



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Office of Water Programs

Final Rulemaking - Water Quality Standard for Manganese and Implementation (25 Pa. Code, Chapters 93 and 96)

Public Water System Technical Assistance Center Board

February 8, 2022

Tom Wolf, Governor

Patrick McDonnell, Secretary

Water Quality Standard for Manganese

Act 40 of 2017

(j) The board shall promulgate regulations under the act of June 22, 1937 (P.L. 1987, No. 394), known as "The Clean Streams Law," or other laws of this Commonwealth that require that the water quality criteria for manganese established under 25 Pa. Code Ch. 93 (relating to water quality standards) shall be met, consistent with the exception in 25 Pa. Code § 96.3(d) (relating to water quality protection requirements). Within ninety days of the effective date of this subsection, the board shall promulgate proposed regulations.

Water Quality Standard for Manganese

DEP must review and update water quality standards to reflect current scientific knowledge and understanding (e.g., updated national recommendations, published scientific literature).

DEP published an advance notice of proposed rulemaking (ANPR) on January 27, 2018 to solicit scientific data and other information necessary to prepare the rulemaking documents required by law.

Information was received from 15 organizations and individuals.

Proposed Rulemaking for Manganese

DEP presented information on the proposed manganese criterion and implementation to the Public Water Systems TAC on August 8, 2019.

TAC voted to concur with WRAC's recommendation on the proposed regulation.

Proposed Rulemaking for Manganese

The proposed regulation for manganese included recommendations to:

- Delete the existing Potable Water Supply (PWS) criterion of 1.0 mg/L from Table 3, and
- Add a human health toxics criterion of 0.3 mg/L to Table 5.

Proposed Rulemaking for Manganese

The EQB also sought public comment on two alternative points of compliance for the human health toxics criterion, including:

- 1st alternative point of compliance would move the point of compliance from the point of discharge to the point of downstream potable water supply withdrawal.
- 2nd alternative point of compliance would maintain the point of compliance at the point of discharge.

Proposed Rulemaking for Manganese

The proposed regulation was adopted by the EQB at its December 17, 2019 meeting and was published in the *Pennsylvania Bulletin* on July 25, 2020 (50 Pa. B. 374)

- 60-day public comment period that ended on September 25, 2020
- 3 virtual public hearings held on September 8, 9 and 10, 2020

Proposed Rulemaking for Manganese

EQB received comments from 954 commenters including comments and testimony from:

- 13 witnesses at the 3 public hearings
- Independent Regulatory Review Commission (IRRC)

The comments received, and DEP's responses are summarized in the Department's **Comments and Responses Document**.

- DEP considered all public comments received on the proposed rulemaking in preparing the final rulemaking.

Proposed Rulemaking for Manganese

Summary of Major Supportive Comments - Support for the Criterion and 2nd Alternative and Opposition to the 1st Alternative:

- General support for the 0.3 mg/L criterion and compliance at the point of discharge.
- General opposition to moving the point of compliance downstream from the discharge pipe to the point of potable water supply withdrawal.
- Moving the point of compliance to the point of potable water supply withdrawal shifts the burden of manganese treatment to PWSs and downstream users.
- For drinking water, source water concentrations of manganese ≥ 0.3 mg/L (EPA's lifetime health advisory limit) may require treatment to remove the manganese (sequestration is no longer acceptable). Public notification requirements may also be triggered.
- PWSs must achieve the secondary maximum contaminant level (SMCL) of 0.05 mg/L in the finished water.
- Manganese removal treatment is expensive and will be necessary for many facilities if source water manganese levels increase to 0.3 mg/L or higher.

Proposed Rulemaking for Manganese

Summary of Major Opposing Comments - Opposition to the Human Health Criterion and 2nd alternative point of compliance:

- General opposition to the 0.3 mg/L criterion and 2nd alternative (compliance at the point of discharge).
- Proposed manganese criterion of 0.3 mg/L is unnecessary, unsupported and overly protective of aq. life. (recent PBPK studies)
- The 2nd alternative does not comply with Act 40.
- Moving the point of compliance to the point of potable water supply withdrawal benefits industry with no adverse impact on PWSs.
- Manganese removal to a level of 0.3 mg/L will be challenging and cost millions of dollars.
- The regulation will negatively impact re-mining/remediation projects and Chapter 102 permits for earth disturbance activities.

Proposed Rulemaking for Manganese

Comments were also received from IRRC.

Summary of Public Comments and Testimony:

Supportive: 923 (including 869 form letters)

Opposing: 30

Total: 953 plus IRRC comments (954)

Comments were submitted by individuals or organizations from 22 different states.

Proposed Rulemaking for Manganese

In response to IRRC comments, DEP's Bureau of Clean Water (BCW) met with the Mining and Reclamation Advisory Board (MRAB) ([January 2021](#)) and the Aggregate Advisory Board ([May 2021](#)) for input on the proposed rulemaking. No additional data or information was received.

BCW met with toxicologists from EPA Headquarters to discuss the toxicology-related comments received ([June 2021](#)). BCW received additional literature citations which were evaluated and incorporated into the criterion rationale document. Overall, EPA commended DEP on its draft responses.

Proposed Rulemaking for Manganese

Summary of Economic Impact Estimates* associated with the 1st Alternative provided by PWSs:

- Pennsylvania American Water:
 - 16 of 68 permits affected = \$40-\$60 million in capital costs + \$740,000-\$1.4 million annually
- Reading Area Water Authority:
 - 1 permit = \$2.1 million in capital costs + \$15.8 million (20 yr. operating costs)
- City of Lancaster (ANPR):
 - 1 permit = tens of millions in capital costs + tens of thousands in operating costs (also anticipate millions of dollars in lost efficiency due to lower plant performance and increased membrane filter replacement).

*Cost information was provided by third parties.

Proposed Rulemaking for Manganese

Summary of Economic Impact Estimates* associated with the 2nd Alternative provided by Industry:

- Pennsylvania Coal Alliance (PCA)(Report by TetraTech):
 - Overall cost = \$44-\$88 million annually + \$200 million in capital costs
- New Enterprise Stone & Lime Co.:
 - 6 of 51 permits affected = \$320,000 in capital costs + \$450,000 annually
- Shenango, LLC:
 - Estimates for all (7) permits affected = \$650,000
- Talon Energy Supply, LLC:
 - Rushton Mine permit = \$30 million in capital costs + \$2 million annually

*Cost information was provided by third parties.

Proposed Rulemaking for Manganese

Economic Benefit Estimates* of the 1st Alternative Point of Compliance provided by Mining Industry:

- Projected annual savings to the mining industry resulting from moving the point of compliance to downstream potable water supply withdrawals would be upwards of \$1 million (PCA).

*Cost information was provided by third parties.

Final Rulemaking for Manganese

DEP's Final Recommendation to the EQB:

- Delete the Potable Water Supply use criterion of 1.0 mg/L from §93.7, Table 3.
- Add a Human Health criterion of 0.3 mg/L to §93.8c, Table 5.
- Maintain the point of compliance in all surface waters (at the point of discharge) in accordance with § 96.3(c).

Changes from Proposed to Final Rulemaking

CHAPTER 93. WATER QUALITY STANDARDS

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§ 93.7. Specific water quality criteria.

(a) Table 3 displays specific water quality criteria and associated critical uses. The criteria associated with the Statewide water uses listed in § 93.4, Table 2 apply to all surface waters, unless a specific exception is indicated in §§ 93.9a—93.9z. These exceptions will be indicated on a stream-by-stream or segment-by-segment basis by the words “Add” or “Delete” followed by the appropriate symbols described elsewhere in this chapter. Other specific water quality criteria apply to surface waters as specified in §§ 93.9a—93.9z. All applicable criteria shall be applied in accordance with this chapter, Chapter 96 (relating to water quality standards implementation) and other applicable State and Federal laws and regulations.

TABLE 3

Parameter	Symbol	Criteria	Critical Use*
		* * * * *	
Iron	Fe ₁	30-day average 1.5 mg/l as total recoverable.	CWF, WWF, TSF, MF
	Fe ₂	Maximum 0.3 mg/l as dissolved.	PWS
[Manganese	Mn	Maximum 1.0 mg/l, as total recoverable.	PWS]
Nitrite plus Nitrate	N	Maximum 10 mg/l as nitrogen.	PWS

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Changes from Proposed to Final Rulemaking

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§ 93.8c. Human health and aquatic life criteria for toxic substances.

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TABLE 5

WATER QUALITY CRITERIA FOR TOXIC SUBSTANCES

PP N O	Chemical Name	CAS Number	Fish and Aquatic Life Criteria		Human Health Criteria (ug/L)	
			Criteria Continuous Concentrations (ug/L)	Criteria Maximum Concentration (ug/L)		
-	LITHIUM	07439932	N/A	N/A	N/A	-
D	MANGANESE	07439965	N/A	N/A	300	H
-	METHYLETHYL KETONE	00078933	32000	230000	21000	H

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Changes from Proposed to Final Rulemaking

CHAPTER 96. WATER QUALITY STANDARDS

IMPLEMENTATION

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§ 96.3. Water quality protection requirements.

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(c) To protect existing and designated surface water uses, the water quality criteria described in Chapter 93 (relating to water quality standards), including the criteria in § § 93.7 and 93.8a(b) (relating to specific water quality criteria; and toxic substances) shall be achieved in all surface waters at least 99% of the time, unless otherwise specified in this title. The general water quality criteria in § 93.6 (relating to general water quality criteria) shall be achieved in surface waters at all times at design conditions.

(d) As an exception to subsection (c), the water quality criteria for total dissolved solids, nitrite-nitrate nitrogen, phenolics, chloride, sulfate and fluoride established for the protection of potable water supply **and** ~~the water quality criterion for manganese~~ shall be met at least 99% of the time at the point of all existing or planned surface potable water supply withdrawals unless otherwise specified in this title.

Final Rulemaking for Manganese

Expected delivery of the final rulemaking package to EQB:

- Spring 2022
- Final package must be delivered to IRRC within 2 years of close of the public comment period (or before **September 26, 2022**)

In addition to TAC, DEP has visited the following advisory committees:

- **Water Resources Advisory Committee** (November 18, 2021)
 - Voted to support the draft final-form rulemaking
- **Agricultural Advisory Board** (December 6, 2021)
- **MRAB** (January 20, 2022)
- **Aggregate Advisory Board** (February 2, 2022)

Final Rulemaking for Manganese

Projected Impacts to BCW NPDES dischargers:

- Not all NPDES permits with Mn limits will be affected. More stringent effluent limitations are most likely for dischargers to waterbodies with an existing metals TMDL or no assimilative capacity, or where the discharge is to a small receiving waterbody. Evaluations of permits ongoing.
- Many surface water PWS systems with NPDES permits are not likely to be affected due to more stringent technology-based limits that currently apply at the end-of-pipe. Accounts for approx. 35% of BCW permits with Mn requirements (approx. 214 out of 616) and approx. 78% of permits with numeric effluent limits (approx. 214 out of 274).
- Permits discharging to HQ or EV waters are required under Chapter 93 to maintain existing quality and will not be affected by this regulation except in limited circumstances relating to social and economic justifications (SEJs).

Final Rulemaking for Manganese

Projected Impacts to active mining NPDES dischargers:

- Approximately 706 active mining NPDES permits exist.
- Not all mining permits will be affected by this regulation due to the federal ELG of 2.0 mg/L applied at the end-of-pipe (no mixing zone) being more stringent than 0.3 mg/L applied at point of discharge (15-minute travel time provided for mixing).
- Existing mining permits with water quality-based effluent limitations, which include those permits subject to an approved TMDL, are most likely to be affected by the change in criterion.

Final Rulemaking for Manganese

Projected Impacts to NPDES discharges associated with remining:

- Remining permits account for approx. 150 of the 706 NPDES permits.
- Remining activities will continue to be permitted under the Commonwealth's Office of Surface Mining Reclamation and Enforcement (OSMRE)-approved remining regulations.



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