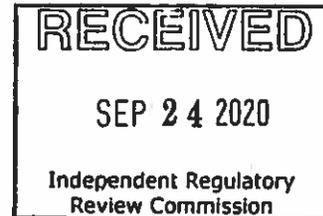
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September 24, 2020

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Planning & Environmental Services Division  
1101 Market Street, 5<sup>th</sup> FL  
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Environmental Quality Board  
PO Box 8477  
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RE: Comments on Proposed Rulemaking - Water Quality Standard for Manganese and Implementation

To Whom It May Concern:

The Philadelphia Water Department (PWD) appreciates the opportunity to provide comments on proposed revisions to 25 Pa. Code Ch. 93 and Ch. 96 ambient manganese regulations.

PWD is an innovative drinking water, wastewater, and stormwater management utility. Philadelphia's three water treatment plants provide drinking water to the approximately 1.6 million residents of Philadelphia, comprising 12% of the population of the Commonwealth.<sup>1</sup> Additionally, Philadelphia's three water pollution control plants provide wastewater and stormwater services to 2.2 million residents of Philadelphia and its surrounding suburban communities.

As stewards of the water community, PWD is dedicated to providing safe, high-quality drinking water to the City of Philadelphia. The Schuylkill and Delaware rivers act as the city's source waters, and PWD's pledge to ensure safe drinking water extends to the stewardship and protection of those rivers through its Source Water Protection Program. Recognizing that impacts to water quality even far upstream of Philadelphia inevitably affect the city's source waters at its points of intake, PWD has embraced a comprehensive watershed protection approach. As such, PWD tracks and evaluates any events and actions throughout the Schuylkill and Delaware River watersheds that could impact the city's source water supply.

The proposed rulemaking published in the *Pennsylvania Bulletin* on July 25, 2020, includes changes to 25 Pa. Code Ch. 93 (relating to water quality standards) and 25 Pa. Code Ch. 96 (relating to water quality standards implementation). The purpose and goals of the rulemaking are as follows:

- Deleting the existing manganese numeric water quality criterion of 1 mg/L from Table 3 in 25 Pa. Code § 93.7, which was established for the protection of Potable Water Supply Use;
- Adding a criterion of 0.3 mg/L to Table 5 in 25 Pa. Code § 93.8c, designed to protect human health from the neurotoxicological effects of manganese and ensure adequate protection of all water uses; and
- Identifying the point of compliance for the criterion.

The submittal includes language that supports two alternative points of compliance: either maintaining the existing framework of compliance in all surface waters (i.e., at the point of discharge) or relocating the point of compliance to all existing or planned points of surface water supply intake. The latter would allow for the consideration of dilution effects during the NPDES permitting process.

As an integrated drinking water, wastewater, and stormwater utility, these amendments could have profound impacts across PWD's operations. Any increase in ambient manganese within the state's waterways could have significant effects on aquatic life, drinking water aesthetics, and public health. This letter highlights serious issues with both the proposed amendments and the rulemaking process itself, each of which warrants further scrutiny prior to establishing a final rulemaking.

The implications of applying an exemption to the enforcement of the ambient manganese water quality standard and/or implementing a human health toxic substance criterion are outlined below:

- 1. Replacing the manganese criterion of 1 mg/L from Table 3 of 25 Pa. Code § 93.7 with a human health toxic substance criterion of 0.3 mg/L in Table 5 of 25 Pa. Code § 93.8c will result in significant costs to the public while providing no discernible health benefit.**

While manganese may produce negative neurotoxicological effects at very high doses of exposure and negative aesthetic impacts to drinking water at very low concentrations, there is no research that conclusively demonstrates it should be classified as a toxic substance when in an aqueous state at naturally occurring levels. In its Agency for Toxic Substances and Disease Registry, the Centers for Disease Control (CDC) notes, "An actual threshold level at which manganese exposure produces neurological effects in humans has not been established." Furthermore, the same analysis acknowledges that "many of the studies reporting oral effects of excess manganese exposure have limitations that preclude firm conclusions about the potential for adverse effects."<sup>2</sup> Although Pennsylvania Department of Environmental Protection (PaDEP) has performed an independent review of scientific studies and issued an Advance Notice of Proposed Rulemaking to solicit additional information, there is little evidence that definitively demonstrates developmental impairment or neurotoxicological effects stemming directly from the presence of manganese in drinking water.

Due to its widespread presence in the earth's crust, existing and natural ambient manganese concentrations throughout Pennsylvania may often be above the proposed 0.3 mg/L human health criterion. While ambient manganese concentrations at PWD's surface water intakes are often below this level, PaDEP itself acknowledges that groundwater in certain areas of the state is known to contain high levels of iron and manganese due to the underlying geology of the region. According to PaDEP, "An analysis of surface water samples collected in Pennsylvania between 2008 and 2018 revealed that 4% of 775 sample sites exceeded the current PWS manganese criterion of 1.0 mg/L, and 48% of the sites exceeded the secondary drinking water MCL of 0.05 mg/L."<sup>3</sup> Natural sources of iron and manganese are more common in deeper groundwater wells where the water has been in contact with rock for a longer period of time. In coal mining regions of northern and western Pennsylvania, these metals may also occur from both deep and surface mining activities.<sup>4</sup>

Adopting manganese as a toxic substance and establishing a much more stringent human health criterion would unnecessarily burden those wastewater utilities under the purview of NPDES permits or practicing residuals management. In 2016, the US EPA included manganese in the fourth Unregulated Contaminant Monitoring Rule (UCMR4) as a part of the Safe Drinking Water Act. The

agency's collection of that occurrence data remains ongoing through the end of 2020. As no national primary drinking water standards yet exist for manganese, it would be inappropriate and excessive to apply a concentration limit equivalent to the current, highly protective 10-day drinking water health advisory level for infants to the ambient water quality of Pennsylvania streams. Furthermore, elevated manganese in drinking water may often be attributed to premise plumbing issues that would not be alleviated by the implementation of the proposed ambient water quality standard.

As PWD's water pollution control plants discharge effluent with average manganese concentrations consistently below the proposed 0.3 mg/L ambient water quality standard and do so downstream of all regional drinking water utilities, manganese has not previously been incorporated into those plants' NPDES permits because the discharges do not pose an exceedance risk to the existing water quality standard of 1.0 mg/L Mn. Even with the application of a more stringent ambient water quality standard of 0.3 mg/L Mn at the nearest downstream potable water supply, PWD water pollution control plants would not be impacted as there are no planned or existing potable water supply withdrawals downstream. However, applying the more stringent standard at all points of discharge and the subsequent incorporation of manganese into PWD water pollution control plant NPDES permits as a part of the next permit cycle may necessitate that PWD incorporate novel and expensive treatment technologies, as the plants are not currently designed to achieve such a stringent level of removal. Investing in such large-scale, physical updates that are inappropriate for PWD treatment systems would demand a significant cost that would ultimately need to be transferred to PWD customers in the form of rate increases. As the more stringent human health criterion would protect public health no better than the existing water quality criterion, PWD ratepayers would be forced to finance a debt that produces no discernible benefits.<sup>5</sup> In its response within the required Regulatory Analysis Form submitted to the Independent Regulatory Review Commission (IRRC), PaDEP stated: "No costs will be imposed directly upon local governments by this regulation."<sup>6</sup> As there is in fact potential for municipally-owned systems (which are a form of local government) to incur costs associated with this regulation, PaDEP appears to be understating to IRRC the potential cost implications of this rulemaking proposal. A more realistic cost analysis should be completed before the proposal is considered.

**2. Moving the point of compliance from manganese dischargers to points of water supply withdrawal as per 25 Pa. Code § 96.3(d) shifts the burden of treatment to water suppliers and reverses progress on environmental improvement.**

The proposed amendment would make stream segments and aquatic ecosystems between points of discharge and downstream water supplies vulnerable to potentially dramatic water quality changes from higher manganese loadings, which could ultimately result in their impairment. Additionally, moving the point of compliance from dischargers to downstream water suppliers would shift the logistical and financial burden of removal from those parties responsible for manganese pollution to suppliers of public drinking water. Many downstream water utilities may not be equipped to remove the contaminant and would need to upgrade their publicly-financed facilities at significant cost in order to maintain drinking water quality standards. The proposed revision not only allows the manganese standard for dischargers to become less protective, but it also leaves water suppliers, recreating members of the public, and aquatic ecosystems susceptible to the negative impacts of the erosion of those protections.

Potential compliance costs for PWD could prove immense.<sup>5</sup> Manganese is a persistent contaminant that can be carried long distances. Due to the current regulatory safeguards provided by the existing

ambient water quality standards, manganese has not been a priority drinking water concern for PWD's water treatment plants. But as the farthest downstream water supplier in the Schuylkill River watershed, relaxing limits on dischargers by taking dilution effects into consideration during permit development could have a measurable impact on manganese concentrations at Philadelphia's drinking water intakes. Any increase in ambient manganese could necessitate that these plants incorporate treatment technologies or management practices that are currently neither needed nor budgeted for. The current ambient water quality standard of 1 mg/L is already 20 times greater than the current secondary maximum contaminant level (SMCL) of 0.05 mg/L, which has been instituted to prevent aesthetic issues in drinking water. However, research has shown that even this SMCL requires reevaluation as customer complaints due to the visual effects of manganese presence are cited at concentrations less than or equal to 0.02 mg/L MnO<sub>2</sub>.<sup>7</sup> Therefore, even without exceeding the SMCL, an increase in manganese levels could weaken consumer confidence in public water supplies.

PWD's 2002 Schuylkill River Source Water Assessment identified abandoned mine drainage in Schuylkill County as the largest continuous source of metals such as manganese that negatively impact water quality throughout the Schuylkill River.<sup>8</sup> Based on an analysis of metal loadings from 11 priority abandoned mine drainage sites and average annual mean flow, abandoned mines are shown to account for the majority of both iron and manganese concentrations observed throughout the Schuylkill River, even as far downstream from those sources as Philadelphia. In 2004, the Schuylkill Action Network ("SAN") was formed to address priority sources of impairment in the watershed through a regional coordination framework. Since the inception of the SAN in 2004, a total of \$14.3 million has been invested by the network and its partners to support the implementation of abandoned mine drainage treatment systems.<sup>9</sup> As a result of these remediation efforts, an estimated 6 tons of manganese is prevented from entering the Schuylkill River every year. Relaxing the manganese requirement for Pennsylvania dischargers would reverse the meaningful progress achieved over 15 years by a network of more than 150 partner organizations throughout the Schuylkill River Watershed.

Amending 25 Pa. Code § 96 such that ambient manganese standards are no longer applied at points of discharge would be a clear step backwards for source water and environmental protection and threaten the progress made by watershed management programs throughout the Schuylkill River Watershed. Not only does the proposed rulemaking lessen the responsibility of dischargers who act as the primary point sources of heavy metal pollution, but it also leaves water suppliers and the public at large to bear the burden of those dischargers' actions.

**3. The proposed amendments establish an unsettling precedent of circumventing the standard rulemaking process without scientific review.**

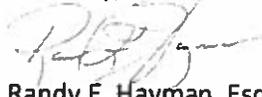
The proposed amendments to state manganese regulations were initiated through a last-minute rider added onto a comprehensive state budget bill. Rather than being introduced as a piece of standalone legislation subject to scrutiny and focused debate, these changes were instead initiated within a legislative body outside of the agency process. The established channels for such rulemaking at the Pennsylvania Department of Environmental Protection (PaDEP) include a scientifically sound process with stakeholder input and public participation, which fully considers the environmental and economic costs and benefits of any regulatory change.

The existing regulatory framework provided by 25 Pa. Code Ch. 93 and 25 Pa. Code Ch. 96 is appropriately protective of ambient manganese within the state's waterways. As currently

constructed, these rules hold manganese dischargers accountable for their effluents through the utilization of water quality standards supported by sound, peer-reviewed science – thus safeguarding aquatic life, drinking water supplies, and public health. The proposed amendments fundamentally contradict the environmental and public health protection measures that have been promulgated and enforced for decades by both the USEPA and PaDEP through the Safe Drinking Water Act and Clean Water Act. Enacting such rulemaking would engender significant and statewide environmental, public health, and economic impacts that should be adequately assessed with sound scientific data prior to any formal proposal.

Thank you for the opportunity to comment on the proposed regulatory changes. PWD looks forward to continuing its longstanding source water protection efforts and to working with PaDEP as stewards of the environment.

Sincerely,



Randy E. Hayman, Esq.  
Commissioner, Philadelphia Water Department

<sup>1</sup> US Census Bureau. *Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2017* [data table]. Retrieved from <http://www.census.gov/data/datasets/2017/dema/popest/counties-total.html>.

<sup>2</sup> CDC – ASTDR. *Manganese: Relevance to Public Health*. Retrieved from <https://www.atsdr.cdc.gov/toxprofiles/tp151-c2.pdf>.

<sup>3</sup> Pennsylvania Department of Environmental Protection – Bureau of Clean Water. *Rationale for the Development of the Human Health Criterion for Manganese*. 2017. Retrieved from:

[http://files.dep.state.pa.us/PublicParticipation/Public%20Participation%20Center/PubPartCenterPortalFiles/Environmental%20Quality%20Board/2019/December%2017/7-553\\_WQS\\_Mn\\_Proposed/05\\_7-553\\_WQS\\_Mn\\_Proposed\\_Rationale.pdf](http://files.dep.state.pa.us/PublicParticipation/Public%20Participation%20Center/PubPartCenterPortalFiles/Environmental%20Quality%20Board/2019/December%2017/7-553_WQS_Mn_Proposed/05_7-553_WQS_Mn_Proposed_Rationale.pdf).

<sup>4</sup> Pennsylvania State University. *Iron and Manganese in Private Water Systems*. 2014. Retrieved from:

<https://www.montcopa.org/DocumentCenter/View/919/Iron-and-Manganese-fact-sheet>.

<sup>5</sup> The costing and / or financial statements made herein are solely commentary respecting proposed regulations and constitute matters of opinion. Such statements, which involve estimates, forecasts, projections or other matters of opinion, whether or not expressly so described herein, are intended solely as such and are not to be construed as representations of fact or as existing or future policy of the City or Water Department. If and when used, the words “expects,” “forecasts,” “projects,” “intends,” “anticipates,” “estimates,” “assumes” and analogous expressions are intended to identify forward-looking statements and any such statements inherently are subject to a variety of risks and uncertainties that could cause actual results or policies to differ materially from those that have been projected. Such risks and uncertainties which could affect the estimates or projections contained herein include, among others, changes in economic conditions and various other events, conditions and circumstances, many of which are beyond the control of the City and the Water Department. Such forward-looking statements speak only as of their date. Both the City and the Water Department disclaim any obligation or undertaking to release publicly any updates or revisions to any forward-looking statement contained herein to reflect any changes in the City’s or the Water Department’s expectations with regard thereto or any change in events, conditions or circumstances on which any such statement is based.

<sup>6</sup> Record of submitted Regulatory Analysis Form retrieved from <http://www.irrc.state.pa.us/docs/3260/AGENCY/3260PRO.pdf>.

<sup>7</sup> Dietrich, A.M. and G.A. Burlingame. (2015). Critical Review and Rethinking of USEPA Secondary Standards for Maintaining Organoleptic Quality of Drinking Water. *Environ Sci & Tech*. 49(2) 708-720.

<sup>8</sup> PWD (2002). Schuylkill River Source Water Assessment. Retrieved from [http://www.phillywatersheds.org/doc/Schuylkill\\_SWA.pdf](http://www.phillywatersheds.org/doc/Schuylkill_SWA.pdf).

<sup>9</sup> PDE (2018). *Celebrating 15 Years of Protecting Schuylkill Waters*. Available at <http://www.schuylkillwaters.org/>.