



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Office of Water Programs

Proposed Rulemaking - Water Quality Standard for Manganese and Implementation

Environmental Quality Board Meeting
December 17, 2019

Tom Wolf, Governor

Patrick McDonnell, Secretary

Water Quality Standards 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 Standards for Manganese

§ 96.3. Water quality protection requirements.

* * * * *

(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.



CREDIT: FOO CONNER/@IWASAROUND



CREDIT: USGS

▶ Water Quality Standards for Manganese



Pennsylvania Clean Streams Law

Pennsylvania Safe Drinking Water Act

Federal Clean Water Act

CREDIT: DEP

Water Quality Standards for Manganese

Criteria Development Data Collection and Outreach

- Advanced Notice of Proposed Rulemaking
- Advisory Committees
- State agencies



CREDIT: DEP, Juturna Water Filters, Farm to Table Western PA

Chapter 93 Proposed Criterion for Manganese

Proposed updates to Chapter 93:

- Delete PWS criterion of 1.0 mg/L from §93.7, Table 3
- Add Human Health criterion of 0.3 mg/L to §93.8c, Table 5

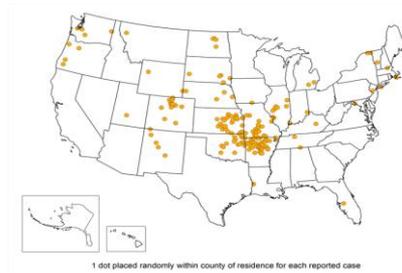
Human Health - Neurotoxicological literature review included:

- Animal toxicity studies, epidemiological studies, epigenetic studies, and information on human dietary needs, exposure routes and sources, etc.

Many of the available studies evaluated manganese exposure as it relates to developmental neurotoxicity.



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Chapter 93 Proposed Criterion for Manganese

$$AWQC_{Mn} = RfD_w \times RSC \times (BW \div [DWI + (FI \times BAF)])$$

$AWQC_{Mn}$ - Ambient Water Quality Criteria for Manganese

RfD_w (Reference Dose – Water) = 0.05 mg/kg-day

RSC (Relative Source Contribution) = 0.2

BW (Body Weight) = 80 kg

DWI (Drinking Water Intake) = 2.4 L

FI (Fish Intake) = 0.022 kg/day

BAF (Bioaccumulation Factor) = 1

$AWQC_{Mn} = 0.05 \text{ mg/kg-day} \times 0.2 \times (80 \div [2.4 + (0.022 \text{ kg/day} \times 1)])$

$$AWQC_{Mn} = 0.3 \text{ mg/L} = 300 \text{ } \mu\text{g/L}$$

Chapter 96 Proposed Implementation for Manganese

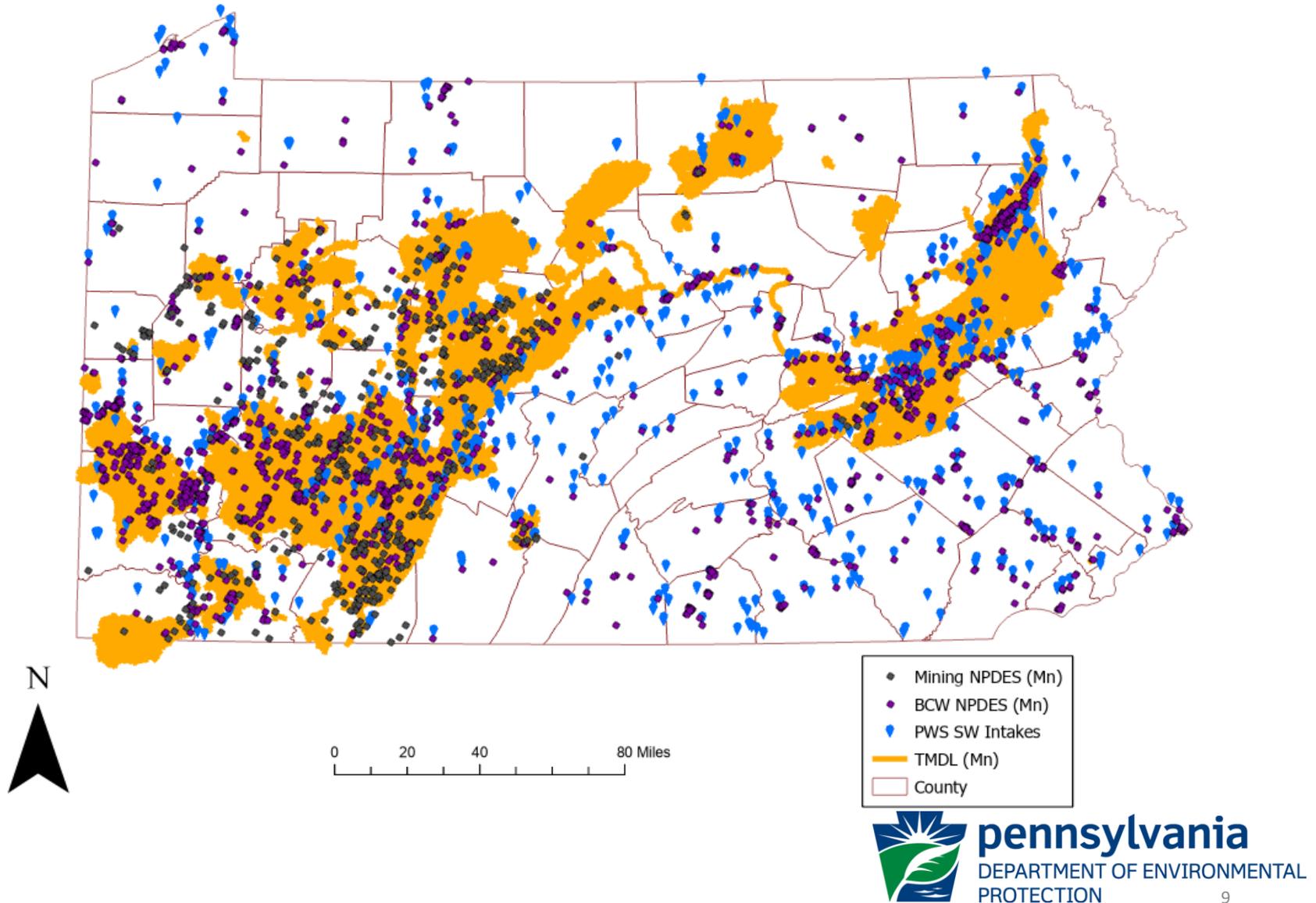
§ 96.3. Water quality protection requirements.

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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....

(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.

PWS Intakes, Statewide NPDES & TMDLs for Mn



Recommendation

The Department recommends the Board adopt the proposed regulation with a 45-day public comment period and public hearings to be determined.



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