

# FUNDAMENTALS OF TRIAL ADVOCACY COURSE

October 5 – 8, 2020  
Phoenix, Arizona



## DUI BREATH ANALYSIS ISSUES

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Distributed by:

ARIZONA PROSECUTING ATTORNEYS' ADVISORY COUNCIL  
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# DUI Breath Analysis

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## Breath Alcohol Analysis

Direct Oxidation

1927 – Emil Bogen: The Diagnosis of Drunkenness; California and Western Medicine Vol XXVI, No 6

Used Football to capture sample

Won \$150 research price  
(Approx. \$1866 by today's standards)

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## Breath Alcohol Analysis

Direct Oxidation

1938 – Rolla Harger

Drunkometer

Used colorimetric analysis

Potassium chromate, silver nitrate, and sulfuric acid  
Turns from yellow to green  
Officer compares color change to a chart

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## Breath Alcohol Analysis

Direct Oxidation

1954 – Robert F.  
Borkenstein

The Breathalyzer

Used colorimetric analysis

Potassium chromate, silver  
nitrate, and sulfuric acid  
Light meter measured  
change in color

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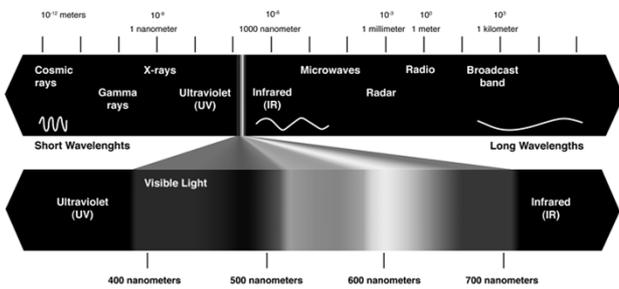
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## Breath Alcohol Analysis

Infrared Spectrophotometry



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## Intoxilyzer 8000

**INTOXILYZER**<sup>®</sup>



**8000**

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## Intoxilyzer 9000



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## Intoxilyzer 9000

- Paperwork will be a bit different
- Reliability and science is pretty much the same

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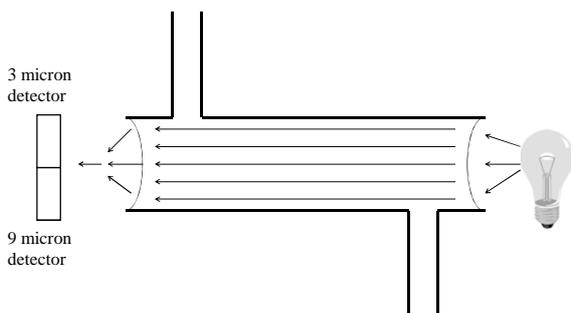
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## Breath Alcohol Analysis

Infrared Spectrophotometry



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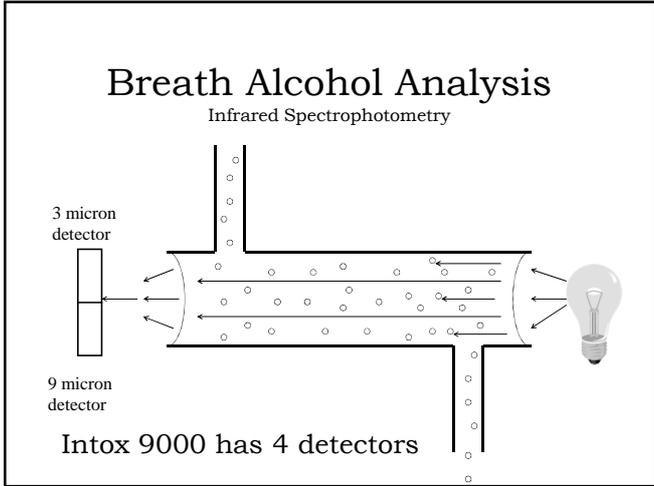
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### Breath Alcohol Analysis

Henry's Law

In a closed system, the concentration of a volatile substance above a fluid is proportional to the concentration of that substance in the fluid at equilibrium

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### Blood to Breath Ratio

USDOT mandates instruments use 2100:1  
1972 ad hoc committee  
Amount of alcohol in 2.1 L of lung air is equal to amount of alcohol in 1 ml of blood  
Average partition ratio is 2300:1  
Large study (21582 drinkers) found 2440:1

A.R. Gainsford, A large scale study if the relationship between blood and breath alcohol concentration in New Zealand drinking drivers, J Forensic Sci. 51; 173-178; 2006

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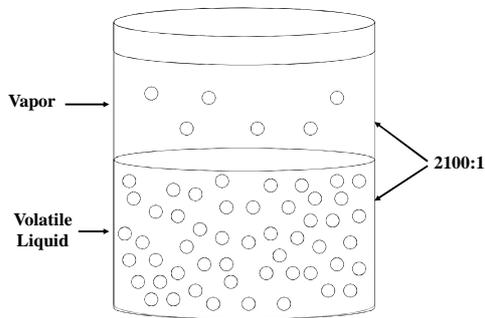
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### Blood to Breath Ratio




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### Breath Alcohol Analysis

Quality Assurance

#### Deprivation period

At least a 15-minute period immediately prior to a duplicate breath test during which period the subject has not ingested any alcoholic beverages or other fluids, eaten, vomited, smoked, or placed any foreign objects in the mouth.

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### Breath Alcohol Analysis

Quality Assurance

EXHIBIT G-1  
OPERATIONAL CHECKLIST  
ARIZONA DEPARTMENT OF PUBLIC SAFETY  
STANDARD OPERATIONAL PROCEDURE  
INTOXLYZER MODEL 8000  
DUPLICATE BREATH TEST

SUBJECT NAME \_\_\_\_\_ DATE \_\_\_\_\_  
 AGENCY \_\_\_\_\_ OPERATOR \_\_\_\_\_  
 INSTRUMENT SERIAL # \_\_\_\_\_ LOCATION \_\_\_\_\_  
 TEST RESULTS 0 \_\_\_\_\_ AC TIME \_\_\_\_\_  
 0 \_\_\_\_\_ AC TIME \_\_\_\_\_  
 0 \_\_\_\_\_ AC TIME \_\_\_\_\_

Immediately preceding administration of the test, subject underwent at least a 15-minute deprivation period.  
 From \_\_\_\_\_ (Hour) \_\_\_\_\_ (Time) by \_\_\_\_\_ (Name)

- ( ) 1. Display reads "PUSH BUTTON TO START"
- ( ) 2. Push Start Test button
- ( ) 3. Follow announced instructions on instrument display
- ( ) 4. If first record reads "Successfully Completed Test Sequence" go to step 5  
 OR  
 If first record reads "Not a Successfully Completed Test Sequence", and subject will be tested again, ensure test record and go to step 1
- ( ) 5. If second record reads "Not a Successfully Completed Test Sequence", and subject will not be tested again, go to step 5  
 OR  
 If second record reads "Successfully Completed Test Sequence", and subject will not be tested again, go to step 5

Note: Duplicate breath tests shall be administered at intervals of not less than 7 minutes nor more than 10 minutes apart and the two consecutive tests shall agree within 0.02% alcohol concentration.

DPS Form Exh G-1 (Rev 05-1)

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# 9000 Checklist

EXHIBIT 11  
OPERATIONAL CHECKLIST  
STANDARD OPERATIONAL PROCEDURE  
ARIZONA DEPARTMENT OF PUBLIC SAFETY  
INTOXILYZER MODEL 9000  
DUPLICATE BREATH TEST

SUBJECT NAME \_\_\_\_\_ DATE \_\_\_\_\_  
 AGENCY \_\_\_\_\_ OPERATOR & BADGE \_\_\_\_\_  
 INTOXILYZER SERIAL # \_\_\_\_\_ DEPRECIATION BY \_\_\_\_\_

1. Runset proper depriming period.  
 2. Check for start failure on the screen.  
 3. Follow automated prompts on the instrument display.

Note: Duplicate breath tests shall be administered at intervals of not less than 7 minutes and never than 10 minutes apart and the two consecutive tests shall agree within 0.02 alcohol concentration.

COMMENTS  
 \_\_\_\_\_  
 \_\_\_\_\_  
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SIGNATURE \_\_\_\_\_  
SP-Form 900-11

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## Breath Alcohol Analysis Quality Assurance

### Bracketing Diagnostic Checks (Checks all internal systems of instrument)

- Voltage/Current Test
- RAM Test
- EEPROM Test
- DSP Test
- Analytical Test
- Internal Printer Test
- Modem Test
- Temperature Regulation Test
- Software Checksum

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## Breath Alcohol Analysis Quality Assurance

### Bracketing Calibration Checks

Arizona rules require result must be within  $\pm 10\%$  or  $\pm 0.01$  g/210L of the known value

0.100 g/210L NIST traceable dry gas standard

Range is 0.090 – 0.110 g/210L

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## Breath Alcohol Analysis

Quality Assurance

OPERATOR: [Name]  
 PERM #: [Number]  
 AGENCY: [Agency]  
 TARGET: [Target]  
 DATE: [Date]  
 TIME: [Time]

Test	g/210L	Time
Air Blank	0.000	14:12:45
Diagnostic Test	Pass	14:13:15
Air Blank	0.000	14:13:42
0.100 Cal Check	0.100	14:14:01
Air Blank	0.000	14:14:30
Subject Test	0.095	14:15:00
Air Blank	0.000	14:15:32
Five Minute Wait		
Air Blank	0.000	14:20:27
Subject Test	0.095	14:21:05
Air Blank	0.000	14:21:36
0.100 Cal Check	0.100	14:21:57
Air Blank	0.000	14:22:26
Diagnostic Test	Pass	14:22:55

Successfully Completed Test Sequence

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## Breath Alcohol Analytical Report

**OPERATOR INFORMATION**

Operator Name: OPERATOR, LEVEL ONE M.  
 Agency: TRAINING CLASS

Permit #: 1020304

**STANDARD INFORMATION**

Standard Value: 0.100  
 Standard Lot #: 29017100A6  
 Expiration Date: 12/05/2019  
 Bottle #: 005  
 Last Changed By: POWERS, MARY M.  
 Perm #: 1234567

Test	g/210L	Time
Air Blank	0.000	09:47:34
Diagnostic Test	PASS	09:48:09
Air Blank	0.000	09:48:46
Dry Standard 1	0.099	09:49:07
Air Blank	0.000	09:49:47
Subject Test 1	0.000	09:50:13
Wait		
Air Blank	0.000	09:51:13
Subject Test 2	0.000	09:56:13
Wait		
Air Blank	0.000	09:56:58
Dry Standard 2	0.099	09:57:19
Air Blank	0.000	09:57:59
Diagnostic Test	PASS	09:58:34
Air Blank	0.000	09:59:11

**RESULTS**

Subject Test 1: 0.000 g/210L  
 Subject Test 2: 0.000 g/210L

**EXCEPTION MESSAGES**

**OPERATOR COMMENTS**

SUBJECT TEST

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## Breath Alcohol Analysis

Quality Assurance

Quality Assurance Specialist

8000  
 31-day Calibration Check (G-2)  
 90-day Standard Quality Assurance Procedure (G-4)

9000  
 31-day Periodic Maintenance and Standard Quality Assurance Procedure (I-2)

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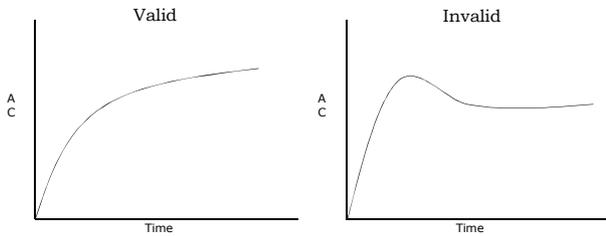


## Breath Alcohol Analysis

Exception Messages

### Invalid Sample

Mouth alcohol possible



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## Breath Alcohol Analysis

Exception Messages

### Ambient Failure

Detectable level of alcohol in room air

### Range Exceeded

Level higher than 0.600

### Deficient Sample

Minimum sample criteria not met

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## Breath Alcohol Analysis

Lockouts

Instrument will not allow a subject test to be performed if:

- The 31-day Calibration check is past due
- The dry gas standard is expired
- The dry gas standard pressure is too low
- Concurrent calibration check failed

QAS must unlock instrument by performing appropriate QA measures

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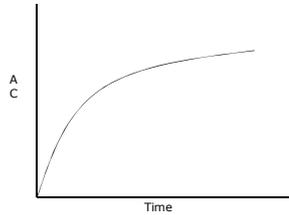
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# Breath Alcohol Analysis

Quality Assurance

## Minimum Sample Criteria

- Flow rate - 0.15 L/sec
- Time - 1 sec
- Volume - 1.1 L
- Level Slope




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# Breath Alcohol Admissibility

Two methods of admitting breath tests

## Statutory Method

ARS § 28-1323

## Rules of Evidence Method

Expert Witness, *Daubert*/Rule 702

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# Breath Alcohol Admissibility

Statutory Method

## 28-1323(A)

- 1) DHS/DPS Approved Device
- 2) Certified Operator
- 3) Duplicate Tests (includes deprivation period)
- 4) DHS/DPS Approved Checklist
- 5) Device in Proper Operating Condition

## 28-1323(B)

These are the only requirements for admissibility

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### DPS (DHS) Approved Device

- Testimony of Operator (not in statute)
- Judicial Notice
  - *Evidence*, Rule 201
  - *State v. Zaragoza*, 21 Ariz.App. 596 (App. 1974)
- Properly authenticated certification from DPS
- DPS Regulations (not in statute)
  - *Evidence*, Rule 902 (Self Authenticating Document)
  - Copy at <http://laww01/index.asp?click=codes#codes>

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### Certified Operator

- Testimony of Officer
- May Admit Copy of Card – not required
  - Certified Record of Officer’s Certification from DPS
  - *Evidence*, Rule 902 (Self Authenticating Document)

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### Breath Test – Statutory Method (Duplicate Tests)

#### What the Statute Says:

- Duplicate (2) Tests
- Tests Within .02 of Each Other

#### In the Regulations:

- 15 Minute Deprivation Period
  - Mouth Alcohol – discussed in depth later
- Tests Not Less Than 5 nor More Than 10 Minutes Apart

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### DPS Approved Checklist

- Testimony of Operator (in statute)
- Checklist Admissible as Public Record
  - Evidence, Rule 803(8)
- Do not have to admit copy of checklist, but need testimony it is DHS/DPS approved & was followed
- Lack of written checklist goes to weight not admissibility

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### Device In Proper Operating Condition

- Strip Chart Calibrations
- Calibration Records/SQAPs
  - Statute only requires periodic maintenance – not specific type
  - Admissible through QAS or as public record
- [Testimony of Expert (criminalist)]

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INFO: 0208 8010  
 Location: PINAL COUNTY ID  
 Strip Number: 8511152  
 DTG: 09/26/19 14:11:54

Standard Lock: 656610  
 Last Charged by: R. THORNTON #8111

Pkg #: 4, 109484941 #8111  
 P/N: 130  
 Component: J. S. DUNN #8111  
 SQAP

Subject: 109484941 #8111  
 CO: 09/11/19  
 Sec #: 109484941  
 15 Minute Depuration Per Lot? Yes

Test	g/210L	Time
Air Blank	0.000	14:12:46
Diagnostic Test	Pass	14:13:15
Air Blank	0.000	14:13:42
0.100 Cal Check	0.100	14:14:01
Air Blank	0.000	14:14:30
Subject Test	0.095	14:15:10
Air Blank	0.000	14:15:32
Five Minute Wait		
Air Blank	0.000	14:20:27
Subject Test	0.095	14:21:06
Air Blank	0.000	14:21:36
0.100 Cal Check	0.100	14:21:57
Air Blank	0.000	14:22:25
Diagnostic Test	Pass	14:22:55

Successfully Completed Test Sequence

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## Breath Alcohol Admissibility

Rules of Evidence Method

### Expert Witness, Daubert

Use when statutory foundation can't be shown  
When want to use an expert  
Also used to admit blood or urine test results

Majority of Time Will Use Statutory Method for  
Breath Tests  
State's Forensic Scientist rarely called in  
breath test cases

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## Breath Testing – When Will the DPS Lab Send an Expert?

If a defense expert will testify/is noticed  
If a retrograde is needed  
If there is an issue with the test or possible  
testing process

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## Blood vs. Breath

To be certified by DPS, breath  
instrument must be capable of  
measuring alcohol to within  $\pm 5\%$

CMI, Inc. states 3% - for both  
8000 & 9000

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## Lack of Foundation

Person objecting must indicate what is lacking.

**State v. Rodriguez**, 186 Ariz. 240 (1996);  
*Packard v. Reidhead*, 22 Ariz.App. 420 (1974).

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## Dealing with Experts

Ask about studies & what they entailed

Learn the material & understand it

Is that reasonable?

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## PBTs

- Results Not Admissible in Trial
- Maybe in PC hearings
- Presence of alcohol [in underage DUIs]

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## Questions?

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