Internal Management Directive:

Implementation of Methylmercury Criterion in NPDES Permits

Submitted to: DEQ Water Quality Program
By: Water Quality Permitting and Program Development
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1. Disclaimer

This internal management directive (IMD) represents the Department of Environmental Quality's current directions to staff on how to determine if a discharging facility has the reasonable potential to cause or contribute to the exceedance of the methylmercury water quality criterion.

This IMD is not a final agency action and does not create any rights, duties, obligations, or defenses, implied or otherwise, in any third parties. This directive should not be construed as rule, although some of it describes existing state and federal laws. The recommendations contained in this directive should not be construed as a requirement of rule or statute. DEQ anticipates revising this document from time to time as conditions warrant

2. Document Development

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Approved By: _____ Date:_____

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1. Introduction

To help states and authorized tribes in the implementation of the fish tissue-based criterion, in April of 2010 EPA published their *Guidance for Implementing the January 2001 Methyl-Mercury Water Quality Criterion*. The EPA guidance describes the use of the new fish tissue-based criterion and presents a number of pathways to incorporate it into NPDES permits and total maximum daily loads (TMDL). DEQ opted to use the pathway that:

- Describes a process to determine if there is a reasonable potential to cause or contribute to an exceedance of the methylmercury water quality criterion using total mercury as an indicator, and
- Establishes appropriate (non-numeric) WQBELs comprised of a Mercury Minimization Plan (MMP), continuing effluent monitoring and antidegradation provisions.

The purpose of this directive is to provide direction to staff on how to:

- Determine if a facility is required to evaluate potential methylmercury in their effluent,
- Use total mercury monitoring data to determine reasonable potential for the methylmercury criterion,
- Establish effluent limits when reasonable potential is indicated, and
- Evaluate Mercury Minimization Plans.

2. Which facilities are subject to the methylmercury criterion?

This directive applies to the development of individual National Pollutant Discharge Elimination System (NPDES) permits for domestic and industrial dischargers that are required to monitor for **total mercury**. The following facilities are required to provide effluent characterization data for total mercury as part of their permit development or renewal process[1]:

- All major domestic facilities,
- All minor domestic and non-primary industrial facilities where total mercury is known to be present in effluent (that is, data include mercury results above the quantitation limit)
- All industrial facilities in the primary metals; timber products; paper products; chemical products; glass, clay, cement, concrete and gypsum products; fabricated metal products; and electronic instruments categories. These categories correspond to SICs 24xx, 26xx, 28xx, 32xx, 33xx, 34xx, and 36xx.

For facilities that discharge to a water body with a TMDL for total mercury, the permit writer should incorporate the requirements (including the waste load allocations) in the TMDL.

[1] The general federal monitoring requirements are detailed in 40 CFR 122, including the requirement to monitor for total mercury where total mercury is "known" to be present for industrial facilities. All other monitoring requirements where the pollutant is "known" or the facility discharges to a water quality limited water body is a state requirement stemming from a Settlement Agreement with EPA and other third parties. Please refer to *Section 2.2.1* of the *Reasonable Potential Analysis IMD* for further information

3. Determining reasonable potential

EPA guidance allows use of effluent monitoring data for total mercury as an indicator to determine whether reasonable potential analysis for methylmercury is necessary. If there is **not** a quantifiable[2] amount of total mercury in the discharge, "…*the permitting authority may reasonably conclude that the discharge does not have reasonable potential* (to cause or contribute to an exceedance of the methylmercury water quality criterion) *and that no water quality based limits are necessary*."[3] Conversely, if a quantifiable concentration of total mercury is detected in a facility's discharge, it must be evaluated for reasonable potential, as described below and depicted in the flowchart in Appendix A.

EPA Guidance directs that any facility **contributing significant** and **consistent** concentrations of total mercury to the receiving water body is considered to have the reasonable potential to exceed the water quality criterion unless a **site-specific survey** determines otherwise. The bullets below clarify the underlined terms.

- When determining if a **contribution** is occurring:
    - the permit writer may consider an Intake Credit pursuant to the OAR 340-045-0105 and the Appendix F of the Reasonable Potential Analysis IMD (Intake Credit Guidance).
    - Alternatively, if the only source of mercury in the discharge is from intake water taken directly from the "same body of water" to which the facility discharges, and there are no known sources or additional contributions of mercury at the facility, the permit writer may reasonably conclude that the discharge **does not** have reasonable potential to exceed the criterion. An example of this is a facility that uses a surface water as a source of cooling water and that discharges immediately downstream of the intake location. In this situation, where there are no known sources or additional contributions of mercury at the facility, the permitting authority could reasonably conclude that there is no reasonable potential to cause or contribute to an exceedance. Furthermore, any slight increase in concentration after discharge (due to evaporation or other water loss) should not increase the bioaccumulation of methylmercury in fish tissue unless the fish are known to regularly reside within the mixing zone of the outfall. Thus, even if the discharge concentration is greater than the intake water concentration, the permit writer may conclude that there is no reasonable potential. Please refer to *Section 7.5.1.3* of the EPA Guidance for more information on the use of this provision. This provision is somewhat different from the DEQ's Intake Credit Rule in that it addresses the overall mass loading of mercury and allows an increase in mercury concentration to occur.
- **Significant** concentrations are those results greater than the Quantitation Level of the method, as specified in the current version of DEQ's "Revised Quantitation Limit List for Individual NPDES Permittees".
    - **Consistency** is defined as 25% or more of the samples above the Quantitation Level. This indicates reasonable potential, unless one of the exceptions discussed herein applies.
    - Note that:
        - There must be at least 4 samples.
        - If there are fewer than six effluent mercury samples for a facility, and one sample contained quantifiable mercury, the operator may, at their option, collect additional confirmation samples. If the operator chooses to collect confirmation samples, a

[2] Method used should be sufficiently sensitive with a minimum Quantitation Level of 0.005 µg/l (5 ng/l) for total mercury (for example Methods 1631 E or 245.7).

[3] EPA's *Guidance for Implementing the January 2011 Methyl-Mercury Water Quality Criterion,* page 95.

minimum of two samples must be collected. If the operator chooses to collect more than two samples, all samples must be collected at least six days apart and include two months. After DEQ notifies the operator that there is reasonable potential for mercury, the operator has two months to collect confirmation samples.

- When a discharge contains quantifiable concentrations of total mercury, a **fish tissue survey** may be conducted to assess whether or not concentrations of methylmercury in the receiving water are close to or exceeding the human health water quality criterion. Under this option, permit conditions would require that the permittee conduct a fish tissue survey of the receiving water body, and include a re-opener clause to complete the reasonable potential evaluation once the survey is complete. Recognizing the substantial costs associated with these surveys and the assumption that a majority of the State's waters routinely exceed the water quality criterion for mercury, DEQ does not anticipate utilizing this option.

4. Effluent limits

Because the water quality criterion for methylmercury is a fish tissue-based concentration rather than a water column concentration, permit limits for methylmercury cannot be expressed in terms of a water quality concentration (without a translation factor). Instead, for facilities where a reasonable potential to exceed the criterion is assumed or determined, the permit writer must:

- As a Schedule A narrative effluent limit, require the permittee to develop and implement an MMP tailored to the facility's potential to discharge mercury. Depending on the particular facts, the permitting authority may include in the MMP a trigger level, reduction goal, or enforceable numeric level (for example, existing effluent quality) to further manage mercury discharges.
- Require continued effluent monitoring (total mercury) using a sufficiently sensitive EPA-approved method to enable evaluation of the effectiveness and implementation of the MMP.
- Include a reopener clause to modify the permit conditions if the MMP is determined to be ineffective or if a water column translation of the fish tissue criterion is developed.

For facilities where no reasonable potential is determined, effluent limits are not required and no further mercury evaluation is necessary for the current permit renewal.

If a permittee undertakes or proposes to undertake an activity that may result in an increase in methylmercury loading to the receiving waterbody, then DEQ may develop additional permit conditions to prevent or minimize the impact of the increased loading. These permit conditions will be consistent with the directives contained in DEQ's *Antidegradation IMD*.

5. Mercury Minimization Plan approval

DEQ will evaluate MMPs to determine if they meet the requirements of the Willamette Valley TMDL. Regional staff have the lead role in this process, in consultation with the headquarters mercury subject matter expert, when needed. The typical MMP approval process is:

1. DEQ comments on the MMP (within 30 days of receipt of plan)
2. Permittee responds to DEQ comments (within 30 days of receipt of DEQ comments)
3. DEQ comments are resolved (within 15 days of receipt of permittee response)
4. DEQ puts plan on 35-day public notice. Compliance staff should consult with permitting staff to coordinate MMP public notice with permit renewal public notice. In most cases:
    a. For MMP updates, public notice at the same time as the next permit renewal public notice.

   b. For new MMPs, public notice within 7 days of resolving comments.
5. DEQ responds to public comments, in consultation with permittee (within 14 days after the close of public comments)
6. DEQ approves the MMP and notifies permittee that MMP has been approved (within 7 days after response to comments; or, if there are no public comments, within 7 days after the close of public comments
7. Permittee begins implementation within 90 days of notification

MMP requirements are permit requirements. Failure to comply with the MMP is a failure to meet a (narrative) permit limit. Because the MMP is part of the permit, DEQ has the authority to require MMP actions, either in the MMP or in the permit.

When possible, DEQ will put the permit and the MMP on public notice simultaneously. Future permits will require the permittee to submit an MMP update along with their renewal application. This will help ensure that MMP updates can be put on public notice at the same time as the permit.

6. Mercury minimization plans

Sources of information on mercury minimization plans includes:

- DEQ's MMP Template.
- DEQ's MMP Checklist.
- EPA's 2001 methyl-mercury implementation guidance: https://www.epa.gov/wqc/final-implementation-guidance-methylmercury-2001
- EPA's mercury website: https://www.epa.gov/mercury
- EPA Region 5 guidance on MMP development (2004): https://www3.epa.gov/npdes/pubs/pt_region5_mercury_pmp_guidance.pdf
- The state of Wisconsin guidance on MMP development: https://dnr.wi.gov/topic/wastewater/documents/mercuryPMP.pdf
- U.S. EPA Region 10 Mercury Strategy: https://www.yumpu.com/en/document/view/44094244/epa-region-10-mercury-strategy-framework-environmental-
- The Oregon Dental Association's Guide to Best Management Practices of Dental Wastes: https://www.oregondental.org/docs/librariesprovider42/default-document-library/best-management-practicesc24fc2dcb07d6e0c8f46ff0000eea05b.pdf
- Dental Effluent Guidelines | Effluent Guidelines | US EPA (https://www.epa.gov/eg/dental-effluent-guidelines)

7. Record management

The permit writer should document a mercury monitoring results, and decision rational in the Permit Evaluation Report. The permit writer should maintain copies of all supporting analytical reports, approved MMPs, compliance reports and correspondence with permittee in the Permit File in accordance with record retention policies.

8. Revision history

Revision	Date	Changes	Editor
1.0	1/08/12	Initial Publishing	Spencer Bohaboy
2.0	3/5/2021	Revision	Erich Brandstetter

9. Appendix A: Monitoring determination and RPA process overview