

The decision to replace amalgam fillings is an individual one, and you should make it in consultation with your dentist. If you feel that you need further information after reading this leaflet and talking to your dentist, it may be a good idea to seek a second opinion.

Prevention is better than cure

- Brush your teeth and gums twice a day with a fluoride toothpaste.
- Floss between teeth every day with waxed dental floss.
- Visit your dentist regularly.
- Limit the number of sugary or sweetened foods and drinks.

Further information

Further information on the effects of amalgam fillings and their benefits and disadvantages can be found on the World Health Organization website - <http://www.who.int/ncd/orh>

Source References

1. ADA Council on Scientific Affairs. Dental amalgam: update on safety concerns. Journal of the American Dental Association. 1998 129:494-503.
2. World Health Organization. Consensus statement on dental amalgam, 7 March 1997. Geneva: WHO, 1999.
3. ATSDR. Toxicological Profile for Mercury. U.S. Department of Health & Human Services, 1999.
4. Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment. Statement on the Toxicity of Dental Amalgam. Department of Health, United Kingdom, December 1997.
5. Ad Hoc Working Group. Dental Amalgam. A report with reference to the Medical Devices Directive 93/42/EEC. European Commission, 1998.

The advantages and disadvantages of dental amalgam

In many respects, amalgam is an excellent filling material, because:

- It is reasonably priced.
- It is highly durable — apart from gold and some of the new ceramics, amalgam is the best material for teeth that are subject to considerable force during chewing and therefore a lot of wear (such as molars). Any replacement weakens the natural tooth that is being filled, so the longer a filling lasts, the better.
- It is pliable when first mixed and can be moulded into a tooth cavity — reducing the amount of natural tooth that needs to be removed in order to fit the filling.

Because of these advantages, dental amalgam is still the most favoured material for repairing decay in most premolar and molar teeth.

The main disadvantages of dental amalgam are:

- It is not tooth coloured.
- The mercury in dental amalgam can pollute the environment when dental wastes are disposed of incorrectly, or bodies are cremated.
- For precautionary reasons, its use is best avoided in some people, as explained in the brochure.

Although there is no scientific evidence for harm, it could be regarded as a disadvantage that mercury is released from amalgam fillings into the body in very small amounts.

CONTACT DETAILS

Publications:

The Publications Officer
NHMRC
MDP 100
GPO Box 9848
Canberra ACT 2601

Phone: (02) 6289 9520
(24-hour answering machine)

Toll-free: 1800 020 103
(inside Australia only)

Fax: (02) 6289 9197

Email: nhmrc.publications@nhmrc.gov.au

This leaflet is available at:

Web address: <http://www.nhmrc.gov.au>

ISBN 1864961694

Dental amalgam

– filling you in

A guide to current thinking
on the use of dental amalgam



Endorsed 24 October 2002

What is the issue?

In recent years, concerns have been raised about dental amalgam because it contains mercury, a substance that at high levels can be harmful to human health. Media stories and websites have fuelled these concerns, but they are sometimes based on inaccurate information. Repeated worldwide reviews of the scientific evidence have been unable to link the use of dental amalgam directly with ill health^{1,2}.

Can mercury from fillings enter the body?

Very small amounts of mercury are released from the surface of dental amalgam fillings, mainly as mercury vapour. Grinding teeth, chewing and tooth-brushing all increase the amount of mercury released. Some of the vapour is breathed out, but some is breathed in, or dissolves in saliva and is swallowed. In this way, some mercury can reach the rest of the body and accumulate in certain organs, particularly the kidneys.

However, the mercury levels involved are very low, so the amount of mercury absorbed into the body is very small. The amount of mercury released from fillings is greatest when fillings are being inserted or removed.

What is dental amalgam?

Dental amalgam (commonly known as ‘silver fillings’) is used to repair decayed or broken teeth. It has been in use since the early 1800s and is generally made up of mercury, silver and tin, with small amounts of copper and zinc. The use of amalgam for dental work is declining as dental health improves and reasonably priced alternative materials become more widely available.

What are the health effects?

High levels of mercury are harmful to human health. These levels of exposure mainly affect the kidneys and the nervous system, producing signs such as mood swings, memory loss and development of tremors. The phrase ‘mad as a hatter’ came about because the hat makers of the 19th century were exposed to high levels of mercury, which was rubbed onto cloth as a preservative.

In rare cases, a person may be allergic to mercury.

Is dental amalgam likely to affect me?

Different people have different tolerances to chemicals in the environment; however, in the opinion of the World Health Organization the levels of mercury exposure from amalgam fillings do not affect general health. Millions of amalgam fillings have been placed since mercury was first used in the early 19th century. There is no reliable evidence that people with such fillings have a greater risk of ill health than people without amalgam.

A very small number of people may experience local side effects due to an allergic reaction to dental amalgam, causing irritation in the tissues surrounding the tooth. However these local effects appear quickly, and can be recognised and treated.

Putting the issue in perspective

Of the mercury found in the body, less is likely to have come from dental amalgam than from other sources. Mercury is present at low levels in our environment as a naturally occurring element in air, water and food. Mercury in food, particularly in fish, is often in a form that can be easily absorbed by the body (in contrast to the mercury in dental amalgam).

The use of dental amalgam has been recommended to be phased out in Scandinavia and other parts of Europe, once satisfactory alternative materials become available. The reason for this was mainly concern over the release of toxic substances into the environment rather than concern about potential health effects for the individual.

Mercury and the environment

Mercury is a naturally occurring metal that enters the environment as the result of the normal breakdown of minerals in rocks and soil from exposure to wind and water, and from volcanic activity. Human activities since the start of the industrial age (eg mining, burning of fossil fuels and solid waste incineration) have resulted in additional release of mercury into the environment³. In lakes and waterways, bacteria convert mercury to methyl mercury, which can be easily taken up by algae and then by fish. As mercury moves up the food chain it becomes more concentrated. Dental amalgam adds to the level of mercury in the environment when wastes from dental offices are not disposed of properly, and through cremation, which vaporises the mercury in amalgam fillings (although mercury vapour collectors are now often used at crematoriums to prevent this).

When should amalgam be avoided?

Pregnancy

During pregnancy, placement of new amalgam fillings or removal of old ones is not recommended, because the level of mercury in the blood tends to rise briefly in these situations. The mercury can cross the placenta and enter the bloodstream of the fetus^{4,5}. There is no scientific evidence of any link between amalgam use and birth defects or stillbirths. However, current thinking is that it is better to avoid dental work involving amalgam when possible during pregnancy, unless the effects of avoiding treatment could cause greater problems, eg the loss of a natural tooth.

Breastfeeding

Women who are breastfeeding should also avoid having amalgam fillings inserted or removed, because mercury can be passed to the baby through breast milk. Of course, there are some situations during pregnancy or breastfeeding where dental work using amalgam might be necessary, and there is no scientific evidence that this will cause harm.

Children

Amalgam is now generally avoided for filling children’s teeth. Growing children tend to be more sensitive to the effects of exposure to any chemical substance in their environment. Several of the new tooth-coloured materials are suitable for use where cavities are small, as they often are in children. Also, it is sometimes possible to treat a child’s tooth with a preventive resin filling that stops existing decay and prevents further decay, rather than inserting an amalgam filling.

Kidney disease

Because high levels of mercury exposure may affect the kidneys, people with kidney disease may be more concerned than others to minimise exposure to mercury.

Should amalgam fillings be replaced?

There is no support in the scientific literature for the idea that the mercury released from amalgam fillings is harmful to an individual’s health. The World Health Organization produced the following statement on dental amalgam in 1999:

There is no scientific evidence showing that general symptoms are relieved by the removal of amalgam restorations².

In fact, there are disadvantages to having amalgam fillings replaced — replacement can be expensive; it almost always causes more of the natural tooth to be lost; and, mercury levels in the body rise immediately after amalgam fillings are replaced due to the manipulation of the amalgam. Alternative materials such as gold, ceramics or composite resins (plastics) require more of the tooth to be removed. Composite resins are also more prone to wear so they usually do not last as long as amalgam fillings.

If you decide to have amalgam fillings replaced, your exposure to mercury can be reduced by using a rubber shielding device called a ‘dental dam’ and having extra suction during the removal. Dentists can also cut away, rather than drill out the amalgam filling, to help reduce exposure to mercury. Check that your dentist uses these measures before undertaking dental amalgam procedures.