

Bad Breath Testing, Causes and Cures

http://www.animated-teeth.com/bad_breath/t1_halitosis.htm

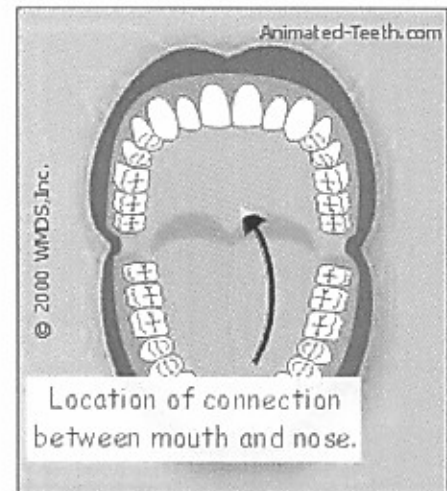
Bad breath, also known as "**halitosis**", doesn't have to be an insurmountable problem. Appropriate cures for bad breath are usually very simple once the sufferer understands the fundamental causes of their breath odors. In most cases a person's bad breath is due to anaerobic oral bacteria which have accumulated on the person's tongue and also between and around their teeth.

Our discussion will outline for you some simple tests you can use to determine if you have bad breath, explain to you how and why oral bacteria create bad breath, detail for you where these offending bacteria commonly accumulate and how to effectively minimize them, provide you with explanations regarding the use of tongue scrapers, mouthwashes, and other specialty products, and provide you with some common sense tips which can help you to minimize bad breath.

Do you have bad breath?

How is your breath, not sure? No doubt at some point each of us has unwittingly had bad breath (**halitosis**) only to subsequently be embarrassed by the reactions of those around us.

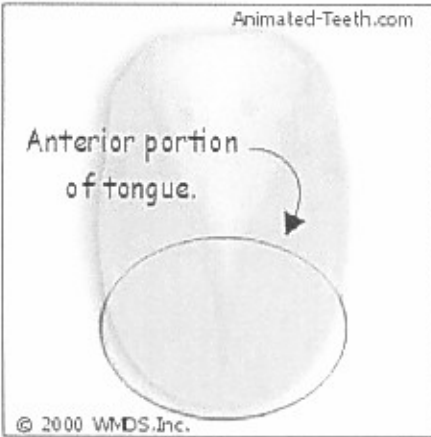
For any individual the exact status of one's breath can be difficult to ascertain. The reason for this lies in the fact that the oral cavity, the source of our breath, is connected to our nose by way of an opening which lies in the back of our mouth (back in the region of our soft palate). Since noses tend to filter out and ignore background odors, it filters out and ignores our own bad breath. This means it is quite possible for a person to have bad breath, yet not be aware of it.



So, how can you tell if you have bad breath?

If our own noses can't reliably help us judge the quality of our own breath, how can we determine if we do have bad breath? One solution is to ask the opinion of a spouse or significant other. In lieu of the availability of these individuals you might ask a friend or else your dentist or hygienist at your next dental appointment. If you find this type of question too personal to ask an adult don't overlook asking a child. As we all know, sometimes the least inhibited and most honest responses come from children.

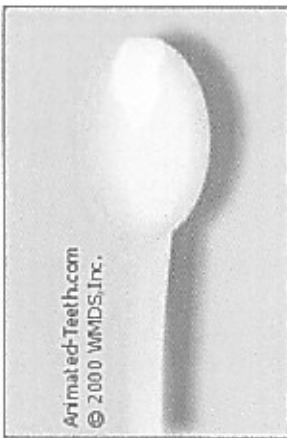
Is there a way a person can test his own breath?



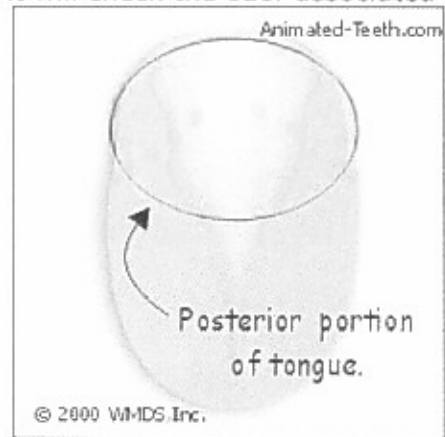
There are ways to accurately smell your own breath, however you have to take a slightly indirect route.

Try this technique. Lick your wrist, wait about five seconds while the saliva dries somewhat, and then smell it. What do you think? That's the way you smell. Or, more precisely, that's the way the end of your tongue smells (your tongue's "anterior" portion). How was it? Did you pass this first check?

Now do this experiment, it will check the odor associated with the back of your tongue (your tongue's "posterior" aspect).

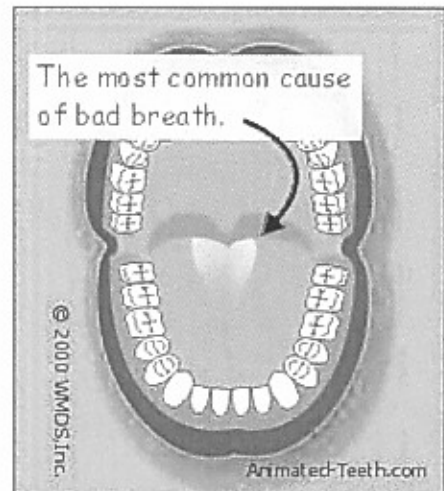


Take a spoon, turn it upside down, and use it to scrape the very back portion of your tongue. (Don't be surprised if you find you have an active gag reflex.) Take a look at the material that has been scrapped off, usually its a thick whitish material. Now, take a whiff of it. Not so bad? Pretty nasty? This smell, as opposed to the sampling from the anterior portion of your tongue, is probably the way your breath smells to others.



The fundamental cause of bad breath is...

So now you know, the fundamental cause of bad breath for most people is the whitish coating that covers the surface of the posterior portion of their tongue. More accurately, bad breath is caused by the bacteria that live in this coating. (The second most common fundamental cause of bad breath is bacteria that live and accumulate elsewhere in a person's mouth.)



How academic researchers test for bad breath.

Before a dental researcher can evaluate various cures for bad breath they must first have a way to measure its severity, both initially and after the cure they are studying has been

are discussed below.

Organoleptic judging of bad breath.

Judging of a person's bad breath by way of organoleptic testing simply means that the one performing the breath evaluation has used their sense of smell (their nose) as the means for making the determination. Historically this method of breath testing has been a frequent choice among dental researchers. Noses are readily available, inexpensive to obtain and operate, and to their credit noses can detect up to 10,000 different smells.

The problem one encounters with organoleptic testing is that it does not provide an evaluation of bad breath that is totally objective. Factors other than breath odors can and do influence organoleptic evaluations. In fact research has shown that factors such as hunger, menstrual cycle, head position, and the degree of attentiveness and expectation can each influence a judge's interpretation of what they smell.

As for quantifying the organoleptic measurement itself, what exactly does constitute a weak, strong, or average level of bad breath? Will each judge involved in the research be able to make equivalent comparisons? Complicating things even more, as we all know when we are repeatedly exposed to a bad odor our sense of smell acclimatizes to the odor and therefore our sense of smell loses much of its sensitivity. Bad breath that seems exceedingly objectionable at the beginning of testing may seem quite less so as the evaluation continues.

Using gas chromatography to evaluate bad breath.

Researchers in a number of scientific fields have long used gas chromatographs as a means of identifying the gases found in the samples they are studying. Likewise, gas chromatographs have been utilized by dentists in bad breath studies and have provided a means by which a researcher could definitively quantify the precise levels of specific compounds present in someone's breath.

While gas chromatography is probably the best way to test for the compounds associated with bad breath it has not been widely utilized in studies for several reasons. Gas chromatographs are relatively expensive and need personnel with special training to operate them. The equipment is not portable and a significant amount of time is needed to make each breath measurement.

Using Halimeters to judge bad breath.

A specialized type of sulfide monitor (termed a Halimeter) has been developed and it provides a means by which a tester can quantify degrees of bad breath. These machines, first introduced in 1991, measure the amount of sulfide gasses found in a person's breath. Some sulfides, such as hydrogen sulfide and methyl mercaptan (collectively referred to in dental literature as volatile sulfur compounds or "VSC's"), are well known as being causative agents for bad breath. A Halimeter's discovery of a high level of sulfides suggests a correlating high level of VSC's, although the individual types of VSC's aren't tested for specifically.

Since Halimeters test for a fewer number of compounds than gas chromatographs (sulfides only), and in fact test for no individual compounds at all but instead just sulfides as a class, Halimeters provide for a less definitive evaluation of a person's bad breath than gas chromatographs can. Additionally, compounds such as ethanol (alcohol) and essential oils (both being compounds commonly found in mouthwashes) interfere with a Halimeter's ability to make a measurement. The advantages of using a Halimeter for a study rather than a gas chromatograph are that a Halimeter requires no special training to use, is portable, breath measurements can be made quickly, and the apparatus itself is comparatively inexpensive.

The BANA test.

Some of the bacteria that cause periodontal disease (gum disease) produce waste products that are quite odiferous and as a result contribute to the presence of bad breath. Some of these types of bacteria can be tested for by way of a BANA test.

The bacteria in question have the characteristic of being able to produce an enzyme that degrades the compound benzoyl-D, L-arginine-naphthylamide (abbreviated BANA). When a sample containing these bacteria is placed with the BANA compound they break it down and the result is a compound that has a different color.

Utilizing chemiluminescence in detecting bad breath.

One of the more recently developed methods of testing for the presence of compounds associated with bad breath relies on the principle of chemiluminescence. This type of testing was first introduced in 1999. When a sample containing sulfur compounds (such as VSC's, the types of compounds which cause bad breath) is mixed in with the test's mercury compound the resulting reaction causes fluorescence. The strength of this methodology is that it can provide better selectivity and sensitivity when measuring low levels of sulfur compounds, as compared to testing with a Halimeter.

What causes bad breath? - Conditions and circumstances which can cause or aggravate bad breath.

On our preceding page you discovered that the most common fundamental cause of bad breath (halitosis) is related to the presence of oral bacteria. There are, however, other factors that also influence the odor of one's breath, and in fact the quality of a person's breath depends on a number of variables. The next part of this discussion details some specific issues and conditions related to the presence of bad breath. Take notice that many of them directly correlate to:

- ◆ Oral bacteria.
- ◆ Conditions which promote the growth of oral bacteria.
- ◆ Not cleaning, or not being able to clean, those areas where oral bacteria reside.

Later in our topic we will discuss the specifics of why bacteria cause odors and detail methods for cleaning these bacteria away. Right now however, at this point in our discussion, just realize that anything that promotes oral bacterial growth will most likely promote bad breath too.

How do foods cause bad breath

Everyone knows that certain foods have a reputation for causing bad breath, possibly the two most notorious ones are garlic and onions. When foods are digested their component molecules are absorbed by our bodies and subsequently carried off in our blood stream. Some of these molecules, which can have very unique and unpleasant odors, will be released into our lungs as our blood flows through them. As we exhale our breath will carry these offending molecules out of our bodies.

While this type of bad breath can be annoying or embarrassing this is not the type of breath problem we discuss on the subsequent pages of this site. Bad breath related to the consumption of certain foods will resolve on its own in a day or so as your body completes the process of breaking down and utilizing or else excreting the offending molecules. You can control this type of bad breath simply by avoiding or minimizing your consumption of these foods.

How does smoking help to cause bad breath?

You are probably familiar with people who have "smoker's breath". While the odor associated with smoking depends on a number of factors, a great part of it is related to the tar, nicotine, and other foul smelling substances derived from tobacco smoke which accumulate on a person's teeth and the soft tissues of the mouth (tongue, cheeks, gums,...).

Once again, this is not the precise type of bad breath we address on this site's pages. Short of quitting smoking there is no effective way to totally eliminate smoker's breath, although immaculate oral hygiene can help to reduce it.

As a contributing factor, the act of smoking does have a drying affect on oral tissues. Decreased moisture in the mouth limits the washing and buffering effect of saliva on oral bacteria and their waste products. [Mouth dryness](#) is addressed as a topic just below.

It's a known fact that persons who smoke have a tendency to have more problems with periodontal disease ("gum disease") than those who don't. The causative agents of periodontal disease are bacteria. [Gum disease](#), as it relates to bad breath, is discussed in more detail below.

How does xerostomia (dry mouth) contribute to causing bad breath?

Even if you don't have significant problems with bad breath you probably have noticed that your breath is least pleasant when you first wake from a night of sleep. This is because while we rest our mouth dries out, due to our body's natural tendency to reduce saliva flow when we sleep. The result of this mouth dryness is "morning breath".

This same souring effect is often noticed by teachers, lawyers, and anyone else whose mouth has become dry after having to speak for a prolonged period of time. Additionally, those who breathe through their mouth, are fasting, or else are under stress will usually notice they have a comparatively dry mouth and problems with breath odors. From a physiological standpoint, persons with chronically dry mouths, a condition termed "xerostomia", tend to have more difficulty keeping their breath pleasant.

The moisture in our mouth helps to cleanse it. The presence of moisture encourages us to swallow. Each swallow we take washes away bacteria, as well as the debris and food particles on which they feed. Moisture also dilutes and washes away the waste products created by the bacteria that live in our mouths.

Saliva is a special form of mouth moisture, it's the body's natural mouth rinse. Beyond the washing and diluting effect that any moistness will produce, saliva also contains special compounds that kill oral bacteria and also buffer the effects of bacterial waste products.

When our mouth dries out all of the benefits which moisture can produce are lessened. The net result is that conditions for bacterial growth are enhanced while the neutralization of bacterial waste products is reduced.

Some persons have chronically dry mouths, this condition is termed "xerostomia". Xerostomia can be a side effect of the medication a person is taking. Antihistamines (allergy and cold medications), antidepressants, blood pressure agents, diuretics, narcotics, or anti-anxiety medications are each known to produce xerostomia.

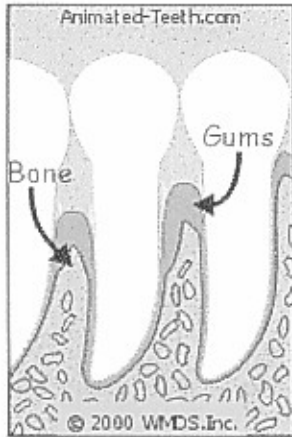
As a person ages they may find that mouth dryness becomes more and more of a problem. It seems that with age our salivary glands tend to work less effectively, and the composition of our saliva changes too. Both of these factors result in less effective salivary cleansing and buffering.

Compounding the problems associated with mouth dryness, long term sufferers of xerostomia are known to have an increased susceptibility to periodontal disease ("gum disease"). Periodontal disease is a causative factor of bad breath.

Can periodontal disease (gum disease) cause bad breath?

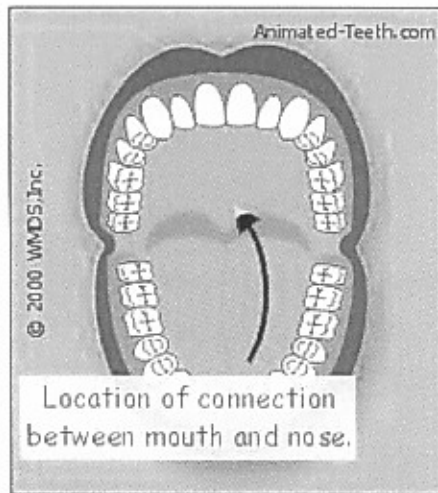
Periodontal disease, often just called "gum disease", can be the source of a person's bad breath. Ask any dentist, the odor of gum disease can be so distinctive that a dentist can often correctly anticipate the presence of gum problems even before they begin their examination.

Periodontal disease is second only to the accumulation of bacteria on the tongue as being the most common fundamental cause of a person's bad breath. Since periodontal disease is usually more of a problem for person's over the age of 35 or so, the older we get the more likely that the source of our bad breath is related to conditions associated with our gums.



Periodontal disease is a bacterial infection located in the tissues that surround teeth. Advanced forms of this disease can result in serious damage to the bone that holds the teeth in place. Often as this bone damage occurs spaces between our teeth and gums (termed "periodontal pockets") develop which provide ideal locations for bacteria to live. It is often the waste products from the bacteria which reside in these periodontal pockets, pockets which are often so deep that a person cannot effectively cleanse them, which can be the source of a person's bad breath.

How can sinus conditions help to promote bad breath?



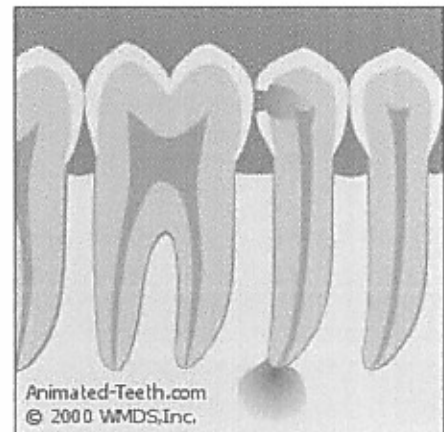
Sinus conditions can certainly have an affect on the odor associated with a person's breath. Upper respiratory infections and allergies can both promote the flow of postnasal drip onto the back portion of the tongue (by way of an opening in the area of a person's soft palate). This discharge often has a foul taste and smell. What's worse, oral bacteria will feed upon this discharge and create their own odiferous waste products which in turn adds to a person's breath problems.

As a compounding factor, persons with sinus conditions will often have stuffed up noses and therefore must breathe through their mouth. The drying effect of mouth breathing will create an environment that promotes bad breath. Sinus sufferers are also likely to take

antihistamines, a type of medicine known for causing mouth dryness.

What types of dental conditions can cause bad breath?

For our discussion here the term "dental conditions" refers to those types of untreated dental pathology that are not typically the most common causes of bad breath for most people. Any active infections in the mouth, such as those associated with abscessed teeth or a partially erupted wisdom tooth, can cause bad breath. Teeth having extensive untreated decay can trap enough debris and bacteria that they become the source of foul odors. Your dentist can identify and treat these problem dental conditions if they exist.



Can untreated medical conditions cause bad breath?

Although the most common source of breath odors is related to the accumulation of bacteria in the mouth certain medical conditions can be the cause of a person's bad breath. If a person's bad breath persists after they have consulted with their dentist and tried the usual simple solutions then a consultation with a medical doctor may be indicated. Your doctor will of course know what types of conditions to look for but, in general, some of the problems for which they will screen are related to the respiratory (pulmonary or bronchial), hepatic (liver), renal (kidney), and gastrointestinal (stomach and intestine) systems.

Can bad breath be caused by dentures?

Dentures (complete dentures, full dentures, partial dentures, etc...) can have a great influence on the quality of a person's breath. If you have dentures, here is a test you can use to determine if they might be the source of your bad breath:

Remove your dentures and place them in a baggie. Seal the baggie shut and let it sit for about four or five minutes. Now, crack the baggie open and take a whiff. For better or worse, the odor you smell is representative of what your breath smells like to others.

While the most common sources of breath odors are associated with bacterial accumulation either on a person's tongue or on and around their teeth (periodontal disease), bacteria can and do accumulate on the surface of dentures and this can be the source of a person's bad breath.