Cancer caused by mouthwash? Lethal doses of toothpaste?

Natural oral care products are creeping onto store shelves, using scare tactics to increase their sales. Are they attempting a hostile takeover of the oral hygiene market by instilling fear in the American public? You decide. One natural toothpaste company warns on their website, "Check your toothpaste and you will probably see a poison warning!" But you won't see any warning labels on these "natural" alternatives. They are supposedly better because they don't contain dreaded fluoride or alcohol. In addition, they are advertised as "excellent for children" and "safe and powerful for dogs with bad breath." They can attempt to hide behind their superfluous warnings and statements of superiority, but when it comes down to it, the only thing they excel at is price.

Natural mouthwash makers claim that conventional mouthwashes containing 25% or more alcohol have been "implicated in mouth, tongue, and throat cancers." They assert that alcohol makes the body tissues more susceptible to carcinogens. One "natural" brand without alcohol markets itself under the name Eliminator. While there are over thirty years of scientific data linking increased risk for oral cancer with excessive, regular alcohol consumption and tobacco use, there is no such data linking mouthwash-use and oral cancer. A 1995 study reviewed the data from seven case control studies and found that there was insufficient evidence to establish a causal relationship between mouthwash use and oral cancer. Dr. Sol Silverman, in his dental text on oral cancer for the American Cancer Society, concluded that there was no risk association. The natural mouthwash makers make extreme statements but cannot back their claims with any scientific proof. Since the non-alcohol, natural mouthwashes do not effectively kill plaque, they must scare the public in order to make a profit.

While natural toothpaste makers heavily publicize the alleged toxicity of fluoride, citing the "Clinical Toxicology of Commercial Products" report of 1984, in reality the report shows us that we have nothing to worry about if we ingest a miniscule amount of fluoride while brushing our teeth. If anything, it will benefit us. While regular tooth-brushing will not prevent tooth decay, there is a proven benefit from regular brushing with a fluoride toothpaste. Clinical trials show that dental decay can be reduced by 15 to 30% with fluoride toothpastes. The lifetime reduction is probably greater than that reported in clinical trials lasting for short periods of time.
First, this 1984 report tells us that the lethal dose of fluoride in a human is "not accurately known." However, it is estimated that the mean lethal dose is around 5 grams. The average 232 gram tube of toothpaste contains 1500 parts per million of fluoride. This means that there are roughly 15 grams of fluoride for every 10,000 grams of toothpaste. So, how much toothpaste would you have to ingest to risk dying of fluoride poisoning? Around fourteen tubes. Never fear: you won't die from adding a little too much toothpaste to your brush while drowsy.

At the levels found in toothpaste, fluoride is safe. The only possible side-effect is a minor "flecking" of tooth enamel if small children swallow significant amounts regularly over many years while their permanent teeth are forming. That is why dentists recommend that children up to age seven use only a "pea-sized" amount when brushing.

Yes, fluoride-containing toothpastes carry a warning label, required by the Food and Drug Administration (FDA): "Keep out of reach of children under 6 years of age. If you accidentally swallow more than used for brushing, seek professional assistance or contact a Poison Control Center immediately." However, the American Dental Association (ADA) released a statement in 1997 renouncing some of the frightening language in this warning. Prior to FDA regulation, the ADA had limited the amount of fluoride allowed in toothpastes and required toothpaste manufacturers to include a usage recommendation. The ADA feels that the current warning label required by the FDA "greatly overstates any demonstrated or potential danger," and they have pointed out to the FDA that a child could not ingest enough fluoride from toothpaste to cause a serious health problem.

The natural toothpaste manufacturers also frighten the public with the idea that fluoride will accumulate in the body and lead to various health problems. The truth is that the kidneys will excrete about 50% of fluoride in the three to six hours following ingestion. The other half of the ingested fluoride will be taken up by bone and teeth, preventing dental decay and possibly aiding in increasing bone mass for individuals suffering from osteoporosis. While the "natural" manufacturers cite a long list of health problems associated with fluoride-retention, there is no proven link between normal fluoride consumption and increased hip fractures, increased bone cancer, or increased skeletal fluorosis (deformation). In fact, only five cases of skeletal fluorosis have been confirmed in the last thirty-five years. The daily dose of fluoride most Americans ingest has not been shown to have any adverse effect on bone health.

Dentists remain skeptical of the efficacy of natural toothpastes, especially those that do not contain fluoride. Fluorideless toothpastes do often contain higher quantities of abrasives than the conventional brands. Sea salt, baking soda, and silica may remove some plaque, but they also could be wearing away your tooth enamel. Also, some "natural" brands may contain vitamin C, which increases the levels of acidity in your mouth and erodes enamel. And there is no evidence proving that natural toothpastes containing ingredients such as baking soda instead of fluoride will prevent tooth decay.

In summary, if we are really concerned about fluoride toxicity in children and fluorosis: 1) we should be supervising our children's brushing and not leaving them alone with whole tubes of toothpaste and 2) we should refrain from buying the kiddie toothpastes that taste just like candy. Eating a whole tube may not kill a child, but the candy-flavored variety may entice children to
swallow more than their fair share and lead to a tummyache or two.

While natural oral care product makers play on people's fears concerning alcohol and fluoride, there really is no reason to worry. It's all a ploy to get consumers to spend three times more on the "natural" brands than they would on tubes of the common brand-name toothpastes.

Karen L. Schneider is a research intern at the American Council on Science and Health.
Responses:

February 4, 2002

I'm sure this is much too obvious...but if aspartame has this effect, why aren't the "women in the mall" rushing to overdose?

Suzanne H. Jones, RDH

April 6, 2003

I read your article on natural toothpaste products and found it