

Oral Galvanism, *A Battery in your Mouth*

You have probably never compared your teeth to car batteries, or thought of “electrical currents” as a side effect to dental treatments. But when you get a metal filling or crown, you have all the ingredients you need to create a charged battery in your mouth.

A battery simply requires two or more different metals sitting in a liquid that can conduct electricity (i.e., an electrolyte). Your saliva acts as the electrolyte, and the metal restorations provide the dissimilar metals, even if you only have one metal filling or crown.



Pure metals are almost never used in dentistry, because the physical characteristics are inappropriate. Instead, metal fillings, crowns, and implants are made up of alloys (metal blends), and they can contain any combinations of metals, depending on the manufacturer. A “classic” gold crown, for example, is likely made up of things like gold, platinum, palladium, silver, copper, and tin. And mercury-amalgam (“silver”) fillings contain mercury, copper, tin, silver and zinc. The most common type of crown that we see is called a PFM (porcelain-fused-to-metal) and this type of crown has a metal substructure underneath a porcelain coating. Oftentimes this metal layer contains nickel, and unfortunately, it is estimated that 20% of the population has a nickel allergy.

An electric current, called a “galvanic” current, is generated by the transportation of metal ions from the dental metals into your saliva. This phenomenon is called “oral galvanism,” and it literally means that your mouth is acting like a small car battery or a miniature electrical generator. The

currents can actually be measured using an ammeter, which is used to measure the electric current in a circuit.

Oral galvanism creates three major complications:

First, the electric currents increase the rate of corrosion (or dissolution) of metal-based dental restorations and replacements. Even “precious” metal alloys such as gold and platinum continuously release metal ions into the mouth due to corrosion, a process that gnaws away bits of metal from the metal’s surface. These ions react with other components of the body, leading to sensitivity, inflammation, and, ultimately, autoimmune disease. Increasing the corrosion rate, therefore, increases the chance of developing immunologic or toxic reactions to the metals.

Second, some individuals are very sensitive to these internal electrical currents. Oral galvanism can result in local lesions, nerve shocks, a metallic or salty taste, burning tongue, unexplained pain, and discoloration.

Finally, there is the concern that oral galvanism directs electrical currents into brain and heart tissues and can disrupt the natural electrical currents in these organs.

At *Natural Smiles Dental Care*, we offer all-ceramic restorations and all-resin partial dentures, with the same strength that metal restorations and metal partials are known to have. We can also replace your *existing* metal fillings and crowns if you have concerns with oral galvanism in your mouth.

