

### 303(c) Review, City of Menomonie Mercury Variance, WQSTS WI2009-303

Date: JUL 29 2009

#### **Submittal Review for the Wisconsin Department of Natural Resources (WDNR) Request for Approval of a Variance from Water Quality Standards for the City of Menomonie Wastewater Treatment Plant, WPDES Permit Number WI-0024708-08-0**

#### **Summary**

On May 28, 2009, WDNR submitted a request to U.S. Environmental Protection Agency for approval of a water quality standards variance for discharge by the City of Menomonie's Wastewater Treatment Facility (MWTF). This submittal was received by EPA on June 9, 2009, and included the following:

- Transmittal letter from WDNR to EPA, dated May 28, 2009.
- Certification statement from WDNR for approval of a variance to water quality standards, City of Menomonie, Wisconsin, Wisconsin Pollutant Discharge Elimination System (WPDES) Permit #WI-0024708-08-0, dated May 26, 2009.
- Public Notice of Intent to Reissue a WPDES Permit, dated April 22, 2009.
- Public-Noticed Menomonie WWTP Permit Information Form, dated March 4, 2009.
- Justification for Alternative Mercury Effluent Limitation, dated March 2, 2009.
- Menomonie Environmental Impacts Evaluation, dated March 2, 2009.
- Permit to Discharge under the WPDES, City of Menomonie to the Red Cedar River, located in the Wilson Watershed of the Lower Chippewa River Basin in Dunn County, Wisconsin.
- Evaluation of water quality-based effluent limitations for toxic substances for the City of Menomonie's discharge to the Red Cedar River, dated December 8, 2008.

#### **Description of Action:**

The proposed action would grant the City of Menomonie a variance from meeting the monthly average water quality based effluent limit for mercury applicable to the Red Cedar River in the Wilson Watershed of the Lower Chippewa River Basin in Dunn County, Wisconsin, for WPDES Permit No. WI-0024708-08-0. The permit limit necessary to comply with water quality standards would be 1.3 ng/L of total recoverable mercury, expressed as a monthly average. Under the conditions of the proposed variance, the limit in the permit would be 4.0 ng/L of mercury, expressed as a daily maximum.

#### **Basis of Action:**

Wisconsin's justification for an alternative mercury effluent limitation is based on Wisconsin Administrative Code s. NR 106.145(1), which contains the main framework for a regulatory approach implemented in October 2002, under the WPDES program for mercury that acknowledges the challenges with regulating substances that cause problems at such low levels. WDNR intended that this provision be generally applicable to municipal dischargers, which

produce large volumes of effluent with already extremely low mercury concentrations. WDNR considers treating these large volumes to produce effluent with even lower concentrations of mercury to be technically and economically infeasible. WDNR's opinion is based on a document entitled, "Assessing the Economic Impacts of the Proposed Ohio EPA Water Rules on the Ohio Economy," prepared in 1997 by the Ohio Environmental Protection Agency, Foster Wheeler Environmental Corporation and DRI/McGraw-Hill in support of Amended and New Rules in OAC Chapters 3745-1, -2, and -33. The study concludes that the treatment technology necessary to remove mercury to the level of the water quality standards are either not available or are prohibitively expensive, and would have a widespread economic and social impact.

At the time s. NR 106.145 was implemented, data on mercury concentrations on wastewater effluents were generally not available. However, with the promulgation of EPA Method 1631, MWTF was required to generate low-level mercury data on samples of its effluent. The data demonstrate that levels necessary to meet the water quality based effluent limitations are not being achieved with the current treatment facility that is properly operated and maintained. Wastewater treatment at MWTF generates a sludge that contains approximately 90% of the mercury removed by conventional and biological treatment. The sludge is handled as a beneficial use and land applied as biosolids. Therefore, any source reduction measures taken by Menomonie will lower mercury levels in the biosolids and improve beneficial use of the biosolids.

Based on this information, WDNR concludes that...

- 1) Menomonie has met the requirements of s. NR 106.145, Wisconsin Administrative Code and s. 283.15, Wisconsin Statutes.
- 2) Requiring Menomonie to meet the water quality standard for mercury would result in substantial and widespread adverse social and economic impacts in the Menomonie area.

#### **Area affected:**

The MWTF discharges to the Red Cedar River in Menomonie, Dunn County, Wisconsin, which is designated as a warm water sport fishery and non-public water supply. The Red Cedar River discharges to the Chippewa River which eventually discharges to the Mississippi River. The MWTF has an annual average design flow of 2.88 million gallons per day (MGD), which is 4.46 cubic feet per second (cfs). The seven-day, ten-year low flow (7Q10) of the Red Cedar River at Menomonie is 437 cfs.

#### **Environmental Impacts:**

##### **Aquatic Life**

Wisconsin's aquatic life criteria for mercury are: Acute Mercury (+2) criterion = 830 ng/L and Chronic Mercury (+2) criterion = 440 ng/L. The proposed effluent limitation of 4.0 ng/L is significantly less than both the acute and chronic criteria to protect aquatic life. Thus, the variance will have no effect on exposed aquatic life.

## **Human Health and Wildlife**

As a condition of the proposed variance, the discharge concentration is limited in the permit to 4.0 ng/L of mercury as a daily maximum limit. This concentration is substantially less than EPA's current maximum contaminant level of 2 ug/L of mercury in drinking water. In addition, the Red Cedar River is not designated as a public water supply. Thus, the proposed variance will not adversely affect human health directly via drinking water.

The more limiting WQS is the 1.3 ng/L criterion for the protection of wildlife. Approval of the proposed variance for the City of Menomonie will require continued influent and effluent monitoring, and implementation of a pollutant minimization program. The goal of implementing the pollutant minimization program plan is to reduce levels of mercury in the influent to the treatment plant, which would then be expected to improve the quality of the plant effluent; thus, improving water quality in the Red Cedar River. While this does not demonstrate attainment with the wildlife criterion of 1.3 ng/L, it demonstrates that the City of Menomonie is reducing ambient mercury concentrations in the river and thereby making progress toward the goal of attainment with the wildlife criterion.

In addition, wastewater treatment at Menomonie generates a sludge that contains approximately 90% of the mercury removed by conventional and biological treatment. The sludge is handled as a beneficial use and land applied as biosolids. Therefore, any source reduction measures taken by Menomonie will lower mercury levels in the biosolids and improve beneficial use of the biosolids. Much of the mercury is captured in biosolids, which would also be reduced as a result of the pollutant minimization program. Over time there would be a decrease in the amount of ambient mercury in the water and the sediments. It is expected that pollutant minimization program efforts will have a beneficial effect on concentrations of mercury in the Red Cedar River and regionally.

### **CWA Section 303(c)/40 CFR 131 Review:**

Variances are reviewed and approved subject to the requirements of federal regulations at 40 CFR 131.10(g). Specifically, to be approved, it must be demonstrated that a variance will not result in loss of an existing use, and that the designated use upon which the criterion to be varied is based, is not attainable for one or more of the factors in 131.10(g).

Given the lack of wastewater treatment technologies capable of reducing mercury effluent concentrations to achieve a 1.3 ng/L effluent limitation, together with the fact that aquatic life and drinking water standards will be met and mercury concentrations will likely be reduced by the MWWTF treatment process and the pollutant minimization plan, granting a variance is consistent with the protection of existing uses.

### **ESA Section 7 Evaluation:**

Consistent with section 7 of the Endangered Species Act, EPA assessed whether any federally-listed threatened or endangered species or their designated critical habitat may be affected by the

variance. EPA reviewed U.S. Fish & Wildlife Service's (FWS) June 2009, Wisconsin List of Threatened and Endangered Species, and the species that occur in Dunn County, Wisconsin. The following listed species for Dunn County were identified:

1. Sheepsnose mussel (*Plethobasus cyphus*)
2. Karner Blue butterfly (*lycaeides Melissa samuelis*)

The federally-listed species most likely to encounter effects of the proposed variance is the Sheepsnose mussel (*Plethobasus cyphus*). For Dunn County, they are located in the Chippewa River into which flows the Red Cedar River, which is the receiving water body for the MWTF. Currently, 26 streams are thought to harbor Sheepsnose mussel populations, a decrease of two-thirds in the total number of streams from which it was historically known. In Wisconsin, the Chippewa/Flambeau Rivers have some of the best viable populations remaining; however, while the Sheepsnose mussels may potentially be in the action area, it is unlikely they will be adversely affected due to the fact that the variance concentration of 4.0 ng/L is so much below EPA's national water quality criterion recommendation of 770.0 ng/L for the protection of aquatic life (chronic criterion).

The other listed species is the Karner blue butterfly (*lycaeides Melissa samuelis*), which has been located in Chippewa County along with wild lupine (*Lupinus perennis*), its only known larval food plant. The Karner blue butterfly is not an aquatic or aquatic-dependent species and water quality has not been identified as a threat to the species survival. Approval of this mercury variance will have no effect on the Karner blue butterfly or impede recovery efforts.

Therefore, based on the aforementioned information, granting the variance is unlikely to adversely affect threatened or endangered species that live in the area of the discharge, nor adversely affect human health. We have initiated consultation with the FWS.