MISSOURI DEPARTMENT OF HEALTH & SENIOR SERVICES

MISSOURI SPHL State Public Health Laboratory

MISSOURI BREATH ALCOHOL PROGRAM

BREATH ALCOHOL OPERATOR MANUAL

Missouri Department of Health and Senior Services
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This manual is provided for information purposes. Memorization is not required for certification. It is revised as necessary.

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BREATH ALCOHOL PROGRAM TYPE III OPERATOR MANUAL

SECTION 1

ETHANOL: CHEMISTRY, PHYSIOLOGY, TOXICOLOGY, AND TESTING

ETHANOL

Ethanol is classified as an ***alcohol***. Alcohol is the generic name for any chemical compound with a hydroxyl (-OH) functional group bound to a carbon atom of an alkyl group. There are many different types of alcohols and each has a unique molecular structure with specific chemical properties associated with that structure. Three of the most common simple alcohols are methanol (methyl alcohol), ethanol (ethyl alcohol), and isopropanol (isopropyl alcohol).

Ethanol is the type of alcohol in alcoholic beverages. It is also referred to as ethyl alcohol, grain alcohol, spirits, or simply alcohol. Throughout this text, the terms *alcohol, ethyl alcohol,* and *ethanol* will be used interchangeably. Regardless of the term used, ethanol is a drug that affects human behavior and performance.

All alcohols are toxic. The reason ethyl alcohol is used in alcoholic beverages is that it is not as toxic as other alcohols.

At room temperature ethyl alcohol is a clear, colorless liquid that has a slight odor and is *miscible* with water. Miscible means the alcohol and water will mix in all proportions. Ethanol is used as a solvent, an antiseptic, and as an additive in certain fuels. Alcohol is found in some medications and mouthwashes. Regardless of the source – whiskey, cold medication, mouthwash, etc. - the effects of the same amount of ethanol on the human body are the same.

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ALCOHOLIC BEVERAGES

Alcohol can be produced naturally through the process of fermentation or synthetically through industrial means. However, only alcohol produced through fermentation may be sold for human consumption. Production of alcoholic beverages always begins with the process of *fermentation*. Fermentation is the procedure by which yeast consume sugar or starch, and in turn, excrete ethanol. Beer and wine are produced through this process. The maximum alcohol concentration produced by this method is about 12-15% because any higher alcohol concentration kills the yeast.

In order to manufacture a beverage with a higher alcohol content (e.g. rum, vodka, gin, and whiskey), the alcohol mixture produced from fermentation must be distilled. *Distillation* is the controlled vaporization and collection of a substance, in this case ethyl alcohol. This process concentrates the ethanol so that the final product has a concentration higher than the original fermented mixture.

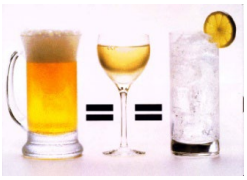
For alcoholic beverages, ethyl alcohol and water account for the vast majority of the beverage. The remaining components in an alcoholic beverage are referred to, collectively, as congeners. Congeners are responsible for the various tastes, aromas, and colors associated with a particular alcoholic beverage. Some congeners come from the primary plant material used in the fermentation mixture, while others are due to the addition of other components during the fermentation process. For example, tequila is made from the agave plant; gin is made from grain and flavored with the juniper berry. Sometimes congeners are also introduced during the aging process, such as during contact of the liquid with wooden containers.

HOW ALCOHOL IS MEASURED

In the United States the ethanol concentration of distilled beverages is designated by the *proof* system. Proof is approximately twice the percentage of the alcohol content by volume. For example, Brand "Z" Whiskey is 101 proof, which means its alcohol content is 50.5% by volume. Conversely, a beverage whose alcohol content by volume is 40% would be 80 proof.

Proof = 2 X % Alcohol by Volume

The alcohol content of beer, wine and distilled spirits are usually reported in terms of percent volume of alcohol. Beer, ale, and malt liquor are not required to label their product with the alcohol content. Most beers have less than about 5% alcohol by volume. Wines typically have about 10-12% alcohol by volume.



The alcohol content varies with the drink. For purposes of this text, one "drink" equals one 12 ounce serving of regular beer, one and a half ounces of 80 proof distilled spirits, or 5-6 ounces of wine. Each of these drinks contain approximately the same amount of alcohol. If any one of these is consumed in the same period of time, it will have about the same effect upon the body.

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ABSORPTION OF ALCOHOL

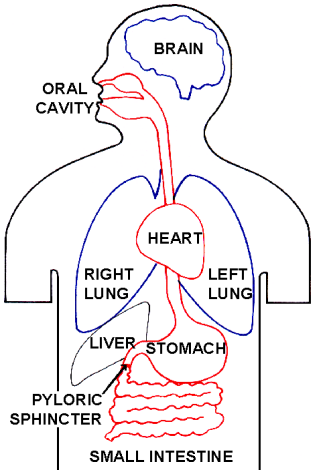
Ethanol can enter the human body in several different ways: injection, inhalation, and ingestion. Ethanol has not been observed to accumulate in the body as a result of absorption through the skin. Injection of ethanol directly into the body is an extremely dangerous procedure because it produces a localized concentration of ethanol that can severely affect the heart and other vital organs (this phenomenon is referred to as the "bolus effect"). Another possible route for ethanol to enter the body is through inhalation of alcoholic vapors. When the alcoholic vapors come into contact with the lungs and mucous membranes lining the nasal passages and throat, then the ethanol can diffuse through these membranes into the blood. However, to reach significant levels of alcohol concentration requires exposure to a severely irritating environment for an extended period of time. It is, therefore, very unlikely that any individual would become intoxicated in this manner. The usual method for alcohol to enter the body is by ingestion of an alcoholic beverage. Ethanol is not digested, but absorbed unchanged.

The absorption of ethyl alcohol begins immediately following the introduction of the alcoholic beverage into the digestive system. Ethanol is readily absorbed through all mucosal surfaces, including the oral cavity and gastrointestinal tract.

Immediately after a sip of an alcoholic beverage, the breath would indicate high alcohol content. If analyzed, this breath sample would not be an accurate reflection of the alcohol concentration in the person's body. This is sometimes referred to as *residual alcohol* or mouth alcohol.

Residual alcohol diminishes rapidly and is gone within a few minutes. Proper testing procedures combined with current evidential breath alcohol testing devices eliminate residual alcohol from the test result.

After passing through the mouth, the ethanol travels to the stomach. If alcohol is present in the stomach and some of it is regurgitated back into the mouth, a portion of that dose will be absorbed in the mouth. Regardless of how ethanol is introduced into the mouth, the presence of residual alcohol is gone in less than 15 minutes.



A portion of the ethyl alcohol can be absorbed into the body from the stomach. The length of time the ethanol remains in the stomach before being passed on to the remainder of the gastrointestinal tract can vary due to several factors. The most significant factor is the amount of food in the stomach. The pyloric sphincter controls the passage of material from the stomach to the small intestine. On a full stomach, the pyloric sphincter remains closed longer. Ethanol remains in the stomach for a longer period of time delaying its absorption. Slowing the alcohol absorption decreases the peak alcohol concentration, may prolong the time to reach the peak concentration, and reduces the impact of that alcohol on the person.

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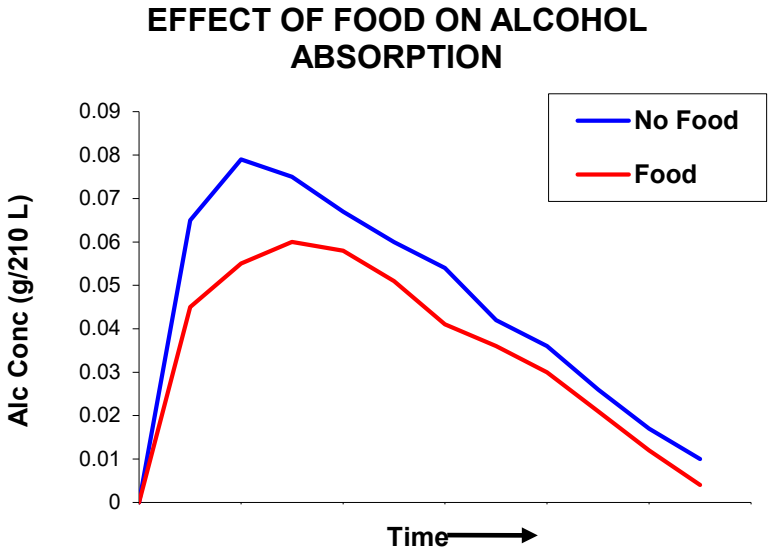
The type of food may affect the absorption rate, but the amount of food is the most significant factor. Even on a full stomach the peak alcohol level is usually reached within 30 to 40 minutes after the last drink.

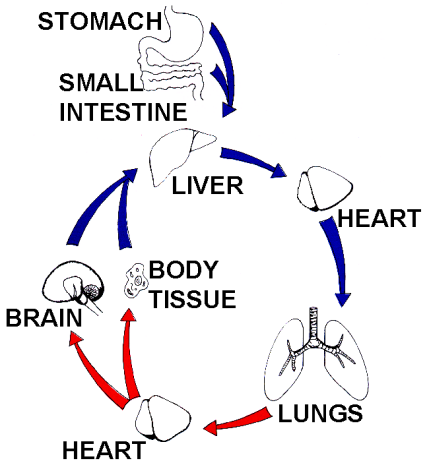


From the stomach the ethyl alcohol enters the small intestine. Ethyl alcohol is rapidly absorbed into the body by the small intestine. The *small intestine* is where most of the alcohol is absorbed into the body. Ethanol is rather unique in that it is not digested, or broken down into smaller parts, but rather it is absorbed unchanged through the process of simple diffusion.

THE DISTRIBUTION PROCESS

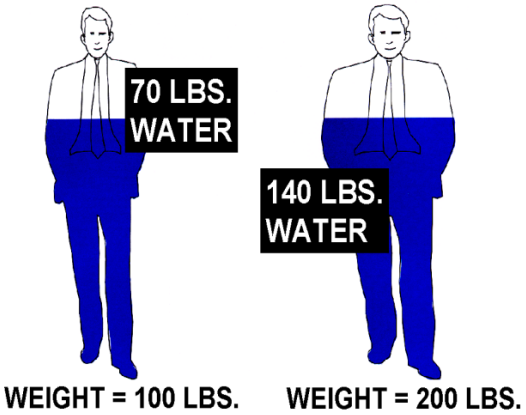
Once ethanol has been absorbed it is distributed throughout the body. The ethanol travels through the liver, then is distributed to the various body tissues. A portion of the ethyl alcohol quickly reaches the brain tissue.

The amount of ethanol in the organs and tissues depends on the water content of each tissue or organ. Since ethyl alcohol is miscible with water, it will rapidly diffuse from an area of high alcohol concentration to an area of low concentration.



BODY TYPE AND TOTAL BODY WATER

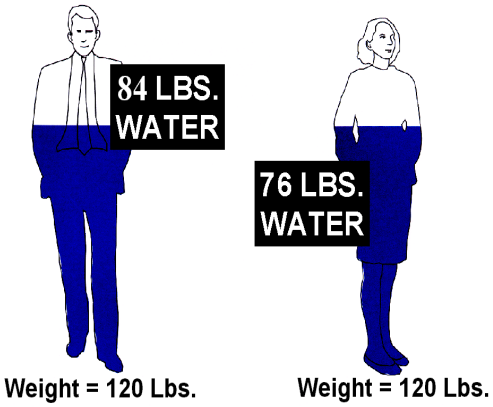
The total amount of water in the body can vary from one individual to another based upon the weight (mass) of the person. Assuming the same body type, a 200 pound man must consume more ethanol than a 100 pound man to reach the same alcohol concentration. This is because the 200 pound man has more body water to dilute the alcohol.



The amount of fat tissue also affects the total amount of body water. Since fat tissue has very little water it does not absorb ethyl alcohol. A 200 pound obese person will have less body water to dilute the alcohol than would a 200 pound lean person.

GENDER MAKES A DIFFERENCE

Total body water content also varies according to gender. On average, women have less body water than men do on a per pound basis due to body composition. The same ethanol intake in terms of body weight results in a higher alcohol concentration in women than in men. For example, a 120 pound man would have to consume more alcohol than a 120 pound woman to achieve the same concentration, because the man has more water in his body with which to dilute the ethyl alcohol.



THE ELIMINATION PROCESS

Ethanol is removed from the body through metabolism and excretion. The majority of ethanol is metabolized (oxidized) by the *liver*. There is also evidence to indicate that a small amount of alcohol is eliminated in the gastrointestinal tract, particularly the stomach. The process of metabolism in the liver accounts for the elimination of 90 to 96% of the alcohol consumed.

The process of excretion accounts for the elimination of 4 to 10 % of the alcohol consumed. A small percentage of ethanol consumed is excreted unchanged into the urine. The amount of ethanol in the urine is proportional, within certain limits, to the ethanol concentration in the blood. The urine is stored in the bladder prior to its elimination from the body. The bladder is very poorly supplied with blood and very little of the urine alcohol is reabsorbed back into the blood stream. A small portion of the ethanol is also excreted unchanged in sweat. Alcohol dissolved in perspiration is transported through the skin and then evaporated into the surrounding air.

Most important for the purposes of determining alcohol concentration, alcohol is also excreted through human breath. Excretion of ethanol in the breath is the basis of the breath alcohol test. When alcohol is present in the body, a portion of that alcohol will be eliminated in the breath because the ethanol readily passes from the blood in the bronchial arteries to the mucous membranes throughout the bronchial passages. As air is inhaled by a subject, this air is saturated with water from the mucous membranes, and thereby saturated with alcohol as well. When a subject exhales, some of the water redeposits on the mucous membranes along with some of the alcohol. As breath exhalation continues, the change in alcohol concentration in the breath becomes less dramatic as the breath alcohol concentration comes closer to the arterial blood alcohol concentration. Since the breath alcohol sample is battling redeposit during exhalation,

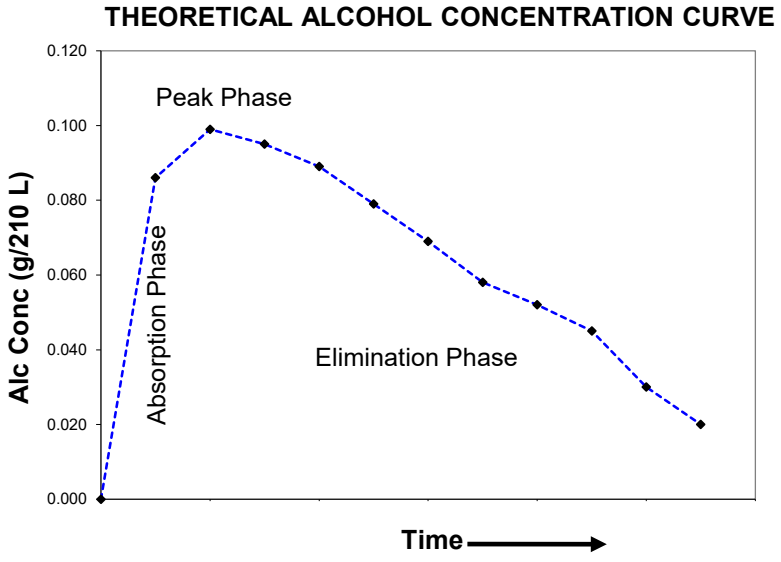
the end-expiratory breath sample will almost always be lower than a blood alcohol sample taken from the same individual at the same time.

Regardless of the method, elimination is a physiological process and as such is not significantly affected by exercise or stimulants such as caffeine. Hot coffee, a cold shower, or vigorous exercise cannot significantly alter the rate of elimination. Currently, the only proven method for sobering up is to allow sufficient time for the body to eliminate the alcohol.

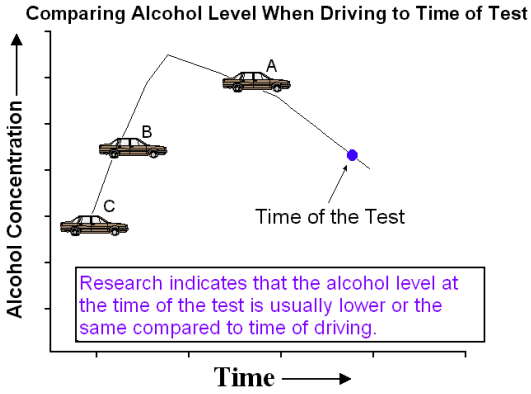
An individual's rate of metabolism during a drinking episode is fairly constant, but the *elimination rate* can vary from person to person. The range of reported elimination rates varies from about 0.010 – 0.040 g/210 L per hour, with the majority of drinking drivers tested in the range of 0.012 – 0.028 g/210 L/h. Higher elimination rates usually occur in alcohol abusers or alcohol dependent persons.

PUTTING IT ALL TOGETHER

Absorption, distribution, and elimination have all been discussed. Combining all these factors creates the *alcohol concentration curve*. Elimination begins immediately after the introduction of alcohol during the absorption phase. However, when the rate of absorption exceeds the rate of elimination, the amount of alcohol in the body will increase. After the drinking stops, at some point the amount of alcohol being absorbed will equal the amount being eliminated, which results in the peak alcohol concentration. During the elimination phase, the amount of alcohol absorbed is less than the amount eliminated so the alcohol concentration in the body will gradually decrease over time. The shape of the alcohol concentration curve will vary according to all the factors that affect absorption, distribution, and elimination of ethyl alcohol.



Depending on the various factors of absorption, distribution, and elimination of ethanol in the body, there are three possibilities when estimating the alcohol concentration at a time prior to the test.



The graph indicates that the alcohol concentration may be higher when driving (Car A) than at the time of the test. In this case the person was in the elimination phase between the two points indicated. The graph also shows the concentration may be the same at both driving and time of test (Car B). This time the amount of alcohol absorbed was equal to the amount eliminated. The last example (Car C) shows that the alcohol level when driving may be lower than at the time of the test. In this example, the person was in the absorption phase and the alcohol concentration was rising. Research indicates that the breath alcohol concentration is usually the same or higher at the time of driving compared to the time of the test.

INTOXICATION WITH ETHANOL

When the alcohol concentration reaches a certain level, the individual concerned is intoxicated. Intoxication refers to the reduction or loss of normal physical and mental faculties. Intoxication is based upon measurable changes in an individual's performance of a specific task, such as operating a motor vehicle. The term "intoxication" should be separated from the more common term "drunk." The term "drunk" is used as a descriptive word denoting a particular type of observed behavior.

A tremendous amount of research has been performed to identify the progressive levels of intoxication, induced by ethanol, with regards to impairment in the operation of a motor vehicle.

The single fundamental fact regarding alcohol consumption is that increasing alcohol concentration results in increasing impairment of normal physical and mental faculties. Judgment is the first area noticeably affected. Behavioral changes are sometimes observed and there is a loss of social inhibitions. Fine muscular coordination is affected and complex reaction time is lengthened. Complex reaction time is the time required for a person to perform two tasks almost simultaneously. At 0.08 percent alcohol concentration, current research has shown that all persons are impaired with regards to the operation of a motor vehicle. Increasing the alcohol concentration above 0.08 percent results in further impairment of normal physical and mental faculties. However, it is always important to remember that ***there is no truly safe level of alcohol with regard to driving!*** Both epidemiological and laboratory studies indicate even low ethanol concentrations impair safe operation of a motor vehicle.

As the alcohol concentration continues to rise, it presents a threat to life. Persons with too high of a blood alcohol concentration should be carefully observed and consideration given to seeking medical assistance. High enough blood alcohol concentrations can result in individuals lapsing into comas and even death.

EFFECTS OF ETHANOL ON THE CENTRAL NERVOUS SYSTEM

The central nervous system (CNS) is the site where alcohol exerts its effects. The CNS is composed of the brain and the spinal cord and is responsible for transmitting nerve impulses to the various muscles and organs of the body. Ethanol acts as a *depressant* on the CNS, not as a stimulant.

Ethanol has such a wide range effect due to the large quantity consumed and the site of action. It is not the alcohol in the peripheral areas of the body which impairs a person's coordination, but the alcohol concentration in the CNS tissue. In the CNS, the alcohol acts to depress nerve transmission and to reduce coordination between various nerve centers.

Alcohol impairs driving ability. Research has demonstrated that impairment of the most important driving skills can occur at ethanol concentrations well below 0.08 g/210 liters. Operating a motor vehicle involves judgment, attention, psychomotor skills, vision, perception, tracking (steering), and information processing.

Judgment ***The first effect of alcohol is the impairment of judgment.*** Since the site of action for ethanol is the brain it follows that mental faculties are affected before physical faculties. Judgment is a general name given to various decision-making aspects of human behavior.

Alcohol affects the brain in reverse order of how the brain develops. So the higher levels for brain function such as judgment, logic and reason are affected first, and the lower involuntary functions, such as respiration and digestion, are affected last.

Alcohol depresses learned social and cultural inhibitions. Consumption of alcohol also results in an impairment of self-evaluation. Self-evaluation is the ability of an individual to judge their own behavior or performance. Alcohol has the ability to create a feeling of euphoria or a sense of well-being. Because of this artificial sense of well-being, combined with an increase in the pain threshold, an intoxicated individual may ignore minor or even serious injuries. Another aspect of judgment affected by alcohol is risk assessment. Intoxicated individuals will take greater risks than when sober.

Attention The ability to divide attention between two or more sources of information is a basic requirement of safe driving. Impairment of attention has been found at levels well below 0.08 g/210 L alcohol concentration.

Psychomotor Skills Psychomotor skills are motor actions (physical faculties) proceeding directly from mental activity. The degree of impairment demonstrated by the traditional roadside tests such as walking and balancing can depend on the drinking experience of the driver.

Vision Ethanol depresses the coordination between the muscles that control the eyes. This lack of muscle coordination leads to blurring and double vision. Intoxicated individuals tend to narrow their visual field. Ethanol decreases the field of peripheral vision so drivers fail to perceive important peripheral events. Impairment of vision has been found at levels well below 0.08 g/210 L alcohol concentration.

Perception The ability to interpret complex sensory information can be adversely affected by ethanol. Impairment of perception has been found at levels well below 0.08 g/210 L alcohol concentration.

Tracking Tracking, or steering, is a relatively difficult task. The driver must maintain the vehicle within the lane limits and in the correct direction while monitoring the driving environment for other important information. The ability to steer is very susceptible to ethanol impairment and impairment has been found at levels well below 0.08 g/210 L alcohol concentration.

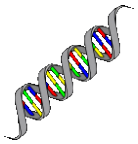
Information Processing Ethanol slows the rate of information processing by the brain. This effect has been noted on many different kinds of tasks. If there are two or more stimuli and if several responses are possible, response times lengthen significantly. Alcohol impaired drivers require more time to read a street sign or to recognize and respond to a traffic signal. Impairment of information processing has been found at levels well below 0.08 g/210 L alcohol concentration.

TOLERANCE AND ETHANOL

The least understood phenomenon of alcohol consumption is tolerance. Tolerance is usually defined as the effect that results from the chronic use of a drug when larger doses become necessary to achieve the same desired effect. However, in discussing alcohol tolerance it is more convenient to reverse this definition and consider tolerance as the effect where the expected changes in behavior or impairment in performance of a specific task are not observed.

There are two general types of tolerance: natural tolerance and learned tolerance.

Natural Tolerance Natural tolerance consists of three areas: inborn tolerance, physical tolerance, and stress tolerance.



- Certain individuals demonstrate a natural inborn (genetic) tolerance to low alcohol concentrations. This type of tolerance is most prominent in very low alcohol concentrations.

- Another form of natural tolerance is physical tolerance. The effect of a given alcohol concentration will always be greater in persons who are ill as compared to the same persons when healthy. These individuals' normal physical and mental faculties are already affected due to their sickness, and this adds to the effects of the alcohol.

- Another form of natural tolerance is stress tolerance. In high stress or anxiety situations adrenaline is released in the human body to stimulate the body's response to the source of stress. In intoxicated individuals, this can result in those persons appearing less intoxicated than they really are. Stress tolerance is only a temporary effect lasting for a few minutes.

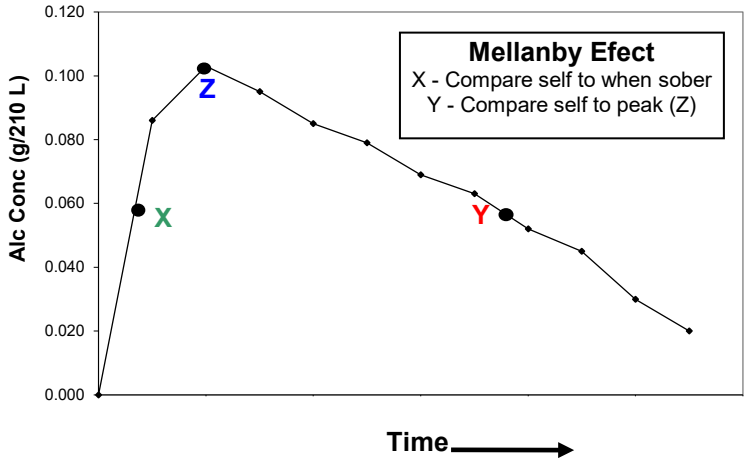
- Learned tolerance consists of three areas: behavioral tolerance, acquired tolerance, and acute tolerance.

- Behavioral tolerance is a result of the influence of the social setting and the social customs associated with alcohol consumption in a particular situation. An individual will behave differently in different social settings even though the alcohol concentration in that person is the same on both occasions. Mood, or sense of well-being, also influences a person’s behavior at a particular alcohol concentration. A person who is depressed and unhappy is usually more depressed and unhappy following the consumption of alcohol. This effect is usually best observed at low levels of alcohol concentration, because higher levels may alter the person's perception of reality.

- Acquired tolerance results from the chronic use of alcohol. These individuals are indeed impaired in judgment, reaction, and coordination, but have learned through experience to disguise their outward appearance of intoxication. A novice drinker (one who has little or no experience with alcohol) will demonstrate greater outward effects than those expected at a given alcohol concentration. This is due to the absence of an acquired tolerance.

- The last type of learned tolerance is acute tolerance, sometimes called the Mellanby Effect. Acute tolerance is the result of a person comparing their present condition with their past condition. In the absorption phase of the alcohol curve (position X), the individual compares their perceived state with when they were alcohol free. Their perception has been altered so that the effects of the alcohol are overestimated. Later during the elimination phase (position Y) the same person compares their present perceived state with their peak alcohol concentration (position Z) and the effects of the alcohol are underestimated. In both instances the alcohol concentrations were equal and the person equally impaired. Since the individual perceives himself as less intoxicated during the elimination phase, this person is a greater risk when operating a motor vehicle. The person has lost the ability to accurately judge thier performance.

THEORETICAL ALCOHOL CONCENTRATION CURVE



Because of the various aspects of alcohol tolerance, judging an individual's intoxication can be very difficult when based solely on visual observation. Social prestige and interpersonal relationship may influence a person's judgment of another's intoxication.

Regardless of how a person appears, it is the impairment of the individual's normal physical and mental faculties that is important. An individual may consciously or unconsciously attempt to disguise their intoxication, but cannot alter the fact that their judgment, reactions, and coordination are impaired.

ALCOHOL AND OTHER DRUGS

When ethyl alcohol is consumed in combination with other chemical agents, illicit, prescribed, or over-the-counter, the symptoms of alcohol intoxication may be altered. This may explain a situation where an individual appears very intoxicated, but the alcohol test results are low.

While the intoxicating effects of alcohol can alter or be altered by other drugs, there is no known drug that can lessen the effects of ethanol on a person's driving performance.

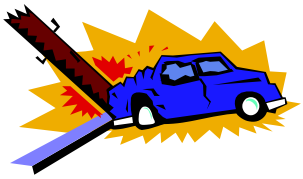
IMPAIRMENT WITHOUT ETHANOL

Ethyl alcohol is not the only agent that can produce the effects already described. Certain illnesses, diseases, or other drugs are able to produce symptoms similar to ethanol intoxication. Untreated diabetics or trauma victims may exhibit symptoms similar to ethanol intoxication.

Acetone, like ethanol, can cause impairment and may be mistaken for alcohol intoxication. Acetone can be present in an individual due to a prolonged fast, a low carbohydrate diet, or untreated diabetes. Modern evidential breath alcohol testing instruments can distinguish between acetone and ethyl alcohol, eliminating any affect from acetone on the alcohol result.

ETHANOL AND DRIVING PERFORMANCE

The relationship between alcohol and driving has been studied and analyzed for decades. From both epidemiological studies (surveys of accident data) and controlled studies of alcohol and driving skills, it has been clearly shown that ethyl alcohol impairs a person's driving performance.



History of Alcohol and Motor Vehicle Crashes

Ethyl alcohol has been suspect as a factor in highway motor vehicle crashes since the appearance of the automobile. Studies as early as 1904 have shown that moderate and heavy drinkers are incapable of safely operating a motor vehicle.

Subsequent studies conducted in the United States and other nations since the 1930's indicate a strong, direct link between increasing blood alcohol concentration (BAC) and increasing risk of motor vehicle collision.

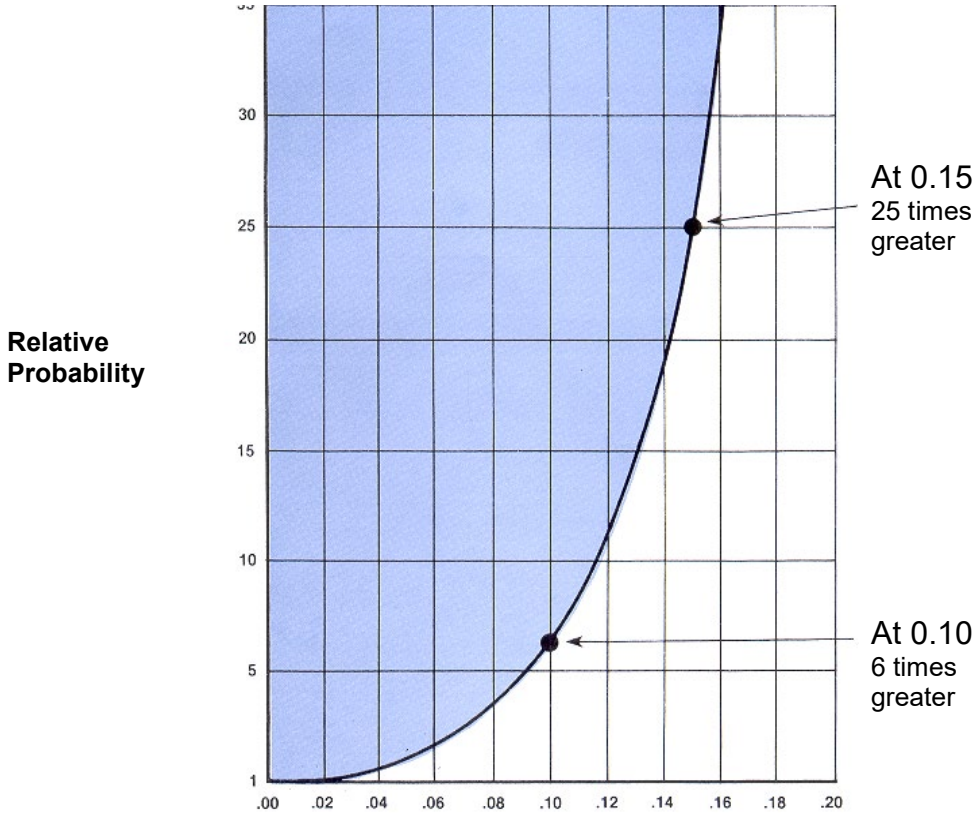
In 1960, the National Safety Council recommended that an alcohol concentration above 0.10 be considered *prima facia* evidence of intoxication. As research continued, the committee recommended in 1971 an even lower presumptive level of 0.08. In 1986, based on the large field of work showing conclusive impairment in virtually all drinkers at levels as low as 0.05, the American Medical Association's Council on Scientific Affairs recommended adoption of 0.05 as *per se* evidence of alcohol-impaired driving. While numerous other countries in Europe and elsewhere have adopted this standard or an even more stringent one, only one state within the United States has adopted this standard so far

Research clearly shows that a problem exists, that this problem is societal, and that a definite cause and effect relationship exists between alcohol in the body and the probability of a vehicle crash. Some of the facts that have emerged are:

- One out of every one hundred drivers has an alcohol concentration of 0.10 or more. On Saturday nights this statistic increases to one in ten.

- At alcohol concentrations as low as 0.02 g/210 L, alcohol affects driving ability and crash likelihood. The probability of causing a crash begins to increase significantly at 0.05 g/210 L and climbs rapidly after 0.08 g/210 L.

- For drivers with alcohol concentrations above 0.15 g/210 L on weekend nights, the likelihood of being killed in a single-vehicle crash is more than 380 times higher than it is for non-drinking drivers. The probability of a driver causing a vehicle crash increases from six times as great at an alcohol concentration of 0.10 g/210 L to twenty-five times as great with an alcohol concentration of 0.15 g/210 L.



RELATIVE PROBABLITY OF CAUSING A CRASH

- Approximately 40% of all motor vehicle crashes in which death occurs are attributed to alcohol being a causative factor.

- In the United States, alcohol related crashes result in approximately 17,000 deaths, one million injuries, and $45 billion in costs to society every year.

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CHEMICAL TESTS FOR INTOXICATION

With over 1.5 million arrests annually for driving under the influence, the analysis of alcohol in biological specimens is one of the most common forensic tests utilized in the United States. Many different biological specimens have been and are used for the analysis of alcohol.

Because alcohol is freely miscible with water, any bodily fluid with significant water content will possess meaningful levels of alcohol during intoxication. However, blood is the preferred and universally accepted specimen of bodily fluid for blood alcohol determination, although saliva or urine can also be used for this purpose.

Since alcohol is excreted unchanged through the breath, analysis of this biological sample can also be employed to determine alcohol concentration, and has been found to be advantageous for many reasons. Chemical analysis of blood and other body fluids are invasive as well as complicated and expensive to perform. Breath tests for alcohol concentration can be performed easily by trained law enforcement officers. Breath alcohol tests are non-invasive and give immediate results. They require only minimal subject participation. Most importantly, scientists agree that the best alternative to testing the brain for alcohol content (obviously not done on living subjects) is to test the arterial blood supply to the central nervous system, and breath alcohol concentration (BrAC) is directly proportional to arterial blood alcohol concentration (BAC). Many decades of testing, as well as thousands of peer-review publications have validated the breath test as a reliable means of measuring the alcohol in the vascular system. This is an established scientific truth of great benefit to law enforcement. BrAC and BAC need not be compared, since both are equally reliable and established measures of intoxication.

WHY BREATH ALCOHOL TESTING WORKS

Blood alcohol analysis works because trained nurses and/or physicians use good sampling protocol and methods for collecting samples, and analysts and toxicologists use good protocol and methods for the analysis of the blood samples collected. Breath alcohol analysis works in the exact same fashion. When a trained, competent officer follows good protocol for the collection of a breath sample, and when that breath sample is analyzed on a breath-alcohol instrument that is calibrated and operating properly, only then can a breath alcohol sample be considered an accurate measure of the alcohol content within a subject's body.

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BREATH ALCOHOL PROGRAM TYPE III OPERATOR MANUAL

SECTION 2

MISSOURI DWI STATUTES

Introduction

The General Counsel's Office of the Department of Revenue provides assistance to law enforcement officers and prosecutors in all areas where driver-licensing issues arise. Their telephone number is (573) 751-2580 and the fax number is (572) 751-815; their address is: General Counsel's Office, PO Box 475, Jefferson City, MO 65105-0475.

Additionally, information and training concerning driving while intoxicated statues and case laws are available through the are available through the Traffic Safety Resource Program of the Missouri Office of Prosecution Services. Their address is: Missouri Office of Prosecution Services, PO Box 899, Jefferson City, MO 65102.
The TSRP prosecutors are:

Susan Glass
Susan.Glass@prosecutors.mo.gov
(573) 301-2630

and

Stephanie Watson
Stephanie.Watson@prosecutors.mo.gov
(573) 301-8654

The following are hyperlinks to the Missouri Revised Statutes most pertinent to DWI enforcement.

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Chapter 302
Drivers' and Commercial Drivers' Licenses

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302.540	Reinstatement of license — completion of substance abuse traffic offender program a condition — individual assessment, judicial review — fees and cost, distribution of — treatment demonstration project may be created.
302.541	Additional reinstatement fee, license to operate motor vehicle, when — proof of financial responsibility, not required, when.
302.545	Expungement of records, when.
302.574	Temporary permit issued by officer, when — report required, contents — revocation of license, procedure — reinstatement, when — fees — proof of interlock device, when — violations, penalty.
302.580	Substance abuse traffic offender program, court may order participation in, when — professional assessment — supplemental fees, deposition — failure to remit, penalty.
302.584	Rules, effective, when — rules invalid and void, when.
302.592	Missouri uniform law enforcement system records, information entered by highway patrol, when, made available, to whom — failure to furnish records to patrol, penalty.
302.745	Chemical tests, requirements — implied consent given, limits — use as evidence, test results.
302.750	Refusal to consent to test, effect — procedures — hearing allowed, when.
302.755	Violations, disqualification from driving, duration, penalties — reapplication procedure.

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Chapter 577
Public Safety Offenses

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BREATH ALCOHOL PROGRAM TYPE III OPERATOR MANUAL

SECTION 3-A

Intox DMT Operation Guide

INSTRUMENTATION

The Intox DMT is a forensic breath-testing device that measures ethanol (commonly termed "alcohol") and is based on the principles of infrared spectrometry. The DMT accurately determines the amount of alcohol in expired breath at the time the test is administered. Breath alcohol concentration (BrAC) is directly proportional to blood alcohol concentration (BAC). This is an established scientific truth of great benefit to law enforcement. BrAC and BAC need not be compared, since both are equally reliable and established measures of intoxication.

Following recommendations by the National Safety Council's Committee on Alcohol and Other Drugs, the Department of Transportation established a conservative standard to legally define alcohol impairment while operating a motor vehicle. This standard is 0.080 grams of alcohol per 210 liters of breath (g/210 L) or per 100 milliliters of blood (g/100 mL). At this level of intoxication, there is well-founded agreement that any individual will be too impaired to drive safely.

It is important to remember that an arrest is not made on the basis of a breath test alone. It also depends on other factors, such as weaving on the roadway, odor of intoxicants, physical tests, and all those observations that give an officer probable cause to believe the driver was under the influence of alcohol and/or drugs.

The DMT has been used for the purpose of forensic breath alcohol concentration measurement in a number of different states and in other countries. The Intox DMT has been tested and approved prior to its use for evidential testing in Missouri by both the National Highway Traffic Safety Administration (NHTSA) and the Missouri Department of Health and Senior Services, and is listed on both the NHTSA Conforming Products List and in Missouri's Regulations 19 CSR 25-30.050, Approved Breath Analyzers.

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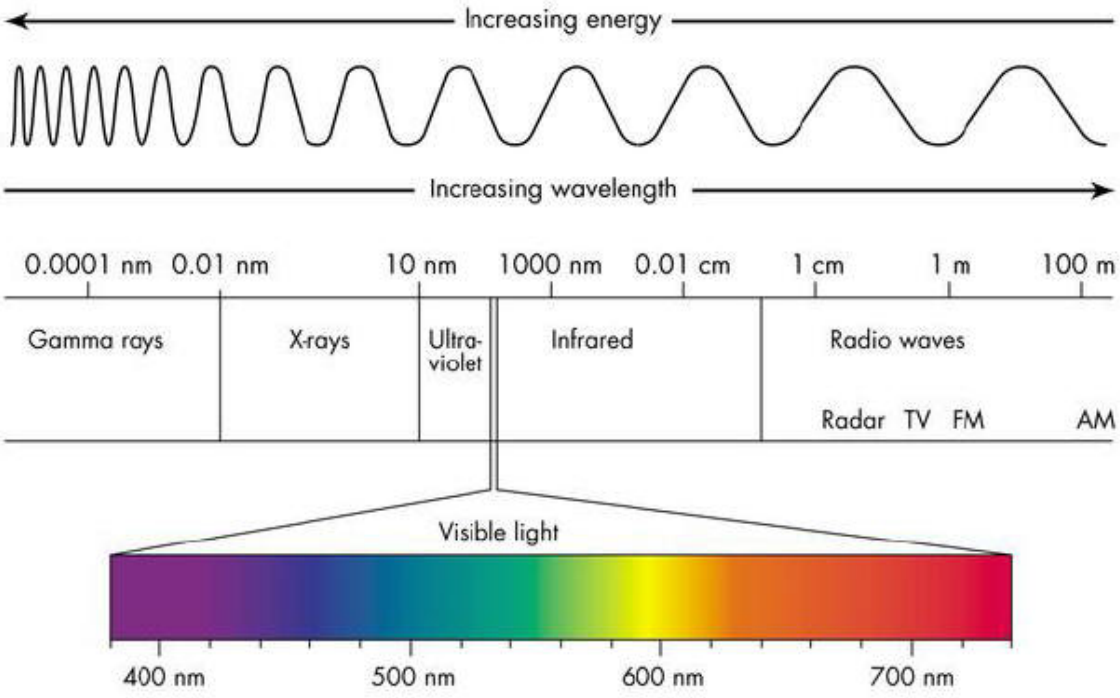
INFRARED SPECTROMETRY

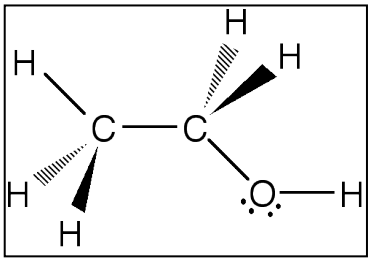
The basis of infrared breath analysis is the absorption of infrared energy by alcohol molecules in a breath specimen. Infrared radiation is a portion of the electromagnetic spectrum. Infrared wavelengths are longer than visible light and are not visible to the human eye. Spectrometry, an analytical method that measures the absorption of radiant energy by a substance, is widely used in the scientific community.

THE ELECTROMAGNETIC SPECTRUM



ETHANOL AND INFRARED ENERGY

Ethanol model



The ethanol molecule is composed of two carbon atoms, six hydrogen atoms, and one oxygen atom that are held together in a fixed order by chemical bonds. These chemical bonds absorb infrared energy in a specific and consistent manner. The specific wavelengths absorbed and the absorption pattern are unique, similar to a fingerprint, for a given molecule such as ethanol. The amount of infrared energy absorbed is proportional to the amount of ethanol present in a breath sample.

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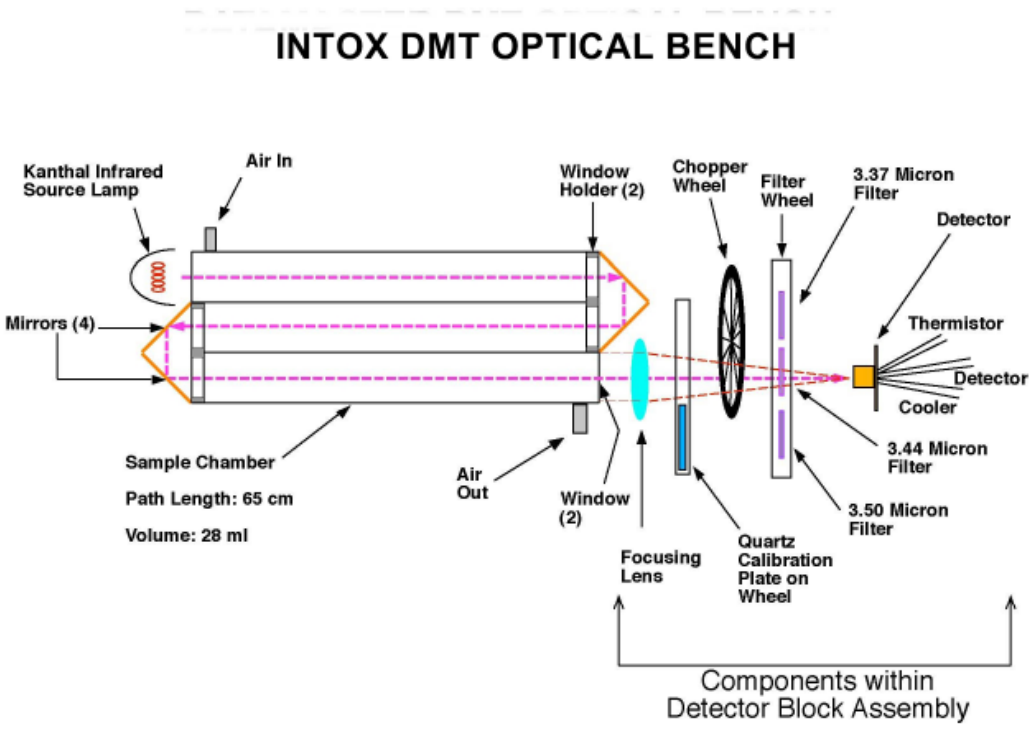
DETERMINATION OF BREATH ALCOHOL CONCENTRATION

The Intox DMT uses a law of chemistry and physics known as the Beer-Lambert law to determine the alcohol concentration in a breath sample. The Beer-Lambert law states that the amount of energy absorbed by a particular substance is directly proportional to the number of absorbing molecules in the sample. The amount of infrared energy absorbed in a breath sample is proportional to the amount of ethanol present in a breath sample introduced into the instrument sample chamber**.**

The breath sample enters the sample chamber of the DMT where an infrared beam of light interacts with any ethanol present (see schematic diagram below). The amount of infrared energy absorbed in the sample chamber is then converted into the subject's BrAC. To satisfy the Regulations' requirement that the breath sample be end-expiratory air, the DMT automatically monitors breath flow, breath volume, and changes in the breath alcohol concentration to ensure a valid sample is obtained. The sample chamber of the DMT is maintained at a temperature (approximately 50 °C) to prevent condensation. Once the sample has been accepted, it is checked for the presence of interfering substances.

The Intox DMT reports the measured alcohol concentration in grams of alcohol per 210 liters of breath, as specified by Missouri statute.

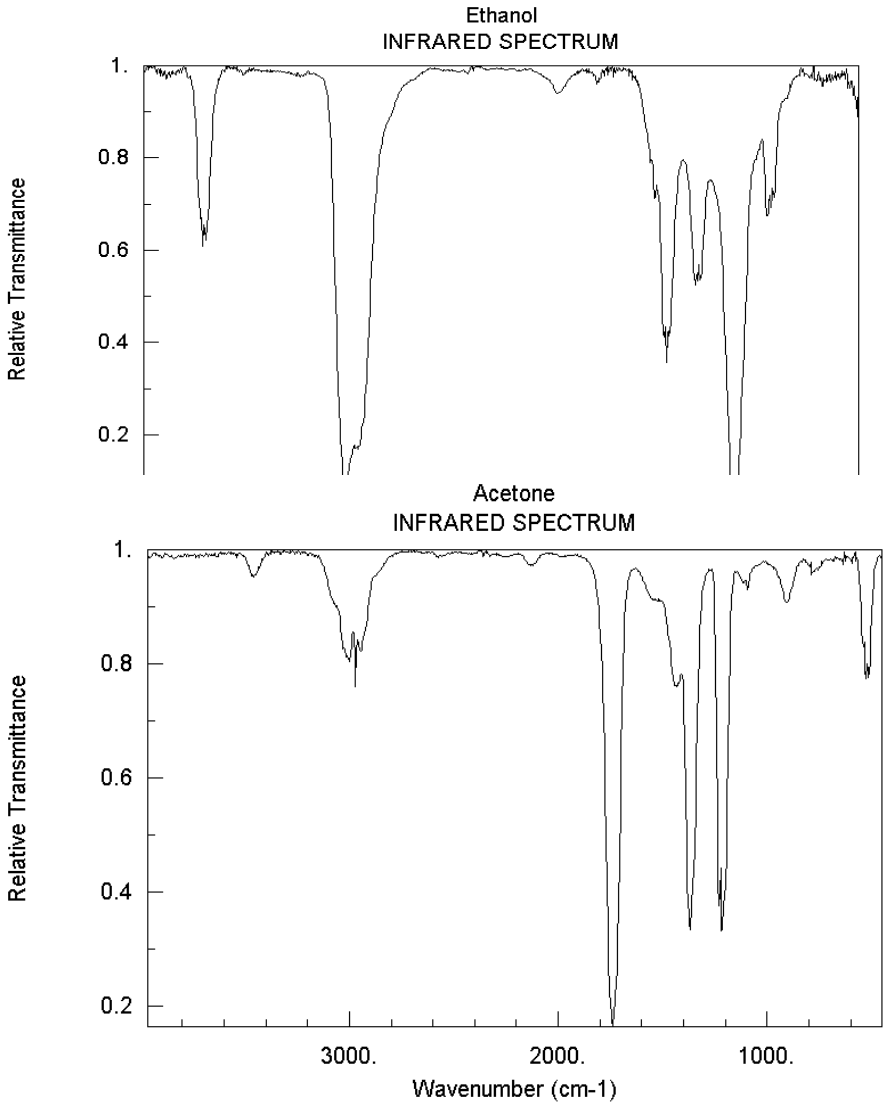
Schematic Diagram of Intox DMT Optical Bench



SPECIFICITY

The Intox DMT uses three wavelengths of infrared energy to achieve specificity for the analysis of ethanol. Some substances, such as acetone, also absorb infrared energy at these same wavelengths. However, no compound consistent with normal human breath will have the same ratio of absorption at these three wavelengths of infrared energy as ethanol. When the DMT detects these differing absorption ratios, it invalidates the test due to the presence of an interfering substance, displays **INTERFERENCE DETECTED**, and prints **INTERFERENCE DETECTED** on the Test Record. The DMT will not identify or measure the amount of the interfering substance. It is important to show that acetone is not present since it could be found in the breath of someone in a state of ketosis, such as an untreated diabetic or someone on a prolonged fast.

INFRARED SPECTRUMS OF ETHANOL AND ACETONE



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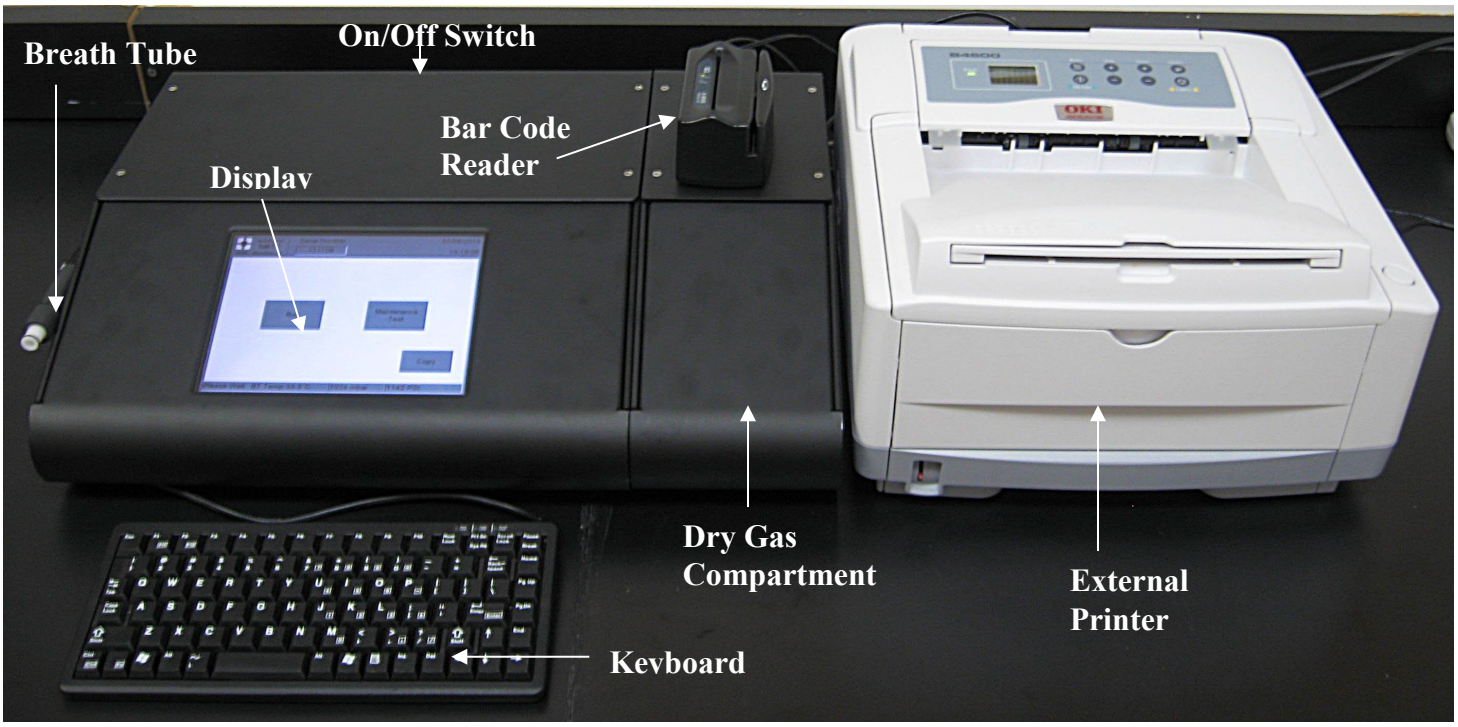
INTOX DMT DIAGRAM



The **breath tube** is the heated, reinforced plastic tube on the right rear side of the instrument that functions as the transport mechanism for breath samples from the testing subject to the instrument. It is heated to prevent condensation of water vapor. All breath samples and the room air used in the air blank sequences are directed to the sample chamber through this tube. The breath tube for the DMT also acts as the RFI (radio frequency interference) antenna, detecting RFI around the instrument.

The **display** is a touch-screen interface that communicates information and instructions between the instrument and the operator.

The **On/Off switch** on the rear of the instrument turns the Intox DMT on or off.

The **Bar Code Reader** reads operator ID cards as well as subject drivers' licenses to aid operators in the speedy and accurate transfer of information to the instrument during a breath test sequence. *(Use is optional)*

The **keyboard** is used for data entry. Information entered via the keyboard is stored in the instrument's electronic memory and printed.

The **Dry Gas Compartment** is the secure storage compartment integrated within the instrument for storage of a compressed gas cylinder. *(Use is optional)*

The **External Printer** is used to print all test data from the instrument. *(Actual printers used may vary)*

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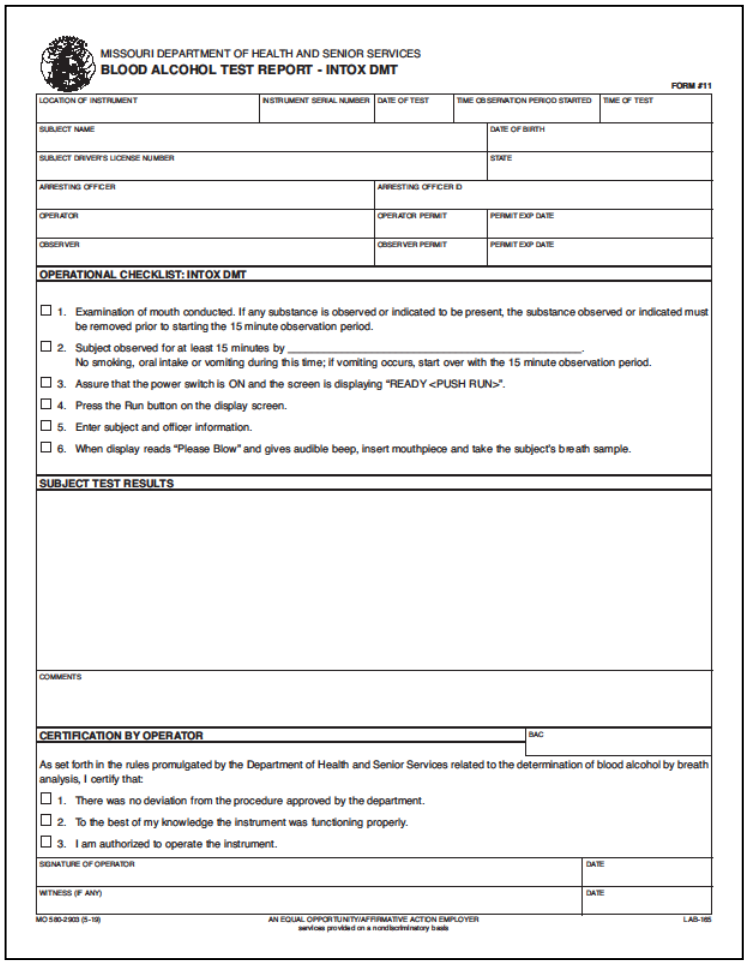
ADMINISTERING A SUBJECT TEST

To administer a subject test on the DMT in Missouri, Form #11, "Blood Alcohol Test Report - Intox DMT" must be completed. This form will be completed automatically by the DMT during the breath test sequence, and a printed and signed copy of the form will be printed at the end of the test sequence.



MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES
BLOOD ALCOHOL TEST REPORT - INTOX DMT

FORM #11

LOCATION OF INSTRUMENT	INSTRUMENT SERIAL NUMBER	DATE OF TEST	TIME OBSERVATION PERIOD STARTED	TIME OF TEST

SUBJECT NAME	DATE OF BIRTH
SUBJECT DRIVER'S LICENSE NUMBER	STATE

ARRESTING OFFICER	ARRESTING OFFICER ID	
OPERATOR	OPERATOR PERMIT	PERMIT EXP DATE
OBSERVER	OBSERVER PERMIT	PERMIT EXP DATE

OPERATIONAL CHECKLIST: INTOX DMT

☐ 1. Examination of mouth conducted. If any substance is observed or indicated to be present, the substance observed or indicated must be removed prior to starting the 15 minute observation period.
☐ 2. Subject observed for at least 15 minutes by _____
No smoking, oral intake or vomiting during this time; if vomiting occurs, start over with the 15 minute observation period.
☐ 3. Assure that the power switch is ON and the screen is displaying "READY <PUSH RUN>".
☐ 4. Press the Run button on the display screen.
☐ 5. Enter subject and officer information.
☐ 6. When display reads "Please Blow" and gives audible beep, insert mouthpiece and take the subject's breath sample.

SUBJECT TEST RESULTS

COMMENTS

CERTIFICATION BY OPERATOR | BAC

As set forth in the rules promulgated by the Department of Health and Senior Services related to the determination of blood alcohol by breath analysis, I certify that:

☐ 1. There was no deviation from the procedure approved by the department.
☐ 2. To the best of my knowledge the instrument was functioning properly.
☐ 3. I am authorized to operate the instrument.

SIGNATURE OF OPERATOR	DATE
WITNESS (IF ANY)	DATE

MO 580-2303 (5-19) AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER services provided on a nondiscriminatory basis LAB-16B

1. The first step of the operational checklist is an examination of the subject's mouth. This examination can be performed in one of two ways: The officer can perform a limited visual examination of the subject's mouth, or the officer can ask the subject whether they have any substances in their mouth. Substances are defined as solid or liquid foreign matter, but does not include dentures, dental work, studs, piercings, or tongue jewelry. Once this examination has been completed, the officer may begin the observation period.
2. An officer with a valid Type II or Type III permit must observe the subject for a minimum of fifteen (15) minutes. The observation period must be continuous and does not end until a breath sample has been provided into the breath analyzer. The officer must remain close enough to the subject during the observation period to reasonably ensure, using the senses of sight, hearing, or smell, that the test subject does not smoke, vomit, or have any oral intake. While the officer must remain close enough to the subject to do this, direct observation is not necessary ensure the test validity or accuracy. The permit holder should carefully observe the subject during both the fifteen-minute observation period as well as while the subject is providing his/her breath sample into the instrument, so that the subject's actions, demeanor, and behavior can be documented.
3. Assure that the instrument is turned on. If it is not, turn it on and allow it to warm up (approximately 30 minutes). The instrument is ready to run a test when the bottom of the display shows "Ready <Push Run>".

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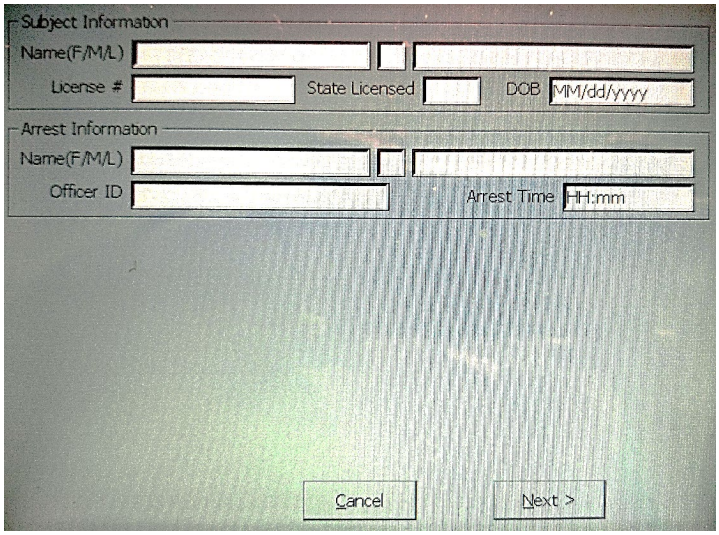
4. When the instrument is ready to take a subject sample and after the mouth examination and 15 minute observation period have been performed, push the **Run** button on the display.

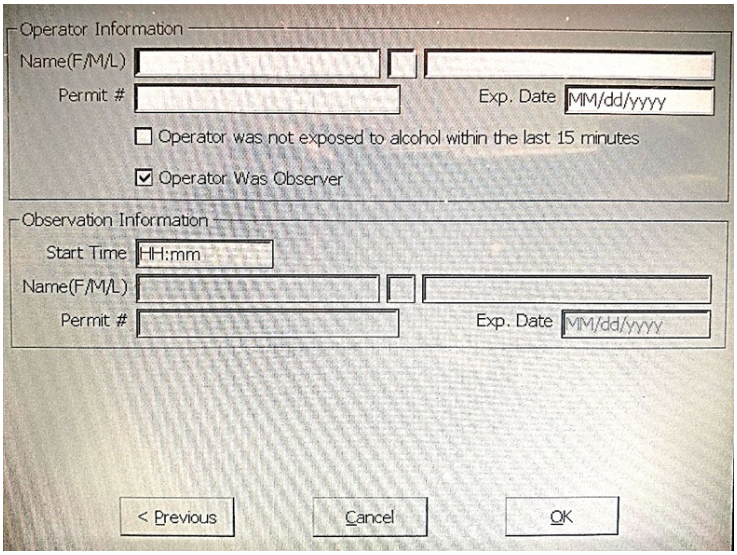
5. The instrument will first display "Scan Operator's Card?" followed by "Scan Driver's License?" If you are using a card reader, insert the Operator Card and/or subject's driver's license when prompted. Otherwise, answer "No" to the questions and fill in the test fields manually.

   The DMT will now display the screen shown on the right. The officer should double-check the accuracy of all fields filled in by information supplied via the card reader, and use the keyboard to type in answers to all fields not already completed.

   The fields to be completed are:
   - Subject Name
   - Subject License # and State Licensed
   - Date of Birth
   - Arresting Officer Name
   - Arresting Officer ID
   - Arrest Time
   - Operator Name
   - Operator Permit # and Expiration Date
   - Observation Start Time



   There is a checkbox for the operator to verify that they were not exposed to alcohol during the 15 minute observation period. There is also a checkbox concerning whether the operator also performed the 15 minute observation period. By default, this boxed is checked, and the Operator Name is auto-filled in the Observation Information portion of the display. However, if the operator was not the observer, uncheck this box. This will then allow the operator to fill in the correct observer's name, permit number and expiration date.



   After determining that all the information is correct, press the **OK** button.

During the automated test sequence the instrument display will show the following series of messages.

PURGE
All chambers and internal plumbing are cleansed of any residual substances by ambient (surrounding) air that is pulled in through the Breath Tube and pumped throughout the instrument by an internal pump. ".000" will appear on the display if the chamber is clear.

AMBIENT CHECK AND AMBIENT ZEROING
After the pump stops, the DMT determines zero references based on the ambient air in the Sample Chamber. During this cycle all three of the specific wavelength filters are inserted into the infrared light path to establish zero references at each wavelength.

BLANK TEST
A measurement is taken after the "Ambient Zeroing". ".000" will appear on the display if no contamination was detected.

INTERNAL STANDARD CHECK
During this cycle a quartz plate is inserted into the infrared path to assure that the accuracy of the DMT has not changed since it was last calibrated. Each Intox stores in memory the exact infrared absorption value of this quartz standard at the time of calibration. The instrument measures the absorption of the quartz plate and compares this measured value with the value obtained at calibration. The two values must agree within prescribed limits or the test sequence will be aborted.

After the DMT has successfully completed the preceding test sequence, the instrument will display: "Did the subject refuse?" If the subject refuses, press the Yes box on the screen. The instrument will print "REFUSED" on the blood alcohol test report and terminate the test sequence. If the subject is willing to take the breath test, press the No box.

6. The instrument will display "PLEASE BLOW" and emit a beeping sound. Insert a mouthpiece into the Breath Tube and have the subject blow at this time.

The officer should advise the subject as follows: "Place your mouth on the mouthpiece and blow long and steady into the tube until I tell you to stop."

The breath sample has to meet the following three criteria to assure the collection of an adequate sample of expired breath. These criteria are:

a. A minimum single breath sample volume of at least 1.5 liters must be delivered.
b. A minimum breath flow rate of 3 liters per minute must be maintained until the minimum breath volume has been delivered.
c. The breath alcohol concentration must show that it has reached end-expiratory air (rate of change in concentration must be within prescribed limits).

During breath sampling, a horizontal green bar is displayed in the bottom right-hand portion of the screen. The first two sample criteria have been met when the green bar crosses the gray line

in the middle of the display box. After the flow rate has decreased to less than 3 liters per minute, the instrument will finish the analysis of the breath sample.

The DMT allows a two-minute window for the completion of a breath test. If a breath test meeting the necessary criteria has not been given during this time period, the DMT will ask again "**SUBJECT REFUSE?**" and display both "YES" and "No" boxes on the screen. If the subject is refusing to provide a breath sample, press the "Yes" box on the screen and the instrument will abort the testing sequence and will print "**REFUSED**" on the blood alcohol test report. If the subject did not appear to be refusing to take the test and is willing to try and provide a sample again, press the "No" box on the screen and a status code of "**INCOMPLETE**" will print on the test report.

After the subject has finished giving a valid breath sample, the DMT will display "**ANALYZING**". Remove the mouthpiece from the Breath Tube before the instrument displays "**PURGING**" and allow the DMT to complete the rest of the automated test sequence. Throw the mouthpiece away. The DMT will purge the Sample Chamber at this point and the take another BLANK TEST.

Once the breath test and all operational steps performed by the instrument are completed and all test results have been accepted by the instrument, the DMT will ask the operator to complete the operator certifications on the bottom of the test report form. Following test certification, the operator will sign the report form on the display of the DMT using a stylus. If a witness to the test was present, they can also sign the display after the operator has signed it.

The last item to appear during the test sequence is the "Remarks/Comments" box. This provides an opportunity for the operator to add any additional information to the BAC test record they feel is relevant.

The completed blood alcohol test report will then print from the instrument's external printer. A signed copy of the last maintenance report will also print directly after the test report.

Good hygiene suggests that a new mouthpiece be used for each separate breath test sequence performed on a test subject. A breath test, or breath test sequence, is a complete testing sequence from the starting of the test on the instrument until a printout of a test result or status code is achieved. This is different from a breath sample or attempt, which can occur multiple times during a single testing sequence depending upon a variety of factors such as a subject's willingness to cooperate, physical capabilities, officer instruction and coaching, etc. Always use a new mouthpiece for a different test subject.

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INTOX DMT STATUS MESSAGES

Occasionally, a status message (or code) will appear on the screen and/or on a BAC Test Report. The following table is a list of status messages that may appear. If one of these messages is received, please follow the recommended corrective action.

Note: The only status message that requires an additional oral examination and observation period is "Invalid Sample".

STATUS MESSAGE	CORRECTIVE ACTION
MAINTENANCE TEST REQUIRED	Out of service. Contact Type II and go to another instrument.
RFI DETECTED	Find and remove source of RFI and attempt another test. If you cannot find the source, request a blood sample under implied consent.
INVALID SAMPLE	Conduct new oral examination and new observation period. Try one or more tests. If unsuccessful, request blood sample under implied consent.
INTERFERENCE DETECTED	Try one more test. If interference is detected on the second test, request blood sample under implied consent and contact Type II regarding status message.
INCOMPLETE	A complete and valid breath test was not given during sampling. Try one or more tests. An additional observation period is not warranted.
BLANK ERROR, PUMP ERROR, and AMBIENT FAIL	Check to see if mouthpiece in breath tube, try removing subject from immediate area around instrument just before and after test, and try one or more tests. If unsuccessful, contact Type II.
SUCKBACK ERROR	Subject sucked air through the breath tube during sampling. Reinstruct on the correct method for providing a sample and try one or more tests. If unsuccessful, request blood sample under implied consent.
SAMPLE CHAMBER TEMPERATURE CHECK	Out of service. Contact Type II and go to another instrument.
BREATH TUBE TEMPERATURE CHECK	Try increasing room temperature. If this doesn't work, place instrument out of service. Contact Type II and go to another instrument.
FILTER WHEEL ERROR	Try one or more tests. If unsuccessful, contact Type II.
FILTER (1, 2 or 3) WON'T ZERO	Try one or more tests. If unsuccessful, contact Type II.
INTERNAL STANDARD ERROR	Try one or more tests. If unsuccessful, contact Type II.
DETECTOR OVERFLOW	Out of service. Contact Type II and go to another instrument.

If any status code appears on the display or on an evidential ticket other than those listed above, discontinue use of the instrument and contact a Type II responsible for maintaining the instrument.

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BREATH ALCOHOL PROGRAM TYPE III OPERATOR MANUAL

SECTION 3-B

Intox EC/IR II Operation Guide

INSTRUMENTATION

The Intox EC/IR II is a forensic breath-testing device that measures ethanol (commonly termed "alcohol") using an electrochemical cell, also known as a fuel cell. The EC/IR II accurately determines the amount of alcohol in expired breath at the time the test is administered. Breath alcohol concentration (BrAC) is directly proportional to blood alcohol concentration (BAC). This is an established scientific truth of great benefit to law enforcement. BrAC and BAC need not be compared, since both are equally reliable and established measures of intoxication.

Following recommendations by the National Safety Council's Committee on Alcohol and Other Drugs, the Department of Transportation established a conservative standard to legally define alcohol impairment while operating a motor vehicle. This standard is 0.080 grams of alcohol per 210 liters of breath (g/210 L) or per 100 milliliters of blood (g/100 mL). At this level of intoxication, there is well-founded agreement that any individual will be too impaired to drive safely.

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The EC/IR II has been used for the purpose of forensic breath alcohol concentration measurement in a number of different states and in other countries. The Intox EC/IR II has been tested and approved prior to its use for evidential testing in Missouri by both the National Highway Traffic Safety Administration (NHTSA) and the Missouri Department of Health and Senior Services, and is listed on both the NHTSA Conforming Products List and in Missouri's Regulations 19 CSR 25-30.050, Approved Breath Analyzers.

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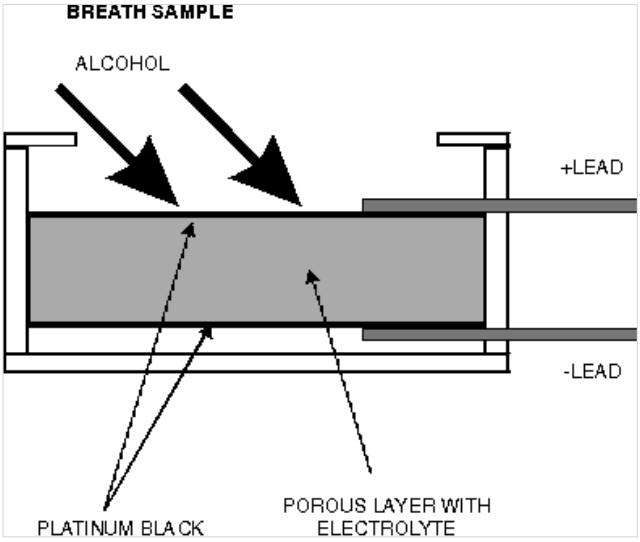
ALCOHOL FUEL CELL TECHNOLOGY

In its simplest form, the alcohol fuel cell consists of a porous, chemically inert layer coated on both sides with platinum oxide (called platinum black). The manufacturer impregnates the porous layer with an acidic electrolyte solution, and applies platinum wire electrical connections to the platinum black surfaces. The fuel cell assembly is mounted in a case, which includes a gas inlet that allows a breath sample to be introduced. The basic configuration of an alcohol fuel cell is illustrated in Figure 1.

Figure 1. Basic Fuel Cell Configuration



DETERMINATION OF BREATH ALCOHOL CONCENTRATION

The chemical reaction that takes place in an alcohol fuel cell converts alcohol to acetic acid, water, and free electrons. When the top and bottom surfaces of the fuel cell are connected via an electrical circuit, current flows through this circuit to neutralize the charge created by the breakup of alcohol. The current created is a direct indication of the amount of alcohol consumed by the fuel cell. By measuring the amount of current, you can determine the amount of alcohol in the sample. The fuel cell produces a direct relationship between the amount of current generated from the alcohol oxidization reaction and the alcohol concentration in the breath sample.

The Intox EC/IR II also incorporates an infrared spectrophotometer which monitors the release of both alcohol and carbon dioxide during exhalation. Analyzing the release of these two chemicals using proprietary algorithms, the EC/IR II can detect sample irregularities occurring during exhalation due to mouth alcohol.

The Intox EC/IR II reports the measured alcohol concentration in grams of alcohol per 210 liters of breath, as specified by Missouri statute.

SPECIFICITY

Due to the nature of their construction, the alcohol fuel cell used in the Intox EC/IR II is highly specific for alcohol on the human breath. The following is an abbreviated list of substances tested by the University of Tennessee at Memphis to measure their response on the Alco-Sensor IV, which uses the same electrochemical cell as the Intox EC/IR II.

ALCO-SENSOR IV RESPONSE TO VARIOUS SUBSTANCES[1]

Substance	Vapor Concentration (mg/l)	Alco-Sensor IV Response (gm/dl)
Acetaldehyde	0.1	0.002
Acetone	0.1	0.0
Benzene	0.05	0.0
2-Butanol	0.1	0.002
Cyclohexane	0.1	0.0
Diethylether	0.1	0.0
Ethanol	0.1	0.100
Ethylacetate	0.06	0.0
Gasoline	0.1	0.002
Isoprene	0.1	0.002
Isopropanol	0.06	0.005
Methane	0.1	0.0
Methanol	0.04	0.008
MEK	0.06	0.0
n-Pentane	0.1	0.0
n-Hexane	0.1	0.0
n-Octane	0.1	0.0
Mineral Spirits	0.1	0.0
Toluene	0.05	0.0
Trichlorethylene	0.1	0.0

1. Stafford, David T. 1993. "Investigation of the Response of Fuel Cell Based Alcohol Breath Test Instruments to Substances Other than Ethanol:" Tennessee: University of Tennessee Toxicology Laboratory.

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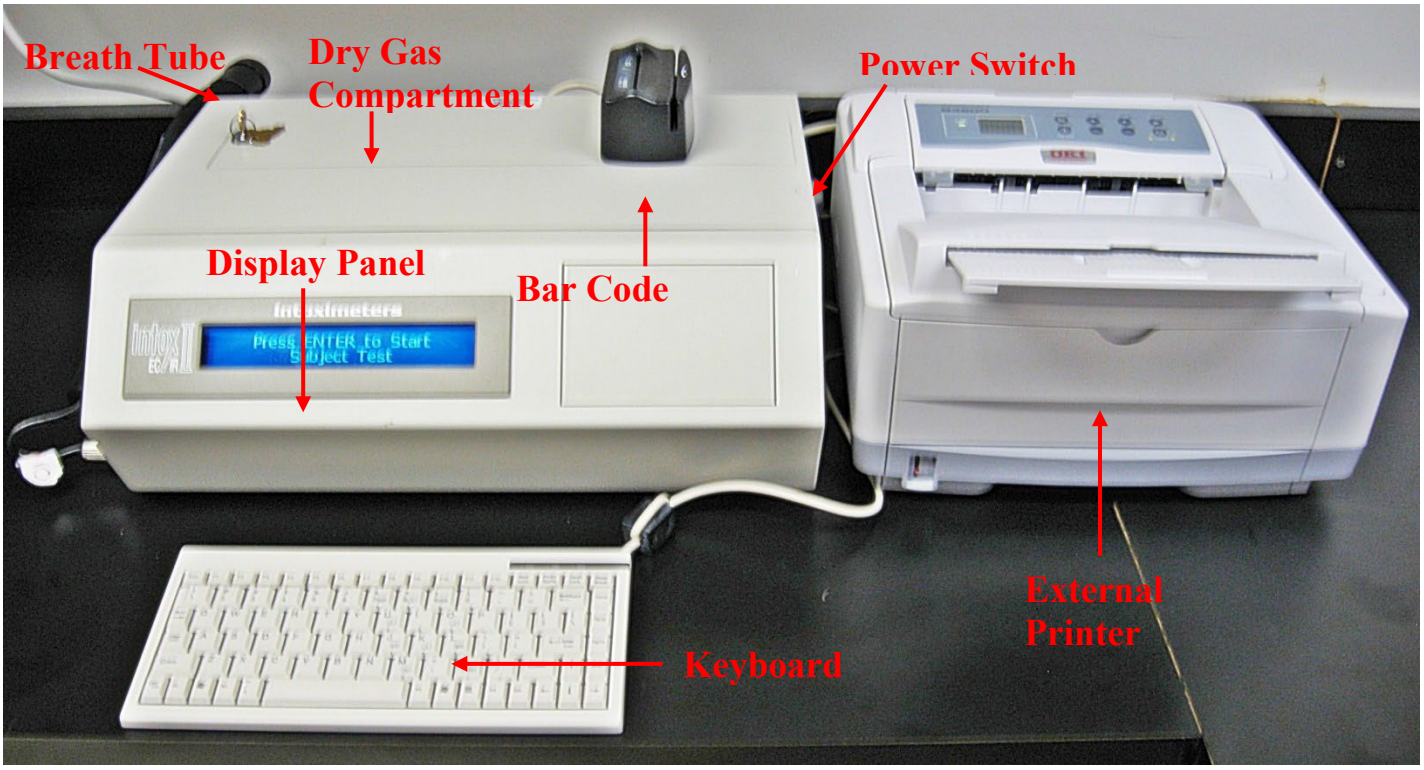
INTOX EC/IR II DIAGRAM



The **Breath Tube** is the heated, reinforced tube on the left side of the instrument that functions as the transport mechanism for breath samples from the testing subject to the instrument. It is heated to prevent condensation of water vapor. All breath samples and the room air used in the air blank sequences are directed to the sample chamber through this tube.

The **Display Panel** communicates information and instructions from the instrument to the operator.

The **Power Switch** on the rear of the instrument turns the Intox EC/IR II on or off.

The **Bar Code Reader** reads operator ID cards as well as subject drivers' licenses to aid operators in the speedy and accurate transfer of information to the instrument during a breath test sequence. *(Use is optional)*

The **Keyboard** is used for data entry. Information entered via the keyboard is stored in the instrument's electronic memory and printed.

The **Dry Gas Compartment** is the secure storage compartment integrated within the instrument for storage of a compressed gas cylinder. *(Use is optional)*

The **External Printer** is used to print all test data from the instrument. *(Actual printers used may vary)*

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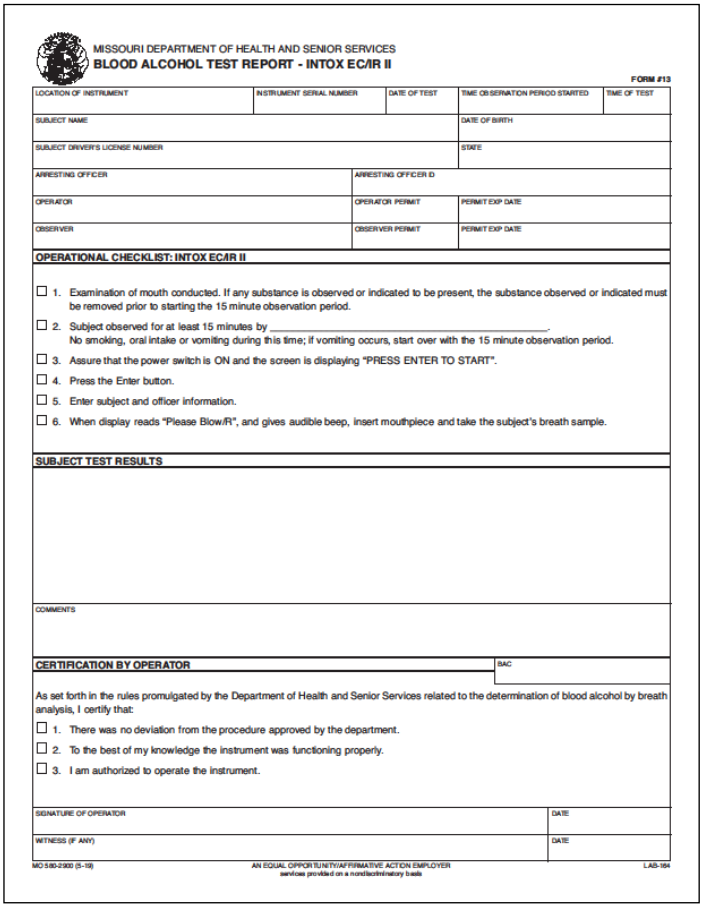
ADMINISTERING A SUBJECT TEST

To administer a subject test on the EC/IR II in Missouri, Form #13, "Blood Alcohol Test Report - Intox EC/IR II" must be completed. This form will be completed automatically by the EC/IR II during the breath test sequence, and a copy of the form will be printed at the end of the test sequence.



MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES
BLOOD ALCOHOL TEST REPORT - INTOX EC/IR II

FORM #13

LOCATION OF INSTRUMENT	INSTRUMENT SERIAL NUMBER	DATE OF TEST	TIME OBSERVATION PERIOD STARTED	TIME OF TEST

SUBJECT NAME	DATE OF BIRTH
SUBJECT DRIVER'S LICENSE NUMBER	STATE

ARRESTING OFFICER	ARRESTING OFFICER ID	
OPERATOR	OPERATOR PERMIT	PERMIT EXP DATE
OBSERVER	OBSERVER PERMIT	PERMIT EXP DATE

OPERATIONAL CHECKLIST: INTOX EC/IR II

- ☐ 1. Examination of mouth conducted. If any substance is observed or indicated to be present, the substance observed or indicated must be removed prior to starting the 15 minute observation period.
- ☐ 2. Subject observed for at least 15 minutes by _____.
  No smoking, oral intake or vomiting during this time; if vomiting occurs, start over with the 15 minute observation period.
- ☐ 3. Assure that the power switch is ON and the screen is displaying "PRESS ENTER TO START".
- ☐ 4. Press the Enter button.
- ☐ 5. Enter subject and officer information.
- ☐ 6. When display reads "Please Blow/R", and gives audible beep, insert mouthpiece and take the subject's breath sample.

SUBJECT TEST RESULTS

COMMENTS

CERTIFICATION BY OPERATOR | BAC

As set forth in the rules promulgated by the Department of Health and Senior Services related to the determination of blood alcohol by breath analysis, I certify that:

- ☐ 1. There was no deviation from the procedure approved by the department.
- ☐ 2. To the best of my knowledge the instrument was functioning properly.
- ☐ 3. I am authorized to operate the instrument.

SIGNATURE OF OPERATOR	DATE
WITNESS (IF ANY)	DATE

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1. The first step of the operational checklist is an examination of the subject's mouth. This examination can be performed in one of two ways: The officer can perform a limited visual examination of the subject's mouth, or the officer can ask the subject whether they have any substances in their mouth. Substances are defined as solid or liquid foreign matter, but does not include dentures, dental work, studs, piercings, or tongue jewelry. Once this examination has been completed, the officer may begin the observation period.

2. An officer with a valid Type II or Type III permit must observe the subject for a minimum of fifteen (15) minutes. The observation period must be continuous and does not end until a breath sample has been provided into the breath analyzer. The officer must remain close enough to the subject during the observation period to reasonably ensure, using the senses of sight, hearing, or smell, that the test subject does not smoke, vomit, or have any oral intake. While the officer must remain close enough to the subject to do this, direct observation is not necessary ensure the test validity or accuracy. The permit holder should carefully observe the subject during both the fifteen-minute observation period as well as while the subject is providing his/her breath sample into the instrument, so that the subject's actions, demeanor, and behavior can be documented.

3. Assure that the instrument is turned on. If it is not, turn it on and allow it to warm up (approximately 10 – 20 minutes). The instrument is ready to run a test when the display shows "PRESS ENTER TO START".

4. When the instrument is ready to take a subject sample and after the mouth examination and 15 minute observation period have been performed, push the **Enter** button on the keyboard.

5. To begin entering officer and subject data, the instrument will first display "Swipe Operator Card: Or Press ENTER". If you are using an Operator Card, place the card into the card slot of the reader and it will automatically input the operator's information. Otherwise, hit the enter button on the display and complete the following questions.
    a. Operator Name:
    b. Operator Permit Number:
    c. Permit Expiration Date: *(mm/dd/yyyy) format*

    At this point the operator has manually entered the same information that would have been read from an operator card. All operators will then be asked the following questions:
    d. Check Mouth? [Y/N]:
    e. 15 Minutes Start:
    f. Operator not exposed to alcohol 15 min prior to test? [Y/N]:
    g. Observer Name: *(default is name of operator)*
    h. Observer Permit #: *(default is permit # of operator)*
    i. Observer Permit Expiration: *(default is permit exp. date of operator)*

    The instrument will next display "Please Swipe Driver's License: Or Press ENTER". If you have the subject's driver's license, place the license with the bar code into the card slot of the reader and it will automatically input the subject's information. Otherwise, hit the enter button on the display and complete the following questions.
    j. Subject Last Name:
    k. Subject First Name:
    l. Subject M.I.:
    m. Subject Date of Birth: *(mm/dd/yyyy) format*
    n. Subject Driver's License #:
    o. State of Issuance:

    At this point the operator has manually entered the same information that would have been read from the driver's license. All operators will then be asked the following questions:
    p. Arresting Officer's Name:
    q. Arresting Officer's ID:

The last screen the display will show during data entry is: "Starting Test Sequence: SPACE=Begin ENTER=Verify". If the officer wishes to correct a mistake made during the data entry, or merely wishes to review the data, hit the ENTER button on the keyboard and the instrument will send the officer back through each of the questions a – k listed above. Once the officer is satisfied with the data, the space bar on the keyboard at

this stage and the instrument will move out of data entry and into the automated test sequence.

During the automated test sequence the instrument display will show the following series of messages.

DIAGNOSTIC CHECK
To begin the automated test sequence, the EC/IR II does an analysis of its internal components to make sure that everything is working properly and that the instrument is ready to conduct a subject breath test.

INSTRUMENT PURGE
After the diagnostic check has been passed, the EC/IR II pumps ambient (room) air through the breath tube and analytical bench. This is done before and after a subject sample to ensure that the instrument is clean of any residual sample from a previous breath test.

BLANK CHECK
At this point the Intox EC/IR II measures both the amount of infrared light that is striking the detector when ambient (room) air is in the sample chamber, as well as the amount of reaction on the fuel cell when only room air is in the sample chamber. The EC/IR II sets this reading as "0.000" (alcohol-free) and that is the first Blank Check.

6. After the Intox EC/IR II has successfully cycled through these steps of the automatic test sequence, the instrument will display "PLEASE BLOW/R**"**, accompanied by a beep. If the subject refuses, hit the "R" button on the keyboard. The instrument will print, "Test refused" on the BAC test report and terminate the test sequence. If the subject is not refusing to take the breath test, insert a mouthpiece into the Breath Tube and have the subject blow at this time.

The officer should advise the subject as follows: "***Place your mouth on the mouthpiece and blow long and hard into the tube until I tell you to stop***."

The breath sample has to meet the following three criteria to assure the collection of an adequate sample of expired breath. These criteria are:

a. A minimum breath flow rate must be maintained until the minimum breath volume has been delivered.
b. During the breath sample, the minimum flow rate must be maintained continuously for a minimum time and minimum sample volume.
c. The flow rate must then decrease as flow diminishes naturally from the subject.

The Intox EC/IR II allows a maximum of 6 separate breath samples during the breath test sequence until a sample meeting all three criteria listed above has been achieved. The EC/IR II purges the sample chamber between each successive breath attempt before another breath sample can be provided, so please remove the mouthpiece from the breath tube between breath attempts to allow for proper purging. Each breath sample attempt has a three-minute window for completion. If none of the 6 breath attempts results in a complete breath sample, the EC/IR II will print a test report of "Insufficient sample". If the subject fails to give a breath sample during the three minute test window, the Intox EC/IR II will print "Breath timeout – No sample provided".

After the subject has finished giving a valid breath sample and the breath flow rate decreases to below the sampling threshold, the instrument will finish the analysis of the breath sample. The instrument will then complete another "Blank Check".

Once the breath test and all operational steps performed by the instrument are completed and all test results have been accepted by the instrument, the Intox EC/IR II will then ask the operator to input any comments to be printed on the test report.

After the test comments have been completed, the external printer of the EC/IR II will print both the BAC Test Report Form as well as an unsigned copy of the most recent maintenance report.

Good hygiene suggests that a new mouthpiece be used for each separate breath test sequence performed on a test subject. A breath test, or breath test sequence, is a complete testing sequence from the starting of the test on the instrument until a printout of a test result or status code is achieved. This is different from a breath sample or attempt, which can occur multiple times during a single testing sequence depending upon a variety of factors such as a subject's willingness to cooperate, physical capabilities, officer instruction and coaching, etc. Always use a new mouthpiece for a different test subject.

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INTOX EC/IR II STATUS MESSAGES

Occasionally, a status message (or code) will appear on the screen and/or on a BAC Test Report. The following table is a list of status messages that may appear. If one of these messages is received, please follow the recommended corrective action.

Note: The only status message that requires an additional oral examination and observation period is "Mouth Alcohol".

STATUS MESSAGE	CORRECTIVE ACTION
MAINTENANCE TEST REQUIRED	Out of service. Contact Type II and go to another instrument.
MOUTH ALCOHOL	Conduct new oral examination and new observation period. Try one or more tests. If unsuccessful, request blood sample under implied consent.
INSUFFICIENT SAMPLE	A complete and valid breath test was not given during sampling. Try one or more tests. An additional observation period is not warranted. You may want to request blood sample under implied consent.
BREATH TIMEOUT	No breath sample was provided during the three minute test window for a breath attempt. You may want to request blood sample under implied consent.
BREATH AT IMPROPER TIME	Subject began to blow when instrument was not ready to accept sample. Try one or more tests. An additional observation period is not warranted. You may want to request blood sample under implied consent.
CHECK AMBIENT CONDITIONS	Check for odors, check to see if mouthpiece in breath tube, try one or more tests. If unsuccessful, contact Type II.
OPERATOR ABORT	Operator aborted the test sequence prior to test completion. Try one or more tests. An additional observation period is not warranted.
AMBIENT DETECTED	Check for odors, check to see if mouthpiece in breath tube, try one or more tests. If unsuccessful, contact Type II.
ETHANOL BASELINE ERROR	Out of service. Contact Type II and go to another instrument.
SET SOLENOID ERROR	Out of service. Contact Type II and go to another instrument.

If any status code appears on the display or on a BAC Test Report other than those listed above, discontinue use of the instrument and contact a Type II responsible for maintaining the instrument.

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BREATH ALCOHOL PROGRAM TYPE III OPERATOR MANUAL

SECTION 3-C

Alco-Sensor IV with Printer Operation Guide

INSTRUMENTATION

The Alco-Sensor IV is a forensic breath-testing device that measures ethanol (commonly termed "alcohol") using an electrochemical cell, also known as a fuel cell. The Alco-Sensor IV accurately determines the amount of alcohol in expired breath at the time the test is administered. Breath alcohol concentration (BrAC) is directly proportional to blood alcohol concentration (BAC). This is an established scientific truth of great benefit to law enforcement. BrAC and BAC need not be compared, since both are equally reliable and established measures of intoxication.

Following recommendations by the National Safety Council's Committee on Alcohol and Other Drugs, the Department of Transportation established a conservative standard to legally define alcohol impairment while operating a motor vehicle. This standard is 0.080 grams of alcohol per 210 liters of breath (g/210 L) or per 100 milliliters of blood (g/100 mL). At this level of intoxication, there is well-founded agreement that any individual will be too impaired to drive safely.

It is important to remember that an arrest is not made on the basis of a breath test alone. It also depends on other factors, such as weaving on the roadway, odor of intoxicants, physical tests, and all those observations that gave you probable cause to believe the driver was under the influence of alcohol and/or drugs.

The Alco-Sensor IV has been in production since the 1980's and has been used for the purposes of both preliminary and forensic breath alcohol concentration measurement in over 30 different states and various other countries. The Alco-Sensor IV has been tested and approved for evidential breath alcohol analysis by the National Highway Traffic Safety Administration (NHTSA). When used with a printer and DHSS-approved software it is approved for evidential testing in Missouri by the Missouri Department of Health and Senior Services and is listed on both the NHTSA Conforming Products List and in Missouri's Regulations 19 CSR 25-30.050, Approved Breath Analyzers.

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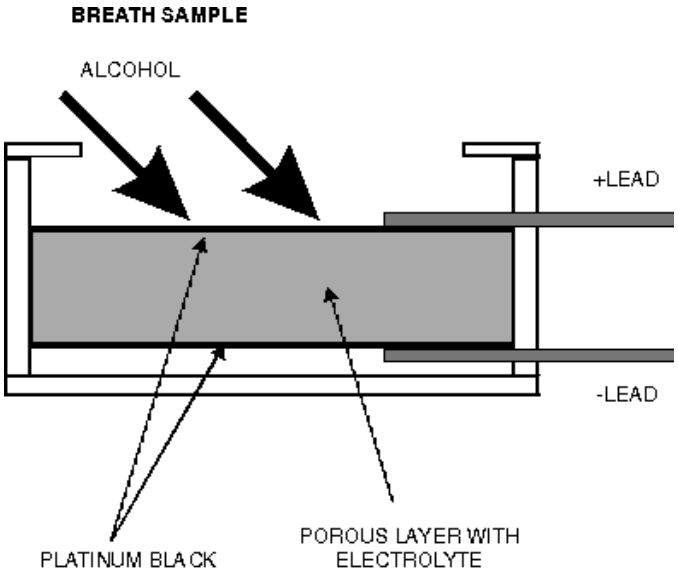
ALCOHOL FUEL CELL TECHNOLOGY

In its simplest form, the alcohol fuel cell consists of a porous, chemically inert layer coated on both sides with platinum oxide (called platinum black). The manufacturer impregnates the porous layer with an acidic electrolyte solution, and applies platinum wire electrical connections to the platinum black surfaces. The fuel cell assembly is mounted in a case, which includes a gas inlet that allows a breath sample to be introduced. The basic configuration of an alcohol fuel cell is illustrated in Figure 1.

Figure 1. Basic Fuel Cell Configuration



DETERMINATION OF BREATH ALCOHOL CONCENTRATION

The chemical reaction that takes place in an alcohol fuel cell converts alcohol to acetic acid. In the process, this conversion produces a fixed number of free electrons per molecule of alcohol. This reaction takes place on the upper surface of the fuel cell. H+ ions are freed in the process, and migrate to the lower surface of the cell, where they combine with atmospheric oxygen to form water, consuming one electron per H+ ion in the process. Thus, the upper surface has an excess of electrons, and the lower surface has a corresponding deficiency of electrons. If you connect the two surfaces electrically, a current flows through this external circuit to neutralize the charge. This current is a direct indication of the amount of alcohol consumed by the fuel cell. By measuring the amount of current, you can determine the amount of alcohol in the sample. The fuel cell produces a linear relationship between the amount of current generated from the alcohol oxidization reaction and the alcohol concentration in the breath sample. The Alco-Sensor IV automatically monitors breath flow to ensure a valid sample of expired air is obtained.

The Alco-Sensor IV reports the measured alcohol concentration in grams of alcohol per 210 liters of breath, as specified by Missouri statute.

SPECIFICITY

Due to the nature of their construction, the alcohol fuel cell used in the Alco-Sensor IV is highly specific for alcohol on the human breath. The following is an abbreviated list of substances tested by the University of Tennessee at Memphis to measure their response on the Alco-Sensor IV.

ALCO-SENSOR IV RESPONSE TO VARIOUS SUBSTANCES[1]

Substance	Vapor Concentration (mg/l)	Alco-Sensor IV Response (gm/dl)
Acetaldehyde	0.1	0.002
Acetone	0.1	0.0
Acetonitrile	0.1	0.0
Benzene	0.05	0.0
2-Butanol	0.1	0.002
Cyclohexane	0.1	0.0
Diethylether	0.1	0.0
Ethanol	0.1	0.100
Ethylacetate	0.06	0.0
Gasoline	0.1	0.002
Isoprene	0.1	0.002
Isopropanol	0.06	0.005
Methane	0.1	0.0
Methanol	0.04	0.008
MEK	0.06	0.0
n-Pentane	0.1	0.0
n-Hexane	0.1	0.0
n-Heptane	0.1	0.0
n-Octane	0.1	0.0
Mineral Spirits	0.1	0.0
Tetrachloroethylene	0.05	0.0
Toluene	0.05	0.0
Trichlorethylene	0.1	0.0
Xylene	0.1	0.0

1. Stafford, David T. 1993. "Investigation of the Response of Fuel Cell Based Alcohol Breath Test Instruments to Substances Other than Ethanol:" Tennessee: University of Tennessee Toxicology Laboratory.

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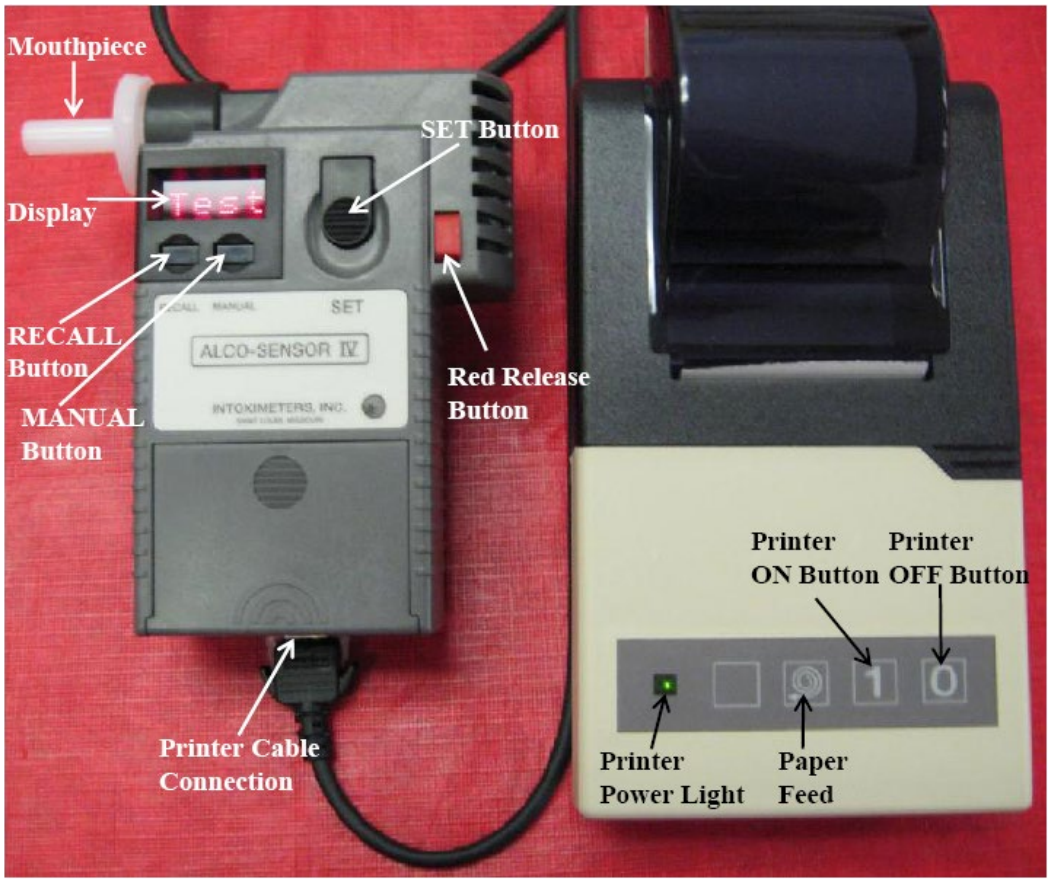
ALCO-SENSOR IV WITH PRINTER DIAGRAM



The **display** communicates information and instructions from the instrument to the operator.

The **mouthpiece** functions as the transport mechanism for breath samples from the testing subject to the instrument. Proper insertion of the mouthpiece also turns the Alco-Sensor IV on. All breath samples and the room air used in the air blank sequences are directed to the sample chamber through the mouthpiece.

The **SET Button** cocks the sampling pump to accept the sample.

The **RECALL Button** allows the operator to print a previous test.

The **MANUAL Button** has no valid function during a subject breath test.

The **Red Release Button** ejects the mouthpiece, thereby also turning the instrument off.

The **Printer Cable Connection** sends data from the Alco-Sensor IV to the printer.

The use of the **MANUAL** button to obtain a breath alcohol test result is not considered a valid test result by the Missouri Department of Health and Senior Services. If the **MANUAL** button is accidentally depressed during a testing sequence, restart the testing sequence.

DATA ENTRY

The Alco-Sensor IV does not have a keyboard for data entry. The printed Test Record includes spaces for the operator to write in the Subject Name, I.D., Operator Name and I.D., and Location of instrument. It is the duty of the officer to correctly and adequately complete the test record with this information following a breath test sequence.

RADIO FREQUENCY INTERFERENCE

Since the Alco-Sensor IV is an electrical instrument, it is susceptible to the possibility of Radio Frequency Interference (RFI). Radio frequency interference is a disturbance that affects an electrical circuit due to electromagnetic radiation emitted from an external source (such as a walkie-talkie). The disturbance may interrupt, obstruct, or otherwise degrade or limit the effective performance of the circuit.

If the presence of a radio signal is detected during an analysis, the Alco-Sensor IV will invalidate the test, display "**RFI!**", and print "**Void: RFI**" on the Test Record.

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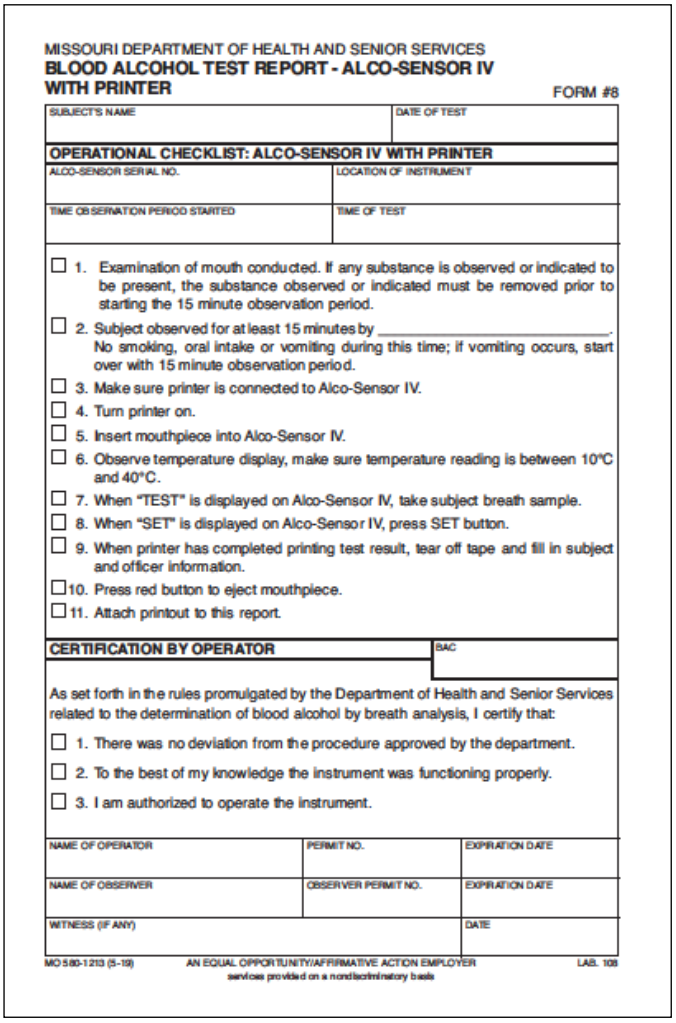
ADMINISTERING A SUBJECT TEST

To administer a subject test on the Alco-Sensor IV with Printer in Missouri, Form #8, "Operational Checklist: Alco-Sensor IV With Printer", of 19 CSR 25-30 must be completed. This form can be found in 19 CSR 25-30, on page two of form DOR-2389 (Alcohol Influence Report) or on the DHSS website at: http://health.mo.gov/lab/breathalcohol/



MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES
BLOOD ALCOHOL TEST REPORT - ALCO-SENSOR IV WITH PRINTER
FORM #8

SUBJECT'S NAME | DATE OF TEST

OPERATIONAL CHECKLIST: ALCO-SENSOR IV WITH PRINTER

ALCO-SENSOR SERIAL NO. | LOCATION OF INSTRUMENT
TIME OBSERVATION PERIOD STARTED | TIME OF TEST

☐ 1. Examination of mouth conducted. If any substance is observed or indicated to be present, the substance observed or indicated must be removed prior to starting the 15 minute observation period.
☐ 2. Subject observed for at least 15 minutes by _____. No smoking, oral intake or vomiting during this time; if vomiting occurs, start over with 15 minute observation period.
☐ 3. Make sure printer is connected to Alco-Sensor IV.
☐ 4. Turn printer on.
☐ 5. Insert mouthpiece into Alco-Sensor IV.
☐ 6. Observe temperature display, make sure temperature reading is between 10°C and 40°C.
☐ 7. When "TEST" is displayed on Alco-Sensor IV, take subject breath sample.
☐ 8. When "SET" is displayed on Alco-Sensor IV, press SET button.
☐ 9. When printer has completed printing test result, tear off tape and fill in subject and officer information.
☐ 10. Press red button to eject mouthpiece.
☐ 11. Attach printout to this report.

CERTIFICATION BY OPERATOR | BAC

As set forth in the rules promulgated by the Department of Health and Senior Services related to the determination of blood alcohol by breath analysis, I certify that:

☐ 1. There was no deviation from the procedure approved by the department.
☐ 2. To the best of my knowledge the instrument was functioning properly.
☐ 3. I am authorized to operate the instrument.

NAME OF OPERATOR | PERMIT NO. | EXPIRATION DATE
NAME OF OBSERVER | OBSERVER PERMIT NO. | EXPIRATION DATE
WITNESS (IF ANY) | DATE

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services provided on a nondiscriminatory basis

You should complete an Operational Checklist for each separate test conducted on a subject.

1. The first step of the operational checklist is an examination of the subject's mouth. This examination can be performed in one of two ways: The officer can perform a limited visual examination of the subject's mouth, or the officer can ask the subject whether they have any substances in their mouth. Substances are defined as solid or liquid foreign matter, but does not include dentures, dental work, studs, piercings, or tongue jewelry. Once this examination has been completed, the officer may begin the observation period.

2. An officer with a valid Type II or Type III permit must observe the subject for a minimum of fifteen (15) minutes. The observation period must be continuous and does not end until a breath sample has been provided into the breath analyzer. The officer must remain close enough to the subject during the observation period to reasonably ensure, using the senses of sight, hearing, or smell, that the test subject does not smoke, vomit, or have any oral intake. While the officer must remain close enough to the subject to do this, direct observation is not necessary ensure the test validity or accuracy. The permit holder should carefully observe the subject during both the fifteen-minute observation period as well as while the subject is providing his/her breath sample into the instrument, so that the subject's actions, demeanor, and behavior can be documented.

3. Make sure that the printer is attached to the Alco-Sensor IV.

4. Turn the printer on. If display shows LO BAT, or if the printer otherwise does not function, recharge the printer battery or plug into wall before continuing.

5. Insert an Alco-Sensor IV mouthpiece into the Alco-Sensor IV. This turns the instrument on.

6. Observe the temperature displayed on the instrument display panel. This temperature must read between 10 ^{0}C and 40 ^{0}C. The instrument will then display the current time and date and will move immediately into the automated test sequence.

7. During the automated test sequence the instrument display will show the following series of messages.

   ALTERNATING "<" AND ">" SYMBOLS
   The Alco-Sensor IV is monitoring the fuel cell output to ensure that the system is stable and free of alcohol.

   BLNK
   When unit displays BLNK, the unit runs a blank test and then displays the result of the test. ".000" will appear on the display if the fuel cell is free of alcohol. If not, the test sequence will void.

8. When "**TEST**" is displayed on the display panel, the Alco-Sensor IV is ready to take a sample of the subject's breath.

The officer should advise the subject as follows: "Place your mouth on the mouthpiece and blow long and steady until I tell you to stop."

The breath sample has to meet the following three criteria to assure the collection of an adequate sample of expired air. These criteria are:

a. The subject must blow with sufficient flow rate to sound the tone in the instrument and have a "+" appear on the instrument display.

b. During the breath flow, this flow rate must be maintained continuously until a minimum acceptable volume has been delivered.

c. The flow rate must then decrease as flow diminishes naturally from a subject. If the flow rate decreases too abruptly, the instrument will void the testing sequence and print "**Void: DEFICIENT SAMPLE**".
   If the sample is not sufficient for analysis, the display will have the message "**NOGO**". The subject has two more attempts to deliver an adequate breath sample before the testing sequence is voided.

The Alco-Sensor IV allows a 60 – 70 second window for the completion of a breath attempt. If three insufficient samples were delivered during this timeframe, the

instrument will void the testing sequence and print "**Void: INSF SAMP**". If a complete breath sample has simply not been acquired by the end of the three minutes, the Alco-Sensor IV will print "**Void: TIME OUT**".

If a suitable sample has been delivered, a single click will be heard by the operator.

As soon as an adequate breath sample has been delivered to the Alco-Sensor IV, the alternating "**<**" and "**>**" will reappear, indicating that the instrument is analyzing the breath sample. Once the instrument has completed analysis of the breath sample, it will beep for three (3) seconds while displaying the measured Breath Alcohol Concentration.

After the instrument is done displaying the measured BAC, the Alco-Sensor IV will show alternating "**.**" on the display as it sends the test sequence information to the attached printer.

9. Once the Alco-Sensor IV is done sending data to the printer, it will show the display message "**SET**". At this point depress the SET button to cock the sampling pump back into position for the next test sequence.

10. Tear off the test record and fill in subject and testing operator's information.

11. At this point, the instrument is done conducting a breath alcohol test. Press the red release button to eject the mouthpiece.

12. Turn off the printer.

13. Attach the printout to the "Operational Checklist: Alco-Sensor IV With Printer" and finish completing the Operational Checklist. Complete the certification portion of the checklist as appropriate.

Unless a copy of the evidence ticket is illegible, you should attach a copy of each separate evidence ticket obtained on a test subject.

Good hygiene suggests that a new mouthpiece be used for each separate breath test sequence performed on a test subject. A breath test, or breath test sequence, is a complete testing sequence from the starting of the test on the instrument until a printout of a test result or status code is achieved. This is different from a breath sample or attempt, which can occur multiple times during a single testing sequence depending upon a variety of factors such as a subject's willingness to cooperate, physical capabilities, officer instruction and coaching, etc. Always use a new mouthpiece for a different test subject.

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ALCO-SENSOR IV STATUS MESSAGES

Occasionally, a message, or status code, will appear on the screen or on the evidential printout of the Alco-Sensor IV. The following table is a list of status codes that may appear. If one of the status codes is received, please follow the recommended corrective action.

DISPLAYED MESSAGES

STATUS MESSAGE	CORRECTIVE ACTION
RFI!	Radio Frequency Interference (RFI) was detected. Find and remove the source of RFI and restart the test.
SET	The SET button needs to be depressed to cock the sampling pump.
NOGO	An insufficient sample was given. Subjects are given 3 attempts to deliver a proper sample before test is voided.
MEM/WARN	Warns that the internal memory is almost full.
MEM/FULL	The internal memory is full. Contact Type II to empty instrument memory before taking a subject's breath sample.
VOID	A condition not conducive to taking a breath sample exists. Turn the unit off and restart the testing sequence.
>.400	Sample concentration in excess of instrument limit (>0.400)
TMP>	Out of service. Contact Type II and go to another instrument.
TMP<	Out of service. Contact Type II and go to another instrument.

PRINTED MESSAGES

STATUS MESSAGE	CORRECTIVE ACTION
Void: RFI	Radio Frequency Interference (RFI) was detected. Find and remove the source of RFI and restart the test.
Void: SET PUSH	The SET button was depressed during the breath sample. Restart the testing sequence.
Void: DEFICIENT SAMPLE	The subject stopped blowing abruptly, rather than allowing the breath flow to slowly decrease as it ran out. Restart the test.
Void: INSF SAMP	Subject gave 3 insufficient samples and test was voided. Change mouthpiece and try again or request blood under implied consent.
Void: TIME OUT	A sufficient sample was not given during the time limit.
Subject Test: Man	The MANUAL button was depressed during breath sampling. This is not a valid test. Restart the testing sequence.

If any message appears on the display or on an evidential printout other than those listed above, discontinue use of the instrument and contact a Type II responsible for maintaining the instrument.

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BREATH ALCOHOL PROGRAM TYPE III OPERATOR MANUAL

SECTION 3-D

Intoxilyzer 8000 Operation Guide

INSTRUMENTATION

The Intoxilyzer 8000 is a forensic breath-testing device that measures ethanol (commonly termed "alcohol") and is based on the principles of infrared spectrometry. The Intoxilyzer 8000 accurately determines the amount of alcohol in expired breath at the time the test is administered. Breath alcohol concentration (BrAC) is directly proportional to blood alcohol concentration (BAC). This is an established scientific truth of great benefit to law enforcement. BrAC and BAC need not be compared, since both are equally reliable and established measures of intoxication.

Following recommendations by the National Safety Council's Committee on Alcohol and Other Drugs, the Department of Transportation established a conservative standard to legally define alcohol impairment while operating a motor vehicle. This standard is 0.080 grams of alcohol per 210 liters of breath (g/210 L) or per 100 milliliters of blood (g/100 mL). At this level of intoxication, there is well-founded agreement that any individual will be too impaired to drive safely.

It is important to remember that an arrest is not made on the basis of a breath test alone. It also depends on other factors, such as weaving on the roadway, odor of intoxicants, physical tests, and all those observations that gave you probable cause to believe the driver was under the influence of alcohol and/or drugs.

The Intoxilyzer 8000 has been used for the purpose of forensic breath alcohol concentration measurement in at least 18 different states and various other countries. The Intoxilyzer 8000 has been tested and approved prior to its use for evidential testing in Missouri by both the National Highway Traffic Safety Administration (NHTSA) and the Missouri Department of Health and Senior Services, and is listed on both the NHTSA Conforming Products List and in Missouri's Regulations 19 CSR 25-30.050, Approved Breath Analyzers.

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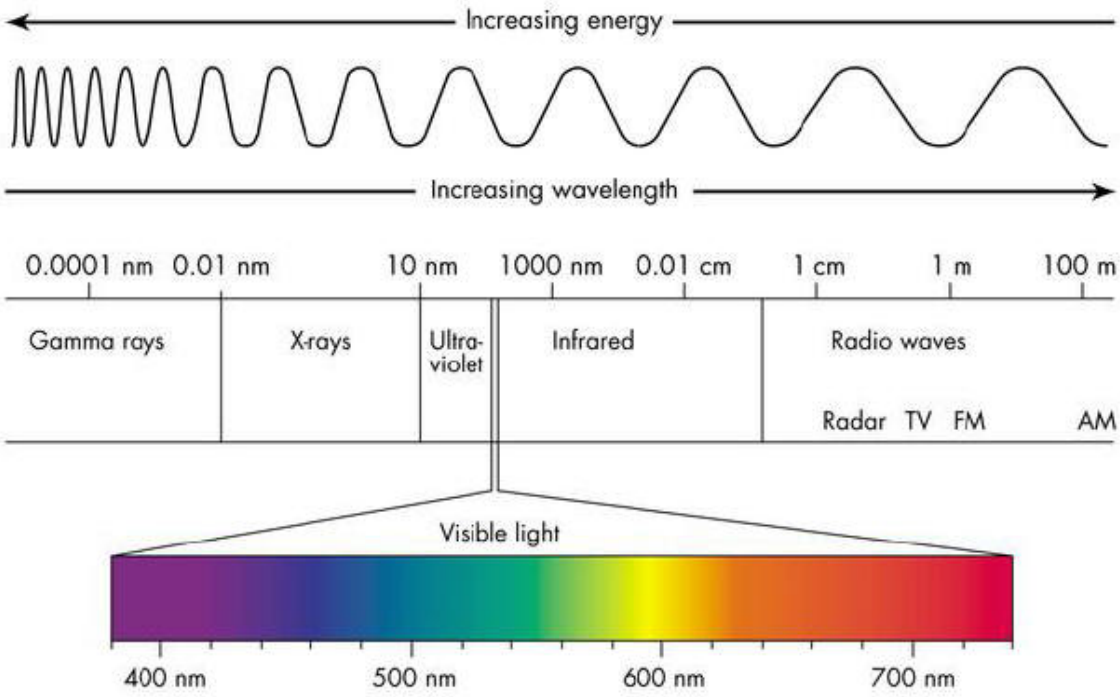
INFRARED SPECTROMETRY

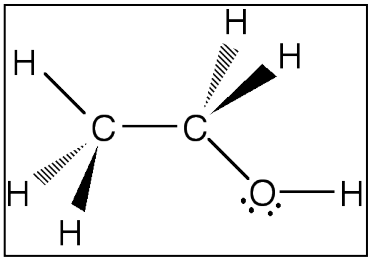
The basis of infrared breath analysis is the absorption of infrared energy by alcohol molecules in a breath specimen. Infrared radiation is a portion of the electromagnetic spectrum. Infrared wavelengths are longer than visible light and are not visible to the human eye. Spectrometry, an analytical method that measures the absorption of radiant energy by a substance, is widely used in the scientific community.

THE ELECTROMAGNETIC SPECTRUM



ETHANOL AND INFRARED ENERGY

Ethanol model



The ethanol molecule is composed of two carbon atoms, six hydrogen atoms, and one oxygen atom that are held together in a fixed order by chemical bonds. These chemical bonds absorb infrared energy in a specific and consistent manner. The specific wavelengths absorbed and the absorption pattern are unique, similar to a fingerprint, for a given molecule such as ethanol. The amount of infrared energy absorbed is proportional to the amount of ethanol present in a breath sample.

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DETERMINATION OF ALCOHOL CONCENTRATION

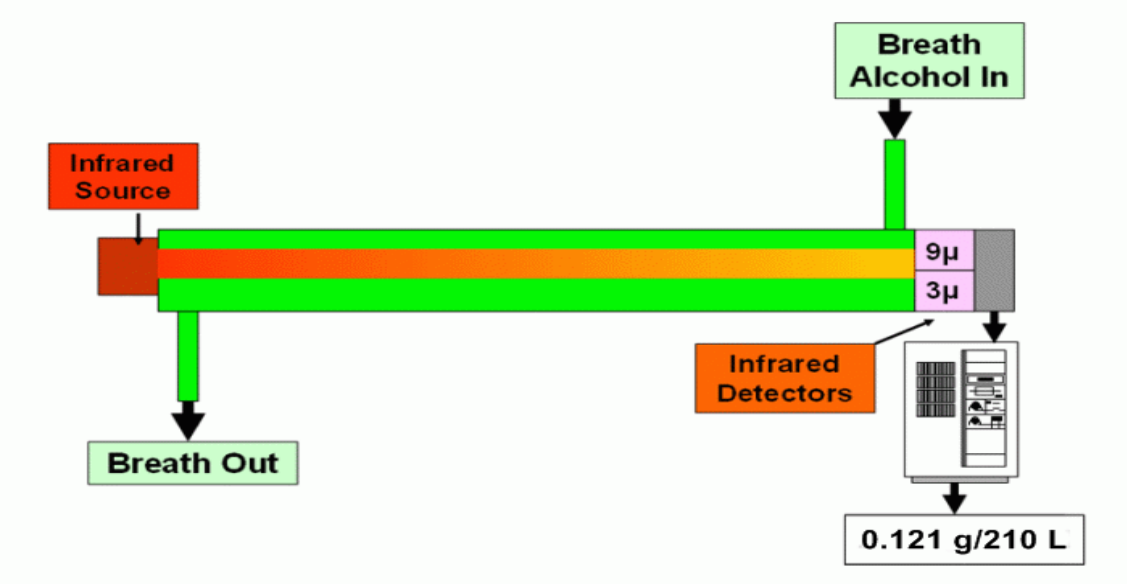
The Intoxilyzer 8000 uses a law of chemistry and physics known as the Beer-Lambert law to determine the alcohol concentration in a breath sample. The Beer-Lambert law states that the amount of energy absorbed by a particular substance is proportional to the number of absorbing molecules in the sample. The amount of infrared energy absorbed on a breath alcohol instrument is proportional to the amount of ethanol present in a breath sample introduced into the instrument sample chamber.

The breath sample enters the sample chamber of the 8000 where an infrared beam of light interacts with any ethanol present (see schematic diagram below). The amount of infrared energy absorbed in the sample chamber is then converted into the subject's BrAC. The 8000 automatically monitors breath flow rate, breath volume, and changes in the breath alcohol concentration to ensure a valid sample is obtained. The sample chamber of the Intoxilyzer 8000 is maintained at a steady temperature (approximately 47 °C) to prevent condensation.

If an improper environmental testing condition, an improper instrument testing condition, or if an operational mistake is detected at any point during the test, the Intoxilyzer 8000 will stop the analysis and invalidate the test. The reason for the invalidation will be displayed and printed; no analytical results will be printed.

The Intoxilyzer 8000 reports the measured alcohol concentration in grams of alcohol per 210 liters of breath, as specified by Missouri statute.

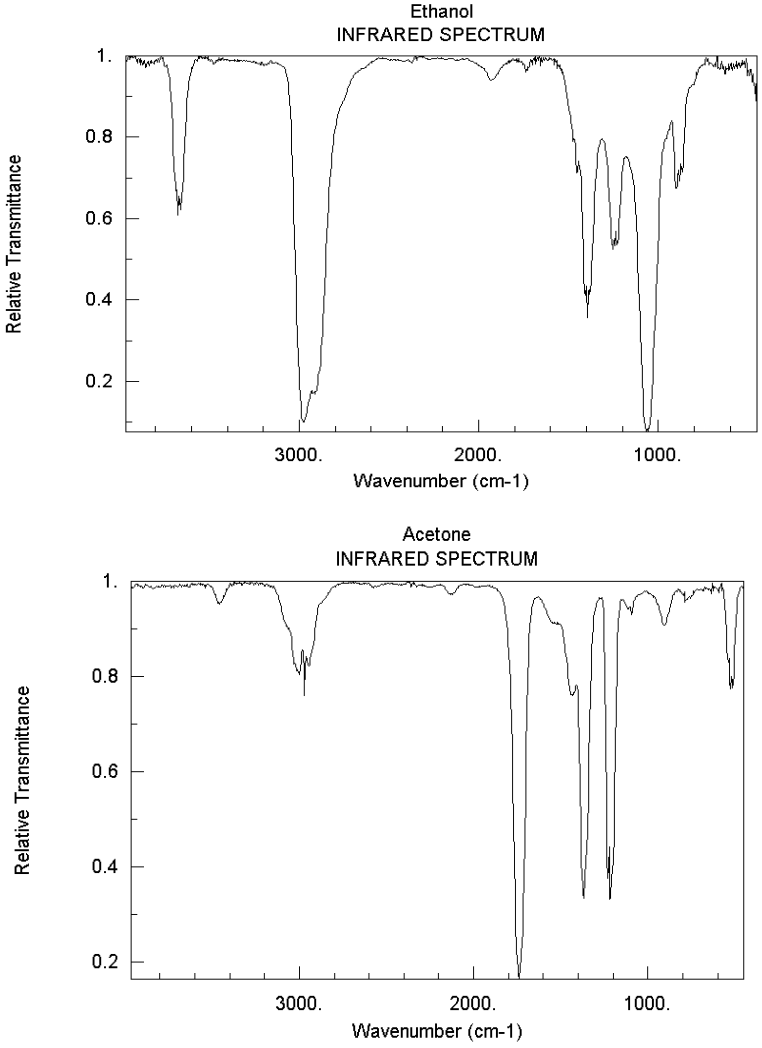
Diagram of Intoxilyzer 8000 Optical Bench



SPECIFICITY

The Intoxilyzer 8000 uses two different wavelengths of infrared energy to achieve specificity for the analysis of ethanol. Other substances, such as acetone, also absorb infrared energy at some of the same wavelengths as ethanol. However, no compound consistent with normal human breath will have the same ratio of absorption at these wavelengths of infrared energy as alcohols. When the Intoxilyzer 8000 detects these differing absorption patterns, it will invalidate the test due to the presence of an interfering substance, display "**INTERFERENT DETECT**", and print "**INTERFERENT DETECT**" on the Test Record. The Intoxilyzer 8000 will not identify or measure the amount of the interfering substance. It is important to show that acetone is not present since it could be found in the breath of someone in a state of ketosis, such as an untreated diabetic or someone on a prolonged fast.

INFRARED SPECTRUMS OF ETHANOL AND ACETONE



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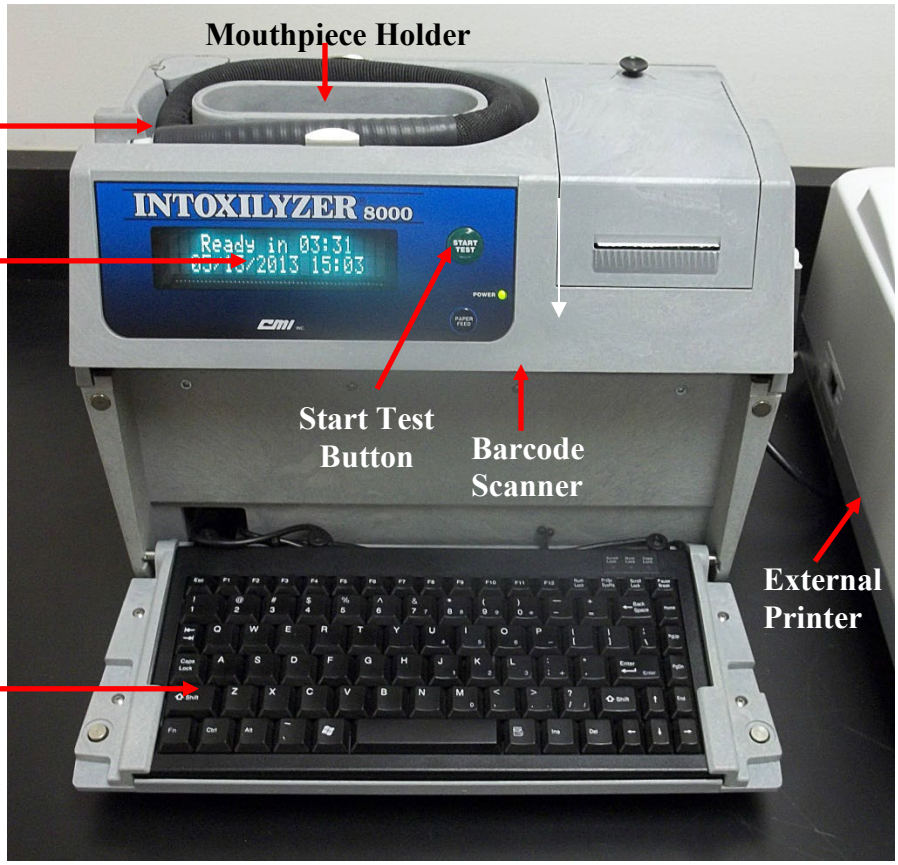
INTOXILYZER 8000 EXTERNAL COMPONENTS



The **Digital Display** communicates information and instructions from the instrument to the operator.

The **Breath Tube** is the heated, reinforced plastic tube located on the top of the instrument that functions as the transport mechanism for breath samples from the testing subject to the instrument. It is heated to prevent condensation of water vapor. All breath samples and the room air used in the air blank sequences are directed to the sample chamber through this tube.

The **Start Test Button**, which is the green button in the middle of the instrument, starts a breath test sequence.

The **Barcode Scanner**, located underneath the display, is used for scanning operator permit cards and subject driver licenses.

The **Mouthpiece Holder** is located on the top of the instrument and is heated so that mouthpieces can be kept at a comfortable temperature for test subjects.

The **Keyboard** is used for data entry and folds up and locks in place to help make the Intoxilyzer 8000 more portable.

The **External Printer** is used to print all test data from the instrument. *(Actual printer used may vary)*

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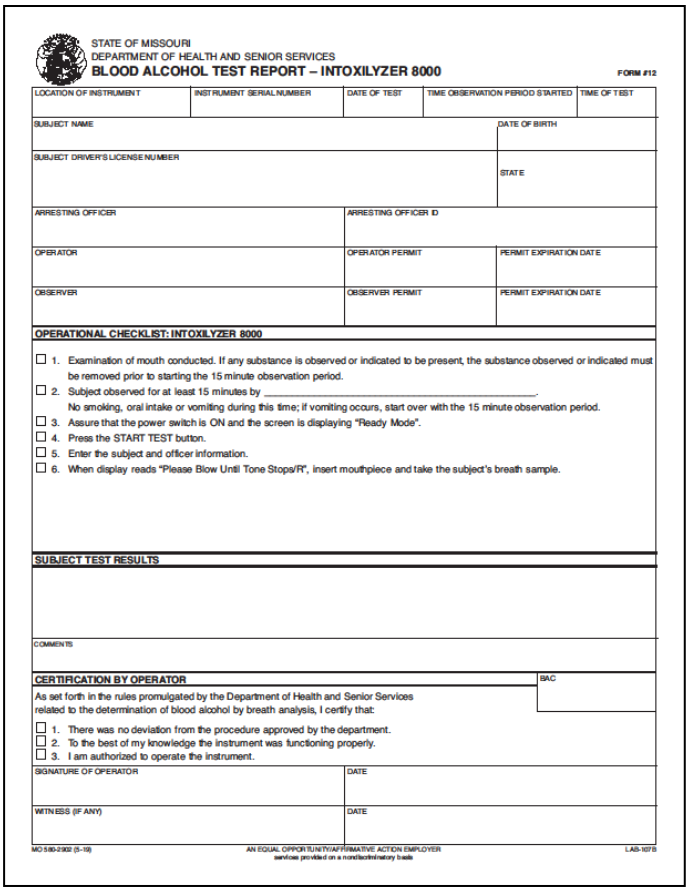
ADMINISTERING A SUBJECT TEST

To administer a subject test on the Intoxilyzer 8000 in Missouri, Form #12, "Blood Alcohol Test Report – Intoxilyzer 8000" must be completed. This form will be completed automatically by the 8000 during the breath test sequence, and a copy of the form will be printed at the end of the test sequence.



STATE OF MISSOURI
DEPARTMENT OF HEALTH AND SENIOR SERVICES
BLOOD ALCOHOL TEST REPORT – INTOXILYZER 8000 FORM #12

LOCATION OF INSTRUMENT	INSTRUMENT SERIAL NUMBER	DATE OF TEST	TIME OBSERVATION PERIOD STARTED	TIME OF TEST

SUBJECT NAME	DATE OF BIRTH
SUBJECT DRIVER'S LICENSE NUMBER	STATE

ARRESTING OFFICER	ARRESTING OFFICER ID	
OPERATOR	OPERATOR PERMIT	PERMIT EXPIRATION DATE
OBSERVER	OBSERVER PERMIT	PERMIT EXPIRATION DATE

OPERATIONAL CHECKLIST: INTOXILYZER 8000

☐ 1. Examination of mouth conducted. If any substance is observed or indicated to be present, the substance observed or indicated must be removed prior to starting the 15 minute observation period.
☐ 2. Subject observed for at least 15 minutes by _____.
No smoking, oral intake or vomiting during this time; if vomiting occurs, start over with the 15 minute observation period.
☐ 3. Assure that the power switch is ON and the screen is displaying "Ready Mode".
☐ 4. Press the START TEST button.
☐ 5. Enter the subject and officer information.
☐ 6. When display reads "Please Blow Until Tone Stops/R", insert mouthpiece and take the subject's breath sample.

SUBJECT TEST RESULTS

COMMENTS

CERTIFICATION BY OPERATOR BAC

As set forth in the rules promulgated by the Department of Health and Senior Services related to the determination of blood alcohol by breath analysis, I certify that:

☐ 1. There was no deviation from the procedure approved by the department.
☐ 2. To the best of my knowledge the instrument was functioning properly.
☐ 3. I am authorized to operate the instrument.

SIGNATURE OF OPERATOR	DATE
WITNESS (IF ANY)	DATE

MO 580-2302 (5-19) AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER services provided on a nondiscriminatory basis LAB-107S

1. The first step of the operational checklist is an examination of the subject's mouth. This examination can be performed in one of two ways: The officer can perform a limited visual examination of the subject's mouth, or the officer can ask the subject whether they have any substances in their mouth. Substances are defined as solid or liquid foreign matter, but does not include dentures, dental work, studs, piercings, or tongue jewelry. Once this examination has been completed, the officer may begin the observation period.

2. An officer with a valid Type II or Type III permit must observe the subject for a minimum of fifteen (15) minutes. The observation period must be continuous and does not end until a breath sample has been provided into the breath analyzer. The officer must remain close enough to the subject during the observation period to reasonably ensure, using the senses of sight, hearing, or smell, that the test subject does not smoke, vomit, or have any oral intake. While the officer must remain close enough to the subject to do this, direct observation is not necessary ensure the test validity or accuracy. The permit holder should carefully observe the subject during both the fifteen-minute observation period as well as while the subject is providing his/her breath sample into the instrument, so that the subject's actions, demeanor, and behavior can be documented.

3. Assure that the power switch is ON and the screen is displaying "READY MODE". If the 8000 is not on, turn it on and allow it to warm up (approximately 15 – 20 minutes). Make sure that the printer is turned on as well.

   If the Intoxilyzer 8000 screen is displaying "STANDBY MODE", press the start button. It takes approximately two minutes for the 8000 to move from 'standby' to 'ready'. The first minute warms up system components. The second minute runs a system diagnostic check.

Once the 8000 is ready to conduct tests, the scrolling display will show the "READY MODE" message.

4. At this point, press the Start Test button to initiate the instrument test sequence.

5. The instrument will first display "Evidential or Training (E/T)?". If you are doing self-tests for a permit, press T on the keyboard. If you are conducting a breath test on a subject, press E on the keyboard.

6. To begin entering officer and subject data, the instrument will then display "Please scan ID or press enter". If you are using an Operator Card, place the card in the optical path of the reader and it will automatically input the operator's information. Otherwise, hit the enter button on the display and complete the following questions.
    a. Operator Name:
    b. Operator Permit Number:
    c. Permit Expiration Date: *(mm/dd/yyyy) format*

    At this point the operator has manually entered the same information that would have been read from an operator card. All operators will then be asked the following questions:
    d. Observer = Operator? *(default "Y")*
    e. Observer Name? *(if hit Y on Observer = Operator?, auto-filled)*
    f. Permit Number? *(if hit Y on Observer = Operator?, auto-filled)*
    g. Permit Exp. Date? *(if hit Y on Observer = Operator?, auto-filled)*
    h. Arresting Officer Name:
    i. Arresting Officer ID Number:
    j. Witness Name (*If there was a witness to the test)*

    The instrument will next display "Please scan DL or press enter". If you have the subject's driver's license, place the license with the bar code in the optical path of the reader and it will automatically input the subject's information. Otherwise, hit the enter button on the display and complete the following questions.
    k. Subject Name:
    l. Subject Date of Birth: *(mm/dd/yyyy) format*
    m. Subject Drivers License Number:
    n. DL State of Issue:

The display will then ask: "REVIEW DATA? Y/N". If the officer wishes to correct a mistake made during the data entry, or merely wishes to review the data, hit **Y** and then the ENTER button on the keyboard and the instrument will send the officer back through each of the questions a – n listed above. Once the officer is satisfied with the data, he should hit the **N** and then the ENTER button on the keyboard.

The last question asked before the instrument initiates the test sequence in "Observation Start?". The default value input by the instrument is the current time. The operator should put in the

correct time that the observation period was begin and hit the enter button. At this stage the instrument will move out of data entry and into the automated test sequence.

During the automated test sequence the instrument display will show the following series of messages.

PURGING and AIR BLANK
All chambers and internal plumbing are cleansed of any residual substances by ambient (room) air that is pulled in through the Breath Tube and pumped throughout the instrument by an internal pump. This is done before the diagnostic check, before a subject sample and after a subject sample to ensure that the instrument is clean of any residual alcohol from previous tests. After the initial purging, the 8000 measures the amount of infrared light that is striking the detector when only room air is in the sample chamber. It uses this to establish a "zero reference" point.

DIAGNOSTIC CHECK
The Intoxilyzer 8000 then runs a diagnostic check to ensure that all instrument systems are operating correctly. After this diagnostic check, a second Air Blank is taken.

INTERNAL REFERENCE CHECK
The last part of the automated test sequence prior to a subject giving a breath sample is the internal reference check. The internal reference check ensures that the measured signal is consistent with the reference created at the time of calibration.

7. After the Intoxilyzer 8000 has successfully cycled through these steps of the automatic test sequence, the instrument will display "PLEASE BLOW/R UNTIL THE TONE STOPS" initially, followed with the displayed message "PLEASE BLOW/R**"**, accompanied by an intermittent beeping tone. If the subject refuses, hit the "R" button on the keyboard. The instrument will print, "Subject Test Refused" on the BAC test report and terminate the test sequence. If the subject is not refusing to take the breath test, insert a mouthpiece into the Breath Tube and have the subject blow at this time.

The officer should advise the subject as follows: "***Place your mouth on the mouthpiece and blow long and steady into the tube until I tell you to stop***."

The breath sample has to meet the following three criteria to assure the collection of an adequate sample of expired breath. These criteria are:

a. A minimum breath flow rate must be maintained until the minimum breath volume has been delivered.
b. During the breath sample, the minimum flow rate must be maintained continuously for a minimum time and minimum sample volume.
c. The breath alcohol concentration must show that it has reached end-expiratory air.

The Intoxilyzer 8000 allows a three-minute window for the providing a complete breath sample. If a complete breath sample has not been acquired by the end of the three minutes, the Intoxilyzer 8000 will print "DEFICIENT SAMPLE".

After the subject has finished giving a valid breath sample and the breath flow rate decreases to below the sampling threshold, the instrument will finish the analysis of the breath sample. The instrument will then complete another "Air Blank".

Once the breath test and all operational steps performed by the instrument are completed and all test results have been accepted by the instrument, the Intoxilyzer 8000 will then ask the operator to input any comments to be printed on the test report. The operator will then be asked to certify the test results by answering the operator certification questions both on the operational checklist as well as on the bottom of the BAC test report.

After the test certifications have been completed, the external printer of the Intoxilyzer 8000 will print both the BAC Test Report Form as well as an unsigned copy of the most recent maintenance report.

Good hygiene suggests that a new mouthpiece be used for each separate breath test sequence performed on a test subject. A breath test, or breath test sequence, is a complete testing sequence from the starting of the test on the instrument until a printout of a test result or status code is achieved. This is different from a breath sample or attempt, which can occur multiple times during a single testing sequence depending upon a variety of factors such as a subject's willingness to cooperate, physical capabilities, officer instruction and coaching, etc. Always use a new mouthpiece for a different test subject.

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INTOXILYZER 8000 STATUS MESSAGES

Occasionally, a status message (or code) will appear on the screen and/or on a BAC Test Report. The following table is a list of status messages that may appear. If one of these messages is received, please follow the recommended corrective action.

Note: The only status message that requires an additional oral examination and observation period is "Invalid Sample".

STATUS MESSAGE	CORRECTIVE ACTION
DISABLED MODE	Out of service. Contact Type II and go to another instrument.
RFI DETECT	Find and remove source of RFI and attempt another test. If you cannot find the source, request a blood sample under implied consent.
INVALID SAMPLE	Check mouth, wait an additional 15 minutes, try one or more tests. If unsuccessful, request blood sample under implied consent.
INTERFERENT DETECT	Try one more test. If interference is detected on the second test, request blood under implied consent.
DEFICIENT SAMPLE	A complete and valid breath sample was not provided in the time allotted. If the subject was trying to comply, try another test or ask them for blood under implied consent. If the subject is refusing, clearly document why it is a refusal.
AMBIENT FAIL and PURGE FAIL	Check for odors, check to see if mouthpiece was removed, try one or more tests. If unsuccessful, contact Type II.
NO SAMPLE GIVEN	No breath was provided by subject during the time allotted.
VOLTAGE/CURRENT FAILURE	Instrument out of service. Contact Type II and go to another instrument.
TEMPERATURE FAILURE	Instrument out of service. Contact Type II and go to another instrument.
EEPROM FAILURE	Instrument out of service. Contact Type II and go to another instrument.
RAM FAILURE	Instrument out of service. Contact Type II and go to another instrument.

If any status code appears on the display or on a BAC Test Report other than those listed above, discontinue use of the instrument and contact a Type II responsible for maintaining the instrument.

RULES OF

Department of Health and Senior Services

Division 25—Missouri State Public Health Laboratory

Chapter 30—Determination of Blood Alcohol by Blood, Breath, Saliva, and Urine Analysis; and Determination for the Presence of Drugs in Blood, Saliva, and Urine

TITLE 19 — DEPARTMENT OF HEALTH AND SENIOR SERVICES
Division 25 — Missouri State Public Health Laboratory
Chapter 30 — Determination of Blood Alcohol by Blood, Breath, Saliva, and Urine Analysis; and Determination for the Presence of Drugs in Blood, Saliva, and Urine

19 CSR 25-30.011 General Provisions for the Determination of Blood, Breath, Saliva, or Urine Analysis and Drug Testing

PURPOSE: This rule provides general information regarding the applicability of the rules in this chapter, definitions of terms, permits, and operation of breath analyzers.

(1) Only those laboratories or persons performing analysis of blood, breath, saliva, or urine for the determination of blood alcohol content, or of blood, saliva, or urine for the presence of drugs — at the direction of a law enforcement officer acting under the provisions of sections 577.001–577.041, RSMo — are subject to the rules in this chapter.

(2) The following definitions shall be used in the interpretation and enforcement of the rules in this chapter:

(A) Blood alcohol content is the alcohol content of blood expressed as a percentage based on grams of alcohol per one hundred (100) milliliters of blood or grams of alcohol per two hundred ten (210) liters of breath;

(B) Breath analyzer is an instrument which measures and expresses the blood alcohol content from a sample of expired air;

(C) Department is the Missouri Department of Health and Senior Services;

(D) Drugs are illegal or controlled chemical substances, other than alcohol, that are capable of impairing an individual's ability to operate a motor vehicle;

(E) Field service and repairs are the service and repairs on breath analyzers at locations other than at a manufacturer's facility;

(F) Maintenance checks are the standardized and prescribed procedures used to determine that a breath analyzer is functioning properly and is operating in accordance with the operational procedures established by the Department of Health and Senior Services;

(G) Permit is the written authorization from the Department of Health and Senior Services for an individual to perform analyses of blood, breath, saliva, or urine for blood alcohol content; to perform analyses of blood, saliva, or urine for drugs; to operate breath analyzers; to supervise operators of breath analyzers; to serve as instructors of training courses; and to perform field service and repairs and maintenance checks on breath analyzers;

(H) Observation period is the minimum fifteen- (15-) minute continuous period that ends when a breath sample has been provided into the approved breath analyzer, during which time the operator shall remain close enough to a subject to reasonably ensure, using the senses of sight, hearing, or smell, that a test subject does not smoke, vomit, or have any oral intake during the fifteen- (15-) minute observation period. Direct observation is not necessary to ensure the validity or accuracy of the test result;

(I) Oral intake is the act of placing a substance from outside the body into the mouth during the observation period. The mouthpiece used to provide a breath sample shall not constitute oral intake;

(J) Vomiting is the act of ejecting the solid and/or liquid contents of the stomach through the mouth, and does not include belching or burping;

(K) Examination is a limited visual examination of a test subject's mouth and/or denial by a subject that he or she has any substance in his or her mouth; and

(L) Substance is any foreign matter, solid or liquid, not to include dentures, dental work, studs, piercing, or tongue jewelry.

(3) The chemical analysis of a person's blood, breath, saliva, or urine conducted under the provisions of sections 577.001–577.041, RSMo, shall be performed by licensed medical personnel or by personnel possessing a valid permit issued by the department.

(A) Permits are valid for two (2) years from the date of issuance.

(B) A permittee is authorized to perform only those tests for analysis, or to operate or maintain those breath analyzers that are specified on the permit.

(C) A permit may not be used as an endorsement from the department for promotional or commercial purposes.

(4) Applications for permits and renewals of permits shall be made on forms available from the Breath Alcohol Program, Missouri State Public Health Laboratory. Forms are also available at http://health.mo.gov/lab/breathalcohol/. Requests for approval of instruments, methods, or training courses shall be made to the director, Missouri State Public Health Laboratory, c/o Breath Alcohol Program. Requests for copies of permits, submitted maintenance records, submitted permit applications, and simulator certifications shall also be made to the director, Missouri State Public Health Laboratory, c/o Breath Alcohol Program. Criteria and standards used for certification and approval purposes shall be provided upon request by the Missouri State Public Health Laboratory.

(5) Breath analyzers shall be operated strictly in accordance with the procedures set forth in 19 CSR 25-30.060.

(A) An operational checklist, including the certification section, shall be completed with each breath test at the time of the test, by the individual performing the test.

(B) An individual permitted to operate a breath analyzer shall —

1. Immediately suspend use of a breath analyzer that is not functioning properly; and

2. Submit to periodic reviews, examinations or surveys conducted by the department.

(6) The department may initiate proceedings to deny, suspend, or revoke a permit when there is evidence of false or misrepresented information given on an application or renewal for a permit; when there is evidence that the permittee has falsified reports, negligently performed analyses or reported results, used an instrument or method not approved by the department, performed analyses not authorized by the permit, or has used the permit for promotional or commercial purposes; or when the permittee has demonstrated an inability to accurately and properly perform analyses or satisfactorily meet the qualifications and competence standards required of the permit.

(A) The department shall provide written notice of the disciplinary action to the permittee and the employee of the permittee.

(B) The notice shall contain a summary of the evidence supporting the disciplinary action.

AUTHORITY: sections 192.006, 577.020, and 577.037, RSMo 2016. This rule previously filed as 19 CSR 20-30.011. Original rule filed July 15, 1988, effective Sept. 29, 1988. Changed to 19 CSR 25-30.011*

Jan. 1, 1995. Emergency amendment filed May 10, 2001, effective May 22, 2001, expired Nov. 17, 2001. Amended: Filed May 10, 2001, effective Oct. 30, 2001. Amended: Filed May 31, 2012, effective Dec. 30, 2012. Amended: Filed Oct. 1, 2019, effective March 30, 2020.

**Original authority: 192.006, RSMo 1993, amended 1995; 577.020, RSMo 1977, amended 1982, 1983, 1996, 1998, 2001, 2006, 2014; and 577.037, RSMo 1982, amended 1983, 1988, 1993, 1996, 2001, 2014, 2016.*

*C**ollins v. Director of Revenue**, 691 S.W.2d 246 (Mo. banc. 1985); **Jannett v. King**, 687 S.W.2d 252 (Mo. App. 1985); **Stuart v. Director of Revenue**, 761 S.W.2d 234 (Mo. App. 1988). **Prima facie** case for admission of breath analysis test results is made if the test is administered by a certified operator in accordance with promulgated operating procedures.*

***Collins v. Director of Revenue,** 691 S.W.2d 246 (Mo. banc 1985); **Stuart v. Director of Revenue**, 761 S.W.2d 234 (Mo. App. 1988). A contention that a breath analysis instrument was not functioning properly can only be made if supported by some evidence which suggests that a malfunction occurred despite adherence to correct test methods.*

***Williams v. Director of Revenue**, 721 S.W.2d 797 (Mo. App. 1986). The results of approved breath analysis tests are measured by weight.*

***Daniels v. Director of Revenue**, 48 S.W.3d 42 (Mo. App. 2001), overruled on other grounds by **Verdoorn v. Director of Revenue**, 119 S.W.3d 543 (Mo. 2003). "Belching" does not constitute "vomiting" because stomach contents are not disgorged through the mouth.*

***Misener v. Director of Revenue**, 134 S.W.3d 761 (Mo. App. 2004). Subject waived any defense based upon the breath test result being contaminated by an antacid tablet in his mouth because he did not respond truthfully when asked whether he was taking any medication.*

19 CSR 25-30.021 Type I Permit

PURPOSE: This rule establishes the qualifications, duties, and responsibilities of a Type I permittee and the standards for laboratories in which Type I permittees perform testing.

(1) A Type I permit, included herein, authorizes an individual to perform analyses of blood, saliva, or urine for blood alcohol content and to perform analyses of blood, saliva, or urine for the presence of drugs.

(2) An applicant for a Type I permit shall not be less than twenty-one (21) years of age and shall possess a baccalaureate degree in chemical, physical, or biological science from an accredited college or university. The applicant shall also complete an application for a Type I permit, included herein.

(A) To perform analyses of blood, saliva, or urine for drugs or blood alcohol content, the applicant shall have performed a biennial forensic proficiency test provided by an outside company for each type of substance, alcohol, or drugs, for which a permit is requested. A copy of the proficiency test results achieved shall accompany the permit application.

(B) If the applicant does not perform proficiency tests, the applicant may qualify for a permit to perform analysis of blood, saliva, or urine for blood alcohol content by satisfactorily analyzing three (3) check specimens provided from the department. The results reported on the three (3) samples shall be within five percent (5%) of the true value. A second set of three (3) check samples shall be sent to the applicant if the results from the first set were unsatisfactory. If the results from the second set of check samples are unsatisfactory, the department shall return the application. Any further efforts to meet this condition for completion of the application shall be made at the discretion of the department based on the nature of the problem; the ability of the applicant; and the facility, equipment, and methods that were employed. A copy of the check specimen results achieved shall accompany the permit application.

(3) Laboratories wherein analyses are performed by Type I permit holders shall maintain complete records of testing, quality assurance data, logbooks, and other documentation related to the performance of tests as established under general standards of laboratory practice and chain-of-custody procedures.

(A) Laboratories wherein analyses are performed by Type I permit holders shall be subject to audits by the department regarding any and all records referenced herein.

(B) Laboratories that perform analyses of blood, saliva, or urine for the presence of drugs shall hold a forensic drug testing accreditation through the College of American Pathologists (CAP), an accreditation through the American Board of Forensic Toxicologists (ABFT), or an accreditation through an accreditation body that is a signatory of the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC MRA). This accreditation shall include an annual forensic proficiency test on each biological matrix (blood, saliva, or urine) tested. A copy of the certification for each laboratory shall be supplied to the Missouri State Public Health Laboratory upon request.

(4) Type I permits issued prior to the effective date of this rule shall be considered valid under the conditions of this rule.

(5) Type I permit applications completed prior to the effective date of this rule shall be considered valid under the conditions of this rule.

MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES
STATE PUBLIC HEALTH LABORATORY
BREATH ALCOHOL PROGRAM

APPLICATION FOR TYPE I PERMIT

1

THIS APPLICATION IS FOR ☐ NEW PERMIT ☐ RENEWAL	CURRENT PERMIT NUMBER AND EXPIRATION DATE		
PRINT FULL NAME		AGE	TELEPHONE NUMBER ( )
SOCIAL SECURITY NUMBER	A disclosure concerning your SSN number is available at: http://www.health.mo.gov/lab/breathalcohol/		
ORGANIZATION		EMAIL ADDRESS	
BUSINESS ADDRESS (STREET, CITY, STATE, ZIP CODE)			
DIRECTOR'S NAME			TELEPHONE NUMBER ( )
ALCOHOL ANALYSIS:	☐ BLOOD	☐ URINE	☐ SALIVA
DRUG ANALYSIS:	☐ BLOOD	☐ URINE	☐ SALIVA

FOR DRUG TESTING ONLY

PROVIDE NAME OF PROFICIENCY TESTING PROGRAM(S) YOUR FACILITY SUBSCRIBES TO

EDUCATION

COLLEGE OR UNIVERSITY	YEARS ATTENDED	HOURS QTRS/SEM.	MAJOR	MINOR	DEGREE	GRADUATED

OTHER RELEVANT TRAINING

COURSE OR PROGRAM TITLE	AGENCY OR INSTITUTION	DATES

ANALYTICAL EXPERIENCE

ORGANIZATION	DATES EMPLOYED

RESULTS OF SAMPLES FOR ANALYSIS:

METHODS OF ANALYSIS USED

DRUGS

- ☐ Enzyme Immunoassay (EIA)
- ☐ Radioimmunoassay (RIA)
- ☐ Thin Layer Chromatography (TLC)
- ☐ High-Performance Liquid Chromatography (HPLC)
- ☐ Liquid Chromatography/Mass Spectrometry (LC/MS)
- ☐ Cloned Enzyme Donor Immunoassay (CEDIA)
- ☐ Ultra-Violet/Visible Spectrophotometry (UV/Vis)
- ☐ Gas Chromatography/Mass Spectrometry (GC/MS)
- ☐ Fluorescence Polarization Immunoassay (FPIA)
- ☐ Gas Chromatography (GC)
- ☐ Enzyme-Linked Immunosorbent Assay (ELISA)
- ☐ Other _____

ALCOHOL

- ☐ Gas or Liquid Chromatography
- ☐ Other _____

SIGNATURE OF APPLICANT ▸	DATE

RETURN COMPLETED APPLICATION TO THE: Breath Alcohol Program, Missouri Department of Health and Senior Services, 1903 Northwood Drive, Suite #4, Poplar Bluff, MO 63901

MO 580-0777 (5-19) LAB. 1 (7-16)

STATE OF MISSOURI
DEPARTMENT OF HEALTH AND SENIOR SERVICES
BREATH ALCOHOL PROGRAM

1

PERMIT
TYPE 1

_____

is hereby authorized to determine the content of _____
(TYPE IN "ALCOHOL" OR "DRUGS" OR BOTH)

from a sample of _____ utilizing approved standard chemical methods.
(TYPE IN "BLOOD," "SALIVA" OR "URINE")

Permit issued under the provisions of sections 577.001 through 577.041, RSMo.

DATE _____

_____
DIRECTOR OF STATE PUBLIC HEALTH LABORATORY

NUMBER _____

EXPIRES _____

_____
DIRECTOR OF DEPARTMENT OF HEALTH AND SENIOR SERVICES

MO 580-1242 (5-19)

LAB-2 (5-19)

STATE OF MISSOURI
DEPARTMENT OF HEALTH AND SENIOR SERVICES
BREATH ALCOHOL PROGRAM

1

PERMIT
TYPE 1

_____

is hereby authorized to determine the content of _____
(TYPE IN "ALCOHOL" OR "DRUGS" OR BOTH)

from a sample of _____ utilizing approved standard chemical methods.
(TYPE IN "BLOOD," "SALIVA" OR "URINE")

Permit issued under the provisions of sections 577.001 through 577.041, RSMo.

DATE _____

_____
DIRECTOR OF STATE PUBLIC HEALTH LABORATORY

NUMBER _____

EXPIRES _____

_____
DIRECTOR OF DEPARTMENT OF HEALTH AND SENIOR SERVICES

MO 580-1242 (5-19)

LAB-2 (5-19)

AUTHORITY: sections 192.006, 577.020, and 577.037, RSMo 2016. This rule previously filed as 19 CSR 20-30.021. Original rule filed July 15, 1988, effective Sept. 29, 1988. Changed to 19 CSR 25-30.021 Jan. 1, 1995. Amended: Filed May 31, 2012, effective Dec. 30, 2012. Amended: Filed Oct. 1, 2019, effective March 30, 2020. Amended: Filed Nov. 1, 2022, effective June 30, 2023.*

**Original authority: 192.006, RSMo 1993, amended 1995; 577.020, RSMo 1977, amended 1982, 1983, 1996, 1998, 2001, 2006, 2014; and 577.037, RSMo 1982, amended 1983, 1988, 1993, 1996, 2001, 2014, 2016.*

***Stuart v. Director of Revenue**, 761 S.W.2d 234 (Mo. App. 1988). A Type II permittee is qualified to testify as an expert on technical matters and permissible temperature tolerances.*

***Miller v. Director of Revenue**, 719 S.W.2d 787 (Mo. banc 1986); **Elkins v. Director of Revenue**, 728 S.W.2d 567 (Mo. App. 1987). Possession of a permit is a matter within the personal knowledge of the permittee. Testimony by a permittee is sufficient to prove the permittee's qualifications to administer the tests.*

19 CSR 25-30.031 Type II Permit

PURPOSE: This rule establishes the qualifications, duties, and responsibilities of a Type II permittee and establishes a maintenance report to be used for each of the approved breath analyzers in 19 CSR 25-30.050.

(1) A Type II permit, included herein, authorizes an individual to operate a breath analyzer and to perform any of the following duties: to conduct training courses for the operation of breath analyzers that are approved by the department, to conduct training courses approved by the department to qualify for a Type II permit, to perform field service and repairs on breath analyzers as indicated on the permit, to perform maintenance checks on breath analyzers as required by the department, and to supervise operators of breath analyzers.

(2) An applicant for a Type II permit shall not be less than twenty-one (21) years of age. In addition, the applicant successfully shall complete a training course approved by the department for obtaining a Type II permit and complete an application for a Type II permit, included herein.

(3) A Type II permittee shall perform maintenance checks on breath analyzers under his/her supervision at intervals not to exceed thirty-five (35) days. The permittee shall retain the original report of the maintenance check and submit a copy of the report so that it shall be received by the department within fifteen (15) days from the date the maintenance check was performed. In addition, maintenance checks shall be completed when –

(A) A new instrument is placed into service; or

(B) The instrument has been serviced, repaired, or recalibrated.

(4) Type II permittees shall maintain complete records as required in 19 CSR 25-30.021(3) and in 19 CSR 25-30.011(5)(A). Type II permittees shall provide oversight and assistance to assure the competency of the operators under their supervision. They shall conduct training courses as approved by the department.

(5) To renew a Type II permit, the applicant shall have completed at least two (2) maintenance checks and at least ten (10) tests on drinking subjects, following the operational checklists, within the past year on each breath analyzer for which renewal is requested. If these conditions are not met or if the permit has expired for more than thirty (30) days, the applicant shall perform two (2) maintenance checks and five (5) self-administered tests for each breath analyzer for which renewal is requested. Copies of the maintenance checks and the operational checklists and printouts for the five (5) self-administered tests shall accompany the application for renewal.

(6) Type II permits issued prior to the effective date of this rule shall be considered valid under the conditions of this rule.

(7) For the maintenance checks referred to in sections (3)–(5) of this rule, the appropriate maintenance report form for the specific instrument being checked shall be used –

(A) When performing a maintenance check on the Intox DMT, the report incorporated in the instrument software shall be used (see Report No. 1 included herein for example);

(B) When performing a maintenance check on the CMI Intoxilyzer 8000, the report incorporated in the instrument software shall be used (see Report No. 2 included herein for example);

(C) When performing a maintenance check on the Intox EC/IR II, the report incorporated in the instrument software shall be used (see Report No. 3 included herein for example); and

(D) When performing a maintenance check on the Alco-Sensor IV with printer, Report No. 7 included herein shall be used.

(8) Maintenance report forms required in section (7) of this rule prior to the effective date of this rule and completed on maintenance checks before that date shall be considered valid under this rule. Maintenance report forms completed on maintenance checks within ninety (90) days after the effective date of this rule shall be considered valid if the maintenance checks and maintenance report forms were completed in compliance with the rules in effect at the time the checks and forms were completed or the rules in effect immediately prior to the effective date of this rule.

(9) Type II permit applications completed prior to the effective date of this rule shall be considered valid under the conditions of this rule.

MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES
STATE PUBLIC HEALTH LABORATORY
BREATH ALCOHOL PROGRAM

APPLICATION FOR TYPE II PERMIT FOR OPERATION OF BREATH ALCOHOL ANALYZERS

THIS APPLICATION IS FOR ☐ NEW PERMIT ☐ RENEWAL	CURRENT PERMIT NUMBER AND EXPIRATION DATE	
PRINT FULL NAME	TITLE	AGE
SOCIAL SECURITY NUMBER	A disclosure concerning your SSN number is available at: http://www.health.mo.gov/lab/breathalcohol/	
DEPARTMENT OR TROOP	TELEPHONE ( )	
BUSINESS ADDRESS (STREET, CITY, STATE, ZIP CODE)		
EMAIL ADDRESS		

LIST ALL ORIGINAL TRAINING COURSES FOR OPERATION OF BREATH ANALYZERS
(Also, please place a checkmark beside ALL breath analyzer(s) for which you are requesting a permit.)

DATES OF COURSE	LOCATION OF COURSE	COURSE LENGTH (HRS.)	NAME & MODEL OF BREATH ANALYZER	PLACE A ✓ BESIDE INSTRUMENTS FOR WHICH YOU REQUEST	NAME OF INSTRUCTOR
				☐	
				☐	
				☐	
				☐	

List the manufacturer and name of instruments for which you are currently performing maintenance reports on and the number of maintenance reports performed on EACH type in the last year.

MANUFACTURER AND NAME OF INSTRUMENT	NUMBER OF MAINTENANCE REPORTS	NUMBER OF SUBJECT TESTS
1.		
2.		
3.		

When adding a new instrument, you receive a new two (2) year permit. Therefore, normal renewal procedures apply for the instrument(s) on your current permit that you wish to transfer to the new permit. Disregarding these renewal procedures will result in a new permit for the new instrument only.

To renew a Type II Permit, the applicant shall have completed two (2) Maintenance Reports and shall have performed at least ten (10) tests on drinking subjects in the past year on each instrument for which renewal is requested. If these conditions are not met, or the permit has expired for more than thirty (30) days, the applicant shall perform two (2) Maintenance Reports and five (5) self-administered tests for each breath analyzer for which renewal is requested. Copies of the Maintenance Reports along with the Operational checklists and printouts for the five (5) self-administered tests shall accompany the application for renewal.

SIGNATURE OF APPLICANT ▸	DATE

RETURN COMPLETED APPLICATION TO THE: Breath Alcohol Program, Missouri Department of Health and Senior Services
1903 Northwood Drive, Suite #4
Poplar Bluff, MO 63901

MO 580-0767 (5-19) LAB-3

STATE OF MISSOURI

DEPARTMENT OF HEALTH AND SENIOR SERVICES

BREATH ALCOHOL PROGRAM

PERMIT

TYPE II

2

_____

is hereby authorized to instruct and supervise operators, train instructors, inspect, calibrate, perform field service and repairs, and operate the following breath analyzer(s):

_____

for the determination of the alcoholic content of blood from a sample of expired air. Permit issued under the provisions of sections 577.001 through 577.041, RSMo.

DATE _____

_____
DIRECTOR OF STATE PUBLIC HEALTH LABORATORY

NUMBER _____

EXPIRES _____

_____
DIRECTOR OF DEPARTMENT OF HEALTH AND SENIOR SERVICES

MO 580-0771 (5-19) LAB-4 (R5-19)

STATE OF MISSOURI

DEPARTMENT OF HEALTH AND SENIOR SERVICES

BREATH ALCOHOL PROGRAM

PERMIT

TYPE II

2

_____

is hereby authorized to instruct and supervise operators, train instructors, inspect, calibrate, perform field service and repairs, and operate the following breath analyzer(s):

_____

for the determination of the alcoholic content of blood from a sample of expired air. Permit issued under the provisions of sections 577.001 through 577.041, RSMo.

DATE _____

_____
DIRECTOR OF STATE PUBLIC HEALTH LABORATORY

NUMBER _____

EXPIRES _____

_____
DIRECTOR OF DEPARTMENT OF HEALTH AND SENIOR SERVICES

MO 580-0771 (5-19) LAB-4 (R5-19)

MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES
STATE PUBLIC HEALTH LABORATORY
BREATH ALCOHOL PROGRAM

INTOX DMT MAINTENANCE REPORT

REPORT #1

Complete this report at the time of the regular monthly preventive maintenance check (not to exceed 35 days).
Complete this report whenever the instrument is serviced or repaired and whenever it is placed into service.
Retain the original and send a copy within 15 days to the Breath Alcohol Program, DHSS.

INTOX DMT SN	NAME OF AGENCY	DATE OF INSPECTION
LOCATION OF INSTRUMENT (STREET AND CITY)		TIME OF INSPECTION

CHECKLIST: Place a mark on the line by each item if found to be satisfactory or is operating within established limits. (Write in observed values where determined). Unmarked items must be corrected before using instrument.

☐ **DIAGNOSTIC RECORD**

DATE AND TIME _____	☐ DETECTOR
☐ PROGRAM	☐ FILTER 1
☐ SAMPLE CHAMBER _____	☐ FILTER 2
☐ BREATH TUBE _____	☐ FILTER 3
☐ PUMP	☐ INTERNAL STANDARD

BREATH ANALYZER ACCURACY STANDARDS

☐ SIMULATOR SOLUTION ☐ COMPRESSED ETHANOL-GAS MIXTURE

☐ STANDARD SUPPLIER _____ LOT # _____ EXP. DATE _____

☐ SIMULATOR TEMP (34°C ± 0.2°C) _____ SIM. SN _____ SIM. NIST EXP DATE _____

☐ CALIBRATION CHECK - **(ONLY ONE STANDARD IS TO BE USED PER MAINTENANCE REPORT)**
Run three tests using a standard solution. All three tests must be within ±5% of the standard value and must have a spread of .005 or less. Mark the box corresponding to the standard solution being used.

☐ 0.10% STANDARD - MUST READ BETWEEN 0.095% AND 0.105% INCLUSIVE

☐ 0.08% STANDARD - MUST READ BETWEEN 0.076% AND 0.084% INCLUSIVE

☐ 0.04% STANDARD - MUST READ BETWEEN 0.038% AND 0.042% INCLUSIVE

TEST 1:	TEST 2:	TEST 3:

☐ PERFORM R.F.I. TEST

INDICATE THE NUMBER OF BREATH TEST IN THE FOLLOWING RANGES SINCE THE LAST MAINTENANCE REPORT:

REFUSALS	0-.04	.05-.09	.10-.14	.15-.19	OVER .19

LIST ANY NEW PARTS AND DESCRIBE ANY ALTERATION OR MODIFICATION THAT WAS MADE TO RESTORE THE INSTRUMENT TO OPERATE SATISFACTORILY AND WITHIN ESTABLISHED LIMITS (USE OTHER SIDE IF NECESSARY)

_____

_____

_____

_____

_____

INSPECTING OFFICER

SIGNATURE		PRINT FULL NAME
TYPE II PERMIT NUMBER	EXPIRATION DATE	TELEPHONE NUMBER ( )

RETURN COMPLETED REPORT TO THE Breath Alcohol Program, Missouri Department of Health and Senior Services by mail, fax, or email

MO 580-2898 (5-19) AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER services provided on a nondiscriminatory basis LAB-166

MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES
STATE PUBLIC HEALTH LABORATORY

CMI INTOXILYZER 8000 MAINTENANCE REPORT

REPORT #2

Complete this report in duplicate at the time of the regular monthly preventive maintenance check, and whenever instrument is repaired. Send one copy to Department of Health and Senior Services, and retain one copy in department file.

INSTRUMENT SERIAL NUMBER	LOCATION OF INSTRUMENT	DATE OF INSPECTION	TIME OF INSPECTION

CALIBRATION CHECK RESULTS

TEST	g/210L	TIME

CALIBRATION CHECK SUMMARY

STANDARD TYPE	STANDARD LOT NO.	STANDARD EXPIRATION DATE

SIM TEMPERATURE	SIM SERIAL NUMBER	SIM CERTIFICATE EXPIRATION

STANDARD VALUE	STANDARD SUPPLIER

CALIBRATION CHECK RESULT 1

CALIBRATION CHECK RESULT 2

CALIBRATION CHECK RESULT 3

MAXIMUM DEVIATION (MUST BE WITHIN 5%)	SPREAD (MUST BE .005 OR LESS)

DIAGNOSTIC TEST RESULTS

Voltage/Current Test
RAM Test
EEPROM Checksum Test
Real Time Clock Test
DSP Test
Analytical Stability Test
Modem Test
Temperature Regulation Test

RFI TEST RESULTS

TEST	g/210L	TIME

NUMBER OF REFUSALS AND SUBJECT BREATH TESTS IN EACH RANGE SINCE LAST MAINTENANCE REPORT

REFUSALS	.00-.04	.05-.09	.10-.14	.15-.19	OVER .19

List any new parts and describe any alteration or modification that was made to restore the instrument to operate satisfactorily and within established limits (use other side if necessary).

INSPECTING OFFICER

SIGNATURE	PRINT NAME

TYPE II PERMIT NUMBER	EXPIRATION DATE	TELEPHONE NUMBER

MO 580-2901 (6-10)

AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER
services provided on a nondiscriminatory basis

LAB-167

MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES
STATE PUBLIC HEALTH LABORATORY
BREATH ALCOHOL PROGRAM

INTOX EC/IR II MAINTENANCE REPORT

REPORT #3

Complete this report at the time of the regular monthly preventive maintenance check (not to exceed 35 days).
Complete this report whenever the instrument is serviced or repaired and whenever it is placed into service.
Retain the original and send a copy within 15 days to the Breath Alcohol Program, DHSS.

INTOX EC/IR II SN	NAME OF AGENCY	DATE OF INSPECTION
LOCATION OF INSTRUMENT (STREET AND CITY)		TIME OF INSPECTION

CHECKLIST: Place a mark in the box by each item if found to be satisfactory or is operating within established limits. (Write in observed values where determined). Unmarked items must be corrected before using instrument.

☐ **DIAGNOSTIC RECORD**

☐ BLANK CHECK	☐ CO2 CHECK
☐ FC 1 TEMP	☐ FLOW CHECK
☐ SRC TEMP	☐ FCB CHECK
☐ DET TEMP	☐ CRC COMP CHECK
☐ BT TEMP	☐ CRC CAL CHECK
☐ STD 2 TEMP	☐ PRINT TEST
☐ ETH CHECK	DATE AND TIME _____

BREATH ANALYZER ACCURACY STANDARDS

☐ SIMULATOR SOLUTION ☐ COMPRESSED ETHANOL-GAS MIXTURE

☐ STANDARD SUPPLIER _____ LOT # _____ EXP. DATE _____

☐ SIMULATOR TEMP (34°C ± 0.2°C) _____ SIM. SN _____ SIM. NIST EXP DATE _____

☐ CALIBRATION CHECK - **(ONLY ONE STANDARD IS TO BE USED PER MAINTENANCE REPORT)**
Run three tests using a standard solution. All three tests must be within ±5% of the standard value and must have a spread of .005 or less. Mark the box corresponding to the standard solution being used.

☐ 0.10% STANDARD - MUST READ BETWEEN 0.095% AND 0.105% INCLUSIVE

☐ 0.08% STANDARD - MUST READ BETWEEN 0.076% AND 0.084% INCLUSIVE

☐ 0.04% STANDARD - MUST READ BETWEEN 0.038% AND 0.042% INCLUSIVE

TEST 1 ☛	TEST 2 ☛	TEST 3 ☛

INDICATE THE NUMBER OF BREATH TEST IN THE FOLLOWING RANGES SINCE THE LAST MAINTENANCE REPORT:

REFUSALS	0-.04	.05-.09	.10-.14	.15-.19	OVER .19

LIST ANY NEW PARTS AND DESCRIBE ANY ALTERATION OR MODIFICATION THAT WAS MADE TO RESTORE THE INSTRUMENT TO OPERATE SATISFACTORILY AND WITHIN ESTABLISHED LIMITS (USE OTHER SIDE IF NECESSARY)

_____

_____

_____

_____

INSPECTING OFFICER

SIGNATURE ▸		PRINT FULL NAME
TYPE II PERMIT NUMBER	EXPIRATION DATE	TELEPHONE NUMBER ( )

RETURN COMPLETED REPORT TO THE: Breath Alcohol Program, Missouri Department of Health and Senior Services by mail, fax, or email.

MO 580-2899 (5-19)

AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER
services provided on a nondiscriminatory basis

LAB-163

MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES
STATE PUBLIC HEALTH LABORATORY

ALCO-SENSOR IV WITH PRINTER MAINTENANCE REPORT

REPORT #7

Complete this report in duplicate at the time of the regular monthly preventative maintenance check, and whenever instrument is repaired. Send copy to Department of Health and Senior Services; retain original in department file.

ALCO SENSOR IV SN	NAME OF AGENCY	DATE OF INSPECTION
LOCATION OF INSTRUMENT (STREET AND CITY)		TIME OF INSPECTION

CHECKLIST: Place a mark in the box by each item if found to be satisfactory or if operating within established limits. (Write in observed values where determined.) Unmarked items must be corrected before using instrument.

- ☐ DIGITAL READOUT (ALL ELEMENTS OPERATIONAL)
- ☐ TEMPERATURE OF ALCO SENSOR (10°C - 40°C)
- ☐ PRINTER WORKING PROPERLY
- ☐ TIME AND DATE DISPLAYING PROPERLY

BREATH ALCOHOL ACCURACY STANDARDS

☐ SIMULATOR SOLUTION ☐ COMPRESSED ETHANOL-GAS MIXTURE

☐ STANDARD SUPPLIER _____ LOT # _____ EXP. DATE _____

☐ SIMULATOR TEMPERATURE (34°C ± 0.2°C) _____ SIM. SN _____ SIM. NIST EXP DATE _____

☐ CALIBRATION CHECK – **(ONLY ONE STANDARD IS TO BE USED PER MAINTENANCE REPORT)**
Run three tests using a standard solution. All three tests must be within ±5% of the standard value and must have a spread of .005 or less. Check the box corresponding to the standard solution being used. (PRINTOUT ATTACHED)

- ☐ 0.100% STANDARD - MUST READ BETWEEN 0.095% and 0.105% INCLUSIVE
- ☐ 0.080% STANDARD - MUST READ BETWEEN 0.076% and 0.084% INCLUSIVE
- ☐ 0.040% STANDARD - MUST READ BETWEEN 0.038% and 0.042% INCLUSIVE

TEST 1 ☛	TEST 2 ☛	TEST 3 ☛

☐ RFI DETECTOR OPERATING

INDICATE THE NUMBER OF BREATH TESTS IN THE FOLLOWING RANGES SINCE THE LAST MAINTENANCE REPORT: (DO NOT INCLUDE SELF-ADMINISTERED TESTS)

REFUSALS	(0-.04)	(.05-.09)	(.10-.14)	(.15-.19)	(OVER .19)

List any new parts and describe any alteration or modification that was made to restore the instrument to operate satisfactorily and within established limits (use other side if necessary).

_____

_____

_____

INSPECTING OFFICER

SIGNATURE ▸	PRINT NAME
TYPE II PERMIT NUMBER/EXPIRATION DATE	TELEPHONE NUMBER ( )

Return completed report to the: Breath Alcohol Program, MO Department of Health and Senior Services, Southeast District Office by mail, fax, or email.

MO 580-1351 (5-19)

AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER
services provided on a nondiscriminatory basis

LAB-114

AUTHORITY: sections 192.006, 577.020, and 577.037, RSMo 2016. This rule previously filed as 19 CSR 20-30.031. Original rule filed July 15, 1988, effective Sept. 29, 1988. Emergency amendment filed Dec. 2, 1992, effective Dec. 12, 1992, expired April 10, 1993. Emergency amendment filed April 1, 1993, effective April 11, 1993, expired June 6, 1993. Amended: Filed Dec. 2, 1992, effective June 7, 1993. Emergency amendment filed Nov. 9, 1993, effective Nov. 19, 1993, expired March 18, 1994. Emergency amendment filed March 1, 1994, effective March 11, 1994, expired July 8, 1994. Emergency amendment filed July 12, 1994, effective July 22, 1994, expired Nov. 18, 1994. Emergency amendment filed Oct. 28, 1994, effective Nov. 7, 1994, expired March 6, 1995. Amended: Filed July 22, 1994, effective Dec. 30, 1994. Changed to 19 CSR 25-30.031 Jan. 1, 1995. Emergency amendment filed March 3, 1995, effective March 13, 1995, expired July 1, 1995. Emergency amendment filed June 21, 1995, effective July 1, 1995, expired Oct. 28, 1995. Amended: Filed March 3, 1995, effective July 30, 1995. Emergency amendment filed March 15, 1996, effective March 25, 1996, expired Sept. 20, 1996. Amended: Filed March 15, 1996, effective Aug. 30, 1996. Amended: Filed Aug. 25, 1997, effective Feb. 28, 1998. Amended: Filed May 31, 2012, effective Dec. 30, 2012. Emergency amendment filed Sept. 4, 2013, effective Sept. 15, 2013, expired March 13, 2014. Amended: Filed Sept. 4, 2013, effective Feb. 28, 2014. Amended: Filed Oct. 1, 2019, effective March 30, 2020.*

**Original authority: 192.006, RSMo 1993, amended 1995; 577.020, RSMo 1977, amended 1982, 1983, 1996, 1998, 2001, 2006, 2014; and 577.037, RSMo 1982, amended 1983, 1988, 1993, 1996, 2001, 2014, 2016.*

***Stuart v. Director of Revenue**, 761 S.W.2d 234 (Mo. App. 1988). A Type II permittee is qualified to testify as an expert on technical matters and permissible temperature tolerances.*

***Miller v. Director of Revenue**, 719 S.W.2d 787 (Mo. banc 1986); **Elkins v. Director of Revenue**, 728 S.W.2d 567 (Mo. App. 1987). Possession of a permit is a matter within the personal knowledge of the permittee. Testimony by a permittee is sufficient to prove the permittee's qualifications to administer the tests.*

19 CSR 25-30.041 Type III Permit

PURPOSE: This rule establishes the qualifications, duties, and responsibilities of a Type III permittee.

(1) A Type III permit, included herein, authorizes an individual to operate breath analyzers.

(2) An applicant for a Type III permit shall not be less than twenty-one (21) years of age. The applicant shall have successfully completed a training course approved by the department for operation of breath analyzers or shall offer proof of equivalent qualifications to the satisfaction of the department. The applicant must also complete an application for a Type III permit, included herein.

(3) To renew a Type III permit, the applicant shall have performed at least ten (10) tests on drinking subjects in the past year on each instrument for which renewal is requested. If this condition is not met or the permit has expired for more than thirty (30) days, the applicant shall complete a two- (2-) hour refresher training course under the supervision of an individual with a valid Type II permit. The refresher training course shall include the performance of the five (5) self-administered tests for each breath analyzer for which renewal is requested. Copies of the completed operational checklists and printout for the self-administered tests shall accompany the renewal application.

(4) Type III permits issued prior to the effective date of this rule shall be considered valid under the conditions of this rule.

(5) Type III permit applications completed prior to the effective date of this rule shall be considered valid under the conditions of this rule.

3

MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES
STATE PUBLIC HEALTH LABORATORY
BREATH ALCOHOL PROGRAM

APPLICATION FOR TYPE III PERMIT FOR OPERATION OF BREATH ALCOHOL ANALYZERS

THIS APPLICATION IS FOR ☐ NEW PERMIT ☐ RENEWAL	CURRENT PERMIT NUMBER AND EXPIRATION DATE	EMAIL ADDRESS FOR COMPLETED PERMIT
PRINT FULL NAME	TITLE	AGE
DEPARTMENT OR TROOP	TELEPHONE ( )	
BUSINESS ADDRESS (STREET, CITY, STATE, ZIP CODE)		

LIST ALL ORIGINAL TRAINING COURSES FOR OPERATION OF BREATH ANALYZERS.
(Also, please be sure an ✓ is placed beside ALL breath analyzer(s) for which you are requesting a permit.)

DATES OF COURSE	LOCATION OF COURSE	COURSE LENGTH (HRS.)	NAME & MODEL OF BREATH ANALYZER	PLACE AN ✓ BESIDE INSTRUMENTS FOR WHICH YOU ARE REQUESTING A PERMIT	NAME OF INSTRUCTOR
				☐	
				☐	
				☐	

IF THIS IS AN APPLICATION FOR A NEW PERMIT, INCLUDE A COPY OF APPLICANT'S EXAM

IF THIS IS A RENEWAL APPLICATION, AND/OR YOU ARE ADDING A NEW INSTRUMENT TO YOUR CURRENT PERMIT, READ THE FOLLOWING INSTRUCTIONS AND PROVIDE THE FOLLOWING ADDITIONAL INFORMATION:

When adding a new instrument, you receive a new two (2) year permit. Therefore, normal renewal procedures apply for the instrument(s) on your current permit that you wish to transfer to the new permit. Disregarding these renewal procedures will result in a new permit for the new instrument only.

To renew a Type III Permit, the applicant shall have performed at least ten (10) tests on drinking subjects in the past year on each instrument for which renewal is requested. If this condition is not met or the permit has expired for more than thirty (30) days, the applicant shall complete a two (2) hour refresher-training course under the supervision of an individual with a valid Type II Permit. The refresher-training course shall include the performance of five (5) self-administered tests for each breath analyzer for which renewal is requested. Copies of the completed operational checklists and printouts for the self-administered tests shall accompany the renewal application.

NAME OF INSTRUMENT	NUMBER OF SUBJECT TESTS	NUMBER OF SELF-TESTS	REFRESHER TRAINING COMPLETE
1.			☐
2.			☐
3.			☐

SIGNATURE OF APPLICANT ▸	DATE

RECOMMENDATION OF SUPERVISOR TYPE II

I certify that _____ is qualified to operate the breath analyzer instrument(s) as requested in this application.
(PRINT TYPE III APPLICANT FULL NAME)

PRINT TYPE II APPLICANT FULL NAME ▸	BUSINESS PHONE ( )
SIGNATURE OF TYPE II PERMITTEE ▸	PERMIT NUMBER/EXPIRATION DATE

RETURN COMPLETED APPLICATION TO THE: Breath Alcohol Program, MO Department of Health and Senior Services, Southeast District Office
1903 Northwood Drive, Suite #4, Poplar Bluff, MO 63901

MO 580-0909 (5-19) LAB-5

STATE OF MISSOURI

DEPARTMENT OF HEALTH AND SENIOR SERVICES

BREATH ALCOHOL PROGRAM

3

PERMIT

TYPE III

_____

is hereby authorized to operate the following breath analyzer(s):

_____

For the determination of the alcoholic content of blood from a sample of expired air. Permit issued under the provisions of sections 577.001 through 577.041, RSMo.

DATE _____

NUMBER _____

EXPIRES _____

_____
DIRECTOR OF STATE PUBLIC HEALTH LABORATORY

_____
DIRECTOR OF DEPARTMENT OF HEALTH AND SENIOR SERVICES

MO 580-0772 (5-19)

LAB-6 (R5-19)

STATE OF MISSOURI

DEPARTMENT OF HEALTH AND SENIOR SERVICES

BREATH ALCOHOL PROGRAM

PERMIT

TYPE III

_____

is hereby authorized to operate the following breath analyzer(s):

_____

For the determination of the alcoholic content of blood from a sample of expired air. Permit issued under the provisions of sections 577.001 through 577.041, RSMo.

DATE _____

NUMBER _____

EXPIRES _____

_____
DIRECTOR OF STATE PUBLIC HEALTH LABORATORY

_____
DIRECTOR OF DEPARTMENT OF HEALTH AND SENIOR SERVICES

MO 580-0772 (5-19)

LAB-6 (R5-19)

AUTHORITY: sections 192.006, 577.020, and 577.037, RSMo 2016. This rule previously filed as 19 CSR 20-30.041. Original rule filed July 15, 1988, effective Sept. 29, 1988. Amended: Filed March 15, 1996, effective Aug. 30, 1996. Changed to 19 CSR 25-30.041 Jan. 1, 1995. Emergency amendment filed June 19, 1998, effective July 1, 1998, expired Feb. 25, 1999. Amended: Filed June 19, 1998, effective Jan. 30, 1999. Amended: Filed May 31, 2012, effective Dec. 30, 2012. Amended: Filed Oct. 1, 2019, effective March 30, 2020.*

**Original authority: 192.006, RSMo 1993, amended 1995; 577.020, RSMo 1977, amended 1982, 1983, 1996, 1998, 2001, 2006, 2014; and 577.037, RSMo 1982, amended 1983, 1988, 1993, 1996, 2001, 2014, 2016.*

***Stuart v. Director of Revenue**, 761 S.W.2d 234 (Mo. App. 1988). A Type II permittee is qualified to testify as an expert on technical matters and permissible temperature tolerances.*

***Miller v. Director of Revenue**, 719 S.W.2d 787 (Mo. banc 1986); **Elkins v. Director of Revenue**, 728 S.W.2d 567 (Mo. App. 1987). Possession of a permit is a matter within the personal knowledge of the permittee. Testimony by a permittee is sufficient to prove the permittee's qualifications to administer the tests.*

19 CSR 25-30.050 Approved Breath Analyzers

PURPOSE: This rule enumerates those breath analyzers which are approved by the Department of Health and Senior Services for the determination of the alcoholic content of blood from a sample of expired air.

(1) Approved breath analyzers are –

NAME OR ITEM	MANUFACTURER OR SUPPLIER
Alco-Sensor IV with printer, Intox EC/IR II, and Intox DMT	Intoximeters, Inc.
Intoxilyzer, Model 8000	CMI/MPH, Operations of MPD, Inc.

(2) Breath analyzers are to be used within buildings or vehicles used for driving-while-intoxicated enforcement. These breath analyzers are not approved for mobile use in boats or in outside areas.

(3) Maintenance checks and breath tests performed on previously approved breath analyzers prior to the effective date of this rule shall be considered valid under this rule if such tests were completed in compliance with the rules in effect at the time the test was conducted.

AUTHORITY: sections 192.006, 577.020, and 577.037, RSMo 2016. This rule was previously filed as 13 CSR 50-140.050 and 19 CSR 20-30.050. Original rule filed Oct. 1, 1965, effective Oct. 13, 1965. Amended: Filed Jan. 29, 1970, effective March 30, 1970. Amended: Filed Sept. 10, 1970, effective Nov. 9, 1970. Amended: Filed Dec. 8, 1972, effective Feb. 6, 1973. Emergency amendment filed Aug. 4, 1977, effective Aug. 14, 1977, expired Dec. 12, 1977. Amended: Filed Aug. 4, 1977, effective Nov. 11, 1977. Amended: Filed Feb. 8, 1982, effective May 13, 1982. Emergency amendment filed July 27, 1984, effective Aug. 6, 1984, expired Jan. 4, 1985. Amended: Filed July 17, 1984, effective Dec. 13, 1984. Changed to 19 CSR 20-30.050, effective Aug. 15, 1986. Amended: Filed Oct. 3, 1986, effective Dec. 25, 1986. Emergency amendment filed Jan. 13, 1987, effective Jan. 23, 1987, expired May 22, 1987. Amended: Filed Jan. 16, 1987, effective April 11, 1987. Emergency rescission and emergency rule filed June 2, 1988, effective June 12, 1988, expired Sept. 19, 1988. Rescinded and readopted: Filed June 2, 1988, effective Aug. 25, 1988. Amended: Filed June 16, 1989, effective Sept. 11, 1989. Emergency amendment filed Sept. 5, 1991, effective Sept. 15, 1991, expired Jan. 12, 1992. Amended: Filed Sept. 5, 1991, effective Jan. 13, 1992. Amended: Filed Jan. 15, 1993, effective July 8, 1993. Emergency amendment filed Nov. 9, 1993, effective Nov. 19, 1993, expired March 18, 1994. Emergency amendment filed March 1, 1994, effective March 11, 1994, expired July 8, 1994. Emergency amendment filed July 12, 1994, effective July 22, 1994, expired Nov. 18, 1994. Emergency amendment filed Oct. 28, 1994, effective Nov. 7, 1994, expired March 6, 1995. Amended: Filed July 22, 1994, effective Dec. 30, 1994. Changed to 19 CSR 25-30.050 Jan. 1, 1995. Emergency amendment filed March 15, 1996, effective March 25, 1996, expired Sept. 20, 1996. Amended: Filed March 16, 1996, effective Aug. 30, 1996. Emergency amendment filed Aug. 22, 1997, effective Sept. 1, 1997, expired Feb. 27, 1998. Amended: Filed Aug. 25, 1997, effective Feb. 28, 1998. Emergency amendment filed May 10, 2001, effective May 22, 2001, expired Nov. 17, 2001. Amended: Filed May 10, 2001, effective Oct. 30, 2001. Amended: Filed May 31, 2012, effective Dec. 30, 2012. Emergency amendment filed Sept. 4, 2013, effective Sept. 15, 2013, expired March 13, 2014. Amended: Filed Sept. 4, 2013, effective Feb. 28, 2014. Amended: Filed Oct. 1, 2019, effective March 30, 2020.*

**Original authority: 192.006, RSMo 1993, amended 1995; 577.020, RSMo 1977, amended 1982, 1983, 1996, 1998, 2001, 2006, 2014; and 577.037, RSMo 1982, amended 1983, 1988, 1993, 1996, 2001, 2014, 2016.*

***Eckhoff v. Director of Revenue**, 745 S.W.2d 815 (Mo. App. 1988); **Director of Revenue v. Martin**, 752 S.W.2d 453 (Mo. App. 1988). For purpose of breath analysis tests, the procedural components of these tests include the testing techniques and methods, the qualifications of the person administering the tests, and the nature and description of the equipment and devices to be used. The designation of approved suppliers of test ampoules for breathalyzer test was procedural only and would be applied retrospectively.*

19 CSR 25-30.051 Breath Analyzer Calibration and Accuracy Verification Standards

PURPOSE: This rule defines the standard simulator solutions or compressed ethanol-gas mixtures to be used in verifying and calibrating breath analyzers, as well as the annual checks required on simulators used in conjunction with the standard simulator solution.

(1) Standards used for the purpose of verifying and calibrating breath analyzers shall consist of standard simulator solutions or compressed ethanol-gas standard mixtures.

(2) Standard simulator solutions, used to verify and calibrate evidential breath analyzers, shall be solutions from approved suppliers. The standard simulator solutions used shall have a vapor concentration within five percent (5%) of the following values:

(A) 0.10%;
(B) 0.08%; or
(C) 0.04%.

(3) Approved suppliers of standard simulator solutions are –

(A) Alcohol Countermeasure Systems, Inc.;
(B) Guth Laboratories, Inc.;
(C) RepCo Marketing, Inc.; and
(D) Draeger Safety, Inc.

(4) Any breath alcohol simulator used in the verification or calibration of evidential breath analyzers with the standard simulator solutions referred to in sections (2) and (3) of this rule shall be certified against a National Institute of Standards and Technology (NIST) traceable reference thermometer or

thermocouple between January 1, 2013, and December 31, 2013, and annually thereafter. Proof that the simulator is in certification shall be shown by entry of the simulator serial number and expiration date of the certification period on the maintenance report required under 19 CSR 25-30.031, or by certification report as issued by the department.

(5) Compressed ethanol-gas standard mixtures used to verify and calibrate evidential breath analyzers shall be mixtures provided from approved suppliers. The compressed ethanol-gas mixtures used shall have a concentration within five percent (5%) of the following values:
(A) 0.10%;
(B) 0.08%; or
(C) 0.04%.

(6) Approved suppliers of standard compressed ethanol-gas mixtures are –
(A) Intoximeters, Inc.;
(B) CMI, Inc.;
(C) Draeger Safety Diagnostic, Inc.;
(D) ILMO Products Company, Inc.; and
(E) Guth Laboratories, Inc.

(7) Maintenance reports completed prior to the effective date of this rule shall be considered valid under this rule if the maintenance report was completed in compliance with the rules in effect at the time the maintenance was conducted.

AUTHORITY: sections 192.006, 577.020, and 577.037, RSMo 2016. Emergency rule filed Aug. 22, 1997, effective Sept. 1, 1997, expired Feb. 27, 1998. Original rule filed Aug. 25, 1997, effective Feb. 28, 1998. Emergency rescission and emergency rule filed April 17, 1998, effective May 4, 1998, expired Oct. 30, 1998. Rescinded and readopted: Filed May 1, 1998, effective Oct. 30, 1998. Amended: Filed Jan. 15, 2004, effective July 30, 2004. Amended: Filed May 31, 2012, effective Dec. 30, 2012. Amended: Filed Sept. 4, 2013, effective Feb. 28, 2014. Amended: Filed Oct. 1, 2019, effective March 30, 2020.*

**Original authority: 192.006, RSMo 1993, amended 1995; 577.020, RSMo 1977, amended 1982, 1983, 1996, 1998, 2001, 2006, 2014; and 577.037, RSMo 1982, amended 1983, 1988, 1993, 1996, 2001, 2014, 2016.*

19 CSR 25-30.060 Operating Procedures for Breath Analyzers

PURPOSE: This rule establishes an operational checklist (including certification by the operator) for each of the approved breath analyzers in 19 CSR 25-30.050. Prosecuting attorneys have requested that these procedures be included as a rule so they can be introduced in court to show that operators of breath analyzers have adhered strictly to the operating procedures set forth and approved by the Department of Health and Senior Services.

(1) When using Alco-Sensor IV with printer, the procedures on the form included herein shall be performed and the form shall be completed (see form #8).

(2) When using Intox DMT, the procedures on the form incorporated within the instrument software shall be performed and the form shall be completed (see form #11 included herein for example).

(3) When using Intoxilyzer, Model 8000, the procedures on the form incorporated within the instrument software shall be performed and the form shall be completed (see form #12 included herein for example).

(4) When using Intox EC/IR II, the procedures on the form incorporated within the instrument software shall be performed and the form shall be completed (see form #13 included herein for example).

(5) The fifteen- (15-) minute observation of the subject, which is the second procedure on the forms in sections (1)–(6) of this rule, shall be done by a current Type II or Type III permit holder. The observation period is intended to ensure that any alcohol in a test subject's mouth has time to dissipate before a breath sample is taken so that mouth alcohol does not affect the accuracy of a test result. A fifteen- (15-) minute observation period is deemed to be sufficient for the dissipation of any mouth alcohol to a reasonable degree of scientific certainty.

(6) Results of subject tests shall be recorded on the operational checklist in a manner consistent with the breath analyzer's digital display and/or printout. For example, if the display and/or the printout reads one hundred forty-nine thousandths percent (0.149%), the result shall be recorded as one hundred forty nine thousandths percent (0.149%).

(7) Operational Checklists and breath tests completed prior to the effective date of this rule shall be considered valid if such tests were completed in compliance with the rules in effect at the time the test was conducted. Operational Checklists and breath tests completed within ninety (90) days after the effective date of this rule shall be considered valid if such tests were completed in compliance with the rules in effect at the time the tests were conducted or the rules in effect immediately prior to the effective date of this rule.

(8) When using the Alco-Sensor IV with printer, the use of the Manual button shall not be allowed to obtain a breath alcohol test result from a subject.

MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES

BLOOD ALCOHOL TEST REPORT - ALCO-SENSOR IV WITH PRINTER

FORM #8

SUBJECT S NAME	DATE OF TEST

OPERATIONAL CHECKLIST: ALCO-SENSOR IV WITH PRINTER

ALCO-SENSOR SERIAL NO.	LOCATION OF INSTRUMENT
TIME OBSERVATION PERIOD STARTED	TIME OF TEST

☐ 1. Examination of mouth conducted. If any substance is observed or indicated to be present, the substance observed or indicated must be removed prior to starting the 15 minute observation period.

☐ 2. Subject observed for at least 15 minutes by _____. No smoking, oral intake or vomiting during this time; if vomiting occurs, start over with 15 minute observation period.

☐ 3. Make sure printer is connected to Alco-Sensor IV.

☐ 4. Turn printer on.

☐ 5. Insert mouthpiece into Alco-Sensor IV.

☐ 6. Observe temperature display, make sure temperature reading is between 10°C and 40°C.

☐ 7. When "TEST" is displayed on Alco-Sensor IV, take subject breath sample.

☐ 8. When "SET" is displayed on Alco-Sensor IV, press SET button.

☐ 9. When printer has completed printing test result, tear off tape and fill in subject and officer information.

☐ 10. Press red button to eject mouthpiece.

☐ 11. Attach printout to this report.

CERTIFICATION BY OPERATOR	BAC

As set forth in the rules promulgated by the Department of Health and Senior Services related to the determination of blood alcohol by breath analysis, I certify that:

☐ 1. There was no deviation from the procedure approved by the department.

☐ 2. To the best of my knowledge the instrument was functioning properly.

☐ 3. I am authorized to operate the instrument.

NAME OF OPERATOR	PERMIT NO.	EXPIRATION DATE
NAME OF OBSERVER	OBSERVER PERMIT NO.	EXPIRATION DATE
WITNESS (IF ANY)		DATE

MO 580-1213 (5-19) AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER LAB. 108
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MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES

BLOOD ALCOHOL TEST REPORT - ALCO-SENSOR IV WITH PRINTER

FORM #8

SUBJECT'S NAME	DATE OF TEST

OPERATIONAL CHECKLIST: ALCO-SENSOR IV WITH PRINTER

ALCO-SENSOR SERIAL NO.	LOCATION OF INSTRUMENT
TIME OBSERVATION PERIOD STARTED	TIME OF TEST

☐ 1. Examination of mouth conducted. If any substance is observed or indicated to be present, the substance observed or indicated must be removed prior to starting the 15 minute observation period.

☐ 2. Subject observed for at least 15 minutes by _____. No smoking, oral intake or vomiting during this time; if vomiting occurs, start over with 15 minute observation period.

☐ 3. Make sure printer is connected to Alco-Sensor IV.

☐ 4. Turn printer on.

☐ 5. Insert mouthpiece into Alco-Sensor IV.

☐ 6. Observe temperature display, make sure temperature reading is between 10°C and 40°C.

☐ 7. When "TEST" is displayed on Alco-Sensor IV, take subject breath sample.

☐ 8. When "SET" is displayed on Alco-Sensor IV, press SET button.

☐ 9. When printer has completed printing test result, tear off tape and fill in subject and officer information.

☐ 10. Press red button to eject mouthpiece.

☐ 11. Attach printout to this report.

CERTIFICATION BY OPERATOR	BAC

As set forth in the rules promulgated by the Department of Health and Senior Services related to the determination of blood alcohol by breath analysis, I certify that:

☐ 1. There was no deviation from the procedure approved by the department.

☐ 2. To the best of my knowledge the instrument was functioning properly.

☐ 3. I am authorized to operate the instrument.

NAME OF OPERATOR	PERMIT NO.	EXPIRATION DATE
NAME OF OBSERVER	OBSERVER PERMIT NO.	EXPIRATION DATE
WITNESS (IF ANY)		DATE

MO 580-1213 (5-19) AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER LAB. 108
services provided on a nondiscriminatory basis

MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES

BLOOD ALCOHOL TEST REPORT - INTOX DMT

FORM #11

LOCATION OF INSTRUMENT	INSTRUMENT SERIAL NUMBER	DATE OF TEST	TIME OBSERVATION PERIOD STARTED	TIME OF TEST

SUBJECT NAME	DATE OF BIRTH
SUBJECT DRIVER'S LICENSE NUMBER	STATE

ARRESTING OFFICER	ARRESTING OFFICER ID	
OPERATOR	OPERATOR PERMIT	PERMIT EXP DATE
OBSERVER	OBSERVER PERMIT	PERMIT EXP DATE

OPERATIONAL CHECKLIST: INTOX DMT

☐ 1. Examination of mouth conducted. If any substance is observed or indicated to be present, the substance observed or indicated must be removed prior to starting the 15 minute observation period.

☐ 2. Subject observed for at least 15 minutes by _____.
No smoking, oral intake or vomiting during this time; if vomiting occurs, start over with the 15 minute observation period.

☐ 3. Assure that the power switch is ON and the screen is displaying "READY <PUSH RUN>".

☐ 4. Press the Run button on the display screen.

☐ 5. Enter subject and officer information.

☐ 6. When display reads "Please Blow" and gives audible beep, insert mouthpiece and take the subject's breath sample.

SUBJECT TEST RESULTS

COMMENTS

CERTIFICATION BY OPERATOR

BAC

As set forth in the rules promulgated by the Department of Health and Senior Services related to the determination of blood alcohol by breath analysis, I certify that:

☐ 1. There was no deviation from the procedure approved by the department.

☐ 2. To the best of my knowledge the instrument was functioning properly.

☐ 3. I am authorized to operate the instrument.

SIGNATURE OF OPERATOR	DATE
WITNESS (IF ANY)	DATE

MO 580-2903 (5-19) AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER services provided on a nondiscriminatory basis LAB-165

STATE OF MISSOURI
DEPARTMENT OF HEALTH AND SENIOR SERVICES

BLOOD ALCOHOL TEST REPORT – INTOXILYZER 8000

FORM #12

LOCATION OF INSTRUMENT	INSTRUMENT SERIAL NUMBER	DATE OF TEST	TIME OBSERVATION PERIOD STARTED	TIME OF TEST

SUBJECT NAME	DATE OF BIRTH

SUBJECT DRIVER'S LICENSE NUMBER	STATE

ARRESTING OFFICER	ARRESTING OFFICER ID

OPERATOR	OPERATOR PERMIT	PERMIT EXPIRATION DATE

OBSERVER	OBSERVER PERMIT	PERMIT EXPIRATION DATE

OPERATIONAL CHECKLIST: INTOXILYZER 8000

- ☐ 1. Examination of mouth conducted. If any substance is observed or indicated to be present, the substance observed or indicated must be removed prior to starting the 15 minute observation period.
- ☐ 2. Subject observed for at least 15 minutes by _____.
  No smoking, oral intake or vomiting during this time; if vomiting occurs, start over with the 15 minute observation period.
- ☐ 3. Assure that the power switch is ON and the screen is displaying "Ready Mode".
- ☐ 4. Press the START TEST button.
- ☐ 5. Enter the subject and officer information.
- ☐ 6. When display reads "Please Blow Until Tone Stops/R", insert mouthpiece and take the subject's breath sample.

SUBJECT TEST RESULTS

COMMENTS

CERTIFICATION BY OPERATOR

BAC

As set forth in the rules promulgated by the Department of Health and Senior Services related to the determination of blood alcohol by breath analysis, I certify that:

- ☐ 1. There was no deviation from the procedure approved by the department.
- ☐ 2. To the best of my knowledge the instrument was functioning properly.
- ☐ 3. I am authorized to operate the instrument.

SIGNATURE OF OPERATOR	DATE

WITNESS (IF ANY)	DATE

MO 580-2902 (5-19)

AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER
services provided on a nondiscriminatory basis

LAB-107B

MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES

BLOOD ALCOHOL TEST REPORT - INTOX EC/IR II

FORM #13

LOCATION OF INSTRUMENT	INSTRUMENT SERIAL NUMBER	DATE OF TEST	TIME OBSERVATION PERIOD STARTED	TIME OF TEST

SUBJECT NAME	DATE OF BIRTH
SUBJECT DRIVER'S LICENSE NUMBER	STATE

ARRESTING OFFICER	ARRESTING OFFICER ID	
OPERATOR	OPERATOR PERMIT	PERMIT EXP DATE
OBSERVER	OBSERVER PERMIT	PERMIT EXP DATE

OPERATIONAL CHECKLIST: INTOX EC/IR II

☐ 1. Examination of mouth conducted. If any substance is observed or indicated to be present, the substance observed or indicated must be removed prior to starting the 15 minute observation period.

☐ 2. Subject observed for at least 15 minutes by _____.
No smoking, oral intake or vomiting during this time; if vomiting occurs, start over with the 15 minute observation period.

☐ 3. Assure that the power switch is ON and the screen is displaying "PRESS ENTER TO START".

☐ 4. Press the Enter button.

☐ 5. Enter subject and officer information.

☐ 6. When display reads "Please Blow/R", and gives audible beep, insert mouthpiece and take the subject's breath sample.

SUBJECT TEST RESULTS

COMMENTS

CERTIFICATION BY OPERATOR

BAC

As set forth in the rules promulgated by the Department of Health and Senior Services related to the determination of blood alcohol by breath analysis, I certify that:

☐ 1. There was no deviation from the procedure approved by the department.

☐ 2. To the best of my knowledge the instrument was functioning properly.

☐ 3. I am authorized to operate the instrument.

SIGNATURE OF OPERATOR	DATE
WITNESS (IF ANY)	DATE

MO 580-2900 (5-19) AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER services provided on a nondiscriminatory basis LAB-164

AUTHORITY: sections 192.006, 577.020, and 577.037, RSMo 2016. This rule was previously filed as 13 CSR 50-140.060 and 19 CSR 20-30.060. Original rule filed July 11, 1979, effective Oct. 12, 1979. Amended: Filed Feb. 8, 1982, effective May 13, 1982. Emergency amendment filed July 27, 1984, effective Aug. 6, 1984, expired Jan. 4, 1985. Amended: Filed Aug. 3, 1984, effective Dec. 13, 1984. Changed to 19 CSR 20-30.060, effective Aug. 15, 1986. Emergency rescission and emergency rule filed June 2, 1988, effective June 12, 1988, expired Sept. 19, 1988. Rescinded and readopted: Filed June 2, 1988, effective Aug. 25, 1988. Emergency amendment filed July 11, 1988, effective July 21, 1988, expired Sept. 19, 1988. Amended: Filed June 16, 1989, effective Sept. 11, 1989. Emergency amendment filed Sept. 5, 1991, effective Sept. 15, 1991, expired Jan. 12, 1992. Amended: Filed Sept. 5, 1991, effective Jan. 13, 1992. Amended: Filed Jan. 15, 1993, effective July 8, 1993. Emergency amendment filed Nov. 9, 1993, effective Nov. 19, 1993, expired March 18, 1994. Emergency amendment filed March 1, 1994, effective March 11, 1994, expired July 8, 1994. Emergency amendment filed July 12, 1994, effective July 22, 1994, expired Nov. 18, 1994. Emergency amendment filed Oct. 28, 1994, effective Nov. 7, 1994, expired March 6, 1995. Amended: Filed July 22, 1994, effective Dec. 30, 1994. Changed to 19 CSR 25-30.060 Jan. 1, 1995. Emergency amendment filed March 3, 1995, effective March 13, 1995, expired July 1, 1995. Emergency amendment filed June 21, 1995, effective July 1, 1995, expired Oct. 28, 1995. Amended: Filed March 3, 1995, effective July 30, 1995. Emergency amendment filed March 15, 1996, effective March 25, 1996, expired Sept. 20, 1996. Amended: Filed March 15, 1996, effective Aug. 30, 1996. Amended: Filed Aug. 25, 1997, effective Feb. 28, 1998. Amended: Filed May 31, 2012, effective Dec. 30, 2012. Emergency amendment filed Sept. 4, 2013, effective Sept. 15, 2013, expired March 13, 2014. Amended: Filed Sept. 4, 2013, effective Feb. 28, 2014. Amended: Filed Oct. 1, 2019, effective March 30, 2020.*

**Original authority: 192.006, RSMo 1993, amended 1995; 577.020, RSMo 1977, amended 1982, 1983, 1996, 1998, 2001, 2006, 2014; and 577.037, RSMo 1982, amended 1983, 1988, 1993, 1996, 2001, 2014, 2016.*

***Eckhoff v. Director of Revenue**, 745 S.W.2d 815 (Mo. App. 1988); **Director of Revenue v. Martin**, 752 S.W.2d 453 (Mo. App. 1988). For purpose of breath analysis tests, the procedural components of these tests include the testing techniques and methods, the qualifications of the person administering the tests, and the nature and description of the equipment and devices to be used. The designation of approved suppliers of test ampoules for breathalyzer test was procedural only and would be applied retrospectively.*

***Stuhr v. Director of Revenue**, 760 S.W.2d 127 (Mo. App. 1988). Though the operational checklist which was used differed from the rule, the checklist exceeded the minimum established requirements and provided a proper foundation for admitting the results of the breath test.*

***Stuhr v. Director of Revenue**, 760 S.W.2d 127 (Mo. App. 1988); **Bradford v. Director of Revenue**, 735 S.W.2d 208 (Mo. App. 1987). The time and date component of the BAC Verifier is a separate component from that of the sample collection portion of the unit. The wrong date or time on the printout is not evidence of a malfunction.*

19 CSR 25-30.070 Approval of Methods for the Analysis of Blood, Saliva, and Urine for the Determination of Blood Alcohol Content or the Presence of Drugs

PURPOSE: This rule establishes the methods and analytical principles approved for the determination of blood alcohol content or the presence of drugs from samples of blood, urine, or saliva.

(1) Samples of blood, saliva, or urine shall be collected in accordance with the provisions of sections 577.001–577.041, RSMo, and a sufficient volume of sample shall be collected to provide for duplicate testing.

(A) Blood samples shall be collected in commercially-manufactured blood collection tubes that contain sodium fluoride or an equivalent preservative, as well as potassium oxalate, sodium citrate, or an equivalent anticoagulant.

(B) Urine specimens shall be collected in clean, dry containers. If a preservative, such as sodium fluoride, is employed, a comment stating the type and amount of preservative used should accompany the specimen. Specimens shall be refrigerated or frozen if not tested within one (1) day of collection.

(C) Saliva specimens shall be collected in a commercially-manufactured collection device and collected according to collection device instructions.

(2) The laboratory in which these analyses are performed shall have a director who shall assume full responsibility for the accuracy of tests and reports.

(3) An individual shall have a valid Type I permit in order to perform analyses of blood, saliva, and urine for the presence of drugs.

(4) Methods based on the following analytical principles are approved for the determination of blood alcohol content from a sample of blood, saliva, or urine:

(A) Chromatography, in liquid or vapor phase;

(B) Spectrophotometry;

(C) Colorimetry; or

(D) The quantitative determination of the reduction of dichromate in acid solution by ethanol.

(5) Methods based on the following analytical principles are approved for the analysis of blood, saliva, and urine for the presence of drugs:

(A) Chromatography, in liquid or vapor phase;

(B) Spectrophotometry;

(C) Spectrometry; or

(D) Immunoassay.

(6) All initial testing for the presence of drugs other than alcohol producing positive results shall be confirmed by a method employing mass spectrometry (MS).

(7) Blood, saliva, and urine tests for the determination of blood alcohol content or the presence of drugs performed prior to the effective date of this rule shall be considered valid under this rule if such tests were completed in compliance with the rules in effect at the time the test was conducted.

AUTHORITY: sections 192.006, 577.020, and 577.037, RSMo 2016. This rule previously filed as 19 CSR 20-30.070. Emergency rule filed May 21, 1987, effective May 31, 1987, expired Sept. 28, 1987. Original rule filed May 21, 1987, effective Aug. 27, 1987. Emergency rescission filed Aug. 14, 1987, effective Aug. 26, 1987, expired Dec 11, 1987. Emergency amendment filed Feb. 16, 1988, effective Feb. 26, 1988, expired June 24, 1988. Amended: Filed Feb. 16, 1988, effective April 28, 1988. Changed to 19 CSR 25-30.070 Jan. 1, 1995. Emergency amendment filed May 10, 2001, effective May 22, 2001, expired Nov. 17, 2001. Amended: Filed May 10, 2001, effective Oct. 30, 2001. Amended: Filed May 31, 2012, effective Dec. 30, 2012. Amended: Filed Oct. 1, 2019, effective March 30, 2020.*

**Original authority: 192.006, RSMo 1993, amended 1995; 577.020, RSMo 1977, amended 1982, 1983, 1996, 1998, 2001, 2006, 2014; and 577.037, RSMo 1982, amended 1983, 1988, 1993, 1996, 2001, 2014, 2016.*

***State v. Kummer**, 741 S.W.2d 285 (Mo. App. 1987). The rules of the Department of Health approving methods of analysis for determining blood alcohol content are procedural and relate to the admissibility of evidence, and thus are to be applied retrospectively.*

19 CSR 25-30.080 Approval of Methods for the Analysis of Blood, Saliva, and Urine for the Presence of Drugs
(Rescinded March 30, 2020)

AUTHORITY: sections 192.006 and 577.026, RSMo 2000, and sections 306.114, 306.117, 577.020, 577.037, RSMo Supp. 2011. This rule previously filed as 19 CSR 20-30.080. Original rule filed July 15, 1988, effective Sept. 29, 1988. Changed to 19 CSR 20-30.080 Jan. 1, 1995. Emergency amendment filed May 10, 2001, effective May 22, 2001, expired Nov. 17, 2001. Amended: Filed May 10, 2001, effective Oct. 30, 2001. Amended: Filed May 31, 2012, effective Dec. 30, 2012. Rescinded: Filed Oct. 1, 2019, effective March 30, 2020.