

Dental Amalgam Overview

North Carolina Pretreatment Consortium Conference

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Presentation Outline

- Overview of the Rule
- How to identify the universe of dentists
- Different types of amalgam separators
- What to look for when inspecting a dental facility

40 CFR 441

Dental Rule Schedule

- Federal Register Notice Final Rule – June 14, 2017
- Effective Date of Rule – July 14, 2017
- One Time Compliance Report Due October 20, 2020 or within 90 days for new sources

What is Amalgam?



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

Applicability of Significant Industrial User (SIU) Status

- Dental dischargers are NOT Significant Industrial Users
- Dental dischargers are NOT Categorical Industrial Users
- Dental dischargers are regulated industrial users

Applicability

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

Exemptions From all Requirements (including reporting)

- Oral pathology, oral radiology, oral surgery, orthodontics, periodontics or prosthodontics
- **Mobile units**
- Dentists that transfer waste to a CWT
- Septic systems

Exemptions (cont'd)

- Dentists are exempt from further requirements of the rule ONLY if they:

- 1) Do NOT place or remove amalgam except in limited emergency or unplanned, unanticipated circumstances

AND

- 2) Certify (responsible corporate officer signature) to the Control Authority to that effect that they do not and will not use or remove amalgam by submitting the One Time Compliance Report

Pretreatment Standards

➤ 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.
- Chair side traps that may drain to a sewer must not be cleaned with oxidizing cleaners, including, but not limited to: bleach or chlorine containing cleaners that have a pH lower than 6 or greater than 8.

Standards (cont'd)

- Must install at least one American National Standards Institute (ANSI) American National Standard/American Dental Association (ADA) Specification 108 for Amalgam Separators (2009) with Technical Addendum (2011) or 2008 ISO 11143 certified amalgam separator that:
 - Is certified to meet removal efficiency of at least 95%
 - Receives all amalgam process wastewater and is INSPECTED in accordance with the manufacturer's operating manual of the separator. If not functioning properly, must be repaired or replaced within 10 business day after the malfunction is discovered by the dental discharger
 - Is regularly MAINTAINED by replacing the amalgam retaining cartridge, canister or unit collection of retained solids when the manufacturers stated design capacity is reached

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.
 - Commonly designed to capture ~99% of solids by weight not mercury
- EPA estimates that dental offices that do not currently have separators will incur an approximate average annual cost of \$800 per office. Unit price from ~ \$400 to ~ \$1000

Existing vs. New Source

➤ Existing Sources

- If discharge amalgam process wastewater to a POTW prior to July 14, 2017
- Must install a separator by July 14, 2020
- One Time Report is due prior to October 20, 2020 or 90 days after a transfer of ownership.

➤ New sources

- First discharge to a POTW is after July 14, 2017
- Report is due within 90 days following introduction of wastewater into a POTW

Standards (cont'd)

- Existing Source (Grandfather clause): If separator is installed PRIOR to the date of publication in the federal register (June 14, 2017), the dentist satisfies the requirements until the separator is replaced or for 10 years (June 14, 2027), whichever is sooner IF they continue to meet the following requirements:
 - Receives all amalgam process wastewater and
 - Is INSPECTED in accordance with manufacturer's operating manual and
 - If not functioning properly, must be repaired or replaced within 10 business days and
 - Is regularly MAINTAINED by replacing the amalgam retaining cartridge, canister or unit collection of retained solids when the manufacturers stated design capacity is reached

Recordkeeping

- Dentists must maintain for three years from the date they are created:
 - One Time Compliance Report
 - Documentation and results of any inspections
 - 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
 - Documentation of repair or replacement of the separator

Recordkeeping Requirements

- Rule requires dental offices to document certain operation and maintenance requirements and maintain all records of compliance, as described in the regulation, and to make them available for inspection
 - The dental office, or an agent or representative of the dental office, must maintain these records and make available for inspection in either physical or electronic form, for a minimum of three years

Recordkeeping (Cont'd)

- As long as a dental office is in operation, or until ownership is transferred, the dentist or an agent or representative of the dentist must maintain the one-time compliance report and make it available for inspection in either physical or electronic form
- The dental office, or an agent or representative of the dental office, should also maintain either a physical or electronic copy of the manufacturer's operating manual for the current device

One Time Monitoring Report Due

➤ Existing Sources:

- Within 3 years of the effective date of the rule

➤ New sources:

- Within 90 days following introduction of wastewater into a POTW

One Time Monitoring Report

➤ Report to include, among other things:

Name, address, contact information, name of the operator and owner and certification statement 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

Sample report is available at:

<https://www.epa.gov/eg/dental-effluent-guidelines>

What Else Do POTWs Have To Do?

Federal Rule 40 CFR 441 ONLY

Beyond receiving the One Time Report - Nothing

Federal 40 CFR 403, State and/or Local Level

You have an obligation to regulate all industrial users!

Follow your ERP.. What does it say?

Compliance with NPDES Permit Requirements

Language about identifying all industrial users that have the potential to cause pass through and/or interference

Identify New Users

What to do to comply with 40 CFR 441?

Remember the 3 R's (Ahh's)

➤ Receive

➤ Review

➤ Retain

FACT SHEETS

➤ <https://www.epa.gov/eg/dental-effluent-guidelines-documents>

Compliance (Installation Only) by New England States Within the First 3 Years of Legislation

Data in the 2003-2007 range

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

First Step to Implementation
“The world according to Jay”

You need to identify the
universe of dental dischargers
within your jurisdiction

DO YOUR
JOB

The New England Patriots logo is positioned at the bottom of the text. It features a stylized blue and white helmet with a red and white pinstriped plume on the left. A white five-pointed star is located on the upper right side of the helmet. The face of the helmet is depicted in a tan color.

EPA (Approval Authority) Initiative Tasks Within New Hampshire

- Collaborated with NH Department of Environmental Services (Pretreatment and Amalgam Recycling Programs)
- Attempted contact with NH Dental Association
- Attempted contact with NH Dental Board
- Created a master list of dentists
- Worked with approved programs to identify the control authority
- Revised the One Time Compliance Report (with specific data elements)

Initiative (cont'd)

- Develop a cover letter to mail out to all facilities
- Time frame “should submit to control authority by (Insert Date)”
- Mass mailing to dentist track and maintain reports
- Notify POTWs when septage contains dental waste
- Respond to multiple email and phone requests from the dentists on how to fill out the form

Be Ready to Answer Questions from Dentists like.....

- Do I have to fill out the report? Example: Orthodontist, Oral Surgeon, Pediatric Practice
- Why are you sending this to me?
- I already filled this form out why do I have to do it again?
- What is “a-mal-jum”
- If more than one dentist in the practice do we each have to complete the form?
- What about multiple practices in one building?

Results from 436 Dentists within first 90 days of mailing

- 50 or 12% - Mailing address was wrong and returned to sender
- Received 163 or 42% Reports
- More reports coming in daily.....
- 15% of the returns submitted were inaccurate or incomplete
- 38 or 23 % Dentists claimed they were exempt
- Of those 38 exemptions –
 - 10 or 6% of Dentists discharged to a septic system
 - ALL SEPTIC SYSTEMS REPORTED HAVING A SEPARATOR

More Data....

- ZERO Endodontics or Oral Surgeons certified they were exempt
- 70 or 43% Submitted electronically
- 93 or 57% Submitted hard copy
- 5.3 - Average # of chairs at practice
- 3 - Average # of chairs where amalgam is present
- Largest practice had 18 chairs (ironically on septic)

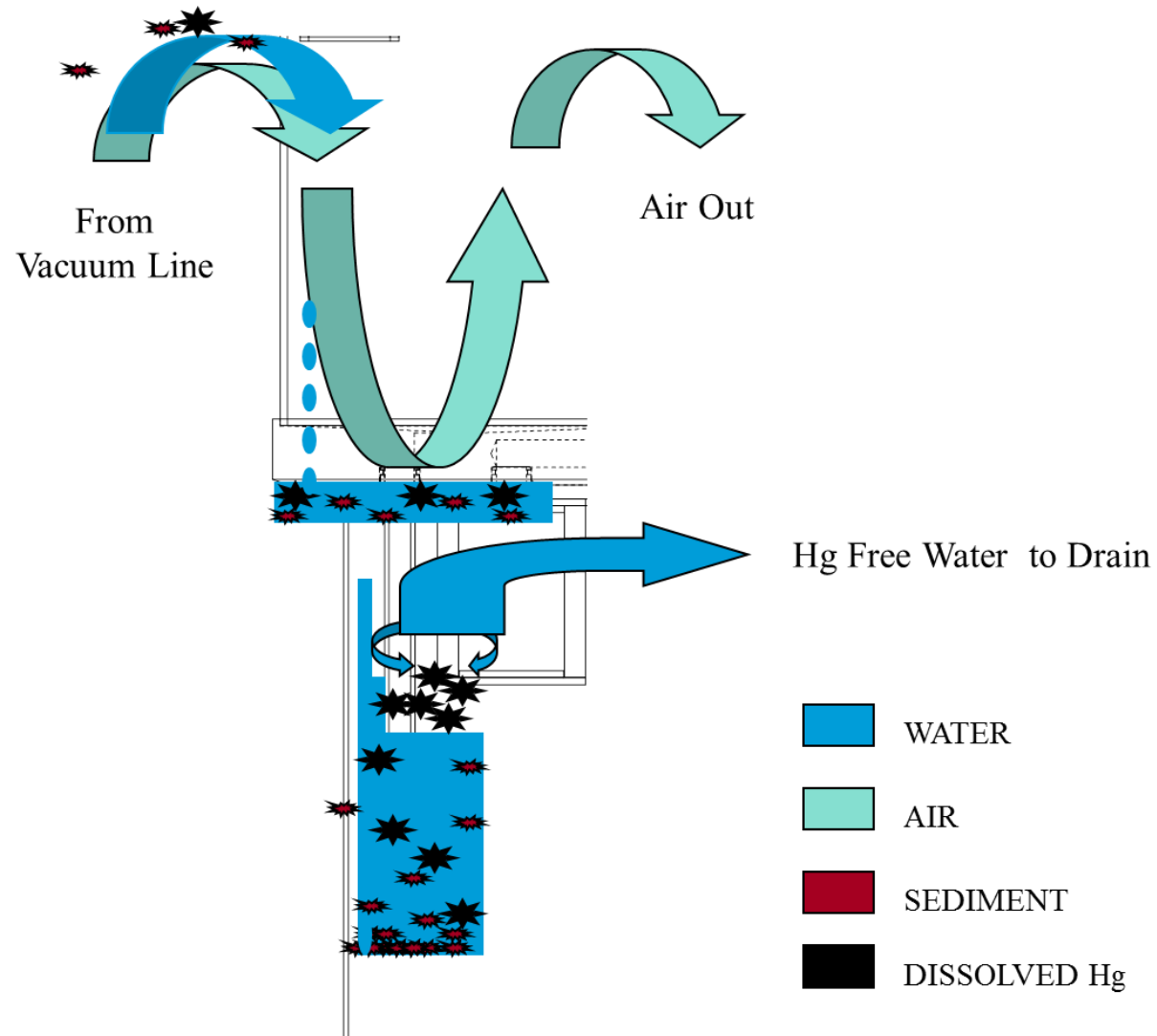
Data (Cont'd)

- Average year of separator installation was 2009
 - Earliest in 2001 and latest 2019 (1), 2018 (1) and in 2017 (4)
- 4 Different amalgam vendors reported
- 95% Were from one manufacturer

What are other New England programs doing?

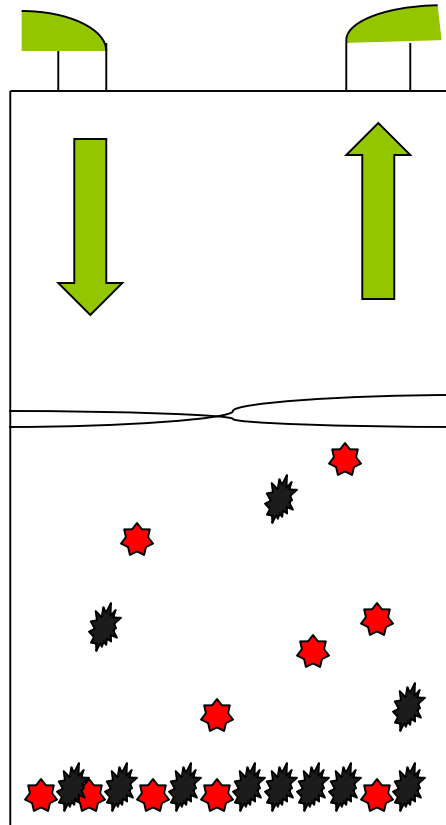
- Vermont & Massachusetts – Electronic Reporting Systems Already in Place
- Narragansett Bay Commission – Providence, Rhode Island
 - 94 Dentists - Permit, inspect once every 2 years, annual reports, \$362 permit fee
- Manchester, New Hampshire
 - 128 Dentists - Inspect 1/year
- Massachusetts Water Resource Authority – Boston, MA
 - 1,000 Dentists – Projecting to Permit, inspect once/5 years, report once/2 years, \$200 annual fee = \$200,000 revenue

How do Amalgam Separators work?



How Separators Work part 2

In Out



Dental Vacuum

Wet System



Dry System





Dental office Flow

Air is moving only when vacuum is on

**Many times chairs and vacuum on the same floor,
therefore a trap situation**

Flow only flows when high speed suction is open

Dental Vacuum Reality

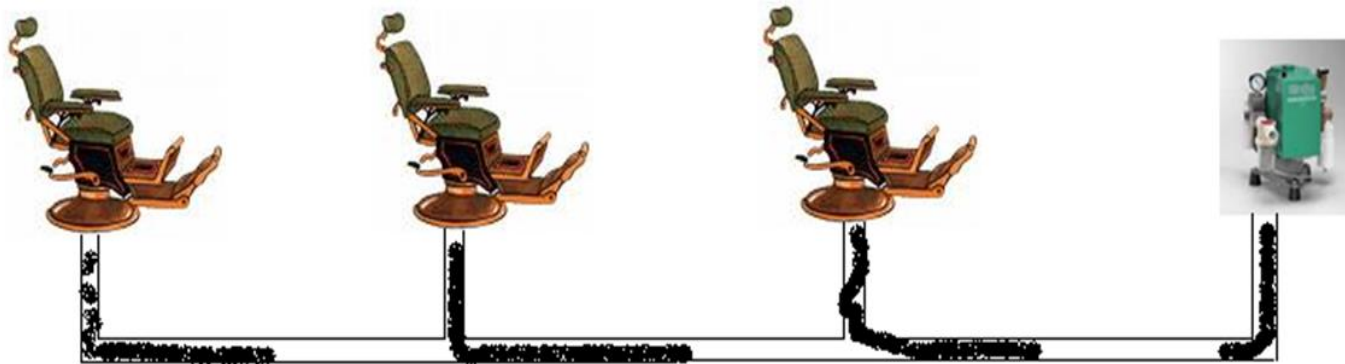
Flow under vacuum is not the same as flow under positive pressure

Chair #1

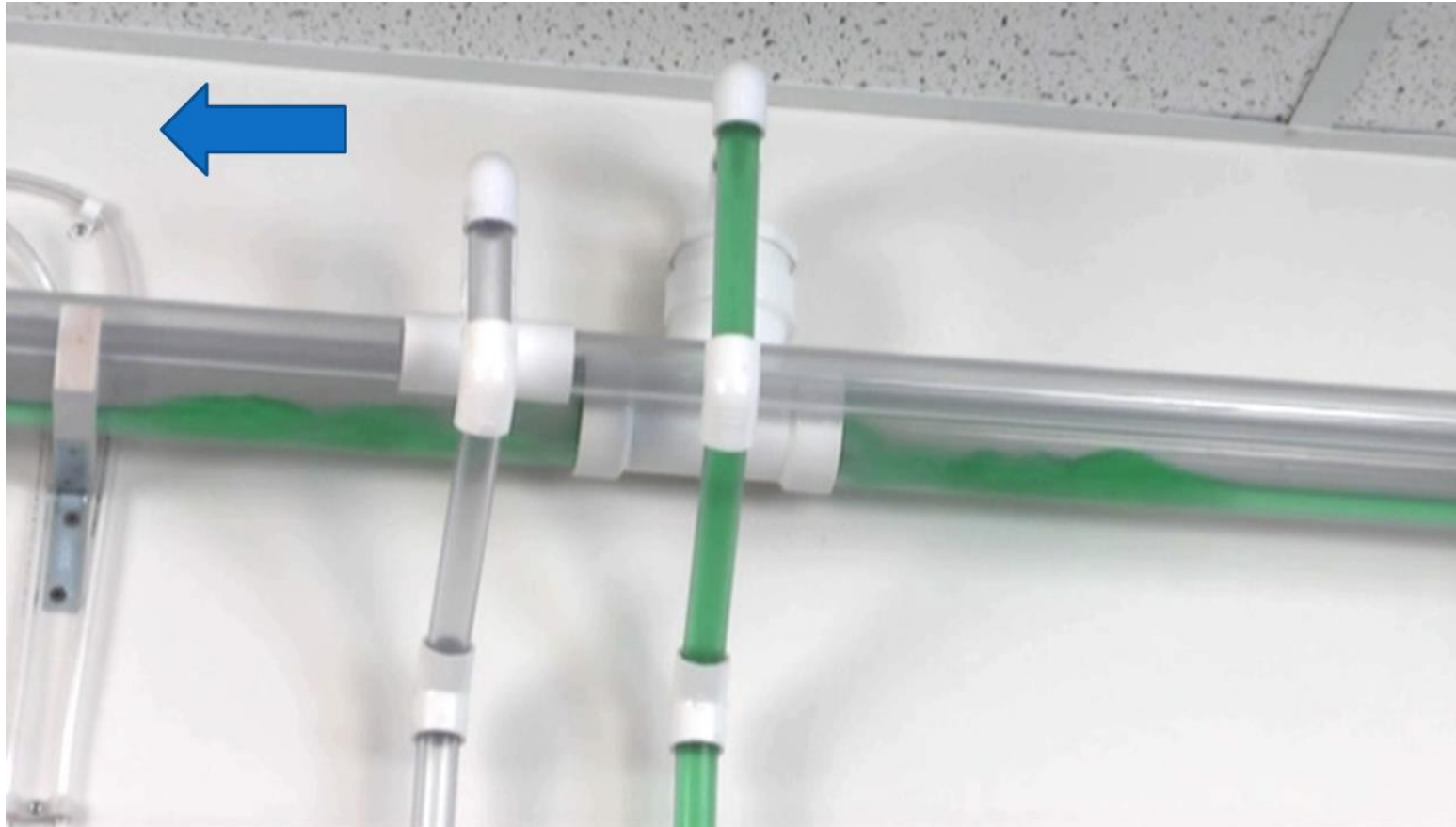
Chair #2

Chair #3

Vacuum Pump



Vacuum Reality



DISCLAIMER

- EPA is NOT endorsing ANY particular product in this presentation! Products that you may see are merely to provide an overview of different TYPES of separators that you MIGHT see in the field and not intended to be an endorsement of any particular model.

Types of Amalgam Separators

Replacement Container Type

Rebec 400



Air Techniques
Acadia



ApaVia AVTMax



MedenteX amalsed



SolmeteX Hg5



Types of Amalgam Separators

Replacement System Type

Metasys Eco II



Asdex AS-10



M.A.R.S. Liberty Boss



R&D Services CH 24



DRNA BU10



The Simple



Total Containment Tank

Anterior Quest
Containment Tank



Clear

**Air Techniques
Acadia**



Metasys Eco II



R&D Services CH 24



SolmeteX Hg5



ApaVia AVTMax



Non Clear

DRNA BU10



Asdex AS-10



Rebec 400



M.A.R.S. Liberty Boss



The Simple



MedenteX amalsed



Zero Discharge Tank

Anterior Quest



Installations



Amalgam Separators

Things to Know

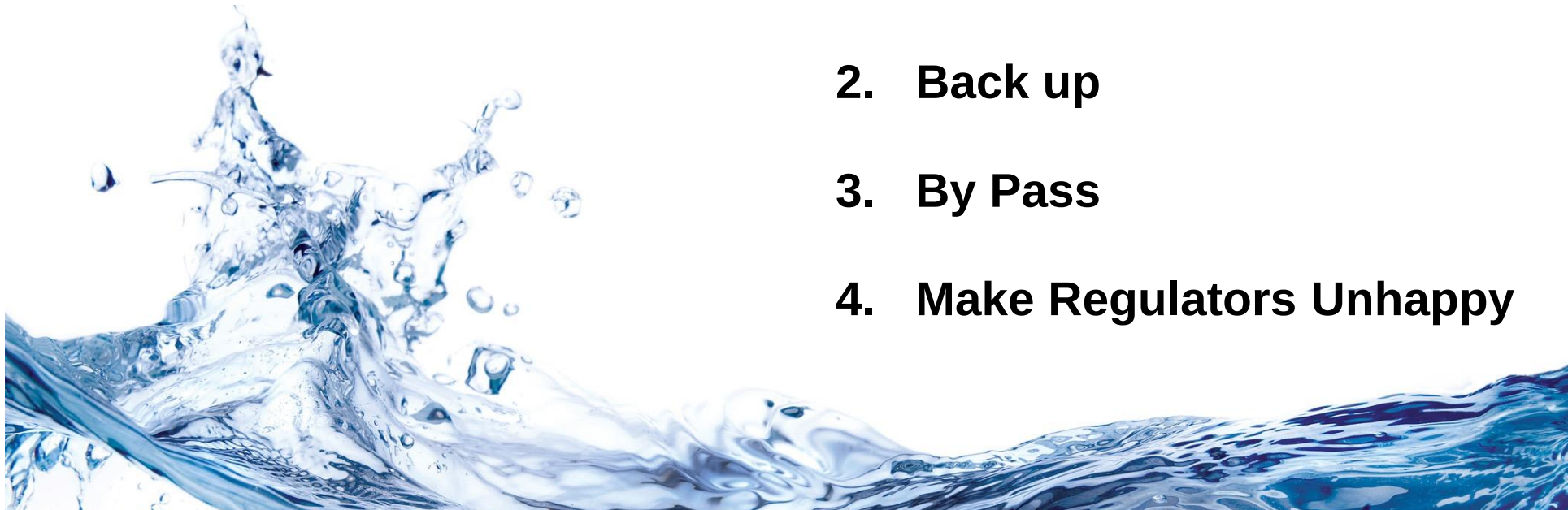
A. Amalgam separators is the wrong name

B. Collection Containers is more appropriate

C. They have a limited capacity

If not properly maintained Separators will

- 1. Clog**
- 2. Back up**
- 3. By Pass**
- 4. Make Regulators Unhappy**



Separator Issues

Separator Filter Fills to quickly

1. Could be the line cleaner your using. Not all line cleaners are the same
2. Look at the consistency of the material, are their bubbles - does it look slushy

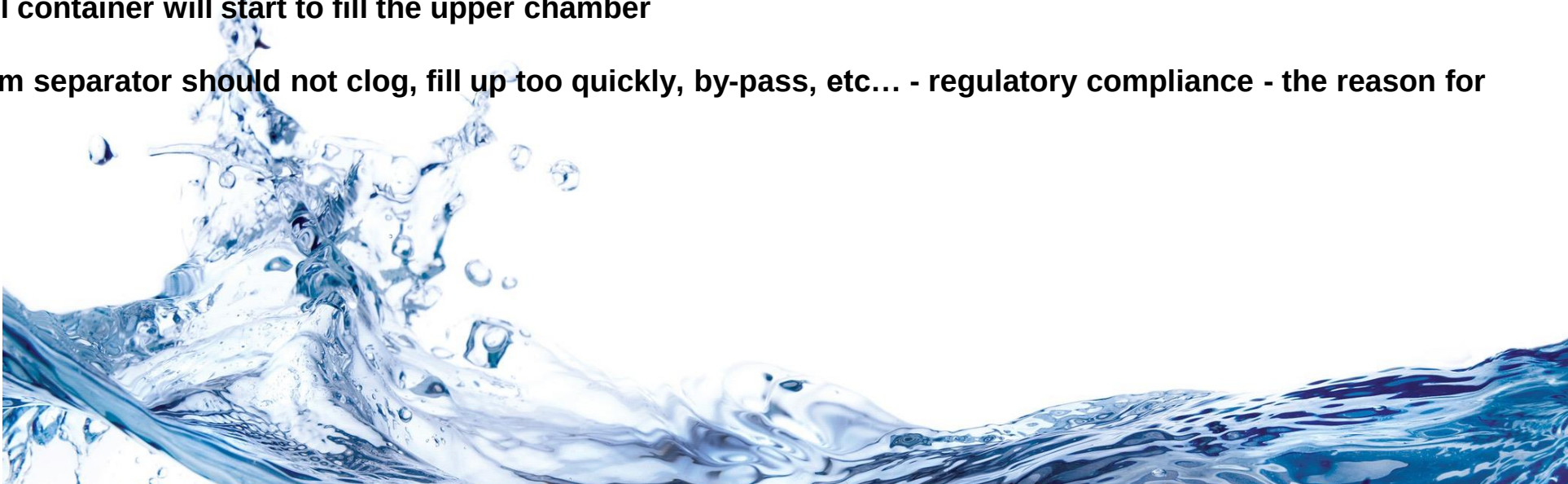
There is water in the upper chamber - Why is this an issue?

1. The system is clogged due to something blocking the whole or the filter is full
2. Is the solid level beyond the full line?
3. Water bubbling means the system is in BY-PASS
4. May hinder the effectiveness of your suction

Filter life if based on capacity - Do I have to change the container if it is not full?

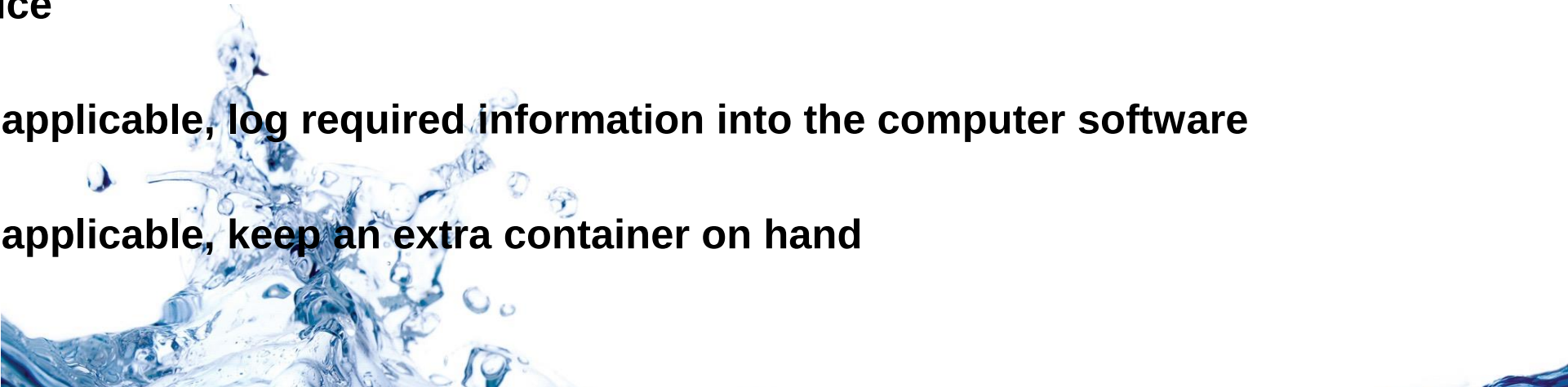
1. The full line is the containers capacity limit. Change only if regulations required it
2. A full container will start to fill the upper chamber

Your amalgam separator should not clog, fill up too quickly, by-pass, etc... - regulatory compliance - the reason for inspecting



Inspections by Dentists

- A. Keep an Inspection Log - Date - Time - What was seen**
- B. Separators need to be inspected - Recommendation - Weekly - Minimum Monthly
How often? According to the MANUFACTURERS SPECIFICATIONS**
- C. Maintain a copy of the manufacturers operating manual**
- D. Keep Manufacturers / Dealers contact information handy - at the separator - in the office**
- E. If applicable, log required information into the computer software**
- F. If applicable, keep an extra container on hand**



How to do an effective POTW Dental Inspection

- Gain access to the facility
- Locate the separator
- Verify with the dental office that the manufacturer of the unit has met the International Organization for Standardization (ISO) Protocol 11143 Standards
- Determine if the separator is operational and functional
- Verifying line cleaners are non-chlorine and pH 6-8
- Review any documentation that the collection contained is being recycled

What to look for in an inspection

Assuming the system is clear - If not a flashlight is useless

Bring a flashlight



What to look for

Bubbling at the top



Solids Level



Material above full line



Use Proper Line Cleaner

- A. Manufacturers don't always know what's best - want to sell product
- B. Should be using a pH neutral line cleaner between 6 – 8
- C. Should NOT be of POWDER or a SOLID

Before



After



Questions?

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