

**Metropolitan Council Environmental Services
Voluntary Mercury Reduction Agreement**

2003 ANNUAL REPORT
March 2004

1.0 Introduction and Background

The Metropolitan Council Environmental Services (MCES), a division of the Metropolitan Council, submitted a Voluntary Mercury Reduction Agreement (VMRA) to the Minnesota Pollution Control Agency (MPCA) on December 28, 2000. The VMRA summarizes the past actions and outlines the commitments under this agreement, according to topic area. This annual report describes the activities and accomplishments that occurred during the year 2003. These activities and accomplishments are arranged using the same major headings found in the VMRA.

2.0 Control of Discharges to the MDS

MCES formed a partnership with the Minnesota Dental Association (MDA) in 1998 as part of our Mercury Reduction Program, and undertook the two studies noted below. The studies evaluated dental amalgam separation equipment and loadings of mercury in amalgam to the sanitary system.

Voluntary Dental Clinic Amalgam Recovery Program

In January 2003, the Metropolitan Council of the Twin Cities (Council) and the Minnesota Dental Association (MDA) established the Voluntary Dental Clinic Amalgam Recovery Program, a jointly managed program to significantly reduce the amount of mercury discharged to wastewater treatment plants, and ultimately to the environment. The Council and MDA issued a joint press release and associated fact sheet on the program on January 3, 2003 (See attachments 1 and 2.) A booklet promoting this program was produced by the Council and the MDA, and sent to all Minnesota dentists in March of 2003. (See Attachment 3.) In addition, the MDA provides an update of the contractors and equipment on its website (See Attachment 4.) The reduction of mercury will be accomplished through the installation and proper operation of amalgam separators in the 825 general practice dental clinics in the seven-county Minneapolis-Saint Paul metropolitan area (approximately 1656 statewide). The Council operates the wastewater collection and treatment system for the Twin Cities metropolitan area and the MDA represents approximately 81% of all practicing dentists in Minnesota. The Minnesota Chapter of the American Public Works Association presented its 2003 annual "Technical Innovation Award" to the Council and to the MDA for this program.

Background

The Council and the MDA began working together in 1998 to explore the best options for keeping mercury-containing amalgam from entering wastewater – intercepting a pollutant at one of its sources. Council staff conducted extensive studies from 1998-2001, including analysis of mercury loads in dental clinic wastewater and on-site evaluation of various types of amalgam separators, in seven clinics. The comprehensive nature of the studies was unique. The first study tested five separators for effectiveness and all of the mercury containing wastewater from the clinic vacuum systems was captured, thereby eliminating the problem of collecting unrepresentative subsamples. Custom made sampling equipment was designed and installed to operate under vacuum, within the clinic vacuum systems. The second study involved monitoring mercury levels in biosolids at two WWTPs, each with and without amalgam separators in place at virtually all dental clinics tributary to those plants. These studies confirmed that dental clinics are a significant source of mercury in wastewater, up to 44%, and there are economical separators that can effectively treat clinic wastewater. Based on what was learned from the studies, staff from the Council and the MDA worked together to create a program that promotes the installation and proper operation of amalgam separators.

Program Implementation

The Environment Committee of the Metropolitan Council recommended adoption of the program on November 12, 2002, with final Metropolitan Council approval on December 11, 2002. The Voluntary Dental Clinic Amalgam Recovery Program was announced in the Twin Cities in January 2003, with the MDA and the Council promoting the program with the goal of achieving voluntary installation and operation of acceptable amalgam separators by all dentists who place or remove amalgam (primarily general practice clinics) within the Council's wastewater service area, by February 2005. The Council and the MDA provided necessary program information to the dental community, such as mailings and notifications, lists of approved amalgam separators and service providers, and an informational booklet on the program. In addition, the MDA also began promoting separator installation to dentists throughout the state of Minnesota. Dental clinics are expected to operate the separators appropriately after installation and to properly manage the amalgam waste collected by the separators and other devices such as chairside traps.

The program targeted February 2005 as the date by which the amalgam separators would be installed and operational. As of mid-November 2003, less than one year after the announcement of the program, 1047 general practice clinics out of approximately 1656 general practice clinics statewide have committed to installing a separator. (By February 20, 2004 this had increased to 1054 clinics.) This represents approximately two-thirds of all applicable Minnesota clinics. On-going outreach and technical assistance efforts are expected to be successful in achieving the program timelines. As of November 2003, 140 of the 825 metropolitan area clinics have installed a separator. (See Attachment 6.) (By February 20, 2004 this had increased to 162 metropolitan area clinics.)

Program Administration

At the outset, MDA asks each dental clinic to make a commitment to install an amalgam separator. After installation, clinics will report to MDA on their amalgam separator installation and related waste-management practices. The Council will then provide a certificate of compliance to the clinic. After being issued a certificate, a clinic will be presumed to be meeting the Council local limit, exempt from needing a Council Industrial Discharge Permit and paying permit fees, and exempt from self-monitoring requirements (sampling and analysis). In order to maintain the certificate of compliance, the clinic will be expected to report to the Council on an annual basis.

To maintain certification, dental clinics must operate within the expectations of the Voluntary Amalgam Recovery Program, including ongoing operation of the amalgam separator equipment and proper management of all amalgam wastes. Amalgam separators that have been tested by the ISO test method (No. 11143), and have been shown to remove an average of at least 99% of the amalgam particles, will be considered an approved separator. This 99% criterion is above the 95% called for in the basic ISO test, meaning up to 1% can pass the separator, rather than up to 5%. The Council has also put forth a considerable effort in 2003 to address a discrepancy in the ISO test method related to flowrates used for conducting the test. This effort should lead to an improved awareness by others using the ISO test procedure as a method to evaluate separators.

A steering committee of MDA and Council representatives oversees the direction and progress of the program. A technical advisory committee was also set up and includes representatives of dental supply companies, waste management service providers, metropolitan area county hazardous waste representatives, plumbing companies, and others.

The voluntary approach of this program will be less burdensome and less expensive than a conventional regulatory approach for each dental office as well as for MCES. This program is a fair and low-cost means of reducing the dental contribution of mercury to the sanitary sewer system. It avoids costly infrastructure expenses at MCES wastewater treatment facilities, enhances protection of the environment, continues the partnership with MDA and dentists, and promotes equity and fairness across sewer user groups.

3.0 Policy-Related Actions

The following policy related actions were taken in 2003:

- In 2003, MCES awarded \$1,172,874, and reallocated \$627,500 of the \$7.5 million in grant monies available (over a five-year period - 1999-2004) to reduce non-point source (NPS) runoff. Since mercury strongly associates with soil particles, reductions in NPS runoff will lead to reductions in mercury in runoff to surface waters. To date, the Council has approved about \$7.5 million in competitive and targeted grants for nonpoint source pollution abatement and prevention projects.
- As part of its Dental Insurance Program benefits, the Council continued coverage of employees and their dependents to use mercury-free posterior restorations (dental cavity fillings) by removing the cost disincentive to selecting the significantly more expensive mercury-free composites.

4.0 External Pollution Prevention

MCES has dedicated much staff time to help other organizations learn about and minimize the use of mercury and mercury compounds, as well as minimizing the potential release of mercury to the environment. Among the activities involving technical assistance and support that were undertaken in 2003 are the following:

- MCES has been an active participant in the Mercury Work Group of the Association of Metropolitan Sewerage Agencies (AMSA), a trade association representing publicly owned treatment works (POTW). This group has been active in persuading the U.S. Environmental Protection Agency (EPA) to resume validation testing of EPA's mercury Method 245.7 and conducting follow-up sampling of EPA's 1994 study of Great Lakes POTWs.
- MCES is a participant in an AMSA project that began in 2002, and is still underway. This will involve tracking mercury levels within wastewater treatment plants as certain cities implement their programs to control mercury contributions from dental offices.
- An MCES staff person is the lead in another AMSA group addressing amalgam separator ISO test method issues and related amalgam separator program issues. This work began in 2003, and is now ongoing.
- The Minnesota Office of Environmental Assistance sponsors meetings of healthcare providers, regulators, technical service providers, trade associations, and others through a

group known as the "Healthcare Environmental Awareness and Resource Reduction Team (HEARRT)." MCES continues to be an active participant in the activities of HEARRT.

- MCES staff have spoken at a number of conferences, disseminating information and promoting the minimization of the use and the release of mercury. MCES staff testified before a U.S. House of Representatives' Subcommittee on Human Rights & Wellness Hearing in Washington D.C. on dental amalgam waste issues.
- The Massachusetts Strategic Envirotechnology Partnership (STEP) is a joint program between the Executive Office of Environmental Affairs (EOEA) and the University of Massachusetts to assist business with the development and promotion of innovative, technology-based solutions to environmental problems in the Commonwealth. The STEP program is currently evaluating methods to test amalgam removal equipment, looking for a simpler, less expensive benchtop method that could replace the ISO method. Their testing compares a new benchtop method with clinic testing of equipment to determine if the benchtop method is "predictive" of amalgam removal equipment operating in clinics. MCES is providing peer review of the study.

5.0 Internal Pollution Prevention

Among the activities involving internal pollution prevention that were undertaken in 2003 are the following:

- MCES staff who conduct or manage demolition projects have been informed that all mercury-containing devices must be removed and recycled prior to demolition.
- MCES continued its emphasis with employees on the importance of appropriate management of fluorescent lamps and mercury-containing materials from its operations. In 2003, a total of 1,944 fluorescent lamps and six pounds of elemental mercury were shipped for recycling.
- MCES R&D staff collected and analyzed 132 stream water samples for filtered and unfiltered total mercury and methylmercury and 30 other water quality parameters. Samples were collected from the Mississippi and Rum Rivers, and from Trott Brook and Cedar Creek, two tributaries of the Rum River. The research has demonstrated that methylmercury inputs to these streams are seasonal and primarily associated with high discharge events during mid-summer. Higher methylmercury concentrations are correlated with reducing conditions in these stream waters, suggesting that wetlands are sources of methylmercury to these streams.
- MCES R&D staff collected and determined total mercury in 59 daily composite samples of Metropolitan Plant influent over a cumulative period of 8 weeks. The data will allow MCES staff to track anticipated reductions in mercury loading at the plant due to new controls applied to dental office discharges.
- MCES R&D staff collected and analyzed 32 samples of treatment plant effluent for filtered and unfiltered total mercury. Twenty samples were collected at the Metropolitan Plant, and 4 each were collected at the Blue Lake, Seneca, and Empire Plants. The results provided