MERCURY POLLUTANT MINIMIZATION PROGRAM GUIDANCE
U.S. EPA Region 5, NPDES Programs Branch
November 2004

1. Background and Overview

The following Guidance has been developed in conjunction with the Region 5 states, to address situations where a Pollutant Minimization Program (PMP) is required in a state-issued NPDES permit as a result of the permittee receiving a variance from the underlying state water quality standard for mercury. Many of the specific recommendations are drawn from existing guidance and practices of the Region 5 states. As guidance, this document does not create any obligations enforceable by any party. Both industrial and municipal permittees may be required to develop PMPs; however, because of the more complex and indirect nature of mercury contributions within these systems, the recommendations in this guidance pertain primarily to Publicly Owned Treatment Works (POTWs). Each POTW affected by PMP requirements will need to determine how it intends to comply. To the extent that other nearby POTWs will be faced with the same requirements, however, EPA and the States strongly encourage POTWs to coordinate with other POTWs in both the development of their PMP Plans, and in their implementation activities to identify and reduce mercury loadings from source sectors.

While it is expected that specific permit language and conditions will vary (see Ohio sample PMP permit language, included in Attachment 1), there are a number of important elements for a mercury PMP.

1. A Program Plan, which lays out the POTW's commitments for:
   a. Identification of potential sources of mercury that contribute to discharge levels;
   b. Reasonable, cost-effective activities designed to reduce or eliminate mercury loadings from identified sources;
   c. Tracking mercury source reduction implementation and mercury source monitoring;
   d. Monitoring the POTW's influent, effluent and biosolids, including at least quarterly influent monitoring;
   e. Resources and staffing;
2. Implementation of cost-effective control measures for direct and indirect contributors; and
3. An annual status report submitted to the Permitting Authority, which includes:
   a. A list of potential mercury sources;
   b. A summary of actions taken to reduce or eliminate mercury discharges to enable the POTW to progress toward meeting the water quality based effluent limitation (WQBEL);
   c. Mercury source reduction implementation, source monitoring results, and influent, effluent and biosolids results for the previous year;
   d. Proposed adjustments to the Program Plan, based on the findings of 3.c.

The PMP is meant to be a self-revising process. Results from annual reports need to be used to make necessary revisions to the Program Plan and the implementation activities in subsequent years to address problems discovered, and investigate new areas where the pollutant might be found. The goal of the PMP is to move the POTW's effluent level towards, and to achieve as soon as is practicable the level specified by the underlying water quality based effluent limit necessary to comply with the mercury water quality criteria (which will generally be 1.3 ng/l in the Great Lakes Basin and elsewhere in the Region 5 states). When this goal is realized, that is, when the discharger can be reasonably expected to be in compliance with the WQBEL, then the PMP requirements can be removed from the permit. Where a POTW believes

it has identified all known sources of mercury, and has fully implemented control strategies with respect to those sources, yet remains unable to meet the underlying WQBEL, it should document those findings in its annual reports, and revise subsequent program plans accordingly.
Each element is discussed below.

2. Program Plans

2.1 Requirements to develop PMP Plans.

Requirements to conduct initial monitoring and develop a mercury PMP will be included in a POTW's NPDES permit at the time of reissuance (where a variance has been granted concurrently), as a condition for receiving a variance from the water quality standard on which the water quality-based effluent limit for mercury is based, or as triggered by results showing a reasonable potential for violating water quality criteria, based on monitoring conducted during the life of the permit. States have generally been allowing six to eighteen months for development and submittal of Program Plans, depending on the extent to which the state requires additional data collection in support of the Plan, and the POTW's previous experience with regard to mercury minimization.

2.2 Identification of potential sources of mercury that contribute to discharge levels (to be updated at least annually).

Sources of mercury within a POTW system can be identified using two basic methods: 1) review of existing information sources, and 2) sampling at various points within the sewer system. These activities can be done separately, but an initial review of types and locations of existing users within a system will help design a monitoring plan which focuses on the most potentially significant contributors. The Program Plan should therefore include a review of existing information regarding industrial, commercial and domestic users of a POTW system. For some source sectors, including most of those in the matrix in Table 1, all individual facilities should be considered likely sources of mercury. For others, such as manufacturing facilities or other Significant Industrial Users, review of production processes, materials usage and discharge information should be evaluated. Studies and other literature such as source sector analyses from other POTWs (see http://www.epa.gov/Region5/air/mercury/mercury.html and http://delta-institute.org/pollprev/mercury/mercury.php), and EPA development documents and Industrial Sector Notebooks on specific industrial categories can be useful sources of information.

Existing influent, effluent and biosolids data should also be evaluated, as well as other available information such as storm water inputs, groundwater (Inflow & Infiltration) inputs, and wastestreams or sewers tributary to the treatment plant. While some States and POTWs may be interested in establishing a mass balance of all mercury inputs so as to be able to characterize controllable versus uncontrollable contributions, it is recommended that the primary focus be on information indicating community sectors and/or geographic locations which are the source of potentially significant contributions.

2.3 Development of Control Strategies

The Program Plan next should describe the POTW's prioritized approach for development of Control Strategies for various source sectors, based on review of existing data and the results of subsequent monitoring. The Plan should also describe any other mercury reduction activities which have already been carried out in a community, as these activities may be substantial and will form a base for the additional activities that will need to be done. At minimum, the sectors in Table 1 reflect direct dischargers of mercury to POTWs, and should be addressed as part of a POTW's mercury PMP. Consideration should also be given to addressing the sectors in Table 2. Although mercury is generally not directly released to POTWs from these sources, they may still pose a significant threat to a POTW's

compliance with its mercury effluent limits. Accidental breakage of mercury-containing devices such as thermometers, while infrequent, may be enough to increase short-term loadings to a POTW. Where a POTW also receives stormwater runoff, mercury levels could be elevated if mercury-containing devices are left at locations such as demolition sites or scrap yards. **NOTE: While we believe that all of the activities listed in Table 1 can be valuable tools in reducing mercury discharges, specific activities and performance measures chosen by a POTW may vary from those recommended below in order to most efficiently implement effective mercury reduction outreach or other controls. These recommendations are based on current information and experience. They may be reevaluated if sector-specific or other relevant national guidance is developed.** Ultimately, activities should be selected by a POTW as part of its mercury control strategy based on the potential of those activities to reduce mercury loadings to its sewer system, and thus to its effluent and biosolids. Whatever approach is taken initially, progress should be monitored with respect to both participation levels and mercury loading reductions. This tracking may indicate the need to change course as necessary for a given sector.

In addition to describing the proposed activities for each sector, the Plan should also include a schedule for implementation which identifies milestones as appropriate.

Table 1 - Direct Contributors to Address in Mercury PMPs

Sector	*Activity*	*Performance Measure*	*Goal*
Medical- Hospitals, clinics, nursing homes, veterinarians	-Mail AHA BMP literature -Workshops -Onsite visits -BMP requirements -Permits	Date/content Participation Reduction Progress, quantity recycled Adoption/implementation	-Mercury-free wherever practicable -Spill management
Dental clinics	-Mail appropriate BMP literature -Mtgs with dentists -Onsite visits -Survey(s) -Adherence to ADA's BMPs (voluntary or mandatory) -Mercury recycling (voluntary or mandatory) -Adoption of removal equipment meeting ISO standards (voluntary or mandatory) -Permits	Date/content Participation Adoption/implementation Quantity recycled Adoption/implementation [Note: Certain facilities do not use or generate mercury, and some measures may not be applicable to them]	-Capture and recycle mercury used or generated -Minimize mercury discharges
Schools-Secondary	-Mail BMP literature -Workshops -Onsite visits -Permits	Date/content Participation Reduction progress Quantity of mercury recycled	-Mercury-free wherever practicable -Spill management

Sector	*Activity*	*Performance Measure*	*Goal*
Schools-Colleges/Technical, laboratories	see Medical and School sectors	see Medical and School sectors	
Other industries and businesses with potential for mercury contributions	-Mail chemical/equipment literature -Onsite visit during pretreatment inspection -Application of local limits and/or require BMPs/IU PMP in IU permits	Date/content Reduction progress Quantity of mercury recycled	-Phaseout of mercury containing devices and chemicals -Spill management
POTWs, **other municipal departments and agencies, hauled waste**	-Evaluate chemical /equipment usage -Evaluate domestic and nondomestic wastes hauled to POTW**,** *see activities from other sectors as appropriate*	Reduction progress Quantity recycled	-Phaseout of mercury containing devices and chemicals -Spill management
General public	-Promote mercury clean sweeps -Displays at community events - Public Service Announcements -Outreach at schools -Establish local mercury website	Date/contents Quantity of mercury recycled Website hits	-Reduced use of mercury containing products -Recycling of mercury products -Spill management

Table 2 - Indirect Contributors to Address in Mercury PMPs

Sector	*Activity*	*Performance Measure*	*Goal*
Thermostats-HVAC Wholesalers/Contractors, Retail stores	-Mail Thermostat Recycling Corp. literature -Workshop -Trade assoc. coordination -Onsite visits -Surveys	Date/content Participation Recycling progress Quantity of mercury recycled	-All captured and recycled -Spill management
Automobile and appliance switches	-Onsite visits-service centers -Replace hood/trunk switches -Onsite visits-scrap yards -Clip & Recycle switches	Date/content Participation Quantity recycled	-All captured and recycled -Spill management
Dairy manometers	-Mail information -Promote use of non-mercury manometers	Date/content Participation Quantity recycled	-All captured and recycled -Spill management
Outside POTW boundaries	see all sectors above	see all sectors above	see all sectors above

2.3.1. Stakeholder Engagement

To be Effective, control strategies should be tailored to the specific source sector. These strategies will need to include forming partnerships with stakeholders such as trade associations, industrial or commercial representatives, local solid and hazardous waste officials, municipal and county health officials, POTW treatment plant and pretreatment staff, environmental or other public interest organizations, technical assistance providers, academics, equipment vendors, analytical labs that run mercury samples, mercury recyclers and others. Participation in statewide or regional efforts (e.g. state dental or hospital associations**,** state and local school agencies and boards) will also greatly improve a POTW's ability to provide outreach and education to association members within its jurisdiction. In addition, local recognition of successful facility or sector mercury reduction activities has proven to be a popular means of encouraging facility participation, and should be strongly encouraged.

POTWs and other municipal departments can be sources of mercury, and can serve as role models for addressing mercury in their communities (see references under wastewater treatment plants and municipal departments).

Collection programs for community residents (e.g. bulk mercury from dentists, thermometer take-backs) have proven effective in removing stocks of mercury from the community that could otherwise end up in wastewater or the solid waste stream, and serve to raise awareness for the importance of mercury reduction efforts. The availability of mercury recycling vendors, whether public or private, is crucial to the success of these collection programs as well as recycling from other sectors, and should be identified, and established if necessary, early in program planning and implementation.

While existing authority should generally be adequate, legal authority issues may need to be considered for some of the strategies. For example, POTWs should evaluate their legal authority to ensure that they are able to require Industrial Users to:

- Develop mercury minimization plans;
- Comply with narrative BMP requirements;
- Apply numeric local limits to non-significant industrial users; and
- Permit non-significant industrial users.

In order to improve the efficiency of educational outreach and mercury product recycling efforts, municipalities should be encouraged to collaborate with others in their area in the preparation and implementation of Mercury PMPs, at least with respect to the control strategies.

2.4 Monitoring of potential sources of mercury

In addition to review of existing information, PMP plans should also lay out a POTW's plans for monitoring known and suspected sources of mercury. POTW monitoring of source reduction activities using the types of performance measures included in Tables 1 and 2 is one way for both the POTW and states to determine whether a POTW is meeting its PMP commitments. For example, Wisconsin has established a goal of schools becoming mercury-free. POTWs would be able to monitor and report their progress towards this goal by reporting the number of schools within their jurisdiction, the number of mercury assessments conducted at these schools, and the number that have become mercury free. Where this approach is taken, it is recommended that some spot-test or random sampling program be maintained to measure progress of educational programs, and to identify any odd "hot spots" that may show up.

POTWs should consider determining the baseline level of BMP implementation for various sectors, which may be important in establishing the potential mercury load reductions for these sectors.

The Water Quality Guidance for the Great Lakes System, 40 CFR 132, Appendix F, Procedure 8.D. requires semi-annual monitoring of potential sources of the subject pollutant, and quarterly monitoring of the wastewater treatment plant influent where a PMP is required due to a water quality-based effluent limit being below the quantification level. While the PMP and associated monitoring requirements in the federal Great Lakes rules are not directly applicable for state-issued mercury variances, they should nonetheless be considered in development of an effective monitoring plan.. Where there are large numbers of individual sources (like residential areas), representative sampling could be conducted to determine how much a given type of source adds to the system load, and to gauge the effectiveness of outreach efforts. In some situations, monitoring methods other than chemical analysis (such as mass- or materials-balance, which rely on assumptions of loadings per individual source rather than chemical analysis) may be appropriate, such as where there are a large number of facilities with low individual loadings, where individual effluent monitoring on a large scale is impractical, or for episodic dischargers such as dentists. In general, the plan should lay out a monitoring schedule that will allow the permittee to establish baseline levels, determine the effectiveness of various activities and track progress of the PMP.

To ensure that potential sources are not missed, it is also recommended that plans include an in-sewer monitoring scheme that begins with sampling main sewers coming into the treatment plant, and working back through the system to identify particular sources. This may need to include sampling of sediments within sewers or drainage ditches tributary to the sewers to determine if in-place pollutants are contributing to the loading.

Sampling and analytical methods used in conducting these monitoring plans may vary, based on the purposes for which the data will be used, and the location of the sample within the POTW. Given the need to compare results with variance-based limits and the underlying water quality-based effluent limits, methods 1669 and 1631 will need to be used for effluent monitoring. However, while these methods can be successfully run on Industrial User effluents and other points within a POTW, less sensitive methods and less-strict sampling protocol may be appropriate for some influent or collection system samples.

POTW influent levels are commonly in the 50 to 200 ng/L range. Collection system samples may be higher in certain parts of the system. EPA Methods 1669 and 1631 are performance based. This means that " alternate procedures may be used so long as these procedures are demonstrated to yield reliable results." Stated another way, less stringent procedures may be used as long as contamination levels are maintained at acceptable levels and sensitivity and other quality control requirements are maintained.

- Sample contamination - Method 1631E, Section 9.4.5.2 indicates that the field blank concentration must be no greater than 0.5 ng/L or one-fifth the level in the associated sample, whichever is greater.
- Method sensitivity - Method 1631E, Section 9.1.2.1 indicates that the Method Detection Limit (MDL) of the method used must be no greater than 0.2 ng/L or one-third the regulatory compliance level, which ever is greater.
- Other quality control - Requirements in Method 1631 regarding standards, method blanks, matrix spikes and matrix spike duplicates must still be followed.
- High concentration samples - Whenever possible, laboratories should be notified when high concentration samples are being submitted so they can select less sensitive procedures or perform necessary dilutions. Failure to identify high concentration samples may compromise the quality of low level results and shut down the instrument for extended periods while the laboratory decontaminates the system.
- Use of Less Sensitive Methods - Although samples may be diluted to bring sample concentrations into the working range for method 1631, it is also appropriate to select less sensitive methods for higher concentration samples. Section 9.1.2 of method 1631E allows certain modifications of the method when less sensitivity is required. Laboratories may substitute the detector with a cold vapor atomic absorption system (CVAAS) similar to that used in method 245.1. The initial preconcentration on the gold amalgam may be omitted, making the method functionally equivalent to method 245.7. For samples expected to have concentrations in excess of 500 ng/L (0.5 ug/L), the traditional dilutional method 245.1 can be useful. However, be aware that the potassium permanganate used in the method acts as a mercury scavenger, so results may have a high bias.

Typical Mercury Concentrations and Method Options For Wastewater Sources
[Estimates based on WDNR observations]

Source	***Typical Concentration***	***Method Options***
POTW wastewater influent	50 - 500 ng/L	1631 (dilution) 1631 modified (245.7*)
POTW wastewater effluent	1 - 20 ng/L	1631
POTW sludge or biosolids	0.2 - 30 mg/Kg (dry weight)	SW 846-7471B
POTW Collection System	50 - 1000 ng/L	1631 (dilution) 1631 modified (245.7) 1631 modified (CVAAS) 245.1 (optimized & dedicated instrument)
Industrial Effluent -general	Variable	1631 1631 modified (245.7) 1631 modified (CVAAS)
Industrial Effluent - mercury process or contaminated feedstock	Variable	1631 modified (245.7) 1631 modified (CVAAS) 1631 (dilution) 245.1
Surface Water	0.2 - 10 ng/L	1631
Dental office discharge **	episodic discharges ranging *from 1,000- 12,000,000* ng/L	245.1 1631 modified (CVAAS) 1631 modified (245.7)

***** Seattle Metro 1991; Massachusetts (MWRA) 1997; Barrucci (San Francisco) 1992, 1993; Pima County, AZ, 1991.***

Additional details on appropriate sampling and analytical procedures are discussed in WDNR's Guidance for Collecting Samples for Total Mercury Analysis to Meet Wastewater Permit Requirements in Wisconsin sampling guidance, (attachment 2).

2.5 Resources and Staffing

Lastly, Program Plans need to summarize the resources and staff that will be committed to implementation of mercury PMPs. Specifically, Plans should indicate the source and amount of funding that will be available to carry them out. They should also include the number and position of Full Time Equivalents that will be devoted to PMP implementation. Where other POTWs, municipal agencies, or trade associations will be helping to plan or implement mercury reduction activities, those resources and staffing estimates should be included as well.

2.6 State approval of the plans

The states will be reviewing and approving POTW PMP plans to ensure that implementation moves the POTW towards the goal of maintaining mercury concentrations at or below the WQBEL. As indicated in section 2.1, POTWs will generally be required to submit proposed plans within a reasonable period of time (typically 6-18 months) from reissuance of the POTW's NPDES permit, or as required by the permitting authority as a condition for receiving a variance.

Proposed plans should be reviewed based on addressing the specified elements discussed above. As indicated above, proposing activities in the "indirect contributors" section (Table 2) should generally not be accepted *instead of* activities in the "direct contributors" section (Table 1), although the value of addressing those additional sectors should be considered as part of the evaluation of adequacy of the overall plan. Similar consideration should be given to activities that address sources outside a POTW's jurisdictional boundaries. POTWs would need to address comments and make necessary revisions prior to state approval of the plans. Upon plan approval, implementation would be required as a condition of the POTW's NPDES permit. POTWs are encouraged, however, to begin implementation activities such as monitoring, outreach to dischargers and internal audits prior to final approval, or prior to a PMP being required.

An example of a PMP developed by a POTW in Michigan is included in Attachment 3.

3. Program Implementation

Upon approval of its Plan, the POTW will be responsible for carrying out and tracking implementation of its source reduction strategies, and conducting the specified monitoring. While U.S. EPA, the states and others are engaged in identifying the best approaches for addressing mercury sources in the various sectors, much work has been done in this area. POTWs should be encouraged to review available information, and to the greatest extent possible adopt approaches that others have found to be effective. Several of the States in Region 5 have already identified materials that can be used or revised as necessary for distribution to sources in several sectors; these materials are referenced in references and websites below. Other sources of mercury pollution prevention and waste minimization information are available at http://www.epa.gov/Region5/air/mercury/mercury.html.

4. Annual status reports

PMP reports are an important element of state approved plans, and will generally be required to be submitted one year after the Program goes into effect, and annually thereafter. For POTWs with pretreatment programs, these reports can be submitted with their Annual Pretreatment Report. Reports should include a summary of potential sources of the pollutant, a summary of all source control activities, and results of source reduction monitoring and wastewater sampling for the previous year. Proposed adjustments to the Program should also be included.

4.1 Potential mercury sources

The annual report should identify individual facilities or targeted groups within the various sectors covered by the plan. A list of new potential sources that have been identified as a result of monitoring or other evaluation should also be provided. Status of these facilities with respect to the goals laid out for the different sectors should be provided, as described in section 4.3 below.

4.2 Summary of actions taken to reduce or eliminate mercury discharges

This section would include actions taken in response to monitoring results discussed below, and in furtherance of the control strategies laid out in the Plan. Progress with respect to identified goals for the various sectors should be discussed. If no actions were taken to address an identified source or sector, an explanation should be provided. Historic mercury source reduction activities, as well as *recent* actions taken in the last year, should be included in this summary. This will give the municipality credit for all their activities to date regarding the various sectors, and will facilitate review of the annual report.

4.3 Source Reduction and Wastewater Monitoring results

All mercury data collected during the previous year should be included with the annual report. This would include tracking of source reduction activities with respect to established sector-specific performance measures as discussed in section 2.4, as well as influent, effluent, biosolids data, and data collected from potential sources. Sampling dates, method of analysis, the laboratory name, and appropriate units should accompany any wastewater monitoring results.

The Water Quality Guidance for the Great Lakes System calls for at least quarterly influent monitoring for POTWs implementing PMPs. Several of the states have viewed this as a minimum requirement for both influent and effluent, but have required additional, generally monthly monitoring, for larger POTWs (those with flows of greater than 5 million gallons per day). In addition, these states have generally required biosolids monitoring from one to four times per year, with the frequency varying based on the volume of biosolids generated. Collection of biosolids data is important in tracking progress in reducing mercury releases to the environment; tracking effluent levels alone will not fully indicate progress in reducing mercury releases to the environment.

4.4 Revision of plans

Finally, the Annual Report would need to include any proposed adjustments to a POTW's Program Plan where municipal activities have not been implemented as originally agreed to, source reduction implementation has not occurred, or source reduction implementation has occurred, but has not been effective in reducing mercury discharges (after accounting for sample variability).

5. Compliance determinations under state NPDES programs

Compliance with the permit provisions for a POTW with mercury limitations based on a variance from the water quality standard would be determined by evaluating two components of the permit. First, the concentration in the POTW's effluent would be compared to the currently achievable level as established through the state's variance process. Second, the facility would need to be in compliance with the PMP requirements of the permit. Specifically, it would need to have developed the PMP Plan, and then fulfilled the commitments established and agreed to in the approved Plan. After approval of the initial plan, compliance would be evaluated primarily through review of the annual status report, to determine whether the POTW had adequately identified known and potential mercury sources, had carried out the activities it committed to, and had satisfied the specific source reduction and wastewater monitoring requirements. Evaluations for subsequent years would need to take into account revisions described in the previous year's annual report. Where a POTW has coordinated with other POTWs, the reports from the communities should be reviewed as a group.

6. Approaches to Establishing Local Limits for Mercury

6.1 Background on local limits

Local limitations are generally developed by POTWs to implement the general and specific prohibitions of the General Pretreatment Regulations, 40 CFR 403, and are established to prevent discharges that cause pass through, interference, or which threaten worker health and safety. EPA's Local Limits Development Guidance (EPA 833-R-04-002A, July 2004) identifies fifteen pollutants, including mercury, which are presumed to be pollutants of concern, and should be evaluated to determine whether local limits should be established. Where established, local limits for mercury and other pollutants are typically expressed as daily maximum and/or a longer term average concentration.

The National Pretreatment Program, and the underlying General Pretreatment Regulations apply to Industrial Users (IU). An IU is defined as a source of indirect discharge, which in turn is defined as the introduction of pollutants into a POTW from any nondomestic source regulated under Section 307(b)(c) or (d) of the Clean Water Act (40 CFR 403.3(g)). Thus, all non-domestic users of a POTW, which would be considered any user except for a household or dwelling unit, are considered Industrial Users, and are thus subject to Pretreatment Standards and Requirements. And while many POTWs have established local limits for mercury, with some applying these limits to hospitals and other Significant Industrial Users (SIU), mercury local limits have generally not been enforced against "commercial" facilities such as dental clinics, schools, etc. Where these facilities have been addressed, it has generally been through voluntary outreach and education efforts. As discussed in this PMP guidance, promotion of voluntary source reduction will remain an integral part of PMPs. In order to increase participation in implementing Best Management Practices and other source reduction strategies to achieve the greatest possible mercury reductions, however, POTWs will need to consider application of local limits for these commercial users.

6.2 Best management practices (BMPs) as local limits

Ensuring compliance by all industrial and commercial facilities within a POTW's jurisdiction with uniform concentration-based mercury limits will generally not be desirable or feasible. As an alternative, some POTWs have established mercury limits that apply to all IUs, but then establish alternative methods that can be used by certain commercial or industrial sectors to demonstrate compliance with the limits.

The issue of using requirements for Best Management Practices instead of or in addition to numeric local limits was addressed in EPA's Pretreatment Streamlining Proposal (64 FR 39563, July 22,1999). As discussed in that proposal, the Pretreatment Regulations do not specifically address the use of BMPs as local limits, and are not clear as to whether BMPs can satisfy current requirements for development and implementation of local limits. However, as pointed out in the proposal, The Guidance Manual on the Development and Implementation of Local Discharge Limitations Under the Pretreatment Program (EPA 833/B-87/202, December 1987) provides general information on the use of BMPs as local limits. Specifically, the guidance explains, ``The development and implementation of numeric local limits is not always the only appropriate or practical method for preventing pollutant pass through and interference, or for protecting POTW worker health and safety. Control of chemical spills and slug discharges to the POTW through formal chemical or waste management plans can go a long way toward preventing problems. A local requirement for an IU to develop and submit such a plan can be considered as a type of narrative local limit and can be a useful supplement to numeric limits."

Recognizing that some POTWs are already using BMPs to control certain wastewater discharges where they found it impractical to apply a numeric effluent limit, EPA proposed to clarify that best management practices developed by POTWs may serve as local limits required by 40 CFR 403.5(c)(3), and that such BMPs would be enforceable under 40 CFR 403.5(d). While this clarification has not yet been finalized,

U.S. EPA Region 5 believes that BMPs developed by POTWs to prevent pass through and interference would be considered enforceable local limits under 40 CFR 403.5(c), and supports this approach.

6.2.1 Sector-specific mercury BMPs

With respect to mercury, some cities are implementing formal regulatory programs for controlling mercury discharges from dental facilities, which were identified in a 2002 Association of Metropolitan Sewerage Agency study as the largest source of mercury to evaluated POTWs (Mercury Source Control & Pollution Prevention Program Evaluation (March 2002). Voluntary and regulatory programs, along with case studies, are discussed in the Binational Toxics Strategy Mercury Workgroup report Options for Dental Mercury Reduction Programs: Information for State/Provincial and Local Governments (updated April 2004). In general, these programs focus on implementation by dental facilities of BMPs such as those adopted by the American Dental Association (ADA), as well as installation of amalgam separators. Amalgam separators are devices that remove amalgam from wastewater before it leaves the dental clinic. As pointed out in a video developed by the ADA and the Naval Institute for Dental and Biomedical Research entitled "Dental Amalgam and Best Management Practices" (http://www.ada.org/prof/resources/topics/amalgam_bmp.asp), the use of amalgam separators can substantially reduce levels of dental mercury that reach wastewater treatment plants, and studies in several communities where separators have been adopted have shown marked reduction in mercury levels in municipal wastewater treatment plant sludge.

To control potential mercury releases from schools, Indiana, like some other states, has adopted legislation prohibiting schools from using or purchasing most mercury commodities, compounds or equipment. Satisfaction of these state requirements or implementation of state programs for inventorying and elimination of mercury in schools could be incorporated into local requirements for schools. Likewise, hospitals and medical clinics could be required to implement BMPs adopted by the American Hospital Association.

6.3 Incorporating BMPs into the technical evaluation of local limits

As discussed in the Pretreatment Streamlining proposal:

> For BMPs to be considered local limits under 40 CFR 403.5(c), they must protect against pass through and/or interference. This will require the POTW to evaluate the BMPs during the technical evaluation of its local limits. During the technical evaluation for local limits, the POTW will determine the maximum allowable headworks loadings (MAHL) for pollutants of concern. This MAHL will then be allocated to the different contributing sectors of the service area, such as domestic loadings, commercial loadings, industrial loadings and a safety factor.
>
> Based on these considerations, the POTW will decide how to control the different contributing sectors in order to protect against pass through and interference. Often the POTW simply allocates a portion of the loading to control industrial contributions; this is considered to be the maximum allowable industrial load (MAIL). The MAIL is then converted into the local limit which is often expressed as an across-the-board concentration applicable to all industrial sources or all "users of the POTW." This is not the only way local limits can be developed. Another option available to the POTW is to apply the MAIL to all industrial and commercial sources and to use a mixture of BMPs and numeric limits to control industrial and commercial sources of pollutants. Whatever the allocation scenario, the BMPs are developed by the POTW to protect against pass through and interference, and are local limits."

Thus, POTWs providing for use of BMPs by certain commercial or industrial sectors as an enforceable alternative to numeric mercury limits will need to review the basis of their underlying numeric limits. What may previously have been considered "uncontrollable" loadings from commercial facilities may now be considered "controllable" loadings. The recharacterization would result in the shifting of loading from the domestic background to the MAIL. Under ordinary circumstances, POTWs using BMPs as local limits would be able to provide an evaluation that implementation of the numeric limit plus implementation of BMPs for specific sectors should result in the calculated MAIL being met.

Available data, however, indicates that mercury local limits calculations for many Great Lakes dischargers would result in negative local limits. In other words, the domestic loading alone may exceed the MAHL, leaving no allowable loading to allocate to commercial or industrial users. This is mainly a function of the estimated domestic loading (the mercury loading from an "average" person multiplied by the number of residents), and the water quality based effluent limit (WQBEL) (A report prepared for the Association of Metropolitan Sewerage Agencies utilized a value of 17.2 ug/day/person (Mercury Source Control & Pollution Prevention Program Evaluation (March 2002)). This situation will pose a significant challenge to POTWs responsible for developing technically based local limits that prevent pass through and interference, as well as the States that must approve these limits. One option for addressing this situation would be to set the local limit equal to the POTW's NPDES limit, adjusted for the mercury removal efficiency (which appears to be above 90 percent at most POTWs). Thus, if the WQBEL is 1.3 ng/l, the local limit would be between 13 and 26 ng/l (1.3 ng/l /1-.9= 13 ng/l; 1.3 ng/l /1-.95=26 ng/l). The rationale in support of this approach is that facilities with such a limit would not be contributing to pass through. This approach appears to be more practical than other, even more stringent alternatives, and would serve as a clear incentive to meet BMPs instead of the numeric limit. Even under this approach, however, opportunities for reductions in mercury discharges may be very limited in some circumstances. Where a nondomestic user discharges above the local limit due primarily or entirely to mercury in sanitary waste, BMP requirements may not have an effect.

6.4 Structuring BMP-based limits

There are a variety of ways to set mercury local limits, from establishment of uniform concentration limits, to setting technology-based limits based on achievability using certain practices or treatment technologies for different sectors. Regardless of how the numeric limit is established, the Ordinance could then provide users an alternative means of demonstrating compliance with the limit through the use of BMPs. To be considered enforceable local limits under 40 CFR 403.5(c), mercury BMPs developed by POTWs should include the common elements listed below. Depending on the sector being controlled, however, certain elements such as installation of treatment or prohibitions on practices, may not be applicable.

- Specific notice to affected users of requirements and enforceability
- Installation of treatment
- Requirements for or prohibitions on certain practices, activities or discharges
- Requirements for operation and maintenance of treatment units
- Reporting and records retention for O&M activities
- Certification and reporting of compliance
- Re-opener for a permit and local limits to be applied at the POTW's discretion
- Other requirements as determined by the POTW

As discussed above, dentists could be given the option of satisfying locally-imposed ordinance and/or permit requirements by installing an ISO 11143 approved amalgam separator, and complying with other BMPs established under the Ordinance. Compliance in such cases would be determined by review of certifications by facilities that they are satisfying those requirements, and/or by random inspections and records review by the POTW. Under this approach, those choosing not to install this equipment or follow

the BMPs should be required by the Ordinance to obtain a permit within a specified time frame, and monitor and report their compliance with the numeric limit. The POTW would also determine compliance by these facilities with the numeric limit through traditional wastewater sampling.

Similarly, hospitals, schools and potentially even Significant Industrial Users could be allowed to implement BMPs specific to their sectors as an alternative to demonstrating compliance with a numeric local limit.

6.5 Timing of local limit evaluations

Normally, POTWs with Pretreatment Programs are required to conduct technical local limit evaluations within six to twelve months from the effective date of NPDES permit reissuance. In the case of mercury, the evaluation may be significantly influenced by information generated in the course of the PMP development process. Thus, we recommend requiring mercury local limit re-evaluations to be provided subsequent to submittal of PMP plans, although the plans should include the municipality's intentions and a schedule for data collection and proposal of revised numeric limits. Where a POTW plans on using BMP-based limits, the plan should also include a schedule for revising the Sewer Use Ordinance.

References

1. Pollutant Minimization Programs Guidance, Ohio Environmental Protection Agency, Division of Surface Water, August 13, 1998, http://www.epa.state.oh.us/dsw/guidance/guidance.html

2. The Use of Best Management Practices (BMPs) as Industrial Local Pretreatment Limits, Ohio Environmental Protection Agency, Division of Surface Water, August 13, 1998, http://www.epa.state.oh.us/dsw/guidance/guidance.html.

3. Municipal Mercury Pollutant Minimization Program (Mercury PMP), Wisconsin Department of Natural Resources, Bureau of Water
http://www.dnr.state.wi.us/org/caer/cea/mercury/index.htm.

4. Procedure for Reviewing Pollutant Minimization Programs, Michigan Department of Environmental Quality, Surface Water Quality Division, August 2002. Please contact Grace Scott, Pretreatment Coordinator, at 517/335-4107.

5. Mercury Source Control & Pollution Prevention Program Evaluation- Final Report, Association of Metropolitan Sewerage Agencies, March 2002.

Websites

General Mercury:

http://www.epa.gov/Region5/air/mercury/mercury.html

Medical Mercury:

http://www.h2e-online.org

http://www.michigan.gov/deq/0,1607,7-135-3585_4127_4175-35423--,00.html

Dental Mercury:

American Dental Association Best Management Practices, and
"Dental Amalgam and Best Management Practices" (Video), American Dental Association and the Naval Institute for Dental and Biomedical Research
http://www.ada.org/prof/resources/topics/amalgam_bmp.asp

http://www.dentalmercury.com

Options for Dental Mercury Reduction Programs: Information for State/Provincial and Local Governments, A Report of the Binational Toxics Strategy Mercury Workgroup Co-Chairs
http://www.epa.gov/region5/air/mercury/dentaloptions3.pdf

Evaluation of Amalgam Removal Equipment and Dental Clinic Loadings to the Sanitary Sewer, Metropolitan Council Environmental Services and Minnesota Dental Association, December 21, 2001.
http://delta-institute.org/pollprev/mercury/linkfiles/Separator%20Comparison%20Chart.htm

Schools:

http://www.mercuryinschools.uwex.edu

General Public:

http://www.epa.gov/mercury/

North Carolina Division of Pollution Prevention and Environmental Assistance
http://www.p2pays.org/mercury/

General Industry:

http://www.nwf.org/nwfWebAdmin/binaryVault/mercuryproducts.pdf

http://www.state.me.us/dep/mercury/lcspfinal.pdf

Dairy manometers:

http://www.dnr.state.wi.us/org/caer/cea/mercury/program.htm#Dairy

http://www.deq.state.mi.us/documents/deq-ead-p2-ag-richro.pdf

Wastewater Treatment Plants:

http://delta-institute.org/pollprev/mercury/mercury.php

http://delta-institute.org/pollprev/mercury/selfassess.php

Auto Switch:

http://www.dec.state.ny.us/website/ppu/p2autosw.html

http://www.deq.state.mi.us/documents/deq-ess-p2-mercury-michiganswitchstudy.pdf

[Note: The following attachments are intended as examples only, and are not intended to serve as models or templates]

Attachment 1- Sample NPDES Permit Language Regarding Mercury PMP Requirements, Ohio Environmental Protection Agency, Division of Surface Water
http://www.epa.state.oh.us/dsw/guidance/permit7.pdf

Attachment 2- Wisconsin DNR Guidance for Collecting Samples for Total Mercury Analysis to Meet Wastewater Permit Requirements in Wisconsin, 2003.
http://dnr.wi.gov/org/water/wm/ww/mercury/clean_hands.pdf

Attachment 3- Holly, Michigan Pollutant Minimization Program, March 2003.
http://www.epa.gov/region5/water/npdestek/MercuryHolly_PMP_4-03_final.pdf

ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD
AMENDING AND CREATING RULES

The Wisconsin Natural Resources Board proposes an order to amend NR 106.04(5) and NR 211 subch. IV (title) and to create NR 106.145, 211.41 and NR 219, Table B, item 35f. relating to regulating mercury in wastewater discharge permits.

WT-12-02

Analysis Prepared by the Department of Natural Resources

Statutory authority: chs. 281 and 283, Stats.
Statutes interpreted: ss. 283.15, 283.31, Stats.

This action provides a common-sense approach to regulating mercury in wastewater effluents. It adds a new high-sensitivity analytical method to NR 219 that allows mercury to be accurately measured in surface waters and wastewater effluents. A new section in NR 106 makes a finding that wastewater treatment technology for mercury is impractical and requires wastewater permittees to implement pollution prevention programs in exchange for water quality standards variances. A new section in NR 211 requires municipal entities to impose source reduction measures on users of their sewer systems.

SECTION 1. NR 106.04(5) is amended to read:

NR 106.04(5) For purposes of this chapter, a cost-effective pollutant minimization program is an activity which has as its goal the reduction of all potential sources of the pollutant for the purpose of maintaining the effluent at or below the water quality based effluent limitation. The pollutant minimization programs specified in ss. NR 106.05 (8), 106.06(6) (d), ~~and~~ 106.07(6) (f) and 106.145(7) shall include investigation of treatment technologies and efficiencies, process changes, wastewater reuse or other pollution prevention techniques that are appropriate for that facility, taking account of the permittee's overall treatment strategies, facilities plans and operational circumstances. Past documented pollution prevention or treatment efforts may be used to satisfy all or part of a pollution minimization program requirement. The permittee shall submit to the department an annual status report on the progress of a pollutant minimization program.

SECTION 2. NR 106.145 is created to read:

NR 106.145 Mercury regulation. This section provides an alternative means of regulating mercury in WPDES permits through the establishment of alternative mercury effluent limitations and other requirements and is intended as a supplement to the authority and procedures contained in other sections of this chapter. For purposes of this section, an alternative mercury effluent limitation represents a variance to water quality standards specified in chs. NR 102 to 105.

(1) FINDINGS. On the effective date of this rule … [revisor inserts date], the department finds all of the following:

(a) Requiring all dischargers of mercury to remove mercury using wastewater treatment technology to achieve discharge concentrations necessary to meet water quality standards would result in substantial and widespread adverse social and economic impacts.

(b) Representative data on the relatively low concentrations of mercury in wastewater are rare and methods for collecting that data have only recently been developed.

(c) Appropriate mercury source reduction activities are environmentally preferable to wastewater treatment technology in many cases because wastewater treatment for mercury produces a sludge or other resultant wastewater stream that can be as much or more of an environmental liability than the untreated effluent.

(2) DETERMINING THE NECESSITY OF MERCURY EFFLUENT LIMITATIONS. (a) The department shall determine whether a mercury effluent limitation is necessary using the procedures in s. NR 106.05.

(b) For the determination under par. (a), the department shall use representative data that comply with all of the following:

1. Data shall meet the sampling and analysis requirements of subs. (9) and (10).

2. Data shall consist of at least 12 monitoring results spaced out over a period of at least 2 years.

(3) DATA GENERATION. (a) In this paragraph, "major municipal discharge" and "minor municipal discharge" have the meanings specified in s. NR 200.02(7) and (8). If an applicant in any of the categories specified in this subsection does not have sufficient discharge data that meet the criteria of sub. (2) at the time of application for permit reissuance, the reissued permit shall require the permittee to monitor and report mercury at the following frequency and location:

1. Monthly influent and effluent for a major municipal discharge with an average flow rate greater than or equal to 5 million gallons per day.

2. Once every 3 months influent and effluent for a major municipal discharge with an average flow rate greater than or equal to one million gallons per day but less than 5 million gallons per day.

3. Once every 3 months influent and effluent for a minor municipal discharge if there are 2 or more exceedances in the last 5 years of the high quality sludge mercury concentration of 17 mg/kg specified in s. NR 204.07(5).

4. Monthly effluent for an industrial discharge that the department determines is likely to contribute net discharges of mercury to the environment or if sludge or biosolids mercury concentrations indicate a source of mercury.

5. Once every 3 months effluent for an industrial discharge with an average flow rate, excluding noncontact cooling water as defined in s. NR 205.03(21), of more than 100,000 gallons per day and the department has no information on mercury concentrations in similar discharges. The department may exempt discharges in this category if the department determines that there is little risk that the effluent will contain mercury.

Note: Any permittee who believes that a significant portion of the mercury in its effluent originates from its intake of surface water is encouraged to provide results of intake monitoring.

6. The department may reduce monitoring frequency from monthly to once every 3 months for discharges described in subds. 1. and 4. after at least 12 representative results have been generated.

(b) The department may require mercury monitoring for other discharges not included in one of the categories specified in par. (a) if the department has a reasonable expectation that the discharge includes significant quantities of mercury.

(c) Permittees shall collect and analyze samples according to the requirements in subs. (9) and (10).

(4) ALTERNATIVE MERCURY EFFLUENT LIMITATION ELIGIBILITY. (a) When the department makes a determination of the necessity for a water quality based effluent limitation for mercury under sub. (2), the department shall determine if an alternative mercury effluent limitation is justified based on information submitted by the permittee in an alternative mercury effluent limitation application.

(b) The department may not establish an alternative mercury effluent limitation for a new discharge to waters in the Great Lakes system, as defined in s. NR 102.12(1), unless the proposed discharge is necessary to alleviate an imminent and substantial danger to the public health or welfare. For the purposes of this section, a new discharger is any building, structure, facility or installation from which there is or may be a discharge of pollutants, as defined in s. NR 200.02(4), the construction of which commenced after the effective date of this rule …[revisor inserts date]. An existing discharger that relocates its outfall after the effective date of this rule …[revisor inserts date] may not be considered a new discharger for purposes of this paragraph. Relocation includes the diversion of a discharge from a land treatment system or systems to a surface water.

(c) The term of an alternative mercury effluent limitation may not extend beyond the term of the permit.

(d) An alternative mercury effluent limitation may be renewed using the procedures and requirements in subs. (5) to (8). An alternative mercury effluent limitation may not be renewed if the permittee did not substantially comply with all of the mercury-regulation conditions of the previous permit.

(5) CALCULATION OF AN ALTERNATIVE MERCURY EFFLUENT LIMITATION. (a) An alternative mercury effluent limitation shall equal the upper 99th percentile of representative daily discharge concentrations as calculated under s. NR 106.05(4)(a), except as provided in par. (c).

(b) The alternative mercury effluent limitation shall be expressed as a daily maximum concentration.

(c) An alternative mercury effluent limitation may not be greater than the alternative mercury effluent limitation contained in the previous permit, unless the permittee demonstrates that the previous alternative mercury effluent limitation was based on monitoring that did not represent actual discharge concentrations.

(6) DEPARTMENT ACTION ON ALTERNATIVE MERCURY EFFLUENT LIMITATION APPLICATIONS. (a) The department shall establish an alternative mercury effluent limitation for a discharger when all of the following have been met:

1. The information provided in the alternative mercury effluent limitation application described in sub. (8) supports establishing the alternative mercury effluent limitation.

2. The permittee and the department agree upon the alternative mercury effluent limitation and the specific permit language requiring implementation of the pollution minimization program described in sub. (7).

(b) If the information provided in the alternative mercury effluent limitation application does not support establishing an alternative mercury effluent limitation or if the department and the permittee cannot agree on the alternative mercury effluent limitation and the specific permit language incorporating the pollutant minimization program, the department shall include the water quality based effluent limitation or limitations in the permit. This paragraph does not prohibit the department from seeking and the applicant providing supplemental information after the initial application is submitted.

(c) If the department grants an alternative mercury effluent limitation, the permit shall require monitoring subject to the data quality requirements of subs. (9) and (10), at the following locations:

1. Effluent for both municipal and industrial discharges.

2. Influent and sludge or biosolids for major and minor municipal discharges.

(7) POLLUTANT MINIMIZATION PROGRAMS. (a) If the department grants an alternative mercury effluent limitation under sub. (6), the reissued permit shall require the permittee to implement a pollutant minimization program as defined in s. NR 106.04(5) and detailed for mercury in this subsection.

(b) If the reissued permit requires monthly data generation under sub. (3)(a) 1. or 4., the permit shall contain a special condition that triggers a pollutant minimization program if the first 24 months of data demonstrate that a limit will be necessary under sub. (2). The permit shall also require that the permittee do all of the following:

1. Submit to the department within 36 months of permit reissuance a pollutant minimization program plan meeting the requirements specified in this subsection.

2. Implement the pollutant minimization program following submittal of the plan.

3. Submit the first annual status report required in par. (g) within 48 months of permit reissuance.

(c) For municipal permittees, a pollutant minimization program shall consist of all of the following elements:

1. Source identification.

2. Activities to help educate the general public, health professionals, school teachers, laboratory personnel or other professionals about ways to reduce use of mercury-containing products, recycle mercury-containing products and prevent spills.

3. A program for collecting mercury from the permittee's sewer system users. This program may be independently operated by the permittee, jointly by the permittee and others or by another governmental unit.

4. Other activities that the department, in consultation with the permittee, deems appropriate for the individual permittee's circumstances.

(d) For industrial permittees, a pollutant minimization program may consist of any of the following elements:

1. Source identification and inventory.

2. Improvement of operational, maintenance or management practices.

3. Substitution of raw materials or chemical additives with low-mercury alternatives.

4. Institution of alternative processes.

(e) In assessing the appropriate elements for a pollutant minimization program, the department may consider any of the following:

1. The type of discharger.

2. The operations that generate the wastewater.

3. The level of mercury in the effluent, influent and biosolids or sludge.

4. The costs of potential source reduction measures.

5. The environmental costs and benefits of the pollutant minimization program elements.

6. The characteristics of the community in which the discharger is located.

7. The opportunities for material substitution.

8. The opportunities available for support from or cooperation with other organizations.

9. The actions the discharger has taken in the past to reduce mercury use or discharges.

10. Any other relevant information.

(f) The pollutant minimization program plan shall include all of the following:

1. Identify specific activities to be undertaken and a relative timeline to implement those activities.

2. State which, if any, activities have already been implemented and how effective they were in reducing potential and actual mercury discharges.

3. Commit the permittee to document how the pollutant minimization program plan was implemented including measures such as the number of contacts of various types made, programs implemented and other activities.

4. Provide for steps to measure the effectiveness of the pollution minimization program elements in reducing potential and actual mercury discharges. Where the permittee regularly monitors influent, effluent, sludge or biosolids for mercury, measures shall include any changes in mercury concentrations over comparable historic data. Where practicable, other measures or estimates of mercury reductions from programs such as mercury recycling, collection or disposal may also be included.

(g) Within 12 months of the beginning of implementation of the pollutant minimization program and annually thereafter, the permittee shall report to the department on the progress of the pollutant minimization program as required in s. NR 106.04(5). This annual report shall include all of the following:

1. An evaluation of the effectiveness of the program in accordance with the plan.

2. Identification of barriers that have limited program effectiveness and adjustments to the program that will be implemented during the next year to help address these barriers.

(h) Permittees may collaborate with one another or other parties to plan and implement a pollutant minimization program.

Note: Permittees that do not prepare or effectively implement a pollutant minimization program are subject to regulatory requirements for mercury, without alternative mercury effluent limitations to water quality standards. For municipal permittees this may mean development and enforcement of mercury discharge standards for users of the public sewerage system pursuant to s. NR 211.10(3). For users of the municipal sewerage system this may mean changes in processes, installation of treatment technology, or other means to comply with the municipal mercury discharge standards pursuant to s. NR 211.10 (1). Implementation of the municipal mercury discharge standards may require a program of user discharge permits and wastewater discharge monitoring.

(8) ALTERNATIVE MERCURY EFFLUENT LIMITATION APPLICATIONS. (a) To apply for an alternative mercury effluent limitation under this section, a permittee shall do all of the following:

1. Submit an alternative mercury effluent limitation application at the same time as the application for permit reissuance following data generation.

2. State the basis for concluding that wastewater treatment technology for mercury is impractical.

3. Supply representative effluent monitoring results of sufficient number and analytical sensitivity to quantify with reasonable certainty the concentration and mass of mercury discharged. Representative sample results shall meet all of the following requirements:

a. Be of sufficient quantity to allow calculation of the upper 99^{th} percentile values pursuant to s. NR 106.05(5).

b. Reasonably represent current conditions.

c. Meet the data quality requirements of subs. (9) and (10).

d. Represent a time period of at least 2 years.

4. Submit a pollution minimization program plan described in sub. (7)(f).

(b) A permittee applying for renewal of an alternative mercury effluent limitation previously granted shall follow the procedures in par. (a) except for all of the following:

1. The permittee shall submit information indicating whether the permittee substantially complied with mercury regulation conditions of the existing permit.

2. A new pollutant minimization program plan shall re-evaluate the plan required under the previous permit.

(9) SAMPLING REQUIREMENTS. (a) Sample types may be grab or 24-hour composite. "Grab sample" and "24-hour composite sample" have the meanings specified in s. NR 218.04.

(b) Sample collection methods shall be consistent with *EPA Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Level*s, EPA-821-R-96-011.

Note: This method provides flexible procedures for collecting samples under clean conditions. Sample collection personnel may modify this procedure or eliminate steps if the modification does not lead to unacceptable contamination of the samples. This method may be accessed on the department's website at http://www.dnr.state.wi.us/org/water/wm/ww/mercury/1669.pdf.

(c) Requirements for field blanks are as follows. A field blank means an aliquot of mercury-free reagent water that is placed in a sample container, shipped to the field and treated as a sample in all respects, including contact with the sampling devices and exposure to sampling site conditions, filtration, storage, preservation, and all analytical procedures. The purpose of the field blank is to determine whether the field or sample transporting procedures and environments have contaminated the sample:

1. At least one field blank shall be collected at each site for each day a sample is collected. If more than one sample is collected in a day, at least one field blank for each 10 samples collected on that day shall be collected.

2. If mercury or any potentially interfering substance is found in the field blank at a concentration equal to or greater than 0.5 ng/L, the limit of detection or one-fifth the level in the associated sample, whichever is greater, results for associated samples may not be used for regulatory compliance purposes unless the conditions in subd. 3. are met.

3. If at least 3 field blanks are collected on a day when samples are collected and the average mercury concentration of the field blanks plus 2 standard deviations is less than or equal to one-half of the level in the associated sample or less than the lowest water quality criterion for mercury found in ch. NR 105, whichever is greater, results may be used.

Note: As of the effective date of this rule … [revisor inserts date] the lowest water quality criterion listed in the ch. NR 105 is 1.3 ng/L.

4. Once a permittee demonstrates the ability to collect samples from a given site using an established procedure that meet the use-criteria of subd. 2., the permittee may decrease the number of field blanks to no fewer than one field blank for each 4 sampling days.

a. The initial demonstration shall consist of at least 6 consecutive sampling days.

b. If the permittee makes significant changes to the sampling procedure or sampling personnel, the 6-day demonstration shall be repeated.

c. If after reducing the field blank frequency, a field blank fails to meet the use-criteria, the permittee shall take corrective action and return to collecting field blanks on each sampling day until it can meet the use-criteria for at least 3 consecutive sampling days.

d. In no case may the permittee decrease field blanks to fewer than one for each 10 samples.

5. The permittee shall report, but may not subtract, field blank concentrations when reporting sample results.

Note: When using the data, the department may subtract field blanks from sample concentrations on a case-by-case basis.

(10) LABORATORY ANALYSIS REQUIREMENTS. (a) In this subsection, "method blank", "matrix spike" and "limit of detection" have the meanings specified in s. NR 149.03.

(b) The analytical method used shall be sensitive enough to quantify mercury concentrations in the sample or mercury concentrations down to the lowest water quality criterion found in ch. NR 105, whichever is greater.

(c) The department may exempt a permittee from the sensitivity requirement in par. (b) if the permittee can demonstrate to the department's satisfaction that the specific effluent matrix does not allow this level of sensitivity using the most sensitive approved method with all reasonable precautions.

(d) The laboratory performing the analyses shall be certified under ch. NR 149 for low-level mercury analyses. Until low-level mercury certification is available, the lab shall be certified under ch. NR 149 for mercury and recognized by the department as having demonstrated its low-level mercury capabilities under the emerging technology provision contained in s. NR 149.12(2).

(e) Method blanks analyzed concurrently with samples shall be reported with sample results. Method blanks may be subtracted from sample results unless concentrations of mercury in the method blank exceed the laboratory’s limit of detection, 0.5 ng/L or 5% of the sample concentration, whichever is greater.

(f) Matrix spikes analyzed concurrently with samples shall have recoveries between 71 and 125 percent.

(11) DATA REJECTION. The department may reject any sample results if data quality requirements specified in subs. (9) and (10) are not met or if results are produced by a laboratory that is not in compliance with certification requirements specified in ch. NR 149.

(12) APPLICABILITY OF THE VARIANCE PROCESS UNDER S. 283.15, STATS. If a water quality based effluent limitation is included in a permit under sub. (6)(b), a permittee may apply to the department for a variance from the water quality standard used to derive the limitation following the procedure specified in s. 283.15, Stats. Where a permittee has been granted an alternative mercury effluent limitation under this section, the procedures of s. 283.15, Stats. are not applicable.

SECTION 3. Subchapter IV of ch. NR 211 (title) is amended to read:

Subchapter IV—Regulation of chloride and mercury sources

SECTION 4. NR 211.41 is created to read:

NR 211.41 POTW action to reduce mercury discharges from all sources. Notwithstanding all other provisions of this chapter, a POTW shall develop and enforce any specific standards or requirements and implement any source reduction activities that are necessary to assure compliance with requirements established in s. NR 106.145. These standards, requirements and source reduction activities apply to mercury discharges to the POTW from all relevant sources, including but not limited to industrial, commercial and residential sources.

SECTION 5. NR 219 TABLE B, Item 35f. is created to read:

TABLE B

LIST OF APPROVED INORGANIC TEST PROCEDURES FOR WASTEWATER

	Parameter, Units & Methods	EPA[1]	SW-846[11,7]	Standard Methods[2,2m]	ASTM[3]	USGS[4]	Other
35f.	Mercury, Total - Low Level, ng/L[40]						
	Cold vapor atomic fluorescence (CVAF) with purge and trap concentration	1631D					
	CVAF without purge and trap concentration	245.7					

[40] Quality control requirements for low level mercury are found in s. NR 106.145 (9) and (10). Low-level mercury methods are performance-based so some method modifications are allowable, provided quality control requirements are met. If an atomic absorption detector is substituted for the atomic fluorescence detector, the appropriate method citation is 245.1 (manual) or 245.2 (automated). If method 1631 is modified to eliminate the purge and trap step, the appropriate method citation is 245.7.

The foregoing rules were approved and adopted by the State of Wisconsin Natural Resources Board on June 26, 2002

The rules shall take effect on the first day of the month following publication in the Wisconsin administrative register as provided in s. 227.22(2)(intro.), Stats.

Dated at Madison, Wisconsin *August 26, 2002*

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

By */s/ Darrell Bazzell*
Darrell Bazzell, Secretary

(SEAL)

Wisconsin NR 211 General Pretreatment Requirements

Chapter NR 211
GENERAL PRETREATMENT REQUIREMENTS

NR 211.01 Purpose. The purpose of this chapter is to establish, under s. 283.55 (2), Stats., the responsibilities of industrial users and of publicly owned treatment works in preventing the discharge into publicly owned treatment works of pollutants which will interfere with the operation of the POTW, which will pass through the POTW treatment works insufficiently treated, or which will impair the use or disposal of POTW sludge.

NR 211.02 Applicability. The provisions of this chapter apply to industrial users and to publicly owned treatment works which receive or may receive wastewater from such industrial users.

NR 211.03 Definitions. The following special definitions are applicable to terms used in this chapter. Definitions of other terms are set forth in ch. NR 205 and ch. 283, Stats.

(6) "Indirect discharge" means the introduction of pollutants into a POTW from any point source other than residential or commercial sources that discharge only domestic waste. Method of introduction includes, but is not limited to, by pipe, truck, or rail car.

(7) "Industrial user" means any source of indirect discharge.

(10) "Pass through" means the discharge of pollutants through the POTW to waters of the state in quantities or concentrations which, alone or in conjunction with the discharge or discharges from other sources, causes a violation or increases the magnitude or duration of a violation of any requirement of the POTW's WPDES permit.

NR 211.10 Prohibited discharge standards.

(1) Industrial users may not discharge pollutants into a POTW which pass through or interfere with the operation or performance of the POTW, and thereby cause or significantly contribute to a violation of the POTW's WPDES permit.

(3) (a) POTWs developing pretreatment programs under subchapter II shall develop specific prohibited discharge standards to enforce the general prohibitions of subs. (1) and (2). All other POTWs shall, where the contributions of industrial users result in pass–through or interference and the resulting permit violation is likely to recur, develop and enforce specific prohibited discharge standards which, together with appropriate operation changes, are necessary to ensure continued compliance with the POTW's WPDES permit.

(b) This subsection is not intended to require pretreatment as a substitute for adequate municipal treatment.

(c) Specific prohibited discharge standards may not be developed and enforced by the POTW without giving prior notice to persons or groups who have requested notice and an opportunity to respond.

(d) Where specific prohibited discharge standards are developed by a POTW under this subsection, they shall be deemed pretreatment standards for the purposes of s. 283.55 (2), Stats.

Total Mercury Monitoring Procedures
For Meeting WPDES Permit Requirements (For Permittees)
5/21/03

This document is intended solely as guidance, and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations, and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.

General Precautions

Mercury poses special problems in regulating its release to the environment. Its presence at even very low concentrations in surface water can cause it to accumulate in fish, causing health problems for humans and other mammals who consume those fish. In November 2002, DNR implemented a special regulatory approach under the WPDES program for mercury that acknowledges the special challenges with regulating a substance that causes problems at such low levels. Section NR 106.145, Wisconsin Administrative Code contains the main framework for that new regulatory approach.

Persons required to perform mercury analysis by their wastewater permits must use an extremely sensitive test method that can be affected by even slight contamination not related to the mercury level in the wastewater. This contamination of samples or sample containers may originate from the air, sampling personnel or contacted surfaces. To avoid this contamination and to properly collect clean samples for mercury analysis, you should have a team of at least two people with a good understanding of potential sources of contamination. The team should follow the "clean hands/dirty hands" technique referenced in s. NR 106.145(9), Wis. Adm. Code and described below (excerpted from EPA *Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels*). This technique is also demonstrated in the EPA video *Sampling Ambient and Effluent Waters for Trace Metals.*

Because even slight contamination can adversely affect effluent or background sample results, the new rule contains some requirements that are unique to Wisconsin's toxic substances regulatory program. For example, each day you collect samples, you must generate and analyze a field blank. A field blank is a portion of mercury-free water that is processed through the full sequence of sampling steps (s. NR 106.145(9), Wis. Adm. Code).

You can grab a sample by dipping the sample bottle directly into the water stream to be sampled or holding the bottle under a flowing spigot. If it becomes necessary, for safety or logistical reasons, to use a sampling pole to allow reaching a water stream, take precautions to thoroughly clean any surfaces of the sampling apparatus that will contact the sample bottle.

EPA Method 1669 is performance-based. This means that less stringent procedures may be used as long as contamination levels are maintained at acceptable levels. S. NR 106.145(9) specifies the acceptable contamination as a percentage of sample mercury concentrations. Therefore, somewhat higher levels of sample contamination are acceptable for POTW influent samples, which will often be collected using automatic samplers that are subject to more contamination.

Similarly, less sensitive laboratory test methods may be used for samples having higher mercury concentrations, such as influent samples.

Persons wishing more information might visit the DNR web site at http://www.dnr.state.wi.us/org/water/wm/ww/mercury/mercury.htm. Information available includes links to the Wisconsin Administrative Code, pollutant minimization program materials and other low-level mercury monitoring information including EPA Methods 1631 (testing) and 1669 (sampling).

Contracting with a Laboratory

To meet the requirements of s. NR 106.145(10), Wis. Adm. Code, the laboratory that conducts your mercury analyses:

- Must be Wisconsin-certified and must be recognized for low level mercury capability
- Must have a limit of quantitation (LOQ) at or below the level in your sample or 1.3 ng/L, whichever is greater. We expect effluent and intake samples to generally fall in the 1 to 10 ng/L range.
- May use a less sensitive method for POTW influent samples. POTW influent levels are commonly in the 50 to 200 ng/L range.

Arrangements that should be made ahead of time:

- Discuss with the lab what supplies you need them to provide (correct number of double-bagged sample bottles, mercury-free water for blanks or rinsing, plastic or non-talc latex gloves, other cleaned equipment) or what you should obtain yourself.
- Determine a means of shipping your samples that is convenient for you and the lab.

Pursuant to s. NR 106.145(10)(d), you must contract with a laboratory that is certified under ch. NR 149 for low-level mercury analyses, or a lab that has been certified under ch. NR 149 for mercury and recognized by the Department as having low-level mercury capabilities under the emerging technology provisions of s. NR 149.12(2). As of May 15, 2003, the labs listed below are recognized under s. NR 149.12(2). The locations, phone numbers and approximate LOQs are also listed. For list updates, including deletions and additions, consult http://www.dnr.state.wi.us/org/es/science/lc/info/Hg_low.htm.

Laboratory Name	City and state	Phone number	Approx. LOQ
Northern Lake Service	Crandon, WI	(715) 478-2777	0.2 ng/L
S-F Analytical	Milwaukee, WI	(800) 300-6700	50 ng/L
En Chem	Kimberly, WI	(920) 469-2436	0.5 ng/L
Frontier Geosciences	Seattle, WA	(206) 622-6960	0.2 ng/L
Battelle Marine Sciences	Sequim, WA	(360) 681-3650	0.5 ng/L
Brooks Rand LTD	Seattle, WA	(206) 632-6206	0.5 ng/L
North Shore Analytical	Duluth, MN	(218) 729-4658	0.3 ng/L

Supplies and Equipment Recommended

- A shipping container for the sampling event to identify and protect bottles
- The correct quantity of properly cleaned and prepared glass or fluoropolymer (teflon®) bottles (polyethylene bottles should not be used), stored in double self-seal plastic bags (remember blank and extra bottles, if glass, to account for breakage)
- Lab water, for blanks, in containers and sealed in plastic bags
- Provision for labeling samples (pre-labeled outer bags or other method)
- A sampling table and clean plastic sheeting to cover the table top and plastic clamps or other provision for retaining the plastic sheet on the table (the table may not be necessary if you don't have to set down bottles or you may set them down on another plastic-covered surface)
- Data log book and lab sheets or chain of custody sheets
- Personal protective equipment that you would normally use when collecting samples at the sample collection site
- Tyvek® (or equivalent) coveralls for sampling personnel (unnecessary if you are able to collect uncontaminated samples without them)
- Clean sampling pole stored in protective covering with a detachable piece (preferably plastic and previously cleaned and stored in a plastic bag) that may be used to securely hold the sample bottle (not necessary if you are able to dip the sample bottle directly into the water to be sampled)

Sampling Locations

If possible, select a location where the sample can be grabbed by dipping the sample bottle directly into the water stream to be sampled. If it becomes necessary, for safety or logistical reasons, to use a sampling pole to allow reaching a water stream, make the necessary provisions for securing the sample bottle to the pole in such a way as to avoid contamination of the outside of the bottle. Sampling teams have used various inventions that compliment the clean hands/dirty hands procedure. Your laboratory or DNR contact may be able to suggest a set-up that will work for your situation.

To minimize cross-contamination, collect the field blank first and then the cleanest sample and finally the dirtiest sample. Change gloves in between.

- Effluents and intake samples should be grab samples
- You may collect intake samples (for industrial facilities whose water supply is withdrawn from the receiving water) directly up-river to the intake structure or at an in-plant structure prior to use or potential contamination. If ice cover creates problems with obtaining sample, contact your DNR representative to work out a mutually acceptable solution.
- You may sample chlorinated effluents at a point before or after chlorination.
- You should collect a POTW influent sample as an aliquot from the composite sampler bottle.

Sample Collection

Attachment 1 shows step-by-step mercury sample and field blank collection procedures.

Preservation and Storage for Total Mercury

Ship collected samples to the lab following the procedures you and your lab agreed to.

- Refrigeration of samples for total mercury analysis is not required. In very cold weather, prevent the samples from freezing such as by shipping overnight.

- Follow the instructions of your laboratory for chemical preservation, if any. Preservation of samples in the field is optional. The Department recommends omitting field preservation, thereby eliminating that step as a potential source of contamination.
  Note: Sample bottles that contain acid preservative may need to be shipped in accordance with the federal hazardous materials rules (49 CFR, Part 172).

Reporting Data to DNR

Data for total mercury for all sample locations and grab sample field blanks must be reported to the Department on Discharge Monitoring Reports (DMRs). Limit of detection (LOD) and limit of quantitation (LOQ) values reported to you by your lab must also be reported on the DMR. The value reported in the field blank column on the DMR should be the one generated by the grab field blank procedure. See the attachment for discussion of influent field blanks.

Pursuant to ss. NR 106.145(9) and (10), labs must report results of both field blanks and method blanks on reports sent to clients. Labs may correct reported sample results based on method blank concentrations if criteria are met and clearly shown on reports. Labs or permittees **may not** correct sample results by subtracting results of field blanks.

Future Sample Quality Improvement

S. NR 106.145(10)(b), Wis. Adm. Code requires that the analytical method used for a sample must be sensitive enough to quantify actual mercury concentrations in the sample, or down to 1.3 ng/L, whichever is greater. If a sample result is greater than 1.3 ng/L but falls below the LOQ that your lab reported, your lab did not use a sensitive enough method. If that happens, your lab should retest the sample using a more sensitive method. If your lab is unable to perform a more sensitive method, the lab should subcontract to a lab capable of meeting the necessary sensitivity. If you are unable to acquire data that meets these requirements for any monitoring period, we recommend that you report the sample result with the LOD and LOQ from the less sensitive method on the DMR and then contact another lab to perform future analyses.

S. NR 106.145(9)(c), Wis. Adm. Code requires that field blank sample results must not exceed a) one-fifth the level in the sample, b) the test LOD or c) 0.5 ng/L, whichever is greatest. If results of the monitoring reported by the lab indicate higher field blank contamination, you should still submit the results of samples and field blanks, as reported by your lab, on the DMR. However, for future monitoring events, take steps to reduce contamination by investigating potential sources of contamination and taking corrective steps on your sampling procedures.

If you have questions, contact your lab or your DNR representative or Tom Mugan at (608) 266-7420 or Donalea Dinsmore at (608) 266- 8948.

Attachment 1 - Clean Hands/Dirty Hands
Basic Sampling Procedure Excerpted from EPA Method 1669

Recommended Step-by-step Procedure

This is the basic procedure for collecting one sample. It should give sampling personnel an idea on which surfaces each person on the team may touch. To incorporate collection of field blanks into the procedure you may add a third person (another clean hands) to the team or you may try a procedure where "Clean hands" sets sample bottles down on previously spread plastic sheeting. Descriptions of possible field blank procedures follow the basic procedures for collecting samples.

1. Both members of the team carry the equipment near to the sampling site.
2. Both members remove Tyvek® suits from protective bag and put them on (if used).
3. Designate one member of the team as "clean hands" and the other as "dirty hands".
4. "Dirty hands" opens a bag containing non-talc gloves.
5. "Clean hands" removes a pair of clean gloves and puts them on. "Clean hands" touches only the inner bag and sample bottle from this point on.
6. "Dirty hands" removes a pair of clean gloves and puts them on.
7. "Dirty hands" removes an empty bagged sample bottle from the shipping container (and closes the container) and opens the outer bag.
8. "Clean hands" opens the inner bag, removes the bottle, and folds down the inner bag.
9. "Dirty hands" seals the outer bag and puts it back in the shipping container.
10. "Clean hands" removes the bottle cap and holds the cap in one hand.
11. With the other hand, "Clean hands" fills the sample bottle by dipping into the flowing water stream, taking care to keep their hand "downstream" of the inlet of the sample bottle. The bottle is filled, leaving a slight headspace. "Clean hands" tightly screws the cap back onto the bottle.
12. "Dirty hands" retrieves the bags and opens the outer bag.
13. "Clean hands" reaches inside to re-open the inner bag, puts the sample bottle inside and seals the inner bag.
14. "Dirty hands" seals the outer bag and places the bagged sample into the shipping container.
15. One member of the team then records the sample bottle number with description and other relevant data.

Field Blank Collection Procedures

Again, it may be useful to use a third person (another "clean hands") for field blank collection. Alternatively, the "Clean hands" person may set sample bottles or field blank bottles down on previously spread, clean plastic sheeting. The grab field blank procedures check for contamination using sampling procedures for grab procedures that are used for effluent samples or (for industrial facilities) intake samples. Report results of the grab sample field blank on the Discharge Monitoring Report each time you report grab sample results.

Note: A field blank is a volume of mercury-free water (usually shipped from the lab) that is processed through the full sequence of sampling steps. Contrast this to a trip blank that is a bottle that "goes along for the ride" but remains unopened at the sampling site.

Possible grab field blank procedure #1 uses a procedure where sample bottles come from the lab filled with mercury-free water. Once "Clean hands" retrieves a full sample bottle from the inner bag, "Cleans hands" pours the contents out to waste and sets the bottle and cap on the plastic sheeting. "Clean hands" then retrieves a second full bottle from its inner bag, removes the cap and pours its contents into the first bottle. The first bottle now becomes the field blank and is repacked into its double bag. The second bottle that has been emptied is now used to collect the sample according to the above procedure.

Possible grab field blank procedure #2 uses a large double-bagged container of mercury-free water supplied by the lab. After opening the field blank bottle outer bag for "Clean hands", "Dirty hands" seals and temporarily stores the outer bag. "Dirty hands" then retrieves the filled large water bottle and opens the outer bag while supporting the bottle. "Clean hands" removes the cap from the field blank bottle and sets both on the plastic sheeting and then opens the inner bag of the large water bottle, removes the lid and exposes the mouth of the container so "Dirty hands" can pour from it. As "Dirty hands" pours, "Clean hands" picks up the field blank bottle and collects the field blank. "Clean hands" caps the field blank bottle, sets it on the plastic sheeting then recaps the large water bottle and seals the inside bag. "Dirty hands" then seals the outer bag, returns the large bottle to the shipping container, retrieves the double bag for the field blank bottle and reopens the outer bag for "clean hands" to replace the field blank.

Composite sampler field blank procedures may be appropriate when a permit requires a POTW to collect influent composite samples. Since a field blank is processed through the entire sampling procedure, a composite sampler field blank (used for influent) will not be the same as an effluent grab sample field blank (used for effluent). You report results of the **grab sample** field blank on the Discharge Monitoring Report each time that you report grab-sample results. Assessing influent sample contamination is more appropriately done as part of the pollutant minimization program documentation required by NR 106.145(7).

The sampling equipment and sample collection container should be cleaned and the tubing should be replaced regularly. Because influent levels of mercury typically exceed 50 ng/L, you can expect any bias imparted by ambient contamination to be overwhelmed by the sample concentration. The logistical barriers of collecting a field blank through the composite sampler may be difficult enough to overcome that it may be necessary to devise other means of assessing contamination in these samples. For example, comparing a grab sample with a sample "grabbed" simultaneously by the automatic sampler might provide an indication of the level of contamination introduced by the sample coming in contact with sampler lines, piping, sub-samplers or composite containers

If you do collect a composite sampler field blank, you will need a large container of mercury-free water like the one described in grab field blank procedure #2. Since there are different types of samplers in use, procedures will vary with the sampler type. For suction tube samplers, draw a volume of mercury-free water out of a storage vessel, through the tubing and pump and into the composite container. For flow-through samplers, you will need to devise a way to transfer some of the mercury-free water into the sub-sampler mechanism. Once the blank water is in the composite container, use clean hands/dirty hands procedures to transfer a mixed (such as by swirling) aliquot into the field blank bottle.

Milwaukee Metropolitan Sewerage District
Amalgam Management at Dental Offices Ordinance

11.214 Amalgam Management at Dental Offices

(1) This section applies to any dental office that places or removes amalgam. If work in a dental office is limited to work that does not involve placing or removing amalgam, such as orthodontics, periodontics, oral and maxillo-facial surgery, endodontics, or prosthodontics, then this section does not apply.

(2) All dental offices shall implement best management practices for amalgam as established by the Wisconsin Dental Association.

(3) Within the shortest reasonable time, but not later than February 1, 2008, every vacuum system where amalgam is placed or removed shall include an amalgam separator that meets the criteria of the International Standards Organization (ISO 11143). Dental offices shall install, operate, and maintain the amalgam separator according to instructions provided by the manufacturer. The amalgam separator shall have a design and capacity appropriate for the size and type of vacuum system.

(4) On or before February 1, 2005, each dental office shall submit a report that certifies the implementation of the management practices required by sub. (2) and identifies the contractors used to remove amalgam waste within the last twelve months.

(5) On or before February 1, 2006, each dental office shall provide a schedule for the installation of the amalgam separator required by sub. (3).

(6) On or before February 1, 2007, each dental office shall provide a report providing the following information.

(a) If installation of the amalgam separator is complete, then the report shall identify the installation date, the manufacturer, and the model name.

(b) If installation of the amalgam separator is incomplete, then the report shall briefly explain the delay, provide an installation schedule, and identify the manufacturer and the model name of the amalgam separator that will be installed.

(7) If a dental office has provided a report according to sub. (6)(b), then the dental office shall notify the District of the completion of installation within five days after completion.

(8) The District shall provide forms for reporting the information required by subs. (4), (5), (6), and (7).

(9) From the contractors used to remove amalgam waste, dental offices shall obtain records for each shipment showing: the volume or mass of amalgam waste shipped; the name and address of the destination; and the name and address of the contractor. Dental offices shall

maintain these records for a minimum of five years. Dental offices shall make these records available to the District for inspection and copying upon request from the District.

(10) Dental offices shall allow the District to inspect the vacuum system, amalgam separator, and amalgam waste storage areas.

(11) Inspections shall occur during the normal operating schedule of the dental office. The District shall inspect dental offices according to appointments made in advance, as long as this advanced notice does not impede enforcement of this section.

(12) If a dental office is implementing the management practices required by sub. (2) and is operating and maintaining the amalgam separator required by sub. (3), then any numerical discharge limit for mercury established in any other section of this chapter does not apply.

[Adopted by the Commission of the Milwaukee Metropolitan Sewerage District on January 26, 2004]

Milwaukee Metropolitan Sewerage District
Amalgam Rule Special Cases

February 9, 2005

1. Do general practice dentists who do not have vacuum systems need to implement an amalgam separator?

No. These offices are not required to implement separators.

Amalgam separators are designed for vacuum systems. The ISO standard is based upon a vacuum system. The rule did not anticipate general practice dental offices without vacuum systems.

The universe of these offices is small and will contract with time. So far, three dentists have indicated that they do not have vacuum systems. These dentists are semi-retired, working only two or three days per week. Each of these dentists has an office with only one chair. These offices have cuspidors.

Although a separator is not required, these offices must implement BMPs. In this case, BMPs would include recycling the amalgam collected in the cuspidor trap.

2. Is a medical clinic required to have a separator when dental work occurs one day per month and when the vacuum system is a mobile, self-contained system carried into the clinic by the dentist?

No. The medical clinic is not required to have a separator.

The dentist indicated that he was providing free dental care to poor people at an inner-city medical clinic. The dentist used large amounts of amalgam. The vacuum collects one to two liters of wastewater by the end of the day. The dentist drained the wastewater into a sink at the clinic at the end of the day.

Decanting the wastewater through a filter and recycling the filter with the captured amalgam would be appropriate. A coffee filter or something similar would be sufficient. The dentist indicated that he would do this filtering.

3. Is an endodontist, who occasionally drills into an amalgam filling when doing a root canal, required to have a separator?

No. The office is not required to have a separator.

General practice dental offices are the focus of the rules. According to the dentist who asked the question, drilling through amalgam is not frequent, but not unusual. It occurs several times per year.

This interpretation may need to be reviewed in the future, especially if additional mercury reductions need to be achieved at the treatment plants.

In the future, an amendment that added a specific threshold, such as 10 removals per year, might be useful.

Although not required now, voluntary installation would be appreciated.

4. Is a pediatric dentist required to have a separator when the dentist does not place amalgam but removes amalgam fillings a few times per year?

No. The office is not required to have a separator.

Although amalgam discharges are not zero, the removal of amalgam is sufficiently unforeseeable that this office qualifies as an office that "does not place or remove" amalgam.

In the future, an amendment that added a specific threshold, such as 10 removals per year, might be useful.

Although not required now, voluntary installation would be appreciated.

5. Is a separator fabricated by a dentist for the dentist's own office acceptable?

No, except in the special case discussed below. Although a dentist may be able to fabricate a device from materials acquired from a local hardware store and this device may be similar in design to commercially available separators, this device does not have the ISO certification required by the rules.

In rare cases, a dental office may have unique circumstances for which no separator is commercially available. For example, a dental clinic may have a combination of a large size and a complex vacuum system. In this case, the dental office would need to submit information showing: (1) its unique circumstances, (2) why no ISO-approved separator is applicable, and (3) its custom-designed separator would achieve performance consistent with the ISO standard. ISO approved separators are available for large systems, so these special circumstances would be very rare.

Milwaukee Metropolitan Sewerage District
Guidance for Complying with the
Record Keeping Requirements for Amalgam Waste

November 24, 2004

To comply with sec. 11.214(9), MMSD Rules, amalgam recycling records at dental offices need to include the following information. This information may be provided by contractors, such as transporters, recyclers, or vendors, or records created by the dental office. The presence of the information is critical, but the type, format, or creator of the record is not.

(1) The name, address, and telephone number of the initial recipient of the amalgam waste.
Examples include Safety Kleen, DRNA, Amalgaway, Enviro-Chem, etc.

The identity of the transporter (examples: post office, UPS, Fed-Ex) is not critical.

The location where the mercury will be recovered, such as Mercury Waste Solutions, Onyx, or others, might not be the initial recipient and is not critical for these records. However, to protect yourself from future liability, you may want to request that the initial recipient of the amalgam waste provide you with a written certification of recycling. The initial recipient should be able to provide you with the name and address of the company that will complete the mercury recycling process. Amalgam waste not recycled must be managed as a hazardous waste.

(2) A shipping date and a volume or mass for each shipment.
Example: 11/01/2004 - 1 container – 5 gallons
11/01/2004 - 1 container – 2 lbs.

Sources that can provide the volume or mass include, but are not limited to:

(A) Receipts from initial recipient (Safety Kleen, DRNA, Amalgaway, Enviro-Chem, etc.)
(B) Receipts from the transporter of the material (Fed Ex, UPS, Post Office, etc.)
(C) Receipts from the vendor providing the amalgam recycling container
(D) Receipts from the vendor recycling waste from an amalgam separator

AN ORDINANCE REGULATING MERCURY CONTAINING DEVICES IN THE CITY OF ASHLAND

The Mayor and the Common Council of the City of Ashland do ordain as follows:

406.10 Sale of Mercury-Containing Products Prohibited

It shall be unlawful for any retailer or commercial enterprise or proprietor to sell, offer to sell, or distribute any device containing fifty or more milligrams of mercury, excluding dental amalgams.

406.20 Removal of Mercury-Containing Devices Before Demolition

All mercury containing devices must be removed from properties before demolition.

406.30 Penalty

Any person, firm, or corporation that violates any provision of this ordinance shall forfeit not less than $100 for each offense, plus the cost of prosecution.

406.40 Effective Date

This ordinance shall take effect on August 15, 2002, following passage and publication.