

Understanding the Dangers of DUI

When it comes to alcohol — impairment starts with the first drink. At any age, it is never safe for a motorist to drive impaired by drugs or alcohol.

For teens, it is never legal to

consume alcohol, and driving after drinking can have deadly consequences.

So what is it about alcohol that makes it so dangerous when it comes to driving? And how are

police officers able to detect a driver's level of intoxication through a breath test?

We will examine these topics in this month's edition of the "Road Trip" newsletter.

Alcohol Impairs Brain, Muscle Functions

Even with only one drink, a person increases the risk of being involved in a crash while driving. That's because alcohol is a central nervous system depressant. It is rapidly absorbed from the mouth, throat, stomach and small intestine into the bloodstream.

Alcohol affects every organ in the drinker's body, and can impair brain function and motor skills, according to the Center for Disease Control.

After three drinks, a 160-pound person may have loss of small muscle control, impaired judgement, and reduced ability to focus their eyes.

If the person continues to drink alcohol, they can develop poor muscle coordination, loss of balance, slowed reaction times, and difficulty speaking, hearing, and seeing.

These negative effects on the body can cause even greater problems if the person attempts to drive a vehicle, as described in the table to the right.

BAC	Predictable Effects on Driving
.02%	<ul style="list-style-type: none"> Decline in visual functions Decline in ability to perform two tasks at the same time
.05%	<ul style="list-style-type: none"> Reduced coordination Reduced ability to track moving objects Difficulty steering Reduced responses to emergency driving situations
.08%	<ul style="list-style-type: none"> Loss of concentration Short-term memory loss Trouble with speed control Reduced information processing Impaired perception
.10%	<ul style="list-style-type: none"> Reduced ability to maintain lane position and brake appropriately
.15%	<ul style="list-style-type: none"> Substantial impairment in vehicle control, attention to driving task, and in necessary visual auditory information processing

Covered in this issue:

Embedded Tech and Science Topic — Breath Alcohol Concentration

Vocabulary Terms — Impairment, alveoli, milliliter

Want to have "Road Trip" sent directly to your email every other month? Submit your email address to jharry@pa.gov and you'll be added to the list.

The newsletter is also available online at www.penndot.gov/RegionalOffices/district-1.

Detecting Alcohol with Just a Breath

Alcohol affects the body as it is absorbed from the mouth, throat, stomach, and intestines into the bloodstream. So how can police officers determine a person's Blood Alcohol Content (BAC) through a breath test?

Alcohol is not digested upon absorption or chemically changed in the bloodstream. As the blood goes through the lungs, some of the alcohol moves across the membranes of the lungs' air sacs (alveoli) into the air because alcohol will evaporate from a solution.

The concentration of the alcohol in the alveolar air is related to the concentration of the alcohol in the blood. As the alcohol in the alveolar air is exhaled, it can be detected by the breath alcohol testing device. So instead of having to draw a driver's blood to test his alcohol level, an officer can test the breath on the spot.

Because the alcohol concentration in the breath is related to that in the blood, the BAC can be



measured through alcohol on the breath. The ratio of breath to blood alcohol is 2,100 to 1. This means that 2,100 milliliters of alveolar air will contain the same amount of alcohol as 1 milliliter of blood.

Information provided by
www.breathalyzeralcoholtester.com

DID YOU KNOW...

Pennsylvania's Zero Tolerance Law carries serious consequences for those under 21 who are convicted of driving with ANY amount of alcohol in their blood.

For example, those under 21 who are convicted of driving under the influence with a .02 BAC, or greater, face severe

penalties, including a 12-to-18-month license suspension, 48 hours to six months in jail, and fines from \$500 to \$5,000.

A vehicle does not have to be involved in order for those under 21 to lose their driving privileges. It is against the law for an individual under the age of 21 to consume, possess or transport alcohol, lie about

their age to obtain alcohol, or carry a fake identification card.

If convicted, the minimum penalties are a fine of up to \$500, plus court costs; a 90-day license suspension for the first offense; a 1-year suspension for the second offense; and a 2-year suspension for the third and subsequent offenses.

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