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What you need to know about the Breathalyzer

By Jon R. Anderson - Staff writer
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The cop looks at you and shakes his head. The Breathalyzer results show your blood alcohol, or BAC, content is over the legal limit. At best, your military career is KIA. At worst, you'll be spending time in jail.

No one is saying you shouldn't drink. But with the Navy now breath-testing sailors and Marines as they show up for duty, along with some Air Force bases starting random breath tests on underage airmen and other crackdowns designed to dry up heavy drinking in the ranks, it's more important than ever to be smart.

The good news: Inexpensive personal breath testers make it easy to know where you stand.

But you need to know some things about using one — and what to do with the information you've gleaned.

A FUNNY DRUG

To understand how breath testers work, take a deep breath and consider first what they're measuring.

"Alcohol is a funny drug," says John Crabbe, a neuroscientist and alcohol researcher for the Veterans Affairs Department Medical Center in Portland, Ore.

Unlike most drugs, which target specific areas and responses in the brain, "alcohol is something that affects pretty much every single area of your brain. Name a neurochemical — dopamine, norepinephrine, adrenaline, serotonin — and it affects every single one of them."

That's why booze gives you the buzz of a stimulant but also — especially if you drink too much — that downward slide of a sedative.

Of course, while you feel alcohol's effects in your head, your blood carries it throughout your body. The more you drink, the higher your BAC.

Although it varies by body type and other factors, most people process about .02 percent BAC per hour. That's the equivalent of about one beer, glass of wine or shot of hard liquor. So if after two quick drinks you're reading .04 percent, you'll take about two hours to get back to zero.

In the meantime, that alcohol is literally soaking into your entire body.

"It's a tiny little chemical — just two little molecules. It gets into just about any cell it gets near," Crabbe says. "It just saturates everything."

Including your lungs. As the blood moves through your lungs, it mixes with the air that's going in and out as you breathe. That's how the devices are able to measure the alcohol content of your blood.

DO'S AND DON'TS

"Breathalyzers measure that deep lung air," says Keith Nothacker, CEO of BACtrack Breathalyzers, a leading breath analysis manufacturer and one of the first companies approved to sell them over the counter in 2004, when the Food and Drug Administration cleared them for personal use.



ARMY

Staff Sgt. David Crocket, traffic investigations supervisor at the Provost Marshal Office on Patrick Henry Village in Heidelberg, demonstrates how simple a breathalyzer test can be on volunteer Sgt. Christopher Opsincs, also assigned to the PMO. U.S. Army Europe mandates military police randomly test drivers for alcohol consumption at various installation gates and times on all four-day weekends, including Presidents Day weekend. The test takes about 15 seconds and measures breath alcohol content.

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These days, there are three basic consumer models: fuel cell, typically the most accurate; semiconductor, less accurate but also less expensive; and one-use disposables, which are the cheapest but only indicate if you're over a specific BAC.

"Using them is pretty straightforward," Nothacker says.

First, you need to wait about 20 minutes from your last drink to get an accurate reading.

"Otherwise, you'll still have alcohol in your mouth and throat that will give you artificially high results."

Waiting also gives your body time to start metabolizing the alcohol into your bloodstream from that last drink so you're measuring peak BAC and not the buildup to it. Both reasons are why police will usually administer a roadside Breathalyzer only after performing other field sobriety tests.

Any number of urban myths detail how to trick breath tests with mouthwash or breath spray. But ironically, these are often alcohol-based — and are more likely to spike your results instead.

Diabetics and dieters also can skew readings higher because their bodies are producing ketones, also a byproduct of alcohol metabolism.

Once you're ready to use your device, to get an accurate reading, you have to inhale deeply, then blow into it for about five seconds.

"It's like blowing out birthday candles: You want to blow out hard with one continuous breath," Nothacker says. "The first second is air that's in your mouth; the next second is air in your neck. That's why it takes a while until you're getting into that deep lung air to get a good reading."

Among BACtrack's line, Nothacker says the fuel cell models could be off, up or down, on BAC readings by .01 percent. "The semiconductors have a little more variance with plus or minus .02 at the most," he says. The disposable models, which act more like a yes-or-no pregnancy test, are better than 99 percent accurate, he says.

While those numbers may seem small, remember that anything over .08 percent BAC is usually grounds for a drunken-driving charge.

"If you have a reading of .085, that .02 variance can be really critical," says Michael Hlastala, a top alcohol and breath test researcher at the University of Washington and a professor at the medical school there. What really concerns him, however, is that it's too easy to trick the tests — not just to reading high, but to undervalue your BAC, as well.

"I can easily change the reading by 50 percent either way," he says. "I've done it."

To see lower readings, he says, just before taking the test, "take a few deep breaths, which flushes away some of the alcohol from the airways so there's less available to come out with the test breath."

Then blow only the minimum required for the test.

To spike it higher: Hold your breath first, which concentrates the alcohol in the lungs, then blow as hard as you can, he says.

Despite their shortcomings, Hlastala says he's a big supporter of using personal Breathalyzers.

"Really, everyone should have one because it can be a good tool to help you track where you are, if nothing else to see if your BAC is going up or down and how alcohol affects your own body."

SOBERING UP

OK, so you're over the limit — or maybe you just want to get a better grip on your blood alcohol content. What now? The only surefire way to sober up is time. Remember, for every .02 percent of BAC, the average person needs about an hour of no drinking. But that can fluctuate based on sex, age, body type and other factors. A personal breath tester is a great way to gauge that. Coffee will merely make you a wide-awake drunk, but there are things you can do. Some tips to keep in mind when trying to regain your footing:

- Pace yourself. A good rule of thumb to stay under the legal limit is to stick to one beer — or its equivalent — per hour. "If you drank a beer an hour for four hours or even 10 hours, you're probably going to be OK because you're not accumulating faster than you can get rid of it," says Veterans Affairs Department alcohol expert John Crabbe. On the other hand, if you've had five beers — four, for women — within two hours, "no matter what you think,

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you're pretty much guaranteed to be over the limit."

• Shoot for the sweet spot. There is a BAC sweet spot of .055, on average, that scientists call the "biphasic curve." If you manage your drinking to stay close to that level, you'll likely continue to enjoy a happy buzz. Once you top that, however, "you begin to increase the chance of having the negative effects of alcohol — like a hangover, throwing up, getting into fights, etc.," says David Hanson, professor emeritus at the State University of New York at Stony Brook and a top expert on alcohol.

• Feel fine? It doesn't matter. Regular drinkers can build up their tolerance to alcohol's effects on the brain, but not the blood. "That's something a lot of people don't understand. You can feel fine, but BAC is completely separate from the feeling of being drunk," says BACtrack chief Keith Nothacker.

• Start grazing. Drinking on an empty stomach can spell disaster because a good meal in your gut slows the body's ability to absorb alcohol. What most people don't know is that alcohol absorption goes into overdrive once it hits your intestine, Hanson says.

• Eat an apple. Studies suggest sources high in fructose — pears or apple juice, for example — could help you sober up faster and lower BAC peaks. "In theory, in order to do its 'magic,' fructose and [alcohol] should be consumed together," says Dr. Francisco Sanchez, the lead researcher in a study published in 2008. A 2003 study, however, found that those who consumed the equivalent of eight beers still could reduce the time it took to sober up by more than an hour. For those who slammed the equivalent of two beers at once, "fructose reduced both the magnitude and duration of the subsequent increase in blood alcohol" by 39 percent, while reducing the time to get clean by 51 percent.

• Avoid carbonated drinks. The alcohol in carbonated drinks will get absorbed into your body, and spike your BAC, faster than drinking the same amount of alcohol in straight shots.

• Shift low or high. The alcohol in drinks of either low alcohol content (below 15 percent) or high alcohol content (more than 30 percent) tend to be absorbed into your blood stream more slowly, Hanson says.

• Go for a run. While it's unclear how much it helps, exercise speeds up your metabolism, so it might work, Crabbe says. "Running and other exercise kick-starts your whole metabolic rate. You're using energy like crazy when you're exercising, so I would certainly expect that to help straighten you out."

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