

Monroe County's Mercury Reduction Program

by Harry Reiter

In 1995, the Environmental Protection Agency (EPA) and the Great Lakes states agreed to a comprehensive plan to restore the health of the Great Lakes. The Final Water Quality Guidance for the Great Lakes System commonly referred to as the Great Lakes Initiative (GLI) defined the pollutants of concern that all publicly owned treatment works (POTWs) would need to address in the decades to come. Mercury is one of these pollutants. Most of us old timers remember science class where we were given a small ball of mercury. We took this liquid metal, broke it apart on the lab bench and watched as it rolled back into the ball we started with. If only it were this easy to control mercury in the environment.

Mercury Action Plan

Monroe County began focusing on mercury in the mid-1990s as part of the Rochester Embayment Remedial Action Plan which identified the element as a high priority pollutant of concern. Unlike the other identified pollutants of concern, mercury is still used today. The program began by identifying the sources. Literature searches uncovered dental and hospital sources as major discharges to POTWs. A task group was formed consisting of county departments of Environmental Services and Health along with the University of Rochester, Strong Memorial Hospital and Eastman Dental School to prepare a best management practice (BMP) manual titled, Reducing Mercury Use in Health Care – Promoting a Healthier Environment. Strong Memorial Hospital then field tested the practices by eliminating all its mercury sources and Eastman Dental School implemented the BMPs. The manual, completed in 1998, was distributed to all hospitals and dental facilities urging voluntary compliance.

Background monitoring in the collection system and POTW, using the then unapproved Environmental Protection Agency's method 1631, was done in 1998 as part of the BMP manual development. The table below shows some of the results.

Education and BMP Compliance

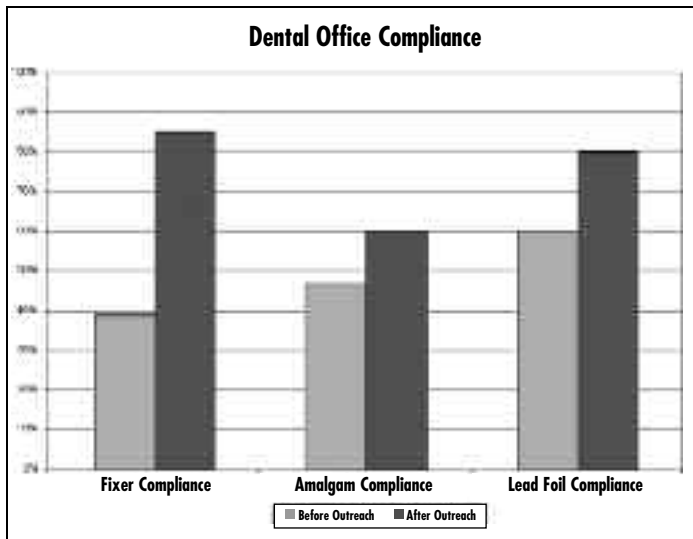
Feedback from dentists and hospital officials through the next two years found the voluntary program ineffective. Therefore, in 2001 the Monroe County Department of Environmental Services began an education program with dental offices. The program addressed all metal pollutants associated with dental facilities: mercury from amalgam, silver from photo processing and lead foil from x-ray film. Education material was assembled. Discharge monitoring data shared with the dental community showed the impact to the POTW and the importance of this pollution prevention effort.

The Monroe County Dental Society has played a large role in education. They agreed to assist in the education process by getting the message to their members, having the department speak at meetings and conferences and donating vendor space to Monroe County at these same conferences.

Best management practices are no longer voluntary. BMP compliance performance is measured instead of discharge monitoring concentrations. Compliance performance showed improvement within the first six months of the initial education program as seen in the Dental Office Compliance graph (next page).

The mercury reduction program has been assisted along the way with technology and cooperation in the dental and hospital setting. Amalgam fillings are being increasingly replaced with composites.

Sample Site	Hg Conc. (ppt)	Sample Site	Hg Conc. (ppt)	POTW Inf Hg Conc. (ppt)	POTW Eff Hg Conc. (ppt)
Dental	3,605.00	Residential	258.00	0.379	0.024
Dental	95.00	Residential	80.40	0.178	0.030
Dental	13,600.00	Residential	63.30	0.086	0.017
Dental	10,200.00	Residential	51.20	0.058	0.014
Dental	7,230.00	Residential	56.30	0.111	0.011
Dental	6,910.00	Residential	52.10	0.123	0.017
Hospital	1,714.00	Residential	26.60	0.139	0.012
Hospital	160.00	Water supply	0.34	0.115	0.009
Hospital	56.00	Water supply	0.40	0.422	0.009
Hospital	145.00	Stormwater	11.30	0.231	0.010
Hospital	128.00	Sodium hypochlorite	1,020.00	0.202	0.014
Hospital	1,815.00	Sodium hypochlorite	838.00	0.090	0.016
Hospital	327.00			0.068	0.013
Industry	89.20			0.083	0.017
Industry	152.00			0.047	0.004
Industry	4.48				
Industry	74,500.00				
Industry	1,360.00				
Industry	39.40				



Digital thermometers and sphygmomanometers have replaced their mercury-containing counterparts in hospitals. The hospital and dental associations have acknowledged the issues of mercury pollution and are willing, in most cases, to do their part.

Collection system monitoring did more than substantiate the county's concern of mercury in hospital and dental facilities. It uncovered a source from a former thermometer manufacturing company. The company was relocated over 10 years prior and the building demolished. However, solids found in the sewer contained trapped mercury. Discharge from the company was on a dead-end section of combined sewer and, fortunately, the solids remained in

the sewer. The company was contacted and a voluntary clean-up agreement was reached to remove and properly dispose of the solids.

The county has also addressed the residential component to mercury pollution. The Household Hazardous Collection Facility accepts mercury containing products such as thermometers, thermostats, fluorescent light bulbs and button batteries. Thermostat Recycling Corporation provides a free "take back" program available to communities and businesses. Information on how your community can participate is available at www.nema.org or by calling 1-800-238-8192.

Proof Is in the Sampling

Sampling of the POTW effluent will be conducted in 2008 to see if there have been any improvements over the years. While the steps so far are thought to have made a difference, the proof will be in the discharge results. Monroe County does not have a formal Pollutant Minimization Plan (PMP) requirement in the POTW State Pollutant Discharge Elimination System Permit. The Department of Environmental Conservation's PMP guidance manual has been recently reviewed and the past efforts described above are equal to the requirements of a PMP.



Illustration by Michelle Heyes

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