Dental Standard - Executive Summary

The purpose of the Dental final rule is to set a uniform national standard that will greatly reduce the discharge of mercury-containing dental amalgam to municipal sewage treatment plants, known as POTWs, in the United States. Across the U.S., 12 states and at least 18 localities have established mandatory programs to reduce discharges of mercury to POTWs. As a result of these efforts, along with outreach from the American Dental Association (ADA) to promote voluntary actions to reduce such discharges, approximately 40 percent of the dentists subject to this rule already have installed amalgam separators. Amalgam separators greatly reduce the discharge of mercury-containing amalgam to POTWs. This rule will ensure that mercury discharges to POTWs are effectively controlled at dental offices that discharge wastewater to POTWs.

Many studies have been conducted in an attempt to identify the sources of mercury entering POTWs. According to the 2002 Mercury Source Control and Pollution Prevention Program Evaluation Final Report prepared by the Association of Metropolitan Sewerage Agencies (AMSA), dental offices are the main source of mercury discharges to POTWs. A study funded by the ADA published in 2005 estimated that dental offices contributed 50 percent of mercury entering POTWs. Mercury is discharged in the form of waste dental amalgam when dentists remove old amalgam fillings from cavities, and from excess amalgam waste when a dentist places a new amalgam filling.

While dental offices are not a major contributor of mercury to the environment generally, dental offices are the main source of mercury discharges to POTWs. EPA estimates that across the US 5.1 tons of mercury and an additional 5.3 tons of other metals found in waste dental amalgam are collectively discharged into POTWs annually. Mercury entering POTWs frequently partitions into the sludge, the solid material that remains after wastewater is treated. Mercury from waste amalgam therefore can make its way into the environment from the POTW through the incineration, landfilling, or land application of sludge or through surface water discharge. Once released into the aquatic environment, certain bacteria can change mercury into methylmercury, a highly toxic form of mercury that bio accumulates in fish and shellfish. In the U.S., consumption of fish and shellfish is the main source of methylmercury exposure to humans.

The ADA, which supported removal and recycling of mercury from wastewater discharged to POTWs in its comments on the 2014 proposed rule, developed best management practices (BMPs) to facilitate this goal and shared its recommendations widely with the dental community. The ADA's voluntary amalgam waste handling and disposal practices include the use of amalgam separators to reduce mercury discharges. In addition, some states and localities have implemented mandatory programs to reduce dental mercury discharges that include the use of amalgam separators.

EPA has concluded that requiring dental offices to remove mercury through relatively low-cost and readily available amalgam separators and BMPs makes sense. Capturing mercury-laden waste where it is created prevents it from being released into the environment. This final rule controls mercury discharges to POTWs by establishing a performance standard for amalgam process wastewater based on the use of amalgam separator technology. The rule also requires dental dischargers to adopt two BMPs, one which prohibits the discharge of waste ("or scrap"), and the other which prohibits the use of line cleaners that may lead to the dissolution of solid mercury when cleaning chair-side traps and vacuum lines.

In addition, the rule minimizes the administrative burden on dental offices subject to the rule, as well as on federal, state, and local regulatory authorities responsible for oversight and enforcement of the new standard. Administrative burden was a concern of many of the commenters on the 2014 proposed rule and EPA has greatly reduced that burden through streamlining the administrative requirements in this final rule.

When EPA establishes categorical pretreatment requirements, it triggers additional oversight and reporting requirements in EPA's General Pretreatment Regulations. The General Pretreatment Regulations specify that Control Authorities (which are often the State or POTW with an approved pretreatment program) are responsible for administering and enforcing pretreatment standards, including receiving and reviewing compliance reports. While other industries subject to categorical pretreatment standards typically consist of tens to hundreds of facilities, the dental industry consists of approximately 130,000 offices. Application of the default General Pretreatment Regulation oversight and reporting requirements to such a large number of facilities would be much more challenging. Further, dental office discharges differ from other industries for which EPA has established categorical pretreatment standards. Both the volume of wastewater discharged and the quantity of pollutants in the discharge on a per facility basis are significantly less than other industries for which EPA has established categorical pretreatment standards. Accordingly, this final rule exempts dental offices from the General Pretreatment Regulations' oversight and reporting requirements associated with categorical pretreatment standards, reflecting EPA's recognition that the otherwise-applicable regulatory framework for categorical dischargers would be unlikely to have a significant positive impact on overall compliance with the rule across the dental industry, while imposing a substantial burden on state and local regulating authorities.

In order to simplify implementation and compliance for the dental offices and the regulating authorities, the final rule establishes that dental dischargers are not Significant Industrial Users (SIUs) as defined in 40 CFR part 403, and are not Categorical Industrial Users (CIUs) or "industrial users subject to categorical pretreatment standards" as those terms and variations are used in the General Pretreatment Regulations, unless designated such by the Control Authority. While this rule establishes pretreatment standards that require dental offices to reduce dental amalgam discharges, the rule does not require Control Authorities to implement the traditional suite of oversight requirements in the General Pretreatment Regulations that become applicable upon the promulgation of categorical pretreatment standards for an industrial category. This significantly reduces the reporting requirements for dental dischargers that would otherwise apply by instead requiring them to demonstrate compliance with the performance standard and BMPs through a one-time compliance report to their Control Authority. This regulatory approach also eliminates the additional oversight requirements for Control Authorities that are typically associated with SIUs, such as permitting and annual inspections of individual dental offices. It also eliminates additional reporting requirements for the Control Authorities typically associated with CIUs, such as identification of CIUs in their annual pretreatment reports. At the same time, the final rule recognizes the Control Authority's discretionary authority to treat a dental discharger as an SIU and/or CIU if, in the Control Authority's judgement, it is necessary.

EPA estimated the annual costs associated with this rule. EPA's analysis reflects that many dental offices have already taken steps to reduce dental amalgam discharges by discontinuing the use of dental amalgam, adopting the ADA's voluntary best practices, or by meeting existing mandatory state or local requirements. On a national basis, EPA estimates that approximately 40 percent of dental offices subject to this final rule already use amalgam separators. Of the remaining 60 percent of dental offices that do not have amalgam separators and that are subject to this final rule, EPA estimates that 20 percent do not place or remove dental amalgam. These dentists that do not place or remove dental amalgam – which correspond to 12 percent of the dental offices subject to this final rule –will incur little to no costs as a result of the rule. EPA estimates the remainder (representing 48 percent of the dental offices subject to this final rule) will incur an approximate average annual cost of $800 per office. The total annual cost of this final rule is projected to be $59 - $61 million.

This final rule will produce human health and ecological benefits by reducing the estimated annual nationwide POTW discharge of dental mercury to surface water from 1,003 pounds to 11 pounds. Studies show that decreased point-source discharges of mercury to surface water have resulted in lower methylmercury concentrations in fish, and that such reductions can result in quantifiable economic benefits from improved human health and ecological conditions (DCN DA00148). While not quantified, as noted above, this rule will also reduce mercury releases to the environment associated with the incineration, landfilling, or land application of POTW sludges. Instead, EPA expects all of the collected amalgam will be recycled, rather than released back into the environment.