



September 21, 2020

Secretary Patrick McDonnell  
Pennsylvania Department of Environmental Protection  
Office of Policy  
Rachel Carson State Office Building  
400 Market Street  
Harrisburg, PA 17101

**RE: Water Quality Standard for Manganese and Implementation**

Dear Secretary McDonnell,

The Delaware Riverkeeper Network (DRN) offers the following comments regarding the proposed amendments to Chapters 93 and 96 relating to manganese that were published in the July 25, 2020 PA Bulletin. First, DRN supports the addition of manganese to the list of toxic substances relating to human health and aquatic life criteria. This standard is long overdue after years of analysis but the mining industry is pressuring officials to ignore science at the expense of public health. The science has shown that human exposure to levels of manganese beyond those necessary for maintaining adequate health can lead to excess manganese in brain tissue resulting in symptoms that mimic Parkinson's disease. Depending upon the length and severity of the exposure, these neurological effects may result in permanent, irreversible damage to the brain.<sup>1</sup> Manganese is also harmful to aquatic life as it can be significantly bio-concentrated by aquatic biota at lower trophic levels.<sup>2</sup> Numerous studies have shown that the effects of manganese on fish include impaired gill functions and hormonal and metabolic interference.<sup>3</sup>

Excess manganese also has negative implications for water uses such as agriculture. The EPA found that irrigation water containing manganese at concentrations of slightly less than 1.0 mg/L to a few milligrams per liter may be toxic to plants when applied to soils with pH values lower than 6.0.<sup>4</sup> The existing Potable

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<sup>1</sup> PADEP Bureau of Clean Water. Rationale for the Development of Human Health Criterion for Manganese.

<sup>2</sup> Howe et al. (2005). Manganese and its compounds: environmental aspects. Centre for Ecology & Hydrology.

<sup>3</sup> Tuzuki et al. (2017). Effects of manganese on fat snook *Centropomus parallelus* (Carangaria: Centropomidae) exposed to different temperatures. *Neotrop. ichthyol. vol.15 no.4.*

<sup>4</sup> PADEP Bureau of Clean Water. Rationale for the Development of Human Health Criterion for Manganese

Water Supply criterion of 1.0 mg/L from PADEP is based on taste, odor, and to prevent laundry staining. It does not take human health, aquatic life, or water supply use into consideration and is therefore inadequate to protect these uses. It is also higher than the EPA health advisory (HA) and other national and international standards set by governmental bodies. DRN supports PADEP's proposal to change the manganese criterion to 0.3 mg/L. The EPA's lifetime HA for adults and children is 0.3 mg/L and was calculated using the reference dose (RfD) in the Integrated Risk Information System (IRIS). Adopting a manganese criterion of 0.3 mg/L in Pennsylvania would match the EPA's HA and be more protective to human health, aquatic life, and water supply use.

In addition, the proposed rulemaking outlines two point of compliance alternatives. The first alternative would change the point of compliance for manganese to being met "at the point of all existing or planned surface potable water supply withdrawals". Under this alternative, no water quality-based effluent limits will apply to the surface water if no potable water supply exists or is planned. This is not acceptable. Aquatic life would not be granted adequate protection under this alternative because stream segments and aquatic ecosystems would not be subject to the manganese effluent limits unless they are located close to a potable water supply. There could be long stretches of open water from the point of discharge to the nearest potable water supply that would be left completely vulnerable. Manganese is a persistent contaminant that can be carried long distances downstream. The only way to prevent manganese from reaching downstream sections is to enforce effluent limits at the point of discharge. This first alternative would shift the burden of manganese removal onto public water suppliers instead of the dischargers. This alternative is harmful and only benefits entities holding or seeking permits to discharge manganese into the surface waters of the Commonwealth (mostly quarries and mining operations).

The second alternative maintains the current point of compliance for manganese in all surface waters (the point of discharge). DRN strongly supports this alternative. Under this alternative, the manganese criterion for the protection of human health would be applicable in all surface waters to protect all relevant water uses, which is in line with the Environmental Rights Amendments of the Pennsylvania Constitution.

Article 1, Section 27 of the Pennsylvania Constitution promises that:

*"The People have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and aesthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people."*

The threshold at which manganese needs to be maintained in the surface water to avoid toxicity to humans is lower than the level necessary to afford appropriate protection for aquatic life. Because of this, this alternative would afford aquatic life an appropriate level of protection from the negative impacts of manganese. Additional protections would be provided to the potable water supply use and other protected water supply uses such as irrigation, wildlife water supply, livestock water supply, aesthetics, fishing, boating, and water contact recreation. There are also cost savings by public water systems because manganese levels in source waters would be lower and less treatment would be necessary to meet drinking water regulations. If the proposed manganese criterion of 0.3 mg/L is adopted and the second point of compliance alternative is adopted, all users of surface waters will benefit. These regulations are a necessary step to protect the health of all Pennsylvania residents while simultaneously protecting aquatic life and the natural resources that we depend on.

Sincerely,

A handwritten signature in blue ink that reads "Maya K. van Rossum" followed by a horizontal line.

Maya K. van Rossum  
the Delaware Riverkeeper