



OSWER Innovations Pilot

Maximizing Voluntary Reductions in Dental Amalgam Mercury

The Office of Solid Waste and Emergency Response (OSWER) sponsors a series of innovative pilots to test new ideas and strategies for environmental and public health protection. A small amount of money is set aside to fund creative approaches to waste minimization, energy recovery, recycling, land revitalization, and homeland security that maybe replicated across various sectors, industries, communities, and regions. We hope these pilots will pave the way for programmatic and policy recommendations by demonstrating the environmental and economic benefits of creative, innovative approaches to the difficult environmental challenges we face.

BACKGROUND

Dental facilities are known contributors to mercury loading into the environment. The most common use of mercury in dental operations is the dental amalgam. Dental amalgam is a filling material used in restoring teeth that is made up of mercury, silver, and other constituents. Amalgam can enter the wastewater when dentists put in new amalgam fillings or remove old fillings. EPA estimates that the average dentist contributes 0.1 to 0.3 grams of mercury in the form of amalgam per day to wastewater. State regulation of mercury varies. Some states have passed laws requiring dental office controls such as mandatory use of Best Management Practices (BMPs) or the installation of amalgam separators. There is no existing data, however, to show the individual effectiveness of either BMPs or the addition of amalgam separators on mercury levels in wastewater influent, effluent and sludge.

PROJECT APPROACH/DESIGN

An innovative partnership of dentists and dental associations, university extension, and municipal public works will work together to measure the effects of training, technical assistance and recognition on amalgam management practices in dentist offices, and the resulting impact on mercury levels in influent, effluent, and sludge.

The pilot will demonstrate whether significant reductions in mercury can be achieved through the rigorous implementation of voluntary dental office BMPs. The project will be managed by the University of Missouri Extension, Office of Waste Management (OWM). The Missouri Dental Association (MDA), Greater Springfield Dental Society (GSDS), the American Dental Association (ADA), will be involved in training and technical assistance. The City of Springfield will sample influent, effluent, and sludge at the two wastewater treatment plants and will test mercury concentrations in sludge. OWM will survey dentist's use of BMP before and after training and technical assistance. The Choose Environmental Excellence program will certify dentists that employ mercury reduction practices, resulting in greater community recognition for their environmental practices.

INNOVATION

This is the first controlled study in which voluntary mercury reduction efforts will be measured and compared to mercury levels in influent, effluent and sludge at a treatment plant. This pilot will provide data on the individual effectiveness of BMPs or the addition of amalgam separators on mercury levels. To be effective a reduction program needs to address

all of the potential sources of amalgam waste and the most effective routes of recycling or disposal.

BENEFITS

Reductions in environmental mercury will benefit public health since mercury is a known neurotoxin. The project will promote a better understanding of the impact of BMPs and amalgam separators. The results should provide data on effective reduction opportunities that can be replicated across the country.

CONTACTS

Craig Smith, EPA Region 7, Innovations Working Group member, 913-551-7683.

For additional information, visit the EPA OSWER Innovations web site at:
www.epa.gov/oswer/iwg.htm.