

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
AND THE DEPARTMENT OF ENVIRONMENTAL QUALITY
OF THE STATE OF MONTANA

In the matter of the amendment of)	NOTICE OF PUBLIC HEARING
ARM 17.24.645, 17.24.646,)	ON PROPOSED AMENDMENT
17.30.502, 17.30.619, 17.30.702,)	
17.30.1001, 17.36.345, 17.55.109,)	(RECLAMATION)
17.56.507, and 17.56.608, pertaining)	(WATER QUALITY)
to ground water standards)	(SUBDIVISIONS)
incorporated by reference into)	(CECRA)
Department Circular DEQ-7)	(UNDERGROUND STORAGE
)	TANKS)

TO: All Concerned Persons

1. On February 5, 2019, at 2:00 p.m., the Board of Environmental Review and the Department of Environmental Quality will hold a public hearing in Room 111 of the Metcalf Building, 1520 East Sixth Avenue, Helena, Montana, to consider the proposed amendment of the above-stated rules.

2. The board and department will make reasonable accommodations for persons with disabilities who wish to participate in this rulemaking process or need an alternative accessible format of this notice. If you require an accommodation, contact Sandy Scherer, Legal Secretary, no later than 5:00 p.m., January 29, 2019, to advise us of the nature of the accommodation that you need. Please contact Sandy Scherer at the Department of Environmental Quality, P.O. Box 200901, Helena, Montana 59620-0901; phone (406) 444-2630; fax (406) 444-4386; or e-mail sscherer@mt.gov.

3. The rules proposed to be amended provide as follows, stricken matter interlined, new matter underlined:

17.24.645 GROUND WATER MONITORING (1) through (5) remain the same.

(6) Methods of sample collection, preservation, and sample analysis must be conducted in accordance with 40 CFR Part 136 titled "Guidelines Establishing Test Procedures for the Analysis of Pollutants" (July 2015) and the department's document titled "Department Circular DEQ-7, Montana Numeric Water Quality Standards," ~~May 2017~~ [effective month and year of this rule amendment] edition. Copies of Department Circular DEQ-7 are available at the Department of Environmental Quality, 1520 E. Sixth Avenue, P.O. Box 200901, Helena, MT 59620-0901. Sampling and analyses must include a quality assurance program acceptable to the department.

(7) and (8) remain the same.

AUTH: 82-4-204, MCA

IMP: 82-4-231, 82-4-232, MCA

REASON: The board and the department are proposing to revise Circular DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.24.646 SURFACE WATER MONITORING (1) through (5) remain the same.

(6) Methods of sample collection, preservation, and sample analysis must be conducted in accordance with 40 CFR Part 136 titled "Guidelines Establishing Test Procedures for the Analysis of Pollutants" (July 2015) and Part 434 titled "Coal Mining Point Source Category BPT, BAT, BCT Limitations and New Source Performance Standards" (January 2002), and the ~~May 2017~~ [effective month and year of this rule amendment] edition of the department's document titled "Department Circular DEQ-7, Montana Numeric Water Quality Standards." Copies of 40 CFR Part 136, 40 CFR 434, and Department Circular DEQ-7 are available at the Department of Environmental Quality, 1520 E. 6th Ave., P.O. Box 200901, Helena, MT 59620-0901. Sampling and analyses must include a quality assurance program acceptable to the department.

(7) remains the same.

AUTH: 82-4-204, MCA

IMP: 82-4-231, 82-4-232, MCA

REASON: The board and the department are proposing to revise Circular DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.30.502 DEFINITIONS The following definitions, in addition to those in 75-5-103, MCA, and ARM Title 17, chapter 30, subchapters 6 and 7, apply throughout this subchapter:

(1) through (13) remain the same.

(14) The board adopts and incorporates by reference Department Circular DEQ-7, entitled "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition), which establishes numeric water quality standards for toxic, carcinogenic, bioconcentrating, nutrient, radioactive, and harmful parameters. Copies of Department Circular DEQ-7 are available from the Department of Environmental Quality, P.O. Box 200901, Helena, MT 59620-0901.

AUTH: 75-5-301, MCA

IMP: 75-5-301, MCA

REASON: The board and the department are proposing to revise Circular

DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.30.619 INCORPORATIONS BY REFERENCE (1) The board adopts and incorporates by reference the following state and federal requirements and procedures as part of Montana's surface water quality standards:

(a) Department Circular DEQ-7, entitled "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition), which establishes numeric water quality criteria for toxic, carcinogenic, bioconcentrating, radioactive, and harmful parameters and also establishes human health-based water quality criteria for the following specific nutrients with toxic effects:

(i) through (3) remain the same.

AUTH: 75-5-201, 75-5-301, MCA

IMP: 75-5-301, 75-5-313, MCA

REASON: The board and the department are proposing to revise Circular DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.30.702 DEFINITIONS The following definitions, in addition to those in 75-5-103, MCA, apply throughout this subchapter (Note: 75-5-103, MCA, includes definitions for "base numeric nutrient standards," "degradation," "existing uses," "high quality waters," "mixing zone," and "parameter"):

(1) through (26) remain the same.

(27) The board adopts and incorporates by reference:

(a) Department Circular DEQ-7, entitled "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition), which establishes numeric water quality standards for toxic, carcinogenic, bioconcentrating, radioactive, and harmful parameters and also establishes human health-based water quality standards for the following specific nutrients with toxic effects:

(i) through (e) remain the same.

AUTH: 75-5-301, 75-5-303, MCA

IMP: 75-5-303, MCA

REASON: The board and the department are proposing to revise Circular DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.30.1001 DEFINITIONS The following definitions, in addition to those in 75-5-103, MCA, apply throughout this subchapter:

(1) remains the same.

(2) "DEQ-7" means Department Circular DEQ-7, entitled "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition), which establishes numeric water quality standards for toxic, carcinogenic, radioactive, bioconcentrating, nutrient, and harmful parameters.

(a) The board adopts and incorporates by reference Department Circular DEQ-7, entitled "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition), which establishes numeric water quality standards for toxic, carcinogenic, bioconcentrating, nutrient, radioactive, and harmful parameters.

(3) through (17) remain the same.

AUTH: 75-5-201, 75-5-401, MCA

IMP: 75-5-301, 75-5-401, MCA

REASON: The board and the department are proposing to revise Circular DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.36.345 ADOPTION BY REFERENCE (1) For purposes of this chapter, the department adopts and incorporates by reference the following documents. All references to these documents in this chapter refer to the edition set out below:

(a) through (d) remain the same.

(e) Department Circular DEQ-7, "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition);

(f) through (2) remain the same.

AUTH: 76-4-104, MCA

IMP: 76-4-104, MCA

REASON: The board and the department are proposing to revise Circular DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.55.109 INCORPORATION BY REFERENCE (1) For the purposes of this subchapter, the department adopts and incorporates by reference:

(a) Department Circular DEQ-7, "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition);

(b) through (5) remain the same.

AUTH: 75-10-702, 75-10-704, MCA
IMP: 75-10-702, 75-10-704, 75-10-711, MCA

REASON: The board and the department are proposing to revise Circular DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.56.507 ADOPTION BY REFERENCE (1) For purposes of this subchapter, the department adopts and incorporates by reference:
(a) Department Circular DEQ-7, "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition);
(b) through (3) remain the same.

AUTH: 75-11-319, 75-11-505, MCA
IMP: 75-11-309, 75-11-505, MCA

REASON: The board and the department are proposing to revise Circular DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.56.608 ADOPTION BY REFERENCE (1) For purposes of this subchapter, the department adopts and incorporates by reference:
(a) Department Circular DEQ-7, "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition);
(b) through (3) remain the same.

AUTH: 75-11-319, 75-11-505, MCA
IMP: 75-11-309, 75-11-505, MCA

REASON: The proposed revised Department Circular DEQ-7 can be viewed on the department's website at <http://deq.mt.gov/water/drinkingwater/standards>. A copy of the proposed revised circular also may be obtained by contacting Mike Suplee at (406) 444-0831. Modifications to the circular and the reasons for the modifications are as follows:

Addition of new human health criteria: The board and the department are proposing to revise Department Circular DEQ-7 to provide human health groundwater criteria for the following: diallate; dioxane, 1,4-; iron; manganese; perfluorooctane sulfonate (PFOS); and perfluorooctanoic acid (PFOA). The proposed criteria concentrations are as follows: diallate, 5.5 µg/L; dioxane, 1,4-, 3 µg/L; iron, 4,000 µg/L; manganese, 100 µg/L; PFOS, 0.07 µg/L, PFOA, 0.07 µg/L.

The diallate criterion will provide the department's Hazardous Materials Program of

the Waste Management and Remediation Division a clean-up standard for hazardous waste permitted facilities. Standards for dioxane, 1,4-, PFOS, PFOA, and iron are also considered important criteria to the Waste Management and Remediation Division as cleanup endpoints for remedial activities carried out by that division. Further, standards for Dioxane, 1,4-, PFOS, and PFOA are included in EPA Office of Water Health Advisories.

Scientific research has demonstrated that excessive manganese levels can have neurobehavioral and neurocognitive impacts on infants (0-6 months). The new proposed criterion was derived for this most-sensitive population. Manganese is considered an important criterion to the Waste Management and Remediation Division as a cleanup endpoint.

The human health groundwater criteria were derived using U.S. Environmental Protection Agency (EPA) equations for human health criteria (EPA, 2000) and there are different equations for toxins and carcinogens. The criteria were derived assuming that exposure is through drinking water only (no accounting for exposure through consumption of fish is made). For example:

$$\text{Toxic Criterion } (\mu\text{g/L}) = \{[\text{RfD (mg/kg-day)} \times \text{RSC} \times \text{average body weight (kg)}] / \text{drinking water intake (L/day)}\} \times 1000 \mu\text{g/mg}$$

where the RfD is a value derived from the no effects or lowest observable effects concentration (NOAEL or LOAEL, respectively), and RSC is the relative source contribution to account for potential exposure from other environmental media. EPA generally recommends an RSC of 0.2 (i.e., 20 percent of a person's exposure is from drinking water). The default drinking water intake rate for adults is 2.4 L/day and the default body weight is 80 kg, both of which are in DEQ-7 (see page 5). For some criteria, sensitive sub-populations required different body weight and drinking assumptions than the defaults, and these are detailed below where appropriate.

Citations to several technical documents are made below; the list of these documents may be found at the end of this section.

The department derived the diallate criterion using a cancer slope factor of 0.061 mg/kg-day from the EPA Health Effects Assessment Summary Table (HEAST) database (<https://epa-heast.ornl.gov/heast.php>), default adult weight and drinking water intake rates, and Montana's cancer risk factor of 1×10^{-5} (per 75-5-301, MCA). Dioxane, 1,4- was derived using the IRIS 2013 cancer slope factor (0.1 mg/kg-day), default adult weight and drinking water intake rates, and Montana's cancer risk factor of 1×10^{-5} . PFOS and PFOA criteria are from EPA (2016a; 2016b; 2018) and were derived for the most sensitive population, lactating women. For them, the 90th percentile for drinking water intake was 3.6 L/day and they have a lower assumed body weight (67 kg) than the overall population. The iron criterion was calculated using a RfD (0.592 mg/kg-day) derived from EPA (2006) and the default adult weight and drinking water intake rates.

For manganese (a toxin), the department used a RfD of 0.025 mg/kg-day. The RfD was derived using literature toxicology studies (Kern *et al.*, 2010; Kern *et al.*, 2011; Beaudin *et al.*, 2013) and a 1000-fold uncertainty factor ($UF_A = 10$, $UF_H = 10$, $UF_L = 10$), where UF_A is uncertainty due to interspecies variability to account for extrapolating from laboratory animals to humans, UF_H is for intraspecies variability to account for variability in the responses within the human population because of intrinsic and extrinsic factors, and UF_L is applied because a LOAEL and not a NOAEL was used in the derivation (EPA, 1993). The average body weight of infants zero to <6 months old was used (6.47 kg; Table 8-1, EPA, 2011) and the 90th percentile drinking water ingestion for infants zero to <6 months was 0.966 L/day (Table 3-15, EPA, 2011). The RSC was calculated by subtracting the manganese infants receive from formula (21 CFR 107.100) from the LOAEL to give a RSC of 0.833 (rounded to 0.8 per EPA guidance). Accounting for significant figures (1 in this case), the department derived a water quality standard of 100 µg/L.

Criteria Stringency Compared to Federal Guidelines: Five of the proposed criteria (diallate; dioxane, 1,4-; iron; PFOS; and PFOA) are equivalent to comparable federally recommended guidelines (EPA, 2006; HEAST; EPA, 2018). The proposed manganese criterion is more stringent than comparable federal guidelines. EPA recommends a criterion of 300 µg/L (EPA, 2004; EPA, 2018) based on studies of dietary intake of manganese. But more recent peer-reviewed scientific studies (Kern *et al.*, 2010; Kern *et al.*, 2011; Beaudin *et al.*, 2013), based on dose-response effects on new-born and adult rats, indicate that the criterion should be 100 µg/L (the value proposed by the board). Rat studies were reviewed in EPA (2004) but the quality of those studies was not considered adequate to derive a criterion. The more recent scientific works are considered high quality according to EPA Region VIII's drinking water toxicologist (Bob Benson, personal communication, 11/8/2018). As addressed above, the proposed manganese criterion is necessary to mitigate harm to the public health, specifically zero to <6 months old infants. Further, it is achievable under current technology. At the municipal scale, dissolved manganese can be removed by several technologies (e.g., oxidation/physical separation) which can achieve concentrations of 40 µg/L.

Footnote (40): The board proposes the addition of footnote (40) to DEQ-7, which references the Montana Administrative Register (MAR) for instances where the derivation of a DEQ-7 human-health criterion is documented in MAR Notice No. 17-403. Human health standards are normally flagged in DEQ-7 to indicate which information source they were derived from; for example, many are flagged "HA," meaning they were derived from nationally-recommended EPA Health Advisory documents. However, the iron and manganese criteria discussed above were derived by the department. If the proposed iron and manganese criteria are adopted as human health standards in DEQ-7, then footnote (40) would reference this MAR notice.

Footnote (41): The board proposes new footnote (41), which clarifies that the sum of PFOA and PFOS shall not exceed the individual standards for each.

References Cited: Technical documents cited above are provided here:

- EPA. 1993. Reference Dose (RfD): Description and Use in Health Risk Assessments. Background Document 1A. <https://www.epa.gov/iris/reference-dose-rfd-description-and-use-health-risk-assessments>.
- EPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. Technical Support Document. Volume 1: Risk Assessment. Office of Water, Office of Science and Technology. EPA-822-B-00-005.
- EPA. 2006. Provisional Peer Reviewed Toxicity Values and Iron and Compounds (CASRN 7439-89-6), Derivation of Subchronic and Chronic Oral RfDs. Superfund Health Risk Technical Support Center, National Center for Environmental Assessment, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, OH 45268.
- EPA. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. EPA/600/R-090/052F.
- EPA. 2016a. Drinking Water Health Advisory for Perfluorooctane Sulfonate (PFOS). Office of Water. EPA 822-R-16-004.
- EPA. 2016b. Health Effects Support Document for Perfluorooctanoic Acid (PFOA). Office of Water. EPA 822-R-16-003.
- EPA. 2018. 2018 Edition of the Drinking Water Standards and Health Advisories Tables. Office of Water. EPA 822-F-18-001.
- Kern, C., G. Stanwood and D.R. Smith. 2010. Pre-weaning Manganese Exposure Causes Hyperactivity, Disinhibition, and Spatial Learning and Memory Deficits Associated with Altered Dopamine Receptor and Transporter Levels. *Synapse* 64: 363-378.
- Kern, C. and D.R. Smith. 2011. Pre-weaning Mn Exposure Leads to Prolonged Astrocyte Activation and Lasting Effects on the Dopaminergic System in Adult Male Rats. *Synapse* 65: 532-544.
- Beaudin, S. A., S. Nisam and D.R. Smith. 2013. Early Life Versus Lifelong Oral Manganese Exposure Differently Impairs Skilled Forelimb Performance in Adult Rats. *Neurotoxicology and Teratology* 38: 36-45.

4. Concerned persons may submit their data, views, or arguments, either orally or in writing, at the hearing. Written data, views, or arguments may also be submitted to Sandy Scherer, Legal Secretary, Department of Environmental Quality, 1520 E. Sixth Avenue, P.O. Box 200901, Helena, Montana 59620-0901; faxed to

(406) 444-4386; or e-mailed to sscherer@mt.gov, no later than 5:00 p.m. February 8, 2019. To be guaranteed consideration, mailed comments must be postmarked on or before that date.

5. The board and department maintain a list of interested persons who wish to receive notices of rulemaking actions proposed by this agency. Persons who wish to have their name added to the list shall make a written request that includes the name, e-mail, and mailing address of the person to receive notices and specifies that the person wishes to receive notices regarding: air quality; hazardous waste/waste oil; asbestos control; water/wastewater treatment plant operator certification; solid waste; junk vehicles; infectious waste; public water supply; public sewage systems regulation; hard rock (metal) mine reclamation; major facility siting; opencut mine reclamation; strip mine reclamation; subdivisions; renewable energy grants/loans; wind energy, wastewater treatment or safe drinking water revolving grants and loans; water quality; CECRA; underground/above ground storage tanks; MEPA; or general procedural rules other than MEPA. Notices will be sent by e-mail unless a mailing preference is noted in the request. Such written request may be mailed or delivered to Sandy Scherer, Legal Secretary, Department of Environmental Quality, 1520 E. Sixth Ave., P.O. Box 200901, Helena, Montana 59620-0901, faxed to the office at (406) 444-4386, e-mailed to Sandy Scherer at sscherer@mt.gov, or may be made by completing a request form at any rules hearing held by the department.

6. Sarah Clerget, attorney for the board, or another attorney for the Agency Legal Services Bureau, has been designated to preside over and conduct the hearing.

7. The bill sponsor contact requirements of 2-4-302, MCA, do not apply.

8. With regard to the requirements of 2-4-111, MCA, the board and the department have determined that the amendment of the above-referenced rules will not significantly and directly impact small businesses.

Reviewed by: BOARD OF ENVIRONMENTAL REVIEW

/s/ Edward Hayes
EDWARD HAYES
Rule Reviewer

BY: /s/ Christine Deveny
CHRISTINE DEVENY
Chairman

DEPARTMENT OF ENVIRONMENTAL
QUALITY

BY: /s/ Shaun McGrath
SHAUN McGRATH
Director

Certified to the Secretary of State, December 11, 2018.