

# EPA Region 1 Perspective Dental Amalgam Overview

Reductions in Mercury in Sewage Sludge  
Through Compliance with Dental Best  
Management Practices

CT DEEP Auditorium

June 30, 2016

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# Overview

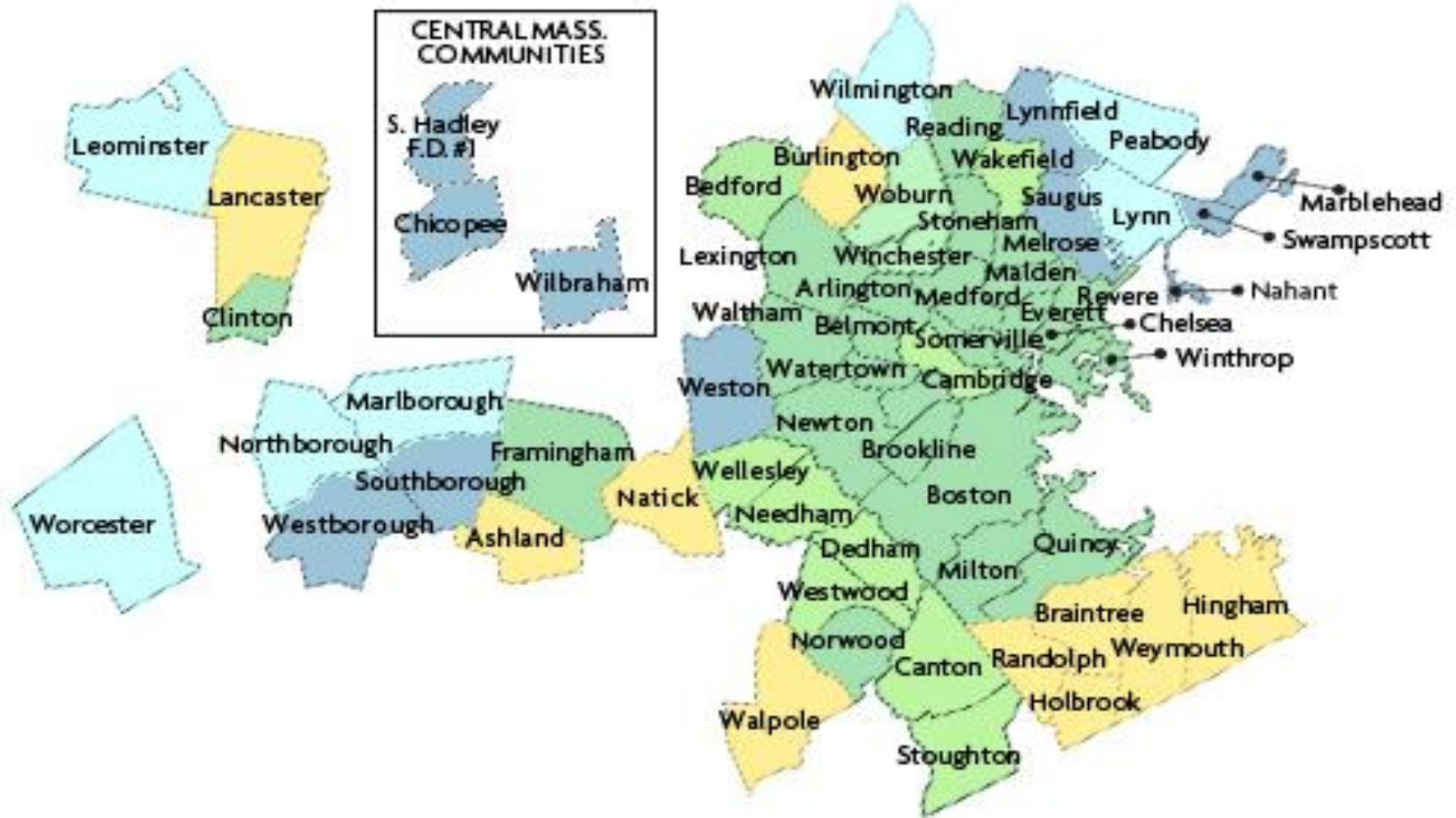
- Regional background on mercury efforts
- Industrial pretreatment program and POTW mercury reduction
- State amalgam separator laws
- State and POTW studies
- Current status of the Federal Dental Rule

- April 1997— Great Lakes Basin Bi-National Toxics Strategy
  - Called for virtual elimination of mercury.
  
- One year later — The Regional Mercury Action Plan adopted .
  - Joint effort between New England Governors & Eastern Canadian Premiers
  - Goal of “virtual elimination of the discharge of mercury into the environment.”
  
- 1998 EPA Region 1 Mercury Reduction Plan
  - launched mercury reduction efforts in the Northeast.
  - Major effort by MWRA



### MWRA SERVICE AREA

- Water only
- Parital/emergency water only
- Sewer only
- Full sewer, partial/emergency water only
- Water and sewer

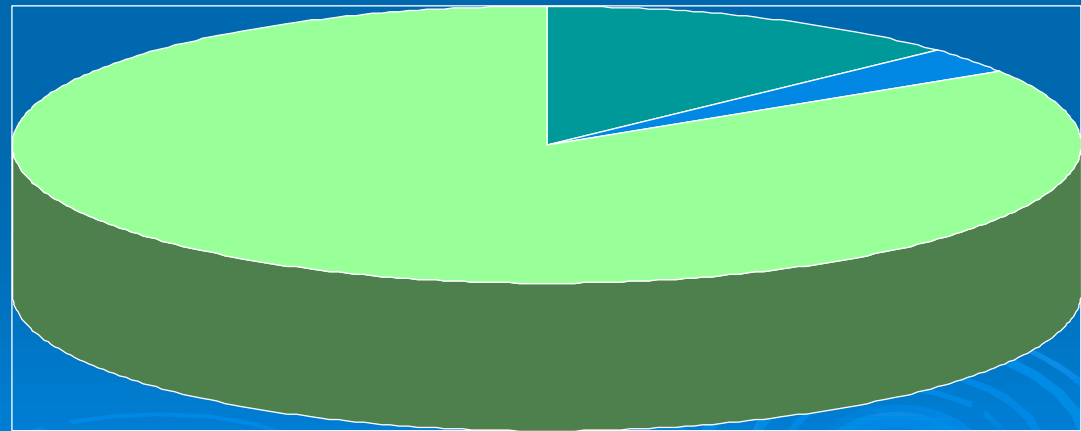
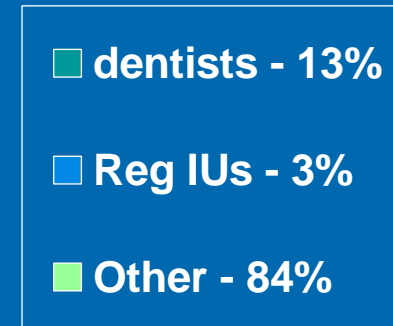




# MWRA

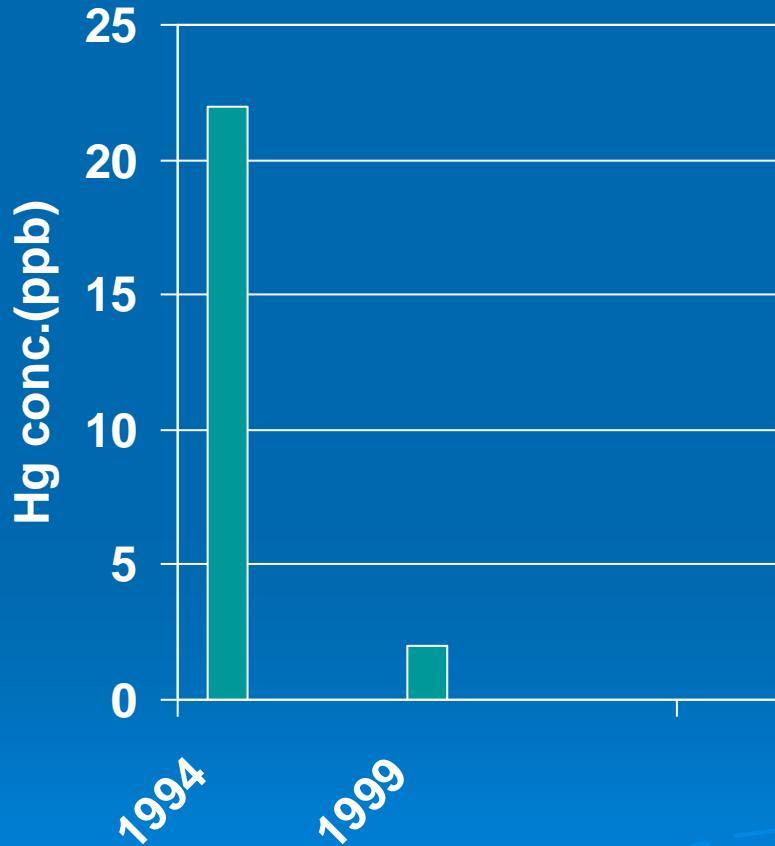
## Massachusetts Water Resource Authority

- Adopted a prohibition on Mercury
- Enforces a local limit at 1 ppb
- ~ 350 MGD
- >250 SIUs



Hg Contributions

# MWRA Hg Reductions



Avg. conc. from medical facilities

- 91% decrease over 5 year span.

# Past Enforcement Penalties

- Tufts New England Medical Center - \$75K
- Tufts University – \$95k
- Cambridge Health Alliance - \$75k
- Brigham and Womens Hospital - \$68k
- St. Elizabeth Medical Center - \$148k

## Recent Penalties assessed

- Massachusetts General Hospital - \$48k
- Forsyth Dental Institute - \$77k

# Narragansett Bay Case Study

- The Narragansett Bay Commission (NBC) has developed the following set of Environmental Best Management Practices (BMPs) for the Management of Waste Dental Amalgam to help the dental community safely and economically reduce the amount of mercury released into the environment.

[www.narrabay.com/Documents/PDFs/NewDentalBMP.pdf](http://www.narrabay.com/Documents/PDFs/NewDentalBMP.pdf)

# NBC Case Study

- Operates the two largest wastewater treatment plants in Rhode Island receiving wastewater from 10 cities and towns.
- ~1500 permitted users
- 2002: NBC began developing Dental BMP Program
- 2004: NBC began implementation of Dental BMP in cooperation with the Rhode Island Dental Association.
  - Require annual inspection since the implementation of the program
- 2004: 100% compliance with Dental BMP requirements
- 2007: Rhode Island passes state legislation requiring the installation of amalgam separators



# NBC Options for Dentists

1. Install and maintain an amalgam separator
  - maintain efficiency of 99%
  - demonstrate compliance with the "Mandatory" BMPs.
2. Demonstrate continuous compliance with all applicable NBC discharges limits.

# What is Amalgam?



Dental amalgam is 49% mercury by weight 35% silver, 9% tin and 6% copper and 1% zinc

# What is an Amalgam Separator?

- It is a solids collector!
  - Designed to capture solids so that they can be recycled and disposed of properly.
  - Captures mercury by default, not by design.
  - Designed to capture 99% of solids by weight not mercury
- Unit price from ~ \$400 to ~ \$1000

# Field's Point & Bucklin Point WWTFs Influent Mercury Loading



# Region 1 Local Limits

- \* Region 1 average mercury local limit is 0.0368 mg/l or 36.8 ppb
- \* Without the 3 highest POTW values - regional average is 12 ppb



# 11 states have mandatory program requirements

Connecticut

Maine

Massachusetts

Michigan

New Hampshire

New York

Oregon

Rhode Island

Vermont

Minnesota

New Jersey

# Compliance (Installation Only) by State Within the First 3 Years of Legislation

- Vermont – 100%
- Maine – 100%
- Massachusetts – 98%
- New Hampshire – 95%
- Connecticut – 84%
- Rhode Island - >90%

# Massachusetts POTW Results

- From 2004-2009, mercury levels in sludge at the state's largest public POTW (MWRA) decreased by about 48%.
- Reduction in environmental releases of mercury of about 136 pounds per year for this POTW alone

# 2008 Memorandum of Understanding (MOU)

Signed by EPA, American Dental Association (ADA) and National Association Clean Water Agencies (NACWA)

# 40 CFR 441

## Dental Rule Schedule

- Proposal – Federal Register Notice  
September 22, 2014
- 120 Day Public Comment Period
- Comments due February 22, 2014
- Public hearing – November 10, 2014  
EPA – Washington, DC
- Final rule – December 2016



# Benefits

- EPA estimates the rule will reduce discharge of metals to POTWs by at least 8.8 tons per year

# What was Proposed?

## Applicability

- DENTISTS, to include institutions, temporary offices, clinics, mobile units, home offices and dental facilities owned and operated by Federal, state or local governments.

# Exemptions

- Oral pathology, oral radiology, oral surgery, orthodontics, periodontics or prosthodontics

# Exemptions (cont'd)

➤ Dentists are exempt ONLY if they:

1) Do NOT place or remove amalgam

2) Certify (responsible corporate officer signature) to the Control Authority that they do not and will not use or remove amalgam

# Pretreatment Standards

- Removal of at least 99.0% of total mercury from amalgam process wastewater
- Incorporation of BMPs:
  - Scrap amalgam, including dental amalgam from chair-side traps, screens, vacuum pump filters, dental tools, or collection devices may not be flushed down the drain



# Standards (cont'd)

- Chair side traps that may drain to a sewer must be cleaned with non-bleach, non-chlorine containing cleaners that have a pH of 6 to 8. Such cleaning must be conducted at least weekly.
- Must install at least one 2008 ISO 11143 certified amalgam separator that:
  - Is certified to meet removal efficiency 99%
  - Receives all amalgam process wastewater and is INSPECTED at least ONCE per month
  - If not functioning properly, must be repaired or replaced
  - Is regularly MAINTAINED by replacing the amalgam retaining cartridge , canister or unit collection of retained solids reaches the manufacturers stated design capacity or annually, whichever comes first

# Standards (cont'd)

- Existing Source: If separator is installed PRIOR to the proposed rule signature, the dentist satisfies the requirements for 10 years IF they continue to meet the following requirements:
  - Receives all amalgam process wastewater and
  - Is INSPECTED at least ONCE per month and
  - If not functioning properly, must be repaired or replaced and
  - Is regularly MAINTAINED by replacing the amalgam retaining cartridge, canister or unit collection of retained solids reaches the manufacturer's stated design capacity or annually, whichever comes first

# Baseline Monitoring Report

- Existing Source – within 180 days
- New Source – within 90 days
- To include:
  - Name, address, contact info and license #
  - Description of the operation at the discharge:  
total number of chairs (and how many have dental amalgam present, description of the existing amalgam separators currently employed, to include, at a minimum, the make, model and manufacturers recommended frequency of container change.

# Periodic Monitoring Report

- Must be submitted annually to include:

Name, address, contact info and license number of dentist certification that the design and operation of the separator meets the requirements in 441.40 or 441.50 and that the facility is employing the BMP's specified

# Records

- Dentists must maintain for three year from the date they are created:
  - Baseline Monitoring Report
  - 90 Compliance Report
  - Periodic Monitoring Reports
  - Documentation including the date and record of each visual inspection
  - Document specifying the date of amalgam retaining cartridge replacement
  - Records indicating the date of cartridge sent off for proper disposal and the shipping address of the facility to which the cartridge are sent

# ADA Statement

“The Association has consulted with the EPA as it developed the rule and supports a reasonable national pretreatment standard for amalgam waste so long as it is not unduly burdensome on dental professionals.

Based on a preliminary review, the EPA’s proposed rule seems to largely parallel the ADA’s best management practices but further review is necessary.”



# Summarizing NACWA Comments

- Remove the SIU provision
- Increase compliance time for baseline reporting and new sources
- Ensure that POTWs will not need to establish pretreatment programs to regulate only dental offices
- Grandfather existing dental amalgam separator programs
- Provide assurance that violations will not occur for POTWs for a minimal number of dental offices in noncompliance
- Remove the requirement to collect license numbers of dentists
- Allow electronic submission of certifications
- Sunset the rule when it is no longer needed
- Establish federal standards for dental offices to install dental amalgam separators and follow BMPs
- Clearly state that non-compliance is subject to citation from POTWs, states, or EPA, but do not obligate these Control Authorities to require action



# What will the final rule look like?

EPA leaked email below:

“looks like all signs are pointing option 1, the Connecticut approach with enhancements”

So what does that mean exactly?????????

# Questions?

Justin Pimpare  
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