# Region 8 Conference
# Amalgam Separators What's New?
# 101 Review

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# What's New in the Amalgam Separator world?

EPA, NACWA and ADA sign a Memorandum of Understanding Dec 29, 2008. Data gathering on systems installed, voluntary installation of amalgam separators.

Michigan Legislature passes unprecedented law limiting and removing local POTW authority to regulate the dental community Jan 12, 2009. Special interests at its best.

# Lets Split Them Apart

# The Basics of the MOU

http://www.epa.gov/guide/dental/files/mou.pdf

Have Dentists follow ADA BMP's

Voluntarily install separators (ADA BMP's do not require separators only recommend)

ADA intends to establish a tracking system

(Fox governing the hen house)

Any special interest reporting data or self regulating

A contradiction, "demonstrate a significant increase in the use of amalgam separators" however only suggesting a "10%" increase per year ~ 120,000 facilities / ~ 30,000 installations  3000 per year would take 30 years.

# Lets Break them out

# American Dental Association

a. ADA will promote compliance with the ADA BMPs by dentists and other members of the dental team.

b. ADA will prepare and submit to EPA and NACW A for review and comment, the baseline report described in subparagraph B.2., above. Thereafter, ADA resolves to submit reports to EPA and NACW A according to plan they will form when interim goals are established. The parties also resolve to continue to consult and coordinate, as appropriate and agreed upon by the signatories. ADA will revise the reports, as appropriate, and submit the final reports to EPA and NACW A.

"ADA will prepare and submit to EPA and NACW A for review and comment, the baseline report described in subparagraph B.2., above. Thereafter, ADA resolves to submit reports to EPA and NACW A according to plan they will form when interim goals are established. The parties also resolve to continue to consult and coordinate, as appropriate and agreed upon by the signatories. ADA will revise the reports, as appropriate, and submit the final reports to EPA and NACWA."

c. ADA will continue and expand its programs to raise awareness and

provide training, outreach, and implementation resources to dentists and other members of the

dental team, and where possible, dental students, on the benefits of following the ADA BMPs

and the proper ongoing operation and maintenance of the ADA BMPs. This effort includes

working with EPA and NACW A in developing seminars, continuing dental education courses

and web-based compliance assessment information.

d. ADA will facilitate meetings between EPA, NACW A, and the American Dental Education Association and other appropriate associations, to discuss methods

by which these other dental-related associations could contribute to the accomplishment of the goals ofthe Voluntary Dental Amalgam Discharge Reduction Program.

# Environmental Protection Agency

a. EPA resolves to promote to dentists and NACW A members the benefits of dentists voluntarily adopting the ADA BMPs.

b. EPA resolves to submit data it believes is relevant to the ADA to assist in the preparation of the baseline report and the tracking reports.

c. EP A resolves to review and provide comments on the draft baseline report and the tracking reports.

d. EPA plans to raise awareness of this Voluntary Dental Amalgam Discharge Reduction Program with EPA Regional pretreatment personnel, state pretreatment personnel, and POTWs and, as appropriate, provide tools and report progress to these stakeholders and the public.

e. EPA resolves to work, in conjunction with the ADA, to develop a program to provide recognition to dentists who comply with the ADA BMPs, e.g., by providing a certificate to dentists who comply with the ADA BMPs.

f. EP A resolves to work in coordination with ADA and NACW A to develop training tools and information for dentists, States, Tribes, and POTWs.

g. As appropriate, EPA resolves to meet with the American Dental Education Association and other appropriate associations and relevant entities to discuss methods by which these other dental related groups could contribute to the accomplishment of the goals of the Voluntary Dental Amalgam Discharge Reduction Program.

# National Association of Clean Water Agencies

a. Where an individual POTW already has data on the degree of compliance with either a mandatory program or a voluntary program, NACWA will encourage its members to submit such data to the ADA to assist in the preparation of the baseline report and the tracking report.

b. NACWA resolves to review and provide comments on the draft baseline report and the tracking reports.

c. NACW A resolves to continue to provide information to its members on the various methods of reducing the discharge of amalgam to POTW s, including through the Voluntary Dental Amalgam Discharge Reduction Program, as well as other programs and requirements.

# Joint Activities

a. All signatories resolve to work to encourage compliance with the ADA BMPs.

b. All signatories resolve to use their best efforts to work cooperatively to achieve the goals of the Voluntary Dental Amalgam Discharge Reduction Program.

# Limitations

No limitation to any Federal, State or POTW to regulate.

No funds to support the document

# What does it all mean

Signed by Ben Grumbles the out going EPA Assistant Administrator for Water of the Bush Admin.  ADA did not want to deal with the Obama Admin.

A lot of words and ADA suggestion of providing the data

A lot of words with little hope of action

# Questionnaire

**Questionnaire Dental Amalgam Separator**

State:
Date of Legislation:

1. Number of practicing dentists:
2. Data source for the number of dentists:
3. Do the dentists have to certify with the State?
4. Who has oversight of this?
5. Who has enforcement of this?
6. Are best management practices required?
7. Are best management practices enforced?
8. Number of dentists that have certified they have installed an amalgam separator:

9. Number of dentists that have certified they are in compliance with the State law:

10. Number of dentists that have not complied with the regulation:

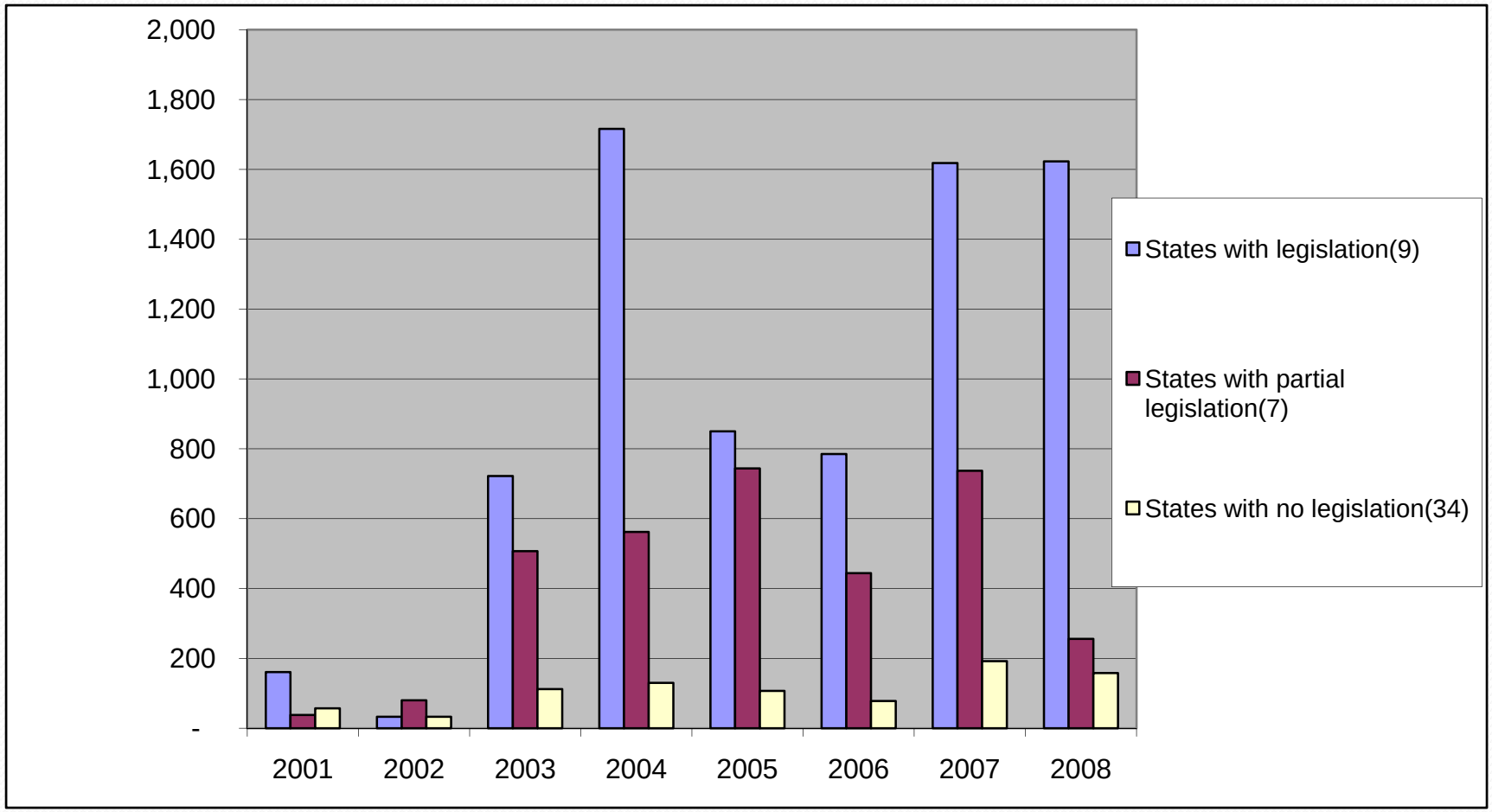
11. Overall compliance % rate:

12. Number of Dental certifications submitted by year
Prior to date of legislation:
Each year after:

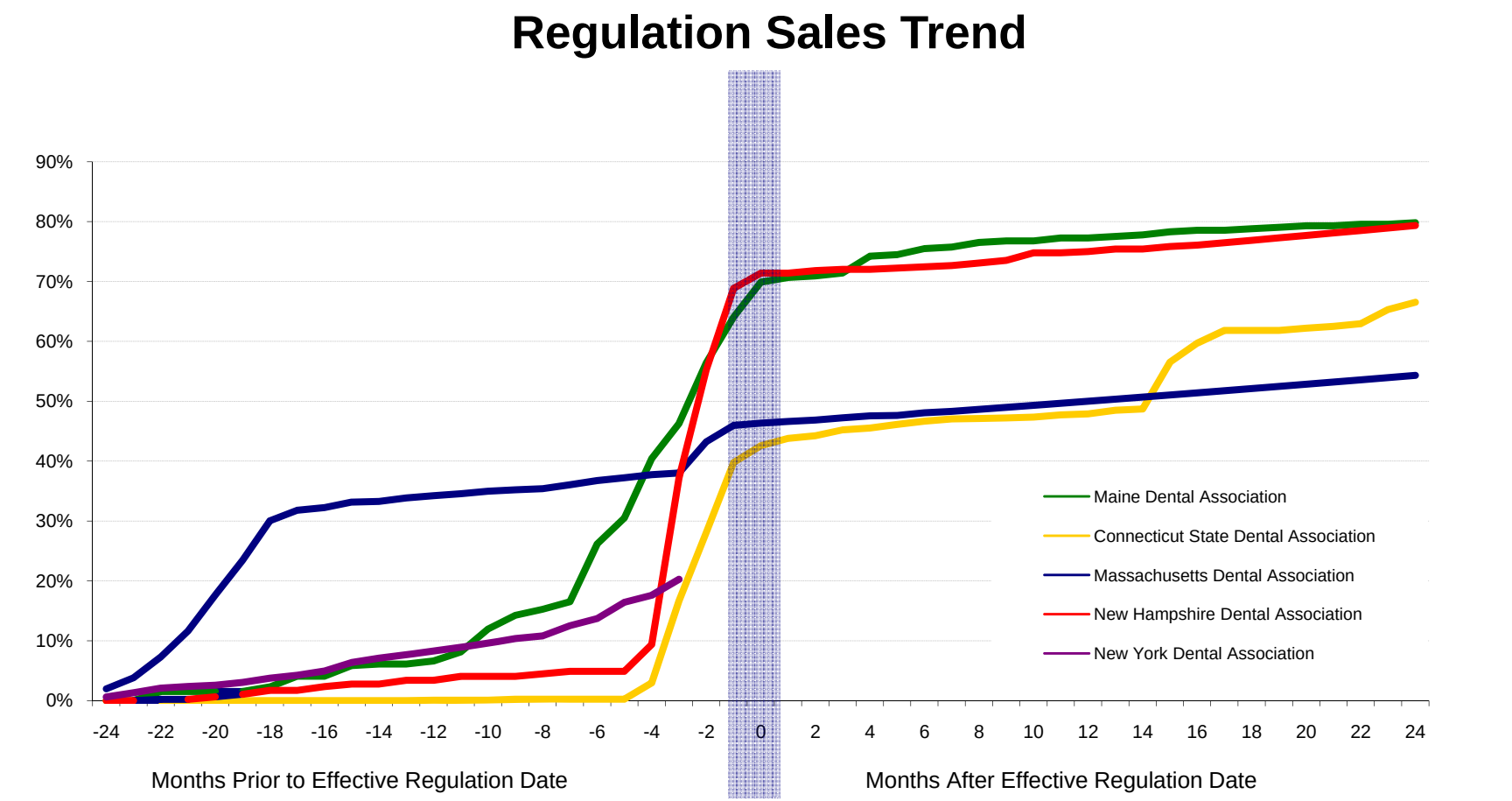
Comments:

Date information collected:
Certifying contact from State:

# 2001-2008 Sales Analysis



# Sales of System



# Current Amalgam Separators Regulations

10 States have mandatory Amalgam Separator regulations

(ME, NH, MA, VT, RI, CT, NY, NJ, OR, MI)

*MN and WA have programs in place but there is no formal regulation

Several other States have local mandatory programs

# Michigan Legislation

http://www.legislature.mi.gov/documents/2007-2008/publicact/pdf/2008-PA-0503.pdf

On or before December 31, 2013, a dentist described in subsection (1) shall install or have installed and use on

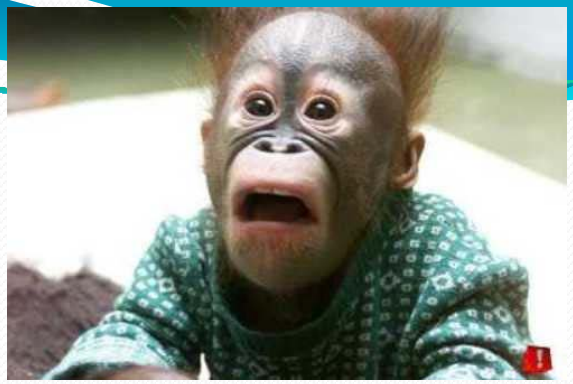
each wastewater drain in the dentist's office that is used to discharge dental amalgam a separator that has an efficiency of 95% or more as determined through testing in accordance with standards published by the international organization for standardization in ISO 11143:2008 "Dental equipment — Amalgam separators".

On or before the expiration of 90 days after the effective date of this section, the department, in consultation with the department of environmental quality, shall promulgate rules regarding best management practice for dental

# Reality

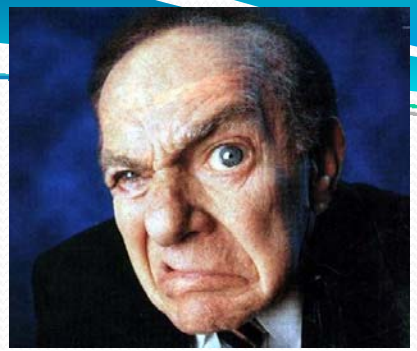
Committee to decide the rules have not even met yet.
reality is 12 – 18 months before rules announced for public comment.

# Pay Attention



Beginning on the effective date of this section and subject to this subsection, this section preempts and supersedes any local ordinance, regulation, or resolution that imposes conflicting, different, or additional standards or requirements on dentists than those contained in this section or rules promulgated by the board under this section. A local unit of government may enact, adopt, maintain, amend, or enforce an ordinance, regulation, or resolution that requires implementation of the requirement in subsections

# Not done yet



# Watching you

(2) and (3) before the date required in subsection (2). A local unit of government shall not enact, adopt, maintain, or enforce an ordinance, regulation, or resolution that imposes conflicting, different, or additional standards or requirements on dentists than those contained in this section or rules promulgated

by the board under this section, including, but not limited to, the requirement to obtain a permit that limits the discharge of mercury into wastewater with a limitation greater than that capable of being achieved by full compliance with this section. This act is ordered to take immediate effect.

# Why Should You Care?

**This could happen to you**

# Effects of amalgam separator installations

Security Water and Sanitation District,
Colorado Springs CO

State of Colorado issued the POTW a cease and desist order. (For not meeting NPDES mercury limits)

Required the installation of amalgam separators
Influent and Effluent total mercury number dropped and now they operate with in the NPDES permit.

# Security Water and Sanitation District

| 2008 SSD Influent Mercury Data | |
|---|---|
| 1/10/2008 | 80.0 ng/l |
| 2/6/2008 | 141 ng/l |
| 3/4/2008 | 91.7 ng/l |
| 4/8/2008 | 113 ng/l |
| 5/1/2008 | 138 ng/l |
| 6/3/2008 | 782 ng/l |
| 7/1/2008 | 150 ng/l |
| 8/4/2008 | 87.7 ng/l |
| ***polishing unit installed 8/15/08*** | |
| 9/3/2008 | 86.8 ng/l |
| 10/1/2008 | 75.7 ng/l |
| 11/3/2008 | 62.1 ng/l |
| 12/3/2008 | 55.3 ng/l |
| | |
| 1/7/2009 | 55.8 ng/l |
| 2/4/2009 | 82.9 ng/l |
| 3/3/2009 | 87.5 ng/l |

| 2008 SSD Effluent Mercury Data | |
|---|---|
| 1/10/2008 | 9.90 ng/l |
| 2/6/2008 | 12.8 ng/l |
| 2/19/2008 | 8.5 ng/l |
| 3/4/2008 | 11.5 ng/l |
| 4/8/2008 | 7.87 ng/l |
| 5/1/2008 | 8.41 ng/l |
| 6/3/2008 | 11.7 ng/l |
| 6/17/2008 | 8.61 ng/l |
| 7/1/2008 | 8.82 ng/l |
| 8/4/2008 | 7.01 ng/l |
| ***polishing unit installed 8/15/08*** | |
| 9/3/2008 | 6.31 ng/l |
| 10/1/2008 | 5.41 ng/l |
| 11/3/2008 | 4.60 ng/l |
| 12/3/2008 | 6.70 ng/l |
| | |
| 1/7/2009 | 6.31 ng/l |
| 2/4/2009 | 7.88 ng/l |
| 3/3/2009 | 6.88 ng/l |

# Review
# What is an Amalgam Separator?

First: The Amalgam Separator name is incomplete.

THESE ARE SOLIDS COLLECTORS

Separate amalgam and every other solid material suctioned down the vacuum line.

Second: Mercury is not the target, solids are.

# What do they do?

Treat contamination at its source

Most from just before the Vacuum Pump

Separate suspended solid and water from air flow

Capture the solids.

Captured solids can be recycled or disposed of properly

# Mercury removal systems?

Amalgam Separators capture “Mercury”

by default not by design (Important relative to MI Law)

Designed to meet an ISO **Particle Standard.**

Designed to capture 99% of solids by weight not total mercury

# ISO 11143 Certification

International Standards Organization

A protocol for testing systems in a laboratory environment

It is a particle standard by weight **(Not mercury)**

- Weigh at the start
- Weigh after drying
- Results based on a % of solids removal

Standard is 95%

All but one in the US 99% ISO

ISO Standard reissued in 2008 with not significant changes (ADA, SolmeteX on committee)

# What does that mean?

Based on the MI Law potential numeric limits would be thwarted. Separators are not designed to meet numeric limits but if they were…

1 ppm equates to 10 ppb at 99% capture rate if it were dissolved mercury.

1 gram would equate to 10 ppm at 99% mercury removal rate.

SolmeteX found greater than 6 grams from one dental facility over a 24 hr period.

# Types of Amalgam Separators

**Sedimentation**

**Centrifugal**

**Mechanical**

**Chemical**

**Combination**

Rebec


Rasch

The Guardian

DRNA

Metasys

M.A.R.S.

R & D Services


SolmeteX

# Vacuum Systems

**Wet System**


**Dry System**

# Why Understand Vacuum?

Wet ring vacuum pumps discharge up to ¾ a gallon of water per minute ≈ 360 gallons of clean water per 8 hour day

Delusion might be the unintended solution in dental offices

Dry vacuum only discharges what comes from the chair

≈ 1 liter per day per chair

A four chair practice ≈ a gallon per day.

# Installations




# System easy to install

Generally installed by dealers or plumbers

Systems costs from as little as $330 - $1200 for 90% of the dental industry.

# Potential Issue With Separator

System can and do clog

If separator is a “black box” without an indicator, how do you know the system is functioning?

The opportunity to install and forget it is a possibility


# Vacuum Flow

Flow under vacuum is not the same as flow under positive pressure

Flow only happens when air moves
Suction must be open at the chair for liquid and solids to move
High speed suction is open only a few seconds each time
Flow to amalgam separators normally a trickle not a flood

# Line Cleaners

There are approximately 35 vacuum line cleaners used in dental facilities

Line cleaners have different pH ranges from 1 – 11.5

Some line cleaners have oxidizers

Oxidation will break down an amalgam release mercury.  Chlorine

# Line Cleaners

Non oxidizing cleaners

Discharge to Publicly Owner Treatment Works (POTW's) require neutral pH between 5 – 10.5. A dentist could be out of compliance for discharge to sewer.

In Massachusetts the regulation requires the use of neutral pH line cleaners 6.5 - 9

# What is there to maintain?

Separators capture Solids

Maintenance is to remove the collected solids and responsibly recycle or dispose of the waste

Amalgam Separator waste can be sent by common carrier

# Disposal Logistics

Some companies have developed simple and easy packaging, transportation, tracking, recycling, and waste characterization to dispose of the waste properly.

Others separator companies following procedures or having waste haulers pick them up.

Recycle or Land Fill

# What to do with the waste?

**Recycling / Retorting**

**Landfill**

# Survey of Regulated States

Data showed that 92% of all dentists within five of the six New England States have complied with the legislation and 94% of dentists required to install a separator have done so. Furthermore, Maine and Vermont have installation rates of 100 % and 99 % respectively.

These numbers prove that a mandatory amalgam separator program provides effective

RI did not provided sufficient enough data to be included in this study

# Maintaining Amalgam Separators and BMP's

Certification

Documentation

Education

Clarification

# Servicing Separators

Each Separator has a capture volume.

When capacity reached, the collection container needs to be replaced.

No standard for replacement as each dental practice is different and creates different volumes of waste.

Frequency of change is  established by the manufacturer

# Servicing the separators:

Containers should be replaced a least once a year

Container sales are at .8 per year.

Conclusion is not being replaced timely

# Conclusion

Regulations perpetuate installations of amalgam separators.

Certification is one way to know installations have occurred

Annual certification will assist in replacement of collection containers

Amalgam separators have an impact on both influent and effluent numbers