

An overview of the new EPA Dental Amalgam Separator Regulations

40 CFR Parts 403 and 441

Effluent Limitations Guidelines and Standards for the Dental Category

Regulations are laws, most likely written by lawyers. The government cannot function without acronyms. This combination can make for confusing reading. I have tried to condense sixty pages into three, for a brief overview of the new regulation. Please consult the regulation for an exact interpretation. The first fifty plus pages are background and boiler plate. The last few pages are the bulk of the information. In short the EPA is going to regulate the wastewater the dentist office discharges. The dental practice is going to be called a Dental Industrial User (DIU). To stay in compliance you are going to have to install a 99% efficient amalgam separator, with very few exceptions. The dental office may have to change their line cleaning practice, because only line cleaners with a pH between 6-8 are acceptable. The dental office is going to need to provide initial and periodic reports to the Public Owned Treatment Works (POTW), and possibly the state.

The Environmental Protection Agency (EPA) has published regulations that will affect your dental practice. It can be found in 40 CFR parts 403 and 441, Effluent Limitations and Standards for the Dental Category. at times referred to as the new Amalgam Separator Rule. The rule has had an elusive start date, but late 2016 is the most recent date, with a three year implementation time period for the separators. However, the regulation covers more than separators that will affect your practice.

Congress passed the Federal Water Pollution Control Act Amendments of 1972, also known as the Clean Water Act (CWA) to “restore and maintain the chemical, physical, and biological integrity of the Nations waters.” EPA is proposing this new regulation under the authorities of the CWA. In 2004, The American Dental Association (ADA) agreed with the EPA that a significant portion of mercury flowing into our Public Owned Treatment Works (POTW’s) was from dental offices. In 2008, the ADA argued for a voluntary pretreatment reduction program. There are varying opinions on the success or failure of the program. The final result is EPA has published new regulations on the subject.

The heart of the separator section is 441.40 Pretreatment Standards for Existing Sources (PSES). The separator must have efficiency of 99.0%, must receive all amalgam processed wastewater, must be inspected monthly, and be regularly maintained. The separator requirement may be met by installing a 2008 ISO 11143 certified amalgam separator. If a separator is not working properly, it must be repaired or replaced in accordance with the manufacturer’s instructions. Nearly all dentists are covered by this section, but there is a three year implementation. This section also talks about Best Management Practices (BMP’s). Scrap amalgam may not be flushed down the drain. Chair-side traps that may drain to a sewer must be cleaned with non-bleach, non-chlorine cleaners that have a pH of 6 to 8. Such cleaning must be conducted at least weekly. This article is not recommending separators, but nearly all listed below are 99% efficient and 2008 ISO 11143 certified. When making your decision those are the two criteria needed.

Section 441.50, Pretreatment Standards for New Sources (PSNS): This section reads very similar to section 441.40. The criteria are the same for a new office as it is for an existing.

In section 441.40 it discusses the procedure for offices with existing separators. This section also highlights the cleaners used must have a pH between 6-8. Most cleaners are a strong base above pH 8 or a strong acid below pH 6.

Part 403, Pretreatment Regulations for Existing and New sources of Pollution: An industrial user subject to categorical Pretreatment Standards under 40 CFR part 441 is designated a Dental Industrial User (DIU) rather than a Significant Industrial User (SIU), if the Industrial User (IU) has complied with 40 CFR part 403, the applicable pretreatment standards for existing sources (PSES) or pretreatment standards for new sources (PSNS) and the monitoring and reporting requirements of 40 CFR 441.60. In laymen terms, all dental practices are going to be designated as a DIU. Factories and industrial facilities that discharge large quantities of wastewater to the local POTW are SIU's. They have very stringent reporting requirements. The dental office will have less stringent requirements. You should get to know personnel at the POTW. The POTW must evaluate at least yearly the DIU's. Section 403.8 Pretreatment Program Requirements: Development and Implementation by POTW covers the POTW role.

Section 441.60 Discharge monitoring, reporting and record keeping requirements, is the reporting requirements for the DIU's. A very critical item is that a base line report must be submitted within 180 days of the effective date of this rule. For new sources, that number is 90 days prior to commencement of discharge. The base line report must include the facility name, address, and contact information, as well as the dental license number of all practicing dentists at the location. A description of the operation: the total number of chairs, the total number of chairs that amalgam may be present in the resulting wastewater. For existing sources are there any separators, does the practice follow BMP's. For existing sources a 90 day compliance report must be submitted. The 90 day compliance report must be submitted 90 days after the final compliance date of this rule. The 90 day compliance report will contain the same information as the base line report. Annually a periodic report of ongoing compliance will have to be submitted. The record keeping portion of this regulation is maintaining a file of all the required reporting plus the date of each visual inspection and each maintenance operation.

There are numerous amalgam separators available. The Solid & Hazardous waste education center of University of Wisconsin (Madison), has a decision flow sheet available for choosing the separator that is the best for your practice. They evaluate the amalgam separators by: model dimensions, flow capacity, ease of maintenance, recycling program, purchase cost, O&M cost, and five-year system cost. The five-year system cost is a very telling chart. The following is from their analysis:

Model	Air Techniques A1010	The Amalgam Collector CE18 or CE24	Asdex AS-9	DNRA BU10	SolmeteX Hg5/Hg5 HV
Total	\$7500 + Labor	\$715 + Labor	\$1830 + Labor	\$3475 + Labor	\$2695 + Labor

This price analysis is very dated, and the prices have no doubt increased for all units. Most all amalgam separators are 99% efficient and ISO 11143 certified, but to be in compliance

with new regulation the separator must be 99% efficient and remain in compliance.

The reporting requirements and record keeping should not be too burdensome, but ensuring it is done is the most important part of the task. A friendly call to your local POTW might be a good insurance policy for good relations. They are going to be glad to hear from you, because each POTW has a discharge permit. The discharge permit has very stringent discharge limits on heavy metals such as mercury. Be aware there are two initial reports due, the 180 day base line report, and the 90 day compliance report. Most offices comply with BMP, but be sure to add that an inspection of your system must be done monthly and documented.

Presently there are numerous line cleaners available, but the majority are either an acid or a base. BioPure is a pH neutral (pH 7) line cleaner. Dr. Gordon Christensen of the Clinicians Report, the Dental Advisor, and the Dental Product Report all recommend Bio-Pure. Below is a list of line cleaners and there pH. The new regulation is very clear all line cleaners must have a pH between 6-8.

	Bio-Pure 14oz.	Vacuosol Ultra 96oz.	Purevac HG 5 L	Cleanstream 2.5 L	SRG 1 Gal.	VacAttack 800gm	Gobble 2L	ProE- Vac Gal
Average PH	7	(12.4)	9.5	8.8	(3.3)	(11)	8	(1.5)
Ave Weekly Cost Per OP	\$1.77	\$2.92	\$3.74	\$2.15	\$1.71	\$4.16	\$2.90	\$1.60
100% All Natural	YES	NO	NO	NO	NO	NO	NO	NO
Restores Vacuum Suction	YES	NO	NO	NO	NO	NO	YES	NO

Bio-Pure, besides having a neutral pH, is safe for all pump equipment including separators. When Bio-Pure is introduced into an evacuation system, the enzymes first break down the organic waste into microbe sized bites. The microbes then digest these "bites" giving energy they need to multiply in an active colony. The process by which organic waste, in the presence of water and enzymes, is broken down or transformed into simpler compounds, is known as digestion or hydrolysis. Bio-Pure contains multiple strains of highly specialized non-pathogenic microbes, that gives it the ability to rapidly digest the organic nutrients found in an evacuation system. As the list indicates, Bio-Pure also has one of the lowest weekly costs. Bio-Pure has many benefits, is less expensive, 100% natural, and restores vacuum suction. As it relates to the regulation it meets the new regulation standard, that a line cleaner must have a pH between six and eight.

About the Author, Jerry Jensen is president of Amalgaway, Inc. He has a bachelors degree in mechanical engineering and a masters degree in chemical engineering. He is a professional engineer that served in the Navy as a Civil Engineer Corps Officer. He has worked in the Environmental field for 30 years and has been the president of Amalgaway, Inc. for 21 years. Amalgaway, Inc. was established in response from a request by a dental

group. Amalgaway has a line of amalgam recycling kits, is a distributor of R & D Services "The Amalgam Collector", and a distributor of Bio-Pure line cleaner products. We can be reached at www.Amalgaway.com or 1-800-267-1467. If Amalgaway or Jerry Jensen can be of service please call.