

Bisphenol A (BPA) and Sealants

There has been a lot of discussion in the media regarding BPA and many products are coming out with BPA free labels. In this article we will discuss BPA and its relation to sealants. A sealant is a plastic material which is usually applied to the chewing surfaces of the back teeth. This plastic resin bonds in the depressions and grooves of the chewing surfaces. The sealant acts as a barrier, protecting enamel from plaque and acids and prevents cavities from forming. Bisphenol A (BPA) is used to manufacture polycarbonate plastics found in beverage containers, compact disks, plastic dinnerware, and toys. BPA epoxy resins are used in the protective linings of food cans, in dental sealants, and in other products. The effects from BPA at low environmental exposures are unknown. BPA has been shown to affect the reproductive systems of laboratory animals. BPA is thought to mimic the effects of the female hormone estrogen. More research is needed to understand the human health effects of exposure to BPA. The ADA Council on Scientific Affairs states that to date, these effects have not been observed in humans and are questionable at the exposure levels resulting from consumer products.

Exposure to BPA at low levels occurs when eating foods or drinking beverages stored in plastic containers containing BPA. Children can be exposed through direct contact and hand to mouth contact with materials such as toys which contain BPA. The release of industrial and household wastes into the environment also exposes humans to BPA. Dental sealants have also shown to result in a short term extremely low level BPA exposure.

BPA may show up as residual trace materials from the manufacture of dental sealants and as a product of degradation of sealants by salivary enzymes. It is important to realize that the amounts of BPA released from dental sealants are extremely low. The American Dental Association (ADA) Council on Scientific Affairs Statement states that to put the exposure from dental materials into perspective, consider the exposure that occurs from the placement of six dental sealants containing bis-GMA in a child (7 to 14 years of age). The estimated one time exposure (upon sealant placement) for a male child of median body weight (51 to 112 pounds) is approximately 5.5 micrograms, which is two to five times lower than the estimated daily exposure from food and environmental sources. The report from the ADA Council on Scientific Affairs goes on to state that according to research, systemic BPA has not been detected as a result of the use of such sealants, and potential estrogenicity at such low levels of exposure has not been documented.

It is important to weigh that against the benefits sealants provide in preventing caries or cavities. According to the CDC, dental caries remains the most common chronic disease of children aged 5 to 17 years—5 times more common than asthma (59% versus 11%). Untreated cavities can cause pain, dysfunction, absence from school, and poor appearance. These problems can greatly affect a child's quality of life. Research has consistently shown that sealants prevent caries. One study shows that a reduction of caries incidence in children and adolescents after placement of resin-based sealants ranges from 86 percent at one year to 78.6 percent at two years and 58.6 percent at four years. There is consistent evidence from private dental insurance and Medicaid databases that placement of sealants on first and second permanent molars in children and adolescents is associated with reductions in the subsequent provision of restorative services.

Given the overwhelming evidence of caries prevention due to the use of dental sealants, the benefits of placing sealants far outweigh the minimal exposure to BPA. The American Dental Association believes that while continued research is necessary any concern about potential BPA exposure from dental sealants is unwarranted at this time.

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