FUNDAMENTALS OF TRIAL ADVOCACY COURSE

September 19-23, 2016
Phoenix, Arizona

DUI BREATH ANALYSIS ISSUES

Presented by:

BETH BARNES
Traffic Safety Resource Person
Assistant Phoenix City Prosecutor
Phoenix, Arizona
&
ERIN BOONE
DPS Criminalist

Distributed by:

ARIZONA PROSECUTING ATTORNEYS' ADVISORY COUNCIL
1951 West Camelback Road, Suite 202
Phoenix, Arizona 85015

ELIZABETH ORTIZ
EXECUTIVE DIRECTOR

DUI Breath Analysis

Beth Barnes, Phx City Pros Office
AZ GOHS Traffic Safety Resource Prosecutor
beth.barnes@phoenix.gov

Erin Boone, DPS Crime Lab
Technical Leader
(602) 223-2281
eboone@azdps.gov

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
($1866 by today's standards)

Breath Alcohol Analysis

Direct Oxidation

1938 – Rolla Harger

Drunkometer

Used colorimetric analysis

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

Breath Alcohol Analysis

Direct Oxidation

1954 – Robert F. Borkenstein

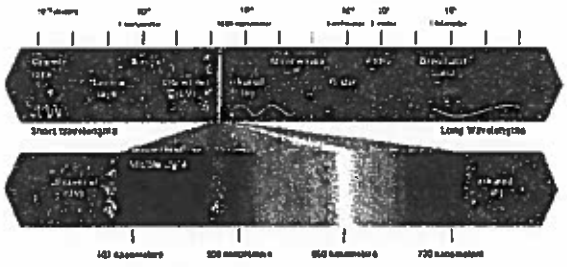
The Breathalyzer

Used colorimetric analysis

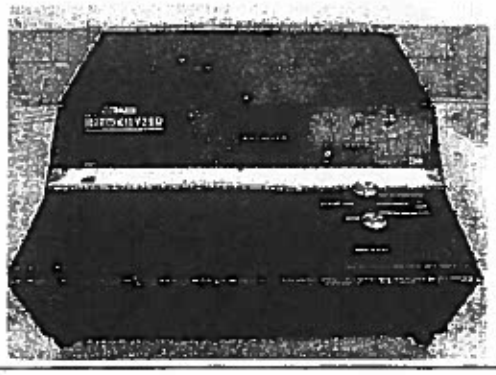
Potassium chromate, silver nitrate, and sulfuric acid
Light meter measured change in color

Breath Alcohol Analysis

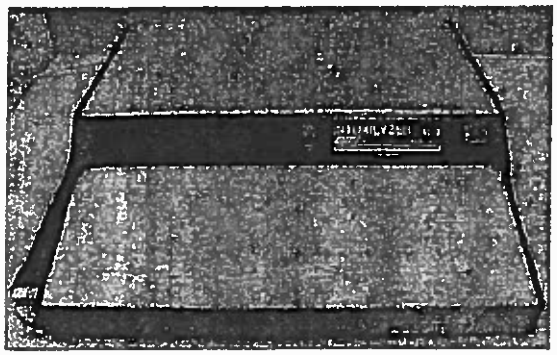
Infrared Spectrophotometry



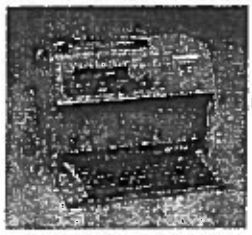
Intoxilyzer 4011



Intoxilyzer 5000

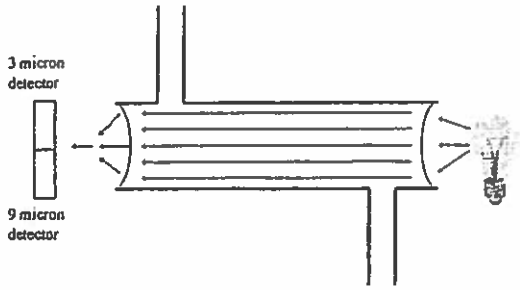


Intoxilyzer 8000



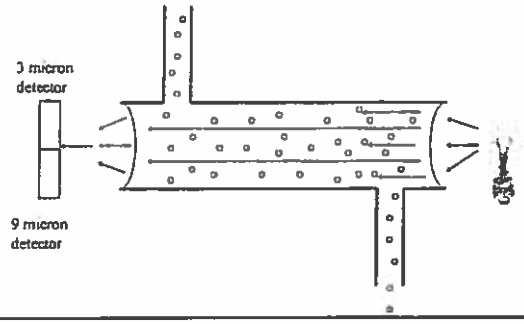
Breath Alcohol Analysis

Infrared Spectrophotometry



Breath Alcohol Analysis

Infrared Spectrophotometry



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

Blood to Breath Ratio

USDOT mandates instruments use 2100:1

1972 ad hoc committee

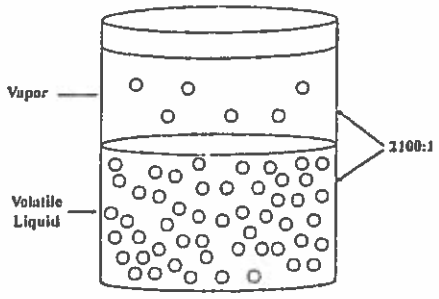
Amount of alcohol in 2.1 L of lung air is equal to amount of alcohol in 1 ml of blood

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

Blood to Breath Ratio



Breath Alcohol Analysis

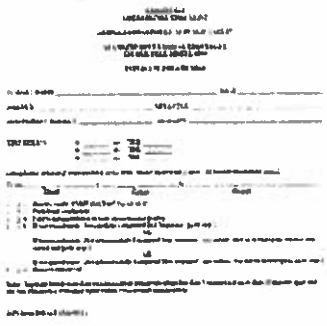
Quality Assurance

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.

Breath Alcohol Analysis

Quality Assurance



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

Breath Alcohol Analysis

Quality Assurance

Bracketing Calibration Checks

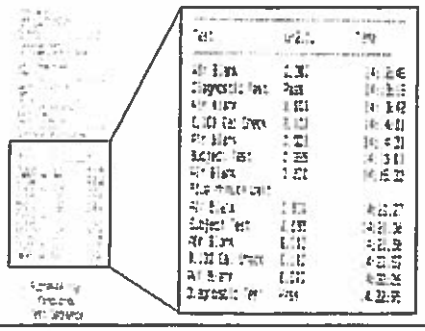
Arizona rules require result must be within ±10% or ±0.01 g/210L of the known value

0.100 g/210L NIST traceable dry gas standard

Range is 0.090 – 0.110 g/210L

Breath Alcohol Analysis

Quality Assurance



Breath Alcohol Analysis
Quality Assurance

Quality Assurance Specialist

31-day Calibration Check

90-day Standard Quality Assurance Procedure

Breath Alcohol Analysis
Exception Messages

Calibration Check Out of Tolerance

Outside 0.090 – 0.110

Instrument will be locked
Display "Contact QAS Cal Check Tolerance"

QAS will need to perform successful 31-day calibration check to unlock

Breath Alcohol Analysis
Exception Messages

Sequence Aborted
Pushed Start Test button at wrong time

Improper Sample
Blew at wrong time

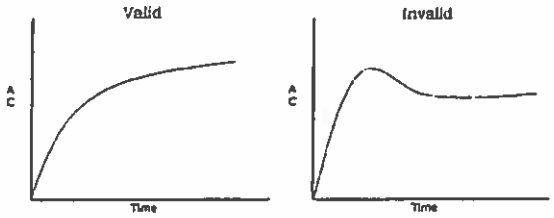
Inhibited RFI
Radio Frequency detected

Breath Alcohol Analysis

Exception Messages

Invalid Sample

Mouth alcohol possible



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

Breath Alcohol Analysis

Lockouts

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

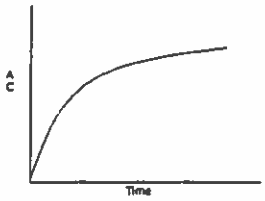
The 31-day Calibration check is past due
The dry gas standard is expired
The dry gas standard pressure is too low
Concurrent calibration check failed

QAS must unlock instrument by performing appropriate QA measures

Breath Alcohol Analysis

Quality Assurance

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



Breath Alcohol Admissibility

Two methods of admitting breath tests

Statutory Method
ARS § 28-1323

Rules of Evidence Method
Expert Witness, *Daubert*/Rule 702

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

DHS/DPS* 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 DHS/DPS
- DHS/DPS Regulations (not in statute)
  - *Evidence*, Rule 902 (Self Authenticating Document)
  - Copy at http://laww01/index.asp?click=codes#codes

Certified Operator

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

Breath Test – Statutory Method (Duplicate Tests)

What the Statute Says:

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

In the Regulations:

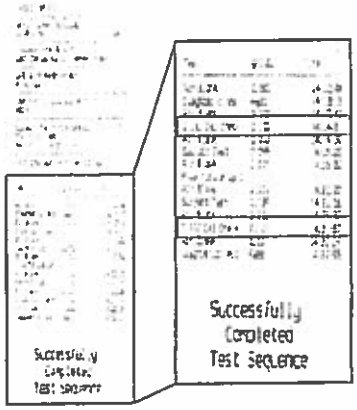
- 15 Minute Deprivation Period
  - Mouth Alcohol – discussed in depth later
- Tests Not Less Than 5 nor More Than 10 Minutes Apart

DHS/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

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)



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

Blood vs. Breath

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

CMI, Inc. states 3%

Lack of Foundation

Person objecting must indicate what is lacking. *Packard v. Reidhead*, 22 Ariz.App. 420 (1974).

Dealing with Experts

Ask about studies & what they entailed

Learn the material & understand it

Is that reasonable?

Questions?

Jon Tew, DPS Crime Lab
Supervising Criminalist
(602) 223-2760
jtew@azdps.gov

Erin Boone, DPS Crime Lab
Technical Leader
(602) 223-2281
eboone@azdps.gov

Beth Barnes, Phx City Pros Office
AZ GOHS Traffic Safety Resource Prosecutor
beth.barnes@phoenix.gov