The Dangerous Truth About Dental Fillings
Open your mouth and take a good look inside. If you’ve had any type of dental work done in say, oh the last 150 years, chances are you have some heavy metal in your mouth. Well, maybe it’s not really metal but those fillings do contain some heavy-duty materials. Amalgam, more commonly referred to as silver fillings due to the material’s final color, has been commonly used in dentistry since the 1800s. An extremely versatile compound, modern dentists around the world routinely place silver fillings in patients’ teeth. Inexpensive compared to other types of fillings, such as porcelain compounds or gold, amalgam is easy to place and manipulate into a tooth’s shape. But have you ever stopped to think about what those fillings are made of or how they might be affecting you? And now a dentist is suggesting using silver amalgam to fill your child’s cavity? What is the best choice for you and your child’s dental health?

**History**

Prior to the invention of silver fillings, primitive dentists used a variety of materials. Examples of these alternate substances include cork, resin, lead, gold leaf and stone chips. It wasn’t until 1603 when Tobias Dorn Kreilius mentioned an amalgam prototype that combined copper sulfide dissolved with acids and then combined with mercury as a way to fill a decayed tooth. Eventually, a product called D’Arcet’s Mineral Cement was unveiled in France; unfortunately, this product, as well as Kreilius’ concoction, had to be boiled first and then poured into the patient’s tooth before it hardened. When Louis Regnart added el-
elemental mercury to D’Arcet’s Mineral Cement, the temperature of the mixture was able to cool down a bit before being placed into the tooth. As recognition for his discovery, Regnart is now known as the “Father of Amalgam.”

Silver fillings are popular for several reasons: they are inexpensive, easy to place and manipulate. Also, amalgam lasts much longer than other materials that have been used for fillings and remains soft long enough to be solidly packed into a tooth. This is due to the mercury Regnart added to the mix. Elemental mercury remains a liquid at room temperature and can then easily be mixed with a powdered alloy. The resulting putty is then placed in the prepared cavity and left to harden into the silver filling. The powdered alloy is a mixture of silver, tin and copper; the putty is 50 percent powdered alloy and 50 percent elemental mercury.

Along with silver fillings, elemental mercury is also found in fluorescent lights, thermometers and medical equipment. While liquid mercury is generally thought to be harmless due to its thick consistency and inability to bond to body tissue long enough to be absorbed, airborne mercury particles, like those found in silver fillings, are easily ingested and can lead to serious illnesses. Some symptoms of mercury poisoning include vomiting, swollen and bleeding gums, coughing and difficulty breathing. When dealing with silver fillings, dental amalgam releases mercury vapor which is then inhaled. It’s this inhaled vapor that is often associated with brain and kidney damage.
Dentists continue to use silver fillings due to their durability and ability to withstand biting pressure. Also, amalgams are nonporous so they do not foster bacterial growth. And, even though other available materials have been developed that resemble tooth enamel, patients continue to request silver fillings because, well, that’s what they have always used to fill their cavities.

**The FDA and Mercury**

Since dental amalgam fillings are medical devices, they are regulated by the U.S. Food and Drug Administration (FDA). A 2009 FDA review looked at the available scientific evidence on mercury vapors to determine if the amount of vapor associated with dental amalgam was truly dangerous. After careful review, the FDA concluded that silver fillings are indeed safe for adults and children older than six. According to this study, mercury exposure from dental fillings is far below the lowest levels found to cause health issues.

Despite the FDA’s early findings, though, mercury vapors are mentioned on the OSHA website as causing effects “in the central and peripheral
nervous systems, lungs, kidneys, skin and eyes in humans. It is also mutagenic and affects the immune system.” The OSHA site also goes on to mention several more severe illnesses and symptoms related to chronic mercury vapor exposure: behavioral and personality changes, fatigue, anorexia, memory loss and depression to name a few.

Since dentists have used silver amalgam to fill cavities for more than 150 years, you would have to reason that a good portion of those fillings were done on children. Since it was widely believed for most of the last century that the patient’s exposure to mercury and its vapor was brief, no one really thought to test the effect of silver fillings on young patients. But, in the late 1970s and early 1980s that all changed. Once more sensitive laboratory tools were available, researchers became increasingly concerned about the chronic, low-level exposure to mercury was affecting adults. After all, the higher toxicity levels of mercury found after industrial exposures was well known. A list of possible side effects included memory loss, tremors, kidney failure and irritability. But these tests were carried out only on adults who were in situations for extreme exposure.

Not until 1996 did scientists look at the effect of mercury exposure on children in both the short and long term. Two studies, one carried out in the urban Boston, Massachusetts area which included parts of rural Maine and the other in Lisbon, Portugal, each involved more than 500 children with untreated tooth decay and no previous dental amalgam fillings. The children were randomly assigned filling types: silver amalgam or composite. In exchange for the free dental care, children were evaluated for several years to determine if there were any health changes associated with the silver fillings.

After five years, children in the Portuguese study group underwent standardized tests of memory and physical coordination. The conclusion was, despite slightly elevated mercury
levels in their urine, the children who received silver amalgam fillings tested similarly to the children receiving composite dental work.

But should you, as a parent, be satisfied with these results? Yes, these children were under supervised dental health care during the five years the study was conducted but what happened after that? What are the long-term issues these children might have encountered? Why is it not all right for kids to be around .08 percent lead paint but its safe for them to chew on 50 percent mercury?

Elemental mercury, which releases minute levels of mercury vapor, has been found to be toxic to internal organs such as the kidneys and brain resulting in neurological and behavioral problems. Early signs of mercury toxicity have been seen in people with mercury levels just slightly higher than normal. And, while the Food and Drug Administration ruled in 2009 that amalgam fillings were safe to use, in 2010 an FDA advisory committee concluded more studies should be done -- especially on children.

Research has shown children of woman who were exposed to higher levels of mercury while pregnant have an increased rate of birth defects. One study examined the number of mercury fillings in the mothers’ mouths versus their children born with autism. The research
concluded children born to mothers with less than six silver fillings had no greater chance of autism. But those whose mothers had more than six silver amalgam fillings had higher chances of being born autistic. So what do these findings tell you as a parent about silver amalgam’s safety? Well, of course it implies that multiple amalgam fillings can increase the amount of mercury vapors which, in turn, increases the level of mercury toxicity in the mother’s body which can damage the fetus.

Adult patients who have had amalgam fillings since childhood have been replacing the silver fillings with other composite materials. In one instance, a man with 10 amalgam fillings had them all replaced after claiming the silver fillings had made him sick, causing him to vomit every day for months. Another compelling story comes from Don Washkewicz, Chairman and CEO of a Fortune 200 company. Mr. Washkewicz had suffered through several health issues for years but, after researching mercury poisoning and then having his amalgam fillings removed, was able to recover. Now he makes sure his employees’ composite dental fillings are 100 percent covered by the company’s insurance policy.

More than 100 symptoms have been associated with mercury poisoning. And the severity and amount of symptoms you or your child might experience are related to a few factors: how many fillings you have, how long you have had them and how they are stimulated. Also, mercury can also contribute to neurological and psychological issues such as depression and mood swings. Here is a partial list of common symptoms of mercury poisoning:

- **Digestive**: loss of appetite, constipation, nausea/vomiting
- **Energy levels**: chronic fatigue, restlessness
- **Heart**: anemia, chest pains
- **Lungs**: asthma, shortness of breath, shallow breathing
- **Muscles and joints:** cramping, joint aches, muscle fatigue
- **Nose:** inflammation, mucous

**Why Dentists Use Fillings**

Dentists use fillings for several reasons. You know about cavities but did you know fillings are also used to repair cracked, broken or worn down teeth? Cavities are holes in your teeth created by decay. Plaque, a substance that forms on teeth, bonds with elements found in the food that we eat; the resulting acid eats away at tooth enamel causing decay. And even though you brush and floss (you do brush and floss regularly, right?), cavities can result.

In order to properly fill a tooth, dentists have to prep the area to be worked on. First, they’ll numb the area around the tooth to be worked on with a topical anesthetic. You know that weird feeling when your dentist rubs a swab along your gums? That’s the anesthetic going to work. Next comes the dreaded shot in the gums to inject some more anesthetic a little closer to the tooth’s nerve ending. Next, the dentist drills out the decaying area. Once the decay has been removed, your dentist will prep the open space; bacteria and debris need to be removed before the filling can be inserted.

If you have chosen to use a tooth-colored composite, a few additional steps are necessary. Tooth-colored material is applied in layers so each layer needs to harden before the next one is applied. Special lights are used to set each layer. When the process is complete, your dentist will smooth the material and polish the filling.
ALTERNATIVES TO SILVER FILLINGS

Along with silver fillings, several alternative materials are now available. The location and extent of the decay along with the cost of materials and the patient’s insurance coverage often determine which material is used. Gold, porcelain or resin composites are commonly available options. While these other materials do not contain the elemental mercury found in the amalgam fillings, they do have their own pros and cons.

Gold fillings are an often appealing choice for fillings. Aesthetically, some patients prefer the look of gold instead of the silver fillings. Gold lasts quite a long time—usually 10 to 15 years or longer. Also, gold can withstand the pressure of chewing. The biggest disadvantage of gold is, of course, the price which can be more than 10 times the cost of amalgam fillings. Another is a bit shocking. Really, when a gold filling is placed next to an amalgam filling, a sharp pain can result. This pain is referred to as galvanic shock and it forms when the two metals interact with saliva and an electric current occurs.

Unlike amalgam fillings that are merely packed into drilled-out cavity spaces, composite fillings bond to tooth structure which provides extra support to the teeth. Aesthetically, the shades and colors of composites allow dentists to match your existing teeth color which makes it a great material for front teeth. Preparation for inserting composite material often involves less tooth structure removal compared with silver fillings. The downsides of composite fillings are many. They wear out much faster; usually lasting at least five years compared to the 10 to 15 of amalgams. Composite materials also take longer to apply which means longer dentist visits.

A few, less common materials are also on the market. Ceramics, which are derived from porcelain, are resistant to staining and resist abrasion. Ceramic is expensive, though, cost-
ing almost as much as gold. Another material is glass ionomer which is actually an acrylic and glass mixture; glass ionomer is used below gumlines and for fillings in young children.

If you or your child already has some silver fillings and you’ve decided to have them replaced with another material, make sure you chose a dentist who understands your concerns and will follow strict procedures to minimize the spread of mercury vapors during removal. Some of the precautions should include making sure you are in good health, the room has proper ventilation and reducing your concerns about the potential dangers.

- **Reduce heat:** Drilling on a tooth creates a great deal of heat. That heat, in turn, will increase the amount of mercury vapor released during removal. Cooling the filling with air and water will keep the amount of vapor released to a minimum.

- **Chunking:** Simply put, this means your dentist removes the amalgam in big chunks which reduces the amount of drilling needed.

- **Super vacuum:** Dentists now have access to more powerful suction systems. Ask your dentist if the office is equipped with this newer technology. Used properly, these vacuums should capture more of the mercury vapors than more conventional systems.

- **Alternate air:** If your dentist does not have a super-powered vacuum, ask if they provide alternate air sources for patients during amalgam removal. This alternate air source can be from an oxygen tank or from air outside the dental office. Either way, though, remember to breathe through your nose to reduce the risk of inhaling mercury vapor.

- **Rubber mouth guard:** These guards, also known as a mouth dam, surround the tooth or teeth being worked on and prevent debris from being swallowed.

Additional precautions should be practiced by dentists to ensure the safest mercury removal possible: removing rubber gloves before cleaning and polishing the patient’s mouth and teeth, providing additional purified air after the procedure and immediately cleaning up the workspace to prevent the spread of mercury vapors to name a few.

But it’s not only patients who need to be protected from mercury vapors. Dentists and their staff are constantly exposed to these dangerous vapors and should take some precautions to minimize their own exposure. Continually purifying the air in the office is a great way to clear the air of impurities. Keeping the workspace free of lingering silver filling debris and properly disposing of all dental waste also should be practiced.

Eventually, the time will come for you to replace your silver fillings. How will you know when it’s time? Perhaps your dentist will mention during your regular visit that your fillings are cracking or you might notice bits of silver coming loose as you chew on some gum. No matter how you find out, one of your first thoughts will no doubt be, “Oy, how much
will this cost me?” There are definitely going to be some financial costs but have you ever thought about the physical cost to your body if you delay replacement?

When silver fillings are inserted, the amalgam isn’t actually bonded to any portion of your tooth. Instead, the dentist packs the material in very tightly to ensure all the space is filled. But, since the amalgam is a mixture of various minerals and all that mercury, the material is never totally stable within the cavity. Differences in temperature, shifting of your teeth and the constant pressure from chewing all have some effect to the wear and tear of the filling. That’s how the cracks and fissures appear. And you know what gets into those cracks, right? Yep, bacteria. The same bacteria that caused the cavity all those years ago. Only now, since they are hidden behind the silver filling, you have no idea how much damage is occurring until the pain associated with decay sets in.

**Replacing Fillings**

The longer you put off replacing your fillings, the more likely you’ll need more dental work than just new fillings. Crowns and root canals are common results of long-term tooth decay. Crowns are basically covers for your teeth. They are often made of porcelain and are used when too much of the tooth’s enamel has either decayed or broken away for a filling to be effective. Crowns often last only about seven to 10 years so the cost of replacement can multiply as you age. A root canal is a procedure that repairs and saves a tooth that is very decayed or infected. When the nerve of a tooth is infected, root canals are done to clean out the inside of the tooth and seal it to prevent further infection. While root canals themselves can be a bit painful, the real pain comes before the procedure when the infection is irritating the tooth’s nerve ending.

Financially, replacing a mouthful of silver fillings can be quite pricey averaging from $125 to $200 per new composite filling. And replacing them with gold can cost more than 10 times that much. But remember, each filling you replace reduces the cost of future dental work and, perhaps even more importantly, reduced the amount of mercury in your body. And check with your dental insurance company to see if they will cover some of the cost. If your dentist’s assessment is the filling is cracked and needs replacing, your insurance should pay for a percentage of the replacement. Dental plans vary, though, so make sure you understand what is and is not covered so you’re prepared to pay the remainder of the bill. Not everyone has dental insurance, though. In that case, don’t hesitate to ask your dentist for a discount. It never hurts to ask but can be a financial hit if you don’t.

These days everyone is worried about the environment and how it affects our health and the health of our children. Removing amalgam fillings, and the mercury contained in them, from your teeth can alleviate a slew of worries. For your health, and the health of your family, call your dentist today and set up a consultation to find out which option is right for you.