

Tongue Bite: The Bane of the Pipe Smoking

by David Peterson

Nearly every pipe smoker eventually becomes familiar with the dreaded "tongue bite." This bane of pipe smoking has caused many to give up the hobby altogether rather than suffer the uncomfortable and sometimes painful irritation that results from being "bitten" by one's pipe.

This essay is not intended to be exhaustive or definitive. But I believe the more we understand about our hobby, the more we can enjoy it. I hope this article will be helpful to those who are frustrated with tongue bite.

Definition of Tongue Bite

For our discussion here, tongue bite is a condition caused by pipe smoking that results in a sore, tender, irritated tongue. Other oral tissues can also be affected and are sometimes referred to as "hot spots." Smokers describe the discomfort in various ways: "a burning sensation," "raw tongue," "like an acid burn," "like pins or needles," and so on. The effects of tongue bite range from a minor irritation to a major discomfort. Sometimes the symptoms last just a few hours; other times they can last for days. Also, although it can be immediate, tongue bite does not always occur during the smoke. Many report that the smoke itself was comfortable, but their tongues feel irritated hours later or even the next day.

Causes of Tongue Bite

Over the years, there has been a great deal of discussion and speculation about the causes of tongue bite. Some old codgers swear there is no cause other than improper technique. Others suggest a host of possibilities ranging from simple heat and steam, all the way to detailed analysis of alkalinity levels in the tobacco. Recent studies indicate that the painful phenomenon may also have to do with the individual's taste buds. Apparently, heat opens sensitive channels and pores in taste buds, making them more vulnerable.

As you might imagine, all of these varying possibilities can create quite a bit of confusion among pipe smokers about what actually causes tongue bite. This confusion often results in a wide variety of unhelpful, and even silly, "cures" and treatments. So let's take a look at some facts about tongue bite.

Aside from physiological factors that may make one person more susceptible than another (these will be discussed briefly below), the causes of tongue bite are pretty straight forward. Tongue bite generally results from either a chemical burn or heat scald (or both). Most of us can immediately understand how heat could cause irritation, but talk of chemical burns seems extreme. Simply put, chemical burns are produced by the caustic elements in the smoke. In other words, pipe smoke that contains higher levels of alkalinity will produce painful irritations of the tongue and oral membranes.

Alkalinity and Tongue Bite

I should point out up front that this section gets a bit technical, and I'm no expert in chemistry. But to help make some sense of the issue of alkalinity and how it relates to tongue bite, I should start with a quick review on alkalinity: Every solution is either acidic or alkaline. (Alkaline is often called "base.") Acidity and alkalinity are measured in pH (potential of hydrogen). The pH scale goes from 0 to 14, with 0 the most acidic, 7 is neutral, and 14 the most alkaline. The pH of stomach acid is 1, wine is 3.5, water is 7.

When smoke from tobacco has a higher degree of alkalinity, it will produce painful irritation of the tongue, regardless of its temperature. A principal cause of alkaline smoke is a tobacco containing little or no sugar, such as Burley. Soil chemistry where the tobacco was grown can also influence the pH of the leaf. Virginias and other tobaccos with a high sugar content generally produce an acidic smoke, which is easier on the mucous membranes and tongue. However, if combustion temperature goes too high, then the hydrocarbons (especially sugars) join with oxygen to form water and turn neutral, thus leaving the alkaline components to predominate in the smoke.

This simply means when this type of tongue bite occurs, it is the result of a chemical reaction, it has nothing to do with heat or the temperature of the smoke. Even if you were to freeze the smoke and make it ice cold, the high alkalinity would still produce a chemical irritation.

Well-known master tobacconist, G. L. Pease, points out these details concerning common tobaccos and their pH and sugar levels:

- Burley and Virginias have a similar pH of 5.4 to 5.8 (although Virginias have significantly more sugar in the form of dextrose, about 0.2% for Burleys and approximately 22% for bright Virginia).
- Turkish is somewhat more acidic, generally about pH 4.9, while containing only about 12% sugar.
- The alkalinity of the water soluble ash from Burley, however, is 2-3 times that of Virginia.

Pease also explains that when sugars are burned at higher temperatures, they tend to produce smoke with a higher pH than when burned more slowly. This can cause Virginias to smoke "hot" when puffed furiously, while gentle smoking will liberate the sugars into the water which is produced during combustion of the tobacco. Maintaining a delicate balance between steam generated by the vaporizing water in the tobacco and the water vapour produced as a by-product of normal combustion is very important to getting a sweet, cool smoke. If the tobacco is too wet, too much steam is generated, diluting the "sweetness" of the smoke, and resulting in caloric heat. If the tobacco is too dry, the smoker may tend to smoke it hot, creating an alkaline smoke from the burning of sugars.

Tobaccos that are flue-cured, such as Virginias, or those exposed to a high heat soon after the leaf is removed from the plant, will have a high sugar content. This is because metabolic processes within the leaf, and microorganisms that live there, are killed by the heat before the sugar is consumed.

Sun-cured or air-cured tobaccos, on the other hand, have a low sugar content, because most of the sugar is either metabolized within the leaf itself or consumed by microorganisms between the time the leaf was removed from the plant and the end of the initial curing process.

In light of this, one would expect Virginias and other heat-cured tobaccos to be gentle on the tongue, and Burley and other slowly-cured tobaccos to be harsh on the tongue. But this is not necessarily the case. When the leaf burns in your pipe, the higher the combustion temperature, the more complete the combustion, and the more hydrogen ions combine with oxygen to form neutral water. Put differently, the higher the burn temperature, the more alkaline the smoke, as the acidic hydrogen is used to form neutral water and the alkaline components dominate.

The irony, of course, is that tobaccos rich in sugar tend to burn easily, fast, and hot, while those low in sugar tend to burn slower and cooler. If you smoke a sugar-rich Virginia hot, instead of pleasant acidic smoke, you will experience caustic alkaline smoke that bites with a vengeance. And if you smoke Burley, which is naturally higher alkaline, in a gentle, cool manner, you will be rewarded with an acidic smoke that will comfort your tongue. All of this can be further modified if the blender has applied extra sugar or honey or cased the tobacco with rum, for example. These additives can tilt the balance of the tobacco toward the acidic pH.

Heat, Steam, and Tongue Bite

All the discussion of alkalinity can seem frustratingly complex. But another culprit in causing tongue bite is readily understood: heat. Obviously, heat can be irritating to sensitive oral membranes. If the temperatures of combustion while smoking a pipe get too high, it is feasible that discomfort or pain could result. This is probably most common during lighting or relighting the pipe. Always trying to burn the tobacco all the way to the very bottom of the bowl can also increase the likelihood of heat related tongue irritation. That's because the smoker may be more prone to draw forcefully on the pipe, which pulls the heat from the match or lighter directly into the mouth. This could result in a heat scald that would definitely "bite" the tongue.

Others suggest that during high temperature combustion of overly moist tobacco, water is vaporized, heated to the temperature of live steam, and then drawn into the mouth. (Live steam is invisible vapour with a temperature of 212 degrees Fahrenheit or higher; it is not "steam" or tiny droplets of water you can see.) Of course, live steam reaching the mouth would liberate an enormous amount of heat when it cools and condenses. If this occurred in contact with the tongue, that area would be scalded. However, it seems very unlikely that any water vapour actually reaches the mouth in the form of live steam, so this theory seems improbable.

But what about the problems that many report when smoking "wet" or "moist" tobacco? My theory is that since excessively moist tobacco burns poorly, it forces the smoker to keep the combustion temperature higher to keep the pipe lit. These higher temperatures produce more alkaline smoke, which results in chemical burn, as described above.

Another common idea is that the temperature of the smoke itself when it reaches the mouth can cause tongue bite. Based on the results from several studies, this seems very unlikely. These studies have demonstrated that the smoke generally arrives at the mouth with a temperature of 88 to 108 degrees Fahrenheit, which is normal body temperature plus or minus 10 degrees Fahrenheit. This temperature doesn't even come close to an average cup of coffee at 140 degrees Fahrenheit and higher, which normally doesn't scald the tongue even at that temperature.

Miscellaneous and Personal Factors

In addition to the causes discussed above, there is a final category of factors that contribute to tongue bite that are worth mentioning. This category is more difficult to discuss because it involves personal characteristics that vary from individual to individual. But perhaps a general overview will be helpful and alert folks to issues that may warrant personal consideration.

Biological studies have demonstrated great variations in the tasting abilities of individuals. This is due to the number of taste buds the individual has on his tongue. Those with larger numbers of buds are sometimes called "supertasters." Since taste buds are made up of nerves, receptors, pores, and such, this complex network can be more easily irritated in some individuals, especially

those with higher taste capabilities. Research also indicates that nicotine has an effect on taste buds as well, which may also contribute to further irritation of the tongue from smoking.

Another factor is that of allergies or allergic reactions. It is a common fact that some folks have adverse reactions or hyper sensitivity to various substances. Sometimes these substances are naturally occurring (such as pollen or pet dander), other times they involve some aspect of processing or manufacturing (such as latex). But if you have an allergy to a substance in a particular tobacco blend, you could find that your tongue and oral tissues are excessively irritated. For example, if someone were allergic to chocolate, smoking a tobacco blend containing chocolate essences for flavouring could set off an allergic reaction.

Aside from actual diagnosed allergies, different people may simply have different tolerances for certain tobacco blends. To use myself as an example, even though I enjoy the taste of various cherry blends, the casing used to flavour these tobaccos gives me extreme tongue bite. So much so, that if I smoke them, my tongue is raw beyond belief for several days. Needless to say, I avoid such blends like the plague (I am not allergic to cherries by the way and can eat them in foods without issue). Sensitivities and reduced tolerances can also be caused by physical characteristics or attributes or can be temporarily brought on by illness or infection. Again, to use myself as an example, I have a condition known as "fissure tongue." This is a benign condition with no cure, but it causes my tongue to be extra sensitive to many types of irritation. This has forced me to limit my daily smoking and necessitated learning and diligent application of proper smoking technique. These and other similar factors can certainly cause greater risk of tongue bite that must be considered in your practice of pipe smoking.

Lastly, but certainly not least, is the matter of smoking frequency. This may seem self-evident, but I am continually surprised by how many folks complain of tongue bite after smoking multiple bowls every day. Perhaps the old cliché, "too much of a good thing" applies here. The tongue and oral tissues may develop certain tolerances over time, but they do not develop calluses in the same way as other tissues of the human body. Oral tissues are mucous membranes and have an extremely high vascularity. Except for extreme cases, they will always remain largely

susceptible to irritation. Clearly if you are smoking several bowls a day and dealing with tongue bite, it is time to cut back. Reducing the number of bowls each day, or smoking on alternating days (Monday on, Tuesday off, etc.) may be just what the doctor ordered.

Preventing and Treating Tongue Bite

Well, with all that science and technical data, it can be easy to lose track of the simple issue: Tongue bite is painful, and all pipe smokers want to avoid it. Here are some practical suggestions to help prevent and treat tongue bite.

- Acquire proper smoking technique. This is absolutely essential. Improper technique can easily lead to some of the most common forms of tongue bite. For this reason it is vital to learn to take slow, gentle sips instead of long, heavy draws. Don't puff too rapidly, which increases combustion temperature leading to chemical burn. Be careful when lighting or relighting so that you don't draw the flame/heat directly into your mouth. Learn to properly fill your bowl: Packing too tight will cause a difficult draw making you inhale too heavily. Packing too loosely will allow excessive airflow, which may cause the tobacco to burn hot. Learn when and how to tamp to keep your pipe lit without excessive or forceful puffing. I realize these suggestions don't actually tell you "how" to do these things; that information is for another article. But take the time to learn and exercise diligence. You will be greatly rewarded for your effort and patience.
- Avoid tobaccos with high alkalinity. Smoke tobaccos rich in sugar. (See the general information above for ideas about which tobaccos contain more natural sugar and those with less alkalinity.) If you enjoy high alkaline tobaccos, try blending them with others to reduce the chemical burn issues. Also, if a particular tobacco irritates your tongue more than others, don't smoke it! With the rich variety of tobaccos available, there's no reason to smoke something that doesn't sit well with you.
- Pay attention to the moisture content of your tobacco. If too dry, it is very easy to drive the combustion temperature too high. But if the tobacco is too moist, you will automatically compensate for the difficulty in making moist tobacco burn by puffing more strongly, and

this too can easily drive the temperature of combustion too high, and result in very alkaline smoke.

- Don't worry about your pipe going out. Some consider it a noble thing to smoke a pipe from start to finish on one or two lights, but that is an unnecessary encumbrance. There is absolutely no shame in relighting. If your pipe starts to go out, let it, and then relight. Nothing promotes a hot, alkaline smoke faster than trying to "rekindle" an ember which is in its death throes. As G. L. Pease said, "Cast thy pride to the winds, and call upon Prometheus whenever needed to enflame thy sweet smoke yet again!"
- Don't insist on smoking your pipe all the way to the bottom of the bowl. Relighting at the bottom can cause a scald by drawing the heat from the flame directly into the mouth. Discarding a small amount of unburned tobacco may seem like a crime, but frying your tongue so you can't enjoy smoking at all is much worse.
- Enjoy a cool or room temperature beverage with your pipe.
- Avoid eating or drinking items that tend to exacerbate tongue bite. The specific list of items will vary from person to person due to individual tolerances, unique body chemistry, allergies, etc. But many report problems from salty foods and carbonated beverages. Also avoid ice cold drinks since the contrast in temperatures can make the tongue more sensitive to irritation.
- After smoking, drink a glass of milk. Some suggest this helps to soothe an irritated tongue.
- Use a product such as Biotene mouthwash or Aloe Vera juice to regularly rinse your mouth (not necessarily during the smoke, but as a regular routine of oral hygiene). Many report that these products are highly effective in preventing and treating tongue bite.

Well, this certainly is not the "final word" on tongue bite. There always seems to be new information on the horizon. But hopefully these details and practical suggestions will help you overcome the nasty gremlin that haunts so many pipe smokers. To paraphrase McGruff the Crime Dog, by understanding some of the causes and resounding accordingly, perhaps you will be able to "take a bite out of tongue bite"!

[Credit Where Credit is Due: Much of the technical information about pH and alkalinity in this article was gleaned from discussion and writing by James Beard and Gregory Pease. The information was retrieved from various online locations, blogs, discussion groups, and magazine articles. Where possible, the information was confirmed and cross-referenced with other technical sources.]