

Dental Amalgam: Safety, Affordability and Utility Fact Sheet for Dental Education

Omar A. Escontrías, Dr.P.H., M.P.H.
and Denice Stewart, D.D.S., M.H.S.A.

FACT SHEET

ADEA Policy Research Series ■ Issue 1, February 2021

DENTAL AMALGAM HAS BEEN USED FOR the last 150 years for tooth fillings, and an estimated 100 million or more Americans are beneficiaries of dental amalgam.¹ Fifty percent of the restorative material is comprised of a metal alloy mixture of silver, tin and copper, and 50% is elemental mercury.² The use of mercury in dental amalgam has raised concerns as a potential health hazard. However, studies have shown that dental amalgam is a safe, affordable and widely used dental material for teeth restoration.

Dental education plays a leading role in ensuring that **future dentists are competent** in restorative techniques, procedures and knowledge of all types of dental restorative materials.

FOR MORE INFORMATION: Contact the ADEA Office of Policy and Education Research (OPER) at policy@adea.org.

ABOUT ADEA: The American Dental Education Association (ADEA) is The Voice of Dental Education. Our mission is to lead and support the health professions community in preparing future-ready oral health professionals. Our members include all 78 U.S. and Canadian dental schools, more than 800 allied and advanced dental education programs, 50 corporations and approximately 18,000 individuals. Our activities encompass a wide range of research, advocacy, faculty development, meetings and communications, including the esteemed Journal of Dental Education®, as well as the dental school application services ADEA AADSAS®, ADEA PASS®, ADEA DHCAS® and ADEA CAAPID®. For more information, visit adea.org.



SAFETY

- Global organizations, such as the FDI World Dental Federation and the World Health Organization, have concurred that amalgam is a safe and effective material.^{3,4}
- No scientific evidence indicates that the small amount of mercury released from amalgam restorations poses adverse health effects, such as lower IQ or cognitive decline, or affects other physiological measures, like kidney function.^{5,6}
- The Food and Drug Administration considers dental amalgam fillings to be safe in adults and children over the age of 6.¹
- The Environmental Protection Agency requires amalgam separators for dental offices to ensure that mercury is safely recycled.⁷
- Other worldwide initiatives, such as the Minamata Convention on Mercury global treaty, vow to protect human health and the environment from the adverse effects of mercury.⁸



AFFORDABILITY

- An amalgam filling costs less than most other filling materials.⁹
- Due to the affordability of dental amalgam materials, dental health plans are more likely to cover between 25-50% of dental amalgam fillings (depending on the plan).¹⁰



UTILITY

- Dental amalgams are durable, long lasting and less likely to break than other types of dental fillings.¹¹
- The American College of Prosthodontists supports the use of dental amalgam as an alternative to surface resin-based restorations. Studies show that resin-based restorations need to be repaired or replaced at almost twice the rate of amalgam restorations.¹²
- The American Academy of Pediatric Dentistry recommends the use of amalgam for Class I and Class II cavity restorations in children.^{13,14}

DENTAL EDUCATION'S ROLE

- Dental education plays a leading role in ensuring that future dentists are competent in restorative techniques, procedures and knowledge of all types of dental restorative materials.¹⁵
- The use of amalgam in posterior primary and permanent teeth restoration is still widely practiced and taught in predoctoral pediatric clinics in dental schools.¹⁶
- Dentists have the responsibility to explore and recommend the best restorative and treatment options for each patient.

REFERENCES

1. Dental Amalgam Fillings. U.S. Food and Drug Administration. At: <https://www.fda.gov/medical-devices/dental-devices/dental-amalgam-fillings>.
2. Jirau-Colón H, González-Parrilla L, Martínez-Jiménez J, Adam W, Jiménez-Velez B. Rethinking the dental amalgam dilemma: an integrated toxicological approach. *Int J Environ Res Public Health*. 2019;16(6):1036.
3. Dental Amalgam and the Minamata Convention on Mercury. At: <https://www.fdiworlddental.org/resources/policy-statements/dental-amalgam-and-the-minamata-convention-on-mercury>.
4. Aggarwal VR, Pavitt S, Wu J, Nattress B, Franklin P, et al. Assessing the perceived impact of post Minamata amalgam phase down on oral health inequalities: a mixed-methods investigation. *BMC Health Serv Res*. 2019;19(1):1-12.
5. WHO Consensus Statement on Dental Amalgam. FDI World Dental Federation. At: <https://www.epa.gov/eg/dental-effluent-guidelines>, <https://www.fdiworlddental.org/resources/policy-statements-and-resolutions/who-consensus-statement-on-dental-amalgam>.
6. Studies Evaluate Health Effects of Dental Amalgam Fillings in Children. National Institutes of Health. At: <https://www.nih.gov/news-events/news-releases/studies-evaluate-health-effects-dental-amalgam-fillings-children>.
7. Environmental Protection Agency. Dental Effluent Guidelines. At: <https://www.epa.gov/eg/dental-effluent-guidelines>.
8. United Nations. Minamata Convention on Mercury. At: <https://www.mercuryconvention.org>.
9. Beazoglou T, Eklund S, Heffley D, Meiers J, Brown LJ, et al. Economic impact of regulating the use of amalgam restorations. *Public Health Rep*. 2007;122(5):657-63.
10. Cigna. Are Fillings Usually Covered By Insurance? At: <https://www.cignadentalplans.com/dental-care/fillings-covered-by-insurance>.
11. Mark AM. Amalgam fillings: safe, strong, and affordable. *JADA* 2019;150(10):894.
12. Dental Amalgam. American College of Prosthodontists. At: <https://www.prosthodontics.org/about-acp/position-statement-dental-amalgam/>.
13. American Academy of Pediatric Dentistry (AAPD). AAPD Confirms Safety and Effectiveness of Amalgam in Response to the FDA Report. At: <https://www.aapd.org/about/about-aapd/news-room/latest-news/aapd-confirms-safety-and-effectiveness-of-amalgam-in-response-to-fda-report>.
14. AAPD 2019 Best Practice on Pediatric Restorative Dentistry. At: https://www.aapd.org/globalassets/media/policies_guidelines/bp_restoratedent.pdf.
15. Dental Amalgam and the Minamata Convention on Mercury. At: <https://www.fdiworlddental.org/resources/policy-statements/dental-amalgam-and-the-minamata-convention-on-mercury>.
16. Kateeb ET, Warren JJ. The transition from amalgam to other restorative materials in the US predoctoral pediatric dentistry clinics. *Clin Exp Dent Res*. 2019;5(4):413-19.

AMALGAM RESOURCES AND LITERATURE

The following resources and literature provide a general overview as of February 2021; users should conduct a more in-depth or current review as needed.

U.S. Food and Drug Administration (FDA)

- Recommendations About the Use of Dental Amalgam in Certain High-Risk Populations: FDA Safety Communication <https://fda.gov/medical-devices/safety-communications/recommendations-about-use-dental-amalgam-certain-high-risk-populations-fda-safety-communication>
- Dental Amalgam Fillings <https://fda.gov/medical-devices/dental-devices/dental-amalgam-fillings>

World Health Organization (WHO)

- WHO Consensus Statement on Dental Amalgam <https://fdiworldiddental.org/resources/policy-statements-and-resolutions/who-consensus-statement-on-dental-amalgam>
- Promoting the Phase Down of Dental Amalgam in Developing Countries https://who.int/oral_health/publications/promoting-phase-down-dental-amalgam-developing-countries/en

National Institutes of Health (NIH)

- Studies Evaluate Health Effects on Dental Amalgam Fillings in Children <https://nih.gov/news-events/news-releases/studies-evaluate-health-effects-dental-amalgam-fillings-children>

Environmental Protection Agency (EPA)

- Mercury in Dental Amalgam <https://epa.gov/mercury/mercury-dental-amalgam>
- Dental Effluent Guidelines <https://www.epa.gov/eg/dental-effluent-guidelines>

American Dental Association (ADA)

- Statement on Dental Amalgam <https://ada.org/en/about-the-ada/ada-positions-policies-and-statements/statement-on-dental-amalgam>
- Oral Health Topics—Amalgam <https://ada.org/en/member-center/oral-health-topics/amalgam>
- Ajiyoye AS. International Association for Dental Research Policy and Position Statements on the Safety of Dental Amalgam. JDR 2020;99(7):736-68.

American Academy of Pediatric Dentistry (AAPD)

- 2019 Best Practice on Pediatric Restorative Dentistry https://aapd.org/globalassets/media/policies_guidelines/bp_restoratedent.pdf

Amalgam Peer-reviewed Literature

- Joy A, Asif Q. Mercury in dental amalgam, online retail, and the Minamata Convention on Mercury. Environ Sci Technol 2020;54(22):14139-42.
- Jirau-Colón H, González-Parrilla L, Martínez-Jiménez J, Adam W, Jiménez-Velez B. Rethinking the dental amalgam dilemma: an integrated toxicological approach. Int J Environ Res Public Health 2019;16(6):1036.
- Kateeb ET, Warren JJ. The transition from amalgam to other restorative materials in the US predoctoral pediatric dentistry clinics. Clin Exp Dent Res. 2019;5(4):413-19.
- Rathore M, Singh A, Pant VA. The dental amalgam toxicity fear: a myth or actuality. Toxicology international 2012;19(2):81.
- AFFAIRS, ACOS. Dental amalgam: Update on safety concerns. JADA 1998;129(4):494-503.
- Beazoglou T, Eklund S, Heffley D, Meiers J, Brown LJ, et al. Economic impact of regulating the use of amalgam restorations. Public Health Rep. 2007;122(5):657-63.