

**Contains Copyrighted Materials.
Cannot Be Reproduced Without Permission.**

State of Illinois



Breath Analysis Operator Training

Revised October 2009

CONTENTS

	<u>Page</u>
SECTION A	COURSE INFORMATION AND ORIENTATION A-1
	State of Illinois Breath Analysis Operator Training Course A-1
	Lesson Plan with Training Goals and Objectives A-3-A-16
SECTION B	Student Outline Notes
	-Breath Alcohol Operator's Course Introduction B-1
	-Session I History and the Drinking Driver B-3
	-Session II Pharmacology and Toxicology B-7
	-Session III Theory B-26
	-Session IV Intoximeter EC/IR I B-32
	-Session V Intoximeter EC/IR II B-38
	-Session VI CMI Intoxilyzer 8000 B-48
	-Session VII RBT IV B-54
	-Session VIII S.F.S.T. Review B-65
	-Session IX The Legal Environment B-69
	-Session X Case Preparation and Court Presentation B-79
	-Session XI PBT Calibration B-85
	-Session XII B.A.O. Practical Proficiency Test B-99
SECTION C	INTRODUCTION C-1
	The History of a Problem C-1
	Drinking and Driving C-3
	Alcohol and Highway Safety C-5
	The Role of Drinking Driver in Traffic Accidents C-7
	The Use and Abuse of Alcohol C-9
SECTION D	ALCOHOL D-1
	Pharmacology and Toxicology D-1
	Alcohol D-1
	Alcohol Production D-3
	Proof System D-4
	Dosage Forms of Alcohol D-4
	Absorption of Alcohol D-5
	Distribution of Alcohol D-8
	Elimination of Alcohol D-10
	Widmark's Formula D-13
	Alcohol Concentration Curve D-14
	Impairment D-16
	Tolerance and Ethanol D-18
	Effects of Alcohol D-19
	Intoxication Without Alcohol D-21
	Measuring Alcohol Concentration D-22
	Urine Test D-22
	Blood Test D-23
	Breath Test D-23
	Interpretation of Results D-24

SECTION E	INFRARED AND FUEL CELL THEORY	E-1
	Infrared Principles	E-1
	Gases and Light Absorption	E-1
	Modifying Factors	E-2
	Lambert-Beer Law	E-4
	Fuel Cell	E-5
	History	E-5
	Application to Breath Alcohol Measurement	E-6
SECTION F	INTOX EC/IR I	F-1
	Introduction	F-1
	Storage	F-1
	Operating Environment	F-1
	Controls and Components	F-2
	Subject Test	F-4
	Aborts, Refusals, and Errors	F-8
	Assistance	F-9
	INTOX EC/IR II	F-10
	Introduction	F-10
	Features	F-10
	Technical Specifications	F-12
	Rear Panel	F-14
	Front Panel	F-15
	Turning on the EC/IR II	F-17
	Using the Keyboard	F-17
	Changing Paper Rolls	F-17
	Internal Printer Self-Test	F-18
	Assistance	F-18
SECTION G	RBT IV	G-1
	Introduction	G-1
	Parts	G-2
	Using the RBT IV	G-4
	Memory Management	G-5
	Void Codes	G-7
SECTION H	INTOXILYZER 8000	H-1
	Introduction	H-2
	Instrument Description	H-2
	Principle of Analysis	H-4
	Customized Data Entry Questions	H-5
	Printed Output	H-6
SECTION I-A	ALCO-SENSOR III	I-1
	Introduction	I-1
	General Components	I-1
	Checking Cell Readiness	I-2
	Flushing	I-2
	Operating Instructions	I-2

SECTION I-B	ALCO-SENSOR III ENHANCED	I-7
	Operating Principles	I-10
	Components and Functions	I-12
	Display Messages	I-15
	Conducting a Subject Test	I-17
	Calibration Standards and Procedures	I-19
	Accuracy Check Procedure	I-23
SECTION J	ALCO-SENSOR IV	J-1
	Introduction	J-1
	Instrument Operating Components	J-1
	Testing Preconditions	J-2
	Preparing the Instrument for a Subject Test	J-2
	Preparing the Subject	J-3
	Performing a Test	J-3
	Instrument Operating Features	J-4
	Troubleshooting	J-5
	Display Messages	J-6
	Void Codes	I-8
SECTION K	INTOXILYZER S-D2	K-1
	Introduction	K-1
	Instrument Features	K-1
	Subject Breath Test	K-2
	Precautions	K-5
SECTION L	INTOXILYZER S-D5	L-1
	Introduction	L-1
	Instrument Features	L-3
	Subject Breath Test	L-5
	Donor Refusals	L-8
	Some Do's and Don'ts	L-21
	Warning & Error Messages	L-25
SECTION M	FST	M-1
	Storage	M-2
	Theory and Design	M-3
	Components and Functions	M-4
	Conducting a Subject Test	M-6
	Operating Features	M-8
	Administrative/Maintenance Functions	M-13
	Accuracy Check Methods	M-13
	Performing an Accuracy Checks	M-16
	Battery Replacement	M-18
	Trouble Shooting & Technical Support	M-19
SECTION N	SFST REVIEW	N-1
	Standardized Field Sobriety Tests	N-1
	Concepts and Principles	N-1

	Detection of D.U.I. Driver	N-2
	Horizontal Gaze Nystagmus	N-5
	Walk and Turn	N-6
	One-Leg Stand	N-7
	Alcohol and/or Drug Influence Report Form	N-8
SECTION O	Legal Aspects	O-1
	Offense Code Index	O-1
	People v. Nunes	O-2
	Immunity Civil Liability	O-4
	Implied Consent	O-7
	People v. Murphy	O-11
	Under the Influence of Alcohol Presumption	O-13
	Emergency Medical Treatment	O-14
	P.B.T.'s	O-15
	Zero Tolerance	O-17
	Uniform Commercial Driver's License Act	O-23
SECTION P	CASE PREPARATION AND COURT PRESENTATION	P-1
	The Officer as a Witness	P-1
	General Considerations	P-1
	Preparation for Testimony	P-1
	Conference with Prosecuting Attorney	P-2
	In the Courtroom	P-2
	Direct Examination	P-3
	Cross-Examination	P-4
	Outside the Courtroom	P-6
	Self Evaluation	P-6
	Guidelines for Arresting Officer Testimony	P-7
	Guidelines for Breath Analysis Operator's Testimony	P-12
	Legal Aspects Checklist	P-14
	Directive (ISP ENF-18)	P-16
APPENDIX 1	TESTING OF BREATH, BLOOD AND URINE FOR ALCOHOL, OTHER DRUGS, AND INTOXICATING COMPOUNDS	1-1
APPENDIX 2	PRELIMINARY BREATH TEST EXAMINER	2-1
APPENDIX 3	FORMS	3-1
	Warning to Motorist	
	Law Enforcement Sworn Report	
	Notice of Summary Suspension	
	Non-Consensual Blood Draw Request	
	Breath Analysis Instrument Log	
	P.B.T. Certification Log	
REFERENCES	REFERENCES	R-1

PREFACE

It is customary for manufacturers of breath alcohol testing instruments to provide general guidelines and training manuals regarding the operation of their equipment. The manufacturers of breath testing equipment market their products worldwide. In Illinois, the operation of all evidential and preliminary breath testing instruments must be performed according to the protocols and procedures prescribed by the Illinois Department of State Police in the administrative regulations entitled "Testing of Breath, Blood and Urine for Alcohol, Other Drugs, and Intoxicating Compounds (20 Illinois Administrative Code 1286)."

Although every effort has been made to provide the most current and generally accepted information, it must be noted the science of breath alcohol testing continues to evolve. Manufacturers routinely include new information as it becomes available. This manual can also serve as a resource for officers when making presentations on breath alcohol issues to community, school, or civic groups.

SECTION A

COURSE INFORMATION AND ORIENTATION

State Of Illinois Breath Analysis Operator Training Course

Course Requirements

1. Successful Breath Analysis Training Course performance will be based on a numerical grade of 70% which will be determined by the final written examination and on the successful completion of the laboratory portion of the course. Officers who do not successfully complete both portions of the course will not be licensed.
2. Officers are required to attend all classroom and laboratory sessions unless excused in advance by the course coordinator. Officers missing a total of 2.4 hours of scheduled instruction will not complete this course.
3. All laboratory assignments must be satisfactorily completed.
4. Students will train on all models of instrumentation.

General Policy

Each student will comply with the rules and regulations of the agency providing the training and the host agency. Students will maintain a level of conduct which is acceptable to the training agency concerned and the general standards of the law enforcement profession. Students may be dismissed by the Instructor of the agency providing training for disciplinary reasons. All discipline problems will be brought to the attention of the head of the department or agency of the student. The Illinois Law Enforcement Training and Standards Board will be informed of any student dismissal, withdrawal or failure.

Laboratory Policy

1. There will be no smoking in the laboratory at any time.
2. Successful laboratory performance will be based on:
 - A. Adherence to prescribed procedures in the operation of instruments.
 - (1) Operational Procedures must be used at all times. Failure to do so may result in an unsatisfactory rating.
 - (2) Students must demonstrate proficiency on all evidential and preliminary breath test instruments.
 - (3) Students will be expected to do their own work. The instructor will give assistance or special attention when necessary.
 - (4) All work will be documented on the laboratory work sheet.
 - B. Proper attitude as demonstrated by:
 - (1) Punctuality
 - (2) Attention to instruction

(3) Completion of all assignments

C. Care and maintenance of instruments. DELIBERATE ABUSE OF THE EQUIPMENT MAY RESULT IN AUTOMATIC DISMISSAL.

UNIT PREPARATION

- A. COURSE TITLE:** Breath Analysis Operator Training
- B. COURSE LENGTH:** 24 Hours
- C. INSTRUCTOR(S):** As assigned (minimum of two instructors with more than 15 students)
- D. PRESENTED TO:** Personnel employed by a law enforcement agency
1. State
 2. Local
 3. Federal
 4. Probation Officers
- E. CLASSROOM LOCATION:**
1. ISP Academy
 2. Off-site Location
- F. INSTRUCTIONAL AIDS:**
1. Chalkboard, chalk, and eraser
 2. Flip charts, marking pens
 3. Projector
 4. Laptop Computer
 5. Projection screen
- Equipment
- a) Evidential Breath Instruments
 - 1) EC/IR I

- 2) EC/IR II
- 3) Intoxilyzer 8000
- 4) RBT IV

b) Preliminary Breath Tests Instruments

- 1) Alco-Sensor III
- 2) Alco-Sensor IV
- 3) S-D2
- 4) S-D5
- 5) FST

c) Solution Standards

- 1) Wet Bath Simulators
- 2) Dry Gas

e) Mouthpieces

f) Tools

g) Electrical Equipment

G. STUDENT MATERIALS:

1. Student Manual
2. Notebook

H. METHOD OF INSTRUCTION:

1. Lecture

2. Laboratory
3. Proficiency Testing

I. REFERENCES - LIST:

1. Illinois Vehicle Code
2. Manufacturer's Manual

Class Title: Problem Drinking Driver

Length: 1 hour

Materials: Lecture/Notebook

Purpose: The purpose of this block of instruction is to familiarize the student with identifying the drinking driver.

Student Performance Objectives:

At the conclusion of this block of instruction, the student should be able to answer the following questions:

- (1). Who is the Drinking Driver?
- (2). What is society's view of the Drinking Driver?
- (3). What do statistics tell us?
- (4). To what socioeconomic background does the average Drinking Driver belong?
- (5). When is the D.U.I. most likely to occur?
- (6). What is the B.A.C. of the average drunk driver?
- (7). Are the chances of being involved in a crash increased with the increase of the driver's B.A.C?
- (8). How efficient are police in detecting and arresting the drunk driver?
- (9). What part do drugs play in the D.U.I. violations?
- (10). What group of drivers are most likely to use drugs?
- (11). What sanctions are most effective?
- (12). What enforcement techniques are most effective?

Class Title: Physiology and Pharmacology

Length: 3 hours

Materials: Breath Alcohol Notebook

Purpose: The purpose of this block of instruction is to cover the physiological and pharmacological effects of alcohol within the human body. The instructor will also discuss the principles and relationships of Henry's Law and Widmark's Formula.

Student Performance Objectives:

Upon completion of this unit of instruction, the student will be able to identify:

- (1). The variables concerning the rate of absorption of the alcohol in the bloodstream.
- (2). The locations where the alcohol after it enters the body.
- (3). The route of the alcohol after it enters the body.
- (4). The various ways alcohol can be introduced into the body.
- (5). The importance of "Henry's Law."
- (6). The length of time for residual alcohol to be completely eliminated from the mouth.
- (7). The organ of the body which destroys alcohol.
- (8). "Widmark's Formula."
- (9). The function of the brain which is affected first by a person consuming alcohol.
- (10). How much alcohol will be eliminated per hour as an average.
- (11). The A.C. where coordination and vision usually become impaired.
- (12). The A.C. where some people may die.

- (13). The difference between alveolar air and mixed expired air.
- (14). Identify that alcohol is a depressant rather than a stimulant.

Class Title: Instrument Theory

Length: 1 hour

Materials: Breath Alcohol Manual, Instruction Manuals provided by Intoximeter and CMI Intoxilizer.

Purpose: The purpose of this block is to inform the student of the physical laws governing light absorption, and fuel cell technology.

Student Performance Objectives:

At the conclusion of this block of instruction, the student will be able to identify:

- (1). The wavelength where ethyl alcohol molecules absorb light.
- (2). That substances other than ethanol absorb light in the same light spectrum.
- (3). The physical laws governing light absorption.
- (4). The instruments using this breath analysis process.
- (5). The Fuel Cell Technology process.
- (6). The purpose of using this technology.
- (7). The instruments using this technology.

Class Title: Instrumentation

Length: 2 hours

Material: BAT Manual, Service Manuals from Intoximeter, and CMI Intoxilyzer, EC/IR I, EC/IR II RBT IV, Intoxilyzer 8000.

Purpose: The purpose of this block of instruction is to familiarize the student with the operation of the EC/IR I, EC/IR II, RBT IV, and the CMI Intoxilyzer 8000.

Student Performance Objectives:

At the conclusion of this block of instruction, the student will be able to identify:

- (1). The methods used by the individual instruments to determine BrAC.
- (2). The process of conducting a breath analysis.
- (3). The individual characteristics of each instrument.

Class Title: Standards and Procedures for Conducting Chemical Analysis

Length: 2 ½ hours

Materials: Illinois Department of State Police Regulations

Purpose: The purpose of this block of instruction is to provide the student with the rules for conducting chemical analysis of blood, breath, and urine, to inform the student of the authorized types of instruments used in Illinois.

Student Performace Objectives:

At the conclusion of this block of instruction the student should be able to identify:

- (1). The requirements to be licensed as breath analysis operators.
- (2). Who can take blood for chemical testing.
- (3). The methods of analyzing BrAC in Illinois.
- (4). The terms BAT, BAI, and BAO.
- (5). The difference between BAC and BrAC.
- (6). The terms Breakdown and Malfunction.
- (7). The logbook and minimum data requirements.
- (8). The duration of the breath operator's license.
- (9). The requirements for a "Subject Test Record."
- (10). The operator's duties in conducting chemical analysis.
- (11). The intervals between accuracy checks.
- (12). The procedure for taking blood and urine.
- (13). The types of P.B.T.'s authorized in Illinois.
- (14). The term "Breath Analysis Reading."

(15). Serum to whole blood conversion.

Class Title: Laboratory Project

Length: 8 ½ hours

Material: Breath Instruments, Lab Record Sheets

Purpose: The purpose of this project is to give the student hands-on operational experience using Breath Alcohol Analyzers.

Student Performance Objectives:

At the conclusion of this project the student will have:

- (1). Conducted a minimum of 75 breath tests.
- (2). Witnessed breath analysis of mouthwash and breath spray, and learn the reason for conducting these tests.
- (3). Completed the Practical Proficiency exam on each type of instrument.
- (4). Completed the Laboratory Work Record as instructed.

Class Title: PBT Examiner

Length: 1 hour

Material: Dry Gas Ethanol Standard Tank, Regulator, all approved PBT's, screw driver(s).

Purpose: Upon completion of this course, agency employees will be able to verify the accuracy and calibrate preliminary breath test instruments. The students will be able to use preliminary breath test instruments to screen subjects suspected of driving under the influence of alcohol. Instrumentation that has been verified as accurate will assist in establishing probable cause for DUI arrests.

Student Performance Objectives:

At the conclusion of this block of instruction the student will be able to:

- (1). Explain the differences between accuracy checks and calibration checks.
- (2). Show an understanding of a Dry Gas Ethanol Standard tank and regulator set-up.
- (3). Demonstrate accuracy check procedures for assigned PBT's.
- (4). Demonstrate accuracy check procedures for the Alco-Sensor III, AS IV, AS FST, S-D2 and the S-D5..
- (5). Demonstrate the operation of assigned PBT's.
- (6). List the approved preliminary breath test instruments used in Illinois.

Class Title: Standardized Field Sobriety Testing

Length: 1 hour

Materials: N.H.T.S.A. Field Sobriety Testing Manuals

Purpose: The purpose of this block of instruction is to provide the student with a review of the principles of S.F.S.T. and the three phases of the Detection Process.

Student Performance Objectives:

At the conclusion of this block of instruction the student will be able to:

- (1). Identify the three phases of the “Detection Process.”
- (2). Recognize the importance of S.F.S.T. in the D.U.I. arrest process.
- (3). The role of the P.B.T. in the “Pre-Arrest Screening.”

Class Title: Legal Aspects

Length: 2 hours

Materials: Illinois Compiled Statutes, Chapter 625, Illinois Vehicle Code

Purpose: The purpose of this block of instruction is to familiarize the student with the law governing D.U.I. Enforcement, Implied Consent, Chemical Testing, Blood Test evidence, use of P.B.T.'s, Chemical Testing for individuals involved in Type A accidents, Zero Tolerance enforcement, and Illegal Transportation of Alcoholic Liquor.

Student Performance Objectives:

At the conclusion of this block of instruction the student will be able to identify:

- (1). The elements required for a D.U.I. violation.
- (2). The six violations contained under 11-501(a).
- (3). The requirements for being in physical control of a vehicle.
- (4). The factors required for Aggravated D.U.I.
- (5). The elements required for "Implied Consent."
- (6). The requirements for issuing the "Warning to Motorist."
- (7). The requirements for issuance of the "Law Enforcement Sworn Report."
- (8). The requirements for issuance of a "JDP."
- (9). The duration of Statutory Summary Suspension.
- (10). The difference between "Presumptive and Per Se Levels."
- (11). The use of chemical test evidence.
- (12). CDL per se levels.
- (13). The use of blood tests obtained by hospital during emergency treatment.

- (14). The use of Section 11-501.6.
- (15). The requirements and use of 11-501.8.
- (16). The relevant case law pertaining to chemical testing and D.U.I. enforcement.

Class Title: Court Testimony

Length: 1 hour

Materials: Video/Notebook

Purpose: The purpose of this block of instruction is to provide the student with the information needed to testify as a Breath Analysis Operator.

Student Performance Objectives:

At the conclusion of this block of instruction the student will be able to identify:

- (1). The proper courtroom demeanor.
- (2). The limits of his/her testimony.

SECTION B

STUDENT OUTLINE NOTES

COURSE INTRO



**BREATH ANALYSIS
INSTRUMENT
OPERATOR**
Certification Course

Course Information

- This course was revised in the Fall of 2003. The materials presented are the result of a joint effort between the Illinois State Police Breath Analysis Unit and The Illinois Secretary of State Police Training Section



Course Information

- 3 days/24 hours
- 70% passing grade (written test)
- Certification on ALL instruments
- Practical exam on ALL instruments



Course Information

- May not miss more than 10% of class
- Must complete laboratory exercises
- No BrAC during class



Course Description

- Introduction
- History - Problems with Drinking Driver
- Physiology/Pharmacology
- Instrument Theory
- Standards and Procedures
- Lab (75 tests min.)
- SFST Review & Court testimony
- DUI Law

Course Participation

- During this course students are expected to follow instructor guidelines.
- Students are expected to arrive to class on-time
- Students are expected to prepare themselves for final written examination
- **ENJOY THE COURSE!**

HISTORY AND THE DRINKING DRIVER

History & The Drinking Driver

Illinois BAO Course



Introduction

- 1916 - 18th Amendment (Prohibition)
- 1920-30 Increased alcohol consumption
- 1933 - Prohibition repealed
- 41,000 deaths annually prior to WWII
- 1937 - Drunkometer developed by Rollo Harger
- 1939 - Evanston, Il. was the first city to use the Drunkometer

Intro continued...

- 1953 - New York became the first implied consent state
- 1972 Illinois and Mississippi became the last implied consent states
- 1973 - 53,000 deaths annually
- 1973 - IDPH promulgates regulations
- 1998 - IDPH and ISP merge operations

Drinking Age - History in Il.

- Pre - 1933 no law governing drinking
- 1933 - Males must be 21; Females 18
- 1963 - 21 year of age was established
- 1973 - changed to 19 years old for beer and wine 21 for hard liquor
- 1980 - changed again to 21 years old for all persons, all types of alcoholic beverage

Profile of Il. Drunk Driver

- Male (85% of those arrested are men)
- 34 years old- average (58% of those arrested are under 35years of age)
- Arrested (11pm to 4am) on a weekend
- Caught driving with BAC level averaging .16 BAC



Illinois Data

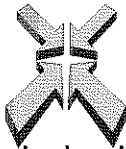
- Average of 1200 to 1600 persons killed annually in crashes each year
- Average 175 to 250 young people aged 16-20 were killed in crashes
- Average of 150 to 200 pedestrians fatalities and an average of 25-35 bicyclists
- Average of 45,000 to 51,000 persons arrested for DUI annually

Traffic Crashes aren't:

- **Accidents** 1500 persons died annually on average
- On average over 100,000 are injured
- Acts of fate
- They are predictable and preventable
- They drain our Healthcare System

How many traffic crashes in the USA claim lives annually?

40,000 per year



17,000 Alcohol-related fatal crashes

Average Statistics

- Cost of Illinois crashes - \$8 billion annually
- Each fatality average - \$1,000,000
- Property damage crash - \$6,500
- 40% of fatally injured drivers tested positive for a BAC
- 45% of fatally injured drivers (16-24) years of age tested had a BAC

The Grand Rapids Study

- Study covered a three year period
- 27,000 crashes
- 2000 were selected at random for review



Use and Abuse of Alcohol

- How many average Americans consume alcohol on a regular basis 8 out of 10
- 1 out of 10 persons are in some stage of alcoholism

Punishments



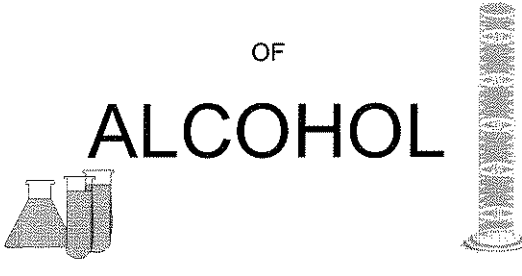
- Turkey - taken 20 miles out from town and made to walk back - loss of license for a year
- Australia - loss of license for a year and name in paper stating "He's drunk & in jail"
- El Salvador - First offense is your last, death by firing squad
- Malaysia - puts you in jail and makes you share a cell with your WIFE!

PHARMACOLOGY AND TOXICOLOGY

PHYSIOLOGY &
PHARMACOLOGY

OF

ALCOHOL



Properties of Alcohol

Alcohol is a hydrophilic compound
. It has an affinity for water

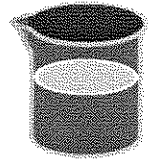
All Alcohol's are toxic to the same
degree
. Sufficient quantities are lethal

TYPES OF ALCOHOL

Ethanol

Isopropanol

Methanol



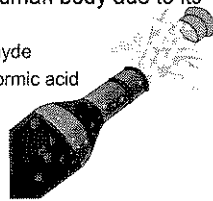
ETHANOL

- Used primarily for alcoholic beverages
- Chemical formula $\text{CH}_3\text{CH}_2\text{OH}$
- Not as toxic as other alcohols due to the lower toxicity of its by-products.
- ethaldehyde, acetaldehyde & ethanoic acid



METHANOL

- PRIMARILY USED FOR "STERNO" TYPE PRODUCTS
- extremely toxic to the human body due to its produced by-products
- methaldehyde or formaldehyde
- formaldehyde converts to formic acid



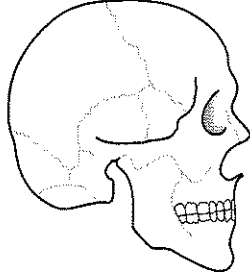
ISOPROPANOL

- rubbing alcohol
- Reduced income alcoholics sometimes are known to consume these products



LETHAL DOSES

- ETHANOL -
.40 .45grams/100 ml blood
- METHANOL -
.07 .075 gram/100 ml blood
- ISOPROPANOL -
.25 .35grams/ 100 ml blood



ALCOHOLIC BEVERAGES

- 2 CLASSIFICATIONS
 - DISTILLED
 - NON-DISTILLED

NON-DISTILLED BEVERAGES

- > BEERS & WINES
- > PRODUCTS OF NATURAL FERMENTATION WITH NO FURTHER PROCESSING
(happens in nature even within your own body)

BEER!

- Grain such as corn or wheat
- combined with
- barley
- yeast
- water
- Enzymes within Barley convert the starch of the grain into sugar
- Yeast consumes sugar = ethanol at 14%

WINES

- > FRUIT JUICE IS SUBSTITUTED FOR GRAIN
- > BARLEY IS SUBTRACTED



ALCOHOL CONTENT

- Beer contains 4-6% ethanol
- Malt liquor contains over 6%
- Wine contains 12-15% ethanol
- Fortified wines contain more than 15%

DISTILLED BEVERAGES

- Starts as a natural fermentation product which is then heated
- Heat causes the ethanol to be released in the form of a vapor
- Vapors are collected through a condensation process then cooled into a liquid form
- Rev. Elijah Craig - Bourbon County Ky.

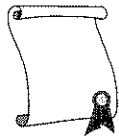
ALCOHOL TRIVIA

- Rum from sugar cane
- Gin from Juniper berries
- Scotch from peat moss as fuel
- Brandies and cognacs from fermented and distilled fruit juices
- Tequila from cactus



THE "PROOF" SYSTEM

- Fermented beverages are listed as "%"
- Distilled beverages are listed as "proof"
- The proof concentration of any beverage is twice it's alcohol content
- 100 proof whiskey is 50% alcohol
- What "proof" is beer ?



THE CONTENT FORMULA

- AMT. OF ALCOHOLIC BEVERAGE IN OUNCES, 12oz
- Multiply by the % of alcohol content
- BEER
- 12 oz Can X 4% alcohol
- 12 X .04 = .48 of actual alcohol



Determining Ethanol Content

- Beer = 12 oz X .04 (4%) = .48 fl oz
- Whiskey = 1 oz X .50 (50%) = .50 fl oz
- Wine = 4 oz X .12 (12%) = .48 fl oz
- **A drink is a drink is a drink!**

ABSORPTION OF ALCOHOL

- Oral ingestion
- Inhalation
- Injection
- Absorption
- Rectally
- Vaginally



ORAL CONSUMPTION

- MOUTH 1% ABSORPTION
- Esophagus less than 1%
- Stomach 5 - 10% absorption
- Ethanol stimulates digestive fluids (hydrochloric acid)



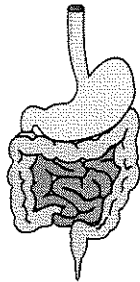
GREATEST ABSORPTION

- Effected by the Pyloric Sphincter



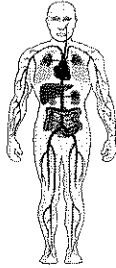
SMALL INTESTINES

- 90-95% OF THE ABSORPTION OF ETHANOL
- WITHIN THE FIRST 10-12 INCHES OF INTESTINE



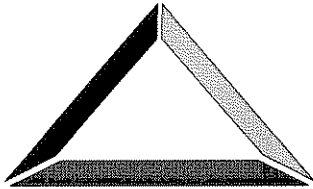
DISTRIBUTION OF ALCOHOL

- In the Human Body
- TIMING
- Amount of ethanol in tissue is proportional to the amount of water in that tissue.
- What organ contains the most water?
Brain
- Alcohol can be measured in the brain within 3 minutes of consumption
- Alcohol takes only 60 seconds to circulate



PHASES OF ALCOHOL CONCENTRATION

- Absorption phase
- Peak Phase
- Elimination Phase Melony Effect



ABSORPTION PHASES

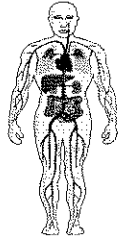
- Continued drinking = + BAC
- Stop drinking > BAC increases until PEAK
- After BAC PEAK - Elimination Phase begins
- After last drink "PEAK" is within 45-75 min.
- Alcohol is not digested, but absorbed unchanged!



ELIMINATION PHASE

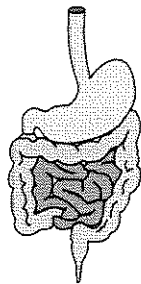
(3 WAYS)

- Excretion 1-2%
- Evaporation / Expiration 7-9%
- Metabolization 90-92%



METABOLIZATION

- A.D.H. ENZYME WITHIN THE LIVER
- Continued alcohol stress will increase A.D.H.



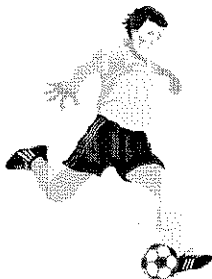
A.D.H.

- Men have some A.D.H. in the stomach
- Women have none
- American Indians & Eskimos have low levels of A.D.H.



Elimination from the Body

- Small amount from the skin, perspiration
- Greater amount through evaporation and expiration
- This phenomenon is the basis for "HENRY'S LAW"



HENRY'S LAW

1803 BRITISH CHEMIST

DEVELOPED THEORY OF VOLATILE
SUBSTANCES PLACED
IN WATER AND BROUGHT IN
CONTACT WITH AIR

(BASIS FOR BREATH TESTING)

HENRY'S LAW

"When the water solution of a somewhat volatile chemical compound is brought to equilibrium with air, there is a fixed ratio between the concentration of this compound in the air and the concentration in the water. This ratio is constant for a given temperature and pressure."

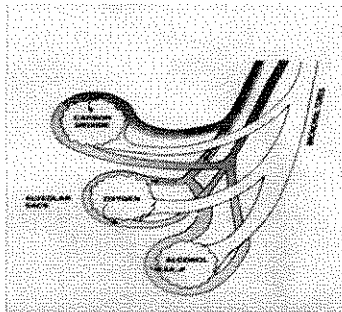
HENRY'S LAW

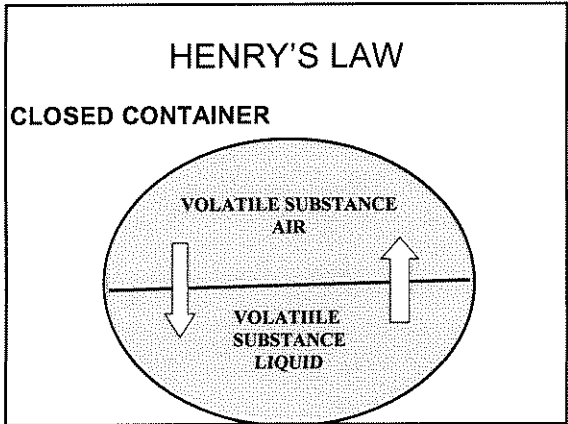
1. If you have a closed container
2. A constant temperature
3. A volatile substance
4. A liquid and a gas
5. Then you have a relationship between the amount of volatile substance in the liquid and that in the gas.
6. This is true regardless of the size of container or the amount of volatile substance.

HENRY'S LAW

1. If you have a closed container-- Alveolar sacs
2. A constant temperature--37 degrees C/ 98.6F
3. A volatile substance--Alcohol
4. A liquid and a gas--Blood--deep lung air
5. Then you have a relationship between the amount of volatile substance in the liquid and that in the gas.-- $2100/1$
6. This is true regardless of the size of the container or the amount of a volatile substance.

Alveolar Sacs





HENRY'S LAW

Increase in body temperature results in an increased (false positive) reading.

Body temp. 98.6°F or 37°C.

Every 1°C increase in body temp results in a 7% increase in breath results.....

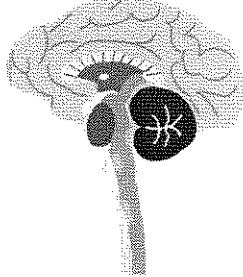
METABOLIZATION RATE

- Developed by:
- Dr. Widmark - Sweden 1930
- "Widmark Beta Factor"
- Generally accepted that the human body will eliminate alcohol at the rate of : .015 per hour
- A .03 will be eliminated within ?

2 Hours

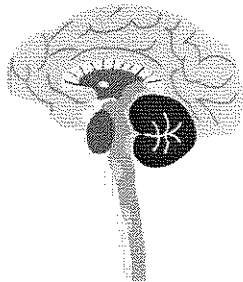
EFFECTS OF ALCOHOL ON THE BRAIN

- Alcohol is a drug
- Alcohol is a depressant
- Alcohol depresses transmissions



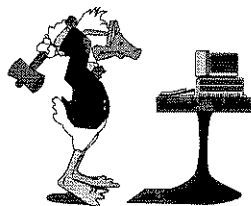
SECTIONS OF THE BRAIN

- Frontal Lobe = Higher learning & judgment
- Midline Brain Functions
- Motor Skills - hand eye coordination
- Brain Stem - life support systems



HIGHER LEARNING FUNCTIONS

- JUDGMENT
- REASONING



MIDLINE BRAIN FUNCTIONS

- SIGHT
- HEARING
- TOUCH
- FEEL
- TASTE



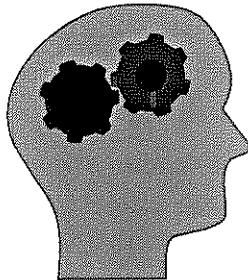
MOTOR SKILLS

- Muscular Coordination
- .06 fine motor coordination is affected
- higher levels .08 gross motor skills



BRAIN STEM Autonomic Functions

- .10 CHANGES
- heartbeat
- respiration
- body temperature
- .40 CHANGES
- respiration may stop



ALCOHOL with DRUGS

- alcohol taken w/ drugs produces a synergistic effect
- there is no known drug which reduces the effects of alcohol
- THEREFORE: when any drug is combined with alcohol the individual's impairment will increase



THE ALCOHOL MINDSET

- Breath Alcohol Analysis cannot detect drugs
- Small amounts of drugs may have a large effect on the individual
- Small amounts of alcohol may be easily and immediately detectable
- Do not limit your investigation to alcohol "alone."



ALCOHOL TOLERANCE

- LIFE EXPERIENCES
- ACQUIRED
- Habitual users of alcohol
- ACUTE
- The "MELONBY EFFECT"

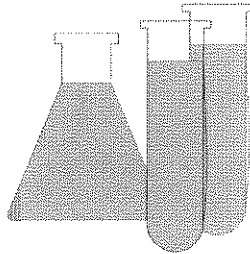


Tolerance

- **Natural**
- **INBORN** - able to to perform tasks at low BAC
- **PHYSICAL** - when your ill or sick
- **STRESS** - "sober up" due to stressor, only temporary
- **LEARNED**
- **BEHAVIORIAL** - same BAC but act different in social settings
- **ACQUIRED** - alcoholics
- **ACUTE** - comparing current BAC to past

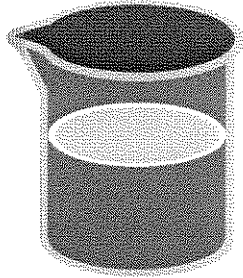
ALCOHOL CONCENTRATION

- THE BLENDING TOGETHER OF ONE OR MORE DIFFERENT COMPONENTS TO CREATE A SINGLE SUBSTANCE WHILE ALL COMPONENTS RETAIN THEIR DISTINCT PROPERTIES.



THREE TYPES OF CONCENTRATIONS

- WEIGHT TO WEIGHT "DRY"
- VOLUME TO VOLUME "LIQUID"
- WEIGHT TO VOLUME "ALCOHOL"



WHAT does .10 mean?

.10 B.A.C.

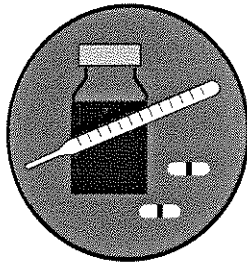
1 tenth of 1 gram or (0.1g) in 100ml of blood

BREATH ALCOHOL CONCENTRATION

- Breath to blood ratio is based on:
- 1 milliliter of blood
- 210 liters of breath
- TO EQUATE THESE VOLUMES, MULTIPLY THE BLOOD VOLUME BY 100 (1ml X 100 = 100ml)
- Now multiply the breath volume by 100 (2100ml x 100 = 210,000ml = 210 liters)

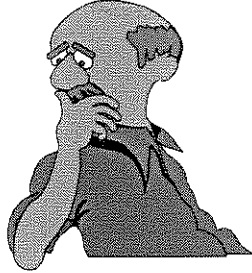
B.A.C (BLOOD ALCOHOL CONCENTRATION)

- .10/100ml of blood is equal to:
- .10g/210L of breath



ALCOHOL CONCENTRATION FORMULAS

- 150 LB INDIVIDUAL
- 1 OUNCE ETHANOL
- BAC = .05



EXAMPLES OF B.A.C. LEVELS

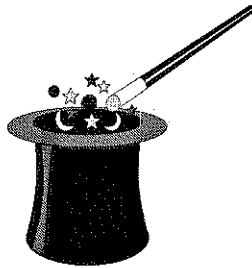
- ALL BASED ON 1HR DRINKING
- 150 lb + 4 BEERS = .08 - .09
- 200 lb + 6 BEERS = .09 - .10
- 180lb + 2 Beers = .03 - .04
- 100 lb + 2 Beers = .06
- 250 lb + 10 beers = .13



CHECK IT OUT!

Just two beers officer!

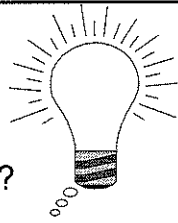
- 2 beers at 12 oz per beer or 24 oz
- The percent of alcohol in beer is 4%
- $24 \times .04 = .96$ oz of ethanol



B.A.T. OPERATORS

Calculations based on the Impossible

- every milliliter of ethanol was absorbed
- every bit of ethanol was present when the person reached "peak alcohol"
- the person was tested at that precise moment in time
- NOT REALISTIC OR POSSIBLE!



QUESTIONS ?

or
A

BETTER UNDERSTANDING ?

THEORY

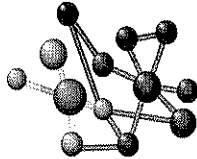


INFRA-RED AND FUEL CELL THEORY



INFRA-RED ABSORPTION

- Device measures alcohol in the breath by detecting the decrease in intensity of a wavelength of light passing through a breath sample.
- The wavelength of ethyl alcohol is (3 TO 4 MICRONS) which is in the infra-red range
- MICRON = 1 millionth of a meter

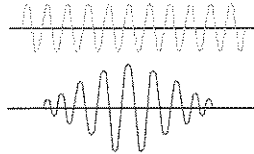


INFRA-RED INSTRUMENTS

- Intoxilyzer 8000
- ECIR
- ECIR II

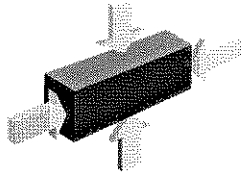
WAVE LENGTH

- Green Light = 0.5m
- Violet Light = 0.4m
- Deep Red = 0.75m
- Wavelengths longer than .75 microns are called "infra-red" or Below "red".
- A spectrophotometer identifies light



GAS AND LIGHT ABSORPTION

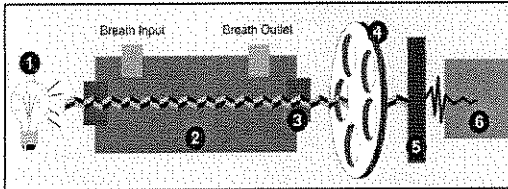
- ETHYL ALCOHOL
CH2CH2OH molecules are absorbed within a narrow strip of infra-red color 3.380 to 3.398 microns.
- METHYL ALCOHOL
CH3OH is chemically different which changes its absorption slightly.



The Lambert - Beer Law

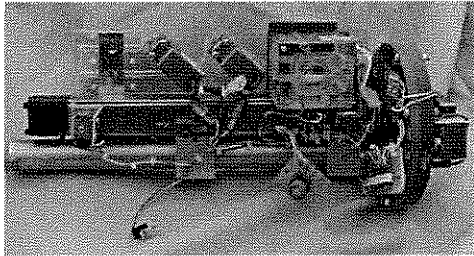
- Physics tells us that light is absorbed by molecules
- EXAMPLE:
 - closed container filled with molecules of gas
 - light passes through one end of the container and out the other

Infrared Operation

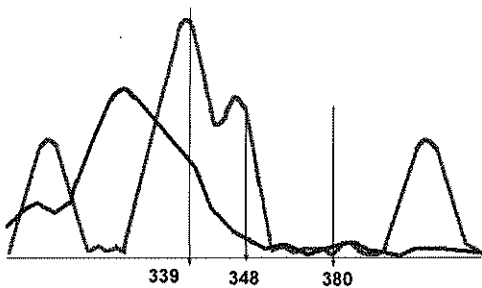


The IncoStar 2000 measures the degree alcohol absorbs infrared energy. The more alcohol present, the greater the absorption. As shown, a quartz lamp (1) generates IR energy which travels through a sample chamber (2) containing the subject's breath. Upon leaving the chamber a lens (3) focuses the energy onto the chopper wheel (3) containing three or five narrow-band IR filters. The IR energy passes by the filter to a light sensitive photo detector (4) which converts the IR pulse into electrical pulses. The microprocessor (5) interprets the pulses and calculates the Blood Alcohol Concentration which is then displayed.

Infrared Bench



Alcohol and Acetone



EXAMPLE

- “We can make determinations of what type of molecules are in the container if we know three things”
- 1. What is the absorption rate of the molecules for that color of light?
- ETHANOL has a very large absorption coefficient for light at 3.39 microns

EXAMPLE

- 2. How long is the box?
- Even with low concentration of molecules the length of the box may allow more molecules to absorb light
- 3. How many molecules are packed in the box?
- The more densely packed the more light will be absorbed

FUEL CELL COMPONENTS

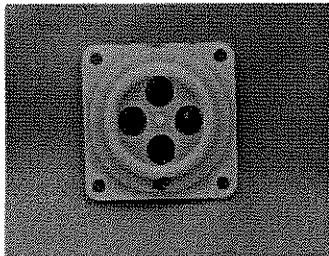
- Porous surface coated with finely divided platinum oxide “Platinum Black.”
- Impregnated with an acidic electrolyte solution
- Electrical connections applied to the surfaces

CELL SURFACE REACTION

- On the upper surface of the cell, alcohol is converted into acetic acid
- produces 2 free electrons per molecule of alcohol so converted
- H⁺ IONS are freed and migrate to the lower surface of the CELL where they combine with OXYGEN to form WATER consuming one electron per ION in the process.



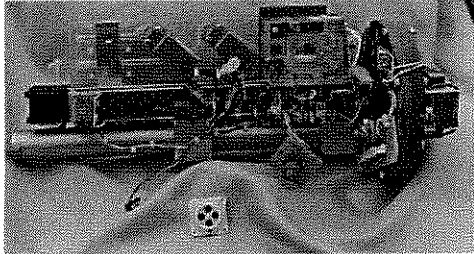
Fuel Cell



Fuel Cell vs Infrared

- | | |
|-----------------------|-------------------------|
| ■ Specific to alcohol | ■ Real-time measurement |
| ■ Less cost | ■ Output is non-linear |
| ■ Output is linear | ■ Quick multiple tests |
| ■ Compact | |

IR vs FC



MEASUREMENTS

- The upper surface has excess of electrons
- The lower surface has a deficiency of electrons
- The two surfaces are connected and a measurable electrical current is formed
- The current is an indicator of the amount of alcohol consumed by the fuel cell



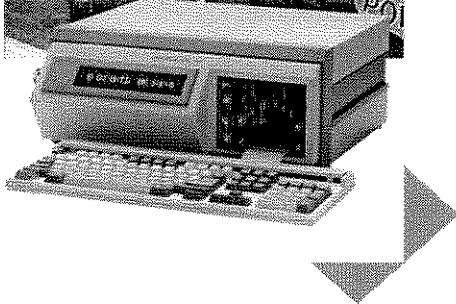
INFRA-RED & FUEL CELL TECHNOLOGY

- You need not be an expert in the field
- You should, however have a reasonable understanding of how YOUR instruments MEASURE alcohol!



INTOXIMETER EC/IR I

INTOX-EC/IR



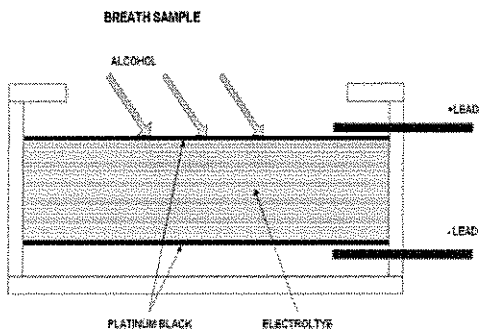
*Intox EC/IR:
Method of Analysis*

Fuel Cell (Electro-chemical)
Specific to alcohol's--primary analyzer

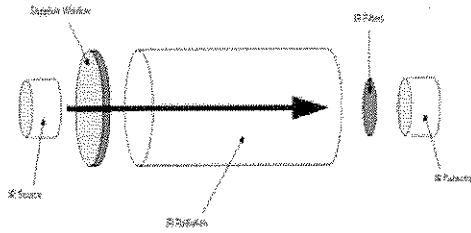
Infra-red absorption
real time analysis 3.39 microns

Slope Detection
used to determine when to take sample

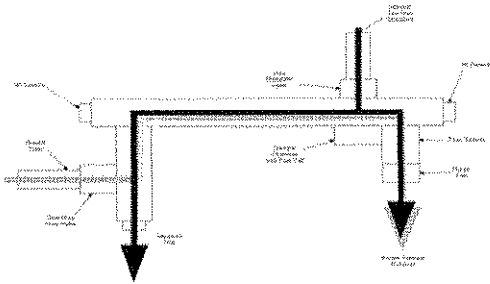
Intox EC/IR: Fuel Cell



Intox EC/IR: Infra-red Cell



Intox EC/IR: Infra-red Cell



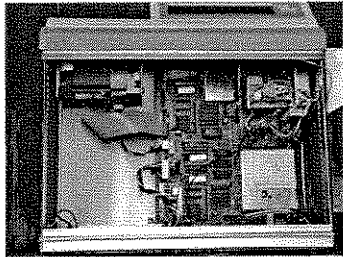
Intox EC/IR Main Components: Keyboard

- Regular 102 IBM keyboard
- special keys for operations
 - Escape--- erases or exits program
 - Enter--- enters information into program
 - "P" --- prints last test
 - "R" --- prints "test refused"
 - F1 to F12--- administrative commands

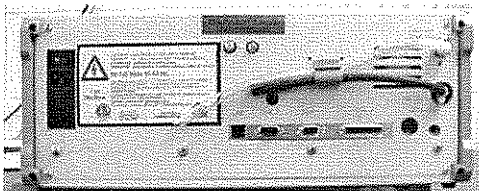
*Intox EC/IR Main Components:
Breath Analyzer*



Internal View



Rear View



Intox EC/IR

- ▶ Computer Compatible
- ▶ Internal record keeping
- ▶ Memory 400 tests
- ▶ Internal modem
- ▶ Allows remote diagnostic checks

Intox EC/IR

- ▶ Requires password
- ▶ 20 character display
- ▶ measurement range .00 to .40
- ▶ Heated breath hose

*Intox EC/IR:
Administrative Protocol*

- ▶ Press enter
- ▶ Subject Test y/n
- ▶ Enter information (20 characters per line)
 - operator's name
 - operator's ID
 - subject's name
 - subject's DOB (mm/dd/yy)
 - subject's sex: male

*Intox EC/IR:
Administrative Protocol*

- drivers license state
- arresting officer
- arresting officer's ID
- arresting department
- county of arrest
- edit? Y or N.

*Intox EC/IR:
Administrative Protocol*

- ▶ Diagnostic process
 - checking system
 - blank check
 - (blow until beep)
 - subject test
 - 3 minutes
 - 3 opportunities

*Intox EC/IR:
Messages*

- ▶ Test Refused--- subject was unable to complete test--- "R" key pressed during test
- ▶ Operator abort---escape key pushed

Intox EC/IR:
Messages

- ▶ Mouth Alcohol--- slope detection
- ▶ Three minute time out--- sample not provided in three minutes
- ▶ Insufficient Breath--- aborted test three times
- ▶ Out of range--- accuracy check off by more than .01
- ▶ High Blank --- contamination in blank check

INTOXIMETER EC/IR II

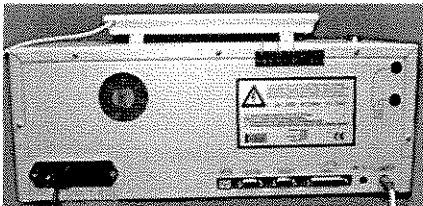
Intoximeters EC/IR II



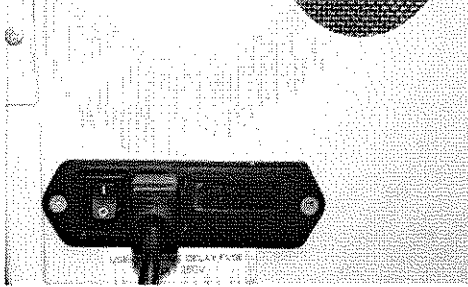
Features

- Dual Sensor Technology
- Subject's BrAC is Measured by the Fuel Cell Which is the Primary Sensor
- Infrared Monitoring for Mouth Alcohol
- Thermal Printer
- Measurement Range: .000 to .440 g/210L
- RFI Shielding

Rear Panel



Power On/Off Switch



Rear Panel Features

- Power On/Off Switch
- A/C Power Cord Connection
- Exhaust Fan - Do Not Block!
- Keyboard Connection

To Start a Subject Test

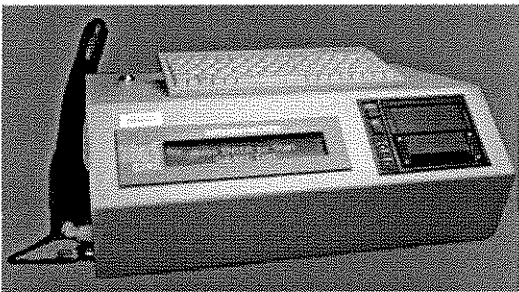
- Make Sure the Instrument is Scrolling
- Install a New Mouthpiece
- Press the "ENTER" Key
- Follow Display Screen Instructions
- Subject is Allowed Three Tries Within Three Minutes
- If Subject Refuses the Test, Press "R" on the Keyboard



Points to Remember

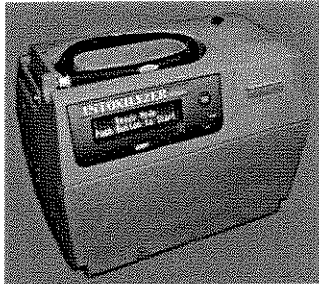
- Leave Instrument On at All Times
- Do Not Allow Subject to Hold Breath tube
- If Printout is Blank, Make Sure Paper is Installed Correctly, i.e. With the Paper Over the Front of the Roll
- If There is No Printout, Make Sure Printer is On Line

Questions ?

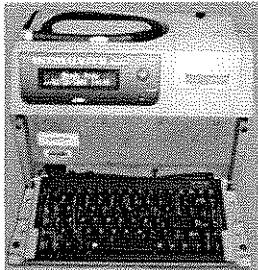


CMI INTOXILYZER 8000

Intoxilyzer 8000



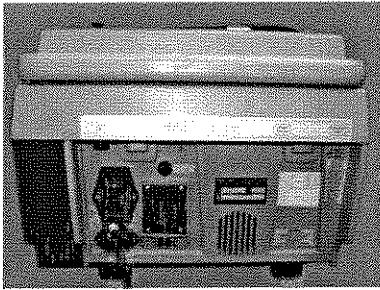
Keyboard Down



Features

- Uses Infrared Analysis for Measurement of Subject's BrAC and Mouth Alcohol Detection
- Designed for Both Stationary and Mobile Use
- Flexible Breath tube
- Thermal Printer
- Measurement Range: .000 to .600 g/210L
- RFI Detection

Rear Panel



Rear Panel Features

- Power On/Off Switch
- 120 Volt A/C Power Cord Connection
- 12 Volt D/C Power Cord Connection
- Exhaust Fan

To Start a Subject Test

- Make Sure the Instrument is Scrolling
- Install a New Mouthpiece
- Press the "START TEST" Button
- Follow the Display Screen Instructions
- Subject is Allowed Three Tries within Three Minutes
- If Subject Refuses the Test, Press "R" on the Keyboard



Points to Remember

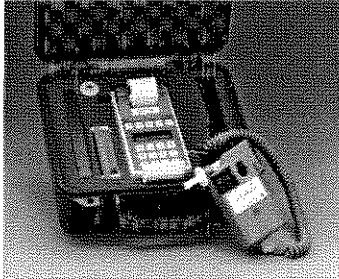
- Leave Instrument On at All Times
- Do Not Allow Subject to Hold Breath tube
- If Printout is Blank, Make Sure Paper is Installed Correctly, i.e. Over the Back of the Roll
- Tear Off the Printout by Pulling Down on the Paper

Questions ?

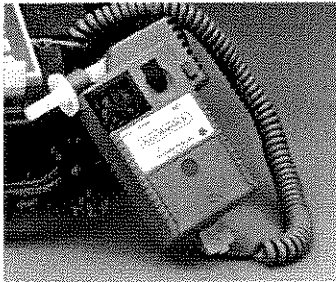


RBT IV

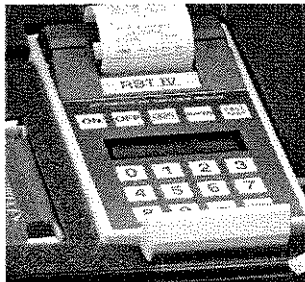
**Road Side Breath Tester
RBT IV**



**Alco Sensor IV
Analytical System**



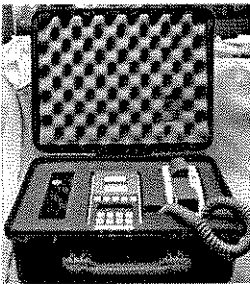
Printing System



RBT IV : Background

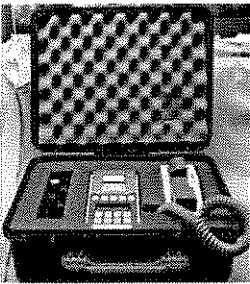
- On NHTSA CPL list in 1992
- Listed as an Illinois Approved Evidential Breath Testing Instrument in 1995
- Fifth generation breath testing instrument
- Increased specificity to alcohol
- Increased accuracy, replicability
- Increased automation

Characteristics



- Portable
- Produce hard copy test result on-scene
- Specific to alcohol
- Results on negative samples in ten seconds
- Positive samples 30-45 seconds

Characteristics



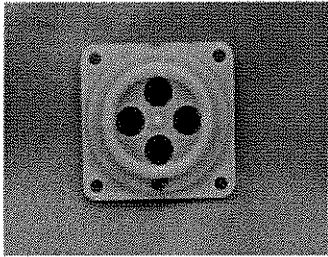
- Reads alcohol levels between .000 - .400
- Can operate between 10 and 40 degrees Celsius
- Self diagnostics
- Multiple power sources

Characteristics

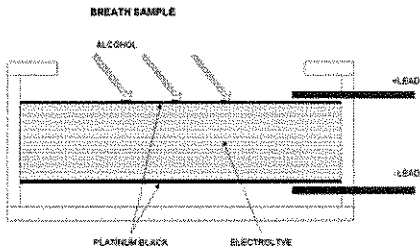


- 75 tests on fully charged printer battery
- 300 tests on AS IV battery
- 900 test memory
- Water-proof case

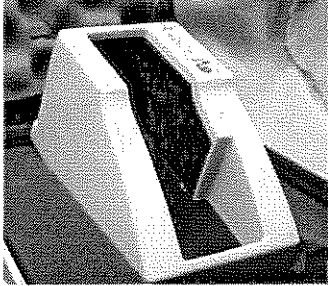
Fuel Cell



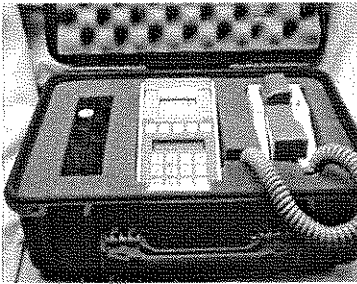
Fuel Cell Technology



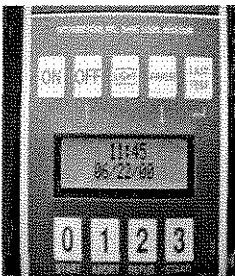
Cell Enhancement Module



Operating Procedures

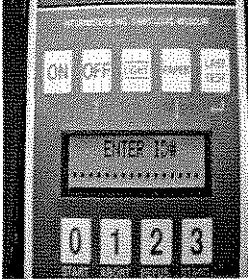


Operating Procedures



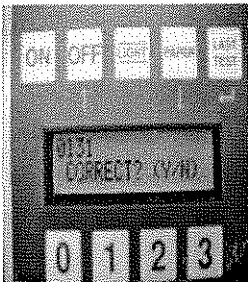
- Press "ON" button to start instrument operation
- Date and time will be displayed
- Press "Start" "0"

Operating Procedures



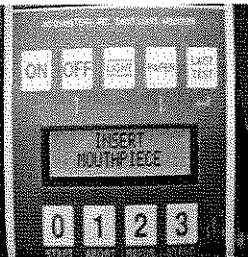
- Enter officer ID. This is not a critical entry but it requires input
- Press "Enter"

Operating Procedures



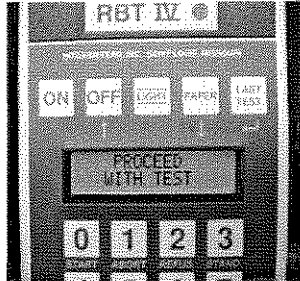
- The instrument will ask you if the input is correct
- Press "8" for "YES"
- Press "9" for "No"

Operating Procedures

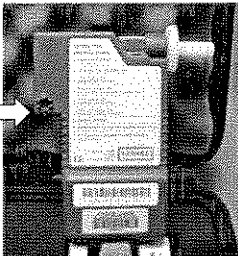


- Insert special mouthpiece into the AS IV unit
- The instrument will tell you to follow AS IV directions

Operating Procedures

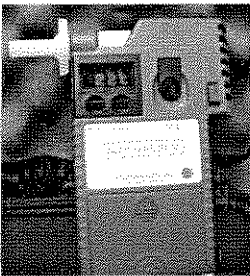


Operating Procedures



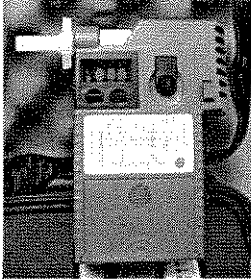
- You can follow directions on the back of the instrument
- Do not place your hand over the exhaust port. This may cause a malfunction

Operating Procedures



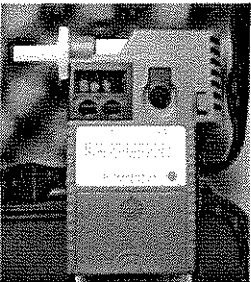
- The instrument will display its current operating temperature
- The unit will not operate if it is too cold or hot. Place in the CEM if this occurs

Operating Procedures



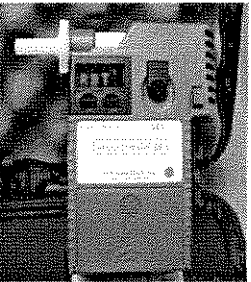
- The instrument will perform an "Air Blank" and indicate .000
- Other readings will cause the instrument to void the test

Operating Procedures



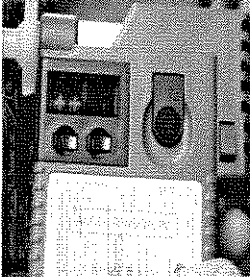
- Press the set button when prompted

Operating Procedures



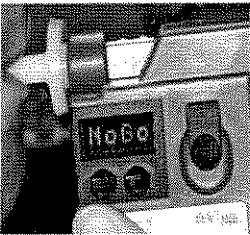
- Have the subject blow when "RBT" appears
- If the word "Test" appears this indicates the unit will only operate as an AS IV and will not print. This is not an evidential test.

Operating Procedures



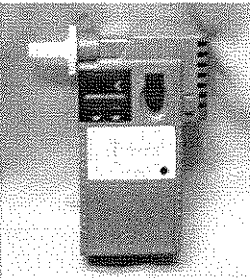
- One “ + ” sign indicates the subject has met the minimum pressure requirement
- Two “ ++ ” signs indicates the subject has met the minimum volume requirement

Operating Procedures



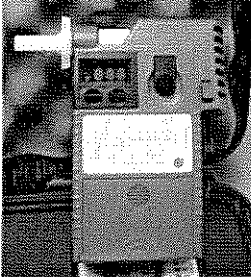
- “NoGo” will appear if the subject failed to meet minimum breath test requirements

Operating Procedures



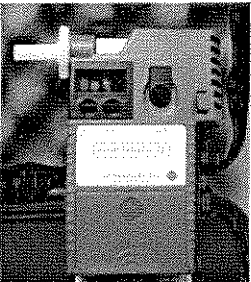
- When you hear a “Click” that indicates a proper sample was given
- “ < > ” signs indicates the unit is analyzing the sample

Operating Procedures



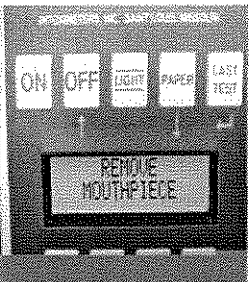
- The subject's BAC will be displayed

Operating Procedures



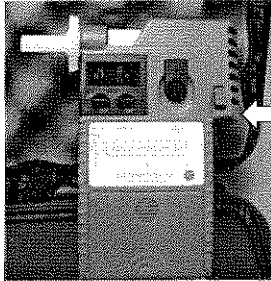
- Press the set button when prompted

Operating Procedures



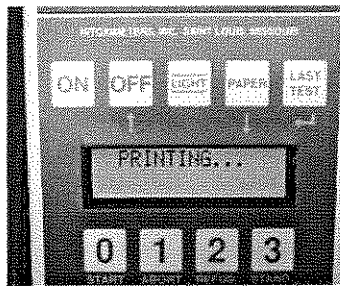
- You have to remove the mouthpiece before it will print

Operating Procedures



Eject button

Operating Procedures



Operating Procedures



RBT IV Questions?



RBT IV OPERATING PROCEDURES

To start a subject test:

Press the "ON" button to start instrument operation

Date and time will be displayed

Press "START" located below the "0" button

Enter your officer ID number

Press the "ENTER" button

Instrument will ask you if the information is correct

Press "YES" located below the "8" button if correct or press "NO" located below the "9" button if you wish to change your entry

Insert a mouthpiece into the AS IV hand held instrument

Follow the instructions on the AS IV display

The instrument will display its temperature

If the instrument is below 10 degrees or above 40 degrees Celsius, it will need to be warmed up or cooled down accordingly

If prompted, press the "SET" button

The instrument will perform an air blank

Press the "SET" button again when prompted

When the letters "RBT" are displayed, have the subject blow into the mouthpiece

One "+" sign indicates the subject is blowing hard enough, two "++" signs indicates they have met the minimum volume requirement, but have them continue to blow until the instrument automatically takes their breath sample.

You will hear a click when the sample has been taken, then the subject's BAC will be displayed several seconds later.

Press the "SET" button when prompted, then press the red mouthpiece ejector button

The instrument will automatically print one copy of the subject's test.

For additional copies, press the "LAST TEST" button on the printer.

SFST REVIEW



S.F.S.T. REVIEW

Three Phases of Arrest

- 1. Vehicle in Motion
- 2. Personal Contact
- 3. Pre-arrest screening

CURRENT APPROVED TESTS

- Walk & Turn
- One Leg Stand
- HGN
- PBT**



Walk & Turn

- Instruction Stage: Initial Positioning & Verbal Instructions
- Place your left foot on the line (demo)
- Place your right foot on the line ahead of the left foot, with heel of right foot against the toe of the left foot (demo)
- Place your arms down at your side
- Keep this position until I tell you to begin. DO NOT START to walk until I tell you to do so
- Do you understand the instructions so far?

One Leg Stand

- Please stand with your feet together and your arms down at the sides, like this. (demo)
- Do not start to perform the test until I tell you to do so.
- Do you understand the instruction so far?
- When I tell you to start, raise one leg, either leg, approx. six inches off the ground, toes pointed out (demo)
- You must keep both legs straight, arms at your side
- While holding that position, count out loud for 30 sec in the following manner: one thousand one, one thousand two, until told to stop. (demo)

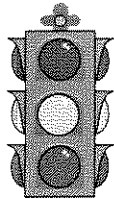
One Leg Stand cont...

- Keep your arms at your sides at all times and keep watching the raised foot.
- Do you understand ?
- Go ahead and perform the test. (discontinue after 30 sec - officer tracking time)



HGN

- Refer to video presentation



Testing reliability

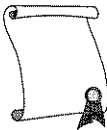
- IN LABORATORY STUDIES NHTSA FOUND THE FOLLOWING:

- Nystagmus Test alone = 77% accurate
- Walk & Turn alone = 68% accurate
- One Leg Stand alone = 65% accurate

- Nystagmus + Walk & Turn = 80% accurate

Standardized ?

- they are always administered in the same way
- the officer administering the tests always looks for a specific set of clues on each test
- the officer always assesses a suspect's performance criterion for each test



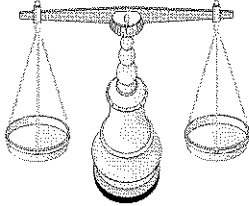
Lets Practice!

- Find a partner and we will break into teams



THE LEGAL ENVIRONMENT

The Legal Environment



Session Objectives

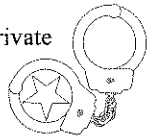
- Identify the six criminal DUI statutes.
- Discuss the provisions of the implied consent law.
- Discuss the Statutory Summary Suspension.
- Discuss the types of chemical tests.
- List the elements required for emergency room reporting, and non-consensual blood draw.

Basic DUI Statute

11-501A

It is unlawful for any person to...

- drive or be in actual physical control of . . .
- any vehicle. . .
- within this state. . . a) public or b) private
- while . . .



1) 11-501a1 The alcohol concentration in a person's blood or breath is 0.08 or more; Illinois Per Se Law.
(This is a secondary ticket after the results of the chemical test are received)

2) 11-501a2 Under the influence of alcohol;

3) 11-501a3 Under the influence of an intoxicating compound or combination of intoxicating compounds to a degree which renders the person incapable of driving safely;

4) 11-501a4 Under the influence of any other drug or combination of drugs to a degree that renders the person incapable of safely driving;

5) 11-501a5 Under the combined influence of alcohol and any other drug or drugs, or intoxicating compound or compounds to a degree which renders the person incapable of safely driving; or

6) 11-501a6

If there is any amount of a drug, substance, or compound in the person's breath, blood, or urine resulting from the unlawful use or consumption of cannabis, controlled substance or intoxicating compound.

(This is a secondary ticket after the results of the chemical test are received)

Towing/Removal of Vehicle

1. 12 hours (1st violation)
2. 24 hours (2nd violation)
3. 48 hours (3rd violation)
 - a) may be released to lawful owner; or
 - b) arrested owner gives permission to another valid driver.

Warning to Motorist

1. Warned by requesting officer; or
2. Refusal results in a statutory summary suspension.
3. Statutory summary suspension for violation of: 11-501a1 through 11-501a6.

**Key Features of Implied Consent
and
Summary Suspension**

- Any person who operates a motor vehicle upon the public highways of this state ...
- Shall be deemed to have given consent to a chemical test ...
- For the purpose of determining the alcohol and/or drug content of that person's blood ...
- When arrested for any acts alleged to have been committed while the person was operating or in actual physical control of a vehicle while under the influence of alcohol and/or any drug.

Refusals

Persons incapable of refusal:

1. Dead;
2. Unconscious; or
3. Conditional

Non-consensual Blood Draw

- Probable cause
- Cause the death or personal injury (Type A)
- To another
- Has been arrested for DUI
- This process is not dependant on any other warnings, refusal or chemical testing (it is a Stand Alone Retrieval of Evidence of the Crime)
- No Search Warrant Required

Chemical Testing

**The Illinois Department of State Police
is the controlling agency for
chemical test standards**

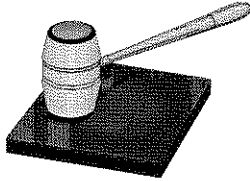
Analysis is determined by:

- Breath,
- Blood,
- Urine

**Alcohol concentration shall
mean;**

1. Grams of alcohol per 100 milliliters of blood
 - A. Whole blood measurement differs from
 - B. Serum blood
2. Grams of alcohol per 210 liters of breath.

Question



Is it possible for a person whose BAC was below the state's per se or presumptive level to be convicted of DUI?

Legal Presumptions

.08 or more...

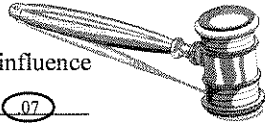
Presumed under the influence

Between .06 or .07

No Presumption, considered with other competent evidence

Between .00 and .05

presumed not under the influence



Illegal "Per Se" Statute



Is it unlawful for any person to...

- operate or be in actual physical control of...
- any vehicle...
- within this state...
- while having a BAC at or above state's level.

Actions after receipt of test results

- A. If the BAC is less than 0.08
 - 1. Do not complete sworn report; and
 - 2. Maintain all evidence for court.

- B. If the BAC is 0.08 or more, or the results confirm drugs:
 - 1. Issue additional citation for 11-501a1, and/ or 11-501a6.
 - 2. Complete the sworn report.

Persons under 21 have statutory summary suspension provisions for BAC's:

- A) Greater than 0.00

- B) Less than 0.08

Zero Tolerance

If the BAC is believed to be less than 0.08 and driver is under 21 years of age;

- 1. Issue citation for any violation of the Illinois Vehicle Code.

- 2. Complete the zero tolerance sworn report.

Elements for Aggravated DUI

1. Committed violation of 11-501a for a third or subsequent time.
2. Committed violation of 11-501a while driving a school bus.
3. Committed violation of 11-501a and was the proximate cause of:
 - a. Motor vehicle accident
 - b. Resulting in great bodily harm, permanent disability or disfigurement (to another)

Elements for Aggravated DUI Continued

4. 2nd DUI and previous reckless homicide conviction
5. Speeding in school zone and crash involving bodily harm
6. Motor vehicle accident and death to another
7. No DL or permit
8. Vehicle not insured

Driving Permits

- Monitoring Device Driving Permit (MDDP)
- 1. Available only to first offenders
- 2. 30 days "Hard Suspension" required
- 3. Issued for any purpose 24/7; hardship not required
- 4. Permit is actually issued by SOS following receipt of court order from judge

CASE PREPARATION AND COURT
PRESENTATION

CASE PREPARATION
AND COURT
PRESENTATION

The Officer As a Witness

Present in a logical sequence and be in a concise, understandable language

Present in a credible manner

- clean and well groomed
- overall appearance
- speak clearly
- be aware of your posture

Cross Examination

- ◆ Give same amount of respect to the Defense Attorney as you would the ASA
- ◆ Keep in mind he is trying to make you:
 - Look like a fool
 - Lose your temper
 - Agree with his/her leading questions

Direct Examination

- ◆ Answer directly to the examiner
- ◆ Make answers to the point, avoid speeches; usually if you can answer fully with a “yes” or “no” you should do so
- ◆ Don’t give opinions
- ◆ Avoid slang, police jargon
- ◆ Refer to the defendant as “The Defendant” or “Mr. or Ms...”

Preparation for Testimony

- ◆ Review and have available the “Alcohol Influence Report Forms”
- ◆ Have “Test Record Cards” available and understand their meaning
- ◆ Review with ASA, cover strong and weak case points, if necessary explain laws and instrument operation

Outside the Courtroom

- ◆ Avoid congregating and joking around
- ◆ Even with the defense attorney avoid conversation with them during a recess
- ◆ Don’t talk to jurors

BAO Testimony

1. Please, state your name, and spell your last name.
2. What is your occupation?
3. How long have been employed by (Dept)?
4. Were you employed on this *date*?
5. What were your duties on this date?
6. Did you have occasion to operate a Breath Analysis Instrument on this date?

BAO Testimony

7. Did you administer a breath test to the defendant?
8. What type of Breath Analysis Instrument did you use?
9. Have you had any tests?
10. When and where did you receive your training?

BAO Testimony

11. Did you pass the examination(s) given as a part of the course?
12. What proof do you have that you passed the examination(s)?
13. Approximately how many tests have you run on a subject(s) for DUI? *How many tests have you run?*
14. How often do you operate the instrument?
15. In operating the Breath Test Instrument, what is the first thing you do?

BAO Testimony

- 16. How do you know it was operating properly when you conducted the test?
- 17. Did you follow the operating procedures?
- 18. Did you conduct an observation/deprivation period prior to administering the test?
- 19. How long?
- 20. Did the defendant eat, drink, smoke, or vomit during this period?

BAO Testimony

- 21. What were the results of the test?
- 22. Was this result recorded anywhere?
- 23. I show to you what purports to be a test record card, do you recognize this form?
- 24. Did you fill out this test record card?
- 25. What does the instrument print on the card?
- 26. What was the breath analysis result?

Just a few more questions.....

- 27. You mentioned recording the test in a logbook?
- 28. What is the logbook and what is it used for?
- 29. Do you recognize this book (or page)?
- 30. Did you make an entry in this logbook?
- 31. Could you describe to the court the entry you made?

Really, just a few more.....

- 32. Was the instrument certified as accurate prior to and after the defendant's test?
- 33. Was the test given according to procedures outlined by the ISP?
- 34. Do you recognize the defendant?
- 35. Can you point him out to the courtroom?
- 36. In your opinion, what was the condition of the defendant?
- 37. Were there any witnesses present when you performed the breath test?

PBT CALIBRATION

PRELIMINARY BREATH TEST INSTRUMENT

CALIBRATION
PROGRAM
FOR B.A.O.'s

PROGRAM OVERVIEW

- 4 HOUR BLOCK OF INSTRUCTION
- CLASSROOM REVIEW OF MATERIAL
- PRACTICAL APPLICATION OF CALIBRATION SKILLS



OBJECTIVES

- Explain differences in accuracy checks and calibration checks
- Demonstrate accuracy check procedures for assigned PBT(s)
- Demonstrate calibration check procedures for AS III, AS IV, S-D2, S-D5, and FST.
- Demonstrate operation of assigned PBT

Instructional Goal

- Student will be able to verify the accuracy and calibrate PBT's
- Student will be able to use PBT's to screen suspect.
Instrumentation which is verified as accurate will assist in establishing probable cause for arrest

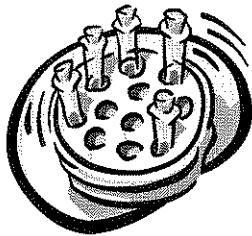


Definitions

- Accuracy Check - is used to determine if an instrument is reading alcohol levels correctly. Accuracy checks do not require adjustments to the instrument.
- Calibration - adjustment used to reset the instrument to display the correct value of a known standard

Calibration Methods

- Wet Bath Simulator
- glass jar which holds 500cc of solution
- Jar head contains heater thermostat, stirrer, thermometer, inlet and outlet port for sampling head space gas standing above the solution.



Wet Bath continued....

- Solution is a water/alcohol mixture of a certified BrAC/BAC concentration
- 30 tests per bottle of solution
- Liquid should be clear with no visible particles suspended in the solution
- A simulator containing a solution of known BrAC/BAC value must be at the operating temperature of 34°C.

Wet Bath continued...

- The simulator top must be on securely so the system is airtight. To check, cover the outlet port and blow into the intake port. Air bubbles will not rise rapidly through the solution if the top is secure.



DRY GAS

- A CYLINDER CONTAINING A MIXTURE OF A KNOWN QUANTITY OF ALCOHOL MIXED WITH AN INERT GAS. (Nitrogen and Ethanol)



DRY GAS

- Used properly the 105 tank gives at least 300 tests
- A small single stage regulator w/ gauge mounts on the tanks
- Tanks should be used only if they are between 10° - 40°C. If the tank has been stored below 0°C (32°F), see tank manufacturer's QAP for proper handling of the dry gas standard

Dry Gas continued....

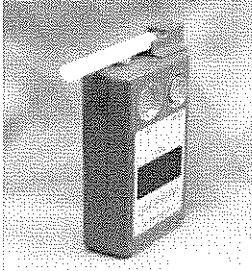
- The concentration of alcohol is calculated and carefully controlled to give the correct vapor concentration, when the cylinder is used at sea level, at normal atmospheric pressure (1Bar).
- At lower atmospheric pressures (such as at higher elevations) the concentration of alcohol in the vapor leaving the tank will be less. The change in alcohol concentration due to normal atmospheric pressure changes at sea level is so small as to be negligible, but at high altitudes, significant errors would be produced if suitable corrections are not made.

Dry Gas continued ...

- Do not mix tanks from one manufacturer with regulators from another
- Use NIST traceable NHTSA approved standards



Alco-Sensor III



- The mouthpiece is aligned with the baffle
- It is not necessary to align the mouthpiece
- It provides a distinctive sound indicating the subject is blowing

PROCEDURES FOR VERIFYING ACCURACY ON THE ASIII

- Make sure set button is depressed
- Check temperature strip on back. Any visible number shows it's OK
- Depress READ button, .000 should be seen for at least 7 to 10 sec. If above condition is not seen, depress SET button and recheck in one min.
- Depress SET button
- Attach mouthpiece
- Connect mouthpiece to solution source
- Depress reg. for 5 sec. or blow into inlet of simulator for 5 sec
- Remove AS III observe reading
- Results should be +/- .010 of solution value

Calibration Check for AS III

- Check temp strip on back. If a number is showing, then OK.
- Ensure SET button is depressed
- Using screwdriver turn calibration screw 2 full turns clockwise
- Connect to solution source
- Deliver sample (5 sec.)
- Press READ button on 4th of 5 second sampling
- Remove from sampling source and insert screw driver onto calibration screw
- Observe reading. Once reading surpasses the value marked on the standard, immediately turn the calibration screw counterclockwise, until reading matches the value of the sample

Calibration continued...

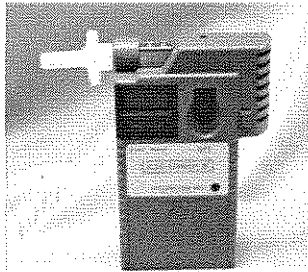
- Under no circumstances should the screw be turned clockwise to increase the number displayed by the AS III during this procedure. If during the 1st adjustment counter clockwise, the reading is carried below the value of the standard, DO NOT bring the value back up by turning the screw clockwise. Wait and see if the reading rises to the desired value. If it rises past the desired value bring it back down to the desired value by turning counter clockwise
- Once you are satisfied with the reading, depress SET button.
- Check calibration using accuracy check procedures. The reading should fall within .003 if a proper job of calibration has been done



Calibration Information

- The pocket model will lose sensitivity if more than 5 positive alcohol tests are run in an hour. Avoid mass testing of subjects of more than .10 BAC unless unit is recalibrated every 5th test.
- If this procedure is followed note that the unit will regain its sensitivity after a rest period and will therefore require recalibration
- Sufficient time after each test must be allowed for all traces of alcohol on the cell surface to be eliminated. This can be accelerated by locking the SET button down to short circuit the cell. If the Alco-Sensor III is ready for use, no reading will develop when the READ button is held down for 10 sec. If any residual alcohol were present in the system, a reading would be obtained, when the READ button was depressed for 10 sec.

Alco-Sensor IV



PROCEDURES FOR AS IV

- If checking w/ dry gas purge reg. for 3 or 4 sec. Before running 1st test of the day, or prepare wet bath to 34°C
- Insert new mouthpiece
- Observe temp reading. Must be in range of 10° - 40°C
- When display shows TEST connect to gas or wet bath
- Deliver 7 sec sample. Depress manual button on 5th sec into sample
- Observe the 3 digit reading
- Record the 3 digit reading. If it does not meet the specified tolerances, the unit requires a calibration adjustment. CALIBRATION MAY ONLY BE PERFORMED ON THE ASIV BY A QUALIFIED TECHNICIAN



S-D2



- Hand-held
- Battery Operated
- Leather Carrying Case

S-D2 (verifying accuracy)

- SET button must be depressed
- Check temp strip on the case of the SD-2. Any visible number indicates proper operating temperature
- Depress READ button, .000 should be seen for at least 7 to 10 sec. If above is not seen, depress SET button and recheck in 1 min.
- Depress SET button
- Attach mouthpiece to the SD-2
- Connect mouthpiece to solution source
- Blow into inlet of wet bath or depress reg on dry gas for 5 sec. On the 4th of 5 sec. press READ button
- Remove SD -2 and check reading
- Results should be $\pm .010\%$ of solution value. If not, it needs calibrated

Calibration for S-D2

- Check Temp strip on case, any visible number indicates OK
- SET button must be depressed
- Using screwdriver insert onto calibration screw and turn counterclockwise 2 full turns.
- Connect by mouthpiece to solution source
- Take sample on the 4th of 5 seconds, by depressing READ
- Remove from sample source and prepare to adjust using screwdriver
- Observe reading. Once reading surpasses the value marked on the solution, immediately turn the calibration screw until the value on the standard and the reading match. If you are quick enough the reading will continue to rise and the screw should be turned back again to match the standard value. Once the value stabilizes and hold for 5 sec, the unit is calibrated.

S-D2 INFORMATION

- Under no circumstances should the screw be turned counterclockwise to increase the number displayed by the SD-2 during this procedure. If during the 1st adjustment clockwise the reading is carried below the value of the standard, DO NOT bring the value back up by turning the screw counterclockwise. Wait and see if the reading rises to the desired value. If it rises past the desired value, bring it back down to the desired value by again turning the screw clockwise.
- Once you are satisfied with the reading, depress SET button.
- Check calibration using accuracy check procedures. The reading should fall within .003 if a proper job of calibration has been done.

S-D2 INFO cont....

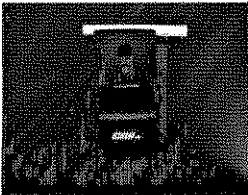
- The SD-2 will lose sensitivity if more than 5 positive tests are run in an hour. Avoid mass testing of persons over .10 unless unit is recalibrated every 5 tests.
- If this procedure is followed, note that the unit will regain its sensitivity after a rest period and will therefore require re-calibration.
- Sufficient time must be given after each test for alcohol on the cell surface to be eliminated. You may accelerate this by pushing the SET button. SD-2 is ready if no reading develops after holding READ down for 10 sec. If any residual alcohol were present, a reading would appear.

CLASSROOM ACTIVITY



- Break into groups of not more than three persons per available regulator and gas tank
- Follow instructor directions (as a group) for verification
- Follow instructor directions (as a group) for calibration

S-D5



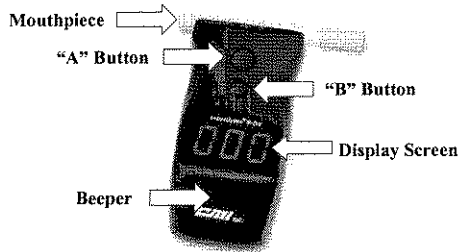
- Hand-held
- Battery operated
- Large display
- Last test recall
- Audible warning messages
- Automatic and Manual Sampling

S-D5

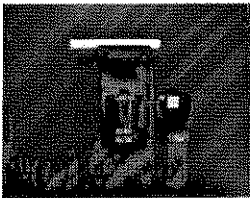


- “A” button (uppermost) activates functions
- “B” button (on/off)
 - Depress once to activate
 - Hold down for three seconds to turn off

S-D5



S-D5



- Battery cover on back of unit
- Uses 2 AAA batteries

S-D5 Operation



- Press the "B" Button and wait for "blo" to be displayed. It will only stay on a little while
- Low battery condition (bat) will be indicated on the display.

S-D5 Operation



- Attach Mouthpiece.
- Have subject blow at a steady pace. "Flow" will be displayed while this occurs.
- Instruct subject to stop blowing after you hear a *click*.

S-D5 Operation



- Observe Reading
 - If alcohol is present, it will increase incrementally.
 - If alcohol is not present, ".000" will quickly be displayed.
 - "Vol" indicates an improper sample.
 - "Suc" indicates the subject tried to withdraw the sample.

S-D5 Operation



- Discard mouthpiece after the test
- SD-5 will automatically reset itself for the next test.
- Last Test Recall
 - Depress "B."

S-D5 Operation



Last Test Recall

- Depress "B"
- Result will be displayed
- OR
- "no" will be displayed to indicate the previous test was aborted because of "Vol " or "Suc".

S-D5 Messages

- E1 Calibration Corrupt
- E2 Cell over range
- E3 Low calibration reading
- E4 Low calibration flow
- E5 Charge Pump error
- E6 Temperature out of range
- E7 Calibration temperature out of range

S-D5 Messages

- E8 Flow over range
- E9 Communications breakdown
- E10 Last test corrupt
- E11 PC settings corrupt
- E12 Flow offset high
- E13 Setup restored
- E14 Temperature restored

S-D5 Messages

E15 Calibration restored

Bat Low battery level

Suc Subject sucks back during the test

SUMMARY



- Verify PBT's once every 93 days
- A PBT examiner may check other agencies PBTs upon request
- AS IV's needing calibration must be completed by a Technician (BAT)

BAO INSTRUMENT
PROFICIENCY TESTS

**BREATH ANALYSIS
OPERATOR**

Practical Proficiency Test

- RBT-IV
 - 1. Operator Abort
 - 2. Manual Sample
 - 3. Refusal
 - 4. (Two) Regular Tests

Required Tests on Instruments

- EC/IR and EC/IR II
 - 1. Operator Abort
 - 2. (One) Quick Test
 - 3. No Sample
 - 4. (Two) Regular Tests
 - 5. Refusal

Required Tests on Instruments

- INTOXILIZER 8000
 - 1. Deficient Sample
 - 2. (Two) Regular Tests
 - 3. (One) Quick Test
 - 4. Refusal

SECTION C
INTRODUCTION

INTRODUCTION

THE HISTORY OF A PROBLEM¹

Revisions to statutory law in 1982 and 1985 have made the ultimate goal of the reduction of death and injury on the highways a more realistic one. Results have been an increase in enforcement efforts throughout the state, a much greater emphasis at the local level on strict enforcement of the statute, and a resulting higher number of certified operators to conduct breath analysis.

To grasp the magnitude of the problem in enforcing laws governing driving under the influence of alcohol or other drugs, it is important to review the history of the problem and how it developed into its present form.

In 1916 the United States Congress passed the first Federal Highway Improvement Act and established the first Federal Bureau of Public Roads. Following within a few years of this development was the ratification of the 18th Amendment to the United States Constitution or the Prohibition Act which led to a general disregard of liquor control laws throughout the country.

In 1920 a review of municipal, county, and state records revealed for the first time the true nature of the traffic safety problem in this country. In that year, 12,500 traffic fatalities had occurred in an almost totally rural highway transportation system with almost no major paved highways outside of larger municipalities. Unfortunately, with the ratification of the 18th Amendment, more drivers excluded from legally consuming alcohol began illegally using alcoholic beverages in motor vehicles.

The first Highway Safety Conference in the United States was called by the then Secretary of Commerce, Herbert Hoover, in Washington, D.C. in 1924. The conference addressed many highway safety problems as have subsequent conferences over the years. Unfortunately, there did not appear to be any solution to the drinking and driving habits of the public. As the highway system improved in the late 1920's and during the 1930's, alcohol consumption also increased dramatically.

Law enforcement agencies, with no training or equipment available to combat the problem and with almost no statutory authority to take action, were powerless to prevent a staggering increase in traffic fatalities. In the short span of 20 years from 1920 to 1940, traffic fatalities increased at a dramatic pace until in 1941, just prior to the beginning of World War II, there were 41,000 highway fatalities in the United States.

The first feasible and portable breath test equipment was invented by Dr. Rollo Harger, a member of the faculty of the University of Indiana Medical School at Indianapolis, Indiana. This device became available for police use in 1937 and remained in general use for a period of almost 25 years. The first city to make general use of Drunkometer equipment was Evanston, Illinois in 1939.

During World War II, with gas rationing, unavailability of new motor vehicles and a nationwide speed limit of 35 miles per hour, there was a dramatic reduction in traffic

fatalities due to the use of alcoholic beverages. However, after the end of the war in 1945, the increase in motor vehicle registration was phenomenal. Closely parallel to this was the construction of new highways largely sponsored by the Federal Interstate Highway Act of 1956. Unfortunately, it did not appear that anything could counteract the staggering increase in traffic fatalities which reached 53,000 drivers, passengers, and pedestrians in 1973.

The Arab Nation Oil Embargo of 1973 and 1974 did reduce the driving of many Americans for a short period of time, and fatalities were reduced to some extent during the next ten years. Unfortunately, they have again begun to increase with a potential of reaching 50,000 annual fatalities within the next few years.

In 1953, the State of New York was the first state to enact an implied consent statute based on the common legal presumption that a motor vehicle operator's license is a privilege granted by the issuing state, and implies drivers will obey all traffic laws when they receive such a license. Within a period of 20 years, all 50 states had passed implied consent statutes with Illinois and Mississippi being the last to do so in 1971.

With the implementation of the implied consent statute in Illinois in 1972, the Department of Public Health created the Division of Implied Consent, first as a section and later as a division of the department. For the first time in the history of Illinois motor vehicle safety projects, an agency was entrusted with the responsibility of certifying those operators as competent on a regular basis. In the ensuing period, the Division has certified and re-certified thousands of operators from law enforcement agencies throughout the state, and on a regular basis, certifies all breath testing instruments used in local agencies. The Division, in accordance with statutory requirements (Chap. 95 1/2, Sec. 11-501.2, Ill. Rev. Stat.), consulted with the Illinois Department of State Police on matters involving the Implied Consent program. The State Police Breath Alcohol Unit was heavily involved in training breath test operators and was responsible for maintenance and certification of instruments under the jurisdiction of the Department of State Police.

Estimates of the fatalities in traffic accidents caused by alcohol range from 15,000 to 25,000 persons annually, with approximately one million persons injured in these accidents. It is difficult, due to wide variances in record keeping, to determine specifically the number of fatalities, injuries, or even estimate the dollar value of property destroyed in accidents caused by driving under the influence of alcohol or other drugs.

More effective legislation in our state has encouraged local, county and state law enforcement officers to increase their enforcement efforts, placing an additional burden on all state agencies involved in enforcement and education programs.

Training has increased dramatically and will probably continue to do so for the foreseeable future. It will be necessary to initiate new programs and institute new technology to maintain a high level of performance in driving under the influence enforcement.

Historically, the Illinois Department of Public Health and the Illinois State Police provided breath analysis services to law enforcement agencies in Illinois. On April 1, 1998, the Illinois State Police and the Illinois Department of Public Health agreed to consolidate their alcohol and substance testing programs under the provision of the Intergovernmental Cooperation Act. The purpose of the consolidation was to promote greater efficiency regarding breath analysis services and fiscal responsibility within the two departments.

On January 1, 2001, Senate Bill 1861, amended the Illinois Vehicle Code regarding the standards and procedures for chemical testing. The amendment transferred responsibility for chemical testing from the Illinois Department of Public Health to the Illinois Department of State Police. The changes are reflected in 20 Illinois Administrative Code 1286, Testing of Breath, Blood, and Urine for Alcohol, Other Drugs, and Intoxicating Compounds.

DRINKING AND DRIVING

Here are some facts which can destroy some of the myths and misconceptions about alcohol.

The drinking and driving problem is one of the major factors contributing to motor vehicle accidents in the United States.

Special studies designed to measure the blood alcohol level of drivers and adult pedestrians who are involved in fatal motor vehicle accidents have consistently shown that drinking is a factor about 45 percent of the time. According to special studies conducted in California, 3 out of 5 of the fatally injured drivers tested who were responsible for the accident had been drinking. This proportion reached about 2 out of 3 for single car accidents. These figures are also reflected in other states' studies.

Who is the Culprit?

The social drinker, in the past has been labeled as the major problem in the drinking driver problem. More recent studies now indicate the major proportion of drinking drivers involved in accidents, especially severe to fatal accidents, have a high blood alcohol level. This does not mean that the "social drinker" is not involved in drinking driver accidents, but does indicate that the "drunken driver" is the biggest single problem on our streets and highways even though social drinkers vastly outnumber the heavy drinkers.

Nevertheless, whether problem drinkers, inexperienced drinkers, social drinkers, or just occasional drinkers, drivers must be made aware of what alcohol does to them when they choose to drink.

Most people have the misguided idea that a few drinks will not affect their driving ability. This is a mistake. Drinkers themselves are never the best ones to judge their own ability after a few drinks. The scientific fact is that the critical judgment of a driver and his ability to react quickly in emergencies are seriously impaired after only a few drinks.

It is true that even very intoxicated persons can perform the mechanical functions of driving. They can start a car, get it going, and steer it, but the important point is that

they don't have the judgment and the reflexes to do these things safely. This can be true for some drivers after even a few drinks.

Don't Fool Yourself!

Some people have the mistaken notion that a drink gives a lift or stimulates the drinker, thus making him or her a better driver. Alcohol does not stimulate, it depresses. It depresses the central nervous system and removes inhibitions and social restraints. This is the so-called lift which gives the impression of stimulation.

Contrary to popular belief coffee or other stimulants will not overcome the effects of alcohol; only time and body process will accomplish this end.

A full stomach tends to slow the rate at which alcohol is absorbed into the blood stream, but it doesn't keep alcohol from reaching the brain. It only delays it.

Enter the Villain!

When alcohol enters the stomach, some alcohol is absorbed through the walls of the stomach but most is absorbed by the small intestine and passed into the blood stream. The blood carries the alcohol to all parts of the body which contain water, including the brain.

In the brain, alcohol first depresses the area of higher functions, which includes judgment, social restraint, etc. Next, it attacks the simple motor functions, reaction time and vision. Balance, coordination and sensory perception are the next faculties to be impaired. Concentrated drinking will eventually lead to stupor, coma, and even if consumed steadily, death.

How Does It Act?

There are several factors which affect the absorption of alcohol into the blood stream: the amount of food in the stomach, type of food, type of alcoholic beverage, body weight, drinking habits. None of these factors will keep the alcohol from reaching the brain -- although they may slow down or speed up absorption time.

The most important factors contributing to alcoholic influence are the amount of alcohol consumed and absorbed by the individual plus the amount of time the body has to eliminate the absorbed alcohol. The human body works to change alcohol into food and/or pass it out of the body, but it does so at a relatively slow rate. It is easy, therefore, for a person to accumulate alcohol in their body but requires several hours to eliminate all of the alcohol from the body.

During the initial absorption period the individual may notice the impairing effects of the alcohol, while during the period of elimination he can be easily convinced that he no longer feels the effects and is perfectly sober. This is a delusion. The individual is falsely comparing his peak feelings of impairment with the declining impairment that he feels as his body eliminates the alcohol from his blood. He is not sober. He is only making a dangerously false comparison.

The liver is the organ of the body which breaks down the alcohol into usable chemical compounds, e.g., food, for the body to use. Alcohol is also passed out of the body directly and unchanged through the lungs and kidneys. If a 200 pound male consumes one ounce of pure alcohol, this will create an alcohol concentration in his body of about

.03%. (The % symbol is commonly used in this scientific area as a shorthand notation meaning grams of ethanol per one hundred milligrams of blood or grams of ethanol per 210 liters of breath. This value represents a weight to volume relationship.) A number of studies have indicated the body oxidizes or eliminates alcohol at rates from .010% to .025% per hour. Therefore, the combined body processes would take about two hours to oxidize or eliminate each ounce of pure alcohol consumed and absorbed by an individual. In terms of the usual intoxicating beverages, it takes about one hour to oxidize or eliminate each bottle of beer or each ounce of 100 proof whiskey.

**How Many
Drinks?**

To be safe and sure, **none**, if you are soon to drive your automobile. This does not mean that you cannot have a drink with your dinner and an hour later get behind the wheel of your car. In that one hour much if not all of the absorbed alcohol could have been eliminated.

The higher concentration of alcohol there is in the body, the longer you must wait until you can drive safely. Figure, conservatively, one hour for each bottle of beer or each ounce of whiskey consumed with a meal.

Some people seem to be able to hold their liquor better than others, and this excuse is often used by those who don't want to believe that a few drinks can seriously impair driving ability.

Because of body weight, fatigue, emotional condition, physical condition or a number of other reasons, one individual may show fewer visible signs of effect than another. However, this does not mean that that person is less impaired so far as driving a motor vehicle is concerned. Both may be equally impaired.

**Much Ado
About
Nothing?**

Hardly! Studies have been conducted which show that the hazard of an accident increases with an increase in alcohol concentration. This means that a normal driver's chances of having an accident are increased with each additional drink taken within a given time period.

Blood-alcohol levels over .04 are definitely associated with increased accident involvement, according to the study. When the alcohol level reaches .06, the probability of causing an accident is twice that of the no-alcohol level; at .10 the probability is six times greater, and at .15 it is 25 times greater.

**ALCOHOL
AND
HIGHWAY
SAFETY²**

The use of alcohol by drivers lead to some 41,000 deaths and a total of at least 511,500 crashes in the United States in 2000. There was no percentage change from the previous year in these figures. In Illinois, alcohol contributed to 608 deaths and about 36,800 crashes in 2000. Especially tragic is the fact that much of the loss in life, limb and property damage involves completely innocent parties.

The problem was first identified in 1904 and was first shown to be serious in 1924. Since then every competent investigation has demonstrated that the immoderate use of alcohol is a major source of highway crashes, especially of those most violent. In fact, it contributes to about half of all highway deaths, and to appreciable percentages of the far more numerous nonfatal crashes.

The Role of the Heavy Drinker

Research shows that more than half of adults use the highways at least occasionally after drinking. However, the scientific evidence is irrefutable that the problem is primarily one of persons, predominantly men, who have been drinking heavily, to an extent rare among drivers and pedestrians not involved in crashes.

Alcoholics and other problem drinkers, who constitute but a small minority of the general population, account for a large part of the overall problem. Their involvement in highway crashes and violations after drinking heavily is one of the many tragic derivatives of their deviancy and pathological behavior toward society as a whole.

Drinking Teenagers and Social Drinkers

Crashes, both fatal and nonfatal, of teenagers and young adults also frequently involve hazardous amounts of alcohol. Adults who use alcohol excessively, but not identified as problem drinkers by the research to date, are also frequently involved. On the basis of considerable scientific evidence, light drinking, although shown to have adverse effects, is clearly not the source of the problem, but its exact role is at present unknown because of insufficient research.

Alcohol Abuse and Violence

Overall, the relationship between alcohol and highway crashes and violations parallels in many ways the long known and very frequent relationship between alcohol abuse and other forms of violence.

Time of Day and Day of Week

Crashes involving alcohol occur at all times of the day. During the morning rush hours, however, they are relatively uncommon. In sharp contrast, the overwhelming majority of alcohol-involved crashes occur during the late afternoon, evening, and nighttime hours. So greatly does the abusive use of alcohol contribute to crashes at these times of the day that the odds are very high that alcohol was involved in any serious and/or fatal crash. In one study, the odds were found to be more than eight to one that a driver fatally injured in a single vehicle crash between 9 p.m. and midnight had been drinking heavily.

While there is an excess of alcohol-related crashes on Saturdays, they are very common on all days of the week. This is believed to reflect the facts that heavy drinkers do not confine their use of alcohol to weekends and that social drinking increases on weekends.

Preventive and other police activities directed at this problem should be concentrated in the hours when it is most serious. The same applies to the staffing and state of readiness of hospital and related emergency services that work to salvage the injured and dying from alcohol related crashes. Unfortunately, many hospitals, police, and emergency services are least prepared for such activity at night and on weekends, when the likelihood of greatest need occurs.

Counter-measures and Their Efficacy

Present enforcement, legal and administrative approaches contribute considerably to the detection and handling of individual cases. The extent to which they have reduced the magnitude of the problem or the contribution of each of the several relatively distinct types of drinkers involved, is not fully understood. Better approaches are needed to augment those now in use is indicated not only by the continued, tragic magnitude of the problem, but also by recent findings that high percentages of those whose licenses have been suspended or revoked for alcohol-related offenses continue to drive.

Attention must especially be directed at the development of constitutionally acceptable methods for screening highway users suspected of drinking, as well as those whose violations and crashes are not known to involve alcohol, to determine if they have been drinking to a hazardous extent. However, the "implied consent" statutes, under which breath and blood tests are used, apply only in situations in which drivers have already been arrested for driving while intoxicated or for similar offenses.

**Implication for
Other Means
of Reducing
Injury and
Death**

The intractability of the problem of alcohol in relation to highway safety is historical, and it is unlikely the continuing, predominant role of heavy drinkers in highway safety will be reduced. Therefore, it is particularly important countermeasures be taken to attack other portions of the sequences which lead to property damage, injury, and death.

Improvements in vehicle and highway crash design, and emergency services, already have greatly reduced death and injury in crashes. More can still be done, such as improved lighting, especially in urban settings.

This is not to suggest a less than all-out attack on the abusive consumption of alcohol in connection with highway use. Rather, it recognizes all practical means for reducing the nation's staggering highway losses, averaging slightly less than 9,000 casualties each day from all causes, must be employed to the fullest extent possible.

**The Dearth of
Research**

It is only during recent years that the complexities of the overall problem have begun to be identified by the few research workers concerned with the field. Only a few qualified research scientists are now known to be at work on this serious problem either in the United States or elsewhere in the world. This is in sharp contrast to the thousands of research workers studying certain social and medical problems, i.e., cancer and HIV. Yet, alcohol, a major source of human morbidity and mortality, will continue to plague our mechanically powered society until its ramifications and many present questions have been exhaustively explored, and the precise possibilities for truly effective countermeasures determined.

**THE ROLE
OF THE
DRINKING
DRIVER IN
TRAFFIC
ACCIDENTS³**

Alcohol, a not-to-be-neglected factor in our society, has been the object of study for many decades. Its effects on social institutions such as the family and the community have inspired the creation of organizations for its research, journals for communicating information between workers, and clinics and hospitals for care of its victims. Laws dealing with alcohol occupy more space in our statute books than those dealing with homicide.

Most efforts concerning control and research have been directed at the chronic alcoholic who is usually "grounded" by his addiction. Little is directed at the acute alcoholic who moves about in society in a relatively normal pattern but whose behavior is altered at times by his consuming alcohol in excessive quantities.

People drive cars. We are a nation on wheels. The nondriver is either a youngster or an exception. With alcohol the part of our culture that it is, and with its power to alter attitude and behavior, it is inevitable that it be considered a factor in traffic safety.

The question is, "How much of a factor?" Tabulations of the frequency of occurrence of alcohol in accident or fatality drivers usually yield startling results, ranging from 40 to 75%. This by itself is no evidence at all. During the First International Conference on Alcohol

and Road Traffic in Stockholm in 1950, one delegate stated passionately that 42% of all road accidents are caused by drivers being drunk. Another delegate quickly retorted, then 58% must be caused by drivers being sober. Incidentally, in 2000, the percentages are virtually the same for Illinois.

Tabulations of alcohol occurrence in accident drivers only answer the question, "How many drivers involved in accidents have been drinking?" but leave unanswered, "What role did alcohol play in causing accidents?" Moreover, no single factor should be considered entirely out of context with other apparent accident causes. The sum of the roles of all causes in the accident total must be 100%. Each cause is subordinate to all the others. Yet, if the percentages usually ascribed to causes, such as speed, alcohol, reckless acts, fatigue, drugs and narcotics, mechanical failures, weather conditions, etc., are added up, the total is several hundred percent.

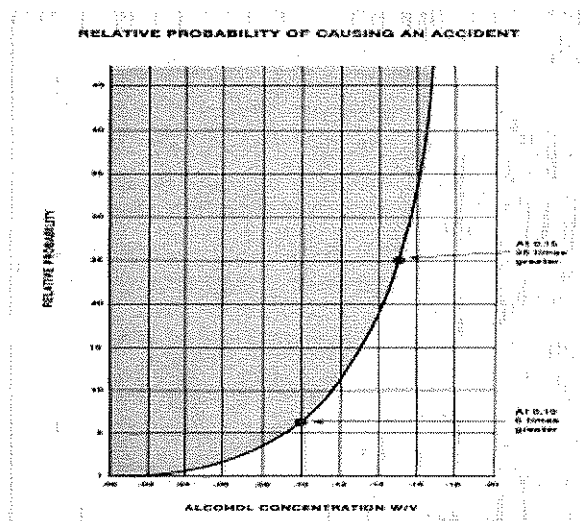
Traffic accidents are the result of interactions among drivers, also the influence of the driving environment, including road, weather, vehicle, signs and signals, etc. Thus accidents become multiple-cause phenomena.

Approaches to studying individual accident causes must be unemotional and designed to weave the cause into the entire fabric of traffic safety. A well-recognized study, "The Role of the Drinking Driver in Traffic Accidents," was designed and executed by the Department of Police Administration at Indiana University.

The distilled essence that this enormous and multi-approach evidence yields is that the use of alcohol by human beings in some way alters their attitudes and behavior and that these changes cause deterioration of performance in these tasks incorporated in the research. It also yields strong evidence that, unlike most other drugs and narcotics, adaptation through experience in use of alcohol is of a very low order.

Grand Rapids, Michigan, was chosen as the city for study on the based on its average socio-economic and ethnic characteristics and its excellent police department. Test data showed the accident rate mounted as the blood alcohol level rose. The study found that above 0.08% blood alcohol level, factors other than alcohol became less and less significant

Figure 1. Relative probability of causing an accident



and eventually seemed to disappear. In every case, the higher alcohol levels were associated with more frequent accident experience; and in general, accident involvement increased steadily and geometrically as the alcohol levels exceeded 0.04%. This association was so strong that other explanations of the excessive accident experience of drivers in the highest alcohol ranges were substantially ruled out.

The relative probability of causing an accident is depicted in Figure 1. This graph is based on strong assumptions. While the estimates should be used with caution, the shape of the curve is consistent with the accident involvement indices and with other data previously examined.

Summary

This discussion is a summary and abstract of material contained in a 246 page report. For the sake of brevity, many qualifications which must be made in the interpretation of this kind of data have been omitted. If the conclusions are to be used, the limitations should be examined in the original report.

Blood alcohol levels over 0.04% are definitely associated with an increased accident involvement. The probability of accident involvement increases rapidly at alcohol levels over 0.08%, and becomes extremely high at levels above 0.15%. When drivers with blood alcohol levels over 0.08% have accidents, they tend to have more single vehicle accidents, more severe (in terms of injury and damage) accidents, and more expensive accidents than similar sober drivers.

Many factors other than alcohol are related to the probability of accident involvement. The classes with the worst accident experience, in addition to the intoxicated, are the young or very old, the inexperienced, and those with less formal education. Persons with the most education, those with better jobs, and those who are middle-aged have relatively fewer accidents.

THE USE AND ABUSE OF ALCOHOL

Assuming that all of the persons reading this are normal, adult and mature Americans, at least seven or eight out of each ten persons consume alcoholic beverages on a regular basis, consider it a harmless pastime which normally relieves worries or tensions and even sometimes creates a feeling of exhilaration. Unfortunately, in addition to those seven or eight out of ten people who consume alcohol, approximately one out of ten persons may also be in the beginning or even last stages of alcoholism.

Alcohol is an emotional drink. It is also, in any form consumed, whether beer, wine or liquor such as gin, bourbon or rye, a drug. Alcohol is a central nervous system depressant at abuse levels which slows down or actually depresses the action of the brain. Alcohol is classified both physiologically and chemically with certain narcotic drugs such as chloroform and ether. If I were to hand you a glass of pure ethyl alcohol, you would probably refuse to drink it since it is clear and almost as odorless as water. Both the flavor and aroma of beer, wine or whiskey are supplied by the fermenting product or materials

used in processing and distillation of alcohol.

Never forget alcohol is a depressant drug, and taken in combination with barbiturates or other sedatives and even sometimes with prescribed drugs such as tranquilizers, it can become deadly enough to not only cause serious illness, but sometimes death.

Because it is easily obtainable and socially acceptable, alcohol is a widely used drug, not only by persons legally consuming the drug, but also by persons as young as students in junior high school. The average age of persons receiving treatment for alcoholism has been decreasing and was about 35 years of age in 1999. Of people receiving treatment for alcoholism in 1999, 24.1 percent were below the age of 24 years.

There are many misleading stories regarding the use of alcohol, such as the timeworn belief that the consumption of a large and heavy meal prior to the ingestion of alcohol will eliminate the possibility of intoxication--a story which we will show to be somewhat inaccurate.

Excessive consumption of alcohol not only develops the painfully apparent "hangover" with resulting headache, thirst and upset stomach. Further, it can, in effect, do more than injure your liver. Alcohol can also affect your pancreas, stomach, intestines or brain and can create a state of malnutrition which makes you even more vulnerable to other diseases.

Based on National Safety Council data, a drinking driver--not a person who is an alcoholic but simply a drinking driver--kills a person every 30 minutes in this country. Statistically, in Illinois, it has been determined in 2000, that more than 40 percent of our fatal motor vehicle accidents involved intoxicated drivers.

Major manufacturing firms in this country, through the American Association of Manufacturers, believe that more than ten billion dollars a year is lost in work time due to the Monday morning absenteeism rate.

About one of every fourteen persons, ages 18 years and older, who consume alcohol have a problem with drinking which may later develop into alcoholism. No one specifically knows the number of alcoholics within this country. We do know, however, that alcohol is the most abused drug in America. Statistically, alcohol contributes to 100,000 deaths (1993) annually making it the third leading cause of preventable mortality in the US. There are an estimated 19 million persons, age 18 years and older, with a drinking problem in the United States at the present time.

The average individual, male or female, who legally or illegally, regularly consumes alcohol generally assumes that alcohol is a means of relieving tensions and has a certain effect of exhilaration which relieves those pressures and tensions so often associated with modern society. Unfortunately, we have accepted alcohol as a way of life and consider it a harmless means of relaxation--never considering the fact that alcohol is classified as a drug. In some cases, it can be an extremely dangerous drug. Alcohol, as does any drug, affects certain parts of the body, and a variety of problems can occur from even moderate consumption of alcohol on a regular basis.

Some of alcohol's most destructive effects occur to the central nervous system. The usual intoxication progression begins first by impairing the brain's frontal lobe. As intoxication progresses, judgment, memory, learning ability and coordination become impaired. A drinker can become less concerned with or aware of his surroundings. These brain impairments can lead to a wide variety of hazards and injuries. Additionally, the sedative effects of alcohol can, of course, cause death by overdose or by over consumption leading to an overdose.

The average individual is considered legally impaired in some circumstances when the alcohol content reaches .05 percent alcohol. At .10 percent alcohol, all fifty states consider the person legally under the influence of alcohol and many states have lowered this level to .08 alcohol concentration. At .35 to .50 percent alcohol, unconsciousness tends to occur and death may follow after a period of time.

When alcohol is ingested, a certain amount of irritation occurs. The degree of the irritation depends on how much and the purity of the alcohol consumed, but a certain amount of injury occurs to the esophageal/intestinal tract with the regular consumption of alcohol. Naturally, prolonged and excessive drinking can result in serious injury to the esophagus, stomach wall and the remainder of the digestive system.

The most critical component of the human body relative to the elimination of alcohol is the liver. The liver is the principal organ involved in the oxidation of alcohol. In other words, it changes the pure alcohol into chemical compounds for use by the body. These chemical compounds ultimately become calories or carbohydrates and are eliminated from the body as energy or as carbon dioxide and water. As the alcohol is transformed, the liver must work approximately two hours to oxidize one ounce of whiskey or 12 ounces of beer in the normal person.

During prolonged intoxication, the liver may become inflamed and swollen because of the additional workload. In an inflamed liver, cells literally die and are replaced first by fat cells and then by scar tissue. The scar tissue, of course, performs no working function and thereby tends to limit the liver's working capacity. Cirrhosis of the liver is a degeneration of liver tissue into scar tissue and can result from excessive drinking. Of course, cirrhosis may also develop from other forms of illness or even a virus. However, drinkers do have a higher rate of cirrhosis than in the general population.

The pancreas is also an organ sensitive to consumption of alcohol. It is vital to the digestive process and is a large gland. It can be injured by continuous drinking of large amounts of alcohol. Pancreatitis is an inflammation of the pancreas involving severe abdominal pain, nausea, and sometimes vomiting. Once the pancreas becomes inflamed, it may never fully recover and continue to degenerate with or without alcohol in the body. In acute forms of this disorder, hemorrhaging may occur and the pancreas cells die, along with the drinker.

Malnutrition can also occur. Although alcohol in the body is transformed by the liver, it does not have the same dietary essentials as other forms of food. Alcohol provides calories but no nutrients, vitamins or proteins needed for good health. A constant drinker often neglects eating, and the result is vitamin deficiency and malnutrition. The drinker then

becomes vulnerable to other diseases.

Alcohol is a depressant drug. Barbiturates and other sedatives are also depressant drugs. Alcohol and barbiturates when taken together may not simply double a reaction, they may multiple the reaction at a tremendous rate. Taking barbiturates with alcoholic beverages is potentially a lethal practice, and many persons have died from the effects of the combination.

Alcohol can create a dependence. Some persons engaged in research in the effects of alcohol on the human body have indicated that even addiction, in some cases, has occurred with persons relying on alcohol as a relief from depression or anxieties. All social and/or economic levels of our society consume alcohol. The problem of alcoholism crosses into all areas of society and is a problem for the immature young adult in particular.

It is important to remember that we are discussing the normal consumption of alcohol. There are other times such as religious or cultural ceremonies when alcohol is used. The medical profession uses alcohol for different purposes. There are other utilitarian uses in cooking and industry. Our discussion of alcohol will revolve around the consumption of ethyl alcohol in the form of alcoholic beverages and how it affects the human body.

Alcohol is consumed by mouth in a variety of forms: beer, ale, wine, hard liquor such as gin, rye, bourbon or vodka, and sometimes brandy. The ethyl alcohol is not a pure laboratory alcohol but is normally only a percentage of the liquid which you consume; for example, fermented beverages such as beer, ale and wine have anywhere from 3 percent alcohol content up to 20 percent. Liqueurs tend to have alcohol concentration ranging from 20 to 40 percent. Whereas other hard liquors may have a 40 to 50 percent alcohol content. The remaining liquid may be water or flavoring to give the product a distinctive taste and make it easier to consume. The ingestion of pure alcohol would be difficult, if not impossible, even though the effect would be the same. Pure ethyl alcohol is clear and almost odorless and, therefore, would not be a very favorable beverage to place on the market.

Alcohol is not digested like other food, but is one of the rare substances absorbed directly into the body/bloodstream through the tissue linings/cells. The alcohol is swallowed, passes through the esophagus to the stomach. Some is absorbed through the stomach walls into the blood stream; however, most of the alcohol ultimately passes into the small intestine and is absorbed into the body from there.

The absorption rate of the alcohol is controlled by the contents of the stomach. All alcohol is absorbed ultimately into the bloodstream. A heavy meal consumed prior to the ingestion of alcohol will slow the absorption rate of intoxication, but ultimately the person will become intoxicated.

As the alcohol moves from the stomach or the small intestine into the bloodstream, the alcohol will be absorbed into the blood stream in a period of 30 to 90 minutes, depending again on the content of the stomach, the size/weight of the individual and the individual's state of health. Normally, on an empty stomach, in not less than 30 nor more than 90 minutes, all of the drink will be absorbed into the bloodstream.

Once the alcohol is in the bloodstream, it is carried throughout the body by the blood to all organs of the body. The amount of alcohol contained in any specific organ is proportional to the amount of water in that particular organ. Since the brain contains a high percentage of water, a large portion of the alcohol is deposited in the brain as it is carried by the blood through the brain. This effects brain functions considerably, particularly the frontal lobes of the brain.

Since a normal healthy person has complete circulation of their blood supply in approximately 30 seconds, alcohol is carried rapidly thru the body. In this movement, alcohol will affect the function of the brain and other organs. However, the effect will vary due to the water content of the body part, by the individual's weight and size, the presence of food in the stomach, and, of course, the amount of alcohol consumed.

As alcohol circulates thru the body, it is changed by the liver into various chemical compounds. This function of transforming alcohol is performed by the liver at the rate of approximately .015 alcohol concentration per hour. Nothing will speed up this rate. For example, hot coffee will add a stimulant drug, caffeine, to the individual who is under the influence of a depressant drug, alcohol. Caffeine does not remove alcohol from the system; it only stimulates the depressed system, thereby creating in the words of many persons, "a wide awake drunk."

When alcohol consumption rate exceeds the liver's ability to transform alcohol, the alcohol overload continues to circulate throughout the bloodstream, continuing to impair the brain centers, and intoxication results on an escalating basis.

As alcohol circulates in the bloodstream, it circulates not only through the brain and other organs but also through the lungs. The lungs contain specialized cells known as alveoli. These miraculous organelles function as a means to expire carbon dioxide from the blood and take on the oxygen needed for continued life.

Alcohol is contained in the expired breath of an individual. Therefore, there would be a relationship between alcohol in the blood and the amount of alcohol in the breath based on Henry's Law for each individual. Breath tests are based on this proportion. A sample of breath processed through an approved breath device is analyzed. Within a very short period of time, the test device will determine the alcoholic concentration at the time of the test and only at the time of the test. Any other computation is pure conjecture since the oxidation of alcohol varies to body weight, type of alcoholic beverage consumed, and a variety of other factors. Breath tests to determine intoxication of an individual have been widely used for a number of years, and successfully since 1937.

As the process of consumption, absorption and elimination continues, some alcohol is used by cells in the body. However, some alcohol is disposed of by the body, not only through the breath, but also through urination as a normal body function.

As the body oxidizes the alcohol, the depressant qualities of alcohol can become painfully apparent to the user just like any other chemical withdrawal symptom from other drug occurs. Some of the usual symptoms are:

1. Acute fatigue. The alcohol has blocked off certain portions of the brain, and the exhilaration brought on by consumption of alcohol suppresses the normal need for sleep. This is only felt in the form of fatigue after the consumption of alcohol ceases.
2. A headache is normally brought on by the changes in brain fluids from alcohol abuse--a normal symptom of the well-known "hangover."
3. Abnormal thirst. Since alcohol speeds up the body's excretion of water, it results in temporary dehydration--a very common problem with persons who regularly consume alcohol in large amounts.
4. The upset stomach is a very common problem with a person who does not regularly consume alcohol or is consuming it for the first time. The alcohol irritates the entire digestive tract, and a severe stomach upset, including vomiting, can result.

The abuse of alcohol is not simply a problem in one state. It is a problem which has no apparent immediate solution. Encouraging moderation has worked in some situations, but total abstinence from alcohol seems to be the only avenue to avoid disaster for many problem drinkers. Laws cannot totally control the problem of driving under the influence of alcohol. Treatment centers for alcoholics often deal with individuals who only seek help when their problem is out of control. We must all attempt to find a reasonable and workable solution, but until we do, a strong educational effort seems to be the only acceptable method to make drinkers aware of the consequences of excessive intake of alcohol.

SECTION D

ALCOHOL

ALCOHOL

PHARMA- COLOGY AND TOXICOLOGY

It is the objective of this chapter to convey to the student an understanding of the effects of alcohol consumption on the human body. The information provided is directed towards explaining the physiological principles pertaining to breath alcohol testing.

Alcohol

Alcohol is a descriptive term which denotes a particular type of chemical compound. Chemical compounds can be categorized as inorganic and organic. The organic compound's primary element is carbon. Alcohols are hydrocarbons because they have hydrogen as a major secondary element. All alcohols contain a hydroxyl group composed of two atoms, one oxygen and one hydrogen.

Alcohols are miscible (infinitely soluble) in water. They are classified as hydrophilic compounds. The term hydro (water) and philic (loving) make alcohol a "water loving" compound.

Within the general category of alcohols there are many individual chemical compounds. All of these compounds are alcohols, but each possesses different chemical properties. See Figure C-1. The different chemical structures of these various alcohols result in each chemical being metabolized by the body to different metabolic products. This is why each alcohol has a different level of toxicity.

All alcohols are toxic, and if sufficient quantity is consumed or introduced into a human then death will result!

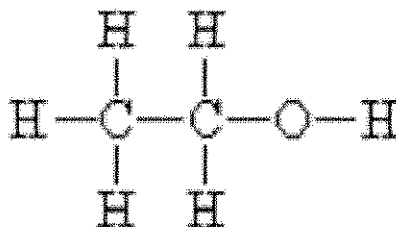


Figure C-1. Molecular Structure of Ethanol

Methanol

Methanol is an extremely volatile, colorless, odoriferous liquid. The chemical structure of methanol is CH₃OH. Methanol consumption tends to occur in two types of individuals. The street derelict and the small child. Small children usually consume methanol by accidentally drinking household cleaners and other disinfectants kept around the house. The street derelict on the other hand will search through trash containers for items which contain methanol. One of the major sources of methanol used are "Sterno" containers which were used to heat food. Methanol is extremely toxic to the human body. The metabolic byproducts of methanol are the reason for its toxicity. The first byproduct is methaldehyde, commonly known as formaldehyde. The body converts this to formic acid. Formic

acid will dissolve the rods and cones in the retina resulting in vision impairment or blindness. Formic acid unchecked results in death by causing the kidneys to cease functioning.

Ethanol Ethanol is a volatile, colorless liquid, which possesses an ethereal odor and produces a burning taste sensation. Ethanol is the alcohol which is contained in all alcoholic beverages. Ethanol's chemical formula is CH_3CHOH . Ethanol is not as toxic to humans as methanol, because its byproducts generally have a lower toxicity. The first byproduct is ethaldehyde or acetaldehyde, followed by ethanoic acid (more commonly acetic acid or vinegar).

Isopropanol Isopropanol is a colorless liquid with a very distinct odor. The chemical formula is $\text{CH}_3\text{CHOHCH}_3$. The majority of individuals who intentionally consume isopropanol are "hard core" alcoholics. Prevented from obtaining regular alcoholic beverages they resort to drinking "rubbing" alcohol, which is isopropanol. The danger of isopropanol consumption is its metabolite: acetone.

Lethal Dosages Lethal dosages are expressed by the term LD50. LD 50 stands for Lethal Dosages for 50% of the population. Some individuals can exceed this level while others may succumb at much lower levels of the drug.

The approximate lethal dosage for the alcohols above are:

- Methanol .075 g/100ml of blood
- Ethanol .40 - .45 g/100ml of blood
- Isopropanol .25 - .35 g/100ml of blood

Common Alcohols

NAME	FORMULA	BOILING POINT	USES	TOXICITY AND METABOLITES
Methanol (Methyl Alcohol) (Wood Alcohol)	CH_3OH	64.5°C	Denaturant Solvent Paint Remover Fuel	Approx. 75ML Formic Acid
Ethanol (Ethyl Alcohol) (Grain Alcohol)	$\text{C}_2\text{H}_5\text{OH}$	78.3°C	Beverage Solvent Medicinal Vehicle Fuel	Approx. 400-500ML Acetaldehyde (Acetic Acid)
Isopropanol (Isopropyl Alcohol) (Rubbing Alcohol)	$\text{CH}_3\text{CH-OH}$ CH_3	82.3°C	Denaturant Antiseptic	Approx. 250ML Acetone

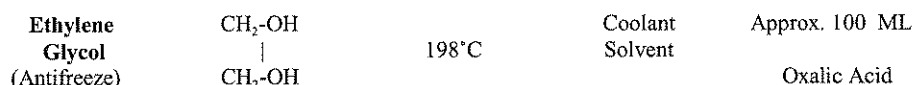


Figure C-2

**Alcohol
Production**

Alcohol is produced naturally through the process of fermentation or synthetically through industrial means. The usual method of synthetic production is from refined petroleum products. Alcohol synthetically produced is not sold for human consumption and is not taxed by the federal government. Commonly, this alcohol is poisoned (denatured) to discourage consumption. Methanol, isopropanol and benzene are three denaturants frequently used to poison industrially produced ethanol. Consumption of denatured alcohol can be very unpleasant and possibly lethal.

All alcohol intended for human consumption must be naturally produced. Natural production of alcohol always begins with fermentation. Fermentation is the only process by which beer and wine are produced, and it is the first step in the product of distilled spirits. This process can continue until the ethanol concentration reaches a maximum of about 15% by volume. The same is true for wine except the initial ingredient is fruit juice in place of the "malted" grain.

When beer and wine are the desired end products, the fermentation process is usually carefully controlled so that a product with a specific alcohol concentration is collected. Beer usually contains from 4 to 6% ethanol by volume. Wine usually contains between 12 to 15% ethanol by volume. Wines of greater content are produced by either adding additional alcohol or blending the wine with another alcoholic product, such as brandy. Values for alcoholic beverages listed in this text are approximate.

Production of distilled spirits (whiskey, rum, vodka, etc.) is accomplished by heating the fermented mixture (mash) to evaporate the alcohol. The type of grain or cereal used in the mash along with the manner of processing determines the type of beverage produced. The vapors from the heated mash are collected and cooled to form a liquid. The liquid distillate portion contains the ethanol plus some water and flavorings.

Throughout the distillation process, precautions must be taken to insure that ethanol is the only alcohol collected. After the distillate is collected it is commonly placed in charred wooden barrels for aging. During the aging process certain chemicals are leached from the wood and dissolved in the distillate. These compounds, congeners, give aged distilled spirits (whiskey, scotch or rum) their distinctive color, aroma and taste. Fermented fruit juice (wine) may also be distilled. This is the process used to produce brandy. After distillation, the brandy is usually aged in oak barrels for at least three years. Colorless distilled spirits (vodka and gin) are not aged and consequently have only a faint odor in comparison to aged spirits. Distilled spirits usually contain from 40 to 60% ethanol by volume.

The idea of aging a distilled beverage in a charred oak barrels is the result of an accident. A man by the name of Rev. Elijah Craig was making a barrel for shipping whiskey. While heating the barrel staves to form the barrel he was called away and, during his absence the staves caught fire. Being a frugal minister, Craig decided to continue and cleaned the staves turning the burned side of the staves to the inside. Craig placed his whiskey into the barrel, capped it and left. A number of months passed and before he returned to the whiskey and upon opening the barrel he noticed that the whiskey, which was clear when he poured it in, had changed to a beautiful amber color and the flavor had dramatically improved. Hence, the method of aging in charred oak barrels was born.

Proof System

In the United States, all distilled beverages list their alcohol concentration under the term **proof**. All non-distilled beverages are labeled as **percent**. The proof concentration of any beverage is twice its percent alcohol concentration. A 100 proof whiskey contains 50% alcohol, while an 85 proof whiskey contains 43% alcohol and so forth. Beer is approximately 4%, therefore its proof equivalent would be 8 proof.

The term proof is derived from folklore. Prior to the process of aging in charred oak barrels, whiskey was clear liquid. In early frontier days this meant that the seller could water down whiskey and the buyer would not be able to tell the difference visually. To ensure that the buyer was receiving a good product a simple test was developed. The buyer would mix equal parts of whiskey with black gunpowder and strike a match to it. If this mixture burned with a steady, blue flame this was “proof” that the shipment was good.

By knowing the proof or percent concentration of a beverage one can compute the actual amount of alcohol contained in a drink or series of drinks. By taking the amount of the alcohol beverage in ounces (V) and multiplying by the percent alcohol (%) the ounces of ethanol contained in that drink is obtained.

Dosage Forms of Alcohol

Alcohol is usually ingested. “Six brands of lager and four light beers account for the majority of all beer sales in the United States, and the mean alcohol concentration for these products was measured as 4.73% v/v and 4.10% v/v respectively.”¹ To ease calculations a hypothetical normal dosage is used. So, beer is about 4% ethanol by volume; therefore, a 12 fluid ounce container of beer contains approximately one-half ounce of pure ethanol.

$$12 \text{ fl. oz.} \times 0.04 = 0.48 \text{ fl. oz. ethanol}$$

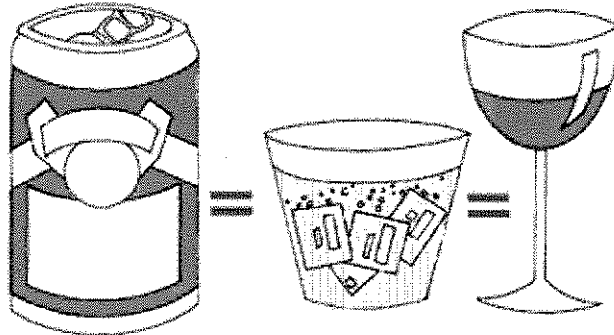
One fluid ounce of 100 proof distilled spirits contains approximately one-half ounce of pure ethanol. One and one-half ounce of 80 proof distilled spirits contains a little more than one-half ounce of pure ethanol.

$$1 \text{ fl. oz.} \times 0.50 = 0.50 \text{ fl. oz. ethanol}$$
$$1 \frac{1}{2} \text{ fl. oz.} \times 0.40 = 0.60 \text{ fl. oz. ethanol}$$

Wine is usually about 12% ethanol by volume; therefore, a 4 fluid ounce serving of wine contains about one-half fluid ounce of pure ethanol.

$$4 \text{ fl. oz.} \times 0.12 = 0.48 \text{ fl. oz. ethanol}$$

For the purposes of discussion, one "drink" will be considered to be one 12 fluid ounce serving of beer, one fluid ounce serving of 100 proof distilled spirits or one 4 fluid ounce serving of wine.



See Figure C-3. A "drink" contains approximately one-half fluid ounce of pure ethanol.
12oz (5% w/v) 1.5oz (80 proof) 6oz (10% w/v)

Figure C-3 Alcohol "Equivalents"

Absorption of Alcohol Ethanol can enter the human body in several different manners: injection, inhalation, and ingestion. Ethanol has not been demonstrated 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. It can produce a localized ethanol concentration that can severely affect the heart and other vital organs. This is referred to as a "bolus effect."

Another possible route for ethanol to enter the body is through inhalation. When alcohol vapors come into contact with the cell membranes lining the nasal passages, throat, or alveoli, the ethanol diffuses through the cell membrane based on Fick's Law that states the rate is proportional to the positive alcohol gradient across the membrane and the ethanol/membrane diffusion coefficient, toward the blood. However, to reach significant alcohol concentration levels (>0.01) requires exposure to a severely irritating environment for an extended period of time. The OSHA standard for general industry is 1000 ppm, 1900 mg/m³. It is, therefore, very unlikely that an 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 absorbed into the blood stream by contact with and diffusion through cell membranes. **Ethanol is not digested, but absorbed unchanged!** The mouth, throat and gastro-intestinal tract all absorb alcohol. The anal canal, vaginal tract, and ureter could serve as possible sites for alcohol absorption. See Figure C-4.

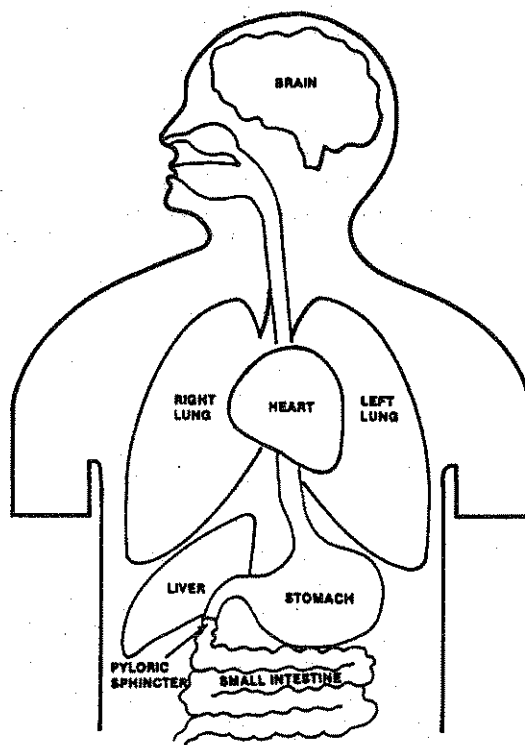


Figure C-4. Representation of human anatomy as it applies to ethyl alcohol absorption and distribution.

Alcohol absorption begins immediately, assuming an individual is alcohol free, once the alcoholic beverage enters the oral cavity. Absorption continues as the beverage passes into the stomach and later into the small intestine. Since alcohol is absorbed through the cell membranes lining the mouth, the presence of alcohol can be detected immediately after the alcoholic beverage has been swallowed. Residual alcohol is the alcohol which remains in the mouth and could affect a breath alcohol test. Alcohol can be reintroduced back into the oral cavity under certain conditions. If alcohol is present in the stomach and is regurgitated, then a portion of that alcohol would be absorbed by the cell membrane lining the oral cavity and throat.

Regardless of how the alcohol is introduced into the mouth, the presence of residual alcohol diminishes below significant levels (<0.01) within twenty minutes. If the observation period is interrupted by vomiting, the operator should restart the entire observation over again.

When the alcoholic beverage reaches the stomach, some of the ethanol is absorbed through the stomach lining directly into the blood stream. This absorption from the stomach is unique, because most other substances ingested cannot diffuse through the protective stomach lining.

Ethanol absorption through the stomach lining and passage to the intestinal tract can vary due to many factors. The type of alcoholic beverages consumed can affect the absorption rate. Carbonated beverages tend to promote absorption; while fatty or oily beverages tend to slow down absorption. Altitude has an affect on the rate of alcohol absorption. Higher altitudes tend to promote faster absorption of ethanol. The ethanol concentration of an alcoholic beverage will also affect absorption. If the stomach's alcohol concentration is too high (>0.40), the stomach lining may be irritated; thus, reducing the amount of alcohol absorbed.

Pharmaceutical companies and several studies have found there is an ethanol concentration which promotes the most rapid absorption. Concentrations higher or lower than this level are absorbed less rapidly.

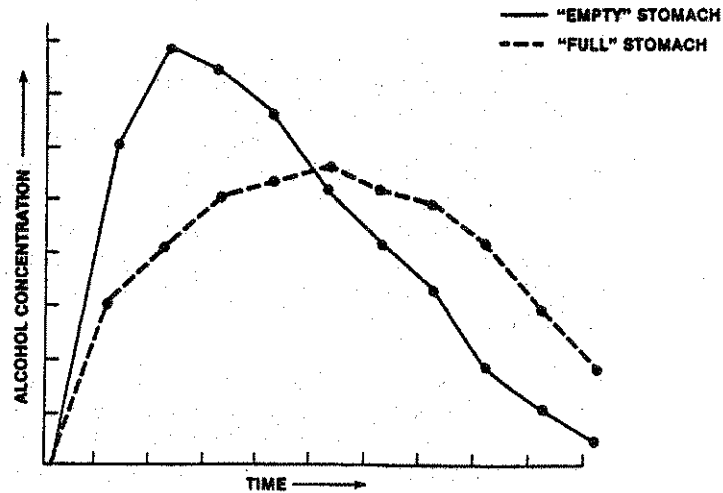


Figure C-5 Absorption of an equal dose of ethyl alcohol in "empty" vs. "full" stomach.

The most significant effect on alcohol absorption is the quantity of food substances ingested with or immediately prior to consumption of an alcoholic beverage. A large amount of food present in the stomach will serve to delay the absorption of ethanol. The pyloric sphincter, which controls the passage of the stomach contents from the stomach to the small intestine, also has an affect on the rate of ethanol absorption. The longer alcohol remains in the stomach; the slower the overall rate of absorption. If no food is present in the stomach, the rate of ethanol absorption is faster. See Figure C-5. The small intestine is the site of the most rapid absorption of ethanol.

All of these factors plus others will determine the specific absorption rate of a particular dose of alcohol consumed by a particular individual. Because of the above factors, alcohol absorption can best be explained through the use of general rules. However, the overall concepts will not be specific for a particular situation. **As a general rule, complete absorption of a single alcoholic beverage is accomplished in forty-five to**

sixty minutes on an empty stomach.

Distribution of Alcohol

Once absorbed, alcohol is transported throughout the entire body. See Figure C-6. Ethanol absorbed from the small intestine is transported to and passes through the liver. From the liver, alcohol moves with the blood to the right side of the heart. The alcohol and blood then travel to the lungs and return to the left side of the heart. When the alcohol and blood leave the heart, they circulate throughout the entire body. The blood leaving the heart reaches the brain tissue directly through the carotid arteries. Studies have shown that equilibrium between the arterial blood and the brain is reached rapidly, in minutes.

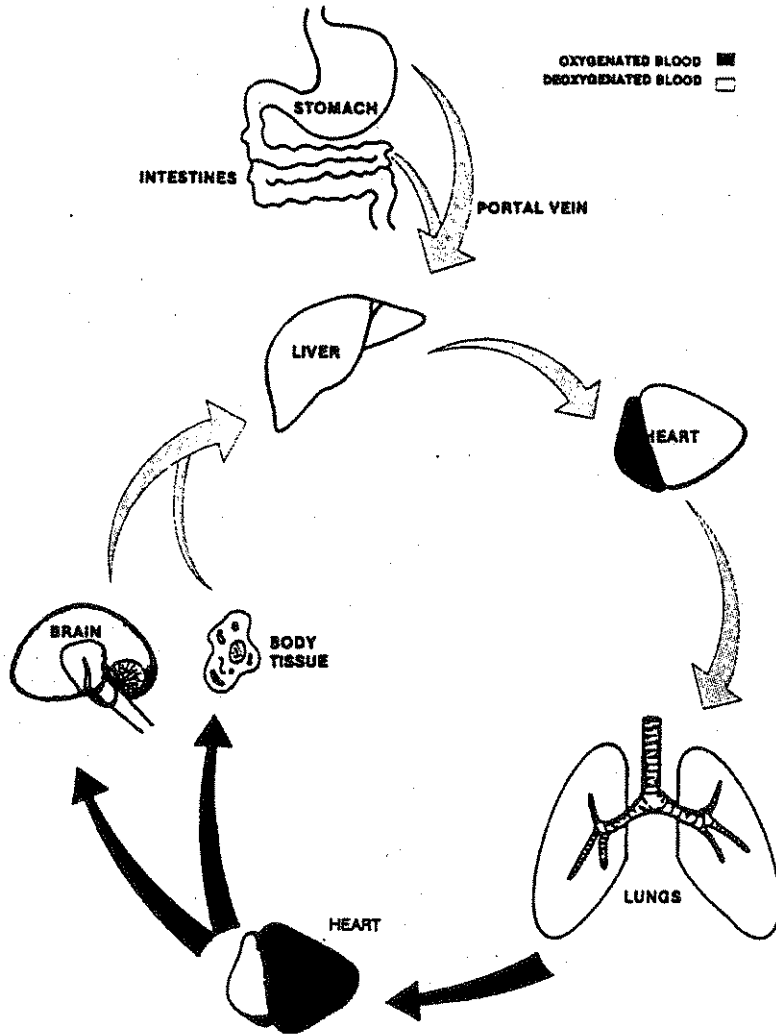


Figure C-6. A representation of ethyl alcohol distribution pathways.

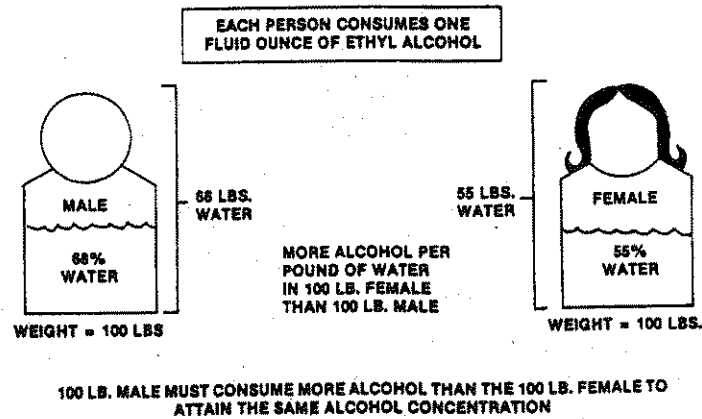
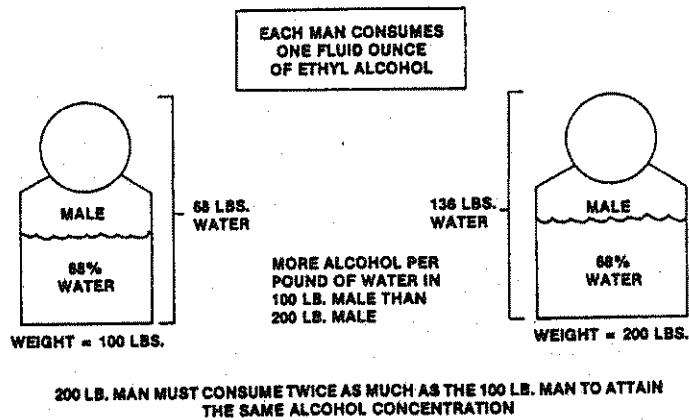


Figure C-7. Relationship of body water content to alcohol concentration.

The alcohol concentration of tissues depends upon the tissues water content. The greater the water content, the greater the alcohol concentration. Water content varies according to tissue type. For example, the water content of muscle is greater than the water content of bone.

The body water content also varies from one individual to another. An obese person has less water per pound of body weight than an emaciated (thin) person, because adipose (fat) tissue has a very low water content.

Body water content varies according to sex. Females have less water per pound of body weight than males, because of the presence of adipose tissue in the breasts, buttocks and thighs. **Since the concentration of alcohol is directly proportional to the body water content (within the limits already discussed), the alcohol**

concentration will vary according to body weight.

As a general rule, the heavier a person is, the more alcoholic beverage must be consumed, to reach a specific alcohol concentration. See Figure C-7.

The rate of alcoholic beverage consumption affects the distribution and alcohol concentration in the body. Rapid consumption of large quantities of alcoholic beverage results in absorption exceeding the rate of elimination. This will produce a rise in the alcohol concentration of the body. When this happens the alcohol concentration in the arterial blood will exceed the alcohol concentration in the venous blood. It is important to remember that it is the alcohol concentration in the arterial blood which reaches the brain tissue and effects our mental and physical faculties.

Elimination of Alcohol Ethanol is removed or eliminated from the body in several ways: metabolism, excretion and evaporation. Metabolic processes account for the elimination of about 90 - 95% of the alcohol consumed. As the alcohol is transported through the body with the blood, the liver continually metabolizes using the enzyme Alcohol Dehydrogenase (ADH). The ethanol is oxidized to simpler compounds such as acetaldehyde and acetic acid. These are then broken down eventually by other processes into carbon dioxide and water. Excess carbon dioxide and water are removed from the body by exhalation or elimination. **The rate at which ethanol is oxidized is constant for a particular individual, but varies somewhat from one person to another.**

Reported rates for alcohol oxidation usually range from 0.010% to 0.025% per hour. (The % symbol as used here is a shorthand notation meaning grams of ethanol per hundred milliliters of blood or two hundred and ten liters of breath). Higher rates of oxidation have been reported but are usually associated with chronic consumption of large quantities of ethanol. The average rate for ethanol oxidation is about 0.015% per hour although recent research indicates it may be slightly higher.

A small percentage of consumed ethanol is excreted unchanged into the urine. The amount of ethanol in the urine is related to the body water ethanol concentration. Prior to elimination from the body, the urine is stored in the bladder. The bladder has a limited blood supply, thus not much urine alcohol is reabsorbed back into the blood.

A small percentage of consumed ethanol is eliminated from the body by evaporation. Alcohol in perspiration is related to the body water ethanol concentration. Once it reaches the skin, it evaporates into the surrounding air.

A larger portion of ingested alcohol is exhaled, another form of evaporation, from the body. The exchange of alcohol from the blood to the breath occurs in the alveoli of the lungs. See Figure C-8. The alveoli are minute tissue sacs in the lungs which are richly supplied with blood. The cell membrane separating the alveoli and the blood is permeable to certain gases such as alcohol. This is also where the exchange between oxygen and carbon dioxide takes place.

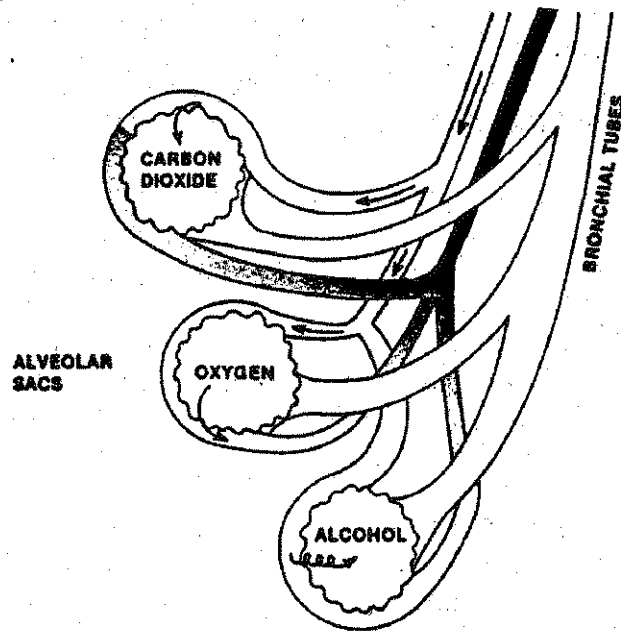


Figure C-8. Representation of the exchange of ethyl alcohol between the blood and breath in the alveolar sacs of the lungs

Henry's Law In 1803, a British Chemist named William Henry, developed a chemical principal concerning the actions of volatile substances when placed in water and brought into contact with air. This discovery is called Henry's Law and is stated as follows:

When the water solution of a somewhat volatile chemical compound is brought to equilibrium with air, there is a fixed ratio between the concentration in the water. This ratio is constant for a given temperature and pressure.

Alcohol and many other substances are considered volatile substances, meaning that they have a tendency to rapidly change states (liquid to air; evaporation, or air to liquid; condensation), whether they are alone or in solution. If one places a volatile substance, such as alcohol, in solution with water in a sealed container, the air in the container will become saturated with alcohol vapor. When the amount of alcohol evaporating into the air space above the solution equals the amount of alcohol condensing and returning to the water, equilibrium has been reached. At equilibrium, there is a fixed ratio, or direct proportion, between the alcohol in the water and the alcohol in the air above it. This ratio is dependent on the temperature of the solution and atmospheric pressure.

It can be more clearly stated as follows:

1. If you have a closed container
2. A constant temperature
3. A volatile substance
4. A liquid and a gas
5. Then you have a relationship between the amount of a volatile substance in the liquid and that in the gas.
6. This is true regardless of the size of container or the amount of volatile substance in liquid in that container.

For the purposes in breath testing for ethyl alcohol, we have the following definitions:

1. Closed container is the alveolar sacs in the lower part of the lungs.
2. Constant temperature is 37° C or 98.6° F.
3. Volatile substance is ethyl alcohol (ethanol).
4. The liquid is blood.
5. The gas is the deep lung air.
6. The relationship is 2100 cc/1cc - i.e., 2100 cc of alveolar breath will have just as much ethyl alcohol as 1cc of pulmonary arterial blood.
7. This is true regardless of how large the subject may be, how much blood is in the body, or how much alcohol that blood contains.

Is Everybody 2100:1?

This question is the number one attack by most defense attorneys concerning breath analysis. The "Breath to Blood" ratio is not the same in every individual. The 2100:1 "Breath to Blood" ratio used in breath analysis instruments, is the accepted medical/legal average that forensic science has yet been able to establish. There are numerous studies that depict this ratio as incorrect or inaccurate, however, the majority of these studies either use unacceptable measuring devices, or do not follow established protocol for conducting these types of experiments. Of special interest is the misinterpretation of a number of properly conducted studies. For example, there has been a great deal of publicity, and defenses questions concerning an article from a well-known scientist and investigator in the field of breath analysis. In this paper the authors present a listing of various "Breath to Blood" ratios gathered from other individuals who investigated this phenomena. The studies published range from the year 1928 to 1976. What has captured the attention of the defense lawyers, expert witnesses, and those presenting DUI seminars is the one study, which set the ratio at 1125:1. If this were in fact true, then individuals having this ratio would in fact test extremely high. The individuals using this paper and in particular this ratio as a basis of attack, apparently have never read the article since the subject in question was not human, but instead **a dog**.

Although people do not adhere to the 2100:1 ratio, remember that the 2100:1 ratio is merely the mathematical basis of the instrument. For this ratio to be "properly" applied we would need to collect 100% sample of the alveolar air. Collecting 100% sample of the alveolar air is a physical impossibility without harming the subject. **Since a breath analysis device collects only deep lung air samples, which at best**

reach only 80% alveolar air concentration, a breath analysis result, regardless of the individuals "Breath to Blood" ratio, will be consistently lower than that of a blood analysis conducted at the same time.

Breath temperature at the mouth is normally about 34°C. At this temperature, the average blood breath ratio in recent studies has shown it at about 1:2350. The National Safety Council as early as 1972 and the legislature in the current **Illinois Vehicle Code at 11-501.2 para. a5** defines the ratio breath testing instruments will use for computing alcohol concentrations as **1:2100**. Therefore, if a person's blood:breath ratio is higher than 1:2100, the breath analysis will slightly underestimate the blood alcohol concentration.

A breath temperature significantly greater than normal (98.6°F or 37°C), will result in more alcohol diffused into the breath. This would cause a higher breath alcohol test result. If a breath temperature is significantly lower than normal, then less alcohol will diffuse into the breath. This would cause a lower breath alcohol test result. However, to have a significant effect, the core body and presumably breath temperature must vary by at least 2°C. For example, a subject with an alcohol concentration of 0.100 who had a fever of 2°C or about 4°F above normal would produce a breath alcohol result of 0.113. It is unlikely that you as the operator or the subject wouldn't know if they had this high a fever.

In breath alcohol testing, it is important to collect an alveolar, i.e., deep lung, sample. If a deep lung sample is not collected, the sample will not result in an optimal test result. Various factors such as lower temperatures in the upper respiratory tract, incomplete equilibration of alcohol across the lung after simple diffusion, etc. will produce a lower than optimal breath test result. Therefore, it is the responsibility of the breath test operator to collect the best sample possible.

Regardless of the method (oxidation, excretion, or evaporation), elimination of alcohol or any other toxic substance is a physiological process. Therefore, neither stimulants, e.g., caffeine, nor exercise will significantly affect a breath alcohol test result. Fructose, a sugar, has been suggested to increase the rate of elimination, but consistent evidence has not been forthcoming in validated scientific studies. **Currently the only proven method to change alcohol's effects on personal performance is to allow sufficient time (average 0.015 per hour) for the body to eliminate the alcohol.**

**Widmark's
Formula**

E. M. P. Widmark, a Swedish scientist and pioneer in alcohol research, developed a formula for estimating the amount of pure ethanol in a person's body based on a blood alcohol test (BAC).

Formula: $A = \frac{WRCT}{0.8}$

where: A = ethyl alcohol in ounces
 W = body weight in ounces
 R = distribution ratio -- .68 for men; .59 for women

CT = chemical test (decimal equivalent of BAC)
 .8 = specific gravity of alcohol (approximately)

Example: How many fluid ounces of 100-proof whiskey are in the body of a 200-pound man who has a BAC of 0.15%?

Solution: $A = \frac{WRCT}{0.8}$

A = ethyl alcohol in ounces
 1 lb = 16 ounces
 W = 200 lb.
 R = .68 (average distribution for men)
 CT = .0015 (decimal BAC equivalent of 0.150)
 0.8 = specific gravity of alcohol (actually 0.79 rounded off)

Therefore:

$$A = \frac{200 \times 16 \times .68 \times .0015}{0.8}$$

200	3200	2176	<u>4.08</u>
x16	x.68	x.0015	.8/3.2640
3200	2176.00	3.2640	

A = 4.08 ounces of ethyl alcohol

If drinking 100-proof whiskey:

$$4.0800/.50 = 8.16 \text{ ounces of 100-proof whiskey}$$

Caution:

Widmark's Rho is based on averages and assumes an empty stomach plus bolus dosing. It only provides a means of **estimating** the amount of alcohol in the average person's body at the time of chemical testing. It does not tell you the actual amount consumed since it does not take into account numerous variables such as elimination.

Alcohol Concentration Curve As noted before, body weight affects the alcohol concentration reached when a given amount of alcoholic beverage is consumed. **Assuming the normal healthy male to have a body weight of 170 pounds, the consumption of one drink could produce an alcohol concentration of 0.02% in the blood in the first hour.**

An average person eliminates alcohol at 0.015 per hour. This is the equivalent of slightly less than one drink per hour. If the alcohol concentration in the body increases, the rate of absorption exceeds the rate of elimination. When absorption stops, alcohol concentration will fall as the liver eliminates it. Figure C-9 shows a generalized representation of an alcohol concentration curve.

This curve can be divided into three parts: the absorption phase, the peak, and the

elimination phase. The slope of the phases will vary according to various factors affecting absorption and elimination of alcohol. It is important to understand that absorption and elimination occur in the phases to varying degrees. In the absorption phase, the rate of absorption is greater than the rate of elimination. This results in an increase of the body's alcohol concentration. In the elimination phase, the rate of elimination is greater than the rate of absorption. This results in a decrease of the body's alcohol concentration.

The only method of quantitatively determining a body's alcohol concentration at a particular time is to conduct a chemical test. When a breath alcohol test is administered, the results demonstrate the alcohol concentration at the time the sample was collected and analyzed. Based upon the results of a breath alcohol test, there are three possibilities as to what the alcohol concentration was at a time prior to the test.

The alcohol concentration at a prior time could have been the same, higher or lower, depending on the circumstances. See Figure C-9. For individuals arrested for driving while intoxicated, the alcohol concentration is generally higher at arrest than at the time of the breath alcohol test.

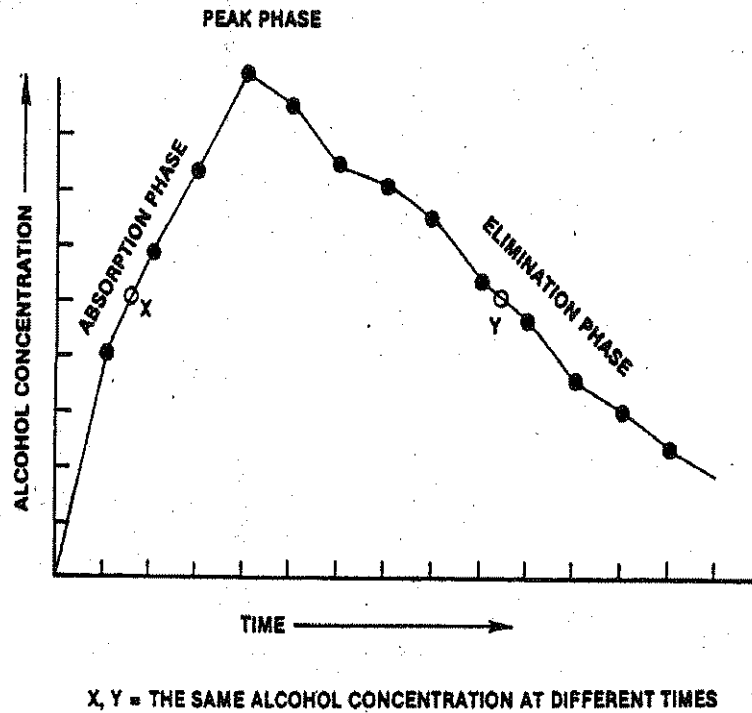


Figure C-9. Generalized alcohol concentration curve.

Impairment

When the alcohol concentration reaches 0.080 in Illinois or .05 according to the AMA in the early 80s, an individual is impaired. Impairment refers to the reduction or loss of normal physical and mental faculties. **Impairment is based upon measurable changes in an individual's performance of a specific task, such as operating a motor vehicle.** The terms "impairment" and "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.

The key fact about alcohol consumption is increasing alcohol concentration implies increasing impairment of physical and mental faculties. Numerous research studies have been printed identifying the progressive levels of impairment and the operation of a motor vehicle induced by ethanol. Research has shown that between 0.00 and 0.04% alcohol concentration, most people do not have significant measurable impairment in terms of vehicle operation. Changes in personality and mental states

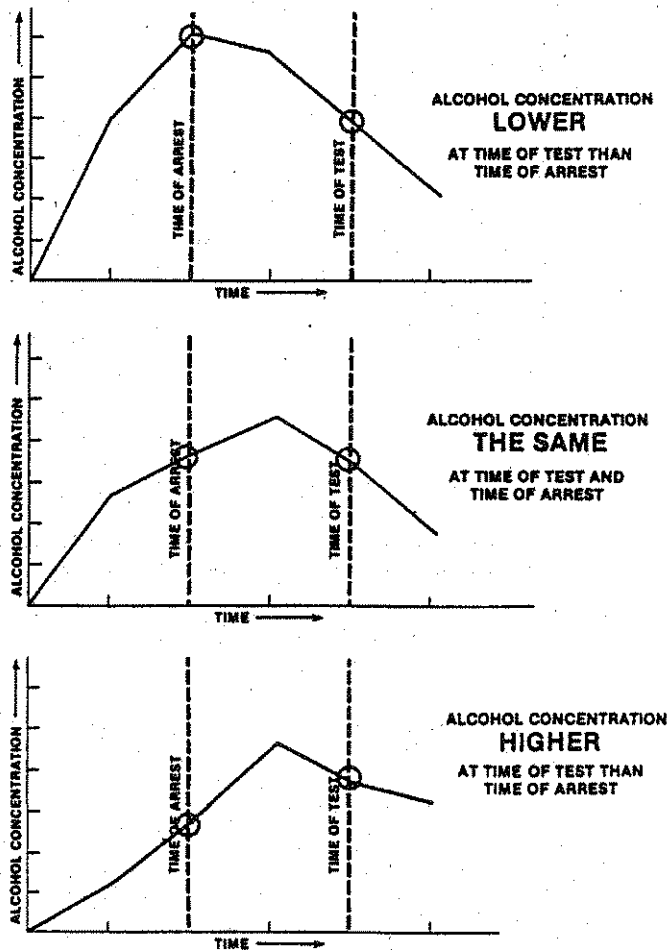


Figure C-10. Three possible relationships between alcohol concentration at time of test vs. time of arrest.

are most often observed. However, people are impaired at this low level. When the alcohol concentration increases to between 0.05 and 0.08%, most individuals have measurable impairment. **Judgment is the first area to be noticeably affected.** Behavioral changes, such as loss of social inhibitions, are sometimes observed. Fine muscular coordination is affected, and complex reaction time is lengthened. Complex reaction is the time required for a person to perform two tasks almost simultaneously. **Above 0.08% alcohol concentration, numerous research studies show everyone is impaired in terms of motor vehicle operation.** Increasing the alcohol concentration above 0.08% results in further impairment of physical and mental faculties. **Persons with alcohol concentration of 0.30% or greater should be carefully observed and consideration given to seeking medical assistance.** Alcohol concentration this high

is a threat to life. This level of alcohol may cause respiratory depression. An individual with an alcohol concentration of 0.40% or greater may lapse into a coma and die. However, people receiving prompt medical attention have survived higher levels.

Tolerance and Ethanol The least understood phenomenon of alcohol consumption is tolerance. Tolerance is usually defined as the effect which results from the continuing use of a drug when a larger dose becomes necessary to achieve the 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 consists of three areas: inborn tolerance, physical tolerance and stress tolerance. Certain individuals demonstrate a natural inborn tolerance to low levels of alcohol concentration. These persons are able to perform a specific task as well and sometimes slightly better at low alcohol levels compared to their alcohol free performance. Natural tolerance has only been demonstrated at alcohol levels below 0.08% and is most prominent between 0.04 and 0.06% alcohol concentration.

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 person when healthy. These individuals' physical and mental faculties are already impaired due to their sickness and alcohol's effects are simply additive.

Another form of natural tolerance is stress tolerance. In high stress or anxiety situations adrenalin is released in the human body to stimulate the body's response. In intoxicated individuals, this results in those persons temporarily appearing less impaired than they really are. This effect only lasts for a few minutes. Due to its short term nature, it is difficult to evaluate whether stress tolerance results in reducing alcohol's influence or if the adrenalin heightens the individuals awareness of the situation. **Even though, individuals may consciously or unconsciously attempt to disguise their intoxication, they cannot alter the fact that their judgment, reactions and coordination are impaired in the long term.**

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 routine alcohol consumption. Individuals may behave differently in different social settings even though their alcohol concentration was the same. Their mood or sense of well-being may influence their behavior at a particular alcohol concentration. People who are depressed and unhappy are usually more depressed and unhappy following the consumption of alcohol. This effect is mostly observed at low alcohol concentration, because higher levels may alter the person's perception of reality.

Another type of learned tolerance is acquired tolerance. Acquired tolerance results from the chronic use of alcohol. A chronic user is accustomed to the effects of alcohol and attempts, consciously or unconsciously, to compensate for these effects. Numerous

experiments have shown these persons 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 not experienced the effects of alcohol) will demonstrate greater outward effects than those expected at particular alcohol concentrations. This is due to the absence of an acquired tolerance.

The last type of learned tolerance is acute tolerance, often referred to as the Mellanby Effect. Acute tolerance is the result of individuals comparing their present condition with their past condition (Refer to Figure C-9). During the absorption phase of the alcohol concentration curve, individuals compare their perceived state, "X", with their condition when alcohol free. Their perception has been altered so that the effects of the alcohol are overstated. Later during the elimination phase, the same individuals compare their present perceived state, "Y", with the peak phase of the alcohol concentration curve. Their perception has been altered such that the effects of the alcohol are underestimated. **In both instances, the alcohol concentration was equal, and the individual was equally impaired.** However, because the individuals perceive themselves as less intoxicated in the elimination phase, although equally impaired at a given alcohol concentration, this increases the hazard of operating a motor vehicle.

Because of the various aspects of alcohol tolerance, judging an individual's intoxication can be difficult based solely on visual observation. Most people are not routinely and closely associated with intoxicated individuals under circumstances which would allow objective evaluation. Judgment of another's intoxication is often influenced by interpersonal relationships and social prestige. The only method for determining intoxication or alcohol concentration is to conduct a chemical test.

Effects of Alcohol

Ethanol is a depressant. The effects of alcohol can be seen in all sensory-motor functions, plus there are definite effects on the biochemical pathways of the body. Ethanol can have a broad spectrum effect due the quantities consumed and individual reaction.

It is not the alcohol in the peripheral areas of the body which impairs a person's coordination, but the alcohol concentration in the brain tissue. **It is in the brain that alcohol exerts its effects.** In the brain the alcohol acts to depress nerve transmission and to reduce coordination between various nerve centers. Depressing the nerve transmission results in the reduction of normal physical and mental faculties.

The first effect of alcohol is the impairment of judgment. Judgment is a general name given to various decision making aspects of human behavior. Such topics as social inhibitions, self evaluation, risk assessment and perception of reality are all included under judgment. Alcohol depresses learned social and cultural inhibitions. This can result in individual inappropriate behavior or the expression of suppressed hostility. The depression of inhibitions allows the release of suppressed behavior.

Consumption of alcohol also results in an impairment of self-evaluation. Self-evaluation

is the ability of individuals to judge their own behavior or performance in a particular situation. When individuals are required to perform a specific task, both in an alcohol free state and later when intoxicated, these individuals will consistently rate their performance when intoxicated as better than when alcohol free. However, independent observation of these individuals clearly demonstrates that when intoxicated, they perform the task slower and with more errors.

Another aspect of judgment affected by alcohol is risk assessment. Individuals have the ability to determine what risks are acceptable to them and to understand the consequences of their actions. **An intoxicated individual may accept risks which would be unacceptable when alcohol free.**

Alcohol can also create a feeling of euphoria, a sense of well-being. With an artificial sense of well-being, plus an increase in the pain threshold, an intoxicated individual may ignore minor injuries. Serious injuries may be considered trivial with no attempt made to seek the necessary medical attention.

Other aspects of an individual's mental faculties are also affected by alcohol. Intoxicated individuals may exhibit a loss of memory such as the inability to recite the alphabet. They sometimes have difficulty in remembering the date and the time of day. They may demonstrate a shortened attention span and the inability to concentrate on a particular task.

Alcohol can also have significant effects on physical capabilities. The sense of vision and visual perception, hearing, smell and taste are all affected by alcohol. Alcohol can cause a blurring of vision, because it depresses the coordination between the eyes such that they do not focus on the same spot, as in normal vision. As the alcohol concentration is increased, this results in diplopia (double vision).

Alcohol lengthens the glare recovery time. Glare recovery is the adjustment back to normal vision after a bright light, headlights, has been shined in the eyes. Alcohol increases the time required for the eyes to make this necessary adjustment for night driving. When intoxicated, dim lights and colors are more difficult to perceive and distinguish than when alcohol free. Intoxicated individuals may demonstrate the effect called light fixation, i.e., fixing on a flashing light. All too often police vehicles are struck by a vehicle driven by an intoxicated person due to this effect.

An intoxicated individual may also demonstrate the effect known as Positional Alcohol Nystagmus. When intoxicated individuals place their head in a lateral position, it can cause rapid involuntary eye movements. This is why they sometimes complain of the room spinning around because of the rapid eye movements.

Alcohol can distort distance' estimation. An intoxicated person will consistently overestimate distances, and as one consequence will underestimate speed when operating a motor vehicle.

Alcohol can impair hearing perception. Alcohol raises the minimal level of noise at which a person will respond. Noises which are usually heard are ignored due to lack of

attention. As a consequence, intoxicated individuals raise their voices to compensate for perceived hearing loss.

The nasal nerves are sensitive to even small quantities of alcohol. Alcohol very quickly dulls the sense of smell and drinkers quickly become unaware of their own odor. Alcohol can also dull our taste resulting in foods tasting bland when an excess of alcohol has been consumed.

Muscular coordination is affected by alcohol. It depresses the nerve transmission to the muscle which affects the performance of the muscle. Generally, fine muscular coordination is affected first. As alcohol concentration increases, large muscle coordination is impaired, affecting gross muscular coordination. As alcohol concentration rises, eventually the involuntary muscles are affected and respiration can cease resulting in death. Because of the effects of alcohol on the nerves and muscles, reaction time is lengthened. At alcohol concentrations above 0.08%, the reaction time for performing a complex task is dramatically increased.

Alcohol can act as a vasodilator, relaxing blood vessel walls and resulting in more blood in the peripheral areas of the body (hands, feet, etc.). This effect is responsible for the flushed face observed in certain individuals who consume alcohol. This results in additional heat being lost from the human body because of the increase of blood near the body surface.

Alcohol is a diuretic. Alcohol depresses the release of antidiuretic hormone which results in less water being retained in the body. This effect is best demonstrated when the alcohol concentration is rising.

**Intoxication
Without
Alcohol**

Alcohol is not the only agent which could produce the effects already described. The situation will occasionally arise where an individual appears intoxicated, but the breath alcohol test results are either negative or much lower than expected from the observed behavior. This can occur if a subject is a novice drinker who lacks the experience of coping with alcohol induced intoxication. The breath test operator should be aware that symptoms similar to alcohol intoxication can be produced by a combination of alcohol and drugs, drugs alone, or certain diseases or illness.

When alcohol is consumed in combination with other drugs, illicit or prescribed, the symptoms of alcohol intoxication may be altered. This explains the situation where an individual appears very intoxicated, but the breath alcohol test results demonstrate a low level of alcohol. Combining drugs with alcohol can produce two types of effects: additive or synergistic. When a given dose of a drug is combined with a given dose of alcohol and the effects are equal to either two doses of the drug or alcohol, this is referred to as the additive effect. Taking alcohol and phenobarbital results in an additive effect. The synergistic effect exists when a given dose of a drug is combined with a given dose of alcohol, and the effects produced are greater than two doses of either the drug or alcohol alone. Taking alcohol and valium results in a synergistic effect.

Certain drugs are capable of producing symptoms similar to alcohol intoxication. **The breath alcohol test does not determine the presence of drugs other than alcohol.**

Other types of analyses must be performed to determine the presence of drugs or other intoxicating compounds. Therefore, if an individual appears very intoxicated; the breath alcohol test results are low or zero; it is reasonable to believe the individual is under the influence of drugs.

Certain illnesses or diseases can produce symptoms similar to alcohol intoxication. Diabetes, epilepsy and trauma are examples of conditions which fall within this category. When individuals have a low or zero alcohol test result, the breath test operator should consider the possibility of a medical condition being present. If a medical condition is suspected or determined, medical assistance should be sought.

Measuring Alcohol Concentration The development of tests to determine the alcohol concentration in an individual has paralleled the development of the automobile. When the motor vehicle was first invented, routine tests for alcohol concentration were practically unknown. There were tests available to the scientists in laboratories, but these tests were not available to the general public or the law enforcement community. As the number of automobiles on the public roads began to rapidly increase, the need for some type of test to determine a person's alcohol concentration quickly became apparent. A person's actions can be caused by drugs, injury or illness. In addition, persons arrested usually offer excuses to account for their unusual actions. Therefore, it became a question of police officers' judgment that in their opinion persons were intoxicated versus defendants' vigorous claims that they were not intoxicated and their actions were caused by some other agent.

The use of a test, based upon scientific principles, to demonstrate that the person did have a quantity of alcohol present and the quantity was sufficient to account for the person's behavior, was a major step forward for the law enforcement community. **Now the police officer's opinion of intoxication can be supported by corroborative evidence showing the alcohol concentration in the defendant.**

Tests for alcohol concentration are the most common type of forensic analysis performed. Three specimens are commonly used: urine, blood and breath.

Urine Test One of the first body fluids used to determine alcohol concentration was urine. Since a small portion of consumed alcohol is excreted unchanged into the urine, it can be analyzed to determine alcohol content. The range of urine ratios varies from 1.12:1 to 1.51:1. **This range of ratios is valid only on urine samples where individuals first void their bladder, then, about 20 minutes later, a urine sample is collected.** In Illinois, by law, the ratio used in calculating Urine Alcohol Concentration (UAC) is **“the number of grams of alcohol per 67 milliliters of urine”** (IVC Section 6-500c [625 ILCS 5/6-500(c)]). If the bladder is not voided first, then the alcohol concentration is a reflection of the total amount of alcohol consumed since the person last voided his/her bladder.

There are several disadvantages to a urine test. Sample collection must be observed. Persons must void their bladder first, then the sample is collected. The sample must be collected in a clean container and properly labeled. Refrigeration of the sample is recommended but not required. Interpretation can be difficult. For example, did the

person totally void the bladder? Finally, confirmed results cannot be obtained immediately but rather days or perhaps weeks after the arrest, since screening sample results must be analyzed and confirmed by a laboratory.

However, urine samples have several advantages. Urine is the sample of choice for determining the presence of drugs due to cost and ease of handling. New urine sampling containers can provide a qualitative result for selected drugs, i.e., the NIDA 5 or 9 panels. The sample is relatively easy to collect and medical personnel are not required. Provided an adequate volume is obtained from the first void, preferably, multiple analysis of the same sample are possible.

Blood Test

Prior to 1960, blood was the sample used in almost all drinking and driving research. In regards to alcohol concentration, it must be remembered that arterial blood and venous blood may differ in the quantity of alcohol present at any given time. Arterial blood will reflect the alcohol concentration in the brain more closely than the venous blood. However, venous blood is easier to obtain because the blood vessels are closer to the surface of the skin. Capillary blood follows the alcohol concentration of arterial blood very closely and makes an excellent specimen for analysis. However, collecting a sufficient volume of sample can be a problem.

Blood samples have several disadvantages. They are dangerous to handle unless proper precautions are taken. Medical personnel, a phlebotomist, are required to draw the sample, and the samples must be drawn in an approved medical facility. The person drawing the specimen should avoid the use of an ethyl alcohol solution to swab the skin before taking the specimen. This is handled if you use the ISP blood kit provided at the medical facility, e.g., hospital. The sample should be collected in a grey top vacutainer which contains sodium fluoride, an anti-coagulant, to prevent blood clotting. Refrigeration of the sample is recommended but not required. Results cannot be obtained immediately since the specimen must be analyzed by a laboratory. Some people object to having a blood sample taken either on personal or religious grounds.

Blood samples have several advantages. In addition to alcohol, analysis of many drugs can be performed. If a sufficient volume is collected, multiple analyses of the same sample can be performed.

Breath Test

Since the mid-1950's, the development of reliable and increasingly automated breath test instruments, the breath test has become the most commonly used method for determining alcohol concentration. **Since the breath test is measuring the arterial blood alcohol concentration, it provides a more accurate determination of the quantity of alcohol affecting the brain than a urine specimen or a venous blood specimen.**

Breath sampling has several advantages. The individual providing the sample cannot affect the quality of the sample analyzed. Current instruments only analyze for alcohol. In Illinois, the operator **must** conduct a proper observation/deprivation period of 20 minutes immediately prior to the test to insure that the person does not consume alcohol nor reintroduce alcohol into the mouth from the stomach by regurgitation or vomiting.

The sample is very easy to obtain. Most persons are willing to provide a sample. Results are instantaneous. A complete analysis can be performed in just a few minutes. The testing costs are low and maintenance is minimal.

Interpretation of Results The analytical result obtained from the analysis of urine, blood, or breath indicates the alcohol concentration at the time the specimen was collected. Of course, for a breath sample, the collection and analysis is performed right away. The results of these analyses are expressed in terms of weight-to-volume. For example, the result 0.10 means that there were 0.10 grams of ethanol per 67 mL of urine, 0.10 grams of ethanol per 100 mL of blood or 0.10 grams of ethanol per 210 liters of breath, depending on the specimen that was analyzed.

Using Widmark's (Estimation) Formula, it is possible to **estimate the minimum** number of "drinks" the person would have consumed to reach the reported alcohol concentration. It must be remembered that this is an **estimate only** and **may not** reflect the actual events. Depending on the numerous alcohol consumption factors, the actual drinks consumed may be much greater. The result of any chemical test for alcohol concentration establishes the amount of alcohol in the person's body at the time the sample was collected. Chemical tests **do not** determine how many drinks were consumed or what type of alcoholic beverage (beer, wine or distilled spirits) was consumed.

When comparing two test results when the sample were collected at different times, it is critical to remember the alcohol concentration within a person is in a dynamic state and not a static state. The alcohol concentration within the person is dependent upon all the factors that affect the absorption, distribution and elimination of ethanol. Over small periods of time, the alcohol concentration can change.

Finally, the method for reporting the results should be considered when comparing the results of two different analyses. The result of a breath test may be reported to only two decimal places. For example, a result of 0.139 would be reported as 0.13. This requirement is not placed on the results of other types of chemical tests. The result of a blood test showing 0.141 could be expressed as 0.14 or as 0.141. If the blood test was reported as 0.14, then when compared to the breath test result of 0.13., it would appear that the blood test was 0.01 higher. However, in actuality the tests differed only by 0.002, indicating excellent agreement between the different tests.

SECTION E

INFRARED AND FUEL CELL THEORY

INFRARED AND FUEL CELL THEORY

Infrared Principles

The Electromagnetic Spectrum

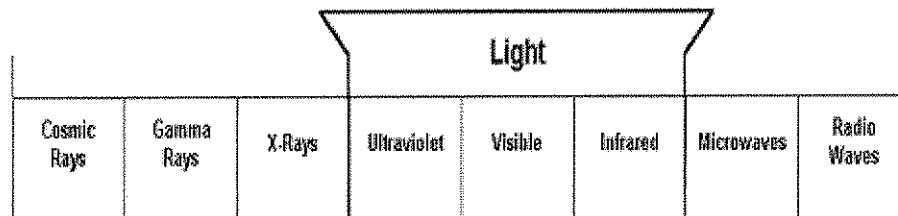


Figure G-1. Electromagnetic Spectrum

Electromagnetic energy exists in a continuous spectrum from the very low energy of radio waves, whose wavelengths are extremely long (many yards to miles), to the very high energy of X-rays and cosmic rays whose wavelengths are in billionths of an inch. Somewhere in the middle of the spectrum is visible light. Green light, for example, has a wavelength of 0.5 microns or 20 millionths of an inch.

Visible light extends from the violet blue (.4 microns) through deep red (.75 microns.) Wavelengths shorter than 0.4 microns are invisible to the human eye and are called ultraviolet or beyond the violet. While not seen, they can be sensed. Wavelengths of .25 microns, for example, are germicidal and are used to sterilize food. They also cause sunburn by cooking the protein in our skin.

Wavelengths longer than .75 microns are called infrared, or below the red. From .75 to 4 microns, the region is called near infrared. The 4 to 15 micron region is called the mid-infrared and is of particular importance to the chemist, because it is this so-called "fingerprint region" where many materials have specific absorption bands which identify them. It is routine for the laboratory analyst to place solid, liquid, or gas samples in rather sophisticated infrared spectrophotometers to observe the patterns of absorption bands and identify the material by these bands.

The 20-1000 micron region, called far infrared, has had little practical application to date.

It should be emphasized that infrared, or ultraviolet radiation, can be considered light which cannot be seen. It can be focused with lenses, bounced off mirrors and handled like visible light in all other respects. There are many detectors which will sense these radiations, but the human eye is limited.

Gases and Light Absorption

Gases, like everything else, are made up of molecules, and these are in constant motion. In water vapor, for example, which the chemist designates as H₂O, a single oxygen atom is attached to 2 hydrogen atoms, and this constitutes the water molecules. There are attractions between these atoms which we can call bonds, and

they can be pictured as rubber bands with the two light hydrogen atoms vibrating at the ends of these rubber bands attached to that central heavy oxygen atom. These vibrations take place at a constant rate for each type of molecule.

It is an interesting fact that every wavelength of light has associated with it certain vibrations. An infrared color whose wavelength is 2.7 microns, for example, has the same vibration rate as a water molecule. When this 2.7 micron light passes through water vapor, its vibrations are picked up or absorbed by bonds between the hydrogen and oxygen atoms to vibrate more strongly (but at the same frequency or vibration rate as always) and the 2.7 micron energy, as it is absorbed in the molecule bonds, disappears. This is the principle of light absorption.

The fact that the atoms in the water molecules not only vibrate on their rubber band connections, but simultaneously stretch up and down and twist clockwise and counterclockwise, causes other vibrations which absorb 1.9 microns radiation, 5.7 microns radiation, and 15 microns radiation. When the chemist puts an unknown fluid in his spectrophotometer, scans the infrared spectrum, and sees weak absorption bands at 0.9 microns, 1.3 microns, 1.9 microns, and strong absorptions at 2.7 microns, 5.7 microns and 15 microns, he knows that his unknown sample is water.

Likewise, most liquids and gases have their particular signatures or sets of absorptions. A number of hydrocarbon gases, for example, with a particular hydrogen-carbon bond vibration will absorb strongly any light of 3.39 microns wavelength. The alcohols are among these.

Modifying Factors

A complex molecule has a number of different sets of bonds, and neighboring bonds will influence a basic vibration, changing it slightly. The engineer would call these harmonics and overtones.

Ethyl alcohol, for example, is $\text{CH}_3\text{-CH}_2\text{-OH}$. Notice that it has the hydrogen-oxygen bond like water. We would, therefore, expect to find the 2.7 micron absorption, and we do. But it is not exactly at 2.7 microns and is shifted slightly because of the presence nearby of all the carbon-hydrogen bonds.

Methyl alcohol is $\text{CH}_3\text{-OH}$. The fact that it does not have the CH_2 unit of ethyl alcohol changes its 3.39 microns absorption slightly.

If we focus our attention on a very narrow strip of infrared color, for example, from 3.380 microns to 3.398 microns, we will see most of the ethyl alcohol absorption but less of the methyl alcohol absorption which is shifted slightly to one side of our color window.

If we add a heavy chlorine atom to make chloroform (CH-Cl_3), we find the shift is so far to one side of our window that there is almost no absorption between 3.380 and 3.398 microns.

That is what occurs in infra-red test instruments. An optical filter serves as a color window letting through only 3.380 to 3.400 micron energy, which centers on the ethanol absorption bond. A few other materials like isopropyl and methyl alcohol show absorption in this color window, but many materials like benzene, turpentine, carbon tetrachloride, xylene, toluene (found in glue sniffing victims), paraldehyde, formaldehyde, ethylene glycol (anti-freeze), trichlorethylene, etc., show little or no absorption.

STUDENT INSTRUCTIONS

BREATH TEST INSTRUMENTS

The following section of the BAO student manual is devoted to breath analysis instrument operations of test units approved for use in Illinois by the Illinois Department of State Police.

It is absolutely essential that you follow the directions of your instructors very carefully in operating breath test instruments. The equipment in use is valued at several thousands of dollars for a single unit! Therefore, abuse or damage to the instrument cannot be tolerated. In the event an instrument malfunctions, ask for assistance from the instructor. Do not attempt to make repairs or trouble-shoot under any circumstances.

Since 1968 the State of Illinois has trained and certified thousands of breath analysis operators successfully and without any major damage to equipment. Use the breath test instruments and simulators carefully in the lab, and you, too, will be a certified breath test operator at the completion of this course.

FACTORS AFFECTING BREATH TESTING

The facts determined by any scientific instrument depends on the competence and integrity of its operator. The procedure for the proper use of any breath testing instrument must be followed or results obtained by it may be open to question.

Regurgitation

To regurgitate air from the stomach and blow it through the mouthpiece simultaneously is virtually impossible. The mouth would first be filled with gas from the stomach and then the gas blown through the mouthpiece. However, several such efforts would be required to produce an adequate specimen. In any case, a qualified breath test operator would not accept a specimen collected in this manner.

Alcohol is absorbed from the stomach very rapidly. Approximately 40% disappears during the first 30 minutes. One to two hours after drinking, high results could not be obtained even if the specimen of lung air were contaminated with stomach air because approximately 90 percent of the ingested alcohol has been absorbed through and beyond the stomach during this period.

Acetone Odor on the Breath

Persons suffering from diabetes should make this condition known when questioned by the police prior to a test. In severe diabetic acidosis they may exhibit one or all of

the following clinical signs: fruity odor on the breath, headache, general feeling of illness or discomfort, nausea, vomiting, abdominal pain, body pain in the extremities, thirst and passage of excessive quantity of urine.

Erroneously high test results for non-drinking diabetics, even those in coma, would not be produced by a breath testing instrument during breath test cycle.

Acetone, which might be present on the breath of an untreated diabetic does not give a test result exceeding the blank reading within 90 seconds. After approximately 15 minutes reaction time, the reading would not exceed .02-.03%. It would require 30-60 minutes for the oxidation of acetone to be complete.

Acetone, which might be present on the breath of an untreated diabetic, does not give a test result on the breath test instrument using photoelectric colorimetry, but would be detected on the infra red devices. If the acetone concentration is high enough some of the instruments will subtract the amount of the acetone in the breath and tell what percentage has been subtracted while others will indicated that there has been an interference and will abort the test.

Lambert-Beer Law

Light is absorbed by molecules in accordance with well established laws of physics. If one had a closed container filled with the molecules of a gas and passed light through one end of the box and out the other, one could predict the percentage of light that gets out if one knows three things about this system:

1. What the grabbing power of the molecules are for that color light
2. How long the box is
3. How many molecules are packed in the box

The grabbing power or absorption coefficient of a particular molecule for a particular wavelength of light is a constant value. Ethanol has a very small absorption coefficient for light of wavelength 3.2 microns but a very large absorption coefficient for light of 3.39 microns, as already indicated.

The variation of light absorption with the number of molecules in the box is obvious. The more densely packed the box is with molecules, the higher is the probability that light won't get through the box without being grabbed by the molecules and turned into bond vibrations.

The same is true for the path length. Even if there are few molecules in the box (the concentration is low), if the light must pass through a very long box, it will encounter enough molecules on the way to be substantially absorbed.

In the infra-red test instruments, we know 4 of the 5 facts about the system, and from the Lambert-Beer relationship, we can easily calculate the fifth. We know the amount of light entering the box or breath sample cell, the amount of light that emerges, the absorption coefficient of alcohol at 3.39 microns, and the path length of the sample cell. We can then easily determine the concentration which is directly

related, through Henry's Law, to the concentration of alcohol in the blood.

Fuel Cells

History

In the early 1800's a British scientist discovered the fuel cell effect. He immersed two platinum electrodes in sulfuric acid electrolyte and supplied hydrogen at one electrode and oxygen at the other. The resulting reaction created a current flow between the electrodes. There was no practical application of fuel cells at that time because of high cost and technological problems. In the 1960s, researchers at the University of Vienna demonstrated a fuel cell that was specific for alcohol. This evolved into the present-day cell used in all fuel cell-based breath alcohol measurement instruments.

In its simplest form, the alcohol fuel cell consists of a porous, chemically inert layer coated on both sides with finely divided platinum (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 manufacturer mounts the entire assembly in a plastic case, which also includes a gas inlet that allows a breath sample to be introduced. Various manufacturers employ numerous proprietary nuances in their construction. The basic configuration, however, follows that described above and illustrated in Figure G-2.

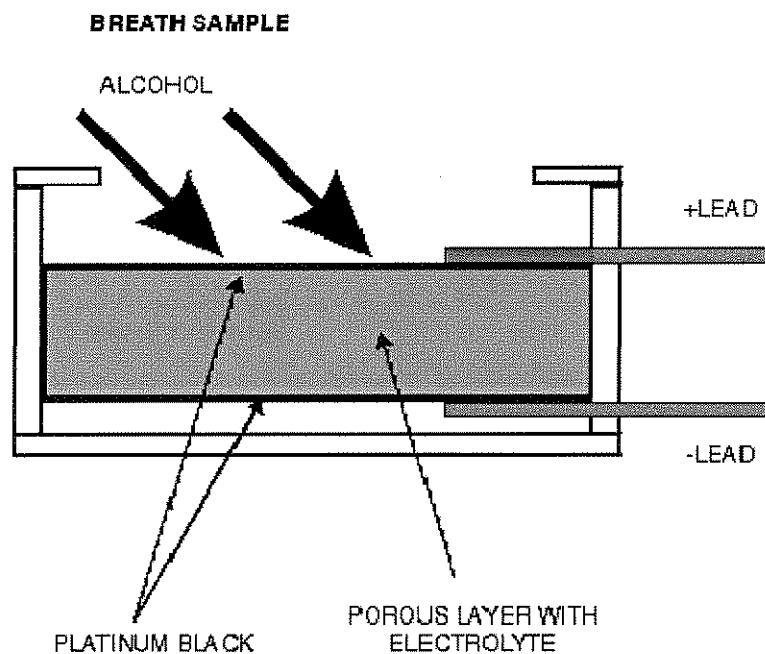


Figure G-2. Basic Alcohol Fuel Cell

The exact chemistry of the reaction that takes place in an alcohol fuel cell is open to some conjecture. Researchers assume that the reaction converts alcohol to acetic

acid. In the process, this conversion produces two 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. With appropriate signal processing, you can display breath alcohol concentrations directly.

**Application To
Breath Alcohol
Measurement**

Since the commercial introduction of fuel cell instruments in the mid-1970s, manufacturers improved them continuously. Many of the early problems that limited their use to non-evidential alcohol breath testing have been eliminated. By 1980, modern counterparts of early units were certified for evidential use by the US Department of Transportation, and by a number of state agencies and foreign governments. The fuel cell has established a reputation for specificity and linearity of response over the complete range of alcohol concentration expected in the breath. This range is from 5 to 900 ppm or its equivalent in other units of measurement. When you introduce a precise volume of breath sample into a fuel cell quickly, the output current from the cell rises from zero to a peak, and then ultimately decays back to zero. The rate at which this happens is highly dependent on the load resistor across the output terminals of the sensor. Traditionally, measurement instruments used fuel cells with load resistors of several hundred to one thousand ohms. Measurement instruments used the height of the voltage peak across the resistor as the measure of alcohol content of the sample.

SECTION F

INTOX EC/IR

Intox EC/IR

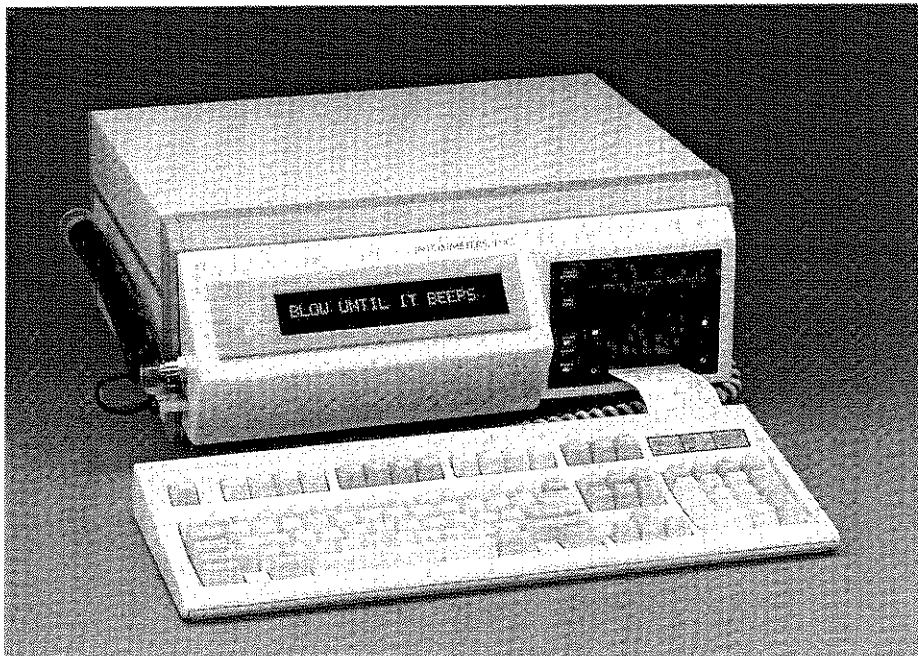


Figure F-1. Intox EC/IR

- Introduction** The Intox EC/IR is a state-of-the-art breath alcohol analyzer. It brings together two separately-controlled subsystems. The first is an analog control system that controls all the analytical functions of the instrument. The second is an input/output control system, which controls all aspects of the user interface as well as controlling various test sequences and protocols. A set of high-quality built-in input and output devices make data entry, storage, and reporting a simple matter.
- Storage** Storage in cold or moderately hot environments will not harm the Intox EC/IR. Avoid storing the instrument for prolonged periods in areas of extremely high or low humidity. When moving a unit from a cold area to a warm area, allow the unit to warm up to room temperature before connecting power. This allows condensation which may have formed inside the unit to dissipate.
- Operating Environment** Environments with heavy alcohol vapor, cigarette smoke, or any other strong chemical vapors must be avoided. These contaminants may affect the conduct of a test by interfering with the instrument ability to establish a "room air blank" during a test. If contaminants are present the instrument will prevent the operator from conducting tests. Repeated exposure of the sensor to these contaminants (not ethyl alcohol) may shorten its life.
- Room air contaminants, however, will not affect the instrument's ability to properly determine an analytical result of a breath test. The breath will displace any

environmental contaminants in the instrument before the sample is drawn into the sensor. Cigarette smoke, however, should never be blown into the instrument where it could be sampled by the sensor. Repeated exposure of the sensor to these contaminants (not alcohol) may shorten its life.

The Intox EC/IR is not designed for all-weather operation. The intended operating environment is indoors at room temperature. If the instrument is used in a portable environment such as a van or car, the instrument has built-in safeguards that prevent operation unless all systems are at the proper temperature.

Controls and Components

The Intox EC/IR has two primary components: the analytical instrument itself, contained in a single cabinet that also houses a thermal printer, and a detachable keyboard. Except for advancing paper, operator commands from the keyboard control all instrument functions. A two-line display provides operator instructions and status information. Indicators on the built-in printer light when the instrument is on and also show off line/on line status.

The Two-Line Display

This display shows operating conditions, menu selections, on-line help, and measurement results. The default display after an initial warm-up period lists such things as date and time of day, instrument serial number, and an instruction to press the keyboard Enter key to start a Subject Test.

The Keyboard

The Desktop Intox EC/IR uses a standard 101-key keyboard, the same kind used in most personal computers today. The Portable Intox EC/IR is equipped with a smaller AT-compatible keyboard which is functionally equivalent to standard keyboard.

The following keys have special uses in conjunction with the Intox EC/IR:

Escape Key - found in the upper left-hand corner of the keyboard

Function Keys - found along the top of the keyboard above the main set of keys

Cursor Keys - found on the lower portion of the keyboard between the main keys and the numeric keypad.

Enter Key - also referred to as the Return Key, is found in the center right portion of the main set of keys.

Internal Printer Controls and Displays

The built-in printer has two push-buttons and three indicators:

The PAPER ADVANCE push-button advances paper out of the printer when it is Off Line. Press the LINE/LOCAL push-button until the ON LINE indicator goes off. Then, hold down the PAPER ADVANCE push-button until you have advanced the required amount of paper. Be sure to put the printer in on line mode before starting Subject Tests.

The LINE/LOCAL push-button takes the printer off and on line when pressed. When off line, the ON LINE indicator goes out.

The ON LINE indicator lights when the printer is ready to print results.

The ERROR indicator lights when there is a printer fault: paper empty, door open, over-voltage or under-voltage condition, or print head over-temperature.

Optional External Printer Controls and Displays

The external printer (if present) has two push buttons and several indicator lights. Refer to the Users Manual on the instructions and proper use of external printer.

NOTE: Do not place anything containing liquids on the instrument's top cover. This includes coffee cups and soft drink containers.

Turning on the Intox EC/IR

Before turning power on make sure the breath tube is connected to the breath tube inlet and the keyboard is attached. To turn power on, plug the Intox EC/IR into an AC power outlet and switch the power switch (located on the rear panel of the unit) to the ON position. The Intox EC/IR can remain on continuously; this allows the user to avoid the warm-up time that is required when the instrument has been turned off for a period of time. Once you turn the instrument on the alphanumeric display should illuminate and display a series of messages that the Operator should verify including the firmware version of the instrument. During the initial warm-up period, the instrument displays "HIT ANY KEY TO START" then "REGULATING TEMP". Subject tests or calibration cannot be initiated during the warm-up period, which lasts about 20 minutes. When the instrument reaches operating temperature, a scrolling set of messages appears, indicating that the instrument is ready to run tests immediately.

Using the Keyboard

The keyboard supplied with the Intox EC/IR works just as any personal computer keyboard works. There are two sets of keys that have special functions when operating the instrument. The Enter key controls data entry and begins a Subject Test sequence. The Escape key interrupts data entry and also aborts a Subject Test. The 12 function keys located at the top of the keyboard have preprogrammed functions.

Enter Key

This key has two functions. After answering questions displayed on the Intox EC/IR and entering data, press Enter to send the current answer or data to the instrument. Then move on to the next question. When the Intox EC/IR is ready and the display is scrolling, pressing Enter starts a Subject Test sequence.

Escape Key

If you press the Escape ("Esc") key while answering a question or entering data, the Intox EC/IR will exit the current function and return to scrolling mode.

In addition, you can use the Esc key to reset the instrument when it is in the scrolling mode. If you find the instrument in an unusual state, pressing the Esc key several times should restore normal operation.

If you press the Esc key while the Intox EC/IR is waiting for the subject to provide a sample, the instrument aborts the test and indicates this on the display and the printout. _____

Subject Test

State of Illinois Protocol

The following outlines the current testing procedures using the State of Illinois protocol, which is a one-test protocol. The order and content of the data entry items may change based on the needs of the Alcohol and Substance Testing program. However, the critical analytical components of the protocol will not change, i.e., air blank, subject test, breakdown messages, if applicable.

Conducting A Subject Test

Once the system has been turned on and the warm-up cycle completed the display will be in the scrolling mode. Follow the steps below noting the DISPLAY, KEYBOARD ENTRY, and EXPLANATION at each step. For a 'subject test' use a new originally packaged mouthpiece for each subject test. Use care when opening the mouthpiece package. Residual pieces of plastic wrap may cling to the mouthpiece, which may get blown into the sample assembly causing restriction and possible blockage.

<u>DISPLAY</u>	<u>KEYBOARD ENTRY</u>	<u>EXPLANATION</u>
Normal Scrolling Mode INTOX EC/IR TEST LOCATION SERIAL NO. 01780 13:59 12/20/99 PRESS ENTER TO START	Press the Enter key.	The Enter key starts the test.

SUBJECT TEST y/n?	Press Y or N, followed by the Enter key.	
OPERATOR NAME	Enter Operator Name, followed by the Enter key.	Enter the 20-character alpha/numeric Operator name followed by the Enter key.
OPERATOR ID	Enter Operator ID, followed by the Enter key.	Enter BAO License number or Badge number.
SUBJECT NAME: Smith	Enter Subject name, followed by the Enter key.	Enter the 20-character alpha/numeric subject name followed by the Enter key.
SUBJECT DOB MM/DD/YY	Enter the subject date of birth followed by the Enter key.	Enter the subject Date of Birth by MM/DD/YY.
SUBJECT SEX: MALE	Press Enter key to accept or press the space bar to toggle to the next screen (FEMALE)	The Operator selects the correct sex of the subject.
DRV LICENSE STATE:	Enter the Drivers License state	Enter the 2 character Drivers license state
DRIVERS LICENSE NUMBER:	Enter the drivers License number followed by the Enter key.	Enter the correct 20-character license number.
ARRESTING OFFICER:	Enter the Arresting Officer name followed by the Enter key.	Enter the correct 20 character Arresting Officer's name.
ARRESTING OFFICER'S ID;	Enter the Arresting Officer's ID followed by the Enter key.	Enter officer's ID/Badge number.
ARRESTING DEPT:	Enter the Arresting Department name followed by the Enter key.	Entry may be up to 20 character department name
COUNTY OF ARREST:	Enter the county of arrest followed by the Enter key.	Entry may be up to 20 characters.
EDIT DATA (Y/N)? N	Press Enter key to accept or press Y followed by the Enter key.	Allows the Operator to review or edit the previously entered data and correct any errors.

CHECKING SYSTEM	Information only. No data entry required.	The instrument is performing an internal electronic systems check.
BLANK CHECK	Information only. No data entry required.	<p>The instrument will automatically run a check of the breath path to ensure there is no alcohol present. The automatic blank check must result in a zero reading before the instrument will advance to the next step in the testing protocol.</p> <p>If the blank check result is >.000 the instrument will automatically run the sequence again – purge and blank check. If on the third attempt the blank result is > .000 the test is aborted.</p>
BLANK .XXX	Information only. No data entry required.	The instrument displays the result of the blank check.
PLEASE BLOW or BLOW UNTIL IT BEEPS or BLOW UNTIL BEEP	Information only. No data entry required.	Instruct subject to take a deep breath and blow into the mouthpiece as steadily and as long as possible. Flow and volume will be indicated by the * characters.
EVALUATING SAMPLE	Information only. No data entry required.	The instrument is evaluating the sample.
SUBJECT .XXX	Information only. No data entry required.	The instrument displays the results of the subject test.

**SAMPLE ACCEPTED
REMOVE
MOUTHPIECE**

Information only. No
data entry required.

Remove mouthpiece.
Record will be printed.

Subject Test Record

Model Name: Intox
EC/IR

Serial Number:
06000

ISP-SPRINGFIELD
IL

Test Rec. #
991221001

Test
Date: 12/22/99
Time: 12:00

Operator Name:
Joe Smith

Subject Name:
John Doe

Subj. DOB:
09/08/43

Subject Sex: Male
License No:

IL1234567890
Arresting

Officer: Smith
Arresting Dept.

County Name:

System Check
Passed

TEST g/210L

Time

BLK .000

13:22

SUBJ .099

13:25

Operator Signature

**PRINT ANOTHER
COPY
(Y/N)? N**

Press Enter to accept or
press Y followed by the
Enter key to print
another copy.

Additional copies of the
printout can be printed at
this time.

NORMAL SCROLLING MODE	Information only.	The instrument returns to the Normal Scrolling Mode.
------------------------------	-------------------	--

**Aborts,
Refusals, and
Errors**

Aborting a Test

If you press the Esc key at any point in the test procedure, the instrument aborts the test and indicates on the display and the printout that the test has been aborted.

Time-outs and Refusals

The instrument waits for a predetermined period after the blow message; PLEASE BLOW, BLOW UNTIL IT BEEPS or BLOW UNTIL BEEP appears. If the subject has not provided a breath sample within that period, an appropriate message is displayed and the printer prints a report showing that the test has not been completed. The test number increments by one and the display returns to scrolling mode. You may return to the subject test by pressing the Return key and starting again. If you determine that the subject has refused to provide a sample while the blow message is on the screen, press the R key and TEST REFUSED Y/N will appear. By pressing Y, TEST REFUSED will be printed on the test result printout.

Insufficient Breath Sample

If the subject fails to deliver an adequate sample the instrument will display Insufficient Breath, end the subject first test sequence and automatically initiate the second subject test sequence.

Recovery from Internal Printer Errors

If the printer is off line or the door latch has been left open at the end of the test, the display shows CHECK PRINTER DOOR. Correct the problem by closing the door latch. If the printer is out of paper, CHECK PRINTER PAPER is displayed. Install a new roll of paper to correct this. In either case, after correcting the problem set the printer on line by pressing the LINE/LOCAL push-button. The instrument will print the test results as soon as the problem is corrected and the printer is on line again.

Unit Disabled

This Intox EC/IR can be programmed to disable if certain errors occur during testing. A disabled message will appear and prompt the certified Supervisor to take corrective steps to re-enable the unit. If a disabled message appears the Operator will not be able to perform a Subject test until the certified Supervisor takes the corrective steps to enable the device. During a Standard Check procedure, if the

unit fails the Standard Check it will display INSTRUMENT DISABLED-STD CHECK FAIL. The certified Supervisor is instructed to check the Simulator jar for leaks before running the Standard Check again. Refer to Standard Check procedures.

Assistance

Getting Assistance or Service

Contact your assigned technician.

State Contact

Alcohol and Substance Testing Section
Illinois State Police
3700 East Lake Shore Drive
Springfield, IL 62712
Phone: (217) 786-7036
Fax: (217) 786-7028

Intox EC/IR II

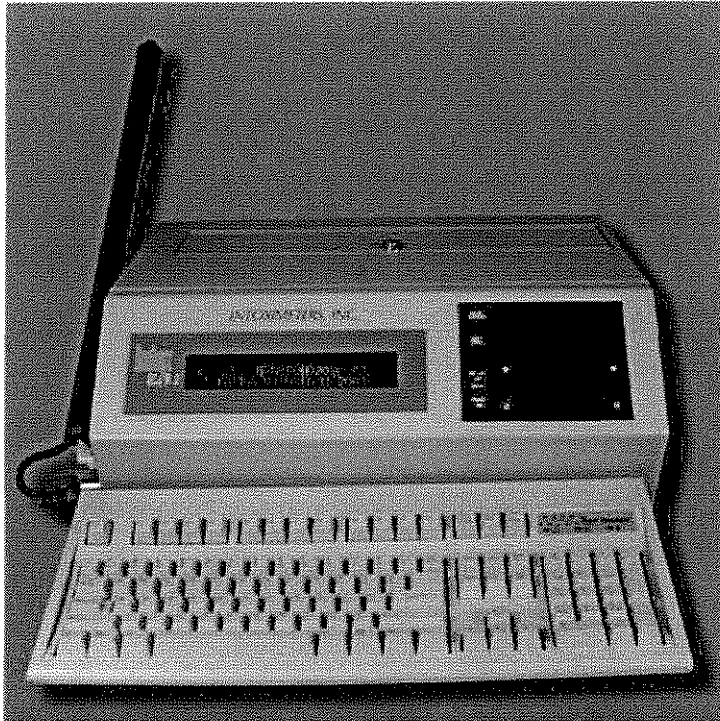


Figure F-2. Intox EC/IR II

Introduction

The Intox EC/IR II is a state-of-the-art breath alcohol analyzer. It brings together two separately-controlled subsystems. The first is an analog control system that controls all the analytical functions of the instrument. The second is an input/output control system, which controls all aspects of the user interface as well as controlling various test sequences and protocols. A set of high-quality built-in input and output devices make data entry, storage, and reporting a simple manner.

Features

Dual Sensor Technology

- Provides two independent analysis methods in one instrument

Fuel Cell As the Primary Sensor

- Linear-one point calibration
- Precise and accurate at breath alcohol concentration (BrAC) levels between 0.000 and 0.400 g/210L
- Specific for alcohols

IR Monitoring of Breath Samples

- Mouth Alcohol Detection capabilities
- Minimizes amount of dry gas standard used in calibration
- Increased stability reduces need for calibration

Patented Fuel Cell Analysis Technology

- No wait between tests
- No re-calibration required after multiple positive tests
- Increased stability reduces need for calibration

Standalone, Microprocessor-Controlled Instrument

- Is self-contained, with all necessary operating software on board
- Can be connected via modem to a central computer for automated maintenance, quality assurance, and data transmittal

Built-in Diagnostics

- Reduce maintenance costs and downtime
- Allows remote diagnostics using a modem

Built-in Chain of Evidence and Record-Keeping Capabilities

- Reduces the cost of maintaining records and helps ensure that test results will meet the rigorous demands of legal challenges

Flexible, Software Driven Protocols

- Protocols can be easily tailored to applicable regulations and the user's specific needs

Two-Line by 20-Character Graphics Display

- Large, bright characters
- Menu-style operation
- Input questions and responses can be viewed together

High-Performance Thermal Printer

- 7.5 lines per second
- Quiet operation
- No ink ribbons to change
- Multiple character capability

Thermal Paper

- 18-month life
- Resistant to degradation from light
- Top-coated paper with guaranteed 7 year life

Automated Calibration

- Reduces costs associated with training, and ensures proper chain of evidence protocol for quality assurance record-keeping

Can Use Wet and/or Dry Alcohol Standards for Automated or Manual Calibration and Standard Checks

- Offers the choice of using either of the accepted methods for instrument calibration and verification

Options

- External printer
- Inverter for 12-volt operation
- 2D Bar code reader/magnetic stripe

TECHNICAL SPECIFICATIONS

Measurement Range

0.000 to 0.440 grams of ethanol/210 liters of breath.

Accuracy and Precision

The Intox EC/IR II meets or exceeds all US Department of Transportation specifications for the accuracy and precision of alcohol breath testing instruments. The measurement system is specific to ethyl, methyl, and isopropyl alcohols; it does not respond to other hydrocarbons found naturally in the breath.

The Intox EC/IR II is accurate to within +/- 0.005 at 0.100 g/210L, or +/- 5%, whichever is the greater.

Operating Temperature Range

The EC/IR II is designed to operate in ambient temperatures between 10°C and 35°C.

Internal Clock and Calendar

The internal clock, with or without external power, is accurate to \pm 1 minute per month.

Keyboard

Mini-keyboard, AT-compatible keyboard. PS2 optional

Display

The Intox EC/IR II display is a 256 x 32 pixel graphic vacuum fluorescent display.

The display:

- Displays 2 lines of characters with a minimum of 20 characters per line.
- highly reliable - rated for a lifetime of 50,000 hours.
- very bright - 685 cd/m² (or 200 f-L)
- has low power consumption
- supports a large international character set

Internal Printer

The Intox EC/IR II incorporates a high performance thermal printer that provides:

- Printing speed 7.5 lines per second
- 150 dots/inch resolution
- Integrated paper handling system requires no threading; changing the paper roll takes seconds and there are no paper jams
- Multiple text modes, including compressed, double width and height, bold and reverse image
- Large international character set

Optional External Printer

The Intox EC/IR II can print to most IBM PC-compatible printers with a Centronics parallel interface via the 25-pin connector on the instrument's rear panel.

Modem

The Intox EC/IR II can communicate via a built-in Hayes-compatible 9600 baud modem.

Input/Output Connections

2 - RS-232 serial communications ports
1 - parallel port (for external printer)

Electrical

90 to 250 VAC, 47 to 63 Hz, approximately 65 watts power consumption
12 VDC operation when used with optional inverter

Mechanical

Desktop model

Height: 7.125 in. (180 mm)
Width: 18.75 in. (476 mm)
Depth: 14.5 in. (368 mm)
Weight: 15.5 lb. (7.0 kg)

REAR-PANEL CONNECTORS AND CONTROLS

Figure 5 shows rear panel controls and connectors for a 'dry only' instrument set-up. The EC/IR II comes in several rear panel configurations.

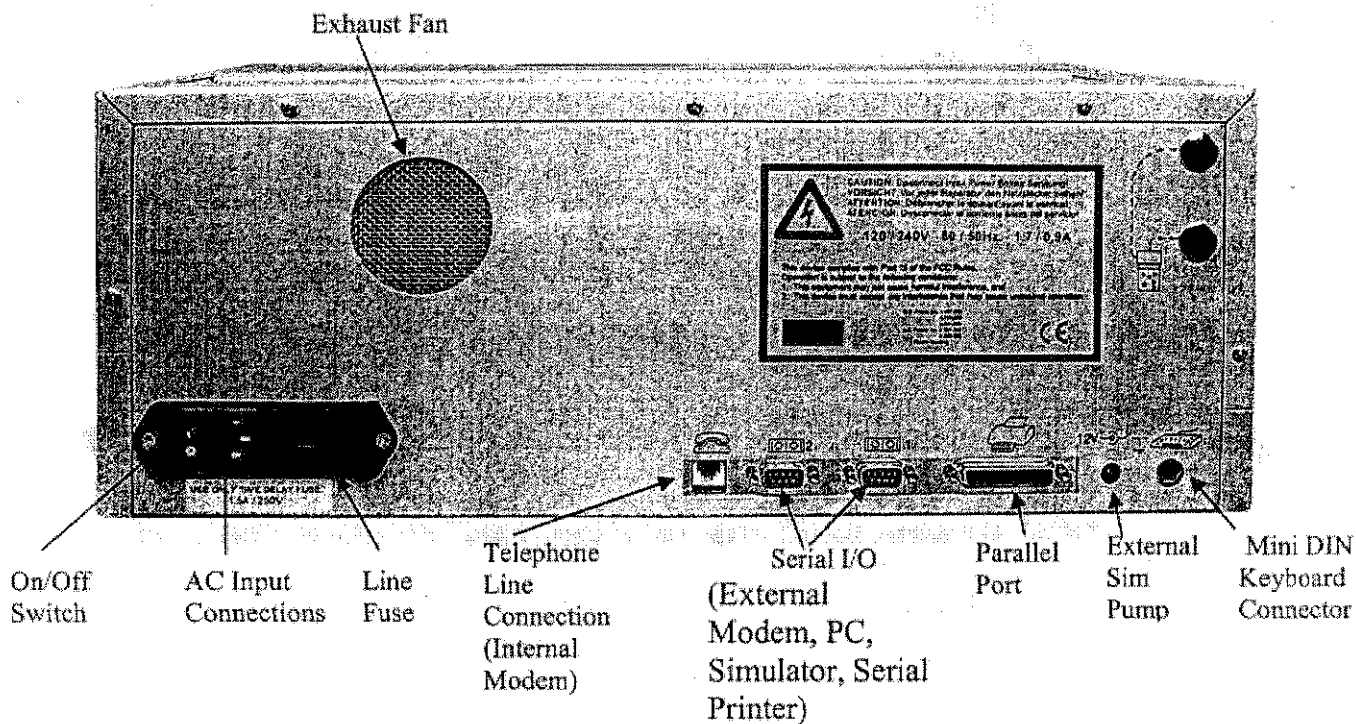


Figure 5. Rear Panel Controls And Indicators

FRONT PANEL AND KEYBOARD CONTROLS AND INDICATIONS

The Intox EC/IR II has several primary components: the analytical instrument itself, contained in a single cabinet that also houses a thermal printer, dry gas standard (if fitted) and display, a detachable keyboard and a detachable breath tube. Except for advancing paper, operator commands from the keyboard control all instrument functions. A graphics display provides operator with two-line of instructions and status information. Indicators on the built-in printer light when the instrument is on and also show off line/on line status. Figure 6 shows a view of the front panel.

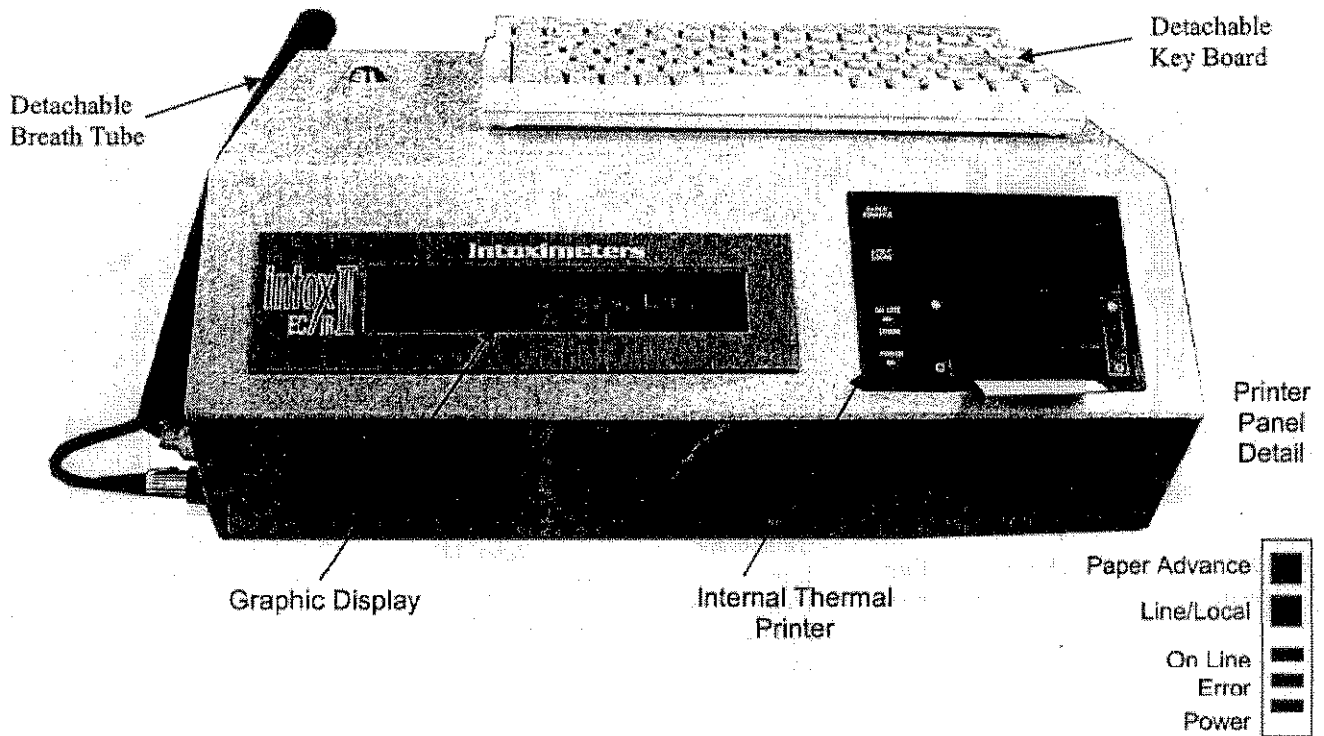


Figure 6. Front Panel Controls and Indicators

The Two-Line Graphic Display

This graphic display shows two lines of text providing information on operating conditions, menu selections, on-line help, and measurement results. The default display after an initial warm-up period lists such things as date and time of day, instrument serial number, and an instruction to press the keyboard Enter key to start a Subject Test.

The Keyboard

The Desktop Intox EC/IR II is equipped with a Mini-AT compatible keyboard, which is functionally equivalent to a standard keyboard.

The following keys have special uses in conjunction with the Intox EC/IR II:

Escape Key - found in the upper left-hand corner of the keyboard

Function Keys - found along the top of the keyboard above the main set of keys

Cursor Keys - found on the lower right portion of the keyboard

Enter Key - also referred to as the Return Key, is found in the center right portion of the main set of keys.

Space Bar - found at the bottom center of the keyboard.

Internal Printer Controls and Displays

The built-in printer has two push-buttons and three indicators:

The PAPER ADVANCE push-button advances paper out of the printer when it is Off Line. Press the LINE/LOCAL push-button until the ON LINE indicator goes off. Then, hold down the PAPER ADVANCE push-button until you have advanced the required amount of paper. Be sure to put the printer in on line mode before starting Subject Tests.

The LINE/LOCAL push-button takes the printer off and on line when pressed. When off line, the ON LINE indicator goes out.

The ON LINE indicator lights when the printer is ready to print results.

The ERROR indicator lights when there is a printer fault: paper empty, door open, over-voltage or under-voltage condition, or print head over-temperature.

Optional External Printer Controls and Displays

The external printer (if present) has two push buttons and several indicator lights. Refer to the Users Manual for the instructions and proper use of external printer.

CAUTION: Do not place anything containing liquids on the instrument's top cover. This includes coffee cups and soft drink containers.

TURNING ON THE INTOX EC/IR II

Before turning power on, ensure that (1) the keyboard cable is attached; (2) breath tube is connected to the breath tube inlet and the power connector on the left side of the cabinet. To turn power on, plug the Intox EC/IR II into an AC power outlet and switch the power switch (located on the rear panel of the unit) to the ON position. The Intox EC/IR II can remain on continuously, which allows the user to avoid the warm-up time that is required when the instrument has been turned off for a period of time. Once you turn the instrument on the alphanumeric display should illuminate and display a series of initialization messages. The Intox EC/IR II will then go to scroll mode, displaying date, time, location and serial number of the instrument. Subject tests, accuracy checks or calibrations cannot be initiated during the warm-up period, which lasts about 20 minutes. When the instrument reaches operating temperature, the scrolling messages will change, indicating that the instrument is ready to run tests.

USING THE KEYBOARD

The keyboard supplied with the Intox EC/IR II works just as any personal computer keyboard works. There are two sets of keys that have special functions when operating the instrument. The Enter key confirms data entry and steps the next data entry field. The Escape key interrupts data entry and also aborts a Subject Test. The 12 Function keys (F1, F2, etc.) located at the top of the keyboard have preprogrammed functions. Pressing the Space Bar begins a Subject Test sequence after all data has been entered.

Enter Key

This key has two functions. After answering questions displayed on the Intox EC/IR II and entering data, press Enter to send the current answer or data to the instrument. Then move on to the next question or data entry field. Pressing the Enter key after all the subject test data entry has been completed will allow the operator to review and correct the data entered.

Escape Key

If you press the Escape ("Esc") key while answering a question or entering data, the Intox EC/IR II will exit the current function and return to scrolling mode.

In addition, you can use the Esc key to reset the instrument when it is in the scrolling mode. If you find the instrument in an unusual state, pressing the Esc key several times should restore normal operation.

If you press the Esc key while the Intox EC/IR II is waiting for the subject to provide a sample, the instrument aborts the test and indicates this on the display and the printout.

Space Bar

This key has two functions. Pressing the Space bar after all the subject test data entry has been completed starts a subject test. The Space Bar can also be used to toggle between options for certain types of data entry.

CHANGING PAPER ROLLS

To replace the paper roll in the internal printer, use this procedure:

1. Unlock the paper exit door by pressing the open circles printed on the latches on either side of the door.
2. Pull up on the latches to raise the door and gain access to the interior.
3. Remove the paper roll holder by pulling out on the paper holder handle. Slip the empty paper roll core off the bar.

4. Slip the paper roll bar through the core of the new paper roll. Install the roll on the holder so that paper feeds from the top of the roll and under the handle.
5. Feed a few inches of paper from the roll so that the paper will extend out the door after you replace the holder.
6. Insert the paper roll holder into the printer and close the door. Press on the solid circles to lock the latches.
7. Tear off excess paper by pulling up at the right or left side of the paper.

PAPER

Intoximeters offers top-coated paper which is resistant to degradation by the factors mentioned above and has a guaranteed life of 7 years. If the printed results need to be saved for long periods of time, we highly recommend using top-coated paper.

RUNNING THE INTERNAL PRINTER SELF-TEST

If you suspect a problem with the printer, you can verify its operation by running the self-test. Place the printer in local mode by pressing the LINE/LOCAL push-button. Then press and hold down PAPER ADVANCE and LINE/LOCAL to start the test. Release the push-button once the test starts. The ERROR indicator should come on and begin a printout showing the printer's model number, software version, dot and bar patterns and various type styles. You may stop the test at any point by pressing PAPER ADVANCE. If the printout is not correct or shows variation in density, contact your nearest Intoximeters Authorized Service Center for a replacement printer.

GETTING ASSISTANCE OR SERVICE

Intoximeters organized its service around one premise: to offer customers convenient and speedy access to information and support for its products. Intoximeters has representation around the United States and in many countries around the world. To find the nearest representative, call our St. Louis office. Personnel at this office will provide you with a local name and number. The St. Louis office or your local representative can also provide information concerning product replacement parts, a list of technical service locations, or general information.

Intoximeters, Inc.	Intoximeters UK Ltd.
8110 Lackland Road	Unit 9 The Paddocks
St. Louis, Mo 63114	Burke Road
Phone: (314) 429-4000	Totnes, Devon TQ9 5XL
800-451-8639	Phone: 44-1-803-868602
Fax: (314) 429-4170	Fax: 44-1-803-868701
www.intox.com	

SHIPPING PRODUCT TO FACTORY FOR REPAIR

When returning a product to Intoximeters for repair the product must be sent to the Intoximeters Service Center with RMA (Returned Material Authorization) Form. This form can be obtained by calling Intoximeters Repair Department at (314) 429-4000 or (800-451-8639) or can be printed from our web site at www.intox.com/forms_apps.asp.

Alternately, the instrument can be returned with a letter, which includes the following:

- type/model of unit
- serial number of unit
- customer shipping address
- customer billing address
- contact name and phone number
- detailed description of the difficulty being experienced with the unit.

Intoximeters Authorized Sales/Service Center assumes no risk for damage in transit. The product should be sent to the service center postage and insurance prepaid.

4 General Information

STATE CONTACT

For detailed information concerning the State of Illinois testing protocol, please contact:

**Illinois State Police Academy
3700 East Lake Shore Drive
Springfield, Illinois 62712
Phone: 217/786-7036
Fax: 217/786-7028**

MAINTENANCE

The instrument does not require periodic maintenance, except for scheduled Standard checks and calibration, if required. You may need to clean the instrument's external surfaces to remove dust or finger marks.

CLEANING

Turn off power to the instrument. Using a soft cloth moistened with a commercial all-purpose detergent, wipe off the top cover, the rear and front panels, and the side panels. Remove dust and smudges from the keyboard.

REPLACING FUSES

To replace a blown fuse, turn off the instrument using the power switch on the rear panel. The fuse holder is just below the switch.

- Disconnect the power cord.
- Insert a small, flat-bladed screwdriver in the opening at the top of the fuse holder. Carefully pry out until the cover comes off.
- Replace the fuse with a 1.5 A, 250 v, slow-blow fuse.

NOTE: Use only a fuse of the same type and rating.

If the fuse blows again, there may be a malfunction. Take the instrument out of service and notify a service technician of the problem.

SECTION G

RBT IV

RBT IV



Figure G-1. RBT-IV

Introduction

The RBT IV is designed to mate and work in conjunction with the Alco-Sensor IV.

The RBT IV is simple to operate because a microprocessor provides directions for every step. The microprocessor also guards against improper test procedure by not allowing the sequence to continue until the operator has completed the step that the display currently asks for.

The RBT IV contains a predetermined operating procedure controlled by the microprocessor. The program is fail safe and supplies a hard copy record of test results.



Figure G-2. Close-up of RBT-IV Keypad

Parts

Operating Instructions Display

The Operating Instructions Display is located in the LCD window in the center of the front panel. These messages give a step-by-step read-out of commands to guide the operator through a successful test. These commands are fail-safe as the next command will not appear until the operator has successfully completed the previous step.

Clock/Date Display

The Clock/Date Display is visible in the green window after the unit is turned on. The Clock displays time on a 24 hour basis. The clock/date information can be reviewed by pushing the "TIME" button. The clock/date information should be checked before any test is started.

It is important that the information be correct because time and date are printed on the hard copy along with the printer serial number, the test number being run, a subject identification number (optional), A/S IV serial number, temperature, and test results after a test is completed. This ensures that the hard copy can be used as an effective tool in court proceedings.

If a test does not proceed within five minutes, the unit beeps and shuts itself off.

Control Buttons

1. "ON"

The "ON" button turns power on for the RBT IV.

2. **"OFF"**

The "OFF" button turns power off for the RBT IV. The unit should be off whenever it is not in use since no warm-up time is required before starting a test.

3. **"LIGHT"**

The "LIGHT" button turns on and off the footlight.

4. **"PAPER"**

The "PAPER" button is used to advance paper through the printer at the discretion of the operator. It is also used when replacing the printer paper.

5. **"LAST TEST"**

The "LAST TEST" button is used to re-print a copy of the last test that was completed.

6. **"START"**

The "START" button is used after the printer is powered up. It starts the sequence of commands to perform a fail-safe test.

7. **"ABORT"**

The "ABORT" button may be used any time during the operation of a program to stop the command sequence and return the RBT IV to the point as if it had just been turned on. The "ABORT" button must be held down for several seconds in order to function.

8. **"REFUS."**

The "REFUS." button stands for "Test Refused". Depress this button anytime after the command message "INSERT MOUTHPIECE" appears. Corresponding information will print out. The "REFUS." button must be held down for several seconds in order to function.

9. **"STAND"**

The "STAND" button stands for "Standard Option". When the command message tells the operator to "SELECT OPTION", the operator may choose to run a standard instead of a test by pushing the "STAND" button.

10. **"YES"**

The "YES" button is used to answer appropriate questions.

11. **"NO"**

The "NO" button is used to answer appropriate questions.

12. **"TIME"**

The "TIME" button displays the clock/date information for review. It is also used in conjunction with the "SET" button when setting the clock.

13. "SET"

The "SET" button is used in conjunction with the "TIME" button in order to reset the information in the clock/date memory.

14. "0 - 9 and HYPHEN"

The "0 - 9" and "HYPHEN" buttons are used when setting the clock/date memory and also when entering up to a 16 digit identification number.

**Using the RBT
IV**

1. Depress the "ON" Button.

Unit power up. Display shows clock/date function. If clock/date is incorrect:

Depress "SET" button. Using "0-9" keys, enter the correct date. Using "0-9" keys, enter the correct time. Time must be stated on a 24 hour clock basis.

2. Depress "START" button. Display shows:

"TEST NO. #####" (test number ready to run)
"RECORDED? (Y/N)"

Printer registers:

"RBT S/N #####" (serial number of printer)
"Test NO. #####" (test number ready to run)

at the top of the paper.

Depress "YES" button if the test result is recorded.

Depress "NO" button if the test result is not to be recorded.

If "YES" was pressed the display shows:

"ENTER ID#"

Using "0-9" keys enter up to a 16 digit identification code for the subject. Depress "ENTER" button when finished. The display will show:

"#####" (up to 16 digit code)
"CORRECT? (Y/N)"

If the i.d code is correct, depress the "YES" button.

If the i.d code is incorrect, depress the "NO" button, and re-enter the i.d. code.

3. Display shows: "INSERT MOUTHPIECE" followed by "FOLLOW AS-IV"

INSTRUCTIONS”

The AS-IV display indicates the stages of the test. When the AS-IV red LED display shows “SET”, depress the SET button on the AS-IV. When the AS-IV display shows “RBT”, instruct the subject to take a deep breath and blow into the mouthpiece for as long as possible. The RBT IV display will show “PROCEED WITH TEST” at this point. The AS-IV will indicate the test result when the subject has finished blowing. When the AS-IV display shows “SET”, depress the SET button on the AS-IV.

4. RBT IV display shows:

“REMOVE MOUTHPIECE”

Depress the red mouthpiece release button on the AS-IV (the AS-IV will beep at this time).

5. The RBT IV prints out the test results and other pertinent information on the test just completed.

6. The RBT IV display shows:

“RBT IV”
“SELECT OPTION”

The operator may choose from several options at this point.

1. Depress “LAST TEST” button to print another copy of the test just completed.
2. Depress “START” button to begin another test.
3. Depress “OFF” button if no further tests are to be run.

Memory Management

1,000 Test Memory

The RBT IV is equipped with extra memory which allows it to automatically store the last 1,000 tests. These tests are stored in a special memory which should last for the life of the unit. If the memory should fail, the unit will display:

“MEMORY FAILED”

and the unit will turn itself off.

When the memory is full, further testing is disabled. If the user pushes the “START” button, the printer prints out:

“MEMORY FULL”

Also, when there is room for 23 tests or less in the memory, the printer prints out a warning to

“DUMP AND ERASE”

but no testing is disabled.

Void Codes	<u>Code #</u>	<u>Display</u>	<u>Reason</u>
	01	“Bat Void”	Battery too low for use
	02	“Void”	Set button down at time of sample
	04	“Void”	Valve did not sample
	05	“Void”	60 sec timeout on “Test”
	06	“Void”	3 rd “NOGO” on a test
	07	“>>>>Void”	No alcohol or too much alcohol on a cal
	08	“Void”	Set button pushed during reading
	09	“Tmp < Void”	Temp too low for test or cal
	10	“Tmp > Void”	Temp too high for test or cal
	11	“Void”	Failed “Blank” requirement
	12	“RFI! Void”	RFI present which could alter test

SECTION H
INTOXILYZER 8000

Operational Guide

INTOXILYZER® 8000

Breath Alcohol
Testing Instrument



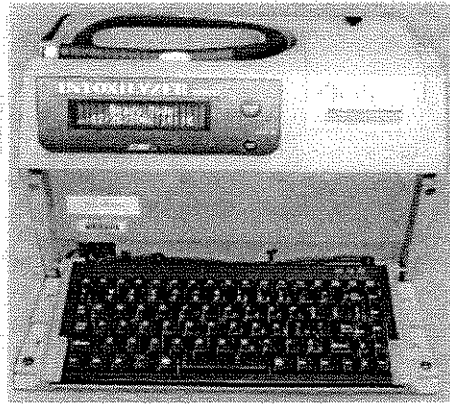
Introduction

The purpose of this manual is to ensure that the user of the CMI, Inc. INTOXILYZER® 8000 achieves the necessary depth of understanding prior to using the device for evidential breath testing. The manual covers all aspects from description of the principles of analysis to running a breath test.

Instrument Description

Overview

The CMI, Inc. INTOXILYZER® 8000 is an infrared-based device, as is shown in the diagram below, has been designed for both mobile and stationary evidential breath alcohol testing.



1. Mouthpiece storage area [heated to minimize likelihood of condensation during breath test].
2. Breath Hose coiled in the top recess of the instrument to allow easy access. Thirty-six inches in length, the hose is flexible but non-kinking, non-collapsible and is heated to ensure that no condensation forms when a breath sample is supplied. The temperature of the breath hose is under digital temperature control. Despite this, it is advised that at all ambient temperatures, when not in use, the hose be positioned correctly within the housing. The hose accepts standard mouthpieces.
3. Instrument display, [vacuum fluorescence].
4. Drop-down standard PS/2 keyboard – may be detached from main unit to enable data entry to be performed remotely from where the test is taking place.
5. Printer unit, [either of the 'impact' or 'thermal' type] has a paper roll that when it is almost "out", a thin red line appears along the edge of the roll. When this occurs, it will be possible to perform no more than five custom test printouts until the end of the paper is reached.

6. Start button. This button is used to run an evidential breath test.

The CMI, Inc. INTOXILYZER® 8000 has a nominal power requirement of 60W. The device may be powered by each of the following:

- 115VAC (47-63 Hz)
- 220VAC (47-63 Hz)
- 12VDC nominal (10 to 16VDC)

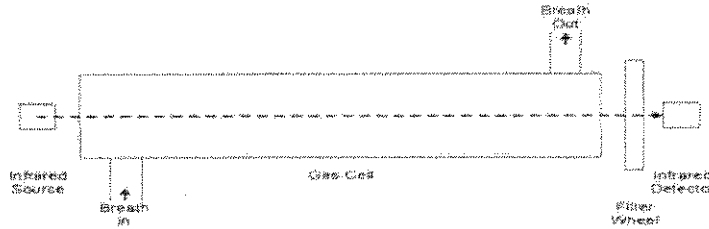
The power supply feeds into a recess at the rear of the device (not shown in the diagram) and has been designed in such a way that ensures that the overall footprint of the device remains unchanged when power supply cables are connected. This means that the device is ideal for use in confined areas such as police vehicles.

A note should be made also of the fact that when the calibration of the device is verified during periodic checks, security tabs can be attached to the device in such a way that prevents any unauthorized opening of the casing. Provided they remain unbroken, the tabs (not shown) confirm that the device has remained in a fully operational condition between the periodic verification checks.

Principle of Analysis

As indicated above, the fundamental principle of analysis is non-dispersive infrared absorption. That is, the greater the concentration of alcohol in a subject's breath specimen, the greater the amount of infrared light that is absorbed by that specimen. An infrared detector detects the absorption of the infrared light.

The above situation is summarized in the following diagram:



Applying this fundamental and scientifically accepted principle, in its design the CMI, Inc. INTOXILYZER® 8000 overcomes the only downfall of this method of quantifying a subject's breath alcohol concentration. That is, when using infrared light at a single wavelength it is possible that interferences present within the breath also absorb at the selected wavelength. The effect of this of course being that artificially high breath alcohol readings may be reported by the device.

In order to eliminate this possibility the CMI, Inc. INTOXILYZER® 8000 operates using infrared light selected at two wavelengths, 3 and 9 microns. The absorption ratio that is generated when alcohol alone is supplied in the path of the infrared light creates what may be termed as a fingerprint and that allows the device to discriminate between those samples, which are contaminated by breath interferences, and those that are not.

This is schematically shown in the diagram below.



What differentiates the CMI, Inc. INTOXILYZER® 8000 from other infrared-based breath testing devices is the fact that it has been designed in such a way that it will allow for prolonged use without the requirement for recalibration. The reason for this is that there are no moving parts within the device. The infrared light is pulsed in order that the dual pyroelectric detectors may accurately quantify as well as qualify the alcohol concentration present within the analytical cell.

Customized Data Entry Questions

When the Intoxilyzer 8000 completes the warm up period depress the START TEST button. Next, enter the appropriate answers to the customized data entry sequence below before beginning a subject test.

Questions	Max Num. of Characters	Format (see below)
Citation #.?	21	Alpha/Numeric
Subj last name?	32	Alpha/Numeric/Separator
Subj first name ?	32	Alpha/Numeric/Separator
Subj middle name ?	32	Alpha/Numeric/Separator
Date of birth ?	8	MM/DD/YYYY (valid date)
Sex M/F?	1	M/F
Drivers lic. state?	2	state abbreviation
Drivers License #?	26	Alpha/Numeric
Operator Name ?	32	Alpha/Numeric/Separator
Operator ID?	9	Alpha/Numeric/Separator
Arrest Officer ?	32	Alpha/Numeric
Arrest officer ID?	9	Alpha/Numeric/Separator
Officer Dept?	32	Alpha/Numeric/Separator
County of arrest?	32	Alpha/Numeric/Separator
Review Data? Y/N	1	Y/N

-Alpha is any letter from A to Z

-Numeric is any digit from 0 to 9

-Separator is any other symbol character including slash, dash, comma, period, and space.

Printed Output

The following illustrations are possible printed output for your Intoxilyzer 8000 instrument. They show the custom mode sequence and custom data entry described in the previous sections. Printout of custom mode from an external printer.

```

Intoxilyzer - Alcohol Analyzer
Model 8000          SN 80-000208
ILLINOIS
*****
                Accuracy Check Record
Test Date          10/31/2004
Standard value     0.105
Lot No.:           12345
Exp Date:          03/10/2006
Test               g/210L      Time
-----
Air Blank          0.000        08:27
Cal Check          0.104        08:29
Air Blank          0.000        08:29
Cal Check          0.104        08:34
Air Blank          0.000        08:35
                ACCURACY CHECK PASSED
*****
                Subject Test Record
Test Rec. #: 020800001
Test Date          10/31/2004
Operator Name:
Green
Operator ID:
123456
Subject Name:
Smith,
John,
K
Subj DOB:          09/08/1955
Subject Sex:       Male
License No:
IL-1234567
Arresting Officer:
Jones
Arrest Officer ID:
1234567
Arresting Dept:
State Police
County Name:
Davis
Citation No:
Q13456
Test               g/210L      Time
-----
Air Blank          0.000        09:44
Subject Test       0.000        09:45
Air Blank          0.000        09:46

-----
Operator's Signature
    
```


SECTION I-A
ALCO-SENSOR III

ALCO-SENSOR III



Figure I-1. Alco-Sensor III

Introduction

The Alco-Sensor III is a handheld (pocket sized) breath alcohol testing device designed to read breath alcohol concentration (BrAC) or estimate blood alcohol concentration (BAC). Nothing more than a disposable mouthpiece and a 9-volt alkaline battery are necessary to keep the Alco-Sensor III operational. With normal usage the unit should provide thousands of tests before the sensor needs replacing.

General Components

The Alco-Sensor III contains a fuel cell sensor and a spring-loaded diaphragm/sampling valve which, when released, draws a 1cc sample from the mouthpiece into the fuel cell for analysis. A signal is generated in the fuel cell in response to alcohol in the breath sample. An amplifier powered by the 9-volt alkaline battery, which has a 500+ test life, causes the result of the analysis to be displayed when the read button is depressed.

The read button operates in two stages. First, it releases the valve, taking a sample. Second, at the bottom of its travel, it switches the instrument "on" electrically.

The set button cocks the valve when depressed all the way and also "shorts" the cell. This accelerates the destruction of any alcohol left on the cell so that the time delay between tests is minimized.

(CAUTION: To assure a correct result, no alcohol should be consumed within 20 minutes of a test, and the subject should not be allowed to smoke.)

With a clean mouthpiece mounted and the set button depressed, ask the subject to blow as long as possible. The first portion of breath from the subject must not be sampled since its alcohol content is low, and not representative. It will take about 3 to 5 seconds to empty the lungs through the mouthpiece. Toward the end of this period, while the subject is still blowing, the read button should be depressed. Then, the action valve will draw 1cc of deep lung breath into the fuel cell from the passing breath stream.

The fuel cell is a plastic membrane coated with a thin layer of platinum black and an active chemical. (Field use indicates the cells generally have a life of 2-5 years.) When the read button is depressed, the breath sample is drawn into the fuel cell. All the alcohol in the 1cc sample is immediately absorbed on the fuel cell and converted to acetic acid. The resulting electric current is measured and converted into a digitally displayed BAC reading.

A BAC reading takes between 15 to 40 seconds to develop in the standard fuel cell unit. This reading will hold for a few moments before deteriorating. During this period the read button can be released and reactivated without affecting the value. However, the set button should not be depressed during this period, as it will destroy the accumulating reading.

Checking Cell Readiness

The Alco-Sensor III has an automatic zeroing feature. When the read button is depressed completely and held for 5 to 10 seconds, the digital display should show .000 to .003. If this does not occur, depress the set button for a few moments and then check the instrument again.

Flushing

Depressing the set button purges 1cc of air from the fuel cell chamber and out through the mouthpiece port. This action flushes the chamber prior to each test, but the cell surface may still retain alcohol. If any residual alcohol is present in the system, a positive reading (>.003) is displayed when the read button is depressed and held down for 5 to 10 seconds.

CAUTION: Sufficient time must be allowed after each test for all traces of alcohol on the cell surface to be eliminated. This can be accelerated by locking the set button down to short circuit the cell. If the Alco-Sensor III is ready to use, a .000 to .003 will be displayed when the read button is held down for 5 to 10 seconds.

Operating Instructions

Instructions

1. Remove unit from box and note temperature window on the back of the device
2. Mount mouthpiece. (SET button must be depressed)

Comments

Should be between 20 and 40 degrees Celsius

3. Press **READ** button and hold down for 5 to 10 seconds to verify unit is ready to use .000 to .003 for 5 to 10 seconds indicates the instrument is ready for sampling
4. Depress the **SET** button cocks the sample valve and prepares the unit for subject sample
5. Instruct subject to blow steadily for as long as possible
6. Press **READ** button before exhalation ceases (but not less than 3 seconds after blowing starts)
7. Keep **READ** button depressed until maximum reading is obtained (three seconds)
8. Record the result.
9. Discard mouthpiece and depress set button.

Alco-Sensor III, Serial Numbers 1200000 and above



Standard Operating Instructions

1. Remove unit from box. Depress both **READ** and **SET** button to ensure the unit is in the operating temperature range (15°C to 36°C). (Release both **READ** and **SET** button).
2. Mount mouthpiece. (**SET** button must be depressed).
3. Press **READ** button, wait for .000 to be displayed in the bright mode which indicates the instrument is ready for sampling.
4. Depress **SET** button. (Cocks the sample valve and prepares unit for subject sample).
5. Instruct subject to blow steadily for as long as possible.
6. Push **READ** button *before* exhalation ceases (but not less than 3 seconds after blowing starts).
7. View result until maximum reading is obtained (bright display).
8. Record the result.
9. Discard mouthpiece and depress **SET** button

Reminder: The Alco Sensor III has the capability to recall the last test from memory. After a test is performed and the final result displayed (for approximately 10 seconds), the instrument will flash **SEt** ten times.

Any time after the final result is displayed and before the **SET** button is pressed, if the **READ** button is pressed again, the last test result will be flashed on the display with **reL** flashed intermittently.

It is important to note that if you wish to recall the last test, you must depress the **READ** button before depressing the **SET** button. The last test recall function will be available for 18 minutes

following the final reading (the **sr** button must not be depressed). Once the **sr** button has been depressed after the unit displays the final reading, the reading cannot be recalled.

If the **sr** button is not depressed, the unit will go into a power save mode and the instrument will automatically power down the display.

Calibration Procedure

When to Perform a Calibration

A calibration procedure should be performed when the result of an accuracy check indicates the unit does not read a standard within your testing program's specified acceptable tolerances.

Calibration Procedure (Step by Step)

Before beginning have these items available: instrument, calibration standard, new mouthpiece, calibration screwdriver.

1. Determine and note the target value of calibration standard you are using.
2. Check the temperature of the Alco-Sensor III by depressing the **MEM** and **SET** buttons at the same time. Be certain that the instrument's temperature is between 15°C and 36°C. (The firmware version and revision designation will be displayed following the instrument temperature.)
3. Place the unit in CAL mode:
 - a) Depress and hold **SET** button.
 - b) Depress and release **MEM** button – as soon as the temperature is displayed depress **MEM** button three (3) times (this must be done in quick succession – you have two seconds) while still depressing **SET** button.
 - c) Release **MEM** button after the third depression.
4. CAL will be displayed momentarily before **BLN** appears on the display. (Note: Stop holding **SET** button down).
5. Depress **MEM** button to take a blank test. ——— (moving dash) indicates that a blank test is being performed. If the blank is successful, **SET** should be seen in the bright display mode before moving to the next step in this procedure. Depress **SET** button.
6. After a successful blank sample, depress the **SET** button and CAL will be displayed in the dim mode, attach the calibration assembly to Alco-Sensor III.
7. Depress valve on calibration standard for 6 seconds. (If you are using a Wet Bath Simulator & Solution as the calibration standard, you should blow into the inlet port of the simulator). On the 4th to 5th second of the 6-second count, press the **MEM** button. (NOTE: The gas/vapor must be flowing through the mouthpiece when the **MEM** button is depressed).
8. Carefully detach the Alco-Sensor III from the calibration assembly. Observe the display on the ASI. A moving dash ——— will display while the instrument analyzes the sample. When a peak reading is determined, the display will show a result based upon the current calibration of the instrument.
9. Place the screwdriver (must be non-metallic) in the calibration screw on the side of the instrument and turn the calibration screw until the reading on the instrument's display is equal to the target value of your standard. (Turn clockwise to increase the value; turn counterclockwise to decrease the value). Once this is accomplished remove the calibration screwdriver without further changing the displayed value on the instrument.
10. Depress the **SET** button. Your calibration is complete.
11. It is essential to verify the calibration. Wait 3 minutes, then run an accuracy check using a new mouthpiece. (Follow the step by step procedures previously described in Accuracy Check Procedure). The reading should be within $\pm .003$ of the target value of the Calibration Standard. If it is not – wait another three minutes and then repeat the Calibration Procedure followed by an Accuracy Check.

Battery Replacement

A **BAT** display indicates that the battery is not strong enough to support an accurate reading and needs replacing.

Procedure

- A. Slide battery door open.
 - B. Remove old battery and disconnect.
 - C. Connect new battery (use only 9-volt alkaline batteries) and replace.
3. Close battery door.

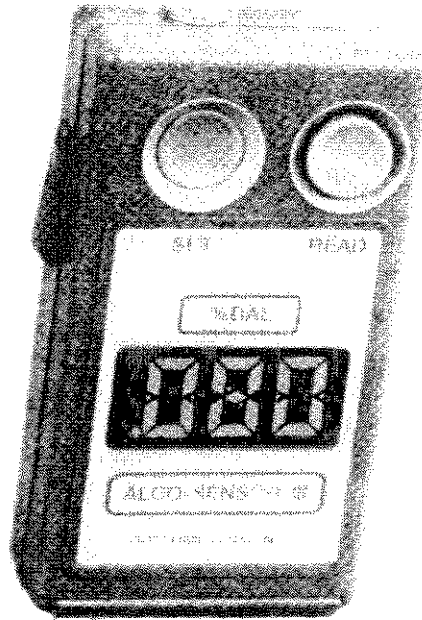
*Note: After replacing the 9-volt battery, make certain the **SET** button is depressed before running the next test or storing the instrument.*

SECTION I-B

ALCO-SENSOR III
ENHANCED

Alco-Sensor III

Operator's Manual



Intoximeters, Inc. 10000 E. 1st Ave. Denver, CO 80231
1-800-541-4373

Intoximeters Inc.

In June of 2002, the Alco Sensor III software was updated. This manual is written for instruments with serial numbers equal to or greater than 1200000. For earlier serial numbered instruments contact Intoximeters for replacement manuals (800-451-8639 or direct dial at 314-429-4000).

Copyright © 2002--2009

Information in this document is subject to change without notice. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of Intoximeters, Inc.

DISCLAIMER: The information provided in this Operator's Manual is intended to offer access to general knowledge about operational procedures, test protocols, quality assurance testing and sampling techniques for this instrument.

Intoximeters, Inc. believes that a regulatory authority should set operating procedures, operator training requirements, test protocols, quality assurance, maintenance requirements and testing techniques to meet their alcohol testing program requirements.

This manual is not intended to supersede the guidelines set forth by the regulatory authority.

Intoximeters, inc. offers technical support for users who wish to consult us or need maintenance or repair service.

SECTION II OPERATING PRINCIPLES

Principle Of Operation

Breath alcohol testing is dependent upon the relationship between the concentrations of alcohol in the blood and deep lung breath.

The amount of alcohol in a properly collected breath sample is governed by the amount of alcohol in the bloodstream circulating in the lungs. To get a reading that accurately reflects the blood alcohol concentrations, a deep lung breath sample must be collected and analyzed.

A recent drink of an alcoholic beverage, a dose of medication containing alcohol or regurgitation could introduce "mouth alcohol" to a breath sample thus causing an exaggerated reading. A 15-20 minute deprivation period prior to testing will insure "mouth alcohol" has not influenced the breath alcohol reading. (Refer to your rules and regulations governing a required deprivation period prior to testing).

Operating Conditions

The standard Alco-Sensor III is designed for optimal performance at temperatures between 15°C (59°F) to 36°C (96°F). *(The ASIII can be configured to perform in other specific environmental or special operating parameters).* Instrument temperature can be checked by depressing both the SET and READ button simultaneously. The Alco-Sensor III will display the temperature in degrees Celsius. Temperature effects the rate of the electrochemical reaction. The warmer the instrument, the faster the time to result. The colder the instrument, the slower the time to result. If the instrument is outside of 15°C to 36°C place it in a shirt pocket. The unit will come to operating temperature in a short time.

Tests on the Alco-Sensor III can be run every 15 seconds when no alcohol is encountered, and every 2 minutes when a positive reading is registered.

Accuracy

With a good deep lung breath sample, a properly calibrated Alco-Sensor III is capable of reading a breath sample within $\pm 5\%$ of a blood sample drawn at the same time.

Frequency Of Accuracy Check

If an accuracy check has not occurred within the stated requirements of your testing program, an accuracy check should be run prior to running a subject test to ensure the instrument has maintained proper calibration.

Interfering Substances

The Alco-Sensor III responds to alcohol. After a 15-minute observation period the fuel cell responds to just alcohol in the breath; it will not respond to acetone.

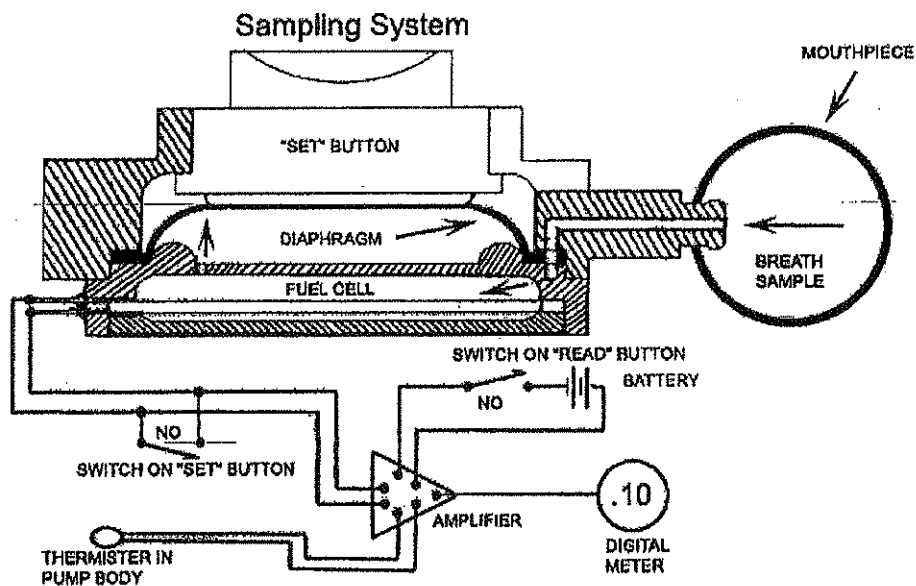
Significant Alcohol Concentrations

In the United States, some states consider 0.10% BrAC/BAC as presumptive evidence of impairment as far as driving skills are concerned. More and more states use a 0.08% level; this level is also used in Canada.

SECTION III COMPONENTS AND FUNCTIONS

Instrument Operating Components

The Alco-Sensor III contains a fuel cell sensor and a spring-loaded diaphragm/sampling valve which, when released, draws a fixed volume sample from the mouthpiece into the fuel cell for analysis. A signal is generated in the fuel cell in response to alcohol in the breath sample. An amplifier, powered by the 9-volt alkaline battery, causes the result of the analysis to be displayed after the READ button is depressed.



The READ button operates in two stages. First, it releases the valve, taking a sample. Second, at the bottom of its travel, it switches the instrument "on" electronically. Once the unit is switched on electronically, it is not necessary to hold the READ button down to view the result.

The SET button cocks the valve when depressed all the way. This accelerates the destruction of any alcohol left on the cell so that the time delay between tests is minimized.

(CAUTION: To assure a correct result, no alcohol should be consumed within 15 minutes of a test, and the subject should not be allowed to smoke during this deprivation period.)

Fuel Cell

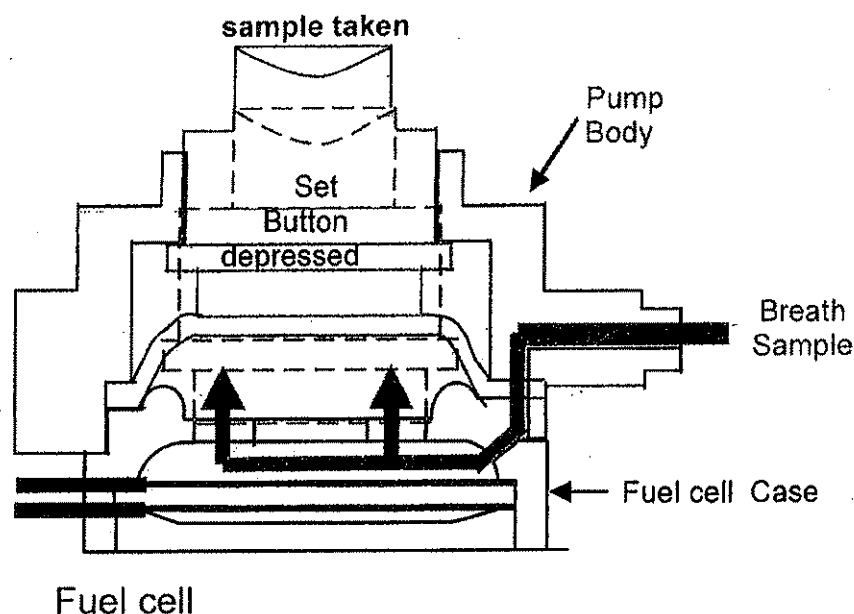
The fuel cell is a plastic membrane coated with a thin layer of platinum black and an active chemical. (Field use indicates the cells generally have a life of 2-5 years.) When the subject blows a deep lung breath sample through the mouthpiece, the READ button is depressed, and the deep lung breath sample is drawn into the fuel cell. The alcohol in the sample is oxidized on the fuel cell and converted to acetic acid. Electrons are a by-product of this reaction. The resulting electric current is measured and converted into a digitally displayed BAC reading.

Digital Display

A positive BAC reading takes between 15 to 40 seconds to develop in the standard unit. There will be a period of time where the displayed numbers are climbing (the analysis phase). During this period the displayed results will be dimly lit. Once a final reading is established, the result will be illuminated brightly, the peak reading will hold on the display for about ten seconds. During the analysis phase the SET button should not be depressed, as it will destroy the accumulating reading.

Flushing

Depressing the SET button purges air from the fuel-cell chamber and out through the mouthpiece port. This action helps flush the chamber prior to each test, but some alcohol could remain in the chamber.



If any residual alcohol is present in the system, a positive reading is displayed when the READ button is depressed to run a blank test.

CAUTION: Sufficient time must be allowed after each test for all traces of alcohol on the cell surface to be eliminated. If the Alco-Sensor III is ready to use, a .000 will be displayed in the bright mode after the READ button is depressed.

Even when exposed to breath samples with high alcohol levels, a cell should clear within 2 minutes when the SET button is depressed and the unit is kept in the pocket.

Note: Alcohol will remain in a used mouthpiece where a subject has blown a positive reading. It is recommended a new mouthpiece always be used for each new subject or standard test sequence.

FOR ACCURATE RESULTS, THE ABOVE PRECAUTIONS MUST BE OBSERVED OR CUMULATIVE READINGS MIGHT RESULT.

Display Messages

- SEt** Any time **SEt** is displayed on the instrument, the SET button must be depressed before another test can be performed.
- ##C** Temperature in Celsius is displayed. (*Depress both READ and SET button to ensure the unit is in the operating temperature range (15° to 36°C).*)
- XXX**
- r#** Firmware version and revision designation will be displayed after the temperature display (after the temperature is displayed and the *READ button is released*). (i.e. firmware version – xxx (three digits); revision designation – r# (will be displayed with a letter of the alphabet designating the revision.)
- rcL** The Alco Sensor III has the capability to recall the last test from memory. After a test is performed and the final result displayed (for approximately 10 seconds), the instrument will flash **SEt** ten times before the unit will go into a power save mode and the instrument will automatically power down the display. Any time after the final result is displayed, and before the SET button is pressed, if the READ button is pressed again, the last test result will be flashed on the display with rcL flashed intermittently. Once the SET button has been depressed following the display of a final reading, the reading cannot be recalled.
- bAt** ~~The 9 volt alkaline battery is approaching the end of its useful life and needs replacing. (See Battery Replacement below).~~
- CAL** Unit is in the calibration mode or is waiting for a standard (calibration) sample. (*See step by step instructions in Section V – Calibration Standards and Procedure*).
- bLn** This indicates, to the Operator, ~~to depress the READ button to perform an air blank.~~
- bAd** Unit is unable to perform a successful blank or a calibration.
- - -** Unit is analyzing a sample during the calibration sequence.
- Abt** Unit is aborting calibration procedure.
- HI** Unit reading is over range - .500 or greater.
- tHI** Unit temperature is too high.
- tLo** Unit temperature is too low.

Units of Measure:

A digital result of .100 on the standard Alco-Sensor III equates to:

- .100 grams of alcohol/100 mL of blood, or
- .100% Blood Alcohol Concentration (BAC), or
- .100 grams/210 liters of breath

Note: The Alco-Sensor III can be configured to display results in other units of measure (i.e. g/l (grams/liter – x.xx), etc.

Battery Replacement

A bAt display indicates that the battery is not strong enough to support an accurate reading and needs replacing.

Procedure

- A. Slide battery door open.
- B. Remove old battery and disconnect.
- C. Connect new battery (use only 9-volt alkaline batteries) and replace.
- D. Close battery door.

Note: After replacing the 9-volt battery, make certain the SET button is depressed before running the next test or storing the instrument.

SECTION IV CONDUCTING A SUBJECT TEST

Standard Operating Instructions

1. Remove unit from box. Depress both READ and SET button to ensure the unit is in the operating temperature range (15°C to 36°C). (Release both READ and SET button).
2. Mount mouthpiece. (SET button must be depressed).
3. Press and release READ button, wait for 0.000 to be displayed in the bright mode which indicates the fuel cell is free of alcohol and the instrument is ready for sampling.
4. Depress SET button. (Cocks the sample valve and prepares unit for subject sample).
5. Instruct subject to take a deep breath, hold it for a moment then blow continuously for as long as possible.
6. Press and release READ button *before* exhalation ceases (but not less than 3 seconds after blowing starts).
7. View result until maximum reading is obtained (bright display).
8. Record the result.
9. Discard mouthpiece and depress SET button

Performing a Subject Test

Before initiating a test, explain to the subject what you want him or her to do. *Example:* "When I tell you I want you to take a deep breath hold it for a moment then blow continuously through this mouthpiece until I tell you to stop." Clear and simple instruction will help the subject give you a good sample. With a clean mouthpiece mounted and the SET button depressed, ask the subject to blow as long as possible. The first portion of breath from the subject should be wasted off if quantifying a deep lung breath sample is the object of the test process. Sampling early will produce a low result since the alcohol content in tidal breath is less than the alcohol concentration in a deep lung breath sample. It will take about 3 to 5 seconds to empty the lungs through

the mouthpiece. Toward the end of this period, while the subject is still blowing, the READ button should be depressed. The action of the valve will draw a sample of deep lung breath into the fuel cell from the passing breath stream.

Note: Using mouthpieces of other design than those supplied by the manufacturer may cause inaccurate readings by as much as 10-20%. For instance, whistling or overly restrictive mouthpieces can either draw room air into the breath sample or pressurize the system causing inaccurate readings.

Screening Test Procedure

Observing a fifteen-minute deprivation period prior to testing, where no substance is introduced into the mouth, will ensure the elimination of mouth alcohol.

This information updates all previously printed materials found in Alco-Sensor III Manuals printed from 1978 through 2002.

Reminder: The Alco Sensor III has the capability to recall the last test from memory. After a test is performed and the final result displayed (for approximately 10 seconds), the instrument will flash SET ten times.

Any time after the final result is displayed and before the SET button is pressed, if the READ button is pressed again, the last test result will be flashed on the display with rCL flashed intermittently.

It is important to note that if you wish to recall the last test, you must depress the READ button before depressing the SET button. The last test recall function will be available for 18 minutes following the final reading (the SET button must not be depressed). Once the SET button has been depressed (after the unit displays the final reading), the reading cannot be recalled.

If the SET button is not depressed, the unit will go into a power save mode and the instrument will automatically power down the display.

SECTION V CALIBRATION STANDARDS AND PROCEDURES

The accuracy of an instrument is verified by running a known alcohol concentration (standard) through the Alco-Sensor III's sampling system and verifying that the result is within an acceptable tolerance of the expected value of the standard. This is called an accuracy or calibration check. *(See Calibration Standards and Procedures below for detailed instructions on performing accuracy checks and calibrations).*

A recommended procedure for setting up a new program is to put the unit in place and run an accuracy check once a week for the first month. Reviewing these results should give you confidence in the stability of the calibration and practice at running this procedure. After gaining confidence in the stability of calibration running an accuracy check periodically, per your programs stated requirements, is an acceptable routine for performing accuracy checks.

TO PRODUCE ACCURATE RESULTS, THE UNIT MUST BE IN CALIBRATION. (Note: A calibration is only required if the reading from an accuracy check is not within the acceptable tolerance)

Calibration Standards

There are several types of calibration standards that can be used to check or calibrate an Alco-Sensor III: *Mini-Alco-Can, Dry Gas Cylinder or Wet Bath Simulator/Solution.*

The Mini-Alco Can may be used with the Alco-Sensor III in non-evidentiary testing environments. Although the Mini-Alco Can provides a reference for screening devices it has not been approved for use in evidential maintenance protocols.

When using the Alco-Sensor III in an evidential testing environment, Intoximeters recommends that external accuracy checks and calibrations be performed with either a dry gas standard or wet bath simulator approved for use by both NHTSA and Intoximeters. In all cases, the compressed gas tanks, simulators and simulator solutions should be used and maintained in accordance with the quality assurance plan provided by their respective manufacturers to insure that they produce consistent and reliable samples.

Mini-Alco Can

ELEMENTS:

- A. Pressurized gas can. Discard plastic collar from stem before use
- B. Valve - Button activated flow control.

MAKEUP: Argon - Alcohol single phase gas mixture

CHARACTERISTICS:

- A. Ten test capacity.
- B. Twelve month shelf life.
- C. Expiration date is stamped on the label of the gas can.
- D. Gas value is effected by elevation variations. The gas value can be determined by consulting the chart that is included with the Mini-Alco Can instructions.

Dry Gas Standard

ELEMENTS:

- A. Pressurized approved dry gas tank.
- B. Small single staged approved regulator.

MAKEUP: NIST traceable tank contains a single-phased mixture of Nitrogen and Ethanol. (The concentrations available are .038% at sea level, and .082% at sea level and .100% at sea level).

CHARACTERISTICS:

- A. Flow rate of the regulator is 1.5 liters per minute.
- B. Used properly, a 105-liter tank should supply approximately 500 samples. (*Note: Other sized approved pressurized tanks may supply a different number of samples*).
- C. New tanks show approximately 1025 psi on the gauge. Follow instructions on the tanks to mount the regulator. When the regulator is initially mounted, depress the regulator control button and allow the gas to purge the valve for 4 seconds.
- D. Expiration date is stamped on the label of the dry gas standard.

- E. Tanks with alcohol concentrations of less than .105% should only be used when they are between 5° - 40° C. Contact Intoximeters for options if the dry gas standard you are using has an alcohol concentration higher than 105%.
- F. If the tank has been maintained at temperatures below 0°C (32°F), see tank-manufacturer's QAP for proper handling of the dry gas standard.

(Note: If you are using your dry gas standard in a number of locations, an optional device you may want to consider is the True-Cal Device. Variations in barometric pressure can affect the expected value of a pressurized dry gas standard, according to standard gas laws. The True-Cal device is designed to sense changes in barometric pressure and report an adjusted value for the dry gas standard. For additional information contact Intoximeters at 314-429-4000.)

Wet Bath Simulator

ELEMENTS:

- A. Glass jar which holds 500cc of solution.
- B. Jar head contains heater-thermostat, stirrer, thermometer, inlet and outlet ports for sampling headspace gas standing above the solution.

~~MAKEUP:~~ Solution is a water/alcohol mixture of a certified BrAC/BAC concentration.

CHARACTERISTICS:

- A. Follow solution manufacturer's recommendation for storage and use of solution. Studies have shown that after running 20 tests per bottle of solution, the solution value will be depleted by 2.4%.
- B. Liquid should be clear with no visible particles suspended in the solution.
- C. A simulator containing a solution of known BrAC/BAC value must be at the operating temperature of 34°C. The simulator top must be on securely so the system is airtight. To check, cover the outlet port and blow into the intake port. Air bubbles will not rise rapidly through the solution if the top is secure.

Accuracy Check Procedure

Before beginning have these items available: instrument, calibration standard, new mouthpiece

Using Mini-Alco Can (can be used in non-evidentiary testing environments).

1. Remove plastic sleeve from top of Mini-Alco Can.
2. ~~With a light back and forth motion, attach valve to stem on top of Mini-Alco can.~~
3. Attach short end of new mouthpiece to plastic nozzle on valve. (This will be called *MINI-ALCO ASSEMBLY* throughout the procedure).
4. Check the temperature of the Alco-Sensor III by depressing the READ and SET buttons at the same

- time. Be certain that the instrument temperature is between 15°C and 36°C. RELEASE READ button. SET button should remain depressed.
5. Press and release the READ button, .000 should be seen first in the dim mode and then in the bright display mode before continuing on with the test procedure.
 6. If .000 is not seen in the bright mode, depress SET button and recheck in one minute. (Follow Step-5 again. If you cannot successfully complete this process after several attempts, contact Intoximeters at 314-429-4000.)
 7. Depress SET button on Alco-Sensor III.
 8. Attach *MINI-ALCO ASSEMBLY to the ASIII.*
 9. Observe the value marked on the Mini-Alco Can – this is the target value at sea level. (Note the elevation value on the chart).
 10. Depress valve on Mini-Alco Can for 6 seconds. On the 4th or 5th second of the 6-second count, press and release the READ button. (*NOTE: The vapor must be flowing through the mouthpiece when the READ button is depressed*).
 11. Release the valve on the Mini-Alco Can.
 12. Remove the *MINI-ALCO ASSEMBLY* from the Alco-Sensor III and observe the reading until it becomes stable and displayed in the bright mode.
 13. The displayed result should be within 10% of the value marked on the Mini-Alco Can (or your testing program's specified acceptable tolerances).
 14. If the reading does not meet the specified tolerance, the unit requires a calibration adjustment. (Follow instructions below – under CALIBRATION PROCEDURE).

Using Dry Gas Standard

1. Follow instructions on the dry gas standard to mount the regulator.
2. Purge regulator by depressing button/valve on regulator for approximately 3 to 4 seconds before running your first accuracy check of the day.
3. Attach new mouthpiece to the end of the regulator line – small plastic tubing.
4. Check the temperature of the Alco-Sensor III by depressing the READ and SET buttons at the same time. Be certain that the instrument temperature is between 15°C and 36°C. RELEASE READ button. SET button should remain depressed.
5. Press and release the READ button, .000 should be seen in the dim mode and then in the bright display mode before continuing on with the test procedure.
6. If .000 is not seen in the bright mode, depress SET button and recheck in one minute. (Follow Step 5 again. If you cannot successfully complete this process after several attempts, contact Intoximeters at 314-429-4000.)
7. Depress SET button on Alco-Sensor III.
8. Carefully attach Alco-Sensor III to mouthpiece assembly.
9. Observe the value marked on the Dry Gas Standard – this is the value of this standard at sea level. If you are not at sea level, review the elevation chart on the tank to calculate the proper alcohol concentration for the tank at your elevation. The value can also be determined from an appropriate TrueCal device.
10. Depress regulator control button for 6 seconds. On the 4th to 5th second of the 6-second count, press and release the READ button. (NOTE: The gas must be flowing through the mouthpiece when the READ button is depressed).
11. Release the regulator control button.

12. Carefully detach the mouthpiece assembly from the ASIII and observe the reading until it becomes stable and bright.
13. The displayed result should be within 10% of the value marked on the Dry Gas Standard (or your testing program's specified acceptable tolerances).
14. If the reading does not meet the specified tolerance, the unit requires a calibration adjustment. (Follow instructions below – under CALIBRATION PROCEDURE).

Using Wet Bath Simulator

1. Prepare Wet Bath simulator for use – a simulator containing a solution of known BrAC/BAC value must be at the operating temperature of 34°C.
2. Liquid should be clear with no visible particles suspended in the solution.
3. The simulator top must be on securely so the system is airtight. To check, cover the outlet port and blow into the intake port. Air bubbles will not rise rapidly through the solution if the top is secure.
4. Check the temperature of the Alco-Sensor III by depressing the READ and SET buttons at the same time. Be certain that the instrument temperature is between 15°C and 36°C. RELEASE READ button. SET button should remain depressed.
5. Press and release the READ button, .000 should be seen in the dim mode and then in the bright display mode before continuing on with the test procedure.
6. If .000 is not seen in the bright mode, depress SET button and recheck in one minute. (Follow Step 5 again. If you cannot successfully complete this process after several attempts, contact Intoximeters at 314-429-4000).
7. Depress SET button on Alco-Sensor III.
8. Attach mouthpiece to Alco-Sensor III and then to simulator.
9. Observe the value of the solution – this is the target value.

10. Blow into the inlet port of the simulator for 6 seconds. On the 4th to 5th second of the 6-second count, press and release the READ-button. (**NOTE: The vapor must be flowing through the mouthpiece when the READ button is depressed**).
11. Stop blowing into the inlet port of the simulator.
12. Carefully detach the ASIII from the simulator and observe the reading until it becomes stable and bright.
13. The displayed result should be within 10% of the value of the solution (or your testing program's specified acceptable tolerances).
14. If the reading does not meet the specified tolerance, the unit requires a calibration adjustment. ((Follow instructions below – under CALIBRATION PROCEDURE).

Calibration Procedure

When to Perform a Calibration

A calibration procedure should be performed when the result of an accuracy check indicates the unit does not read a standard within your testing program's specified acceptable tolerances.

Calibration Procedure (Step by Step)

Before beginning have these items available: instrument, calibration standard, new mouthpiece, calibration screwdriver (USE ONLY INTOXIMETERS SUPPLIED NON-METALLIC CALIBRATION SCREWDRIVER).

1. Determine and note the target value of calibration standard you are using.
2. Check the temperature of the Alco-Sensor III by depressing the READ and SET buttons at the same time. Be certain that the instrument's temperature is between 15°C and 36°C. (The firmware version and revision designation will be displayed following the instrument temperature).

3. Place the unit in CAL mode:
 - a) Depress and hold SET button.
 - b) Depress & release READ button. As soon as the temperature is displayed depress READ button three (3) times (this must be done in quick succession – you have two seconds) while still depressing SET button.
 - c) Release the READ button after the third depression.
4. CAL will be displayed momentarily before bLn appears on the display. (Note: Stop holding SET button down).
5. Press and release the READ button to take a blank test. ----- (moving dash) indicates that a blank test is being performed. If the blank is successful, SEt should be seen in the bright display mode before moving to the next step in this procedure. Depress SET button.
6. After a successful blank sample, depress the SET button and CAL will be displayed in the dim mode, attach the calibration assembly to Alco-Sensor III.
7. Depress valve on calibration standard for 6 seconds. (If you are using a Wet Bath Simulator & Solution as the calibration standard, you should blow into the inlet port of the simulator). On the 4th to 5th second of the 6-second count, press and release the READ button. (NOTE: The gas/vapor must be flowing through the mouthpiece when the READ button is depressed).
8. Carefully detach the Alco-Sensor III from the calibration assembly. Observe the display on the ASIII. A moving dash --- will be seen before the display shows the value of the standard used in the previous calibration (as long as the calibration screw has not been adjusted). If the displayed value is the same as the calibration standard you are currently using, proceed to Step 10. If the displayed value is different than your current calibration standard, follow the procedure detailed in step 9.
9. Place the screwdriver (*must be non-metallic calibration screwdriver supplied by Intoximeters*) in the calibration

screw on the side of the instrument and turn the calibration screw until the reading on the instrument's display is equal to the target value of the calibration standard you are currently using. (Turn clockwise to increase the value; turn counterclockwise to decrease the value). Once this is accomplished remove the calibration screwdriver without further changing the displayed value on the instrument.

10. Depress the SET button. Your calibration is complete.
11. It is essential to verify the calibration. Wait 3 minutes, then run an accuracy check using a new mouthpiece. (Follow the step by step procedures previously described in Accuracy Check Procedure). The reading should be within $\pm .003$ of the target value of the Calibration Standard. If it is not – wait another three minutes and then repeat the Calibration Procedure followed by an Accuracy Check.

SECTION J

ALCO-SENSOR IV

ALCO-SENSOR IV



Figure J-1. Alco-Sensor IV

Introduction

The Alco-Sensor IV is a hand-held breath alcohol testing device designed to read blood/breath alcohol concentrations. A disposable mouthpiece, a 9 volt alkaline battery, and a calibration standard are the only items necessary to keep the Alco-Sensor IV operational. Under normal conditions, the Alco-Sensor IV should provide thousands of accurate tests with little more than routine maintenance.

Instrument Operating Components

Mouthpiece - The mouthpiece contains a plastic check valve which permits only one way airflow.

Display - The display turns on when a mouthpiece is inserted properly. Various commands and symbols appear on the display to direct the operator through the testing protocol and to alert the operator of improper testing conditions detected by the instrument.

Set Button - The **SET** button cocks the sampling pump when depressed. It is best that the internal pump be cocked when the Alco-Sensor IV is not in use; in this position the chance of contaminants entering the fuel chamber is eliminated.

Manual Button - The **MANUAL** button is located below the display on the front panel of the Alco-Sensor IV; its primary function is to allow the operator to take a sample manually.

Recall Button - The **RECALL** button is located below the display on the front panel to the left of the **MANUAL** button. Its primary function is to re-display the current test result. Once the mouthpiece is removed the result of the previous test cannot be recalled.

Mouthpiece Release Button - When depressed, the red mouthpiece release (**RELEASE**) button on the right hand side of the instrument releases the mouthpiece from the mount and ejects it from the chamber. The mouthpiece should *never* be pulled from the mount without depressing the **RELEASE** button.

Battery - The battery cover opens when the serrated area, located on the front of the Alco-Sensor IV, is depressed and the door is pushed towards the bottom of the case. A heavy duty 9 volt alkaline battery should run in excess of 500 tests. Only 9 volt alkaline batteries should be used in the Alco-Sensor IV.

Air Flow Exit Port - This port is located on the back of the Alco-Sensor IV. It is surrounded by a ring of plastic ridges. The function of this opening is to allow the expired breath to pass unimpeded, out of this instrument. During operation, position the instrument so that the expired breath is directed away from the operator, also avoid blocking this passage with your hand at any time during operation.

Back Plate - On the back plate of the Alco-Sensor IV are step-by-step directions providing a general explanation of how to run a test. These steps only refer to the operating procedures of the instrument. The operator should be thoroughly familiar with the protocols under which s/he is performing the test.

Cable Connector Port - Located at the bottom of the Alco-Sensor IV; it is used when connecting the instrument to a printer or a computer with a compatible cable.

**Testing
Preconditions**

The Alco-Sensor IV is generally set up to operate at instrument temperatures of 10 degrees Celsius to 40 degrees Celsius (50degrees Fahrenheit to 104 degrees Fahrenheit). When the unit is in its operating temperature range it will function properly in climates where the ambient temperatures are in the range of -15 degrees Celsius to 40 degrees Celsius (3 degrees Fahrenheit to 104 degrees Fahrenheit).

**Preparing the
Instrument for
a Subject Test**

The mouthpiece has a long end, which fits snugly and easily into the unit. When properly inserted, the mouthpiece turns the display on.

To initiate a test sequence always use a new mouthpiece. Insert the long end of the mouthpiece into the mouthpiece port. As it is slipped into place, some resistance is felt, as the end of the mouthpiece enters a resilient seal additional resistance will be felt. Be sure that the mouthpiece is solidly "home".

To remove the mouthpiece, press the red **RELEASE** button on the right front side of the unit. If the mouthpiece does not eject, keep the **RELEASE** button depressed

and gently push it out by placing pressure on the back side of the mouthpiece flange. **Under no conditions**, should the mouthpiece be pulled out without the **RELEASE** button depressed. The cam or mouthpiece mount is designed to resist accidental pull-out. Pulling the mouthpiece out without disengaging it can break the eject mechanism.

Preparing the Subject

Before initiating a test, explain to the subject what you want him or her to do. *Example:* "When I tell you to take a deep breath hold it for a moment then blow through this mouthpiece until I tell you to stop." Clear and simple instruction will help the subject give you a good sample.

Performing a Test

1. **Insert the mouthpiece.** This will turn the unit on.

2. **Note Pre-Test Information.** Temperature in degrees Celsius will be displayed after the mouthpiece has been properly inserted. The standard Alco-Sensor IV is designed to operate when the unit temperature is between 10 degrees Celsius and 40 degrees Celsius. The Also-Sensor IV will display **TEMP<** or **TEMP>** and will not allow a test if the unit is out of the proper operating temperature range. If the temperature is outside of the proper operating range, take appropriate corrective action by removing the mouthpiece and placing the instrument in an environment that will bring it to the proper operating temperature.

3. **If the unit displays SET depress SET button.** At any time during a test sequence when **SET** appears depress the **SET** button to re-cock the sampling valve. (Depending upon whether the **SET** was pressed at the end of the last test sequence or not will determine whether **SET** will display at this time). The test will not proceed until this is accomplished.

If the **SET** button has been depressed the processor will monitor the fuel cell output to ensure the system is stable and free of alcohol. If this function takes more than a few seconds, a **WAIT** message followed by an "analyzing" display consisting of alternating **< / >** character appear until the fuel cell output has returned to baseline. If **WAIT** persists for more than 1 minute, remove the mouthpiece, wait a few moments and start the test again from step 1.

4. **BLNK flashes on display.** When the unit displays **BLNK**, the unit runs a blank test automatically and then displays the result of the test. The **< / >** displays while the check is being run. If the fuel cell is alcohol free, a zero result appears on the display, if not the test sequence will **VOID**.

5. **Zero result shows on display.**

6. **If display shows SET,** depress the **SET** button to cock the sampling pump; the unit is ready for a breath sample.

7. **Display shows TEST- COLLECT A BREATH SAMPLE.** At the beginning of this step, **< / >** is displayed while the instrument's processor monitors the breath

flow sensor for stability. When the display shows **TEST**, instruct the subject to take a deep breath, hold it, and then blow steadily through the mouthpiece for as long as he or she can. A + appears to indicate that the instrument senses breath flow. If + does not appear, stop the subject and instruct him or her to blow with more force. When the subject has blown a minimum volume of breath, a ++ appears. The sample will be taken **only** if this condition has been met **and** when the flow diminishes, indicating that the end of exhalation is approaching. It is not necessary for the subject to blow hard but rather steadily or continuously.

8. **Observe and Record 3 Digit Reading.** As soon as a successful breath sample has been taken, the busy signal < / > is displayed to indicate the Alco-Sensor IV is analyzing the breath sample. A sample with no alcohol will result in a zero reading almost instantaneously. In a breath sample containing alcohol, a three digit display appears in 10-40 seconds depending on the amount of alcohol in the sample and the temperature of the fuel cell. The final result is displayed in three digits and is accompanied by a three second beep.

9. **Depress SET Button.** Unless you need to recall the test result, depress the **SET** button and eject the mouthpiece. To recall the test result after the **SET** button has been pressed, depress the **RECALL** button. Depressing the **RECALL** button will display the three digit result of the test just completed. The result may be retrieved anytime after the **SET** button has been depressed and **before the mouthpiece has been ejected.**

10. **Remove the Mouthpiece.** Depress the **RELEASE** button to eject the mouthpiece.

***NOTE:** The Alco-Sensor IV should remain idle for at least one minute following a positive test. When initiating a test sequence always use a new mouthpiece.*

Instrument Operating Features

Automatic Blank Test

A blank test is a test that is run automatically by the instrument to check the sample chamber and ensure that there is no alcohol present from a previous test. The automatic blank test must result in a zero reading before the instrument will advance to the next step in the testing protocol.

***Note:** Keeping the unit warm will shorten the time it takes for the cell to clear and give a zero reading on the blank test.*

Automatic Sampling

A thermistor in manifold monitors breath flow and allows sampling of a deep lung breath. + is displayed when the thermistor senses an adequate breath flow. ++ is displayed when the minimum breath volume is obtained. Automatic breath sampling requires that at least ++ is displayed before the sample will be taken, but the sampling system will not be activated until the subject's breath flow meets this

requirement and the breath flow begins to decrease. When the sampling system is activated, a small sample of deep lung breath is drawn into the fuel cell chamber from the manifold.

Manual Sampling

Manual sampling is a feature that allows the operator to collect a breath sample either when the automatic sampling function is disabled or the subject is unable to provide minimum volume of breath. Manual sampling can produce equally accurate results but before using this method of testing the operator should be trained in the proper technique to collect a manual sample. Samples taken too early or after the breath flow has ceased will result in readings that are lower than the actual BrAC/BAC.

Test Recall

After the test result has been displayed the instrument will display **SET**. If the operator needs to review the test result the Alco-Sensor IV has a Recall function. To access the function, press the **SET** button when the display shows **SET**. At any time after the **SET** button has been pressed and **before the mouthpiece is ejected** the operator may retrieve the previous result by pressing the **RECALL** button. Once the **RELEASE** button has been pushed and the mouthpiece has been ejected the test result can no longer be recalled on the Alco-Sensor IV display.

Troubleshooting ***Aborting a Test***

To abort a test anytime during the testing procedure simply depress the red mouthpiece **RELEASE** button to disengage the mouthpiece. The test sequence will end.

Blank Test is not Successful

Before the subject gives a sample the instrument automatically runs a blank test analyzing the system to ensure it is free of alcohol. If this test does not result in a zero reading the test will display **VOID**. Eject the mouthpiece. Wait a few minutes before initiating another test with a new mouthpiece. Allowing additional time for the unit to purge itself of any residual alcohol from a previous test will better ensure a zero result on a blank test.

Insufficient Breath Sample

Insufficient Breath Sample means that the subject did not provide enough breath to initiate the automatic sampling feature. If blowing is erratic the unit will display **NOGO**. The instrument will allow the subject three tries, however, if the third try is unsuccessful the test will **VOID** and the test procedure will have to be started over. If the suspect has impaired breathing, it is possible to take a sample manually.

Low Battery

BAT displayed for two seconds after the mouthpiece is mounted warns the operator that the battery is low. The message indicates that the battery voltage has dropped below 7.0 volts; the current test can be completed but the battery should be replaced before additional tests are run. When **BAT** is displayed for two seconds and followed by **VOID**, the battery power has fallen to 6.6 volts and must be replaced before the test sequence can be continued.

Radio Frequency Interference (RFI) Sensor

A RFI sensor is built into the Alco-Sensor IV. As well, the Alco-Sensor IV's casing is designed to provide RFI shielding for electronics. If an interference signal is detected by the RF sensor, the test will be voided and **RFII** will be displayed on the Alco-Sensor IV. No result will be available. The test will have to be re-started. The mouthpiece should be removed to turn the unit off, and the source of RFI located and removed from the testing site before the test is initiated again. Some common sources of RFI include walkie-talkies, cell phones, and other radio transmitting sources.

Temperature of Instrument too high or too low

The instrument temperature is displayed after the mouthpiece is inserted. If this temperature is below 10 degrees Celsius or above 40 degrees Celsius, the test cannot be initiated. Remove the mouthpiece and place the unit in an environment that will bring it to proper operating temperature. *(The instrument should come to an acceptable temperature within several minutes if placed in a pocket close to the body.)*

Time Outs

If no breath sample is blown into the instrument immediately, **TEST** will be displayed for 60-70 seconds before **VOID** appears and the test is aborted. This is a time-out, and the test procedure must be re-started.

Other Problems

Contact your assigned technician.

Display Messages

Display

Meaning

BAT

The 9-volt alkaline battery should be replaced. If this display is followed by normal operation, the battery is capable of completing the current test. If **BAT** is followed by **VOID**, the test must be terminated and the battery replaced.

BLNK	Indicate the instrument is automatically initiating an analysis of the system's sample chamber to ensure it is free of alcohol.
CAL	Seen only during a calibration procedure.
MAN	The breath flow sensor is inoperative and ONLY a manual sample may be taken. Proceed with the breath sample, but depress the MANUAL button near the end of exhalation. Service by an authorized service technician is required to repair the automatic sampling feature.
NOGO	An insufficient sample has been given and rejected. When TEST appears again, start a new sample. The subject will be given <i>three</i> tries to deliver a proper sample before the test will VOID .
RFI/VOID	Indicates RFI has been detected which is strong enough to possibly affect the results of the test. Test must be started over.
SET	Indicates SET button should be depressed to cock sampling pump.
TMP>	Indicates the instrument's temperature is too high to perform any type of test.
TMP<	Indicates the instrument's temperature is too low to perform any type of test.
TEST	A breath sample should be collected from the subject.
VOID	Indicates an improper condition exists that requires the unit to be turned off and restarted from Step 1 of the testing procedure.
WAIT	A waiting period is necessary to ready the system for another test. Generally, if WAIT persists more than one minute, the unit should be turned off for several moments before initiating another test.
> / <	This indicates that the instrument is performing a task - wait for the next message.
+	Indicates a sufficient minimum breath flow is being provided for automatic sampling.
++	Indicates a minimum sample volume of breath has been

delivered.

	#	<i>Meaning of Void Message</i>
Void Codes	01	Battery too low
	02	SET button not down at time of sample
	03	N/A
	04	Valve did not sample
	05	180 second time-out on TEST
	06	Third NOGO on a test
	07	Too much alcohol or no alcohol introduced during calibration
	08	Set button pushed during Alco-Sensor IV analysis of a sample
	09	Temperature of Alco-Sensor IV is too low to conduct any kind of test
	10	Temperature of Alco-Sensor IV is too high to conduct any kind of test
	11	N/A
	12	RFI detected
	14	Voided Analysis

SECTION K
INTOXILYZER S-D2

INTOXILYZER S-D2



Figure K-1. Intoxilyzer S-D2

- Introduction** The Intoxilyzer S-D2 is an accurate and reliable breath testing instrument; it allows a complete breath test procedure to be performed in about one minute. It is simple to operate and may be used as often as required, provided that suitable delay is allowed between tests.
- Instrument Features**
- Mouthpiece** - This is attached to the sampling port. For hygienic reasons, mouthpieces are supplied separately and are disposable. A new mouthpiece must be used for each breath test. This minimizes health concerns and prevents cross-sample contamination.
- Sampling Port** - This forms the entrance to the fuel cell detector. When inserted into the small hole in the side of the mouthpiece, it allows a small portion of breath to be drawn into the instrument for analysis.
- 'SET' Button** - This button forms part of the sampling system. When fully depressed, the button locks to set the instrument ready for sampling. When the 'SET' button rises, the sample to be analyzed is drawn directly into the fuel cell detector.

'READ' Button - This button has two functions:

- 1) to release the 'SET' button and take the sample
- 2) to switch on the amplifier and display systems

The 'READ' button is spring loaded. Momentary depression will take the breath sample. Constant pressure is required to switch on the amplifier and display systems.

Alcohol Level Display - This three digit liquid crystal display shows the BAC of the subject. This display has built-in illumination and is activated by depressing the 'READ' button.

Calibration Control - This screw control, located on the right side of the case, is used for periodic calibration adjustments.

Breath Sampling Lights - Light 'A' illuminates to indicate the subject is blowing hard enough to obtain a proper breath sample. Light 'B' illuminates when the subject has blown long enough and indicates when the 'READ' button should be pressed. In other words, light 'B' illuminates when the subject has provided a suitable sample for breath analysis.

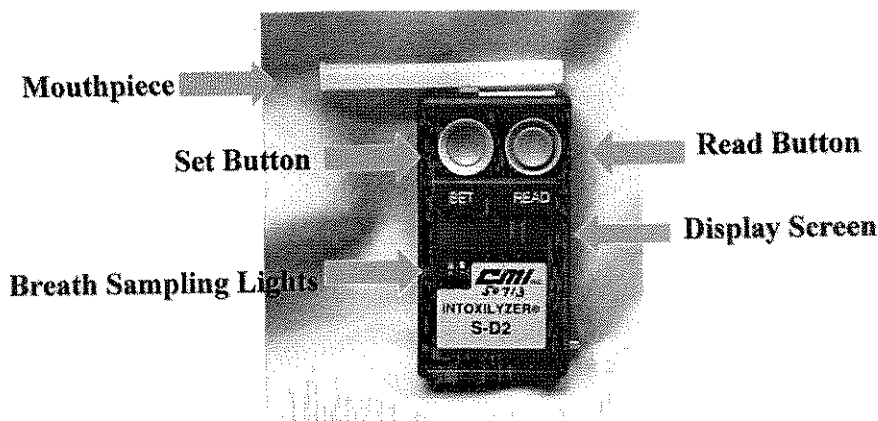


Figure K-2. Intoxilyzer S-D2 with Labeled Components

Battery - The battery is located directly behind the sliding base of the S-D2. It powers the amplifier, digital display, and sampling lights and should be replaced when the letter 'L' appears on the left side of the display.

Subject Breath Test

The operating sequence for testing a subject with the S-D2 can be summarized in eight simple steps:

1. Ready Check
2. Set
3. Attach Mouthpiece
4. Instruct the Subject
5. Take Sample

6. Observe Reading
7. Remove and Discard Mouthpiece
8. Reset and Wait

READY CHECK

The instrument should first be checked to insure that it is ready to receive a sample. This is accomplished by checking to insure the fuel cell is discharged and free of alcohol from and previous sample. Elimination of alcohol from the fuel cell should take no longer than two minutes - except in unusual cases - depending on how much alcohol was actually present in the last sample.

To conduct a READY CHECK, depress the 'READ' button and hold it down for at least ten seconds. This will release the 'SET' button and switch on the amplifier and display circuits. Observe the display; it should not exceed .002 after ten seconds. If the display does not show .002 or less during the ten second READY CHECK, the fuel cell may have traces of residual alcohol from a previous sample. If this occurs after a previous test, depress the 'SET' button to lock and wait one minute before repeating the READY CHECK. If the left digit shows 'L', replace the battery.

SET

Once the READY CHECK is complete, the sampling system must now be SET to prepare to draw a breath sample into the fuel cell for analysis. Press down the 'SET' button until it locks. This pushes down the diaphragm and holds it against a spring-loaded catch. This action also places a short-circuit across the fuel cell, which accelerates its inter-sample time.

ATTACH MOUTHPIECE

Attach a mouthpiece to the sampling port on the top of the S-D2. This sampling port forms the entrance to the fuel cell and pressure switch and it is essential that the mouthpiece is pushed fully onto it.

The subject must be offered the wide-bore, lipped end of the mouthpiece to blow through. If the subject blows into the other end, the pressure switch will not be activated and the sampling lights will not operate. The instrument is now ready to receive a breath sample from the subject for analysis.

INSTRUCT THE SUBJECT

Instruct the subject exactly what must occur to provide a suitable sample of breath for analysis. Tell the subject to take a deep breath, blow strong enough to bring on light 'A' and keep blowing at that pressure long enough to bring on light 'B'. The subject must then continue blowing until told to stop and you have taken the sample by pressing the 'READ' button. Warn the subject that if both sampling lights fail to

come on, there will not be a suitable sample of breath for analysis.

If the subject blows too hard then s/he may run out of breath before the 'B' light comes on: just a moderate breath flow rate is required.

Finally, the subject should keep his/her hands away from the instrument. If the subject clasps it, your view of the sampling lights or your operation of the sampling mechanism could be obstructed.

TAKE SAMPLE

Tell the subject to take a deep breath and blow through the wide-bore, lipped end of the mouthpiece. The subject must blow strongly enough to bring on sampling light 'A' and then continue to blow at this pressure until the 'B' light is activated. At this point, the subject will have expelled top lung air so that deep lung air is now being blown through the mouthpiece. Press the 'READ' button to release the catch holding down the 'SET' button, allowing it to rise. This pulls up the diaphragm, drawing a small portion of breath from the mouthpiece directly into the fuel cell detector.

It is imperative that the subject is still blowing when the sample is taken. Both sampling lights must be on when the sample is taken. The subject must, therefore, continue blowing until told to stop. If the subject stops blowing prematurely, the sampling lights will go out.

OBSERVE DISPLAY

Withdraw the instrument from the subject and continue to hold down the 'READ' button. The fuel cell now develops its signal, which takes about 30 seconds to complete from the time of sampling. The maximum sample reached is a measure of the amount of alcohol in the breath sample.

As the fuel cell charges, it will cause the display reading to rise. The final value will be displayed after 20-30 seconds and is the alcohol concentration of the subject. If the 'READ' button is accidentally released during this time, the fuel cell signal will not be affected as long as the 'SET' button is not depressed. Simply re-press the 'READ' button within the 30 second signal development time to continue reading the alcohol level on the digital display.

It is important that the 'SET' button is not touched during the reading development time. This would flush the alcohol from the cell and partly discharge its voltage and reduce the alcohol level.

DISCARD MOUTHPIECE

Having completed the test and observed the alcohol reading, you should now remove and discard the mouthpiece. Never use the same mouthpiece for subsequent

tests, on either the same or different subjects.

RESET AND WAIT

The instrument must now be RESET so it will be ready for another test. This RESET is done by depressing the 'SET' button until it locks. This flushes out the fuel cell and short-circuits its electrodes, allowing its voltage to return more quickly to zero.

If the display shows .003 or higher as a result of the test, it may take several minutes before a satisfactory READY CHECK can be obtained before re-use of the S-D2.

Precautions

Never allow tobacco smoke to be blown directly into the fuel cell, as it may cause damage.

Always store the S-D2 with the 'SET' button depressed. This will keep the fuel cell discharged so that the instrument is always ready for a breath test, provided that satisfactory READY CHECK was obtained prior to taking the sample.

Avoid storing in extreme temperatures.

Do not use the S-D2 in close proximity to radio transmitters while they are transmitting.

SECTION L
INTOXILYZER S-D5



INTRODUCTION

The Intoxilyzer® S-D5 is the latest in the CMI, Inc. line of handheld quantitative breath alcohol testing instruments. It can be used for law enforcement, workplace safety and medical purposes and is the successor to the popular S-D2 model, thousands of which have been used worldwide for several years. Unlike the S-D2, which requires manual operation, the S-D5 features an easy-to-use automatic sampling system. The S-D5 is just one of the range of instruments manufactured by CMI, Inc. for breath alcohol testing purposes.

The Intoxilyzer® S-D5 is accurate and reliable, allowing a complete breath test procedure to be conducted in about 30 seconds.

This manual describes the operation, maintenance, calibration check, and calibration adjustment of the S-D5. This manual should be read completely and fully understood by each operator prior to testing a subject. It is further recommended that operators practice the breath testing process before giving an actual "in the field" test.

PRINCIPLES OF OPERATION



The Intoxilyzer® S-D5 uses an electrochemical fuel cell, containing two platinum electrodes, to detect and measure the concentration of alcohol vapor in expired breath. When breath is drawn into this fuel cell, by means of the sampling system, a small voltage is generated in proportion to its breath alcohol concentration. This fuel cell is fed to an electronic amplifier and displayed on a digital meter (light emitting diode).

The instrument is simple to operate and may be used as often as required, provided that a suitable delay is allowed between successive tests. This time delay allows the fuel cell to clear itself of alcohol and prevents the possibility of additive readings. If no alcohol is present in a test, a second test may be analyzed immediately, since the fuel cell voltage is already at zero. Unless the breath alcohol level of the subject is very high, the instrument will generally be clear enough to receive and analyze the second sample in less than two minutes.

INSTRUMENT FEATURES

1) Disposable Mouthpiece

This is attached to the sampling port. For hygienic reasons, mouthpieces are supplied separately packed and are disposable. A new mouthpiece must be used for each breath test. This minimizes health concerns and prevents cross-sample alcohol contamination. The mouthpiece used on the Intoxilyzer® S-D5 is the same as used on the Intoxilyzer® S-D2.

2) Function Button "A"

The uppermost button is used for various functions described in this manual

3) Function Button "B" (On/Off switch)

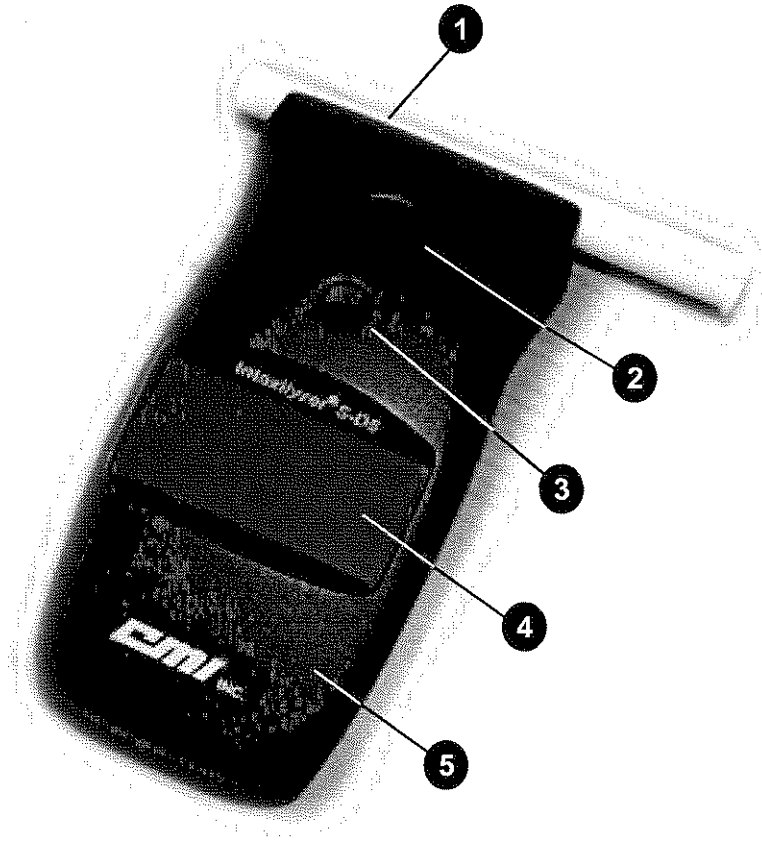
Depress once to activate the unit. The lower button is used for functions described in this manual. Function button "**B**" is also used to turn off the unit by holding it down for three seconds until the display shows "**Off**".

4) Digital Display

Provides on-screen directions to the instrument operator and indications of the subject's breath alcohol concentration. Illuminates in bright red LED and at night for use in dark conditions.

5) Beeper

Provides audible warning messages to the operator.



- 1 Disposable Mouthpiece
- 2 Function Button "A"
- 3 Function Button "B" (On/Off)
- 4 Digital Display
- 5 Beeper



SUBJECT BREATH TEST

Although the Intoxilyzer® S-D5 is extremely simple to operate, it is important that the following procedure is used each time a breath test is given. Deviation from the proper procedure will not generally affect the result of a test. However, the integrity and capability of an operator, and even the legality of any resulting action, could be questioned and brought into doubt if it is found later that the operator did not follow the proper testing procedure. This is true even if the test subject was not analytically prejudiced by it.

PRELIMINARY DONOR QUESTIONING

Ask the subject when he/she last took anything by mouth. Some foods and even "non-alcoholic" drinks may contain traces of alcohol, which the subject may later claim affected the result of the test through a "mouth alcohol" effect. To prevent this, wherever possible, insure that a delay of about 20 minutes has elapsed since the subject took anything by mouth—even medicines which may contain alcohol.

Do not even allow the subject a glass of water prior to the test since this will cool the mouth and dilute the saliva, temporarily reducing the amount of alcohol in the breath, and, consequently, the instrument reading. A

delay of at least two minutes should take place between the time the donor last smoked and the test.

DETAILED PROCEDURE

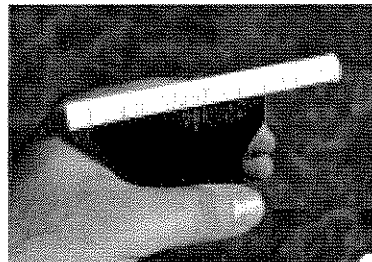
This section describes how the Intoxilyzer® S-D5 is used in a breath test.

1) TURN INSTRUMENT "ON"

Switch the instrument on by pressing Function Button "B" and wait for "blo" to be displayed which is shown for only a brief time to conserve battery power. The decimal point will then flash.

2) ATTACH MOUTHPIECE

You can then attach a new disposable mouthpiece to the sampling port. The mouthpiece can be attached to blow from either side of the unit. The hole in the mouthpiece will fit snugly around the sampling port on the top of the S-D5 and snap into place.



The mouthpiece can be attached to blow from either side of the unit. Do whatever is most comfortable.



3) INSTRUCT THE SUBJECT

Instruct the subject to take a deep breath and to blow into the lipped end of the mouth-piece at a steady pace until you say "stop." During the time when the subject is blowing, the S-D5 will display "Flo".



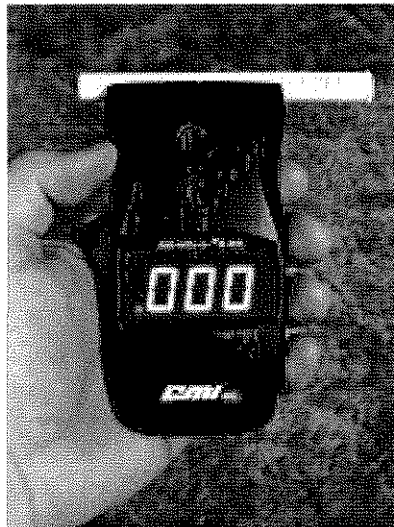
While the subject blows, "Flo" will appear on the display. This tells you the subject is providing a sufficient sample of air for analysis.

4) SUBJECT PROVIDES SUFFICIENT SAMPLE

You can instruct the subject to stop blowing when you hear a *click* and the unit begins to analyze the sample (4-6 seconds).

5) OBSERVE READING

If alcohol is detected, the reading will rise incrementally on the display until it reaches its peak value. If the result is negative, the display will quickly read ".000".



If alcohol is not detected in the subject's breath, the display will quickly read ".000".

6) DISCARD MOUTHPIECE

After the final reading is made, remove the mouth-piece and discard. Never use the same mouthpiece for subsequent tests on different subjects.

At this stage, the Intoxilyzer®

S-D5 will automatically reset itself to allow more breath tests to proceed. “Blo” will appear in the display when the unit is ready for more tests. If a test result is positive, it may take a few minutes before the unit is ready for another test. This time will vary depending on the concentration of the positive test.

A WORD ABOUT MOUTHPIECES...

The Intoxilyzer® S-D5's sampling port is designed specifically for the particular Intoxilyzer® S-D5 mouthpieces sold by CMI, Inc. It is strongly recommended that mouthpieces for the Intoxilyzer® S-D5 be ordered from CMI at 1-866-835-0690 or an authorized CMI distributor.

DONOR REFUSALS AND FAILURES

If the subject is not able to provide a sufficient sample, one of the following two messages will be displayed:

- “**Vol**” indicates that the subject provided a sample that did not satisfy the breath sampling requirement
- “**Suc**” indicates the subject attempted to foul the test by withdrawing his/her sample

In both cases, the S-D5 will be unable to analyze a sufficient sample of breath for a quantitative result. The operator should wait for “Blo” to be displayed before proceeding with another try.

MANUAL SAMPLE

If the subject cannot provide a sufficient sample, the S-D5's manual override feature makes it possible to still acquire and analyze a breath sample. While the subject is blowing,

simply press and release Function Button “A”. The S-D5 will then sample the breath as provided. Note: Since the manual sample feature is controlled by the operator, the breath sample might not be of the deep lung air equivalent that the automatic sampling mode requires. Because of this, the manual sample result might not reflect the true BAC of the subject.

LAST TEST RECALL

The S-D5 can recall from its memory the last breath test record. Simply press and release Function Button “B” to show the last test result value. If the value shown is “no”, this indicates that the previous test was aborted because of the “Vol” or “Suc” conditions described above.

CALIBRATION REQUIREMENTS: USE OF THE DRY GAS STANDARD



The Intoxilyzer® S-D5 uses an electrochemical fuel cell to detect and measure the concentration of alcohol in expired breath. The sensitivity of the instrument changes slowly with time, due to aging of the platinum electrode within the fuel cell. This change in sensitivity is very slight and calibration will not normally change significantly over a six-month or longer period.

Monthly calibration checks are recommended to determine when calibration adjustment is needed.

Either a dry gas standard or wet-bath simulator may be used to generate the standard alcohol vapor required.

THE ALCOHOL STANDARD

Calibration checks and adjustments can be conveniently done using a dry gas standard. This consists of a mixture of alcohol in air or nitrogen.

The quantity of alcohol in the gas is accurately known and is shown on the label. Therefore, when

the instrument is calibrated using a dry gas standard, subsequent breath tests will indicate the subject's blood alcohol concentration (BAC).

Dry gas standards are supplied in one of four ranges, each range based around a legal limit which is in wide use: .040% BAC, .045% BAC, .085% BAC and .105% BAC. For calibration above 3,000 feet, use a gas value of .085 or greater.

THE GAS STANDARD

The gas canister is a high-pressure, disposable cylinder fitted with a regulator. Cylinders are available in two sizes, containing enough gas for approximately 100 or 300 calibration checks or adjustments.

The label on each cylinder is marked with an expiration date. The gas should not be used after that time due to deviation of alcohol concentration of the gas outside the analytical specifications of the instrument.

When the cylinder is empty or time-expired, the regulator can be safely unscrewed from the cylinder and retained for use with a new cylinder. After venting all pressure, the old cylinder can then be disposed or recycled.

USING A DRY GAS STANDARD AT HIGH ALTITUDE

The concentration of alcohol in the dry gas standard is calculated and carefully controlled to give the correct vapor concentration when the cylinder is used at sea level at normal atmospheric pressure. At lower atmospheric pressures, the concentration of alcohol in the vapor leaving the cylinder will be less. The change in alcohol concentration due to normal atmospheric pressure changes at sea level is so small as to be negligible, but if the dry gas standard was used at a high altitude, significant errors would result if suitable corrections were not made.

ALTITUDE CORRECTION CHART

Elevation from Sea Level	Correction Factor
0	1.000
500	.981
1000	.962
1500	.943
2000	.925
2500	.907
3000	.889
3500	.872
4000	.854
4500	.837
5000	.820
5500	.804
6000	.787
6500	.771
7000	.755
7500	.740
8000	.724

Intoxilyzer® S-D5 itself to alcohol is **not** affected by changes in atmospheric pressure; it is only the concentration of the alcohol in the vapor from the dry gas standard that is affected.

The Altitude Correction Chart on the preceding page gives the correction factors which should be applied to the stated dry gas value when calibration checks or adjustments are made at various altitudes above sea level.

Correction factor sample:

Suppose the dry gas standard you are using has a value of .045% BAC at sea level, but it is being used at an altitude of 500 feet. Using the chart on page 16, the correction factor would be (0.981). Therefore, the corrected value of the dry gas standard would now be (.045 x .981 = .044% BAC).

USE OF A WET BATH SIMULATOR

If required, a wet bath simulator can be used instead of a dry gas standard to perform calibration checks and adjustments on the Intoxilyzer® S-D5.

A wet bath simulator should be used according to its own instructions. Pay particular attention to the alcoholic strength and temperature of the solution used.

A mouthpiece should be attached to the simulator outlet for direct attachment to the sampling port on the instrument. A flow rate of air of about 1.5-2 liters per second should be used. Any higher rate may result in the formation of an aerosol and lead to excessive cooling of the solution itself.

The simulator vapor must be allowed to pass through the mouthpiece for at least five seconds before the sample is "taken" for analysis.

CALIBRATION CHECK PROCEDURE



The calibration check procedure insures that the Intoxilyzer® S-D5 is reading alcohol levels correctly and alerts the operator that a calibration adjustment is needed. It is recommended that the instrument's calibration be checked once per month.

DETAILED PROCEDURE

1) ENTER THE CALIBRATION CHECK MODE

Switch the instrument on by pressing Function Button "B". As the S-D5 is performing its startup self test—upon the third digit displaying an "8", press and release Function Button "A". The instrument will then enter its "calibration modes" cycle. Use Function Button "B" to cycle between showing "CAL" and "CHC". When the display is showing "CHC", select this option by pressing and releasing Function Button "A".



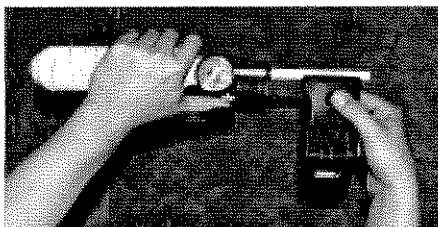
After entering the calibration modes, the unit will cycle between showing "CAL" and "CHC". When "CHC" is displayed, enter the calibration check mode by pressing Function Button "A".

2) CHOOSE BETWEEN DRY GAS STANDARD OR WET BATH SOLUTION

You now have a choice of using either dry gas standard or wet bath solution to perform the calibration check. To cycle between these modes, “**Gas**” and “**Sol**”, press Function Button “**B**”. Once your chosen calibration source is displayed, press and release Function Button “**A**” to confirm.

3) DISPENSE THE CALIBRATION STANDARD

The instrument will then ready its sampling mechanism for calibration which will take a few seconds. When ready, “**CHC**” is displayed, then the decimal point on the bottom left of the display will flash at a steady rate.



Dispense the calibration standard (dry gas standard shown) into the unit through a mouthpiece for at least five seconds. Press Function Button “**A**” to sample the standard.

Dispense the calibration standard through a new mouthpiece attached to the sampling port for a period of at least five seconds. While the calibration standard is still flowing, press and release Function Button “**A**” to sample the standard and perform the check. The result will be displayed.

Once the calibration check process is completed, the S-D5 will return to the “calibration check mode” and should be switched off by pressing Function Button “**B**”.

If the calibration check shows the instrument is outside the acceptable range of the calibration standard, a calibration adjustment should be done using the procedure described in the next section.

CALIBRATION ADJUSTMENT

Calibration adjustment is required when a calibration check indicates the Intoxilyzer® S-D5 has deviated more than ± 0.005 BAC from a known standard of alcohol vapor. During the calibration adjustment procedure, the Intoxilyzer® S-D5 will automatically adjust its fuel cell to compensate for any change in sensitivity of the fuel cell detector over a period of time. Adjustment should not normally be required more than two or three times per year.



THE DRY GAS CALIBRATION VALUE

Since the fuel cell detector responds linearly to the concentration of alcohol vapor in the standard, the actual value of the dry gas standard used for calibration is not important, provided that the instrument is actually calibrated to this value.

DETAILED PROCEDURE

The calibration adjustment process assumes three conditions:

- The instrument has not analyzed a sample of alcohol within the past hour,
- The instrument is in its normal operating temperature range, and
- The battery does not need replacement.

1) ENTER THE CALIBRATION ADJUST MODE

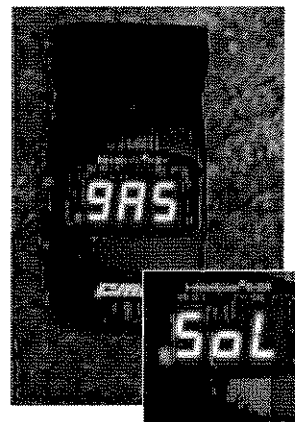
Switch the instrument on by pressing Function Button "B". As the S-D5 is performing its startup self test—upon the third digit displaying an "8", press and release Function Button "A". The instrument will then enter its "calibration mode" cycle. During this time, use Function Button "B" to cycle between showing "CAL" and "CHC". When the display is showing "CAL", select this option by pressing and releasing Function Button "A".

2) CONFIGURE UNIT TO CALIBRATION STANDARD

The S-D5 will now show a value for the calibration standard. To change this value to correspond to your calibration standard, press Function Button "B" to increment the figure to your desired value. The calibration value range is from 0.035% BAC to 0.125% BAC. Upon reaching 0.125% BAC, the calibration value will revert back to 0.035% BAC. Once your desired calibration value is displayed, press and release Function Button "A" to confirm.

3) CHOOSE BETWEEN DRY GAS STANDARD OR WET BATH SOLUTION

You now have a choice of using either a dry gas standard or wet bath solution to perform the calibration. To cycle between these modes, "Gas" and "Sol",



You have a choice of using either a dry gas standard or wet bath solution to perform the calibration.

To cycle between these modes, "Gas" and "Sol", press Function Button "B". Once your chosen calibration source is being displayed, press and release Function Button "A" to confirm.

press Function Button "B". Once your chosen calibration source is being displayed, press and release Function Button "A" to confirm.

4) DISPENSE THE CALIBRATION STANDARD

The S-D5 will then ready its sampling mechanism for calibration which will take a few seconds. When ready, "CAL" is displayed briefly, then the decimal point on the bottom left of the display will flash at a steady rate. Dispense the calibration standard through a new mouthpiece attached to the sampling port for a period of at least five seconds. While the calibration standard is still flowing, press and release Function Button "A" to sample the standard and then stop the calibration standard flow.

Once the calibration process is complete, the instrument automatically powers down.



POINTS TO REMEMBER

The following information, if applied to the operation of your Intoxilyzer® S-D5, will help prevent any problems.

"MOUTH ALCOHOL"

Twenty (20) minutes should pass between the consumption of alcohol and a breath test using the Intoxilyzer® S-D5. This period allows for any "mouth alcohol" to be dispersed. "Mouth alcohol" will give artificially high breath readings and is not indicative of actual impairment of the subject.

MOUTHPIECE

Use a new mouthpiece for every subject breath test, calibration check and calibration adjustment. Insure that the subject blows (or the alcohol standard is introduced) through the lipped edge, wide-bored end. Only mouthpieces from CMI, Inc. should be used.

SMOKING

Smoking just prior to a breath test will not influence the result, but tobacco smoke should not be blown through a mouthpiece attached to the instrument. Tobacco smoke could damage the fuel cell.

MANUAL BREATH SAMPLING

When a sufficient volume of breath is blown into the mouthpiece, the Intoxilyzer® S-D5 automatically “takes” a sample for analysis. If, for any reason, the subject cannot or will not provide a sufficient sample, **Function Button A** can be pushed while the subject is blowing to manually obtain a sample for analysis.

STORAGE BETWEEN TESTS

Avoid storing the Intoxilyzer® S-D5 in temperature extremes.

BATTERY REPLACEMENT

The Intoxilyzer® S-D5 is powered by two AAA batteries which are under the battery cover on the backside of the unit. A low battery warning appears on the display when battery power is low, and they should be replaced as soon as possible.



SOME “DOs” AND “DON'Ts”

WHAT TO DO...

- Do press the function buttons lightly. Excessive force is not required.
- Do change the batteries as soon as the low battery warning is displayed.
- Do change both batteries at the same time.
- Do use the correct mouthpiece for the Intoxilyzer® S-D5. Intoxilyzer® S-D2 mouthpieces can also be used.
- Do use a clean, new mouthpiece for each subject test and calibration check and adjustment.
- Do insure the subject blows into the wide-bore, lipped end of the mouthpiece.
- Do check the instrument's calibration at least once per month.

WHAT NOT TO DO...

- Do not test the subject if you believe he/she may have been drinking within the last 20 minutes or smoking within the past two minutes.
- Do not permit the subject to hyperventilate immediately prior to supplying his/her breath sample.
- Do not store the unit in temperate extremes, either hot or cold.
- Do not subject the unit to unnecessary shock. Normal wear and usage will have no affect on the unit.
- Do not clean the unit with chemical or abrasive products because they could cause permanent damage.
- Do not allow the sampling port to become blocked.
- Do not block or restrict the end of the mouthpiece, such as with your finger, while the subject is blowing. This may seriously damage the unit.
- Do not open the unit or attempt any repairs.
- Do not deviate from the instructions in this manual.



SPECIFICATIONS

MODEL:	Intoxilyzer® S-D5
DESIGNATION:	Portable, handheld, breath alcohol measuring instrument
DETECTOR:	Electrochemical fuel cell which generates a voltage or current in proportional response to breath alcohol vapor concentration.
SPECIFICITY:	The detector is unaffected by acetone, paint and glue fumes, foods, confectionery, methane and practically all other non-alcoholic substances at the levels found in human breath.
SAMPLING:	Automatic after the subject blows for 4-6 seconds. An override feature for manual sampling is provided.
MEMORY:	Result of the last test is stored and can be recalled until the next test is taken.

ACCURACY:	Meets DOT specifications of ± 0.005 BAC up to 0.100 BAC and $\pm 5\%$ above 0.100 BAC.
RESPONSE TIME:	Within five seconds of sampling, depending on alcohol concentration.
RF INTERFERENCE:	Case is impregnated with RFI shielding material for RFI protection.
DISPLAY:	Large, three digit LED (9/16" x 5/16")
AUDIBLE INDICATOR:	Beeper signals fault conditions and changes in instrument status.
VISUAL INDICATOR:	LEDs are used for alpha prompting of the operator.
INSTRUMENT CONTROL:	By microcontroller
RECOMMENDED OPERATING TEMPERATURE:	23° to 104°F (-5° to 40°C)
CALIBRATION:	Automated procedure by either dry gas or wet bath simulator.
DIMENSIONS:	2½" w x 4¾" h x 1¼" d
POWER SUPPLY:	Two "AAA" batteries
WARRANTY:	One year, parts and labor



WARNING & ERROR MESSAGES

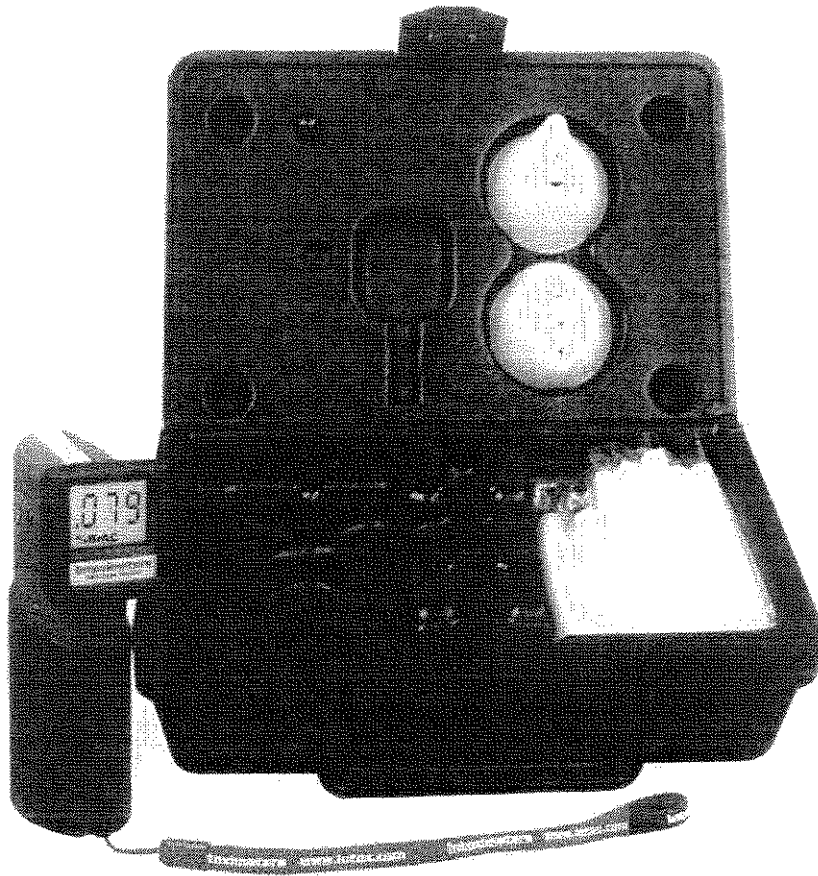
The following messages may appear in the unit's display indicating an error has occurred:

ERROR MESSAGE	MEANING
E1	Calibration corrupt
E2	Cell over range
E3	Low calibration reading
E4	Low calibration flow
E5	Charge pump error
E6	Temperature out of range
E7	Calibration temperature out of range
E8	Flow over range
E9	Communications breakdown
E10	Last test corrupt
E11	PC settings corrupt
E12	Flow offset high
E13	Setup restored
E14	Temperature restored
E15	Calibration restored
bat	Low battery level
SuC	Subject sucks back during the test

SECTION M

Intoximeters FST

Alco-Sensor FST Operators Manual



ASFST

Intoximeters, Inc.
St. Louis MO

PRINT DATE: March 2007

ALCO-SENSOR FST

Storage

Storage in cold or moderately hot environments will not harm the Alco-Sensor FST. For prolonged storage avoid extremely humid or arid environments.

Recommended Storage Conditions

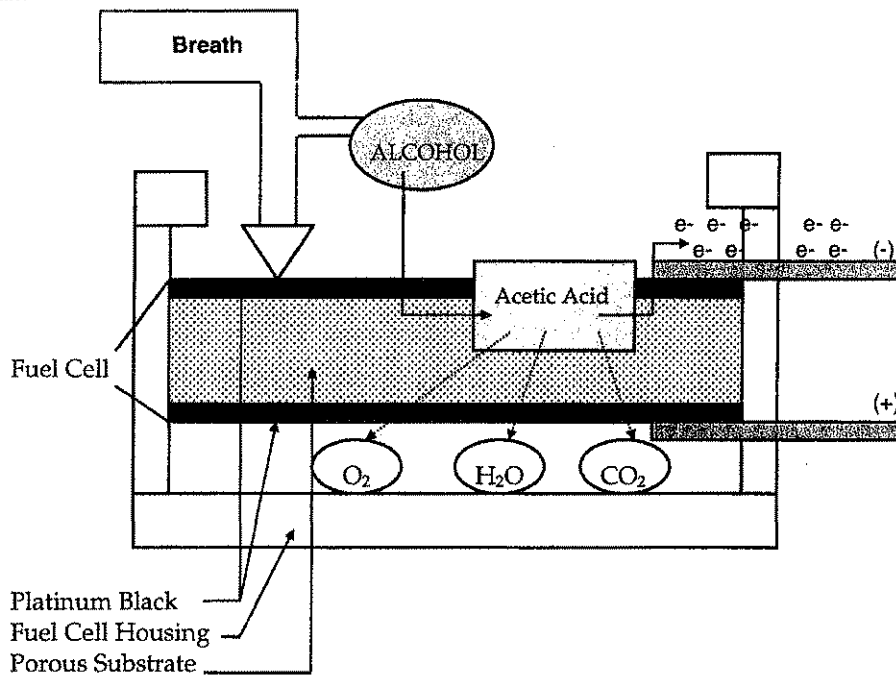
Temperature: -15°C to 50°C (3° F to 122° F)
Humidity: 10% to 95% relative humidity
Pressure: 600 to 1300 hPa

Theory and Design of the Alco-Sensor FST

The Alco-Sensor FST contains a fuel cell sensor and an electrically operated piston-sampling pump. The fuel cell is a porous disk coated with a thin layer of platinum black on both faces and saturated with an electrolyte. The cell is supported at its outer edge in the fuel cell case. While a subject is blowing and when deep lung breath is reached the sampling pump is activated. A small, fixed volume of deep lung breath is drawn onto the surface of the cell, any alcohol is subsequently converted to acetic acid, electrons are released and a current is generated in proportion to the amount of alcohol oxidized. The resulting electric current is translated into a Breath or Blood alcohol concentration and the result is displayed on the Alco-Sensor FST.

If there is no alcohol present in the breath sample, no oxidation will occur. Because no electrons will be released, no current will be generated and the result displayed will be a zero reading.

Fuel Cell Diagram



The Alco-Sensor FST fuel cell responds to alcohol in the human breath. It will not respond to acetone which may be found in the breath of a diabetic, dieter or highly exercised individual. In fact, it has no significant cross sensitivity to any known substance that might be found in a living human subject after a 15-minute deprivation period.

SECTION III COMPONENTS AND FUNCTIONS

Instrument Operating Components



Mouthpiece (23-0120-00)

The mouthpiece is a critical portion of the sample assembly and specifically designed to be used with the Alco-Sensor FST.

The cross section is a "D" shape which helps orient the mouthpiece when placing it on the instrument. By inserting the closed end of the mouthpiece into the mouthpiece channel, and then rotating the shaft of the mouthpiece downward, the flat side of the mouthpiece and the two holes on the underside of the mouthpiece will naturally align and attach to the appropriate ports on the Alco-Sensor FST.

Use only mouthpieces manufactured or approved by Intoximeters. The design of the mouthpiece can affect both the analytical process and/or damage the instrument. Using unapproved mouthpieces can void the instrument warranty and make it impossible for Intoximeters to support test results generated while using these unapproved parts.



Drink Sniffer/Mouthpiece (23-0150-00)

The Drink Sniffer/Mouthpiece attachment is designed to improve the ASFST's ability to test the 'headspace' above a beverage for the presence of alcohol.



Passive Sample Cup (23-0130-00)

The Passive Sampling Cup is designed to help automatically collect an air sample while a subject is blowing in the direction of the instrument. For best passive results have the subject's mouth about two inches from the top of the cup, while the subject is blowing into the cup.



Display

The display turns on when the instrument is powered ON. If it is necessary to backlight the display, pressing and holding the ON button down for an additional second.

Various commands and symbols appear on the display to direct the operator through the testing protocol and to alert the operator of improper testing conditions detected by the system. (see also Status Message, page 22).

Depending upon the version of the Alco-Sensor FST, the result may be displayed in two digits, three digits or 0 (Zero), PAS (Pass), CAU (Caution), FAil (Fail), and the unit of measure may or may not be displayed.



ON Button

The **ON** button (labeled with a "I" symbol) is the larger of the two buttons on the Alco-Sensor FST case. This button is located opposite the display and will naturally rest under the operator's forefinger when holding the instrument. The primary function of the button is to turn the instrument **ON**, and this is accomplished by pressing the button down for one second, a beep and/or the display powering **ON** will indicate that power up has been successful. (Note: If you want to illuminate the display, hold the **ON** button down for an extra second on power up or press the **ON** button at any point when the temperature is being displayed and the display will illuminate). The **ON** button also allows an operator to capture a manual sample.

Additionally, the **ON** button is used to toggle through menu items to access certain features of the instrument. The steps are described later in this manual. (*see also: Manual Sampling, page 10*).



OFF Button

The **OFF** button (labeled with an "O" symbol) is located on the Alco-Sensor FST case beneath the display; depressing it and holding it down for two seconds, during normal operation, will manually turn the instrument off. Manually turning the instrument off will always reset the instrument to the standard subject test sequence. Note: The instrument does have an auto power down feature, which powers the instrument down when it has not been used for a period of time.

The **OFF** button is also used to select several other features of the instrument. The steps are described throughout this manual (*see also: Options/Features and Maintenance Menu; page 10*).

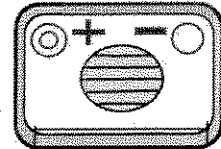


Batteries

The battery cover is located on the base of the Alco-Sensor FST. Two AA batteries should run well in excess of 1000 tests at room temperature. *When changing batteries always replace both batteries.*

Caution

- When changing batteries always replace both batteries and never mix battery types.
- When installing **batteries**, the **proper** polarity, or direction, must be observed. (On both the inside of the case and on the circuit board in the battery compartment there is a guide for proper polarity or direction).
- In addition, some ASFSTs have a battery cover with the proper polarity displayed on the outside of the battery cover. If your ASFST is equipped with this style battery cover you can also use it to verify that the batteries have been installed correctly.
- After replacing the batteries, always power the instrument **ON** to verify proper installation – if the ASFST does not power **ON** immediately remove the batteries and reinstall correctly or replace with a new set.



SECTION IV CONDUCTING A SUBJECT TEST

Initial Preparation

Operator Training

The results from a properly calibrated Alco-Sensor FST are no better than the quality of the sample collected. A deep lung sample is essential to produce a breath alcohol reading that will correlate with the alcohol concentration of the blood. The Alco-Sensor FST sampling system is designed to ensure that a deep lung sample is collected for analysis.

Even though the Alco-Sensor FST has a very simple sample collection process, training on the use of the instrument is recommended. Training is available through a variety of mediums. Both Classroom and Computer based training provided on a CD are available from Intoximeters. For further information on training sessions and the availability of training tools contact Intoximeters Training Department.

Preconditions for Conducting a Test

Temperature Requirements

The Alco-Sensor FST is generally set up to operate at instrument temperatures of 0°C to 50°C (32°F to 122°F). Customized software is available from intoximeters that will allow the Alco-Sensor FST to operate in a broader or narrower temperature range. When the unit is in its operating temperature range it will function properly in climates where ambient temperatures are in the range of -15°C to 50°C (3°F to 122°F).

Calibration Requirements

The accuracy of a subject test result is dependent upon a properly calibrated instrument. To determine the accuracy of an instrument an accuracy check should be performed periodically. An accuracy check is performed by introducing, to the Alco-Sensor FST, a sample containing a known concentration of alcohol (what is referred to in this manual as a Standard Sample). The reading provided by the instrument must be within the established tolerances of the target value of the standard sample for the instrument to be considered properly calibrated or accurate. Because different testing programs have different requirements for the instrument, the definition of accuracy is dictated by the tolerances established in the protocols of a specific testing program. Know the established tolerances of your program before conducting an accuracy check. If you don't have an established program, checking the instrument at no more than 31-day intervals is a frequency that would be acceptable for most routinely used tolerance levels.

Your unit was calibrated at the factory before shipment. However, before using the instrument for subject testing you should perform an accuracy check to ensure that the unit has maintained its calibration. To build a history of instrument performance, record accuracy check and calibration results in a logbook along with the date of the test and the expected or target value of the standard sample. (see also: Inspection and Routine Maintenance, page 19).

Preparing the Instrument for a Subject Test

Mouthpiece and Powering up the Alco-Sensor FST

For a subject test, an accuracy check or a calibration, always use a clean mouthpiece.

To avoid damaging the Alco-Sensor FST, the operator should be familiar with the correct procedure for attaching the mouthpiece to the instrument.

The mouthpiece has both an open and a closed end. The open end should be made available for the subject to blow into. The sealed, rounded end should be inserted into the mouthpiece channel on the top of the Alco-Sensor FST.

In addition to the breath inlet hole there are three additional holes in the mouthpiece. One larger hole, on the top of the mouthpiece toward the sealed end of the mouthpiece is the exit port for the subject's breath flow. There are also two smaller holes on the bottom, or flat portion of the mouthpiece. When the mouthpiece is mounted properly these holes will be seated on both the fuel cell inlet port and the flow sensor port.

ALCO-SENSOR FST

To initiate a test sequence, use a clean mouthpiece. Insert the long, closed end of the mouthpiece into the mouthpiece channel. The mouthpiece is "D" shaped and when properly inserted, the flat side should be making contact with the instrument.

The mouthpiece connection process is simplified if the end of the mouthpiece is first pressed into the mouthpiece channel. Once the mouthpiece abuts the end of the guide, rotating the mouthpiece downwards attaches the mouthpiece to the two ports and the instrument will be ready for testing.

Preparing the Subject for a Test

Before initiating a test, explain to the subject how you want the subject to provide a sample.

Example: "When I tell you to, I want you to take a deep breath, hold it for a moment and then blow steadily into this mouthpiece until I tell you to stop. Are you ready? Okay, take a deep breath, hold it, and now blow steadily for as long as possible".

Clear and simple instruction will help the subject give you a good sample.

Screening Test Procedure

Observing a fifteen-minute deprivation period (no foreign substance is introduced into the mouth during this period) prior to sample collection will ensure the elimination of "mouth alcohol".

Performing a Subject Test - Step by Step

ATTACH A MOUTHPIECE.

Use a clean, unused mouthpiece from a sealed bag.

DEPRESS THE POWER ON BUTTON AND HOLD FOR 1 SECOND.

This will turn the unit on.

If you wish to illuminate the display, hold the **ON** button down for an extra second or two.

NOTE PRE-TEST INFORMATION.



A digital display showing the number 28.0 with a small 'C' for Celsius to the right.

The Battery Strength Indicator and Temperature in °C (i.e. 28C) will be displayed momentarily after the instrument is powered ON. As well, a battery indicator will be displayed indicating the current condition of the battery. If the instrument does not have sufficient battery power to perform a test either the instrument display will not power on or BAT will be displayed and testing will be disabled. The standard Alco-Sensor FST is designed to operate when the unit temperature (not the ambient temperature) is between 0°C and 50°C. If the temperature is outside of the proper operating range, the standard instrument will indicate a temperature out of range condition before powering off. If you must perform a test with the instrument, place the instrument in an environment that will bring it to a proper operating temperature.

BLN flashes on display.



A digital display showing the letters 'BLN'.

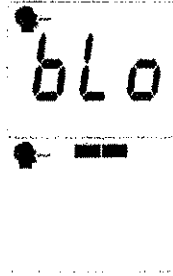
If your unit displays BLN, it is an indication that the instrument is performing a blank test automatically. Your unit will then display the result of the blank test. If the blank check is successful, a zero result appears on the display. If the blank check is not successful, a status message E 11 (Air Blank Out of Range Message) is displayed and the test sequence is aborted.



A digital display showing the number 0.000 with '%BrAC' below it.

Depending upon the version of the Alco-Sensor FST, the blank test may or may not be displayed. However, a failed blank test will always be indicated with an error message (E 11) followed by the test sequence being discontinued.

COLLECT A BREATH SAMPLE.



When the display shows the icon of a persons head flashing and/or bLo displayed, instruct the subject to take a deep breath, hold it and then blow steadily through the mouthpiece for as long as he or she can. The icon of the head will stop flashing and a dash appears to the right of the head indicating that the instrument senses sufficient breath flow. Additional dashes will appear as the subject continues to provide a sample. Once three dashes appear an automatic sample will be taken. It is not necessary for the subject to blow hard but rather a steady or continuous sample is best for sample collection.

OBSERVE AND RECORD THE RESULT



As soon as a successful breath sample has been captured, the analyzing signal "- _ _", "- _", "- _" is scrolled across the display. At the end of the analysis a result will be displayed.

Depending upon the version of the Alco-Sensor FST, the result may be displayed in two digits, three digits or 0 (Zero), PAS (Pass), CAU (Caution), FAl (Fail), and the unit of measure may or may not be displayed.

REMOVE THE MOUTHPIECE.

The result will be displayed for fifteen seconds before the instrument will power itself off.

It is also possible to turn the instrument off manually by pressing the OFF button for two seconds. To view the last test result after the instrument is powered off see the section below on Test Recall. If you are interested in starting another test after the instrument has been powered down, pressing the ON button will initiate the next test sequence.

Instrument Operating Features

Automatic Blank Test

A blank test is a test that is run automatically by the instrument to check the sample chamber and the attached mouthpiece to ensure that there is no alcohol present from a previous test. The automatic blank test must result in a zero reading before the instrument will advance to the next step in the testing protocol. Depending upon the version of Instrument, the blank test may or may not be displayed. However a failed blank test will always be indicated with an error message (E 11) followed by the test sequence being discontinued.

Note: Although the instrument cleans up quickly, keeping the unit warm will shorten the time it takes for the cell to clear and give a zero reading on the blank test.

Automatic Sampling

A pressure sensor monitors breath flow and volume to determine when to capture a breath sample for analysis.

When breath flow is sensed by the instrument, the icon of the human head will stop flashing, bLo will disappear and a "-" is displayed next to the icon of the head. This "-" indicates that the instrument has determined that the minimum breath flow rate has been detected and that breath volume can start to be calculated. "- -" is displayed when the minimal breath volume has been reached. After a minimum volume requirement has been met the

ALCO-SENSOR FST

sampling system will capture a sample for analysis when either the subject's breath flow begins to decrease or a second, greater volume threshold is met.

When the sampling system is activated a small sample of deep lung breath is drawn into the fuel cell chamber for analysis.

If an improper breath sample condition is detected by the instrument, the sample will be rejected and the instrument will flash "FLO" along with one of the following descriptors: "Lo", "Hi", "InS" or "Cut". (see also: Status Messages, page 20 for an explanation of the meaning for each of these displayed descriptors.) After this message is displayed the instrument will return to the ready mode. If the subject is unable to provide a proper sample after the preset number of attempts the instrument will power itself off. For this reason, it is important for the operator to provide the subject with clear instruction on how to properly provide a breath sample. (Note: The standard Alco-Sensor FST will allow the subject three attempts to provide a proper sample before it will display the status message E06 and power off.)

Manual Sampling

Manual Sampling is a feature that allows the operator to collect a sample either when the automatic sampling function has been disabled or the subject is unable to provide the minimum volume of breath. This can occur in both direct and passive testing modes.

When direct sampling (sampling when a subject blows into a mouthpiece) Manual sampling can produce results that are as accurate as automatic samples but for best sampling technique, before using this method of testing, the operator should be trained to collect a manual breath sample. Samples taken too early or after the breath flow has ceased will result in readings that are lower than the actual deep lung BrACs or BACs.

In the rare occasion when a subject is unable to provide an adequate breath flow to trigger the automatic sample capture feature, a Manual Sample Capture is possible. This process requires that the operator follow the normal test procedure up to the point that "bLo" is displayed. At this point the operator should instruct the subject on how to provide a sample.

As close to the end of the exhalation as possible (but while the subject is still blowing) the operator can collect a Manual sample by pressing the ON button.

Errors in Manual Testing that must be avoided include capturing a sample before the subject begins blowing; capturing a sample in the early part of the exhalation or capturing a sample after the exhalation has ceased. In all of these cases a dilute sample will be drawn into the instrument for analysis and a corresponding low or zero result will occur.

Option / Features / Maintenance Menu

While the instrument is powered down, by depressing and holding the OFF button down and then also depressing the ON button, one can access a List of Optional Features included in the instrument software. This list includes, but is not limited to the following features:

- reL – Allows the operator to Recall the last test result
- PAS – Allows the operator to access the Passive Testing Mode
- rbL – Allows the operator to access the Road Block Testing/Quick Test Mode
- ACC – Allows the operator to access the Accuracy Check Mode
- CAL – Allows the operator to access the Calibration Adjustment Mode
- dSr – Allows the operator to view the Displayed Software Revision

Note: Certain versions of the Alco-Sensor FST have a security feature on some menu functions. If you access a menu function and the instrument does not operate according to the instructions in this manual, contact your Supervisor.

After gaining access to the menu function (which is indicated by reL being displayed), pressing the ON button will allow you to scroll through the list of options, pressing the OFF button will execute the option displayed at the time the OFF button is depressed.

Test Recall (rcl)

After the test result has been calculated the instrument will display the result for several seconds after which the instrument will power OFF. If the operator wants to review the result, while the instrument is OFF, momentarily press the OFF button and then simultaneously press the ON button. The display will show the first menu item off a list of optional functions that the instrument can perform. The first item on the list is rcl (Recall Last Test). To execute this function, pressing the OFF button will prompt the instrument to alternately display the result from the last test performed along with an intermittent displayed rcl.



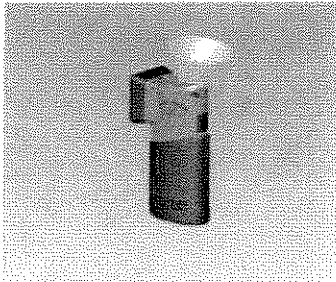
Depending upon the version of the Alco-Sensor FST, the result may be displayed in two digits, three digits or 0 (Zero), PAS (Pass), CAU (Caution), FAil (Fail), and the unit of measure may or may not be displayed.

Passive Sampling (PAS)

Two common uses for this mode are to sample and determine if alcohol exists in the ambient air around a subject or in the headspace over an unknown liquid substance. If alcohol is detected, a positive indication is displayed.

When performing a passive test of a subject, for best results, attach the Passive Sample Cup as shown in the diagram below. If you are sampling the headspace of unknown liquid, the Passive Sampling Cup can be used, but is not required.

Note: Certain versions of the Alco-Sensor FST have a security feature on some menu functions. If you access a menu function and the instrument does not operate according to the instructions in this manual, contact your Supervisor.



Performing a Passive Test

**DURING POWER UP
DEPRESS AND HOLD THE
POWER OFF BUTTON WHILE
AT THE SAME TIME
PRESSING THE ON BUTTON.
RELEASE THE BUTTONS
ONCE rcl IS DISPLAYED**

This will turn the unit on and display the first option from a menu listing. The first option will be rcl.

**DEPRESS THE POWER ON
BUTTON TO SCROLL TO
THE PAS OPTION**

When the ON button is pushed it will cycle to the next menu item. If you continue to push the ON button, the instrument will cycle through the whole list of menu items and will eventually scroll back to the rcl option. For the purpose of performing a passive test, cycle the message to the PAS option.



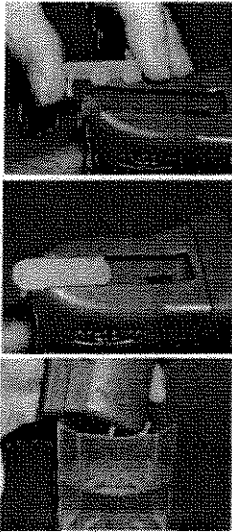
**DEPRESS THE OFF BUTTON
TO SELECT THE PASSIVE
MODE**

Selecting the Passive Testing Mode by pressing the OFF button will initiate a Passive Test. This will be indicated by the display first indicating the instrument's current temperature (for passive testing the operating range is from 0°C to 50° C) and then flashing the PAS display. Once you see this flashing PAS display the Alco-Sensor FST is prepared to capture a Passive Sample.



THIS MANUAL WILL DESCRIBE THREE WAYS TO CAPTURE A PASSIVE SAMPLE. FIRST WE WILL DESCRIBE HOW TO COLLECT A PASSIVE SAMPLE OVER AN OPEN CONTAINER. SECOND, WE WILL DESCRIBE HOW THE INSTRUMENT IS DESIGNED TO AUTOMATICALLY COLLECT A SAMPLE OF AIR FROM A SUSPECT WHO IS BLOWING IN THE DIRECTION OF THE INSTRUMENT; AND FINALLY WE WILL DESCRIBE HOW TO COLLECT A PASSIVE AMBIENT AIR SAMPLE FROM THE VICINITY OF A SUSPECTED ALCOHOL USER.

Test an Open Container

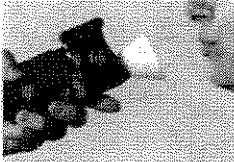


To test a beverage for the presence of alcohol, attach the 'mouthpiece drink sniffer' and put the instrument in the Passive Mode with "PAS" flashing.

The drink sniffer adapter allows the inlet port of the Alco-Sensor FST to extend beyond the body of the instrument and provide better access for sampling the alcohol vapor that sits just above the liquid in a glass. Proper use of the 'drink sniffer' adapter will increase the sensitivity of the Alco-Sensor FST when testing the gas (or headspace) above the surface of a liquid.

The ASFST, with the *drink sniffer* attached, should be positioned within one or two inches above the surface of the liquid. (CAUTION: DO NOT IMMERSE THE DRINK SNIFFER ADAPTER OR THE UNIT IN THE LIQUID). After several seconds press the **ON** button and a sample will be captured for analysis. A "PoS" or "E29" (*status message*) or "E31" (*status message*) result likely indicates the presence of alcohol in the beverage. A "nEG" result indicates that the alcohol content in the sample was negligible.

Test a Subject Passively



The best method to passively test a subject with the Alco-Sensor FST is to automatically capture a sample from a subject who blows at the Passive Sampling Cup. To accomplish this, the instrument must have a Passive Sampling Cup attached and be in the Passive Mode with "PAS" flashing. (Note: the subject must have his/her lips approximately 2" from the Passive Sampling Cup and the subject must blow at the cup – see picture at left). In this mode, when the instrument detects a consistent flow of breath reaching the sample inlet port, an automatic sample will be collected for analysis. A "PoS" result indicates the presence of alcohol in the collected sample. A "nEG" result indicates that the alcohol content in the sample was negligible. Have the subject blow in the direction of the sample cup for as long as possible. Once you hear the instrument *click* the sample has been taken, it will be analyzed and a result reported.

Test the Environment Around a Subject



Finally, to merely test the air in the vicinity of a subject for alcohol, the instrument should be in the Passive Mode with "PAS" flashing. In order to capture a sample, place the Alco-Sensor FST without the Passive Sampling Cup attached as near to the subject as possible (preferably near his nose or mouth) and press the **ON** button to capture a sample for analysis. A "PoS" result indicates the presence of alcohol in the air near the subject. A "nEG" result indicates that the alcohol content in the air was negligible.

It is important to understand that the further the unit is from the subjects mouth and nose, the more dilute the sample will become and the less likely you will be able to identify a meaningful concentration of alcohol. Also, Passive Sampling on a subject only indicates the likely presence of alcohol, further direct sampling will validate a positive or negative passive result.

Repeat Passive Testing

The FST is designed to perform repeat Passive Tests while in the Passive Mode. After the result is displayed the instrument will go into a low power mode for two minutes. This mode is indicated by a dash slowly moving across the top of the display. Once in the low power mode there are three possible events that can change the instrument's mode of operation:

First, no buttons are pressed during the two-minute low power mode and the instrument automatically powers OFF. The automatic power down mode will return the instrument to a standard testing sequence and if the operator wants to perform another Passive Test they must go through the menu selection process again.

A second option is that the operator presses the OFF button, powering the instrument OFF prior to the end of the two-minute low power timer. Again, the instrument will be in the standard direct sample mode if powered ON after this occurs.

Finally, if the ON button is pressed while the instrument is in the low power mode, the instrument will return to the Passive Mode (*PAS flashing*). With *PAS flashing* the instrument is ready to perform another Passive Test. Using this feature allows an operator to perform repeat Passive Samples with minimal delay between tests.

SECTION V ADMINISTRATIVE / MAINTENANCE FUNCTIONS

Overview

To obtain accurate subject test results, the unit must be properly calibrated.

The accuracy of an instrument is verified by running a known alcohol concentration (standard) through the Alco-Sensor FST sampling system, and verifying that the result is within an acceptable tolerance of the expected or target value of the standard. This is called an accuracy check. It is also sometimes called quality assurance or a calibration check. The terms are used interchangeably; however, we will use the term accuracy check in this manual.

When performing an accuracy check, if the result of the accuracy check is within an acceptable tolerance of the stated value of the standard, the Alco-Sensor FST is considered calibrated. If the reading is not within the acceptable tolerance the Alco-Sensor FST must have its calibration adjusted. Only Intoximeters approved standards (dry or wet) gas samples with a known expected ethanol concentration should be used to perform the accuracy check or calibration procedure.

Alco-Sensor FSTs hold calibration for months. However, some users choose to perform an accuracy check once a week during the first month the unit is in use. This process helps establish that the new instrument is stable and increases the operator's confidence in its accuracy.

Intoximeters recommends you follow your own policy when performing accuracy checks. If you do not have a quality assurance policy and if an accuracy check has not occurred within the past 31 days, it is recommended that an accuracy check be run in conjunction with a subject test to ensure the instrument has maintained proper calibration.

Accuracy Check Methods

Intoximeters recommends that external accuracy checks and calibrations be performed using a dry gas standard approved for use by both NHTSA and Intoximeters or a wet bath simulator with properly certified and maintained ethanol solutions. The wet bath simulator should be approved for use by NHTSA and Intoximeters.

In all cases the compressed gas tanks, simulators and simulator solutions should be used and maintained only in accordance with the quality assurance plans provided by their respective manufacturers.

Although some jurisdictions require using certified standards with specific values to perform accuracy checks and calibrations, these values are imposed only by the specific jurisdiction. The analytical design of the instrument allows it to be checked for accuracy and calibrated using positive standard values between .015 and .200 g/210L.

Approved Dry Gas Standard

ELEMENTS:

- A. Pressurized NHTSA and Intoximeters approved dry gas tank.
- B. Small single staged approved regulator
 - 6 LPM regulator required for automatic sampling*
 - 1.5 LPM regulator is acceptable, but manual sampling will be required*
- C. True-Cal device. *(Optional)*

MAKEUP: NIST traceable tank contains a single-phased mixture of Nitrogen and Ethanol.

CHARACTERISTICS:

- A. Flow rate of the regulator must be 6 liters per minute for automatic sampling on Accuracy Checks and Calibrations. 1.5 liter per minute regulators can be used, but manual sampling on Accuracy Checks and Calibrations will be required. (1.5 LPM regulators purchased from Intoximeters can be modified in the field to become 6 LPM regulators – contact Intoximeters Customer Support for more information (314) 429-4000).

ALCO-SENSOR FST

- B. Follow instructions on the tanks to mount the regulator. When the regulator is initially mounted, depress the regulator control button and allow the gas to purge the valve for 10 seconds.
- C. Expiration date is stamped on the label of the dry gas standard.
- D. The optional True-Cal device (programmed for your tanks alcohol concentration) used in the vicinity of the dry gas standard will display the expected value of the standard based on current barometric pressure at the time of the test.
- E. If you are not using a True-Cal device, the altitude chart on the side of the tank will give you the stated value of your tank adjusted for the pressure changes due to the elevation at which you are using the dry gas standard.
- F. **Tanks should only be used when they are between 10° - 40° C.**
- G. If the tank has been maintained at temperatures below 0°C (32°F), see tank manufacturer's QAP for proper handling of the dry gas standard when bringing it back to operating temperature.

For True-Cal Device information see Accessory below.

Approved Wet Bath Simulator (Standard)

ELEMENTS:

- A. Glass jar, which holds 500cc of solution.
- B. Jar head contains heater thermostat, stirrer, thermometer, inlet and outlet ports for sampling headspace gas standing above the solution.

MAKEUP: Solution is a water/alcohol mixture of a certified BrAC/BAC concentration.

CHARACTERISTICS:

- A. Seven-month shelf life for refrigerated, unopened bottles of solution. Or as determined by the manufacturer.
- B. 30 tests per bottle of solution.
- C. Liquid should be clear with no visible particles suspended in the solution.
- D. A simulator containing a solution of known BrAC/BAC value must be at the operating temperature of 34°C. The simulator top must be on securely so the system is airtight. To check, cover the outlet port and blow into the intake port. Air bubbles will not rise rapidly through the solution if the top is secure.

Accessory

True-Cal Device

Variations in barometric pressure can affect the expected value of a pressurized dry gas standard, according to standard gas laws. The True-Cal device is designed to sense changes in barometric pressure and report an adjusted value for the dry gas standard.

The True-Cal works only with Intoximeters approved dry gas standards. Due to strict accuracy and quality requirements for all tanks sold by Intoximeters, the True-Cal device should not be used with gas standards supplied by other vendors unless otherwise approved. The color of the label "% BAL" (which appears directly below the True-Cal name on the face of the device) must match the color of the label on the Intoximeters approved dry gas standard. A True-Cal device with a yellow "% BAL" can only be used with an Intoximeters approved .038% value dry gas standard, and a True-Cal device with a white "% BAL" can only be used with an Intoximeters approved .082% value dry gas standard. Values on the tanks are expressed in values at sea level under normal atmospheric conditions.

By depressing the button on the True-Cal device, the LED display will show the current expected value of the gas. The True-Cal is powered by a 9-volt alkaline battery, which should be good for 800 assessments. "888" will appear on the True-Cal display when the battery needs to be replaced. Only use **9-volt alkaline batteries** for replacement.

A CALIBRATION STATION consists of an Intoximeters approved dry gas standard, a regulator and a True-Cal device.

Accuracy Check Intervals

Unless stated otherwise by your programs protocol, if an accuracy check has not occurred within the past 31 days, it is recommended that an accuracy check be run in conjunction with a subject test to ensure the instrument has maintained proper calibration.

Accuracy Check Tolerances

The result of an accuracy check should not differ from the expected value by more than the tolerances prescribed by the program guidelines under which the test is being administered. Usually these tolerances range from $\pm .005$ g/210L or 5% whichever is greater, to $\pm .010$ g/210L or $\pm 10\%$ whichever is greater.

Intoximeters has set a factory standard for accuracy checks run directly following a calibration. The factory standard states: the tolerance range for the expected value of the required accuracy check run **directly** following a calibration should be no greater than $\pm .003$ g/210L of the expected value if the calibration is to be considered successful.

Refer to your policy to determine the guidelines for your testing program.

Inspection and Routine Maintenance

The instrument should be calibrated when the displayed result of an accuracy check differs from the expected result of the standard gas sample by more than the accepted tolerances established by the protocols of the specific program under which the instrument is being utilized.

The instrument should be taken out of service if:

- the instrument repeatedly fails to maintain its calibration, (i.e. if after two successive attempts to calibrate the device a successful accuracy check was not obtained);
- the instrument fails to maintain its calibration on three consecutive, properly performed, monthly accuracy checks;
- the instrument consistently takes more than two minutes to perform a breath analysis on a sample with a concentration less than .100 grams per 210 liters of breath.

IF THE INSTRUMENT EXHIBITS ANY OF THE ABOVE CHARACTERISTICS CALL INTOXIMETERS SERVICE DEPARTMENT AT (314) 429-4000 OR (800) 451-8639.

Performing an Accuracy Check

Unit Temperature

The FST will only allow Accuracy Checks to be performed when the Alco-Sensor FSTs temperature is between 0°-50°C.

Note: While wet bath Standard accuracy checks can be performed throughout the full 0°- 50°C temperature range, if you are using Dry Gas as your Standard for accuracy checks, then the unit and gas should be at or between 10°C and 40°C.

Accuracy Check Procedure Step by Step

Before beginning have these items available:

- Calibration Standard (dry gas or wet bath simulator)
- Calibration Logbook
- New Mouthpiece

1. Attach a new mouthpiece to the Alco-Sensor FST and power the instrument ON by first pressing and holding the OFF button and then simultaneously pressing ON button.
2. The display should show the rCL message, which is the first option in the function Menu. Momentarily depress the ON button, the displayed message should change to PAS, press the ON button again, the displayed message should change to ACC. If it is not ACC repeat this step until ACC appears on the display.
3. With ACC on the display, press the OFF button to select the Accuracy Check option. The temperature will be displayed followed by bLN and the result of the blank test before a flashing ACC message will appear.
4. If the accuracy check is being done with a Wet Bath Standard skip this step and go to step 5. If the accuracy check is being performed with a Dry Gas, purge the regulator for at least 3 or 4 seconds before running your first accuracy check of the day. (Continue with step 6)
5. Prepare Wet Bath simulator for use. Be sure the stirrer is operating properly and the top is securely mounted. Also be certain that the bath temperature has reached 34°C and stabilized at this temperature for 15 to 30 minutes.
6. While the display shows a *flashing ACC*, make an airtight connection between the delivery tube of the regulator OR the outlet port of the simulator and the open end of the mouthpiece.
7. Depress the regulator control button OR blow into the inlet port of the simulator. If there is 6 LPM or more of airflow, after several seconds, the instrument should capture a sample automatically. Make certain that you continue to provide a sample for at least one or two seconds following the point in time where the sample has been captured. (sample collection is identified by a *clicking* sound).
8. If for some reason you cannot provide an adequate flow rate for the instrument to collect an automatic sample, it is possible to perform an Accuracy Check by taking a manual sample. To perform a test in this manner, present a sample to the instrument for seven seconds. On the 5th second depress the ON button to take a manual sample. (The goal is to have gas still flowing through the Alco-Sensor FST mouthpiece when the sample is taken). Release the regulator control button OR stop blowing into the inlet port of the simulator on the 7th second.
9. Detach the mouthpiece from the regulator OR the simulator.
10. Observe the result and compare it to the known value of the standard gas.
11. Record the result in your calibration log. If it does not meet your programs specified tolerances, the unit will require a calibration adjustment. If the result is within the required tolerances, the procedure is completed.

Note: Depending upon the version of the Alco-Sensor FST, the result may be displayed in two or three digits and the unit of measure may or may not be displayed.

Performing a Calibration

When to Perform a Calibration

A calibration procedure should be performed when the result of an accuracy check indicates the unit does not read a known standard within your testing program's specified acceptable tolerances. A calibration procedure or calibration adjustment should not be confused with the term "calibration check". A calibration check is synonymous with an

Accuracy Check. A calibration procedure or calibration adjustment is a procedure where the instruments calibration setting is adjusted.

Note: *Certain versions of the Alco-Sensor FST have a security feature on some menu functions. If you access a menu function and the instrument does not operate according to the instructions in this manual, contact your Supervisor.*

Unit Temperature

To calibrate an instrument its temperature must be between 15°C - 35°C. If the temperature is not within this range, the unit will display E09 OR E10 and block the calibration procedure.

Calibration Procedure - Step by Step

Before beginning this procedure have these items available:

- New mouthpiece
- Approved calibration standard (ASFST standard software requires a calibration alcohol concentration between .015 - .200)
- Calibration logbook

Note: Depending upon the version of the Alco-Sensor FST, the result may be displayed in two or three digits and the unit of measure may or may not be displayed.

Ready your calibration standard according to its instructions

- A. Attach a new mouthpiece and power the instrument **ON** by first pressing and holding the **OFF** button and then simultaneously pressing **ON** button.
- B. The display should show the **rL** message, which is the first option in the function Menu. Momentarily depress the **ON** button, the displayed message should change to **PAS**, press the **ON** button again, the displayed message should change to **ACC**, press the **ON** button one more time and the next message should be **CAL**. If it is not **CAL** repeat this step until **CAL** appears on the display.
- C. Once **CAL** is displayed, depress the **OFF** button; this will initiate the Calibration sequence.
- D. The temperature will be displayed and if within range then **CAL** (*flashing*) will be displayed on the instrument.
- E. Make an airtight connection between the delivery tube of the regulator **OR** the outlet port of the simulator, and the open end of the mouthpiece. Depress the regulator control button **OR** blow into the inlet port of the simulator. If there is adequate and consistent flow, after several seconds the instrument should capture a sample automatically. Make certain that you continue to provide a sample for at least one or two seconds following the point at which the sample has been captured. (identified by a *clicking* sound)

If for some reason you cannot provide an adequate flow rate for the instrument to collect an automatic sample, it is possible to perform a Calibration by taking a manual sample. To perform a test in this manner:

- F. Present a sample to the instrument for seven seconds. On the 5th second depress the **ON** button to take a sample. The goal is to have gas still flowing through the Alco-Sensor FST mouthpiece when the sample is taken. Release the regulator control button **OR** stop blowing into the inlet port of the simulator on the 7th second.
- G. Detach the mouthpiece from the regulator **OR** the simulator.
- H. The microprocessor will analyze the output from the fuel cell and will report a result.
- I. **If this value equals the current expected value** of the standard then depress the **OFF** Button. You will see that each time you depress the **OFF** Button, the *flashing digit* moves from the left most digit of the number to the right. After depressing the button three times, the value displayed will be accepted as the Calibration Value and will flash three times before the instrument will power down.
- J. If the result **does not** match the expected value or current target value of the standard gas, you will need to adjust the displayed result to the proper value. The result displayed will have the digit furthest to the left flashing. If the flashing digit is incorrect, press and release the **ON** button as many times as it is necessary to cycle the displayed digit to the correct number. When the digit is correct, press the **OFF** button to move the flashing highlight to a digit to the right. After you have adjusted the furthest to the right digit and the **OFF** Button is depressed, the new calibration value will be flashed on the display three times. If you need to adjust this number further, pressing the **OFF** Button again, while the entire calibration number is flashing, will provide you this option by displaying the most recently entered number with the digit furthest to the left flashing. If the calibration value is correct and you have not pressed the **OFF** button a second time, after the third flash the new Calibration value will be accepted.

- K. Cycle the power on the instrument **OFF** and **ON** and perform an Accuracy Check to verify the calibration adjustment.
- L. It is essential to verify the calibration. Use a new mouthpiece and an approved gas standard. **THE RESULT SHOULD BE WITHIN $\pm .003$ OF THE EXPECTED VALUE OF THE STANDARD GAS READING.**
- M. If this Accuracy Check does not produce a result within $\pm .003$ of the standards target value repeat the calibration procedure after waiting several minutes.

Battery Replacement Procedure

The batteries will need to be replaced when the displayed battery icon indicates the battery is out of power. The display shows **BAT** or there is not enough power to power the instrument **ON**.

BAT

To replace the batteries follow these instructions.

Remove the optional rubberized grip (if the ASFST is equipped with this option)
Slide **BATTERY DOOR** open.
Remove both **BATTERIES**.
Insert two new **BATTERIES**.
(Note the + and - labels within the battery compartment to insert the batteries properly)
Close **BATTERY DOOR**.
Replace rubberized grip

Caution

- When changing batteries always replace both batteries and never mix battery types.
- When installing **batteries**, the **proper** polarity, or direction, must be observed. (On both the inside of the case and on the circuit board in the battery compartment there is a guide for proper polarity or direction).
- In addition, some ASFSTs have a battery cover with the proper polarity displayed on the outside of the battery cover. If your ASFST is equipped with this style battery cover you can also use it to verify that the batteries have been installed correctly.
- After replacing the batteries, always power the instrument **ON** to verify proper installation – if the ASFST does not power **ON** immediately remove the batteries and reinstall correctly or replace with a new set.



SECTION VI TROUBLE SHOOTING & TECHNICAL SUPPORT

Trouble Shooting

Aborting a Test

To abort a test, depress the **OFF** button to turn the instrument **OFF**.

E11 - Blank Test is not Successful

Before the subject provides a sample the instrument automatically performs a blank test to ensure that the unit is free of alcohol. If this test does not result in a zero reading the test will display E11. Remove and replace the mouthpiece. Make certain that you are using a new, clean mouthpiece. Wait a few moments before initiating another test. If repeated attempts do not result in a zero reading contact Intoximeters Service Department.

E06 - Insufficient Breath Sample

The standard instrument will allow the subject a preset number of attempts to provide a sample before it will display the status message E06 and power off. (The majority of Alco-Sensor FST software versions are preset to allow the subject three attempts to provide a proper sample).

If the subject has impaired breathing it is possible to take the sample manually with the standard version Alco-Sensor FST. (see also: Manual Sampling, page 10)

Improper Breath Sample

An Improper Breath Sample was detected by the instrument and is indicated by the FLO message flashing several times along with one of the following descriptors: Lo, Hi, InS or Cut. FLO Lo - indicates subject breath flow fell below the instrument's minimum flow requirements; FLO Hi - indicates subject breath flow exceeded maximum allowable flow rate; FLO InS - indicates subject breath flow was not consistent; FLO Cut - indicates subject provided enough sample to capture a sample, but breath flow stopped too abruptly

Low Battery

The battery level indicator is displayed on power up and will give the user an indication of current battery strength. If the battery strength is lower than the instrument's requirement for performing a test BAT will flash on the display and the instrument will power off. Battery replacement is required. (see also: Battery Replacement Procedure, page 22)

Radio Frequency Interference (RFI) Sensor

An RFI sensor is built into some versions of the Alco-Sensor FST. In all versions, the Alco-Sensor FST's casing is designed to provide RFI shielding for the electronics. If an interference signal is detected by the RF sensor, the test will be voided and RFI will be displayed on the Alco-Sensor FST. No result will be available. The test will have to be re-started. The mouthpiece should be removed to turn the unit off, and the source of the RFI located and removed from the testing site before the test is initiated again. Some common sources of RFI include walkie-talkies, cell phones and other radio transmitting sources.

E09 & E10 Temperature of Instrument too high or too low

The instrument temperature is displayed after the mouthpiece has been inserted. If this temperature is below 0°C or above 50°C (the standard Alco-Sensor FST range), the test cannot be initiated. Remove the mouthpiece and place the unit in an environment that will bring it to proper operating temperature. The instrument should come to an acceptable operating temperature within several minutes if placed in a pocket close to the body. (Versions of this instrument can be set up so that they operate outside of the standard temperature range. In these instruments, temperature outside the standard range will flash on the display, but the test will be allowed to proceed.)

ALCO-SENSOR FST

Time Outs

If no breath sample is blown into the instrument, bLo will be displayed for 30 seconds before the test is aborted and the instrument powers down.

If the Alco-Sensor FST is being used in the passive mode, and no test is performed for 120 seconds the instrument will power off.

Status Messages

bln	Indicates that a blank test is in process
OFF	Indicates that the instrument has been turned OFF
bLo	Indicates that the instrument is ready to accept a sample
PAS	In the Maintenance Menu this menu item indicates the Passive Testing Option
nEg	Indicates, during a PASSIVE TEST, that the prior test result was negative
PoS	Indicates, during a PASSIVE TEST, that the prior test was positive
rbL	In the Maintenance Menu this menu item indicates the Screen Test / Road Block Testing Mode
CAL	Menu item indicating the Calibration Mode Option
Bat	Battery power low – Change the battery
FLO Lo	Subject's breath flow fell below the instrument's minimum flow requirements before the minimum volume requirement was met. Subject is given a preset number of attempts to provide an adequate sample before the test is aborted. Instruct the subject to provide a continuous sample with a moderate rate of breath flow.
FLO Hi	Subject's breath flow exceeded maximum allowable flow rate. Subject is given a preset number of attempts to provide an adequate sample before the test is aborted. Instruct the subject to provide a continuous sample with a moderate rate of breath flow.
FLO InS	Subject's breath flow was not consistent. Subject is given a preset number of attempts to provide an adequate sample before the test is aborted. Instruct the subject to provide a continuous sample with a moderate rate of breath flow.
FLO Cut	Subject provided enough breath flow to capture a sample but their breath flow stopped too abruptly. Subject is given a preset number of attempts to provide an adequate sample before the test is aborted. Instruct the subject to provide a continuous sample with a moderate rate of breath flow.
RFI	Instrument detected possible radio frequency interference at the time of the test and aborted the test process.
rcL	Indicates that the result that is being viewed is a recalled test result from the previous sample.
E03	Blank Timeout (> 60 seconds)
E06	Exceeded Sample Attempt Allotment
E07	Bad Calibration (Invalid Sample)
E09	Temp too Cold for Test Type Being Performed
E10	Temp too Hot for Test Type Being Performed

TROUBLE SHOOTING & TECH SUPPORT

E11	Failed Air Blank – Replace mouthpiece with new mouthpiece and begin test again
E12	RFI Detection Error
E21	Invalid Sample
E22	Invalid Calibration Target (target value entered must be between .015 & .200)
E23	Recall Memory Failure
E25	Insufficient drive voltage to reset solenoid
E26	Excess drive voltage after solenoid reset
E27	Insufficient drive voltage to sample
E28	Excess drive voltage after sample
E29	Fuel Cell Out of Range
E30	Pressure Sensor Baseline Out of Range
E31	Result Over Range
E32	Internal Error: Ram, Stack overflow.
E33	Checksum Error
xxx	Random three-digit number displays – you have accessed a pass-coded menu option – Contact your Supervisor.

Frequently Asked Questions

Q: After a fifteen-minute deprivation period does the Alco-Sensor FST respond to anything other than alcohol found in the human breath?

A: *The Alco-Sensor FST responds only to alcohol. It does not respond to acetone or hydrocarbons, which also might be present in the breath.*

Q: What is the life of a fuel cell?

A: *Field use indicates that fuel cells have an average life of 3 - 6 years.*

Factory Support and Repair

Intoximeters service has been organized around one premise: to offer customers convenient and speedy access to information and support for instruments manufactured by Intoximeters.

Intoximeters has representation throughout the United States and in many countries around the world. In order to find the representative most convenient for you, call the St. Louis, Missouri office or our Totnes UK office. You will be provided with a local name and number. Likewise, for product replacement parts and pricing for mouthpieces, protector set, passive sample cup, carrying case, in-service training, etc., a list of technical service locations or general information, the St. Louis office, UK office or your local representative can help you.

Intoximeters, Inc.
8110 Lackland Road
St. Louis, Missouri 63114
(314) 429-4000
800-451-8639
FAX: (314) 429-4170

Intox UK
Alpha Center Unit 6 A-D
Babbage Road
Totnes, Devon UK
TQ9 5JA
44 (0) 1803 868602

Information is also available at: www.intox.com

SECTION N

SFST REVIEW

CONCEPTS AND PRINCIPALS OF THE STANDARDIZED FIELD
SOBRIETY TESTS

STANDARDIZED ELEMENTS

STANDARDIZED ADMINISTRATIVE PROCEDURES

STANDARDIZED CLUES

STANDARDIZED CRITERIA

OVERVIEW: DEVELOPMENT AND VALIDITY

NHTSA RESEARCH BEGAN IN 1975 IN CALIFORNIA WITH THREE FINAL
REPORTS BEING PUBLISHED:

1. California: 1977
2. California: 1981
3. Maryland, Washington D.C., Virginia, North Carolina: 1983

**Detection of D.U.I. Driver
DWI Detection Guide**

Problems Maintaining Proper Lane Position

p = .50 - .75

Weaving
Weaving across lane lines
Straddling a lane line
Swerving
Turning with a wide radius
Drifting
Almost striking a vehicle or other object

Speed and Braking Problems

p = .45 - .70

Stopping problems (too far, or too short)
Accelerating or decelerating for no apparent reason
Varying speed
Slow speed (10 + mph under limit)

Vigilance Problems

p = .55 - .65

Driving in opposing lanes or wrong way on one-way
Slow response to traffic signals
Slow or failure to respond to officer's signals
Stopping in lane for no apparent reason
Driving without headlights at night
Failure to signal or signal inconsistent with action

Judgment Problems

p = .35 - .90

Following too closely
Improper or unsafe lane change
Illegal or improper turn (too fast, jerky, sharp, etc.)
Driving on other than the designated roadway
Stopping inappropriately in response to officer
Inappropriate or unusual behavior (throwing, arguing, etc.)
Appearing to be impaired

Post Stop Cues

$p \geq .85$

Difficulty with motor vehicle controls
Difficulty exiting the vehicle
Fumbling with driver's license or registration
Repeating questions or comments
Swaying, unsteady or balance problems
Leaning on the vehicle or other object
Slurred speech
Slow to respond to officer/officer must repeat
Provides incorrect information, changes answers
Odor of alcoholic beverage from the driver

Motorcycle DWI Detection Guide

Excellent Cues (50% or greater probability)

Drifting during turn or curve
Trouble with dismount
Trouble with balance at a stop
Turning problems (unsteady, sudden corrective, late breaking improper lean angle)
Inattentive to surroundings
Inappropriate to unusual behavior (carrying or dropping object, urinating at roadside, disorderly conduct, etc.)

Good Cues (30 to 50% probability)

Erratic movements while going straight
Operating without lights at night
Recklessness
Following too closely
Running stoplight or sign
Evasion
Wrong way

HORIZONTAL GAZE NYSTAGMUS

*CAUSED BY THE INABILITY OF THE EYES TO MAINTAIN A VISUAL
FIXATION AS THE EYES ARE MOVED TO THE SIDE.*

ADMINISTRATIVE PROCEDURES

1. Eyeglasses/contacts
2. Verbal Instructions
3. Position Object (12-15 Inches)
4. Equal Tracking
5. Pupil Size
6. Check for Lack of Smooth Pursuit
7. Check for Distinct Nystagmus at Maximum Deviation
8. Check for Onset of Nystagmus Prior to 45 Degrees
9. Total the Clues
10. Check for Vertical Nystagmus

Check each eye independently beginning with the suspect's left and compare.

THREE CLUES OF HORIZONTAL GAZE NYSTAGMUS

1. Lack of Smooth Pursuit
2. Distinct Nystagmus of Maximum Deviation
3. Onset of Nystagmus Prior to 45 Degrees

HORIZONTAL GAZE NYSTAGMUS TEST CRITERION

FOUR OR MORE CLUES INDICATES BAC ABOVE 0.08%
(77% RELIABLE)

WALK AND TURN

(DIVIDED ATTENTION TEST-MENTAL TASKS AND PHYSICAL TASKS)

INSTRUCTION STAGE

WALKING STAGE

ADMINISTRATIVE PROCEDURES

1. VERBAL INSTRUCTIONS
 - ASSUME HEEL-TOE STANCE
 - ARMS DOWN AT SIDES
 - DON'T START UNTIL TOLD
2. NINE STEPS, TURN, NINE STEPS
3. TURN PROCEDURES
 - TURN AROUND ON LINE
 - SEVERAL SMALL STEPS
4. WHILE WALKING
 - KEEP WATCHING FEET
 - ARMS DOWN AT SIDES
 - COUNT STEPS OUT LOUD
 - DON'T STOP DURING WALK

WALK AND TURN TEST CLUES

1. CAN'T BALANCE DURING INSTRUCTIONS
2. STARTS TOO SOON
3. STOPS WHILE WALKING
4. DOESN'T TOUCH HEEL TO TOE
5. STEPS OFF LINE
6. USES ARMS TO BALANCE
7. IMPROPER TURN (LOSES BALANCE ON TURN)
8. WRONG NUMBER OF STEPS

Note: If the individual can't do test at all, record as if all four clues were observed.

WALK AND TURN TEST CRITERION

TWO OR MORE CLUES INDICATES BAC ABOVE 0.08%
(68% RELIABILITY)

ONE-LEG STAND

(Divided Attention Test - Mental and Physical task)

Instruction Stage
Balance and Count Stage

ADMINISTRATIVE PROCEDURES

(It is important for the officer to time the 30-second count)

1. **INSTRUCTION STAGE**
STAND STRAIGHT, FEET TOGETHER.
KEEP ARMS AT SIDES
MAINTAIN POSITION UNTIL TOLD OTHERWISE

2. **BALANCE AND COUNTING STAGE**
RAISE ONE LEG, EITHER LEG
KEEP RAISED LEG APPROXIMATELY SIX INCHES OFF
GROUND, FOOT POINTED OUT
KEEP BOTH LEGS STRAIGHT
KEEP EYES ON ELEVATED FOOT
COUNT OUT LOUD FOR 30 SECONDS IN THE FOLLOWING
MANNER: "ONE THOUSAND AND ONE, ONE THOUSAND
TWO, UNTIL TOLD TO STOP"

ONE - LEG STAND TEST CLUES

1. SWAYS WHILE BALANCING
2. USES ARMS TO BALANCE
3. HOPS
4. PUTS FOOT DOWN

Note: If the individual can't do the test at all, record as if all four clues were observed.

ONE - LEG STAND TEST CRITERION

TWO OR MORE CLUES INDICATES BAC ABOVE 0.08%
(65% RELIABILITY)

D.U.I. PROCESSING

PHASE I. VEHICLE IN MOTION

Probable cause or Reasonable suspicion for original stop
Stop sequence

PHASE II. PERSONAL CONTACT

Interview
Pre-exit testing
Exit

PHASE III. PRE-ARREST SCREENING

Horizontal Gaze Nystagmus
Walk and Turn
One leg stand
Preliminary breath test

ARREST, RESTRAIN AND SECURE SUSPECT

SECURE SUSPECTS VEHICLE, PASSENGERS, PROPERTY

TRANSPORT SUSPECT TO PROCESSING LOCATION

ISSUE UNIFORM TRAFFIC CITATION

(Driving under the influence of alcohol 11-501(a)2)

ADMINISTER IMPLIED CONSENT WARNING

(If implied consent applies, offense must have occurred on a highway)

CHEMICAL TEST/REFUSAL

ADDITIONAL DUI CITATIONS (if applicable)

Driving with an alcohol concentration of .08 or greater 11-501(a)1
Driving under the influence of drugs 11-501(a)3
Driving under the combined influence of alcohol and drugs 11-501(a)4
Driving with a controlled substance/cannabis in system 11-501 (a)5

LAW ENFORCEMENT SWORN REPORT (if chemical test refusal or failure)

Confiscate ALL Illinois driver's licenses or permits
Issue receipt to drive

ALCOHOL INFLUENCE REPORT

Miranda Warning
Interview

SECTION O

Legal Aspects

ILLINOIS D.U.I. LAW

Offense Code Index

Driving Under the Influence

11-501(a)

Misdemeanor driving or actual physical control of vehicle in Illinois. \$1000 and current Illinois Driver's License. Persons who do not possess a valid Illinois Driver's License shall post \$3000.

11-501(a) 1

The alcohol concentration in a person's blood or breath is 0.08 or more.

11-501(a) 2

Under the Influence of Alcohol.

11-501(a) 3

Under the influence of Intoxicating Compound or Compounds.

11-501(a) 4

Under the influence of Drug or Drugs.

11-501(a) 5

Under the combined influence of Alcohol, Drugs or Intoxicating compound or compounds.

11-501(a) 6

Any amount of Drugs, Substance or compound in the breath, blood or urine.

11-501(c1), (2) (3)

Penalties for multiple offenders Class 2, 3 and 4 felonies.

11-501(d)

Aggravated Driving under the Influence Class 4 felony.

COURT CITES WHICH HAVE AN IMPACT ON D.U.I. ENFORCEMENT

11-501- - (1) Driving or Physical control of a vehicle:

Defendants erratic driving in swerving from one lane to another and odor of liquor about defendant after he was stopped gave reasonable grounds to believe that the defendant was driving while under the influence of intoxicating alcohol.

People v. Kruger, 99 Ill. App. 2d 431 (1968)

The defendant was stopped based on a tip that he had a gun. He was later arrested for D.U.I. The officer's report did not contain enough information to justify the stop. The officer did not testify at the hearing. The court reversed the suspension based on insufficient information.

People v. Drewes, Ill. App. Ct. 3rd. Dist. (1996)

"For the purposes of a violation of 11-501 this applies on both public and private property"

People v. Guynn, 338 N.E. 2d 239, Ill App. 3rd. Dist. (1975)

"The offense of driving under the influence may be proved not only by personal observation but also by logical inferences from directly observed facts or circumstances."

People v. Schultz, 295 N.E. 2d 115 Ill. App. Ct. 1st. Dist. (1973)

"It is fair inference that when a car is found stopped in the middle lane of a busy thoroughfare, and a person is found asleep or unconscious behind the wheel, sitting in the driver's seat, with no one else present, that the person drove the vehicle to its present location. It would be most unreasonable to assume otherwise."

People v. Schulewitz, 87 Ill. App. 2d. 331 (1967)

"Where the defendant was found alone lying over the steering wheel of his auto, his foot on the brakes, the car in the west-bound lane of the East-West Tollway with its headlights and brake lights on, windshield wipers off, ignition on but motor not running and the auto in gear."

People v. Mundof, 239 N.E. 2d. 690 Ill. App. Ct. 2nd. Dist. (1968)

Defendant found standing by his vehicle after an accident. He admitted he was driving when the accident happened. The court held this was sufficient to find he was in actual physical control of his vehicle when it crashed.

People v. Brummett, Ill. App. Ct. 4th Dist. (1996)

Sleeping it off in a car is no defense to D.U.I. Defendant is found sleeping in his car in an apartment complex, with the motor running. He said that he was sleeping in his car because he had too much to drink. A person need not drive to be in actual physical control of a vehicle. *"It is no defense that the defendant may have intended only to use the vehicle for shelter while achieving sobriety"*

City of Naperville V. Watson 222 Ill. Dec. 421, (1997)

Where defendant was found standing on the roadway with his auto in the ditch, coupled with his voluntary admission that he had been driving the automobile was sufficient.

People v. Jendrzejak, 240 N.E. 2d 239 Ill. App. Ct. 1st Dist. (1968)

"Where defendant was asleep behind wheel on roadway, with engine running."

People v. Johnson 353 N.E. 2d 130 Ill. App. Ct. 1st Dist.

Operation of a bicycle while under the influence of Alcohol, drugs, or a combination of both could probably be convicted of a violation of 11-501.
People v. Corrigan 473 N.E. 2d. 140 Ill. App. Ct. 4th.

Dist. (1985).

An officer who personally lacks probable cause may rely upon an ISPERN message and the subsequent arrest will be lawful if the person initiating the message had probable cause for arrest.

People v. Bascom, 221 Ill. Dec. 629 2nd. Dist. (1997)

"Admission of statement made by defendant to police officer, the night he was arrested for driving under the influence of intoxicating liquor, that he was the owner and driver of automobile, where it was volunteered during a period of general on scene questioning, was not a violation of defendant's right against self-incrimination."

People v. Jendrzejak, 98 Ill. App. 2d 313 (1968).

"Miranda warnings are not required before general on the scene questioning of driver prior to the driver being taken into custody."

People v. Nunes 494 N.E. 2d. 202 Ill. App. Ct. 2nd. Dist. (1986)

An officer's request that a person perform coordination tests need not be preceded by Miranda warning.

People v. Mulack 240 N.E. 2d. 633 Ill. Sp. Ct. (1968)

A defendant motorist's response to a request to recite the alphabet or count does not constitute a testimonial response even if the motorist is in police custody at the time the response is sought.

People v. Bugbee 599 N.E. 2d. 554 Ill. App. Ct. 2nd. Dist. (1990)

The defendant was questioned after arrest about ownership, license, insurance on his motorcycle, for the purpose of towing the vehicle. The court said that the response to these questions was likely to incriminate the defendant and as such require Miranda Warnings.

People v. Pierce, 673 N.E. 2d. 750, 3rd Dist. (1997)

The results of a Horizontal Gaze Nystagmus test when combined with other factors, is acceptable to establish probable cause of driving under the influence of alcohol.

People v. Furness 526 N.E. 2d 947 Ill. App. Ct. 5th Dist. (1988)

The law requires that the charge on the Uniform traffic ticket constitute a complaint (725 ILCS 5/111-3(a)3), and must set forth the nature and elements of the offense. It is important the arresting officer use the proper descriptive words on the ticket. The Illinois Supreme Court ruled that each subsection of 11-501 is a separate offense and as such a citation using the terminology "driving under the influence, 11-501(a), "would not be sufficient for charging the offense."

People v. Ziltz, 455 N.E. 2d 38 Ill. Supreme Ct. (1983)

Defendant involved in personal injury accident. Charged with 12 felony counts of driving under the influence. Defendant argued that he suffered from "post traumatic stress disorder" as a result of involvement in the gulf war. His witnesses claimed that he was compelled to drink to cope with the overwhelming symptoms of his mental disorder. The court held that the statute does not provide for a mental state. The defense cited the "Tolliver" case. The court rejected stating "*the purpose of the statute is to protect the people who walk and drive on the public way. The legislature has determined that drunk drivers are ticking time bombs. This statute attempts to regulate the way people drive. This is not the incomplete title of Tolliver, or the unauthorized salvage certificate of Gean. Titles and salvage certificates do not kill and maim people. Drunk drivers do.*"

People v. Avery, Ill. App. Ct. 1st. Dist. (1995)

Court defined the term "committed" as applied to the statute. The court held that the most significant part of the felony DUI statutes was the use of the word committed rather than convicted. Convicted has a specific meaning withing the statute. "*Since the word committed is not defined by statute, we may assume*

that the legislature intended for the term to possess its ordinary and popular understood meaning, that is commit it '(t)o perpetrate, as a crime; to perform, as an act.' The court further said that just because a person is not adjudicated guilty does not mean they did not commit the offense.

People v. Sheehan, Ill. Sup. Ct. (1995)

The court said that the statutes are ambiguous regarding operation of a bicycle, they were insufficient to criminalize the behavior of a person riding a bicycle while under the influence. "*Due process requires that the proscription of a criminal statute must be clearly defined to apprise a reasonable person of what conduct is criminal.*"

People v. Shaver, Ill. App. 2nd. Dist. (1995)

11-501(a) 2- - - Under the Influence of Alcohol:

"Even though a person can walk straight, attend to business, and not give any outward and visible sign to casual observer of being drunk, a person is intoxicated if he so under the influence of liquor as not to be entirely himself, as to be excited from it, and as not to possess that clearness of intellect and that control of himself that he would otherwise have."

People v. Leiby, 346 Ill. App. 550 (1952)

"Under the Influence of intoxicating liquor means a condition that makes a person less able, either mentally or physically, or both, to exercise clear judgment, and with steady hands and nerves operate an automobile with safety to himself and to the public."

People v. Sullivan, 270 N.E. 2d 571 Ill. App. Ct. 1st. Dist. (1971)

People v. Wheatly, 283 N.E. 2d 279 Ill. App. Ct. 1st. Dist. (1972)

Village of Park Forest v. Angel, 347 N.E. 2d 278 Ill. App. Ct. 1st. Dist. (1976)

Officer observed defendant walking along highway at

2:30am, the officer stopped and exited his vehicle and approached the person on foot. He asked the person if the abandoned vehicle parked along the road belonged to him. The defendant admitted the vehicle belonged to him, and said that he had consumed two beers. The defendant had slurred speech, his face was bloody, and he smelled strongly of alcohol. He was arrested after performing poorly on field sobriety tests. The defense claimed that there was no reason for the officer to stop him. The court ruled that this was not a stop, because the officer was merely engaged in "community care taking" or "public safety" functions by approaching an individual on the street or in a public place.

People v. Crocker, Ill. App. 3rd. Dist. (1994)

" the HGN test is admissible the same as any other evidence of a defendant's behavior, to prove that the defendant is under the influence of alcohol provided a proper foundation has been laid." The court cited *People v. Buening (1992)*, which said that the proper foundation should consist of *"describing the officer's education and experience in administering the test and showing the procedure was properly administered."* The court further held that *"HGN evidence is only to be considered a factor, along with other evidence of the defendant's behavior, in the determination of whether the defendant is under the influence of alcohol."*

People v. Wiebler, Ill. App. Ct. 3rd. Dist. (1994)

625 ILCS 5/11-500 DEFINITIONS

For the purposes of interpreting Sections 6-206.1 and 6-208.1 of this Code, "first offender" shall mean any person who has not had a previous conviction or court assigned supervision for violating Section 11-501, or a similar provision of a local ordinance, or a conviction in any other state for a violation of driving while under the influence of a similar offense where the cause of action is the same or substantially similar to this Code or any person who has not had a driver's license suspension for violating Section 11-501.1 within 5 years prior to the date of the current offense, except in cases where the driver submitted to chemical testing resulting in an alcohol concentration of 0.08 or more, or any amount of drug, substance, or compound in such person's blood or urine resulting

from the unlawful consumption of cannabis listed in the Cannabis Control Act or a controlled substance listed in the Illinois Controlled Substances Act or an intoxicating compound list in the Use of Intoxicating Compounds Act and was not found guilty of violation Section 11-501 or similar provision of local ordinance.

625 ILCS 5/11-500.1 IMMUNITY

(a) A person authorized under this Article to withdraw blood or collect urine shall not be civilly liable for damages when the person, in good faith, withdraws blood or collects urine for evidentiary purposes under this Code, upon the request of a law enforcement officer, unless the act is performed in a willful and wanton manner.

(b) As used in this Section "willful and wanton manner" means a course of action that shows an actual or deliberate intention to cause harm or which, if not intentional, shows an utter indifference to or conscious disregard for the health or safety of another.

CHAPTER 625 ILCS 5/11-501 DRIVING UNDER THE INFLUENCE OF ALCOHOL, OTHER DRUG OR DRUGS INTOXICATING COMPOUND OR COMPOUNDS OR AN COMBINATION THEREOF

- (a) A person shall not drive or be in actual physical control of any vehicle within this state while:
- (1) the alcohol concentration in the person's blood or breath is 0.08 or more based on the definition of blood and breath units in section 11-501.2;
 - (2) under the influence of alcohol;
 - (3) under the influence of any intoxicating compound or combination of intoxicating compounds to a degree that renders such person incapable of driving safely;
 - (4) under the influence of any other drug or combination of drugs to a degree which renders such person incapable of safely driving.
 - (5) under the combined influence of alcohol and any other drug or drugs, or intoxicating compound or compounds to a

degree which renders such person incapable of safely driving;

(6) there is any amount of a drug, substance or compound in such person's breath, blood or urine resulting from the unlawful use or consumption or cannabis listed in the Cannabis Control Act, or a controlled substance listed in the Illinois Controlled Substances Act, or an intoxicating compound listed in the Use of Intoxicating Compounds Act.

(b) The fact that any person charged with violating this section is or has been legally entitled to use alcohol, or drug or other drugs, or intoxicating compound or compounds or any combination of thereof, shall not constitute a defense against any charge of violating this section.

(c) Except as provided under paragraph (c-3) and (d) of this Section, every person convicted of violating this section or a similar provision of a local ordinance shall be guilty of a Class A Misdemeanor and, in addition to any other criminal or administrative action, for any second conviction of violating this Section or a similar provision of a law of another state or local ordinance committed within 5 years of a previous violation of this Section or a similar provision of a local ordinance shall be mandatory sentenced to a minimum of 48 consecutive hours of imprisonment or assigned to a minimum of 100 hours of community service as may be determined by this court. Every person convicted of violating this Section or a similar provision of a local ordinance shall be subject to a mandatory minimum fine of \$500 and a mandatory 5 days of community service in a program benefitting children if the person committed a violation of paragraph (a) or a similar provision of a local ordinance while transporting a person under age 16. Every person convicted a second time for violating this Section or a similar provision of a local ordinance within 5 years of a previous violation of this Section or a similar provision of a law of another state or local ordinance shall be subject to a mandatory minimum fine of \$500 and 10 days of mandatory community service in a program benefitting children

if the current offense was committed while transporting a person under the age of 16. The imprisonment for assignment shall not be subject to suspension nor shall the person be eligible for probation in order to reduce the sentence or assignment.

(c1) A person who violates this Section during a period in which his or her driving privileges are revoked or suspended where the revocation or suspension was for a violation of this section or section 11-501.1, paragraph (b) of Section 11-401, or Section 9-3 of the Criminal Code of 1961 is guilty of a Class 4 felony.

(2) A person who violates this Section a third time during a period in which his or her driving privileges are revoked or suspended where the revocation or suspension was for a violation of this section or section 11-501.1, paragraph (b) of Section 11-401, or Section 9-3 of the Criminal Code of 1961 is guilty of a Class 3 felony.

(3) A person who violated this Section a fourth or subsequent time during a period in which his or her driving privileges are revoked or suspended where the revocation or suspension was for a violation of this section or section 11-501.1, paragraph (b) of Section 9-3 of the Criminal Code of 1961 is guilty of a Class 2 felony.

(c2) Blank

(c3) Every person convicted of violating this section or a similar provision of a local ordinance who had a child under age 16 in the vehicle at the time of the offense shall have his or her punishment under this act enhanced by 2 days of imprisonment for a first offense, 10 days of imprisonment for a second offense, 30 days of imprisonment for a third offense, and 90 days of imprisonment for a fourth or subsequent offense, in addition to the fine and community service required under subsection (c) and the possible imprisonment required under subsection (d). The imprisonment or assignment under this subsection shall not be subject to suspension nor shall the person be eligible for probation in order to reduce the sentence or assignment.

(d1) Every person convicted of committing a violation of this section shall

be guilty of Aggravated Driving Under the Influence of Alcohol, other drug or drugs or intoxicating compound or compounds or any combination thereof:

(A) the person committed a violation of this Section, or a similar provision of law of another state or a local ordinance when the cause of action is the same as or substantially similar to this section, for the third or subsequent time;

(B) the person committed a violation of paragraph (a) while driving a school bus with children on board;

(C) the person in committing a violation of paragraph (a) was involved in a motor vehicle accident that resulted in great bodily harm or permanent disability or disfigurement to another, when the violation was a proximate cause of injuries; or

(D) the person committed a violation of paragraph (a) for a second time and has been previously convicted of violating Section 9-3 of the Criminal Code of 1961 relating to reckless homicide in which the person was determined to have been under the influence of alcohol or any other drug or drugs or intoxicating compounds as an element of the offense or the person has previously been convicted under subparagraph (C) of this paragraph (1).

(2) Aggravated driving under the influence of alcohol drug or drugs or intoxicating compound or compounds or any combination thereof is a Class 4 Felony for which a person, if sentenced to a term imprisonment, shall be sentenced to not less than one year and not more than 3 years for a violation of subparagraph (A), (B), or (D) of paragraph (1) of this subsection (d) and not less than one year and not more than 12 years for a violation of subparagraph (C) of paragraph (1) of this subsection (d)

(e) After a finding of guilt and prior to any final sentencing, or an order for supervision, for an offense based upon an arrest for a violation of this Section or a similar provision of a local ordinance, individuals shall be required to undergo a professional evaluation to determine if an alcohol or other drug or intoxicating compound abuse problem exists and the extent of the problem. Programs conducting

these evaluations shall be licensed by the Department of Alcoholism and Substance Abuse. The cost of any professional evaluation shall be paid for by the individual required to undergo the professional evaluation.

(f) Every person found guilty of violating this Section, whose operation of a motor vehicle while in violation of this Section proximately cause any incident resulting in an appropriate emergency response, shall be liable for the expense of an emergency response as provided under Section 5-5-3 of the Unified Code of Corrections.

(h) Every person sentenced under subsection (d) of this Section and who receives a term of probation or conditional discharge shall be required to serve a minimum term of either 30 days of community service or beginning July 1, 1993, 48 consecutive hours of imprisonment as a condition or the probation or or conditional discharge. This mandatory minimum term of imprisonment or assignment of community service shall not be suspended and shall not be subject to reduction by the court.

(i) The Secretary of State shall establish a pilot program to test the effectiveness of ignition interlock device requirements upon individuals who have been arrested for a second or subsequent offense of this Section. The Secretary shall establish by rule and regulation the population and procedures or use of the Interlock system.

(j) In addition to any other penalties and liabilities, a person found guilty of or pleads guilty to violating this Section, including any person placed on court supervision for violating this Section, shall be fined \$100, payable to the circuit clerk, who shall distribute the money to the law enforcement agency that made the arrest. In the event that more than one agency is responsible for the arrest, th \$100 shall be shared equally. Any moneys received by a law enforcement agency under subsection (j) shall be used to purchase law enforcement equipment that will assist in the prevention of alcohol related criminal violence

throughout the State. This shall include, but is not limited to, in-car video cameras, radar and laser speed detection devices, and alcohol breath testers. Any moneys received by the Department of State Police under this subsection (j) shall be deposited into the State Police DUI Fund and shall be used to purchase law enforcement equipment that will assist in the prevention of alcohol related criminal violence throughout the State.

11-501.1- - - Implied Consent:

"Implied consent applies only to those who drive or are in actual physical control of a vehicle upon a public highway, if the driving was only on private property, implied consent does not apply."

People v. Kissel, 501 N.E. 2d 963 Ill. App. Ct. 2nd. Dist. (1986)

"Municipal parking lot maintained by the municipality constitutes a highway for purposes of this section."

People v. Bailey, 612 N.E. 2d 960 Ill. App. Ct. 1st. Dist. (1993)

"Blood taken against the will of a defendant restrained by leather restraints was not an unreasonable search and seizure and was therefore admissible."

People v. Yant, 570 N.E. 2d 3 Ill. App. Ct. 2nd. Dist. (1991)

"A knowing and intelligent consent to a test does not have to be preceded by a "Miranda" advisement."

People v. Cook, 418 N.E. 2d. 457 Ill. App. Ct. 2nd. Dist. (1981)

"The implied consent statute requires only that the summary suspension warning be given in order for the motorists suspected of drunk driving to have been properly warned. The statute does not require that a motorist understand the consequences of refusing to

take a blood alcohol test before the State may summarily suspend his/her driver's license for failure to take the test."

People v. Wegielnik, 605 N.E. 2d. 487 Ill. Sup. Ct. (1992)

"The statutory requirement that the defendant consent to the taking and analysis of blood, etc. before it is admissible into evidence is absolute."

People v. McHugh, 460 N.E. 2d 18 Ill. App. Ct. 4th. Dist. (1984)

The option of which tests are to be administered rests with the arresting officer.

People v. Kiss, 462 N.E. 2d 546 Ill. App. Ct. 5th. Dist. (1984)

"Refusal to take a second breath test after an instrument malfunctions during the first breath test constitutes a refusal for purposes of this section."

People v. Cofer, 481 N.E. 2d 351 Ill. App. Ct. 3rd. Dist. (1985)

Refusal to take a blood test, requested after three breath tests indicated the presence of a foreign substance in defendant's mouth, constituted a refusal to take a test for implied consent purposes.

People v. Rhoades, 534 N.E. 2d 1346 Ill. App. Ct. (1989)

"Defendants insistence on his non-existent right to consult with counsel constituted a clear refusal to take the test."

People v. Buerkett 559 N.E. 2d 271 Ill. App. Ct. 4th. Dist. (1990)

"Nonverbal conduct following consent can be tantamount to a refusal to undergo testing."

People v. Bates, 518 N.E. 2d 628 Ill. App. Ct. 4th. Dist. (1987)

The court ruled that the combative behavior of the driver did not excuse the officer from giving the implied consent warning. The court said that the officer must at least make an attempt to give the implied consent warning to the driver.

City of Highland Park v. Didenko, Ill. App. Ct. 2nd. Dist (1995)

"The administrative Statutory Summary Suspension of one's privilege to drive, pursuant to the Implied Consent Statute, is not the equivalent of the forfeiture of a fundamental property right or fine and is not punishment for double jeopardy purposes. Rather it is clearly remedial in nature..... The statutory summary suspension of a driver's license which the court may refuse to rescind at an implied-consent hearing, is an administrative function of the Secretary of State designed to protect persons who travel the highways; it is not punishment."

People v. Dvorak, 276 Ill. App. Ct. 3rd. Dist. (1995)

People v. Eck, Ritzel, Short and Baron, Ill. App. Ct. 5th Dist. (1996)

People v. Lopeman, Ill. App. Ct. 3rd. Dist (1996)

No double jeopardy based on administrative suspension.

People v. Fashbinder, Ill. App. Ct. 4th. Dist (1996)

People v. Lavarienga, 2211 Ill. Dec. 840 (1997)

The defendant was given the right to call his attorney, however during the call the officer said that his time was up, the violator hung up the phone and refused to take the test. The court said that once an officer makes an arrest he must follow through. *"Once a person is accorded rights not required by law the revocation of the rights will vitiate the effect of any purported refusal to submit to breathalyzer test."*

People v. Goss, Ill. App. 1st. Dist. (1995)

Notice of suspension, and receipt to drive served by detention officer. Notice served as required by law. The court cited *People v. Steder (1994)*, *"the defendant was not deprived of any substantial right, since he clearly received actual notice of summary suspension and his right to a hearing."*

People v. Lent, Ill. App. Ct. 2nd. Dist. (1995)

Failure of officer to complete the receipt to drive did not warrant rescission of suspension. The court said the defects did not effect the validity of the Notices. The court said that the failure to complete the notice did not deny the motorist their right to drive without a hearing. It ruled that the motorist *"needed only to return to the police station to have the receipt signed."*

People v. Steder, Ill. App. Ct. 2nd. Dist. (1994)

An officer who arrests a defendant for DUI may request multiple tests without any suspicion that the arrestee is under the influence of drugs. The officer is authorized to request defendant to submit to a blood test and a urine test for the purpose of determining the content of alcohol, other drug, or combination of both in the defendant's blood.

People v. Kirk, 225 Ill. Dec. 752 4th Dist. (1997)

The failure of a police agency to designate the test or tests an officer may administer as provided in the implied consent statute does not require rescission of a summary suspension.

People v. Tomlinson, 230 Ill. Dec. 41, 4th Dist. (1998)

"Correct warnings are statutorily mandated. Just as a police officer must be able to rely upon an objective fact of refusal without regard to a suspect's subjective intentions a defendant, and the courts as well, must be able to rely on an objectively accurate and informative warning as required by this code."

People v. Johnson, 2nd Dist. Sept. (2000)

People v. Wierman, 436 N.E. 2d 1081 (Ill. App. Ct., 4th Dist.) (1982)

People v. Jackson, 514 N.E. 2d 983 (Ill. Sup. Ct.) (1987)

People v. Honaker, 469 N.E. 2d 1120 (Ill. App. Ct., 4th. Dist.) (1984)

People v. Frazier, 463 N.E. 2d. 165 (Ill. App. Ct., 4th. Dist.) (1984)

People v. Naseef, 468 N.E. 2d 466 (Ill. App. Ct., 3rd. Dist.) (1984)

625 ILCS 11-501.1
SUSPENSION OF DRIVER'S
LICENSE—STATUTORY SUMMARY
ALCOHOL OR OTHER DRUG OR
DRUGS OR INTOXICATING
COMPOUND OR COMPOUNDS
RELATED SUSPENSION—IMPLIED
CONSENT

(625 ILCS 5/11-501.1) (from Ch. 95 1/2, par. 11-501.1)

Sec. 11-501.1. Suspension of drivers license; statutory summary alcohol, other drug or drugs, or intoxicating compound or compounds related suspension; implied consent.

(a) Any person who drives or is in actual physical control of a motor vehicle upon the public highways of this State shall be deemed to have given consent, subject to the provisions of Section 11-501.2, to a chemical test or tests of blood, breath, or urine for the purpose of determining the content of alcohol, other drug or drugs, or intoxicating compound or compounds or any combination thereof in the person's blood if arrested, as evidenced by the issuance of a Uniform Traffic Ticket, for any offense as defined in Section 11-501 or a similar provision of a local ordinance, or if arrested for violating Section 11-401. The test or tests shall be administered at the direction of the arresting officer. The law enforcement agency employing the officer shall designate which of the aforesaid tests shall be administered. A urine test may be administered even after a blood or breath test or both has been administered. For purposes of this Section, an Illinois law enforcement officer of this State who is investigating the person for any offense defined in Section 11-501 may travel into an adjoining state, where the person has been transported for medical care, to complete an investigation and to request that the person submit to the test or tests set forth in this Section. The requirements of this Section that the person be arrested are inapplicable, but the officer shall issue the person a Uniform Traffic Ticket for an offense

as defined in Section 11-501 or a similar provision of a local ordinance prior to requesting that the person submit to the test or tests. The issuance of the Uniform Traffic Ticket shall not constitute an arrest, but shall be for the purpose of notifying the person that he or she is subject to the provisions of this Section and of the officer's belief of the existence of probable cause to arrest. Upon returning to this State, the officer shall file the Uniform Traffic Ticket with the Circuit Clerk of the county where the offense was committed, and shall seek the issuance of an arrest warrant or a summons for the person.

(b) Any person who is dead, unconscious, or who is otherwise in a condition rendering the person incapable of refusal, shall be deemed not to have withdrawn the consent provided by paragraph (a) of this Section and the test or tests may be administered, subject to the provisions of Section 11-501.2.

(c) A person requested to submit to a test as provided above shall be warned by the law enforcement officer requesting the test that a refusal to submit to the test will result in the statutory summary suspension of the person's privilege to operate a motor vehicle, as provided in Section 6-208.1 of this Code, and will also result in the disqualification of the person's privilege to operate a commercial motor vehicle, as provided in Section 6-514 of this Code, if the person is a CDL holder. The person shall also be warned by the law enforcement officer that if the person submits to the test or tests provided in paragraph (a) of this Section and the alcohol concentration in the person's blood or breath is 0.08 or greater, or any amount of a drug, substance, or compound resulting from the unlawful use or consumption of cannabis as covered by the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, an intoxicating compound listed in the Use of Intoxicating Compounds Act, or methamphetamine as listed in the Methamphetamine Control and Community Protection Act is detected in the person's blood or urine, a statutory summary suspension of the person's privilege to operate a motor vehicle, as provided in Sections 6-208.1 and 11-501.1 of this Code, and a disqualification of the person's privilege to operate a commercial motor vehicle, as provided in Section 6-514 of this Code, if the person is a CDL holder, will be imposed.

A person who is under the age of 21 at the time the person is requested to submit to a test as provided above shall, in addition to the warnings provided for in this Section, be further warned by the law enforcement officer requesting the test that if the person submits to the test or tests provided in paragraph (a) of this Section and the alcohol concentration in the person's blood or breath is greater than 0.00 and less than 0.08, a suspension of the person's privilege to operate a motor vehicle, as provided under Sections 6-208.2 and 11-

501.8 of this Code, will be imposed. The results of this test shall be admissible in a civil or criminal action or proceeding arising from an arrest for an offense as defined in Section 11-501 of this Code or a similar provision of a local ordinance or pursuant to Section 11-501.4 in prosecutions for reckless homicide brought under the Criminal Code of 1961. These test results, however, shall be admissible only in actions or proceedings directly related to the incident upon which the test request was made.

(d) If the person refuses testing or submits to a test that discloses an alcohol concentration of 0.08 or more, or any amount of a drug, substance, or intoxicating compound in the person's breath, blood, or urine resulting from the unlawful use or consumption of cannabis listed in the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, an intoxicating compound listed in the Use of Intoxicating Compounds Act, or methamphetamine as listed in the Methamphetamine Control and Community Protection Act, the law enforcement officer shall immediately submit a sworn report to the circuit court of venue and the Secretary of State, certifying that the test or tests was or were requested under paragraph (a) and the person refused to submit to a test, or tests, or submitted to testing that disclosed an alcohol concentration of 0.08 or more.

(e) Upon receipt of the sworn report of a law enforcement officer submitted under paragraph (d), the Secretary of State shall enter the statutory summary suspension and disqualification for the periods specified in Sections 6-208.1 and 6-514, respectively, and effective as provided in paragraph (g).

If the person is a first offender as defined in Section 11-500 of this Code, and is not convicted of a violation of Section 11-501 of this Code or a similar provision of a local ordinance, then reports received by the Secretary of State under this Section shall, except during the actual time the Statutory Summary Suspension is in effect, be privileged information and for use only by the courts, police officers, prosecuting authorities or the Secretary of State. However, beginning January 1, 2008, if the person is a CDL holder, the statutory summary suspension shall also be made available to the driver licensing administrator of any other state, the U.S. Department of Transportation, and the affected driver or motor carrier or prospective motor carrier upon request. Reports received by the Secretary of State under this Section shall also be made available to the parent or guardian of a person under the age of 18 years that holds an instruction permit or a graduated driver's license, regardless of whether the statutory summary

suspension is in effect.

(f) The law enforcement officer submitting the sworn report under paragraph (d) shall serve immediate notice of the statutory summary suspension on the person and the suspension and disqualification shall be effective as provided in paragraph (g). In cases where the blood alcohol concentration of 0.08 or greater or any amount of a drug, substance, or compound resulting from the unlawful use or consumption of cannabis as covered by the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, an intoxicating compound listed in the Use of Intoxicating Compounds Act, or methamphetamine as listed in the Methamphetamine Control and Community Protection Act is established by a subsequent analysis of blood or urine collected at the time of arrest, the arresting officer or arresting agency shall give notice as provided in this Section or by deposit in the United States mail of the notice in an envelope with postage prepaid and addressed to the person at his address as shown on the Uniform Traffic Ticket and the statutory summary suspension and disqualification shall begin as provided in paragraph (g). The officer shall confiscate any Illinois driver's license or permit on the person at the time of arrest. If the person has a valid driver's license or permit, the officer shall issue the person a receipt, in a form prescribed by the Secretary of State, that will allow that person to drive during the periods provided for in paragraph (g). The officer shall immediately forward the driver's license or permit to the circuit court of venue along with the sworn report provided for in paragraph (d).

(g) The statutory summary suspension and disqualification referred to in this Section shall take effect on the 46th day following the date the notice of the statutory summary suspension was given to the person.

(h) The following procedure shall apply whenever a person is arrested for any offense as defined in Section 11-501 or a similar provision of a local ordinance:

Upon receipt of the sworn report from the law enforcement officer, the Secretary of State shall confirm the statutory summary suspension by mailing a notice of the effective date of the suspension to the person and the court of venue. The Secretary of State shall also mail notice of the effective date of the disqualification to the person. However, should the sworn report be defective by not containing sufficient information or be completed in error, the confirmation of the statutory summary suspension shall not be mailed to the person or entered to the record; instead, the sworn report shall be forwarded to the court of venue with a copy returned to the issuing agency identifying any defect.

(Source: P.A. 94-115, eff. 1-1-06; 95-201, eff. 1-1-08; 95-382, eff. 8-23-07; 95-876, eff. 8-21-08.)

6-206.1 - Monitoring Device Driving Permit

(625 ILCS 5/6-206.1) (from Ch. 95 1/2, par. 6-206.1)

Sec. 6-206.1. Monitoring Device Driving Permit. Declaration of Policy. It is hereby declared a policy of the State of Illinois that the driver who is impaired by alcohol, other drug or drugs, or intoxicating compound or compounds is a threat to the public safety and welfare. Therefore, to provide a deterrent to such practice, a statutory summary driver's license suspension is appropriate. It is also recognized that driving is a privilege and therefore, that the granting of driving privileges, in a manner consistent with public safety, is warranted during the period of suspension in the form of a monitoring device driving permit. A person who drives and fails to comply with the requirements of the monitoring device driving permit commits a violation of Section 6-303 of this Code.

The following procedures shall apply whenever a first offender is arrested for any offense as defined in Section 11-501 or a similar provision of a local ordinance:

(a) Subsequent to a notification of a statutory summary suspension of driving privileges as provided in Section 11-501.1, the court, after informing the first offender, as defined in Section 11-500, of his or her right to a monitoring device driving permit, hereinafter referred to as a MDDP, and of the obligations of the MDDP, shall enter an order directing the Secretary of State (hereinafter referred to as the Secretary) to issue a MDDP to the offender, unless the offender has opted, in writing, not to have a MDDP issued. After opting out of having a MDDP issued, at any time during the summary suspension, the offender may petition the court for an order directing the Secretary to issue a MDDP. However, the court shall not enter the order directing the Secretary to issue the MDDP, in any instance, if the court finds:

- (1) The offender's driver's license is otherwise invalid;
- (2) Death or great bodily harm resulted from the arrest for Section 11-501;
- (3) That the offender has been previously convicted of reckless homicide or aggravated driving under the influence involving death; or

(4) That the offender is less than 18 years of age.

Any court order for a MDDP shall order the person to pay

the Secretary a MDDP Administration Fee in an amount not to exceed \$30 per month, to be deposited into the Monitoring Device Driving Permit Administration Fee Fund. The Secretary shall establish by rule the amount and the procedures, terms, and conditions relating to these fees. The order shall further specify that the offender must have an ignition interlock device installed within 14 days of the date the Secretary issues the MDDP. The ignition interlock device provider must notify the Secretary, in a manner and form prescribed by the Secretary, of the installation. If the Secretary does not receive notice of installation, the Secretary shall cancel the MDDP.

A MDDP shall not become effective prior to the 31st day of the original statutory summary suspension.

(a-1) A person issued a MDDP may drive for any purpose and at any time, subject to the rules adopted by the Secretary under subsection (g). The person must, at his or her own expense, drive only vehicles equipped with an ignition interlock device as defined in Section 1-129.1, but in no event shall such person drive a commercial motor vehicle.

(a-2) Persons who are issued a MDDP and must drive employer-owned vehicles in the course of their employment duties may seek permission to drive an employer-owned vehicle that does not have an ignition interlock device. The employer shall provide to the Secretary a form, as prescribed by the Secretary, completed by the employer verifying that the employee must drive an employer-owned vehicle in the course of employment. If approved by the Secretary, the form must be in the driver's possession while operating an employer-owner vehicle not equipped with an ignition interlock device. No person may use this exemption to drive a school bus, school vehicle, or a vehicle designed to transport more than 15 passengers. No person may use this exemption to drive an employer-owned motor vehicle that is owned by an entity that is wholly or partially owned by the person holding the MDDP, or by a family member of the person holding the MDDP. No person may use this exemption to drive an employer-owned vehicle that is made available to the employee for personal use. No person may drive the exempted vehicle more than 12 hours per day, 6 days per week.

(b) (Blank).

(c) (Blank).

(c-1) If the holder of the MDDP is convicted of or receives court supervision for a violation of Section 6-206.2, 6-303, 11-204, 11-204.1, 11-401, 11-501,

11-503, 11-506 or a similar provision of a local ordinance or a similar out-of-state offense or is convicted of or receives court supervision for any offense for which alcohol or drugs is an element of the offense and in which a motor vehicle was involved (for an arrest other than the one for which the MDDP is issued), or de-installs the BAIID without prior authorization from the Secretary, the MDDP shall be cancelled.

(c-5) If the court determines that the person seeking the MDDP is indigent, the court shall provide the person with a written document, in a form prescribed by the Secretary, as evidence of that determination, and the person shall provide that written document to an ignition interlock device provider. The provider shall install an ignition interlock device on that person's vehicle without charge to the person, and seek reimbursement from the Indigent BAIID Fund. If the court has deemed an offender indigent, the BAIID provider shall also provide the normal monthly monitoring services and the de-installation without charge to the offender and seek reimbursement from the Indigent BAIID Fund. Any other monetary charges, such as a lockout fee or reset fee, shall be the responsibility of the MDDP holder. A BAIID provider may not seek a security deposit from the Indigent BAIID Fund. The court shall also forward a copy of the indigent determination to the Secretary, in a manner and form as prescribed by the Secretary.

(d) The Secretary shall, upon receiving a court order, issue a MDDP to a person who applies for a MDDP under this Section. Such court order shall contain the name, driver's license number, and legal address of the applicant. This information shall be available only to the courts, police officers, and the Secretary, except during the actual period the MDDP is valid, during which time it shall be a public record. The Secretary shall design and furnish to the courts an official court order form to be used by the courts when directing the Secretary to issue a MDDP.

Any submitted court order that contains insufficient data or fails to comply with this Code shall not be utilized for MDDP issuance or entered to the driver record but shall be returned to the issuing court indicating why the MDDP cannot be so entered. A notice of this action shall also be sent to the MDDP applicant by the Secretary.

(e) (Blank).

(f) (Blank).

(g) The Secretary shall adopt rules for implementing this Section. The rules adopted shall

address issues including, but not limited to: compliance with the requirements of the MDDP; methods for determining compliance with those requirements; the consequences of noncompliance with those requirements; what constitutes a violation of the MDDP; and the duties of a person or entity that supplies the ignition interlock device.

(h) The rules adopted under subsection (g) shall provide, at a minimum, that the person is not in compliance with the requirements of the MDDP if he or she:

(1) tampers or attempts to tamper with or circumvent the proper operation of the ignition interlock device;

(2) provides valid breath samples that register blood alcohol levels in excess of the number of times allowed under the rules;

(3) fails to provide evidence sufficient to satisfy the Secretary that the ignition interlock device has been installed in the designated vehicle or vehicles; or

(4) fails to follow any other applicable rules adopted by the Secretary.

(i) Any person or entity that supplies an ignition interlock device as provided under this Section shall, in addition to supplying only those devices which fully comply with all the rules adopted under subsection (g), provide the Secretary, within 7 days of inspection, all monitoring reports of each person who has had an ignition interlock device installed. These reports shall be furnished in a manner or form as prescribed by the Secretary.

(j) Upon making a determination that a violation of the requirements of the MDDP has occurred, the Secretary shall extend the summary suspension period for an additional 3 months beyond the originally imposed summary suspension period, during which time the person shall only be allowed to drive vehicles equipped with an ignition interlock device; provided further there are no limitations on the total number of times the summary suspension may be extended. The Secretary may, however, limit the number of extensions imposed for violations occurring during any one monitoring period, as set forth by rule. Any person whose summary suspension is extended pursuant to this Section shall have the right to contest the extension through a hearing with the Secretary, pursuant to Section 2-118 of this Code. If the summary suspension has already terminated prior to the Secretary receiving the monitoring report that shows a violation, the Secretary shall be authorized to suspend the person's

driving privileges for 3 months, provided that the Secretary may, by rule, limit the number of suspensions to be entered pursuant to this paragraph for violations occurring during any one monitoring period. Any person whose license is suspended pursuant to this paragraph, after the summary suspension had already terminated, shall have the right to contest the suspension through a hearing with the Secretary, pursuant to Section 2-118 of this Code. The only permit the person shall be eligible for during this new suspension period is a MDDP.

(k) A person who has had his or her summary suspension extended for the third time, or has any combination of 3 extensions and new suspensions, entered as a result of a violation that occurred while holding the MDDP, so long as the extensions and new suspensions relate to the same summary suspension, shall have his or her vehicle impounded for a period of 30 days, at the person's own expense. A person who has his or her summary suspension extended for the fourth time, or has any combination of 4 extensions and new suspensions, entered as a result of a violation that occurred while holding the MDDP, so long as the extensions and new suspensions relate to the same summary suspension, shall have his or her vehicle subject to seizure and forfeiture. The Secretary shall notify the prosecuting authority of any third or fourth extensions or new suspension entered as a result of a violation that occurred while the person held a MDDP. Upon receipt of the notification, the prosecuting authority shall impound or forfeit the vehicle.

(l) A person whose driving privileges have been suspended under Section 11-501.1 of this Code and who had a MDDP that was cancelled, or would have been cancelled had notification of a violation been received prior to expiration of the MDDP, pursuant to subsection (c-1) of this Section, shall not be eligible for reinstatement when the summary suspension is scheduled to terminate. Instead, the person's driving privileges shall be suspended for a period of not less than twice the original summary suspension period, or for the length of any extensions entered under subsection (j), whichever is longer. During the period of suspension, the person shall be eligible only to apply for a restricted driving permit. If a restricted driving permit is granted, the offender may only operate vehicles equipped with a BAID in accordance with this Section.

(m) Any person or entity that supplies an ignition interlock device under this Section shall, for each ignition interlock device installed, pay 5% of the total gross revenue received for the device, including monthly monitoring fees, into the Indigent BAID Fund. This 5% shall be clearly indicated as a separate surcharge on each invoice that is issued. The Secretary shall conduct an annual review of the fund to determine whether the surcharge is sufficient to provide for indigent users. The Secretary may increase or decrease this surcharge requirement as needed.

(n) Any person or entity that supplies an ignition interlock device under this Section that is requested to provide an ignition interlock device to a person who presents written documentation of indigency from the court, as provided in subsection (c-5) of this Section, shall install the device on the person's vehicle without charge to the person and shall seek reimbursement from the Indigent BAID Fund.

(o) The Indigent BAID Fund is created as a special fund in the State treasury. The Secretary shall, subject to appropriation by the General Assembly, use all money in the Indigent BAID Fund to reimburse ignition interlock device providers who have installed devices in vehicles of indigent persons pursuant to court orders issued under this Section. The Secretary shall make payments to such providers every 3 months. If the amount of money in the fund at the time payments are made is not sufficient to pay all requests for reimbursement submitted during that 3 month period, the Secretary shall make payments on a pro-rata basis, and those payments shall be considered payment in full for the requests submitted.

(p) The Monitoring Device Driving Permit Administration Fee Fund is created as a special fund in the State treasury. The Secretary shall, subject to appropriation by the General Assembly, use the money paid into this fund to offset its administrative costs for administering MDDPs.

(Source: P.A. 95-400, eff. 1-1-09; 95-578, eff. 1-1-09; 95-855, eff. 1-1-09; 95-876, eff. 8-21-08; 96-184, eff. 8-10-09.)

6-208.1 - Period of statutory summary alcohol, other drug, or intoxicating compound related suspension

(625 ILCS 5/6-208.1) (from Ch. 95 ½, par.

6-208.1)

Sec. 6-208.1. Period of statutory summary alcohol, other drug, or intoxicating compound related suspension.

(a) Unless the statutory summary suspension has been rescinded, any person whose privilege to drive a motor vehicle on the public highways has been summarily suspended, pursuant to Section 11-501.1, shall not be eligible for restoration of the privilege until the expiration of:

1. Twelve months from the effective date of the statutory summary suspension for a refusal or failure to complete a test or tests to determine the alcohol, drug, or intoxicating compound concentration, pursuant to Section 11-501.1; or </DIV"
2. Six months from the effective date of the statutory summary suspension imposed following the person's submission to a chemical test which disclosed an alcohol concentration of 0.08 or more, or any amount of a drug, substance, or intoxicating compound in such person's breath, blood, or urine resulting from the unlawful use or consumption of cannabis listed in the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, an intoxicating compound listed in the Use of Intoxicating Compounds Act, or methamphetamine as listed in the Methamphetamine Control and Community Protection Act, pursuant to Section 11-501.1; or </DIV"
3. Three years from the effective date of the statutory summary suspension for any person other than a first offender who refuses or fails to complete a test or tests to determine the alcohol, drug, or intoxicating compound concentration pursuant to Section 11-501.1; or </DIV"
4. One year from the effective date of the summary suspension imposed for any person other than a first offender following submission to a chemical test which

disclosed an alcohol concentration of 0.08 or more pursuant to Section 11-501.1 or any amount of a drug, substance or compound in such person's blood or urine resulting from the unlawful use or consumption of cannabis listed in the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, an intoxicating compound listed in the Use of Intoxicating Compounds Act, or methamphetamine as listed in the Methamphetamine Control and Community Protection Act.</DIV"

(b) Following a statutory summary suspension of the privilege to drive a motor vehicle under Section 11-501.1, driving privileges shall be restored unless the person is otherwise suspended, revoked, or cancelled by this Code. If the court has reason to believe that the person's driving privilege should not be restored, the court shall notify the Secretary of State prior to the expiration of the statutory summary suspension so appropriate action may be taken pursuant to this Code.

(c) Driving privileges may not be restored until all applicable reinstatement fees, as provided by this Code, have been paid to the Secretary of State and the appropriate entry made to the driver's record.

(d) Where a driving privilege has been summarily suspended under Section 11-501.1 and the person is subsequently convicted of violating Section 11-501, or a similar provision of a local ordinance, for the same incident, any period served on statutory summary suspension shall be credited toward the minimum period of revocation of driving privileges imposed pursuant to Section 6-205.

(e) Following a statutory summary suspension of driving privileges pursuant to Section 11-501.1, for a first offender, the circuit court shall, unless the offender has opted in writing not to have a monitoring device driving permit issued, order the Secretary of State to issue a monitoring device driving permit as provided in Section 6-206.1. A monitoring device driving permit shall not be effective prior to the 31st day of the statutory summary suspension.

(f) (Blank).

(g) Following a statutory summary suspension of driving privileges pursuant to Section 11-501.1 where the person was not a first offender, as defined in Section 11-500, the Secretary of State may not issue a restricted driving permit.

(h) (Blank).

(Source: P.A. 95-355, eff. 1-1-08; 95-400, eff. 1-1-09; 95-876, eff. 8-21-08.)

11-501.2 - Chemical and Other Tests:

SCHMERBER V. CALIFORNIA, 384 U.S. 757, (1966)

After drinking in two different establishments, the defendant was involved in an automobile collision when his vehicle crashed into a tree. The defendant was taken to a hospital and arrested while receiving treatment. A physician removed a sample of blood from the defendant upon the direction of a police officer. Although the defendant objected, on the advise of counsel, to submission to the test, the blood sample was taken and later admitted into evidence at trial for driving under the influence of intoxicating liquor.

The ruling in this case may be summarized into three major considerations:

- (1). Chemical tests for intoxication do not violate constitutional prohibitions against unreasonable searches and seizures if the test accompanies a valid arrest.
- (2). The administration of chemical tests to persons reasonably suspected of driving while intoxicated is not so shocking and unreasonable as to violate constitutional guarantees of due process.
- (3). The privilege against self-incrimination is not violated by chemical blood test.

The court commented: "We begin with the assumption that once the privilege against self-incrimination has been found not to bar compelled intrusions into the body for blood to be analyzed for alcohol content, the Fourth Amendment's proper function is to constrain, not against all intrusions as such, but against intrusions which are not justified in the circumstances, or

which are made in an improper manner. In other words, the questions we must decide in this case are whether the police are justified in requiring petitioner to submit to the blood test, and whether the means and procedures employed in taking his blood respected relevant Fourth Amendment standards of reasonableness."

"Use of hospital blood is allowed."
People v. Kotecki, Ill. App. Ct. 2nd. Dist. (1996)

Improper search warrant procedure by which state initially obtained defendant's medical records from hospital did not taint blood alcohol evidence later acquired through subpoena Duces Tecum.
People v. Wilber, Ill. App. 4th. Dist. (1996)

"The person taking the sample and/or doing the analysis has not been issued a permit by the department, or the sample is not taken of the analysis is not done according to the Standards promulgated by the Department, the results may not be used as evidence."
People v. Murphy, 464 N.E. 2d 695 Ill. App. Ct. 3rd. Dist. (1984)

Failure to comply with section 11-501.2 and the regulations promulgated there under renders the results of chemical tests inadmissible in a criminal D.U.I. prosecution.
People v. Emrich, 498 N.E. 2d 1140 Ill. Sup. Ct. (1986)

The same standard in "Emrich" applies to admissibility of tests results at a statutory summary suspension hearing. People v. Hamilton, 514 N.E. 2d 965, Ill. Sup. Ct. (1987)

Failure to comply with the Department of Public Health standard of a 20-minute period of continuous observation of the defendant prior administering the breath test, rendered the results of the test inadmissible.

People v. Haney, 507 N.E. 2d 230 Ill. App. Ct. 4th. Dist. (1987)

Foundation requirements for chemical test evidence:

- (1). Evidence that the tests were performed according to the uniform standard adopted by the Illinois Dept. of Public Health.
 - (2). Evidence that the operator administering the tests was certified by the Department of Public Health.
 - (3). Evidence that the machine used was a model approved by the Department of Health, was tested regularly for accuracy, and was working properly.
 - (4). Evidence that the motorist was observed for the requisite 20 minutes prior to the test and during this period, they did not smoke, regurgitate, or drink and
 - (5). Evidence that the results stated can be identified as belonging to the defendant.
- People v. Orth, 124 Ill. 2d 341, 530 N.E. 2d (1988)

Blood samples must be delivered directly to a laboratory certified by the department. Blood samples held for 18 days at police department and then delivered to laboratory. The sample did not undergo testing for another 8 days. The court ruled that the blood samples need not be rushed to the laboratory. "*Directly seems mostly concerned with the chain of custody and integrity of the evidence, not how quickly the blood is analyzed.*" The rule was adopted "*to help insure the samples were safely delivered and properly identified and not*

because the samples needed to be tested within a certain time frame."

People v. Jennings, Ill. App. Ct. 2nd. Dist. (Dec. 1998)

The court addressed the defendant's argument that the trial court erred in admitting the blood test results because the state failed to establish a proper foundation and establish a chain of custody. The applicable statute for chemical tests of blood in DUI cases provides that the results of blood tests taken at a hospital emergency room pursuant to treatment are admissible under the business records exception to the hearsay rule when the test was ordered in the regular course of providing emergency medical treatment and not at the request of law enforcement, and the test was performed by a laboratory routinely used by the hospital. The court held that by complying with the statute, the state demonstrated that reasonably protective measures have been taken to ensure the blood was not changed or substituted. Here, the court found the state complied with the requirements of the statute. "*We find that compliance with the statute is sufficient in and of itself to establish the admissibility of blood tests, and additional chain of custody evidence is not required.*"

People v. Lach, Ill. App. Ct. Dec24 (1998)

"Not quite perfect speech" alcohol odor, red eyes, failures to attempt to stop to avoid an accident, apparent attempt to conceal alcohol odor, and voluntarily going to the hospital, though not in need of treatment, provided probable cause of D.U.I. Citing *Schmerber v. California* (1966) the appellate court first observed that as a "constitutional matter" involuntary blood tests are admissible when as here there is probable cause, the evidence is evanescent [i.e. fading away or disappearing; alcohol in the blood will disappear rapidly], and the test is performed by medical personnel in a reasonable and medically

acceptable manner. The court held that in 11-501.2(c)(2), the legislature provided that a driver is required to submit to a test of his blood upon request of an officer if the officer has probable cause to believe a vehicle driven by him while under the influence of alcohol has caused an accident resulting in death or a type A injury to another. The court noted that 11-501.2(c)(2) explicitly provides that it shall apply "notwithstanding any ability to refuse under this Code to submit" to blood tests. Though a driver may refuse to submit under other sections, he may not refuse to submit under other sections, he may not refuse under this section. Where there is probable cause that a DUI driver has caused a Type A injury or death accident, he may be compelled to submit.

People v. Ruppel, 237 Ill. Dec. 21 4th. Dist. (1999)

People v. Ardella, 276 N.E. 2d 302 (Ill. Sup. Ct.) (1971) (**Videotaping**)

People v. Killian, 356 N.E. 2d 423 (Ill. App. Ct. 4th. Dist.) (1976)

South Dakota v. Nevelle, 459 U.S. 553 (U.S.S. Ct.) (1983)

People v. Rolfinsmeyer, 461 N.E. 2d 410 (Ill. Sup. Ct.) (1984)

People v. Pezzette, 444 N.E. 2d (Ill. App. Ct. 2nd. Dist.) (1983)

Cuellar v. Hout, 522 N.E. 2d 322 (Ill. App. Ct. 2nd. Dist.) (1988)

**625 ILCS 5/11-501.2
CHEMICAL AND OTHER TESTS**

(a). Upon the trial of any civil or criminal action or proceeding arising out of an arrest for an offense as defined in Section 11-501 or a similar local ordinance or proceedings pursuant to section 2-118.1, evidence of the concentration

of alcohol, other drug or drugs or intoxicating compound or compounds or any combination thereof in a person's blood or breath at the time alleged, as determined by analysis of the person's blood, urine, breath, or other bodily substance, shall be admissible. Where such test is made the following provisions shall apply:

(1). Chemical analysis of the person's blood, urine, breath or other bodily substance to be considered valid under the provisions of this section shall have been performed according to standards promulgated by the Department of State Police by a licensed physician, registered nurse, trained phlebotomist acting under the direction of a licensed physician, certified paramedic, or other individual possessing a valid permit issued by the department for this purpose. The Director of the Department of State Police is authorized to approve satisfactory techniques or methods, to ascertain the qualifications and competence of individuals to conduct such analyses, to issue permits which shall be subject to termination or revocation at the discretion of that department and to certify the accuracy of breath testing equipment. The Department of State Police shall prescribe regulations as necessary to implement this Section.

(2). When a person in this State shall submit to a blood test at the request of a law enforcement officer under provisions of Section 11-501.1, only a physician authorized to practice medicine, a registered nurse, trained phlebotomist, or certified paramedic, or other qualified person approved by the Department of State Police may withdraw blood for the purpose of determining the alcohol, drug, or alcohol and drug content therein. This limitation shall not apply to the taking of breath or urine specimens. When a blood test of a person who has been taken to an adjoining state for medical treatment is requested by an Illinois law enforcement officer, the blood may be withdrawn only by a

physician authorized to practice medicine in the adjoining state, a registered nurse, trained phlebotomist acting under the direction of the physician, or certified paramedic. The law enforcement officer requesting the test shall take custody of the blood sample, and the blood sample shall be analyzed by a laboratory certified by the Department of State Police for the purpose.

(3). The person tested may have a physician, or a qualified technician, chemist, registered nurse, or other qualified person of their own choosing administer a chemical test or tests in addition to any administered at the direction of a law enforcement officer. The failure or inability to obtain an additional test by a person shall not preclude the admission of evidence relating to the test or tests taken at the direction of a law enforcement officer.

(4). Upon the request of the person who shall submit to a chemical test or tests at the request of a law enforcement officer, full information concerning the test or tests shall be made available to the person or such person's attorney.

(5). Alcohol concentration shall mean either grams of alcohol per 100 milliliters of blood or grams of alcohol per 210 liters of breath.

(b). Upon the trial of any civil or criminal action or proceeding arising out of acts alleged to have been committed by any person while driving or in actual physical control of a vehicle while under the influence of alcohol, the concentration of alcohol in the person's blood or breath at the time alleged as shown by analysis of the person's blood, urine, breath, or other bodily substance shall give rise to the following presumptions:

(1). If there was at that time an alcohol concentration of 0.05 or less, it shall be presumed that the person was not under the influence of alcohol.

(2). If there was at that time an alcohol concentration in excess of 0.05 but less than 0.08, such facts shall not give rise to any presumption that the person was or was not under the influence of alcohol, but such fact may be considered with other competent evidence in determining whether the person was under the influence of alcohol.

(3). If there was at that time an alcohol concentration of 0.08 or more, it shall be presumed that the person was under the influence of alcohol.

(4). The foregoing provisions of this section shall not be construed a limiting the introduction of any other relevant evidence bearing upon the question whether the person was under the influence of alcohol.

(c).(1). If a person under arrest refuses to submit to a chemical test under the provisions of Section 11-501.1, evidence of refusal shall be admissible in any civil or criminal action or proceeding arising out of acts alleged to have been committed while the person under the influence of alcohol, drug or drugs, or intoxicating compound or compounds or any combination thereof was driving or in actual physical control of a motor vehicle.

(2). Notwithstanding any ability to refuse under this Code to submit to these tests or any ability to revoke the implied consent to these tests, if a law enforcement officer has probable cause to believe that a motor vehicle driven by or in actual physical control of a person under the influence of alcohol, drug or drugs, or intoxicating compound or compounds or any combination thereof, has caused the death of personal injury to another,

that person shall submit, upon the request of a law enforcement officer, to a chemical test or tests of his or her blood, breath, or urine, for the purpose of determining the alcohol content thereof of the presence of any other drug or combination of both.

This provision does not affect the applicability of or imposition of driver's license sanctions under 11-501.0 of this Code.

(3). For purposes of this section personal injury includes any Type A injury as indicated on the traffic accident report completed by a law enforcement officer that requires immediate professional attention in either a doctor's office or a medical facility. A Type A injury includes severe bleeding wounds, distorted extremities and injuries that require the injured party to be carried from the scene.

11-501.4 - - - ADMISSIBILITY OF CHEMICAL TESTS OF BLOOD CONDUCTED IN THE REGULAR COURSE OF PROVIDING EMERGENCY MEDICAL TREATMENT:

People v. Reardon, 570 N.E. 2d 791 (Ill. App. Ct. 3rd. Dist.) (1991)

People v. Lendabarker, 575 N.E. 2d 568 (Ill. App. Ct. 2nd. Dist.) (1991)

**625 ILCS 5/11-501.4
ADMISSIBILITY OF CHEMICAL TESTS OF BLOOD CONDUCTED IN THE REGULAR COURSE OF PROVIDING EMERGENCY MEDICAL TREATMENT**

(a). Notwithstanding any other provisions of law, the results of blood tests performed for the purpose of determining the content of alcohol, drug or drugs, or

intoxicating compound or compounds or any combination thereof, of an individual's blood conducted upon persons receiving medical treatment in a hospital emergency room are admissible in evidence as a business record exception to the hearsay rule only in prosecutions for any violation of Section 11-501 of this code or a similar provision of a local ordinance, or in prosecutions for reckless homicide brought under the Criminal Code of 1961, when each of the following criteria are met:

(1). The chemical tests performed upon an individuals's blood were ordered in regular course of providing emergency medical treatment and not at the request of law enforcement authorities.

(2). The chemical tests performed upon an individual's blood were performed by the laboratory routinely used by the hospital; and,

(3). Results of chemical tests performed upon an individual's blood are admissible into evidence regardless of the time the records were prepared.

(b). The confidentiality provisions of law pertaining to medical records and medical treatment shall not be applicable with regard to chemical tests performed upon an individual's blood under the provisions of this section in prosecutions as specified in subsection (a) of this section. No person shall be liable for civil damages as a result of the evidentiary use of chemical testing of an individual's blood test results under this section, or as a result of that person's testimony, made available under this section.

**625 ILCS 5/11-501.4-1
REPORTING OF TEST RESULTS OF BLOOD OR URINE, CONDUCTED IN THE REGULAR COURSE OF PROVIDING EMERGENCY MEDICAL TREATMENT**

(a). Notwithstanding any other

provisions of law, the results of blood tests performed for the purpose of determining the content of alcohol, drug or drugs, or intoxicating compound or compounds or any combination thereof, in an individual's blood or urine conducted upon persons receiving medical treatment in a hospital emergency room for injuries resulting from a motor vehicle accident shall be disclosed to the Department of State Police or local law enforcement agencies or jurisdiction, upon request. Such blood or urine tests are admissible in evidence as a business record exception to the hearsay rule only in prosecutions for any violations of section 11-501 of this Code or a similar provision of a local ordinance, or in prosecutions for reckless homicide brought under the Criminal Code of 1961.

(b). The confidentiality provisions of law pertaining to medical records and medical treatment shall not be applicable with regard to tests performed upon an individual's blood or urine under the provisions of subsection (a) of this section. No person shall be liable for civil damages or professional discipline as a result of the disclosure or reporting of the tests or the evidentiary use of an individual's blood or urine test results under this section or Section 11-501.4 or as a result of that person's testimony made available under this section or Section 11-501.4, except for willful or wanton misconduct.

11-501.5 PRELIMINARY BREATH SCREENING

The court ruled on the use of PBT results. The court said that the state could not use the PBT results in its' Case in Chief. The court said that the PBT is not like other field sobriety tests. The field sobriety tests involve testing a person's behavior while the PBT test is a scientific test similar to any other test of breath, blood and

urine.

**People v. Rose, Ill. App. Ct. 4th.
Dist. (1994)**

P.B.T. results obtained under 11-501.5 are admissible to establish probable cause for arrest in a motion to suppress in a D.U.I. prosecution.

**People v. Davis, 231 Ill. Dec. 244 3rd.
Dist. (1998)**

625 ILCS 5/11-501.5 PRELIMINARY BREATH SCREENING TEST

(a) If a law enforcement officer has reasonable suspicion to believe that a person is violating or has violated Section 11-501 or a similar provision of a local ordinance, the officer, prior to an arrest, may request the person provide a sample of his or her breath for a preliminary breath screening test using a portable device approved by the Department of State Police. The person may refuse the test. The results of this preliminary breath screening test may be used by law enforcement officers for the purpose of assisting with the determination of whether to require a chemical test as authorized under sections 11-501.1 and 11-501.2 and the appropriate type of test to request. Any chemical test authorized under section 11-501.1 and 11-501.2 may be requested by the officer regardless of the result of the preliminary breath-screening test, if probable cause for an arrest exists. The result of a preliminary breath-screening test may be used by the defendant as evidence in any administrative or court proceeding involving a violation of Section 11-501 or 11-501.1.

2. The Department of State Police shall create a pilot program to establish the effectiveness of pupillometer technology (the measurement of the pupil's reaction to light) as a noninvasive technique to detect and measure possible impairment of any person who drives or is in

actual physical control of a motor vehicle resulting from the suspected usage of alcohol, other drug or drugs, intoxicating compound or compounds or any combination thereof. This technology shall also be used to detect fatigue levels of the operator of a Commercial Motor Vehicle as defined in Section 6-500(6), pursuant to Section 18b-105 (Part 395-Hours of Service of Drivers) of the Illinois Vehicle Code. A State Police officer may request that the operator of a commercial motor vehicle have his or her eyes examined or tested with a pupillometer device. The person may refuse the examination or test. The State Police officer shall have the device readily available to limit undue delays. If a State Police officer has reasonable suspicion to believe that a person is violating or has violated Section 11-501, the officer may use the pupillometer technology, when available. The officer, prior to an arrest, may request the person to have his or her eyes examined or tested with a pupillometer device. The person may refuse the examination or test. The results of this examination or test may be used by the officer for the purpose of assisting with the determination of whether to require a chemical test as authorized under Sections 11-501.1 and 11-501.2 and the appropriate type of test to request. Any chemical test authorized under Sections 11-501.1 and 11-501.2 may be requested by the officer regardless of the result of the pupillometer examination or test, if probable cause for an arrest exists. The result of the examination or test may be used by the defendant as evidence in any administrative or court proceeding involving a violation of 11-501 or 11-501.1. The pilot program shall last for a period of 18 months and involve the testing of 15 pupillometer devices. Within 90 day of the completion of the pilot project, the Department of State Police shall file a report with the President of the Senate and Speaker of the House evaluating the project.

11-501.6 DRIVER INVOLVEMENT IN PERSONAL INJURY OR FATAL MOTOR VEHICLE ACCIDENT.

Fink v. Ryan 673 N.E. 2d 281 (Ill. Sup. Ct.) (1996)

**625 ILCS 5/11-501.6
DRIVER INVOLVEMENT IN
PERSONAL INJURY OR FATAL MOTOR
VEHICLE ACCIDENT - CHEMICAL
TEST.**

(625 ILCS 5/11-501.6) (from Ch. 95 1/2, par. 11-501.6)

Sec. 11-501.6. Driver involvement in personal injury or fatal motor vehicle accident - chemical test.

(a) Any person who drives or is in actual control of a motor vehicle upon the public highways of this State and who has been involved in a personal injury or fatal motor vehicle accident, shall be deemed to have given consent to a breath test using a portable device as approved by the Department of State Police or to a chemical test or tests of blood, breath, or urine for the purpose of determining the content of alcohol, other drug or drugs, or intoxicating compound or compounds of such person's blood if arrested as evidenced by the issuance of a Uniform Traffic Ticket for any violation of the Illinois Vehicle Code or a similar provision of a local ordinance, with the exception of equipment violations contained in Chapter 12 of this Code, or similar provisions of local ordinances. The test or tests shall be administered at the direction of the arresting officer. The law enforcement agency employing the officer shall designate which of the aforesaid tests shall be administered. A urine test may be administered even after a blood or breath test or both has been administered. Compliance with this Section does not relieve such person from the requirements of Section 11-501.1 of this Code.

(b) Any person who is dead, unconscious or who is otherwise in a condition rendering such person incapable of refusal shall be deemed not to have withdrawn the consent provided by

subsection (a) of this Section. In addition, if a driver of a vehicle is receiving medical treatment as a result of a motor vehicle accident, any physician licensed to practice medicine, registered nurse or a phlebotomist acting under the direction of a licensed physician shall withdraw blood for testing purposes to ascertain the presence of alcohol, other drug or drugs, or intoxicating compound or compounds, upon the specific request of a law enforcement officer. However, no such testing shall be performed until, in the opinion of the medical personnel on scene, the withdrawal can be made without interfering with or endangering the well-being of the patient.

(c) A person requested to submit to a test as provided above shall be warned by the law enforcement officer requesting the test that a refusal to submit to the test, or submission to the test resulting in an alcohol concentration of 0.08 or more, or any amount of a drug, substance, or intoxicating compound resulting from the unlawful use or consumption of cannabis, as covered by the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, an intoxicating compound listed in the Use of Intoxicating Compounds Act, or methamphetamine as listed in the Methamphetamine Control and Community Protection Act as detected in such person's blood or urine, may result in the suspension of such person's privilege to operate a motor vehicle and may result in the disqualification of the person's privilege to operate a commercial motor vehicle, as provided in Section 6-514 of this Code, if the person is a CDL holder. The length of the suspension shall be the same as outlined in Section 6-208.1 of this Code regarding statutory summary suspensions.

(d) If the person refuses testing or submits to a test which discloses an alcohol concentration of 0.08 or more, or any amount of a drug, substance, or intoxicating compound in such person's blood or urine

resulting from the unlawful use or consumption of cannabis listed in the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, an intoxicating compound listed in the Use of Intoxicating Compounds Act, or methamphetamine as listed in the Methamphetamine Control and Community Protection Act, the law enforcement officer shall immediately submit a sworn report to the Secretary of State on a form prescribed by the Secretary, certifying that the test or tests were requested pursuant to subsection (a) and the person refused to submit to a test or tests or submitted to testing which disclosed an alcohol concentration of 0.08 or more, or any amount of a drug, substance, or intoxicating compound in such person's blood or urine, resulting from the unlawful use or consumption of cannabis listed in the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, an intoxicating compound listed in the Use of Intoxicating Compounds Act, or methamphetamine as listed in the Methamphetamine Control and Community Protection Act.

Upon receipt of the sworn report of a law enforcement officer, the Secretary shall enter the suspension and disqualification to the individual's driving record and the suspension and disqualification shall be effective on the 46th day following the date notice of the suspension was given to the person.

The law enforcement officer submitting the sworn report shall serve immediate notice of this suspension on the person and such suspension and disqualification shall be effective on the 46th day following the date notice was given.

In cases where the blood alcohol concentration of 0.08 or more, or any amount of a drug, substance, or intoxicating compound resulting from the unlawful use or consumption of cannabis as listed in the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, an intoxicating compound listed in the Use of Intoxicating Compounds Act, or methamphetamine as listed in the Methamphetamine Control and Community Protection Act, is established by a

subsequent analysis of blood or urine collected at the time of arrest, the arresting officer shall give notice as provided in this Section or by deposit in the United States mail of such notice in an envelope with postage prepaid and addressed to such person at his address as shown on the Uniform Traffic Ticket and the suspension and disqualification shall be effective on the 46th day following the date notice was given. Upon receipt of the sworn report of a law enforcement officer, the Secretary shall also give notice of the suspension and disqualification to the driver by mailing a notice of the effective date of the suspension and disqualification to the individual. However, should the sworn report be defective by not containing sufficient information or be completed in error, the notice of the suspension and disqualification shall not be mailed to the person or entered to the driving record, but rather the sworn report shall be returned to the issuing law enforcement agency.

(e) A driver may contest this suspension of his or her driving privileges and disqualification of his or her CDL privileges by requesting an administrative hearing with the Secretary in accordance with Section 2-118 of this Code. At the conclusion of a hearing held under Section 2-118 of this Code, the Secretary may rescind, continue, or modify the orders of suspension and disqualification. If the Secretary does not rescind the orders of suspension and disqualification, a restricted driving permit may be granted by the Secretary upon application being made and good cause shown. A restricted driving permit may be granted to relieve undue hardship to allow driving for employment, educational, and medical purposes as outlined in Section 6-206 of this Code. The provisions of Section 6-206 of this Code shall apply. In accordance with 49 C.F.R. 384, the Secretary of State may not issue a restricted driving permit for the operation of a commercial motor vehicle to a person holding a CDL

whose driving privileges have been suspended, revoked, cancelled, or disqualified.

(f) (Blank).

(g) For the purposes of this Section, a personal injury shall include any type A injury as indicated on the traffic accident report completed by a law enforcement officer that requires immediate professional attention in either a doctor's office or a medical facility. A type A injury shall include severely bleeding wounds, distorted extremities, and injuries that require the injured party to be carried from the scene.

(Source: P.A. 95-382, eff. 8-23-07.)

11-501.8 ZERO TOLERANCE

Defendant was involved in an accident; a blood test showed a blood alcohol of .165. The defendant was suspended under 11-501.1 and 11-501.8. Court ordered JDP for the defendant. Secretary of State denied because of the Suspension under 11-501.8.

If a driver's underlying driving privilege are lost for another reason and he also has a summary suspension the court cannot issue a JDP. People v. Boyd (1991).

**People v. Schmidt 221 Ill. Dec. 671
3rd. Dist. (1997)**

625 ILCS 5/11-501.8

SUSPENSION OF DRIVER'S LICENSE; PERSONS UNDER AGE 21.

(625 ILCS 5/11-501.8)
Sec. 11-501.8. Suspension of driver's license; persons under age 21.

(a) A person who is less than 21 years of age and who drives or is in actual physical control of a motor vehicle upon the public highways of this State shall be deemed to have given consent to a chemical test or tests of blood, breath,

or urine for the purpose of determining the alcohol content of the person's blood if arrested, as evidenced by the issuance of a Uniform Traffic Ticket for any violation of the Illinois Vehicle Code or a similar provision of a local ordinance, if a police officer has probable cause to believe that the driver has consumed any amount of an alcoholic beverage based upon evidence of the driver's physical condition or other first hand knowledge of the police officer. The test or tests shall be administered at the direction of the arresting officer. The law enforcement agency employing the officer shall designate which of the aforesaid tests shall be administered. A urine test may be administered even after a blood or breath test or both has been administered.

(b) A person who is dead, unconscious, or who is otherwise in a condition rendering that person incapable of refusal, shall be deemed not to have withdrawn the consent provided by paragraph (a) of this Section and the test or tests may be administered subject to the following provisions:

(i) Chemical analysis of the person's blood, urine,

breath, or other bodily substance, to be considered valid under the provisions of this Section, shall have been performed according to standards promulgated by the Department of State Police by an individual possessing a valid permit issued by that Department for this purpose. The Director of State Police is authorized to approve satisfactory techniques or methods, to ascertain the qualifications and competence of individuals to conduct analyses, to issue permits that shall be subject to termination or revocation to certify the accuracy of breath testing equipment. The Department of State Police shall prescribe regulations as necessary.</DIV"

(ii) When a person submits to a blood test at the

request of a law enforcement officer under the provisions of this Section, only a physician authorized to practice medicine, a registered nurse, or other qualified person trained in venipuncture and acting under the direction of a licensed physician may withdraw blood for the purpose of determining the alcohol content therein. This limitation does not apply to the taking of breath or urine specimens.</DIV"

(iii) The person tested may have a physician,

qualified technician, chemist, registered nurse, or other qualified person of his or her own choosing administer a chemical test or tests in addition to any test or tests administered at the direction of a law enforcement officer. The failure or inability to obtain an additional test by a person shall not preclude the consideration of the previously performed chemical test.</DIV"

(iv) Upon a request of the person who submits to a

chemical test or tests at the request of a law enforcement officer, full information concerning the test or tests shall be made available to the person or that person's attorney.</DIV"

(v) Alcohol concentration means either grams of

alcohol per 100 milliliters of blood or grams of alcohol per 210 liters of breath.</DIV"

(vi) If a driver is receiving medical treatment as a

result of a motor vehicle accident, a physician licensed to practice medicine and registered as a Department of State Police and prescribed regulations shall withdraw blood for testing purposes to ascertain the presence of alcohol upon the specific request of a law enforcement officer.

However, that testing shall not be performed until, in the opinion of the medical personnel on scene, the withdrawal can be made without interfering with or endangering the well-being of the patient.</DIV"

(c) A person requested to submit to a test as provided above shall be warned by the law enforcement officer requesting the test that a refusal to submit to the test, or submission to the test resulting in an alcohol concentration of more than 0.00, may result in the loss of that person's privilege to operate a motor vehicle and may result in the disqualification of the person's privilege to operate a commercial motor vehicle, as provided in Section 6-514 of this Code, if the person is a CDL holder. The loss of driving privileges shall be imposed in accordance with Section 6-208.2 of this Code.

(d) If the person refuses testing or submits to a test that discloses an alcohol concentration of more than 0.00, the law enforcement officer shall immediately submit a sworn report to the Secretary of State on a form prescribed by the Secretary of State, certifying that the test or tests were requested under subsection (a) and the person refused to submit to a test or tests or submitted to testing which disclosed an alcohol concentration of more than 0.00. The law enforcement officer shall submit the same sworn report when a person under the age of 21 submits to testing under Section 11-501.1 of this Code and the testing discloses an alcohol concentration of more than 0.00 and less than 0.08.

Upon receipt of the sworn report of a law enforcement officer, the Secretary of State shall enter the suspension and disqualification on the individual's driving record and the suspension and disqualification shall be effective on the 46th day following the date notice of the suspension was given to the person. If this suspension is the individual's first driver's license suspension under this Section,

reports received by the Secretary of State under this Section shall, except during the time the suspension is in effect, be privileged information and for use only by the courts, police officers, prosecuting authorities, the Secretary of State, or the individual personally. However, beginning January 1, 2008, if the person is a CDL holder, the report of suspension shall also be made available to the driver licensing administrator of any other state, the U.S. Department of Transportation, and the affected driver or motor carrier or prospective motor carrier upon request. Reports received by the Secretary of State under this Section shall also be made available to the parent or guardian of a person under the age of 18 years that holds an instruction permit or a graduated driver's license, regardless of whether the suspension is in effect. The law enforcement officer submitting the sworn report shall serve immediate notice of this suspension on the person and the suspension and disqualification shall be effective on the 46th day following the date notice was given.

In cases where the blood alcohol concentration of more than 0.00 is established by a subsequent analysis of blood or urine, the police officer or arresting agency shall give notice as provided in this Section or by deposit in the United States mail of that notice in an envelope with postage prepaid and addressed to that person at his last known address and the loss of driving privileges shall be effective on the 46th day following the date notice was given.

Upon receipt of the sworn report of a law enforcement officer, the Secretary of State shall also give notice of the suspension and disqualification to the driver by mailing a notice of the effective date of the suspension and disqualification to the individual. However, should the sworn report be defective by not containing sufficient information or be completed in error, the notice of the suspension and disqualification shall not be mailed to the person or entered to the driving record, but rather the sworn report shall be returned to the issuing law enforcement agency.

(e) A driver may contest this suspension

and disqualification by requesting an administrative hearing with the Secretary of State in accordance with Section 2-118 of this Code. An individual whose blood alcohol concentration is shown to be more than 0.00 is not subject to this Section if he or she consumed alcohol in the performance of a religious service or ceremony. An individual whose blood alcohol concentration is shown to be more than 0.00 shall not be subject to this Section if the individual's blood alcohol concentration resulted only from ingestion of the prescribed or recommended dosage of medicine that contained alcohol. The petition for that hearing shall not stay or delay the effective date of the impending suspension. The scope of this hearing shall be limited to the issues of:

(1) whether the police officer had probable cause to

believe that the person was driving or in actual physical control of a motor vehicle upon the public highways of the State and the police officer had reason to believe that the person was in violation of any provision of the Illinois Vehicle Code or a similar provision of a local ordinance;

and</DIV"

(2) whether the person was issued a Uniform Traffic

Ticket for any violation of the Illinois Vehicle Code or a similar provision of a local ordinance;

and</DIV"

(3) whether the police officer had probable cause to

believe that the driver had consumed any amount of an alcoholic beverage based upon the driver's physical actions or other first-hand knowledge of the police officer;

and</DIV"

(4) whether the person, after being advised by the

officer that the privilege to operate a motor vehicle would be suspended if the person refused to submit to and complete the test or

tests, did refuse to submit to or complete the test or tests to determine the person's alcohol concentration; and</DIV"

(5) whether the person, after being advised by the

officer that the privileges to operate a motor vehicle would be suspended if the person submits to a chemical test or tests and the test or tests disclose an alcohol concentration of more than 0.00, did submit to and complete the test or tests that determined an alcohol concentration of more than 0.00; and</DIV"

(6) whether the test result of an alcohol

concentration of more than 0.00 was based upon the person's consumption of alcohol in the performance of a religious service or ceremony; and</DIV"

(7) whether the test result of an alcohol

concentration of more than 0.00 was based upon the person's consumption of alcohol through ingestion of the prescribed or recommended dosage of medicine.</DIV"

At the conclusion of the hearing held under Section 2-118 of this Code, the Secretary of State may rescind, continue, or modify the suspension and disqualification. If the Secretary of State does not rescind the suspension and disqualification, a restricted driving permit may be granted by the Secretary of State upon application being made and good cause shown. A restricted driving permit may be granted to relieve undue hardship by allowing driving for employment, educational, and medical purposes as outlined in item (3) of part (c) of Section 6-206 of this Code. The provisions of item (3) of part (c) of Section 6-206 of this Code and of subsection (f) of that Section shall apply. The Secretary of State shall promulgate rules providing for

participation in an alcohol education and awareness program or activity, a drug education and awareness program or activity, or both as a condition to the issuance of a restricted driving permit for suspensions imposed under this Section.

(f) The results of any chemical testing performed in accordance with subsection (a) of this Section are not admissible in any civil or criminal proceeding, except that the results of the testing may be considered at a hearing held under Section 2-118 of this Code. However, the results of the testing may not be used to impose driver's license sanctions under Section 11-501.1 of this Code. A law enforcement officer may, however, pursue a statutory summary suspension of driving privileges under Section 11-501.1 of this Code if other physical evidence or first hand knowledge forms the basis of that suspension.

(g) This Section applies only to drivers who are under age 21 at the time of the issuance of a Uniform Traffic Ticket for a violation of the Illinois Vehicle Code or a similar provision of a local ordinance, and a chemical test request is made under this Section.

(h) The action of the Secretary of State in suspending, revoking, cancelling, or disqualifying any license or permit shall be subject to judicial review in the Circuit Court of Sangamon County or in the Circuit Court of Cook County, and the provisions of the Administrative Review Law and its rules are hereby adopted and shall apply to and govern every action for the judicial review of final acts or decisions of the Secretary of State under this Section.

(Source: P.A. 94-307, eff. 9-30-05; 95-201, eff. 1-1-08; 95-382, eff. 8-23-07; 95-627, eff. 6-1-08; 95-876, eff. 8-21-08.)

625 ILCS 5/6-106.a

CANCELLATION OF SCHOOL BUS DRIVER PERMIT; TRACE OF ALCOHOL

(a). A person who has been issued a

school bus driver permit by the Secretary of State in accordance with Section 6-106.1 of this code and who drives or is in actual physical control of a school bus or any other vehicle owned or operated by or for a public or private school, or a school operated by a religious institution, when the vehicle is being used over a regularly scheduled route for the transportation of persons enrolled as students in grade 12 or below, in connection with any activity of the entities listed, upon the public highways of this state shall be deemed to have given consent to a chemical test or tests of blood, breath, or urine for the purpose of determining the alcohol content of the person's blood if arrested, as evidenced by the issuance of a Uniform Traffic Ticket for any violation of the Illinois Vehicle Code or a similar provision of a local ordinance, of a police officer has probable cause to believe that the driver has consumed any amount of an alcoholic beverage based upon evidence of the driver's physical condition or other first hand knowledge of the police officer. The test or tests shall be administered at the direction of the arresting officer. The law enforcement agency employing the officer shall designate which of the aforesaid tests shall be administered. A urine test may be administered even after a blood or breath test or both has been administered.

(b). A person who is dead, unconscious, or who is otherwise in condition rendering that person incapable of refusal, shall be deemed not to have withdrawn the consent provided by paragraph (a) of this section and the test or tests may be administered subject to the following provisions:

1. Chemical analysis of the

person's blood, urine, breath, or other bodily substance, to be considered valid under the provisions of this section, shall have been performed according to standards promulgated by the Department of State Police by an individual possessing a valid permit issued by that department for this purpose, the director of the Department of State Police, is authorized to approve satisfactory techniques or methods, to ascertain the qualifications and competence of individuals to conduct analyses, to issue permits that shall be subject to termination or revocation at the direction of that department, and to certify the accuracy of breath testing equipment. The Department of State Police shall prescribe rules as necessary.

2. When a person submits to a blood test at the request of a law enforcement officer under the provisions of this section, only a physician authorized to practice medicine, a registered nurse, or other qualified person trained in venipuncture and acting under the direction of a licensed physician may withdraw blood for the purpose of determining the alcohol content therein. This limitation does not apply to the taking of breath or urine specimen.

3. The person tested may have a physician, qualified technician, chemist, registered nurse, or other qualified person of his or her own choosing administer a chemical test or tests in addition to any test or tests administered at the direction of a law enforcement officer. The test administered at the request of the person may be admissible into evidence at a hearing conducted in accordance with Section 2-118 of this code. The failure or inability to obtain an additional test by a person shall not preclude the consideration of the previously performed chemical test.

4. Upon request of

the person who submits to a chemical test or tests at the request of a law enforcement officer, full information concerning the test or tests shall be made available to the person or that person's attorney by the requesting law enforcement agency within 72 hours of receipt of the test result.

5. Alcohol concentration means either grams of alcohol per 100 milliliters of blood or grams of alcohol per 210 liters of breath.

6. If a driver is receiving medical treatment as a result of a motor vehicle accident, a physician licensed to practice medicine, registered nurse, or other qualified person trained in venipuncture and acting under the direction of a licensed physician shall withdraw blood for testing purposes to ascertain the presence of alcohol upon the specific request of a law enforcement officer. However, that testing shall not be performed until, in the opinion of the medical personnel on scene, the withdrawal can be made without interfering with or endangering the well-being of the patient.

(c). A person requested to submit to a test as provided shall be warned by the law enforcement officer requesting the test that a refusal to submit to the test, or submission to the test resulting in an alcohol concentration of more than 0.00, may result in the loss of that person's privilege to possess a school bus driver permit. The loss of the individual's privilege to possess a school bus driver permit shall be imposed in accordance with Section 6-106.1b this code.

(d). If the person refuses testing or submits to a test that discloses an alcohol concentration of more than 0.00, the law enforcement officer shall immediately submit a sworn report to the Secretary of State on a form prescribed by the Secretary of State,

certifying that the test or tests were requested under subsection (a) and the person refused to submit to a test or tests or submitted to testing which disclosed an alcohol concentration of more than 0.00. The law enforcement officer shall submit the same sworn report when a person who has been issued a school bus driver permit and who was operating a school bus or any other vehicle owned or operated by or for a public or private school, or a school operated by a religious institution, when the vehicle is being used over a regularly scheduled route for the transportation of persons enrolled as students in grade 12 or below, in connection with any activity of the entities listed, submits to testing under section 11-501.1 of this code and testing discloses an alcohol concentration of more than 0.00 and less than the alcohol concentration at which driving or being in actual physical control of a motor vehicle is prohibited under paragraph (1) of subsection (a) of Section 11-501.

Upon receipt of the sworn report of a law enforcement officer, the Secretary of State shall enter the school bus driver's permit sanction on the individual's driving record and this sanction shall be effective on the 46th day following the date notice of the sanction was given to the person.

The law enforcement officer submitting the sworn report shall serve immediate notice of this school bus driver's permit sanction on the person and the sanction shall be effective on the 46th day following the date notice was given.

In cases where the blood alcohol concentration of more than 0.00 is established by a subsequent analysis of blood or urine, the police officer or arresting agency shall give notice as provided in this section or by deposit in the United States mail of that notice in an envelope with postage prepaid and addressed to that person at his last

known address and the loss of driving privileges shall be effective on the 46th day following the date notice was given.

Upon receipt of the sworn report of a law enforcement officer, the Secretary of State shall also give notice of the school bus driver's permit sanction to the driver and the driver's current employer by mailing a notice of the effective date of the sanction to the individual. However, should the sworn report be defective by not containing sufficient information or be completed in error, the notice of the school bus driver's permit sanction may not be mailed to the person of his current employer or entered to the driving record, but rather the sworn report shall be returned to the issuing law enforcement agency.

(e). A driver may contest this school bus driver's permit sanction by requesting an administrative hearing with the Secretary of State in accordance with Section 2-118 of this code. An individual whose blood concentration is shown to be more than 0.00 is not subject to this section if he or she consumed alcohol in the performance of a religious service or ceremony. An individual whose blood alcohol concentration is shown to be more than 0.00 shall not be subject to this section if the individual's blood alcohol concentration resulted only from the ingestion of the prescribed or recommended dosage of medicine that contained alcohol. The petition for that hearing shall not stay or delay the effective date of the impending suspension. The scope of this hearing shall be limited to the issues of:

(1). whether the police officer had probable cause to believe that the person was driving or in actual physical control of school bus or any other vehicle owned or operated by or for a public or private school, or a school operated by a religious institution, when the vehicle being used over a regularly scheduled route for the transportation of persons

enrolled as students in grade 12 or below, in connection with any activity of the entities listed, upon the public highways of the state and the police officer had reason to believe that the person was in violation of any provision of the Illinois Vehicle Code or a similar provision of a local ordinance; and

(2). whether the person was issued a Uniform Traffic Ticket for any violation of the Illinois Vehicle Code of a similar provision of a local ordinance; and

(3). whether the police officer had probable cause to believe that the driver had consumed any amount of an alcoholic beverage based upon the driver's physical actions or other first-hand knowledge of the police officer; and

(4). whether the person, after being advised by the officer that the privilege to possess a school bus driver's permit would be cancelled if the person refused to submit to and complete the test or tests, did refuse to submit to and complete the test or tests to determine the person's alcohol concentration; and

(5). whether the person, after being advised by the officer that the privileges to possess a school bus driver's permit would be cancelled if the person submits to a chemical test or tests and the test or tests disclose an alcohol concentration of more than 0.00 and the person did submit to and complete the test or tests that determined an alcohol concentration of more than 0.00; and

(6). whether the test result of an alcohol concentration of more than 0.00 was based upon the person's consumption of alcohol in the performance of a religious service or ceremony; or

(7). whether the test result

of an alcohol concentration of more than 0.00 was based upon the person's consumption of alcohol through ingestion of the prescribed or recommended dosage of medicine.

The Secretary of State may adopt administrative rules setting forth circumstances under which the holder of a school bus driver permit is not required to appear in person at the hearing.

Provided that the petitioner may subpoena the officer, the hearing may be conducted upon a review of the law enforcement officer's own official reports. Failure of the officer to answer the subpoena shall be grounds for a continuance if, in the hearing officer's discretion, the continuance is appropriate. At the conclusion of the hearing held under Section 2-118 of this Code, the Secretary of State may rescind, continue, or modify the school bus driver's sanction. The Secretary of State does not rescind the sanction.

(f). The results of any chemical testing performed in accordance with subsection (a) of this section are not admissible in any civil or criminal proceeding, except that the results of the testing may be considered at a hearing held under Section 2-118 of this code. However, the results of the testing may not be used to impose driver's license sanctions under Section 11-501.1 of this code. A law enforcement officer may, however, pursue a statutory summary suspension of driving privileges under Section 11-501.1 of this code if other physical evidence or first hand knowledge forms the basis of that suspension.

(g). This section applies only to drivers who have been issued a school bus drivers permit in accordance with Section 6-106.1 of this code at the time of the issuance of the Uniform Traffic Ticket for a violation of the Illinois Vehicle code or a similar provision of a local ordinance, and a chemical test request is made under this section.

(h). The action of the Secretary of State in suspending, revoking, or denying any license, permit, registration or certificate of title shall be subject to judicial review in the Circuit Court of Sangamon County or in the Circuit Court of Cook County, and the provisions of the Administrative Review Law and its rules are hereby adopted and shall apply to and govern every action for the judicial review of final acts or decisions of the Secretary of State under this section.

**UNIFORM COMMERCIAL DRIVERS
LICENSE ACT**

Penalties

6-501

Operation of a Commercial Motor Vehicle with more than one license

***Class A Misdemeanor - - - -
\$1000 or 10%***

6-506

Allowing unauthorized operation of CMV (employer)

***Class A Misdemeanor - - - -
\$1000 or 10%***

6-507(a)

**Improper Operation of CMV
- - - No Commercial Drivers License
- - - No Proper Endorsement
- - - Improper Classification**

6-507(b)

Driving with revoked, suspended or cancelled Commercial Drivers License

***Class A Misdemeanor - - - -
\$1000 or 10%***

6-511

Failure to notify SOS of change of name or domiciliary address; or failure to obtain corrected CDL after 30 days

Petty offense - - - - \$75

6-512

Unlawful Operation of a CMV

Petty offense - - - - \$75

6-515

Operation of CMV with Alcohol in System

- - - A C 0.00 to .07

Petty offense - - - \$75

- - - A C 0.08 or above

Cite under 11-501(a) 1

625 ILCS 5/6-515

PROHIBITIONS AGAINST A PERSON DRIVING A COMMERCIAL MOTOR VEHICLE WHILE HAVING ANY ALCOHOL, OTHER DRUG OR BOTH IN SUCH PERSON'S SYSTEM.

(a) Notwithstanding any other provisions of this code, a person shall not drive a commercial motor vehicle while having any alcohol, other drug or both in such person's system.

(b) A person who drives a commercial motor vehicle while having any alcohol other drug, or both in such person's system or who refused to submit to or fails to complete an alcohol or other drug test or tests pursuant to Section 6-517, as evidenced by the issuance of a Sworn Report by a police officer, must be placed "out of service" for at least 24 hours.

(c) The police officer shall provide the Secretary of State with a copy of all

Sworn Reports issued pursuant to this UCCLA.

(d) The "out-of-service" referred to in this section shall not be entered to the record of any Illinois commercial motor vehicle driver, by the Secretary of State, unless the prohibited action occurred after March 31, 1992.

**625 ICLS 5/6-516
IMPLIED CONSENT
REQUIREMENTS FOR COMMERCIAL
MOTOR VEHICLE DRIVERS**

(625 ILCS 5/6-516) (from Ch. 95 1/2, par. 6-516)

Sec. 6-516. Implied consent requirements for commercial motor vehicle drivers.

(a) Effective April 1, 1992, any person who drives a commercial motor vehicle upon the highways is hereby deemed to have given consent to submit to a test or tests, subject to the provisions of Section 11-501.2 of this Code, of such person's breath, blood or urine for the purpose of determining the presence of alcohol, or other drugs, in such person's system.

(b) A test or tests may be administered at the direction of a law enforcement officer, who after stopping or detaining the commercial motor vehicle driver, has probable cause to believe that driver was driving a commercial motor vehicle while having alcohol or any amount of a drug, substance, or compound resulting from the unlawful use or consumption of cannabis listed in the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, or methamphetamine as listed in the Methamphetamine Control and Community Protection Act in such driver's system.

(c) Effective April 1, 1992, any person who operates a school bus at the time of an accident involving the school bus is hereby deemed to have given consent to submit to a test or tests to be administered at the

direction of a law enforcement officer, subject to the provisions of Section 11-501.2 of this Code, of the driver's breath, blood or urine for the purpose of determining the presence of alcohol, or other drugs, in the person's system. (Source: P.A. 95-355, eff. 1-1-08.)

1.

**625 ILCS 5/6-517
COMMERCIAL DRIVER-IMPLIED
CONSENT WARNINGS**

(625 ILCS 5/6-517) (from Ch. 95 1/2, par. 6-517)

Sec. 6-517. Commercial driver; implied consent warnings.

(a) Any person driving a commercial motor vehicle who is requested by a police officer, pursuant to Section 6-516, to submit to a chemical test or tests to determine the alcohol concentration or any amount of a drug, substance, or compound resulting from the unlawful use or consumption of cannabis listed in the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, an intoxicating compound listed in the Use of Intoxicating Compounds Act, or methamphetamine as listed in the Methamphetamine Control and Community Protection Act in such person's system, must be warned by the police officer requesting the test or tests that a refusal to submit to the test or tests will result in that person being immediately placed out-of-service for a period of 24 hours and being disqualified from operating a commercial motor vehicle for a period of not less than 12 months; the person shall also be warned that if such person submits to testing which discloses an alcohol concentration of greater than 0.00 but less than 0.04 or any amount of a drug, substance, or compound in such person's blood or urine resulting from the unlawful use or consumption of cannabis listed in the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, an intoxicating compound listed in the Use of Intoxicating Compounds Act, or

methamphetamine as listed in the Methamphetamine Control and Community Protection Act, such person shall be placed immediately out-of-service for a period of 24 hours; if the person submits to testing which discloses an alcohol concentration of 0.04 or more or any amount of a drug, substance, or compound in such person's blood or urine resulting from the unlawful use or consumption of cannabis listed in the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, an intoxicating compound listed in the Use of Intoxicating Compounds Act, or methamphetamine as listed in the Methamphetamine Control and Community Protection Act, such person shall be placed immediately out-of-service and disqualified from driving a commercial motor vehicle for a period of at least 12 months; also the person shall be warned that if such testing discloses an alcohol concentration of 0.08, or more or any amount of a drug, substance, or compound in such person's blood or urine resulting from the unlawful use or consumption of cannabis listed in the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, an intoxicating compound listed in the Use of Intoxicating Compounds Act, or methamphetamine as listed in the Methamphetamine Control and Community Protection Act, in addition to the person being immediately placed out-of-service and disqualified for 12 months as provided in this UCCLA, the results of such testing shall also be admissible in prosecutions for violations of Section 11-501 of this Code, or similar violations of local ordinances, however, such results shall not be used to impose any driving sanctions pursuant to Section 11-501.1 of this Code.

The person shall also be warned that any disqualification imposed pursuant to this Section, shall be for life for any such offense or refusal, or combination thereof; including a conviction for violating Section 11-501 while driving a commercial motor vehicle, or similar provisions of local ordinances, committed a second

time involving separate incidents.

(b) If the person refuses or fails to complete testing, or submits to a test which discloses an alcohol concentration of at least 0.04, or any amount of a drug, substance, or compound in such person's blood or urine resulting from the unlawful use or consumption of cannabis listed in the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, an intoxicating compound listed in the Use of Intoxicating Compounds Act, or methamphetamine as listed in the Methamphetamine Control and Community Protection Act, the law enforcement officer must submit a Sworn Report to the Secretary of State, in a form prescribed by the Secretary, certifying that the test or tests was requested pursuant to paragraph (a); that the person was warned, as provided in paragraph (a) and that such person refused to submit to or failed to complete testing, or submitted to a test which disclosed an alcohol concentration of 0.04 or more, or any amount of a drug, substance, or compound in such person's blood or urine resulting from the unlawful use or consumption of cannabis listed in the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, an intoxicating compound listed in the Use of Intoxicating Compounds Act, or methamphetamine as listed in the Methamphetamine Control and Community Protection Act.

(c) The police officer submitting the Sworn Report under this Section shall serve notice of the CDL disqualification on the person and such CDL disqualification shall be effective as provided in paragraph (d). In cases where the blood alcohol concentration of 0.04 or more, or any amount of a drug, substance, or compound in such person's blood or urine resulting from the unlawful use or consumption of cannabis listed in the Cannabis Control Act, a controlled substance listed in the Illinois Controlled Substances Act, an intoxicating compound listed in the Use of Intoxicating Compounds Act, or methamphetamine as listed in the Methamphetamine Control and Community Protection Act, is established by subsequent analysis of blood or urine

collected at the time of the request, the police officer shall give notice as provided in this Section or by deposit in the United States mail of such notice as provided in this Section or by deposit in the United States mail of such notice in an envelope with postage prepaid and addressed to such person's domiciliary address as shown on the Sworn Report and the CDL disqualification shall begin as provided in paragraph (d).

(d) The CDL disqualification referred to in this Section shall take effect on the 46th day following the date the Sworn Report was given to the affected person.

(e) Upon receipt of the Sworn Report from the police officer, the Secretary of State shall disqualify the person from driving any commercial motor vehicle and shall confirm the CDL disqualification by mailing the notice of the effective date to the person. However, should the Sworn Report be defective by not containing sufficient information or be completed in error, the confirmation of the CDL disqualification shall not be mailed to the affected person or entered into the record, instead the Sworn Report shall be forwarded to the issuing agency identifying any such defect.

(Source: P.A. 95-355, eff. 1-1-08.)

1.

SECTION P

Case Preparation and Court Presentation

CASE PREPARATION AND COURT PRESENTATION

THE OFFICER AS A WITNESS¹

The court trial is the crucible wherein the thoroughness and effectiveness of officers' work meet the greatest challenge. Their work and often the officers themselves will be attacked at any vulnerable point. However, the most penetrating probing and scrutiny will not damage the evidential value of a thorough and competent job done by officers if a few basic rules are observed and good judgment is used. In fact, if officers handle the matter properly, often attacks during a trial upon officers or their work tend only to increase the impact of their testimony upon the jury.

Officers are frequently called upon to testify in court regarding the prosecution of a case in which they have been involved as arresting officers, or in some other capacity. Many times officers will be the most important witnesses to establish whether or not defendants are guilty.

Rightly or wrongly, officers are generally regarded as more than ordinary lay witnesses. Consequently, a greater degree of proficiency as a witness is expected.

What constitutes a good witness? Reduced to bare essentials, two major factors constitute an effective witness:

1. The ability to present to the court, in logical sequence and in concise, understandable language, the facts and/or material evidence to which the witness can testify.
2. This presentation is made in such a manner that the witness is believed by the court and the jury.

Such a simple formula, however, does not mean that the task of testifying is easy or simple, or that it can be done effectively without work and preparation.

General Considerations

Although officers may testify several times a month, they should never allow testimony to become routine, no matter how trivial cases may seem as compared with other, more serious crimes. Most often there is at stake one of our most priceless heritages--the liberty of fellow human beings or even their lives. To them, the matter is far from routine. Bear in mind that irrespective of the overall knowledge you have of cases, defendants, under our system of justice, are presumed to be innocent until the State establishes in court by competent evidence their guilt to the exclusion of a reasonable doubt. Therefore, any open indication on the part of officers in court that they know or think defendants are guilty is highly improper; that is the issue the court is deciding.

Preparation for Testimony

In the larger sense, preparation started when the officer became involved in the matter at hand. If officers do not then understand the elements of the offense and do not properly handle the matter at the outset and throughout the investigation, it is

too late when the case is set for trial.

Officers should thoroughly review their notes, charts, photos, and all other information in their or their department's possession, to refresh their memory and assure they have a complete mastery of the matters to which they are expected to testify. They should assure themselves that they can properly describe and, if necessary, chart for the court the physical aspects of the case. This is very important. If their memory has become vague, they should revisit the pertinent scenes to refresh their memory.

Notes, charts, etc., properly identified, should be in the possession of the officers and arranged in such manner that they can easily locate and produce for the court any particular one. Notes to which the officers may refer while testifying must be where the officer can produce them readily without unnecessary fumbling and searching. Officers should refer to notes in testifying to such matters as long numbers, such as automobile numbers where it is apparent they would not recall such numbers unless they had just committed them to memory before going on the stand.

In such cases as "driving under the influence," the appropriate officers should review and have available the "Alcohol/Drug Influence Report". The breath analyzer operator should, of course, have all records pertaining to the test they administered.

Officers, who have made arrests based on observations immediately prior to the arrest, must realize that not only was it necessary that they have probable cause to make the arrest, but they must present in evidence, facts that establish as a matter of record, probable cause existed. Let officers consider precisely what they observed, heard, etc., which prompted the arrest, and how best to relate these facts to the court.

**Conference
with
Prosecuting
Attorney**

Officers should seek to have a conference with the prosecutor to determine what testimony is desired from them and to acquaint the prosecutor with all they know about the case. If doubt exists in the minds of officers as to the admissibility of certain evidence, attempt at the conference with the prosecutor to resolve the matter. If officers know of any weaknesses in the case they should point them out so the prosecutor will not be caught unaware.

**In the
Courtroom**

Much of the proper conduct and demeanor of officers in the courtroom is merely an extension of application of good manners and common sense to a particular situation. The trial under our system of justice is the procedure whereby a determination is made whether or not citizens have so conducted themselves as to have violated a criminal law and are to be punished. Our courts have evolved rules designed to assure a fair trial and, at the same time, safeguard the rights of the accused. Even though officer may not fully comprehend the reasons behind some rules, it is their duty to respect these rules and abide by them. At all times, show the court the respect demanded by a dignified procedure.

Officers should make a presentable appearance, clean and well groomed. What is desired is that the court listen to what they have to say on the witness stand. Clothing should be such as to make a good appearance but not attract attention. Anything about officers' appearance or mannerisms which would tend to direct attention away from what they are testifying to will lessen the effect of their testimony.

At all times officers should be businesslike, prompt and decisive. In taking the oath, they should stand erect, hand well up for the oath, and speak so they can be heard.

Upon taking the stand, officers should maintain the respectful attitude due the court. For example, do not slouch in the witness chair. Any dogmatic statements that the feet and hands should be thus and so are ridiculous. A comfortable, yet respectful position, manner and decorum should be assumed. Again, posture and attitude, if so stilted or stiff that the attention of the court is directed to the witness rather than what they have to say, lessens the effectiveness of the testimony.

There is no place in the courtroom for cockiness, levity, or being "smart." Be modest but at the same time decisive and forceful.

**Direct
Examination**

Officers should speak distinctly and loudly enough to be heard by all in the courtroom. This does not mean to shout. If a speaker system is utilized, it is necessary only to speak distinctly and directly into the microphone.

Officers' undivided attention should be given to the examiner. Questions should be answered directly and to the point. A speech should not be made each time a question is asked. Testimony should be confined to logical responses to questions asked. If a question can be fully answered by "yes" or "no," officers should do so.

If officers do not understand the question, they should indicate so and respectfully ask that the question be repeated. Generally the question, if it has been asked in an ambiguous or involved manner, will be rephrased in a simpler and clearer form.

Many times prosecutors, upon reaching a certain point with the witness, will then say words to the effect, "Tell the jury what happened." Upon such direction, the witness should relate the facts, in logical order, fully but without excess wordage or extraneous material.

Testimony should be directed to the jury. Prosecutors, if at all possible, will so position themselves that witnesses can face both the prosecutor and the jury at the same time. If they do not do this, when the witness replies to a question, they should face the jury. Again, good common sense should govern. For example, a witness should not be so obvious in switching from examiner to the jury as to give the impression of watching a ping pong game.

While answers should be brief and to the point as far as possible, they should be complete. This means that officers state all facts within their knowledge. This

includes facts favorable as well as against the defendant. Officers must appear fair and impartial. Even though defendants have attorneys to present factors favorable to them, this is no excuse for officers to cover up or omit factors favorable to the defendant and thus state a half truth. Bear in mind that the duty of an officer is to tell the truth and all of the truth.

Answers and statements should be positive. Officers should not hedge, quibble, equivocate or be indecisive. Witnesses who do not know their own mind cannot expect the jury to give great weight to anything they say. If the answer to a question is not known, a positive type answer can still be made. Officers should say they do not know.

Snap answers without thinking about the question will lead to trouble. Questions should be considered. However, sitting and pondering for a noticeable period over every simple question will give the impression that the witness is uncertain and may in part, at least, be fabricating answers.

To be fair and impartial means more than merely giving truthful word answers to questions. Officers must keep in mind their knowledge of court procedure and the rules of evidence and not intentionally violate these rules. Do not testify to matters you know to be inadmissible. Upon any objection by counsel to a question or answer, an officer should stop immediately until the judge rules on the matter and issues directions. An officer should not try to "sneak in" inadmissible material.

An officer should maintain the attitude of fairness and impartiality throughout. This includes not only spoken words, but inflection, facial expression, and emphasis by use of adjectives and adverbs. The whole truth should be told simply and forcefully.

In general, opinions should not be voiced. On certain matters, officers can testify as to their opinion. If asked and no objection is interposed, an officer's opinion can be stated in a positive manner as in other testimony.

Occasionally when testifying, a person will make a misstatement. If such is done and is recognized by the witness, they should correct the statement. If the misstatement is pointed out, then witnesses should frankly admit an error and state, "The facts are . . ." and give the correct answer.

Slang, profanity, coarse language or the use of expressions common only to law enforcement or the criminal element should be avoided. To be most effective, the words employed by witnesses should be as simple and direct as the subject matter permits and understandable by the jury. Witnesses should say what they mean as clearly and simply as possible.

If it is necessary to refer to defendant, call them "The defendant," or "Mr." or "Ms," (as the case may be) and use the surname. Terms such as "subject" or use of first names even though you may have known the defendant for years should be avoided.

Cross- Examination

Cross-examination has an essential role in court proceeding. It is used to elicit the whole truth and uncover any bias, dishonesty, prejudice, ignorance, corruption or fraud upon the part of a witness. It is a powerful tool in the hands of a skilled attorney. At the same time, it has inherent dangers to the attorney who would seek to confuse, distort, color, pervert or hide the truth.

Officers should show the same respect, demeanor, etc., toward the cross-examiner as is given the prosecutor and the court as a whole. Answer questions fully, honestly.

First, it is essential that witnesses know what is the truth. It is important that they realize what they do not know rather than what they do know. If officers think that they should or are expected to know the answer to a question and start to guess, interpolate or be careless with their statements, they are headed for trouble. They will bring discredit upon themselves and their department and are a poor citizen. As a result of their training, breath analyzer operators should realize that they have not become chemists, physicists, pharmacists, electronic experts, etc. In answering questions relating to the theory, etc. of the instrument, operators should make plain they have only a superficial knowledge and are not an authority.

At times defense attorneys will attempt, for the want of a better defense, to make a fool of the officer. If such an attempt is made, only one will appear foolish. If officers keep their wits about them, do not lose their temper and stick strictly to truth, they will not be the ones who look ridiculous.

You are not on the stand to be humiliated or castigated. You do not need to be. You are not on trial. You have a backbone or you would not be an officer. When questions present the opportunity, repeat what you said on direct examination. Any unfair accusations made by the defense attorney should be refuted in positive manner, in certain terms and forcefully.

This does not mean that you engage in an argument or running battle with the cross-examiner. Such is the hope of the defense attorney. Just make statements in a factual manner, calmly, but positively as you did on direct examination. Do not permit yourself to become obviously angry and hostile as the defense attorney will attempt to relate such emotion on your part to prejudice and hostility toward the defendant.

Beware of questions made in an accusatory tone of voice. This is often done in the hope a witness will deny something the attorney knows in good reason to be true. Such a question is, "Have you discussed your testimony with anyone before coming to court?" The answers to such questions are simple—again, state the truth.

As stated above, if "yes" or "no" gives a full and complete answer, so state. But some questions cannot be truthfully answered by yes or no. You may explain your answer and should do so when necessary.

You are on the stand to present all of the facts. This responsibility continues throughout your testimony, even cross-examination. Do not permit an attorney to distort your former statements by predication in a question. If an attorney misquotes you, state so respectfully, but forcefully. Insure that you are presenting all of the facts.

The cross-examiner is permitted to employ leading questions. Avoid the pitfall of agreeing to statements made by the defense attorney, which are not entirely correct. This is particularly true when the attorney will make a compound statement, the major portion of which is true, but some of which is inaccurate. An unqualified agreement on your part is an agreement also to the misstatement. Such a relaxing of attention and diligence on the part of the witness may well give the defense attorney a potent point for argument to the jury. You have not discharged your duty to state the whole truth if you permit an attorney in the slightest degree to deviate your testimony from the actual facts.

Leave the stand when directed to do so by the judge. Maintain your businesslike attitude throughout. If you are finally excused and have no further business with the court, leave.

**Outside the
Courtroom**

Rules of conduct and decorum inside the courtroom apply equally in the halls and corridors. This is no place to congregate with other officers and joke as if you were at a picnic.

Do not discuss the case at recess of the court with the defense attorneys even though you may know them well. You may find that some remark you made lightly or in jest will soon come back to haunt you. Such remarks sound far different when officers are forced on the witness stand to admit that they made such statements. The humor will not be apparent in the courtroom atmosphere. Do your testifying on the stand.

Do not talk to jurors. If defendants are on bond and permitted to be free at recesses, etc., avoid talking to them for any reason. As a general rule, if your duties at the court would not normally entail certain acts or conducts, such should be avoided as nothing of benefit is to be gained, and embarrassing situations which you would not foresee may well arise.

**Self
Evaluation**

No other activities of the officers reflect more directly on their ability and competency than do their courtroom appearances. Officers should take pride in their courtroom presentations. They should, throughout their career, seek to improve themselves in this regard. Young officers should seek the advice and counsel of more experienced officers who are known to do a good job. All officers should welcome the constructive comments of fellow officers and prosecutors.

Many times the cross-examination of well-seasoned officers will be: "No questions," or two or three innocuous questions about how long the officers have been on the department, etc. When this occurs regularly, defense attorneys are paying high compliment to the officers. The officers have demonstrated their ability

and integrity in the past to the extent that defense attorneys know that their cases would, in all probability, be damaged by extensive cross-examination.

But to the experienced, as to the recruit, testifying should never be taken lightly or routinely. Each time officers should strive, through proper preparation and attention to all detail that they know to be important in a trial, to do the best possible job and thus, through each testifying experience, increase their stature as officers and citizens.

**Guidelines for
Arresting
Officer
Testimony**

The following series of questions have been asked of arresting officers in court cases involving the offense of Driving Under the Influence of Alcohol and are provided for illustrative purposes. The questions may be used as a guide for the arresting officer, as well as the state's attorney, to prepare and prosecute the above offense.

The questions are not necessarily in order or complete, nor is it intended that the list be taken as total preparation for a DUI case.

1. State your name please.
A. State full name, first name, middle name, last name.
2. What is your occupation?
A. I am an Illinois State Trooper or a _____ County Deputy
or _____ city police officer.
3. How long have you been so employed?
A. _____ years.
4. Were you so employed on _____?
A. Yes.
5. What were your duties on that date?
A. Patrol.
6. On that date, did you see the defendant, Mr./Mr./Miss/Ms.
_____ and, have a conversation with him/her?
A. Yes.
7. Do you see him/her in the courtroom?
A. Yes.
8. Would you point him/her out please?
A. Point and describe (a.i., the man to my left wearing
_____).
9. What first called your attention to the defendant?
A. I saw the defendants vehicle _____ speeding, weaving
_____.

10. Approximately what time was that?
 - A. approximately _____ a.m./p.m.
11. Where was his/her vehicle when you first observed it?
 - A. The officer should give street name, road name/number and direction of travel.
12. Where were you when you first observed him/her?
 - A. Northbound (direction), on Illinois Route (Road Number), behind the defendant's vehicle.
13. What was he/she doing?
 - A. Repeatedly weaving/speeding, etc.
14. If the defendant was involved in an accident:
 - A. Where did the accident occur?
 - B. Who was involved?
15. Was he/she alone in the vehicle?
16. Did the defendant get out of his/her vehicle?
17. Did you see him/her walking?
18. Did you detect any unusual odor at any time? If so, when?
19. Did you request the defendant to perform any tests?
 - A. Yes. I requested the defendant to perform a Horizontal Gaze Nystagmus test, a Walk and Turn test, a One-leg Stand test, and a Finger-to-Nose test.
20. Would you advise the court what instructions were given to the defendant for the Horizontal gaze Nystagmus test?
 - A. May I use my pocket notebook?
21. Why?
 - A. Because I use the pocket notebook in the field and do not rely on memory.

NOTE: The same answer should be used on all questions pertaining to the instructions.
22. What is nystagmus?
 - A. It is a jerking of the eye.
23. Who has nystagmus?
 - A. Everyone, but it cannot be seen in most people.

24. How can you use nystagmus to identify a person using alcohol?
A. Alcohol ingestion causes nystagmus to become visible to the naked eye and is distinct.
25. Can nystagmus be seen in some people who have not consumed alcohol?
A. Yes. Approximately 3 to 4 percent of the population exhibit nystagmus.
26. How do you know the nystagmus you are looking at is not one of the 3 - 4 percent?
A. Alcohol nystagmus is very distinct and the nystagmus test is used in conjunction with the other Field Sobriety tests when possible.
27. If a person is wearing glasses will that effect nystagmus?
A. No. However, we ask the person to remove the glasses so we can see the eyes better. This is not a vision test.
28. What if a person is wearing contact lenses?
A. Soft contact lenses will not effect the test. If the person is wearing hard contacts, the test is not performed.
29. Why is that?
A. Hard contacts will restrict the movement of the eye to maximum deviation or the contacts may pop out.
30. Describe what you are looking for when you perform this test?
A. There are three things observed in each eye; first I check to see if the eye has smooth pursuit, then I look for a distinct nystagmus at maximum deviation and then, I check to see if the angle of onset of the nystagmus is prior to 45 degrees.
31. What criteria is used to determine if a person is under the influence of alcohol?
A. There is one point given for each symptom observed with a total of six (6) points for the test. Four (4) points indicate an individual as having a BAC of .10 percent or above.
32. How do you know this is correct?
A. This information was received during my training in how to give a score the Field Sobriety test. The results of the Horizontal Gaze Nyustagmus tests have been validated by the National Highway Traffic Safety Administration through research in the laboratory and in the field.
33. Does the research support the theory that four (4) points indicate a person's BAC is .10 or above?
A. I was taught that it does with a capability of identifying 77 out of 100 people correctly.
34. Is there any other reason that a person would exhibit nystagmus?
A. Yes, besides the 3 to 4 percent who have a natural nystagmus, it can be

induced by spinning around in circles or by watching a moving image. Some type of brain damage can cause nystagmus and some drugs cause nystagmus.

35. What did you observe when you gave the defendant the Horizontal Gaze Nystagmus test?
A. I observed that the defendant's eyes could not follow smoothly, that the nystagmus at maximum deviation was distinct and that the angle of onset occurred prior to 45 degrees (describe only the points failed).
36. Based on your training, what did that indicate to you?
A. It indicated that the defendant's BrAC was at or above a .08 g/210L.
NOTE: May be phrased as having a BrAC that would cause the defendant to be under the influence of intoxicating liquor.
37. What other tests, if any, did you have the defendant perform?
A. The Walk and Turn, the One-Leg Stand test and the Finger-to-Nose test.
38. Can you advise the court how you gave the walk and turn test?
A. May I use my pocket notebook?
39. Why not?
A. I read the instructions and do not rely on my memory.
40. What are the instructions for the Walk and Turn test?
A. "I am going to check your balance. Please put your left foot on the line, then your right foot in front of it with your right heel touching your left toe." I show the suspect what I mean. "When I tell you to begin, take nine heel-to-toe steps back. Make your turn by pivoting on one foot, keeping it on the line, and using the other foot turn yourself around with several small steps." I show the suspect how I want the turn made. "Keep your hands at your side at all times, watch your feet at all times, and count your steps out loud. Once you begin, do not stop until you have completed the tests. Do you understand?"
41. Did the defendant say he/she understood?
A. Yes.
NOTE: The officer repeats only the parts not understood.
42. What did you observe during this test?
A. I observed the defendant _____ resulting in a score of _____ points.
NOTE: Each error made by the suspect should be pointed out.
43. What does it indicate to you if someone scores _____ points on the walk and turn test?
A. Based on my training it would indicate the person was under the

influence of intoxicating liquor.

44. What would bring you to that conclusion?
A. I was taught if a person scores two (2) or more points the BrAC would be .08 percent or above 68 times out of 100.
45. Did you give the defendant any other tests?
NOTE: The officer should continue relating the tests, instructions and results.
46. Do you ask every suspect to perform all of these tests?
A. I have the person perform as many of the tests as they can.
47. Could anything keep a person from doing these tests?
A. Yes. The Walk and Turn and the One-Leg Stand tests may be more difficult for a person 60 years of age or older, or a person 50 pounds overweight or more. Also, the weather and road conditions need to be considered. High heels and injuries to the leg or back may prevent the use of these tests.
48. How do the last three tests, the Walk and Turn, the One-Leg Stand, and the Finger-to-nose test, help you in determining if a suspect is intoxicated?
A. They are divided attention tasks requiring the suspect to maintain balance and listen to instruction and to perform at least two tasks at the same time. Research has shown that divided attention tasks are very difficult to do if a person is intoxicated.
49. Have you ever observed intoxicated persons before?
A. Yes.
50. Have you ever observed intoxicated persons perform the Field Sobriety Tests you have just described?
A. Yes. During training subjects were dosed and administered the Field Sobriety tests.
NOTE: The officer should be able to estimate the number of subjects he has seen perform the tests (before court make a count from your evaluation sheets).
51. After concluding the performance tests, what was your opinion of the effects of alcohol on Mr./Mrs./Miss/Ms. _____?
A. The defendant appeared intoxicated to the degree that he/she was impaired.
52. Would you say he/she was fit to drive a vehicle?
A. No.
53. Did you issue a uniform traffic citation for driving under the influence of intoxicating liquor to him/her?
A. Yes.

54. When and where was that citation issued?
 A. At the time of arrest while at the scene.
 NOTE: The issuance of the citation must precede the implementation of the Implied Consent Warning/Request.
55. Was the defendant requested to submit to a breath test?
 A. Yes. After the citation was issued.
56. Did he/she agree to submit to that test?
 A. Yes/No.
57. Did you take him/her to the instrument location?
 A. Yes. The defendant was taken to _____ where the intoxilyzer is located.
58. Approximately what time did you arrive at the instrument location?
 A. Approximately _____.
59. Did you complete an alcohol influence report form?
 A. Yes.
60. While completing that report, did you advise Mr./Mrs./Miss/Ms. _____ of his/her Miranda Warning and if so, approximately what time?
 A. Yes. At approximately _____ before I completed the interview portion of the report.
 NOTE: Questions pertaining to answers provided by defendant during the interview.
61. Did all of the events which you have related, occur in _____ County, in the State of Illinois?

**Guidelines for
 Breath
 Analysis
 Operator's
 Testimony**

The following series of questions have been asked of breath analyzer operators in testifying in court cases involving driving under the influence of intoxicating liquor and are provided for illustrative purposes:

The questions may be used as a guide for the breath analysis instrument operator as well as the state's attorney to prepare and prosecute the above offense. The questions are not necessarily in order or complete, nor is it intended that the list be taken as total preparation for a DUI case.

1. State your name please.
 A. State full name, first name, middle name, last name.
2. What is your business or occupation?
 A. I am an Illinois State Trooper or a _____ County Deputy or _____ city police officer.

3. How long have you been employed?
A. _____ years.
4. Were you so employed on ____ (date) ____?
A. Yes.
5. What were your duties on that date?
A. _____
6. Did you have an occasion to operate the breath analysis instrument on that date?
A. Yes.
7. What type of instrument was used?
A. Intoximeter EC/IR
B. Intoxilyzer 5000
C. Intoximeter RBT IV
8. What, if any, special training have you had?
A. Yes, Breath Analyzer Operator Training.
9. Were did you receive this training?
A. _____
10. Were there any tests given, and did you pass these tests?
A. Yes.
11. What proof do you have that you passed the exam?
A. I was issued a license by the Department of State Police.
12. How many tests have you run on a subject(s) for DUI?
A. _____ (#)
13. How often do you operate the instrument?
A. _____
14. In operating the breath test instrument, what is the first thing done?
A. (EC/IR) Check to see if the display is scrolling.
B. (5000) Push the red power button if it is not on.
C. (RBT IV) Push the on button.
15. Is there an Operational Procedure list used?
A. No
16. Where is it located?
A. _____
18. After waiting 20 minutes, can you explain the procedure you used?
A. _____

19. I now show you what purports to be a test record card. People's Exhibit Number #1 for identification.
A. Yes.
20. Do you recognize this forms?
A. Yes.
21. Did you fill out this test record card?
A. (EC/IR) No. The instrument printed it.
B. (5000) Yes.
C. (RBT IV) No. The instrument printed it.
22. What was printed on the ticket by the instrument?
A. Information about the instrument and the test result.
23. What was the breath analysis result?
A. _____ g/210 L
24. Are these results recorded anywhere else?
A. Yes.
• in the logbook
• in the instruments memory
25. This book. Please mark it People's Exhibit Number #2 for identification. Do you recognize this book?
A. Yes.
27. What is it, and what is its use?
A. The instrument logbook. It is used to document subject test results conducted on the instrument.
28. Did you make the entry in the logbook?
A. Yes.
29. Could you tell the court what is written in the logbook?
A. _____
30. What is your opinion of his/her condition
A. Impaired and over the per se limit of .08 g/210 L.
31. Were there any witnesses present when you performed the breath test?
A. Yes/No.

**Legal Aspects
Check List**

- I. Suspect is under arrest.
2. Uniform traffic ticket charging violation of Chapter 95 I/2, Section 11-501, Illinois Revised Statutes, or similar provisions of municipal ordinance, has been issued to suspect.

3. Arresting officer has specifically requested suspect to take a breath, blood, or urine test.
4. Suspect has been given the warning by arresting officer in the manner prescribed by statute.
5. Operator is fully conversant with standards of Department of State Police with regard to validity of license, operation of the instrument, and certification of the instrument.
6. The test was administered in strict compliance with the standards.
7. Results of the test were furnished to suspect or suspect's attorney upon motion.
8. Test results are merely corroborative evidence. Remain alert for visual symptoms, statements of suspect, and indications of drug induced behavior.
9. Be thoroughly prepared to respond to questions regarding your competency including:

Where your training took place and when.
Extent of training.
How many were in your class?
Did you take examinations?
What were your scores on examinations?
Where did you rank in your class?
By whom employed and how long.
Number of previous tests conducted.
What books or periodicals have you read in your field?
Licensing--By whom and when?
Relicensing and retraining.

The Instrument

The manufacturer, when acquired and from whom?
How soon it was used after being acquired.
Was anything done to the instrument before being put into use?
How does it work?
Has it ever been examined by anyone? Why? How many times?
When was it last examined?
When was it last used?
Has it ever malfunctioned?
If yes, what was the malfunction, how was it repaired and by whom?
Do you keep records on all tests, the results and who ran them?
Do you have a manufacturer's operational procedures?
Where is it kept? Do you use it? Did you use it in this case?

Reminder

YOU ARE NOT AN EXPERT ON THE EFFECTS OF ALCOHOL IN THE
HUMAN BODY. YOU ARE BEING QUALIFIED ONLY ON THE
OPERATION OF THE INSTRUMENT.

Appendix 1

Testing of Breath, Blood and Urine for Alcohol, Other Drug, and Intoxicating Compounds

20 Illinois Administrative Code 1286

Illinois Vehicle Code 625 ILCS 5/11-500 and 501

issued by
Illinois State Police

Testing of Breath, Blood and Urine for Alcohol, Other Drugs, and Intoxicating Compounds

20 Illinois Administrative Code 1286

**Illinois Vehicle Code
625 ILCS 5/11-501.2**



ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

TITLE 20: CORRECTIONS, CRIMINAL JUSTICE, AND LAW ENFORCEMENT
CHAPTER II: DEPARTMENT OF STATE POLICE

PART 1286

TESTING OF BREATH, BLOOD AND URINE
FOR ALCOHOL, OTHER DRUGS, AND INTOXICATING COMPOUNDS

SUBPART A: GENERAL PROVISIONS

Section	
1286.10	Definitions
1286.20	Grievances
1286.30	Additional Testing
1286.40	Conversion of a Blood Serum or Blood Plasma Alcohol Concentration to a Whole Blood Equivalent
1286.50	Passive Sensors
1286.60	Department Notification
1286.70	Maintenance of Records for Approved Evidentiary Instruments
1286.75	Subpoena Procedure for Evidentiary Instruments
1286.80	Approved Evidentiary Instrument and Logbook Availability
1286.90	Reporting Laboratory Results

SUBPART B: APPROVAL PROCEDURES FOR PERSONS AND
LABORATORIES TO PERFORM SPECIFIC FUNCTIONS

Section	
1286.100	Licensing BAOs
1286.110	Renewal of BAO License
1286.120	Revocation and Denial of BAO License
1286.130	Authorization of BATs
1286.140	Revocation and Denial of BAT Authorization
1286.150	Accrediting BAIs
1286.160	Revocation and Denial of BAI Accreditation
1286.170	Certification of Laboratories and Laboratory Technicians
1286.180	Revocation and Denial of Laboratory Certification

SUBPART C: EQUIPMENT

Section	
1286.200	Equipment Approval and Accuracy

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

- 1286.210 Evidentiary Instrument Approval
- 1286.220 Checking Approved Evidentiary Instruments for Accuracy
- 1286.230 Checking Approved Evidentiary Instruments for Continued Accuracy
- 1286.240 PBT Approval
- 1286.250 Checking Approved PBTs for Accuracy
- 1286.260 Operation of PBTs

SUBPART D: SAMPLING PROCEDURES

- Section
- 1286.300 General Sampling Protocol
- 1286.310 Approved Evidentiary Instrument Operation
- 1286.320 Blood Collection for Determining the Presence of Alcohol, Other Drugs or Intoxicating Compounds
- 1286.330 Urine Collection for Determining the Presence of Alcohol, Other Drugs or Intoxicating Compounds
- 1286.340 Urine Collection for Determining the Concentration of Urine Alcohol (Repealed)
- 1286.350 Operation of PBTs (Repealed)

AUTHORITY: Authorized by Section 2605-15 of the Civil Administrative Code of Illinois [20 ILCS 2605/2605-15]. Implementing and authorized by Section 6-106.1a of the Illinois Vehicle Code [625 ILCS 5/6-106.1a]. Implementing and authorized by Section 11-501.2 of the Illinois Vehicle Code [625 ILCS 5/11-501.2]. Implementing Section 11-501.5 of the Illinois Vehicle Code [625 ILCS 5/11-501.5]. Implementing Section 11-501.6 of the Illinois Vehicle Code [625 ILCS 5/11-501.6]. Implementing and authorized by Section 11-501.8 of the Illinois Vehicle Code [625 ILCS 5/11-501.8]. Implementing Section 5-7.5 of the Snowmobile Registration and Safety Act [625 ILCS 40/5-7.5]. Implementing Section 5-16b of the Boat Registration and Safety Act [625 ILCS 45/5-16b]. Implementing and authorized by Section 6-1 of the Boat Registration and Safety Act [625 ILCS 45/6-1].

SOURCE: Adopted by emergency rulemaking at 25 Ill. Reg. 239, effective January 1, 2001, for a maximum of 150 days; adopted at 25 Ill. Reg. 3023, effective February 1, 2001; amended at 28 Ill. Reg. 10017, effective June 30, 2004; amended at 31 Ill. Reg. 7305, effective May 1, 2007; emergency amendment at 31 Ill. Reg. 10188, effective July 9, 2007, for a maximum of 150 days; amended at 31 Ill. Reg. 15107, effective October 29, 2007; amended at 33 Ill. Reg. 8529, effective June 4, 2009.

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

SUBPART A: GENERAL PROVISIONS

Section 1286.10 Definitions

"Accredited Law Enforcement Training Academy" means a police training organization that is recognized by the Illinois Law Enforcement Training Standards Board and is accredited by Commission on Accreditation for Law Enforcement Agencies (CALEA), 10302 Eaton Place, Suite 100, Fairfax VA 22030-2215.

"Accuracy Check Record" means the data recorded in a logbook or stored in memory when an accuracy check is performed on an approved evidentiary instrument. Accuracy test records will include at least the type of instrument, instrument serial number, test date, reference sample value, and the readings of the two accuracy check tests. Certification check and standard check are synonyms for accuracy check.

"Agency" means a Municipal, Park District, County, State, Federal law enforcement agency or Circuit Court Probation Department involved in the use of approved evidentiary instruments or PBTs.

"Alcohol" means ethanol (commonly referred to as grain alcohol), ethyl alcohol, alcoholic beverage, alcoholic liquor, isopropanol or methanol.

"Alcohol Concentration" means weight in grams of alcohol in a specified volume of blood, breath, or urine.

"Approved Evidentiary Instrument" means an instrument approved for use by the Department to obtain a BrAC pursuant to a breath test as described under Section 6-106.1a of the Illinois Vehicle Code [625 ILCS 5/6-106.1a], Section 11-501 of the Illinois Vehicle Code [625 ILCS 5/11-501], Section 11-501.1 of the Illinois Vehicle Code [625 ILCS 5/11-501.1], Section 11-501.2 of the Illinois Vehicle Code [625 ILCS 5/11-501.2], Section 11-501.6 of the Illinois Vehicle Code [625 ILCS 5/11-501.6], Section 11-501.8 of the Illinois Vehicle Code [625 ILCS 5/11-501.8], and Sections that cross-reference Section 11-501.2 of the Illinois Vehicle Code [625 ILCS 5/11-501.2].

"Approved PBT" means an instrument approved for use by the Department either to obtain a BrAC pursuant to a preliminary breath screening test as described under Section 11-501.5 of the Illinois Vehicle Code [625 ILCS 5/11-501.5],

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

Section 5-7.5 of the Snowmobile Registration and Safety Act [625 ILCS 40/5-16b], Section 5-16b of the Boat Registration and Safety Act [625 ILCS 45/5-16b], and Sections that cross-reference Section 11-501.5 of the Illinois Vehicle Code [625 ILCS 5/11-501.5] or to obtain a BrAC pursuant to a breath test as described under Section 11-501.6 of the Illinois Vehicle Code [625 ILCS 5/11-501.6], and Section 11-501.8 of the Illinois Vehicle Code [625 ILCS 5/11-501.8].

"Blood Alcohol Concentration" or "BAC" means grams of alcohol per 100 milliliters of whole blood (Section 11-501.2(a)(5) of the Illinois Vehicle Code [625 ILCS 5/11-501.2(a)(5)]).

"Breath Alcohol Concentration" or "BrAC" means *grams of alcohol per 210 liters of breath* (Section 11-501.2(a)5 of the Illinois Vehicle Code [625 ILCS 5/11-501.2(a)5]).

"Breakdown" means a malfunction that affects the analytical performance of the instrument or its ability to quantitate a BrAC.

"Breath Analysis Instructor" or "BAI" means an individual who is accredited by the Department to instruct breath analysis instrument operations and to train and administer licensing examinations to BAOs.

"Breath Analysis Operator" or "BAO" means an individual licensed by the Department to operate approved evidentiary instruments and to create subject test records. BAOs can print local reports, perform basic maintenance (i.e., replace a fuse), and make minor adjustments (i.e., correct the date/time).

"Breath Analysis Reading" means the numeric value of the first two digits to the right of the decimal point of a BrAC analysis as displayed, printed, or recorded by an instrument.

"Breath Analysis Technician" or "BAT" means an individual who is authorized by the Department to conduct re-certification classes for BAOs and to administer that examination, to install, examine, certify, repair, maintain, check the accuracy of approved evidentiary instruments, and create accuracy check records and service records.

"Central Repository" means the collection and maintenance by the Department of business records, maintained by an agency in the normal course of business, of subject test records, quick tests, accuracy check records, calibrations, and service

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

records.

"Certified Paramedic" means an individual licensed by the Illinois Department of Public Health as an Emergency Medical Technician (Intermediate) or Emergency Medical Technician (Paramedic) acting under the direction of a licensed physician as a phlebotomist.

"Department" means the Illinois Department of State Police.

"Director" means the Director of State Police.

"Foreign Substance" means any substance not in the subject's body when a 20-minute observation period is commenced, excluding a substance introduced due to normal breathing.

"Ingested" means eaten, chewed, swallowed or consumed by mouth in any other manner; inhaled, sniffed, snorted, sprayed, or introduced into the breathing passages in any other manner; injected or introduced into the body in any manner.

"Instrument" means any item or combination of items of equipment used to quantitate a breath analysis reading.

"Internal Memory" means the digital storage medium that is part of an approved evidentiary instrument that registers subject test records, accuracy check records, quick tests, and calibrations.

"License" means a permit issued as evidence by the Department to an individual as proof of his or her authority and competence as a BAO, BAT, BAI, or PBT-E.

"Logbook" means a business record, maintained by the agency in the normal course of business, of subject test records and accuracy check records. The logbook does not contain automatic accuracy checks or accuracy checks performed remotely.

"Malfunction" means failure of an instrument to function properly.

"NHTSA's List" means the Conforming Products List of Evidential Breath Measuring Instruments produced by the National Highway Traffic Safety Administration, United States Department of Transportation.

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

"Passive Sensor" means a unit that monitors ambient air for the presence of alcohol for an investigative purpose.

"Phlebotomist" means a person trained to collect blood from another individual through venipuncture.

"Preliminary Breath Test Device" or "PBT" means a portable device used to quantitate a breath analysis reading.

"Preliminary Breath Test Examiner" or "PBT-E" means a BAO who is authorized by the Department to perform accuracy checks on preliminary breath test devices.

"Reference Sample" means either a solution for use in a breath simulator, commonly referred to as a wet bath simulator, or a dry gas mixture, commonly referred to as a dry gas evidential standard (DGES), for the purpose of instrument certification, accuracy checks, and/or calibration.

"Service Record" means information concerning an instrument breakdown. Service records will include at least the type of instrument, instrument serial number, date of service, service issue reported, service issue found, probable cause of service issue, corrective action taken, and BAT. Service records do not include information such as a bill for repairs of an approved evidentiary instrument or documentation included with an instrument returned from the manufacturer.

"Subject Test Record" means the data recorded by a BAO in the logbook or printed out or stored by the instrument in memory when a subject is tested with an approved evidentiary instrument. Subject test records will include at least the type of instrument, instrument serial number, name of individual tested, test date, breath analysis reading, and BAO. Subject Test Records do not include information other than that which can be recorded in instrument memory or the central repository.

"Urine Alcohol Concentration" or "UAC" means *the number of grams of alcohol per 67 milliliters of urine* (Section 6-500(2)(C) of the Illinois Vehicle Code [625 ILCS 5/6-500(2)(C)]).

"Whole Blood Equivalent" means the conversion of a blood serum or blood plasma alcohol concentration to an approximate BAC.

(Source: Amended at 33 Ill. Reg. 8529, effective June 4, 2009)

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

Section 1286.20 Grievances

Aggrieved persons who wish to contest the Department's actions with respect to their BAO license, BAT authorization, PBT-E authorization, BAI accreditation, or laboratory certification shall follow general hearing procedures outlined in 20 Ill. Adm. Code 1200.

(Source: Amended at 28 Ill. Reg. 10017, effective June 30, 2004)

Section 1286.30 Additional Testing

Should a subject choose to undergo additional chemical analysis, *the person tested may have a physician, or a qualified technician, chemist, registered nurse, or other qualified person of his/her own choosing administer a chemical test or tests in addition to any administered at the direction of a law enforcement officer* (Section 11-501.2(a)3 of the Illinois Vehicle Code).

- a) The additional tests must be conducted in a manner as close as practicable to the procedures in this Part.
- b) Persons wishing to have additional tests administered shall make their own arrangements for such tests.
- c) Any additional testing conducted pursuant to this Section shall be at the subject's expense and subsequent to the posting of bond.

Section 1286.40 Conversion of a Blood Serum or Blood Plasma Alcohol Concentration to a Whole Blood Equivalent

The blood serum or blood plasma alcohol concentration result will be divided by 1.18 to obtain a whole blood equivalent.

Section 1286.50 Passive Sensors

Passive sensors are not regulated by the Department.

Section 1286.60 Department Notification

- a) Agencies shall notify the Department:
 - 1) If an approved evidentiary instrument needs service.

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

- 2) If the agency receives an approved evidentiary instrument or PBT from an entity other than the manufacturer.
 - 3) If an agency returns the evidentiary instrument to the manufacturer for repairs, the service report shall be submitted to the Department.
- b) BAOs shall notify the Department:
- 1) If the BAO leaves the employment of the agency that employed the BAO.
 - 2) If the BAO changes his or her name.
- c) Certified laboratories shall notify the Department of any change in accreditation status.
- d) Any manufacturer who sells an approved evidentiary instrument or a PBT to an agency in Illinois shall notify the Department of all such sales, listing the name of the agency, the date, the make, and serial number of the instrument.

(Source: Amended at 31 Ill. Reg. 7305, effective May 1, 2007)

Section 1286.70 Maintenance of Records for Approved Evidentiary Instruments

Subject test records, accuracy check records, and service records will be maintained for and/or by each approved evidentiary instrument.

- a) Subject test records and accuracy check records may be maintained in a logbook and/or the instrument's memory.
- b) Logbook entries will be made in the logbook as contemporaneous as reasonably practicable to the time the procedure was performed.
- c) Service records will be maintained by the Alcohol and Substance Testing Section or may be maintained in the instrument's memory. Malfunctions that are not breakdowns (non-analytical failures such as battery expiration, incorrect time/date, printer problems, keyboard replacement, breath hose replacement, etc.) will not be documented.
- d) Only instruments equipped with sufficient internal memory to store 100 subject

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

test records and that can download stored information to the central repository may keep the test records in the memory of the instrument.

- e) All records removed from the internal memory of an instrument shall be erased and downloaded if possible and practicable, to the central repository.
- f) The central repository will maintain instrument records for not less than five years from the date downloaded.

(Source: Amended at 31 Ill. Reg. 7305, effective May 1, 2007)

Section 1286.75 Subpoena Procedure for Evidentiary Instruments

- a) Subpoena requests for accuracy checks, subject tests, quick tests, calibrations, and maintenance/repair records will be responded to as quickly as possible. If the response cannot be provided within the timeframe requested, the requesting party shall be notified by telephone. If further information is needed to determine the material requested, the requesting party shall be contacted by telephone to obtain this information and the subpoena response completed.
- b) The timeframe for the information provided in response to a subpoena request for accuracy checks, subject tests, quick tests, calibrations, and maintenance/repair records shall be from 62 days prior to the subject's arrest date through 62 days following the arrest date.

(Source: Amended at 33 Ill. Reg. 8529, effective June 4, 2009)

Section 1286.80 Approved Evidentiary Instrument and Logbook Availability

- a) All agencies shall have their approved evidentiary instruments available for examination by a BAT.
- b) All agencies shall have the logbooks for their approved evidentiary instruments available for examination by a BAT.
- c) Agencies with portable evidentiary instruments may be required to transport the instrument to a specific location for its accuracy check.

(Source: Amended at 28 Ill. Reg. 10017, effective June 30, 2004)

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

Section 1286.90 Reporting Laboratory Results

- a) Laboratories shall return the original analysis report of the blood or urine sample to the submitting agency only.
- b) Laboratories shall retain a duplicate copy of the analysis report in the testing laboratory for two years.

(Source: Amended at 28 Ill. Reg. 10017, effective June 30, 2004)

SUBPART B: APPROVAL PROCEDURES FOR PERSONS AND
LABORATORIES TO PERFORM SPECIFIC FUNCTIONS

Section 1286.100 Licensing BAOs

The Director or his/her designee is authorized to license persons to be BAOs subject to the requirements of this Section. BAOs are licensed to perform all appropriate BAO functions described in this Part. Only licensed BAOs may operate evidential breath testing instruments.

- a) To be eligible to be a BAO, the individual must be employed by an agency or an accredited law enforcement training academy. BAO candidates, including those who have previously been licensed as a BAO in another state, must successfully attend the course and pass the written and proficiency examination or successfully complete a computer-based training (CBT) course.
- b) Under the direction and control of a BAI, BAO candidates must:
 - 1) Complete a training curriculum approved by the Department that includes a minimum of 24 hours of instruction, which includes the following:
 - A) Presentation and discussion of the psychological, physiological, and pharmacological effects of alcohol in the human body;
 - B) Demonstration and discussion of instruments and the analytical processes used to measure BrAC;
 - C) Practical application and demonstration in the use of an approved evidentiary instrument; and

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

- D) Discussion of current DUI issues, the administrative rules, and case law.
- 2) Pass the following:
 - A) The standardized written examination for Breath Analysis Operator provided by the Department with a minimum score of 70 percent.
 - B) A proficiency examination where the candidate operates approved evidentiary instruments.
- c) A license shall be valid for a period of three years after the printed date of issuance. If the license is not renewed as provided for in Section 1286.110, it shall expire three years after the printed date of issuance.
- d) Licensing classes will be held in locations approved by the Department based upon appropriate lighting, space, heating, and air conditioning conditions.

(Source: Amended at 33 Ill. Reg. 8529, effective June 4, 2009)

Section 1286.110 Renewal of BAO License

The Director or his/her designee is authorized to renew BAO licenses subject to the requirements of this Section. An individual with a renewed BAO license is a BAO. A renewed BAO license shall be subject to the same terms and conditions as an original BAO license.

- a) BAO license renewal candidates must either successfully attend the renewal course and pass the written renewal examination or successfully complete the computer-based training course.
 - 1) Under the direction and control of a BAT, BAO renewal candidates attending the renewal course must:
 - A) Complete a training curriculum approved by the Department that includes the following:
 - i) Review of theory and practice with an approved evidentiary instrument;

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

- ii) Review of administrative rules as contained in this Part;
and
- iii) Review of current and related problems in the field.
- B) Pass the following:
 - i) The standardized written examination for Breath Analysis Operator provided by the Department with a minimum score of 70 percent; and
 - ii) A proficiency examination where the candidate operates an approved evidentiary instrument.
- 2) The computer-based BAO license renewal course will:
 - A) Review subject matter similar to the BAO classroom instruction;
and
 - B) Provide an objective examination that the BAO license renewal candidate must pass with a minimum score of 70 percent.
- b) A BAO license that has either been revoked or been expired for more than one year cannot be renewed. To become licensed again, the individual must complete the initial licensure course. Appeals from this decision may be pursued in accordance with Section 1286.20.
- c) The Department will designate sites and dates for renewal courses.
- d) Renewal courses will be held in locations approved by the Department based upon appropriate lighting, space, heating, and air conditioning conditions.

(Source: Amended at 33 Ill. Reg. 8529, effective June 4, 2009)

Section 1286.120 Revocation and Denial of BAO License

The Director or his/her designee may revoke a BAO license or deny BAO licensing. Grounds for BAO license revocation and denial can be, but are not limited to:

- a) Misuse of an instrument by the BAO in such a way that he or she violated State

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

law or this Part.

- b) Unauthorized testing of the analytical system of an instrument.
- c) Unauthorized attempts to access instrument memory.
- d) Failure to comply with Section 1286.100.
- e) Failure to notify the Department the BAO has changed his or her name from what it was when the license was issued.
- f) Failure to notify the Department the BAO is no longer employed by the agency that employed the BAO.
- g) Failure to comply with Department direction with regard to correcting the BAO license information subsequent to a change in employment or name.
- h) Relocating approved evidentiary instruments without Department approval.
- i) Anything deemed by the Director or his/her designee not in the best interest of the program.

Section 1286.130 Authorization of BATs

The Director or his/her designee is authorized to license persons employed by the Department to be BATs subject to the requirements of this Section. BATs are authorized to perform all appropriate BAT functions described in this Part.

- a) BATs must be BAOs and meet all BAO licensing requirements.
- b) The candidate must display knowledge and understanding through specialized training in all of the following areas:
 - 1) Psychological, physiological, and pharmacological effects of alcohol in the human body;
 - 2) Proficiency on all approved evidentiary instruments and the analytical processes used to measure BrAC;
 - 3) Maintenance, calibration, and repair procedures on all approved

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

evidentiary instruments; and

- 4) Knowledge of current DUI issues, the administrative rules, and case law.
- c) Under the direction and control of the Director or his/her designee, BAT candidates must pass a proficiency examination for each approved evidentiary instrument.
- d) A BAT's authorization period coincides with his or her BAO license term. The Director or his/her designee will evaluate the appropriateness of renewing the BAT authorization when the BAO license is renewed. Other than keeping their BAO license current, BATs are not required to retake the examination in subsection (c) of this Section to retain their authorization as a BAT.
- e) The Department will maintain a list of authorized BATs.

(Source: Amended at 28 Ill. Reg. 10017, effective June 30, 2004)

Section 1286.140 Revocation and Denial of BAT Authorization

The Director or his/her designee may revoke or deny authorization to a BAT. Grounds for revocation or denial of BAT authorization can be, but are not limited to:

- a) Any grounds for revocation set forth in Section 1286.120.
- b) Failure to comply with Section 1286.130.
- c) Anything deemed by the Director or designee not in the best interest of the program.

Section 1286.150 Accrediting BAIs

The Director or his/her designee is authorized to accredit persons to be BAIs subject to the requirements of this Section. BAIs are accredited to perform all appropriate BAI functions described in this Part.

- a) The BAIs must be BAOs and meet all BAO licensing requirements.
- b) The candidate must display knowledge and understanding through specialized training in all of the following areas:

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

- 1) Psychological, physiological, and pharmacological effects of alcohol in the human body;
 - 2) Proficiency on all approved evidentiary instruments and the analytical processes used to measure BrAC;
 - 3) Maintenance, calibration, and repair procedures on all approved evidentiary instruments; and
 - 4) Knowledge of current DUI issues, the administrative rules, and case law.
- c) Under the direction and control of the Director or his/her designee, BAI candidates must pass the following:
- 1) The written breath analysis operator's examination with a minimum score of 100 percent;
 - 2) The written breath analysis instructor's examination with a minimum score of 90 percent; and
 - 3) A proficiency examination for each approved evidentiary instrument.
- d) The Director or his/her designee will evaluate the appropriateness of maintaining an individual's BAI accreditation. Other than keeping their BAO license current, BAIs are not required to retake the examinations in subsection (c) to retain their accreditation.
- e) The Department will maintain a list of accredited BAIs.

(Source: Amended at 28 Ill. Reg. 10017, effective June 30, 2004)

Section 1286.160 Revocation and Denial of BAI Accreditation

The Director or his/her designee may revoke or deny accreditation to a BAI. Grounds for revocation or denial of BAI accrediting can be, but are not limited to:

- a) Any grounds for revocation set forth in Section 1286.120.
- b) Failure to comply with Section 1286.150.

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

- c) Anything deemed by the Director or designee not in the best interest of the program.

Section 1286.170 Certification of Laboratories and Laboratory Technicians

The Director or his/her designee is authorized to certify laboratories and laboratory technicians subject to the requirements of this Section.

- a) Only laboratories that employ technicians who work under the supervision of a pathologist, toxicologist, or other person who has at least five years experience in the specialty of analytical chemistry may be deemed qualified to detect and/or quantitate alcohol and/or other drugs in human biological fluids will be certified by the Department. The Laboratory Director shall be responsible for the accuracy of all laboratory testing performed in the laboratory. The following conditions must be met by laboratories:
 - 1) Prior to initial laboratory certification, and at least biannually thereafter, the Department shall request the demonstration of proficiency in the performance of the tests by the laboratory through the satisfactory examination of specimens by participation in a program of proficiency testing conducted by an agency or agencies approved by the Department.
 - A) The Laboratory Director will advise the Department of the proficiency testing program in which it is participating.
 - B) The laboratory will direct the proficiency testing agency to forward a copy of the laboratory's testing results and evaluations to the Department after each testing cycle.
 - 2) A candidate for certification under this Part shall furnish evidence of competent supervision by a person who meets the qualifications set forth in this Section.
- b) Upon evidence that a laboratory has complied with this Section, a letter of certification listing those technicians certified to perform appropriate tests shall be issued, and such certification shall be valid for three calendar years. It may be renewed upon submission by the holder of the certification of evidence that the laboratory continues to perform analyses for alcohol concentration and/or other drug content on human biological fluids under the supervision of a person meeting the qualifications set forth in this Section and upon the Department's

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

determination that the laboratory is complying with subsection (a)(1) of this Section.

(Source: Amended at 33 Ill. Reg. 8529, effective June 4, 2009)

Section 1286.180 Revocation and Denial of Laboratory Certification

The Director or his/her designee may revoke or deny certification of a laboratory or a laboratory technician. Grounds for revocation or denial of certification can be, but are not limited to:

- a) Change in laboratory accreditation status.
- b) Failure to comply with Section 1286.170.
- c) Anything deemed by the Director or his/her designee not in the best interest of the program.

(Source: Amended at 33 Ill. Reg. 8529, effective June 4, 2009)

SUBPART C: EQUIPMENT

Section 1286.200 Equipment Approval and Accuracy

The procedures contained in this Subpart are the only procedures for establishing the accuracy of breath testing instruments. A rebuttable presumption exists that an instrument was accurate at the particular time a subject test was performed when the following four conditions are met.

- a) The instrument was approved under this Subpart at the time of the subject test.
- b) The performance of the instrument was within the accuracy tolerance described in this Subpart according to the last accuracy check prior to the subject test.
- c) No accuracy check has been performed subsequent to the subject test or the next accuracy check after the subject test was within the accuracy tolerance described in this Subpart.
- d) Accuracy checks have been done in a timely manner, meaning not more than 62 days have passed since the last accuracy check prior to the subject test.

(Source: Amended at 33 Ill. Reg. 8529, effective June 4, 2009)

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

Section 1286.210 Evidentiary Instrument Approval

Approved evidentiary instruments shall print and display a breath analysis reading. Approved evidentiary instruments can print and display two or three digits to the right of the decimal point. Whether the approved evidentiary instrument prints and displays two or three digits to the right of the decimal point, the breath analysis reading consists of the first two digits to the right of the decimal point.

- a) The Department shall only approve evidentiary instruments enumerated in NHTSA's list. The Department approves the following instruments for obtaining breath analysis readings:
 - 1) Intoximeters EC-IR, manufactured by Intoximeters, Inc.
 - 2) RBT IV, in conjunction with a printer, manufactured by Intoximeters, Inc.
 - 3) Intoximeters EC-IR II, manufactured by Intoximeters, Inc.
 - 4) Intoxilyzer 8000, manufactured by CMI, Inc.
 - 5) Intoxilyzer EC-IR II, with serial numbers 10001 and above, manufactured by Intoximeters, Inc.
- b) Should an instrument in subsection (a) be removed from NHTSA's list, the instrument will remain an approved evidentiary instrument under this Part for a period of 18 months subsequent to removal or until this Section is amended.
- c) The Department may temporarily approve additional evidential instrumentation from NHTSA's list after conducting a program suitability evaluation. The Department shall maintain a list of evidentiary instruments temporarily approved for breath testing in addition to those provided in subsection (a). Evidentiary instruments may be temporarily approved for a maximum period of 18 months. The list of temporarily approved evidentiary instruments, if any, shall be available to the public upon request to the Alcohol and Substance Testing Section.

(Source: Amended at 33 Ill. Reg. 8529, effective June 4, 2009)

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

Section 1286.220 Checking Approved Evidentiary Instruments for Accuracy

The accuracy of all approved evidentiary instruments used to obtain a breath analysis reading from a subject shall be checked by a BAT.

- a) Accuracy checks are required:
 - 1) Prior to being placed in operation;
 - 2) After a breakdown has been repaired; and/or
 - 3) When an approved evidentiary instrument fails to quantitate the two required accuracy check tests within 10 percent of the reference sample's value, as adjusted for environmental factors.
- b) Approved evidentiary instruments must quantitate the reference sample within 10 percent of the reference sample's value, as adjusted for environmental factors, to be certified accurate. Accuracy beyond the second digit to the right of the decimal point is not required.
- c) Approved evidentiary instruments shall be adjusted by a BAT when necessary to cause the instruments to quantitate the reference sample within 10 percent of the reference sample's value, as adjusted for environmental factors.
- d) The accuracy check results shall be recorded in the instrument's logbook or internal memory, or in the central repository. The automatic accuracy checks or accuracy checks performed remotely will not be entered in the instrument logbook. If the accuracy check was performed by a BAT at the instrument location, the accuracy check results shall be recorded in the instrument's logbook.

(Source: Amended at 33 Ill. Reg. 8529, effective June 4, 2009)

Section 1286.230 Checking Approved Evidentiary Instruments for Continued Accuracy

To ensure the continued accuracy of approved evidentiary instruments, a BAT or automated system shall perform accuracy checks.

- a) Checks shall be performed at least once every 62 days.
- b) Checks shall consist of at least two tests of the instrument in which the instrument

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

quantitates a reference sample.

- c) Approved evidentiary instruments must quantitate a reference sample within 10 percent of the reference sample's value, as adjusted for environmental factors. Accuracy beyond the second digit to the right of the decimal point is not required.
- d) The accuracy check results shall be recorded in the instrument's logbook or internal memory, or in the central repository. The automatic accuracy checks or accuracy checks performed remotely will not be entered in the logbook. If the accuracy check was performed by a BAT at the instrument location, the accuracy check results shall be recorded in the instrument's logbook.

(Source: Amended at 33 Ill. Reg. 8529, effective June 4, 2009)

Section 1286.240 PBT Approval

PBTs shall display a breath analysis reading. PBTs can display two or three digits to the right of the decimal point. Whether the PBT displays two or three digits to the right of the decimal point, the breath analysis reading consists of the first two digits to the right of the decimal point.

- a) The Department shall only approve PBTs enumerated in NHTSA's list. The Department approves the following PBTs for obtaining breath analysis readings:
 - 1) S-D2, manufactured by CMI, Inc.
 - 2) Alcosensor III, manufactured by Intoximeters, Inc.
 - 3) Alcosensor III (Enhanced with serial numbers above 1,200,000), manufactured by Intoximeters, Inc.
 - 4) Alcosensor IV, manufactured by Intoximeters, Inc.
 - 5) S-D5, manufactured by CMI, Inc.
 - 6) Alcosensor FST, manufactured by Intoximeters, Inc.
- b) The Department may temporarily approve additional PBTs from NHTSA's list after conducting a program suitability evaluation. The Department shall maintain a list of PBTs temporarily approved for screening instrument testing in addition to those provided in subsection (a). PBTs may be temporarily approved for a

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

maximum period of 18 months. The list of temporarily approved PBTs, if any, shall be available to the public upon request to the Alcohol and Substance Testing Section.

(Source: Amended at 33 Ill. Reg. 8529, effective June 4, 2009)

Section 1286.250 Checking Approved PBTs for Accuracy

PBTs shall be checked for accuracy by a BAT or an individual specially trained to perform PBT accuracy checks at least once every 93 days. To be accurate, the PBT must quantitate a reference sample within 10 percent of the reference sample's value, as adjusted for environmental factors. Accuracy beyond the second digit to the right of the decimal point is not required.

(Source: Amended at 33 Ill. Reg. 8529, effective June 4, 2009)

Section 1286.260 Operation of PBTs

The following procedures shall be used to obtain a breath sample to determine a subject's BrAC with an approved PBT:

- a) Each test shall be performed according to an operational procedure programmed into the instrument.
- b) A test shall consist of only one breath analysis reading, based on the PBT's internal operational calculations.
 - 1) A complete and valid breath analysis reading is denoted by at least one air blank, one subject breath test reading, and no breakdown message.
 - 2) Messages such as "No Go", "Void", etc., are not breakdowns or malfunctions. These messages indicate the subject's failure to adequately complete the test.
- c) A subject who submits an insufficient sample or otherwise fails to adequately complete the test or tests may be asked to submit to an additional test or tests.

(Source: Amended at 31 Ill. Reg. 7305, effective May 1, 2007)

SUBPART D: SAMPLING PROCEDURES

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

Section 1286.300 General Sampling Protocol

The arresting officer has discretion to determine whether a subject will be required to submit a breath, blood, and/or urine sample for testing.

- a) If the subject has been in a vehicle crash and must be treated or is currently being treated by a physician licensed to practice medicine for injuries sustained in the crash, the arresting officer will consult with the treating physician to determine when best to test the subject without unreasonably jeopardizing the subject's treatment.
- b) The arresting officer or BAO shall deem a subject who fails to submit to a requested test or additional testing to have refused testing.
- c) When a subject has submitted an insufficient sample or otherwise failed to adequately complete a requested test or tests, the arresting officer or BAO has discretion to determine if the subject:
 - 1) has refused testing; or
 - 2) will be required to undergo additional testing.
- d) The procedures contained in this Subpart are the only procedures required to obtain a valid breath, blood, and/or urine sample. There are no additional sampling procedures.

(Source: Amended at 31 Ill. Reg. 7305, effective May 1, 2007)

Section 1286.310 Approved Evidentiary Instrument Operation

The following procedures shall be used to obtain a breath sample to determine a subject's BrAC with an approved evidentiary instrument:

- a) Prior to obtaining a breath analysis reading from a subject, the BAO or another agency employee shall continuously observe the subject for at least 20 minutes.
 - 1) During the 20 minute observation period the subject shall be deprived of alcohol and foreign substances and shall not have vomited.
 - 2) If the subject vomits during the observation (deprivation) period, the

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

process shall be started over by having the individual rinse the oral cavity with water.

- 3) If the individual continues to vomit, alternate testing shall be considered.
- b) After starting the instrument's breath test sequence, the BAO will obey instrument prompts. When prompted by the instrument, the BAO shall direct the subject to blow into the instrument. The subject shall be directed to keep blowing into the instrument until he or she has submitted an adequate breath sample. Once an adequate breath sample is collected, the instrument shall complete the test cycle and print and display the breath analysis reading.
- c) A breath test shall consist of only one breath analysis reading, based on the instrument's internal operational calculations.
 - 1) A complete and valid breath analysis reading is denoted by at least one air blank, one subject breath test reading, and no breakdown message.
 - 2) Messages such as "refusal", "insufficient sample", "inadequate sample", etc., are not breakdowns or malfunctions. These messages indicate the subject's failure to adequately complete a requested test or tests.

(Source: Amended at 28 Ill. Reg. 10017, effective June 30, 2004)

Section 1286.320 Blood Collection for Determining the Presence of Alcohol, Other Drugs or Intoxicating Compounds

The following procedures shall be used to obtain a blood sample from a subject to determine the alcohol concentration, or presence of other drugs or intoxicating compounds:

- a) The blood sample shall be collected in the presence of the arresting officer, another law enforcement officer, or an agency employee who can authenticate the sample.
- b) For samples collected in Illinois, *the blood sample shall be collected by a licensed physician, registered nurse, trained phlebotomist, or certified paramedic. When a blood test of a person who has been taken to an adjoining state for medical treatment is requested by an Illinois law enforcement officer, the blood may be withdrawn only by a physician authorized to practice medicine in the adjoining state, a registered nurse, a trained phlebotomist acting under the direction of the*

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

physician, or certified paramedic. (Section 11-501.2(a) of the Illinois Vehicle Code)

- c) The blood sample should be drawn using proper medical technique.
- d) Officers shall use DUI kits provided by the Department, if possible. If kits are not available, officers may submit two standard grey top vacuum tubes. (Pursuant to generally accepted industry standards, grey top vacuum tubes contain an anticoagulant and preservative.)
- e) The individual tubes shall be labeled with the name of the subject and the date of the withdrawal and treated as biohazard evidence.
- f) The blood samples shall be delivered as soon as practicable to a laboratory certified by the Department (see Section 1286.170).
- g) The testing laboratory shall maintain any remaining sample for a period of six months after testing unless otherwise directed by the submitting agency or the appropriate prosecuting authority.

(Source: Amended at 31 Ill. Reg. 15107, effective October 29, 2007)

Section 1286.330 Urine Collection for Determining the Presence of Alcohol, Other Drugs or Intoxicating Compounds

UAC testing is not a preferred method of determining the amount of alcohol in a subject and the feasibility of other testing procedures should be explored before deciding UAC testing for alcohol concentration. Urine is the preferred method for drug confirmation. The following procedures shall be used to obtain a urine sample from a subject to determine the presence of alcohol, other drugs or intoxicating compounds:

- a) A sample of urine shall be collected in a manner to preserve the dignity of the individual and to ensure the integrity of the sample.
- b) A urine sample may be collected by the arresting officer, another law enforcement officer, an agency employee, or a hospital nurse who can authenticate the sample. The officer, agency employee, or nurse shall be of the same sex as the subject undergoing testing.
- c) A urine sample of approximately 60 ml should be collected.

ILLINOIS REGISTER

DEPARTMENT OF STATE POLICE

NOTICE OF ADOPTED AMENDMENTS

- d) Urine sample shall be collected in clean, dry containers.
- e) No preservatives shall be used. The containers shall be closed.
- f) The containers shall be labeled with the name of the subject and the date of the collection.
- g) The urine samples shall be delivered as soon as practicable to a laboratory certified by the Department.
- h) The testing laboratory shall maintain any remaining sample for a period of six months after testing unless otherwise directed by the submitting agency or the appropriate prosecuting authority.

(Source: Amended at 31 Ill. Reg. 7305, effective May 1, 2007)

Section 1286.340 Urine Collection for Determining the Concentration of Urine Alcohol (Repealed)

(Source: Repealed at 28 Ill. Reg. 10017, effective June 30, 2004)

Section 1286.350 Operation of PBTs (Repealed)

(Source: Repealed at 28 Ill. Reg. 10017, effective June 30, 2004)

Appendix 2

PRELIMINARY BREATH TEST EXAMINER

ILLINOIS STATE POLICE ACADEMY

LESSON PLAN FOR CONDUCTING A UNIT OF INSTRUCTION IN

**ACCURACY AND CALIBRATION CHECKS
FOR PRELIMINARY BREATH TEST INSTRUMENTS**

Prepared By:

Master Sergeant Tony Lebron

January 2001
Updated July 2009

UNIT PREPARATION

- A. COURSE TITLE:** Accuracy and Calibration Checks for Preliminary Breath Test Instruments
- B. COURSE LENGTH:** 4 Hours
- C. INSTRUCTOR(S):** As assigned
- D. PRESENTED TO:** Law Enforcement Officials
1. ISP Cadets
 2. In-service
 3. 32-Hour Breath Analysis Instrument Operator Course
 4. Mobile Training Units
- 4. CLASSROOM LOCATION:**
1. ISP Academy
 2. Off-site location
- F. INSTRUCTIONAL AIDS:**
1. Chalkboard, chalk, and eraser
 2. Flipchart, marking pens
 3. Equipment
 - a) Preliminary Breath Tests Instruments
 - 1) Alco-Sensor III
 - 2) Alco-Sensor IV
 - 3) S-D2
 - 4) S-D5
 - 5) FST

UNIT PREPARATION (continued)

- b) Solution Standards
 - 1) Wet Bath Simulators
 - 2) Dry Gas
- c) Mouthpieces
- d) Screw drivers

G. STUDENT MATERIALS:

- 2. Preliminary Breath Tests Instruments
 - a) Alco-Sensor III
 - b) Alco-Sensor IV
 - c) S-D2
 - d) S-D5
 - e) FST
- 2. Student Lesson plan

H. METHOD OF INSTRUCTION:

- 1. Lecture
- 2. Demonstration
- 3. Proficiency

I. REFERENCES - LIST:

- 1. Illinois Vehicle Code
- 2. Manufacturer's Manual

INSTRUCTION PLAN FOR THE ACCURACY AND CALIBRATION CHECKS FOR PRELIMINARY BREATH TEST INSTRUMENTS

A. Instructional goal or course description:

1. Upon completion of this course, law enforcement officers will be able to verify the accuracy and calibrate preliminary breath test instruments.
2. Law enforcement officer will be able to use preliminary breath test instruments to screen subjects suspected of driving under the influence of alcohol. Instrumentation which has been verified as accurate will assist in establishing probable cause for DUI arrests.

B. Student performance objectives: upon completion of this block of instruction, the student will be able to:

1. Explain the difference between accuracy checks and calibration checks.
2. Explain the difference between wet bath and dry gas standards.
3. Demonstrate accuracy check procedures for assigned PBTs.
4. Demonstrate calibration check procedures for the Alco-Sensor III or S-D2.
5. Demonstrate the operation of assigned PBTs.

C. Cycle of learning:

The students will be informed of the necessity for ensuring the accuracy of preliminary breath test instruments. The student handout provides step-by-step instruction for conducting accuracy/calibration checks and achieving each student learning objective. The students will be asked to demonstrate each objective and take corrective actions regarding possible malfunctions.

Appendix 2 - 5	Outline	Notes
	<p>I. Definition</p> <p>A. Accuracy Checks - are used to determine if an instrument is reading alcohol levels correctly. Accuracy checks do not require adjustments to the instrument.</p> <p>B. Calibration - adjustments used to reset the instrument to display the correct value of a known standard.</p> <p>II. Calibration Methods</p> <p>A. Wet bath simulator - is a device designed to provide a precise alcohol-air vapor standard from a water-alcohol solution.</p> <ol style="list-style-type: none"> 1. glass jar which holds 500cc of solution. 2. Jar head contains heater thermostat, stirrer, thermometer, inlet and outlet ports for sampling head space gas standing above the solution. 3. Solution is a water/alcohol mixture of a certified BrAC/BAC concentration. 4. 30 tests per bottle of solution. 5. Liquid should be clear with no visible particles suspended in the solution. 6. A simulator containing a solution of known BrAC/BAC value must be at the operating temperature of 34°C. The simulator top must be on securely so the system is airtight. To check, cover the outlet port and blow into the intake port. Air bubbles will not rise rapidly through the solution if the top is secure. 	

Appendix 2 - 6	Outline	Notes
	<p>B. Dry gas - A cylinder containing a mixture of a known quantity of alcohol mixed with an inert gas. (Nitrogen and Ethanol)</p> <ol style="list-style-type: none"><li>1. 105 liter and 17 liter pressurized tanks<li>2. Used properly, a 105 liter tank should supply at least 300 tests. A 17 liter tank should supply at least 50 tests.<li>3. Small single staged approved regulator with gauge mounts on the tank.<li>4. Tanks should only be used when they are between 10° - 40° C. If the tank has been maintained at temperatures below 0°C (32°F), see tank manufacture's QAP for proper handling of the dry gas standard.<li>5. The concentration of alcohol is calculated and carefully controlled to give the correct vapor concentration, when the cylinder is used at sea level at normal atmospheric pressure (1 Bar). At lower atmospheric pressures, however, the concentration of alcohol in the vapor leaving the can or cylinder will be less. The change in alcohol concentration due to normal atmospheric pressure changes at sea level is so small as to be negligible but, at high altitudes, significant errors would be produced if suitable corrections are not made.<li>6. Do not mix tanks from one manufacturer with regulators from another.<li>7. Use NIST traceable NHTSA approved standards.	

Appendix 2 - 7	Outline	Notes
	<p>III. Procedures for verifying accuracy on the Alco-Sensor III</p> <ul style="list-style-type: none">A. Make sure set button is depressed.B. Check temperature strip on back of the AS III. Any visible number verifies proper operating temperature.C. Depress READ button, .000 should be seen for at least seven to ten seconds. If above condition is not seen, depress SET button and recheck in one minute.D. Depress SET button.E. Attach mouthpiece to Alco-Sensor III.F. Connect mouthpiece to solution source.G. Blow into inlet of the wet bath simulator with a constant breath or depress regulator valve on dry gas tanks for five seconds. On the fourth of the five seconds count, press READ button.H. Remove Alco-Sensor III and observe reading.I. Results should be +/- .010% of solution value. If unit does not read within specs it needs calibration. <p>IV. Calibration procedures for the Alco Sensor III</p> <ul style="list-style-type: none">A. Check temperature strip on back of the AS III. Any visible number verifies proper operating temperature.B. Make sure SET button is depressed.C. Insert screwdriver in calibration screw located in hole on right side of unit.D. Turn screw two full turns clockwise.E. Connect the Alco-Sensor III with the attached mouthpiece to solution source.	

Appendix 2 - 8	Outline	Notes
	<p>F. Blow into inlet of the wet bath simulator with a constant breath or depress regulator valve on dry gas tanks for five seconds. On the fourth of the five seconds count, press READ button.</p> <p>G. Quickly remove the Alco-Sensor III from the solution source and insert the screwdriver in the calibration screw.</p> <p>H. Carefully observe the reading. Once the reading surpasses the value marked on the standard immediately turn the calibration screw counterclockwise until the value on the standard and the reading are once again the same. If you are quick enough the reading will continue to rise and the screw should be turned back again to bring the reading back to the standard value. Eventually the value will stabilize and when it holds for 5 seconds the unit is calibrated.</p> <p>I. Under no circumstances should the screw be turned clockwise to increase the number displayed by the Alco-Sensor III during this procedure. If during the first adjustment counterclockwise the reading is carried <u>below</u> the value of the standard, DO NOT bring the value back up by turning the screw clockwise. Wait and see if the reading rises to the desired value. If it rises past the desired value bring it back down to the desired value by again turning the screw counterclockwise.</p> <p>J. Once you are satisfied with the reading, depress SET button.</p> <p>K. Check calibration using accuracy check procedures. The reading should fall within .003 if a proper job of calibration has been done.</p> <p>L. The pocket model will lose sensitivity if more than five positive alcohol tests are run in an hour. Avoid mass testing of subjects of more than .10 BAC unless the unit is re-calibrated every five tests.</p>	

Appendix 2 - 9	Outline	Notes
	<p>M. If this procedure is followed note that the unit will regain its sensitivity after a rest period and will therefore require re-calibration.</p> <p>N. Sufficient time after each test must be allowed for all traces of alcohol on the cell surface to be eliminated. This can be accelerated by locking the SET button down to short circuit the cell. If the Alco-Sensor III is ready for use no reading will develop when the READ button is held down for 10 seconds. If any residual alcohol were present in the system a reading would be obtained on the digital display when the READ button was depressed and held down for ten seconds.</p> <p>O. THE ABOVE PRECAUTIONS MUST BE OBSERVED OR CUMULATIVE READINGS WILL RESULT.</p> <p>V. Procedures for verifying accuracy on the Alco-Sensor IV</p> <p>A. If the accuracy check is being performed with a Dry Gas, purge the regulator for at least three or four seconds before running your first accuracy check of the day. Prepare Wet Bath simulator for use and be sure it has reached a stable 34°C temperature, the stirrer is operating properly and the top is securely mounted.</p> <p>B. Insert a new mouthpiece into the Alco-Sensor IV.</p> <p>C. Observe temperature reading. Accuracy checks must be performed when the Alco-Sensor IV's temperature is between 10° - 40°C.</p> <p>D. When the display shows TEST make an airtight connection between the delivery tube of the regulator OR the outlet port of the simulator and the open end of the mouthpiece.</p> <p>E. Depress the regulator control button OR blow into the inlet port of the simulator for seven seconds. On the fifth second depress the manual button to take a sample. (The goal is to have gas still flowing through the Alco-Sensor IV when the sample is taken). Release the regulator control button OR stop blowing into the inlet port of the simulator on the seventh second.</p>	

Appendix 2 - 10	Outline	Notes
	<ul style="list-style-type: none"> F. Carefully detach the mouthpiece from the regulator OR the simulator ensuring that the mouthpiece is not disengaged from the unit. G. Observe the three digit reading. H. Record the three digit reading. If it does not meet the specified tolerances, the unit requires a calibration adjustment. CALIBRATION MAY ONLY BE PERFORMED ON THE AS IV BY A QUALIFIED TECHNICIAN. <p>VI. Procedures for verifying accuracy on the S-D2</p> <ul style="list-style-type: none"> A. Make sure set button is depressed. B. Check temperature strip on the case of the S-D2. Any visible number verifies proper operating temperature. C. Depress READ button, .000 should be seen for at least 7 to 10 seconds. If above condition is not seen, depress SET button and recheck in one minute. D. Depress SET button E. Attach mouthpiece to the S-D2. F. Connect mouthpiece to solution source. G. Blow into inlet of the wet bath simulator with a constant breath or depress regulator valve on dry gas tanks for 5 seconds. On the fourth of the five seconds count, press READ button. H. Remove the S-D2 and observe reading. I. Results should be +/- .010% of solution value. If unit does not read within specs it needs calibration. 	

Appendix 2 - 11	Outline	Notes
	<p>VII. Calibration procedures for the S-D2.</p> <ul style="list-style-type: none">A. Check temperature strip on the case of the S-D2. Any visible number verifies proper operating temperature.B. Make sure SET button is depressed.C. Insert screwdriver in calibration screw located in hole on right side of unit.D. Turn screw two full turns counterclockwise.E. Connect the S-D2 with the attached mouthpiece to solution source.F. Blow into inlet of the wet bath simulator with a constant breath or depress regulator valve on dry gas tanks for five seconds. On the fourth of the five seconds count, press READ button.G. Quickly remove the S-D2 from the solution source and insert the screwdriver in the calibration screw.H. Carefully observe the reading. Once the reading surpasses the value marked on the standard immediately turn the calibration screw clockwise until the value on the standard and the reading are once again the same. If you are quick enough the reading will continue to rise and the screw should be turned back again to bring the reading back to the standard value. Eventually the value will stabilize and when it holds for five seconds the unit is calibrated.I. Under no circumstances should the screw be turned counterclockwise to increase the number displayed by the S-D2 during this procedure. If during the first adjustment clockwise the reading is carried <u>below</u> the value of the standard, DO NOT bring the value back up by turning the screw counterclockwise.	

Appendix 2 - 12	Outline	Notes
	<p>Wait and see if the reading rises to the desired value. If it rises past the desired value bring it back down to the desired value by again turning the screw clockwise.</p> <p>J. Once you are satisfied with the reading, depress SET button.</p> <p>K. Check calibration using accuracy check procedures. The reading should fall within .003 if a proper job of calibration has been done.</p> <p>L. The pocket model will lose sensitivity if more than five positive alcohol tests are run in an hour. Avoid mass testing of subjects of more than .10 BAC unless the unit is re-calibrated every five tests.</p> <p>M. If this procedure is followed note that the unit will regain its sensitivity after a rest period and will therefore require re-calibration.</p> <p>N. Sufficient time after each test must be allowed for all traces of alcohol on the cell surface to be eliminated. This can be accelerated by locking the SET button down to short circuit the cell. If the S-D2 is ready for use no reading will develop when the READ button is held down for ten seconds. If any residual alcohol were present in the system a reading would be obtained on the digital display when the READ button was depressed and held down for ten seconds.</p> <p>O. THE ABOVE PRECAUTIONS MUST BE OBSERVED OR CUMULATIVE READINGS COULD RESULT.</p>	

Appendix 3

FORMS

FORMS

WARNING TO MOTORIST

Case Number _____

DUI TRAFFIC CITATION NO. (I-501A)

DUI TRAFFIC CITATION NO. (I-501A2)

DUI TRAFFIC CITATION NO. (OTHER)

Subsequent to an arrest for driving while under the influence of alcohol, other drug(s) or intoxicating compound(s), or any combination thereof (DUI), you are hereby notified that:

As provided in Section 11-500 of the Illinois Vehicle Code, you are a first offender unless within the last 5 years of this arrest for DUI you have had:

- A previous conviction or court-assigned supervision for DUI or a similar provision of a local ordinance; or
A conviction in any other state for DUI or a similar offense where the cause of action is the same or substantially similar to the Illinois Vehicle Code; or
Pursuant to a DUI arrest, an Illinois driver's license suspension for refusing to submit to or failing to complete all requested chemical tests, or for submitting to a chemical test(s) disclosing an alcohol concentration of .08 or more or any amount of a drug, substance or intoxicating compound resulting from the unlawful use or consumption of cannabis as listed in the Cannabis Control Act; a controlled substance as listed in the Illinois Controlled Substances Act; an intoxicating compound as listed in the Use of Intoxicating Compounds Act; or methamphetamine as listed in the Methamphetamine Control and Community Protection Act, except in cases where you submitted to a chemical test(s) disclosing an alcohol concentration of .08 or more or any amount of a drug, substance or intoxicating compound resulting from the unlawful use or consumption of cannabis as listed in the Cannabis Control Act; a controlled substance as listed in the Illinois Controlled Substances Act; an intoxicating compound as listed in the Use of Intoxicating Compounds Act; or methamphetamine as listed in the Methamphetamine Control and Community Protection Act, and were subsequently found not guilty of the associated DUI charge.

Considering the above, you are warned:

- If you refuse or fail to complete all chemical tests requested and:
If you are a first offender, your driving privileges will be suspended for a minimum of 12 months; or
If you are not a first offender, your driving privileges will be suspended for a minimum of 3 years.
If you submit to a chemical test(s) disclosing an alcohol concentration of .08 or more or any amount of a drug, substance or intoxicating compound resulting from the unlawful use or consumption of cannabis as listed in the Cannabis Control Act; a controlled substance as listed in the Illinois Controlled Substances Act; an intoxicating compound as listed in the Use of Intoxicating Compounds Act; or methamphetamine as listed in the Methamphetamine Control and Community Protection Act, and:
If you are a first offender, your driving privileges will be suspended for a minimum of 6 months; or
If you are not a first offender, your driving privileges will be suspended for a minimum of 1 year.

You are further warned that if you are a Commercial Driver's License (CDL) holder, your CDL privileges will be disqualified for the following time period if you refuse to submit to or fail to complete all chemical tests requested, or submit to a chemical test(s) disclosing an alcohol concentration of .08 or more or any amount of a drug, substance or intoxicating compound resulting from the unlawful use or consumption of cannabis as listed in the Cannabis Control Act; a controlled substance as listed in the Illinois Controlled Substances Act; an intoxicating compound as listed in the Use of Intoxicating Compounds Act; or methamphetamine as listed in the Methamphetamine Control and Community Protection Act:

- If you are a first offender, your CDL privileges will be disqualified for 12 months; or
If you are not a first offender, your CDL privileges will be disqualified for life.

MOTORIST UNDER AGE 21

You are further warned that as a motorist under age 21, if you submit to a chemical test(s) disclosing an alcohol concentration of more than .00 and less than .08, your driving privileges will be suspended as provided in Sections 6-208.2 and 11-501.8 of the Illinois Vehicle Code.

As provided in Section 6-208.2, you are a first offender unless you have had a previous suspension under Section 11-501.8 for refusing or failing to complete a chemical test(s) or for submitting to a chemical test(s) disclosing an alcohol concentration of more than .00.

- If you are a first offender, your driving privileges will be suspended for a minimum of 3 months; or
If you are not a first offender, your driving privileges will be suspended for a minimum of 1 year.

SCHOOL BUS DRIVER

You are further warned that as a school bus driver operating a school bus in accordance with Section 6-106.1a of the Illinois Vehicle Code, if you submit to a chemical test(s) disclosing an alcohol concentration of more than .00, your privilege to possess a school bus driver permit will be cancelled for 3 years as provided under Sections 6-106.1a and 6-106.1b of the Illinois Vehicle Code.

Warning Issued To _____ Name of Motorist _____ Driver's License Number _____

Under penalties as provided by law pursuant to Section 1-109 of the Illinois Code of Civil Procedure, the undersigned certifies that the statements set forth in this instrument are true and correct.

Signature of Arresting Officer _____ ID Number _____

Law Enforcement Agency _____ a.m.

Date of Warning _____ POLICE OFFICER - SEND TO COURT OF VENUE Time of Warning _____ p.m.

Law Enforcement Agency _____ Date _____ Month _____ Day _____ Year _____

INSTRUCTIONS FOR COMPLETING "WARNING TO MOTORIST"

- (A) Case Number - to be entered by the Clerk of Courts
- (B) Enter citation number for the charge of 11-50(a) 1.
- (C) Enter citation number for the charge of 11-501(a) 2.
- (D) Enter citation number for other citations issued for 11-501(a) 3, 4, 5, or 6.
- (E) Enter the name of arrestee.
- (F) Enter driver's license number of arrestee.
- (G) Signature of arresting officer.
- (H) Enter department identification of arresting officer.
- (I) Enter law enforcement agency name.
- (J) Enter date/time the warning was issued to arrestee.

LAW ENFORCEMENT SWORN REPORT

Circuit Court, _____ County, _____ Municipal District

Case Number _____

DUI TRAFFIC CITATION NO. (II-501A1)

DUI TRAFFIC CITATION NO. (II-501A2)

DUI TRAFFIC CITATION NO. (OTHER)

Name _____ Last First Middle

CDL

Table with columns for Driver's License Number and State.

Street Address _____

City and/or County of Arrest _____

City & State _____

Arrest Date _____ a.m. p.m.

Sex _____ Date of Birth _____

Place of Refusal or Location of Test(s) _____

Notice of Summary Suspension Given On _____

Refusal or Test Date _____ a.m. p.m.

The suspension shall take effect on the 46th day following issuance of this notice of summary suspension. Subsequent to an arrest for violating Section 11-501 of the Illinois Vehicle Code, or similar provision of a local ordinance, you are hereby notified that on the date shown above, you were asked to submit to a chemical test(s) to determine the alcohol, other drug(s), intoxicating compound(s), or any combination thereof, content of your breath, blood, or urine and warned of the consequences pursuant to Section 11-501.1 of the Illinois Vehicle Code. You have the right to a hearing to contest your suspension. You must file a petition to rescind your suspension within 90 days of this notice.

- Because you refused to submit to or failed to complete testing, your driver's license and/or privileges will be suspended for a minimum of 12 months.*
 Because you submitted to testing conducted pursuant to Section 11-501.2, which disclosed:
 an alcohol concentration of _____, which is .08 or more; or
 any amount of a drug, substance or intoxicating compound in your blood or urine resulting from the unlawful use or consumption of cannabis as listed in the Cannabis Control Act; a controlled substance as listed in the Illinois Controlled Substances Act; an intoxicating compound as listed in the Use of Intoxicating Compounds Act; or methamphetamine as listed in the Methamphetamine Control and Community Protection Act;

your driving privileges will be suspended for a minimum of 6 months.*

*NOTE: If it is determined that you are not a "first offender," as defined in Section 11-500 of the Illinois Vehicle Code, and:

- You refused to submit to or failed to complete all requested chemical tests, the period of suspension will be a minimum of 3 years; or
You submitted to chemical testing that disclosed an alcohol concentration of .08 or more or any amount of a drug, substance or intoxicating compound resulting from the unlawful use or consumption of cannabis as listed in the Cannabis Control Act; a controlled substance as listed in the Illinois Controlled Substances Act; an intoxicating compound as listed in the Use of Intoxicating Compounds Act; or methamphetamine as listed in the Methamphetamine Control and Community Protection Act; the period of suspension will be a minimum of 1 year.

Driver's license surrendered? Yes No; Reason: _____
Driver's license valid at time of arrest? Yes (Sign receipt) No (Void receipt)

I have complied with Section 11-501.1 of the Illinois Vehicle Code by having reasonable grounds to believe the arrestee was in violation of Section 11-501 or a similar provision of a local ordinance: (Explain) _____

Pursuant to Section 11-501.1 of the Illinois Vehicle Code I have:

- Served immediate Notice of Summary Suspension of driving privileges on the above-named person.
 Given Notice of Summary Suspension of driving privileges to the above-named person by depositing in the U.S. mail said notice in a prepaid postage envelope addressed to said person at the address as shown on the Uniform Traffic Ticket.

Under penalties as provided by law pursuant to Section 1-109 of the Illinois Code of Civil Procedure, the undersigned certifies that the statements set forth in this instrument are true and correct.

Signature of Arresting Officer _____

ID Number _____

Law Enforcement Agency _____

Date _____ Month Day Year

INSTRUCTIONS FOR COMPLETING THE "LAW ENFORCEMENT SWORN REPORT"

- (A) Enter county and address of court of venue.
- (B) Case Number - to be entered by Clerk of Courts
- (C) Enter citation number for 11-501(a) 1.
- (D) Enter citation number for 11-501(a) 2.
- (E) Enter other DUI citation number. Citations for 11-501(a) 3, 4, 5, or 6 only.
- (F) Enter full name, including middle initial or (NMI) if none.
- (G) Enter motorist's driver's license number and state issuance and indicate by checking the boxes if the driver has a CDL, or was operating a commercial motor vehicle, or was hauling hazardous materials.
- (H) Enter driver's current address.
- (I) Enter driver's gender.
- (J) Enter driver's date of birth numerically.
- (K) Enter DUI arrest location. City and/or county are sufficient for the Secretary of State's office.
- (L) Enter date and time DUI arrest occurred. This is the time of initial stop. The driver is deemed to be DUI at this time even though no field sobriety tests have taken place.
- (M) Enter location where driver refused or submitted to chemical testing. The driver cannot refuse until he or she has been warned.
- (N) Enter the date and time driver refused or submitted to chemical testing. The date and time of chemical test should reflect the time breath, blood or urine testing was administered.
- (O) Enter the date "notice of summary suspension" was issued to driver. This date should be the same as on the bottom of the form (Box O). In cases where blood or urine testing occurred, this date will be after the results are received from the lab.
- (P) Check the box that reflects the reason the sworn report was issued.
- (Q) Indicate whether the individual surrendered his driver's license. If not, indicate the reason (i.e., not on person, out-of-state driver, suspended, revoked, none, etc.).
- (R) This space is provided for explaining the reasonable grounds for the DUI arrest. A full explanation is not needed (i.e., *Suspect had strong odor of alcoholic beverage, slurred speech, blood shot eyes, failed field sobriety testing*).
- (S) Indicate whether the form was served immediately or sent in the mail.
- (T) Signature of arresting officer and agency officer's identification number.
- (U) Enter the name of law enforcement agency.
- (V) Enter date of issuance of LESR. This date should be the same as "notice of summary suspension" (Box O).

NOTE: THE RECEIPT IS ON THE REVERSE SIDE OF THE (3RD) COPY OF THE "LESR"

NOTICE TO THE MOTORIST OF RIGHT TO A HEARING

You have a right to petition for judicial review within 90 days. Your petition must be filed in writing and submitted to the Circuit Court identified on the front of this notice.

Your request must state the grounds upon which you seek to have this suspension rescinded.

RECEIPT TO DRIVE

This is your receipt to drive until such time as this summary suspension takes effect as indicated on the front of this notice, and shall be evidence of your privileges to operate a motor vehicle subject to the restrictions, classification and endorsement below.

License Restrictions:

License Classification:

License Endorsement:

Arresting Officer*

ID Number

NOT VALID UNLESS SIGNED BY ARRESTING OFFICER.

NOTE: This receipt permits driving only while your driving privileges are valid. Should your driver's license become invalid or withdrawn for any reason, this receipt shall become concurrently invalid at that time.

Police Officer: Please check the driver's license record for validity.

*ARRESTING OFFICER -- If the driver's license is not valid at the time of arrest, write VOID on the signature line of the "RECEIPT TO DRIVE."

THIS DOCUMENT MUST BE PROVIDED TO ALL INDIVIDUALS WHO ARE SUBJECT TO
"STATUTORY SUMMARY SUSPENSION"

INSTRUCTIONS FOR COMPLETING THE "RECEIPT TO DRIVE"

- (A) Enter driver information, using the boxes supply driver's license information regarding restrictions, classifications, and endorsements.
- (B) Enter arresting officer's signature or "VOID." Officer should sign the receipt if the violator has a valid driver's license or write VOID if the driver's privileges are suspended, revoked, otherwise nonexistent.

Illinois State Police
NON-CONSENSUAL BLOOD DRAW REQUEST



Pursuant to 625 ILCS 5/11-501.2(c)(2)

I _____, being a duly sworn police officer of the state of Illinois,
Name of Officer I.D. Number

hereby request the assistance of _____
Name of Person Drawing Blood

in the collection of a blood sample from _____
Name of Driver D.O.B.

at _____
Medical Facility

I further certify that probable cause exists to believe the driver named above has driven a motor vehicle or was in actual physical control of a vehicle while under the influence of alcohol, any other drug, or combination of both and has caused the death or personal injury* to another.

Date and Time

Officer's Signature

Witness

*Personal injury means any type "A" injury as indicated on a traffic crash report that requires immediate professional attention in either a doctor's office or a medical facility. A type "A" injury includes severe bleeding wounds, distorted extremities, and injuries that require the person to be carried from the scene.

NON-CONSENSUAL BLOOD DRAW PROCEDURES
(Authority: 625 ILCS 5/11-501.2(c) 2)

1. Probable cause to believe an individual has committed a DUI violation and caused the death or personal injury to someone else. Personal injury is any Type A injury as indicated on a traffic crash report which requires immediate professional attention at either a doctor's office or a medical facility. This includes; severely bleeding wounds, distorted extremities and injuries that require the injured party to be carried from the scene.
2. Conduct standardized field sobriety tests, if practical, and preliminary breath test, if available, and there is reasonable suspicion to believe a DUI has been committed. (The preliminary breath test cannot be used as evidence in these cases.)
3. Make arrest for DUI and complete citation.
4. Read warning to motorist.
5. Request test(s) (ENF-18).
6. If test(s) are refused, transport the suspect to a medical facility (ENF14).
7. Complete the Non-Consensual Blood Draw Request Form.
8. Deliver the original copy of the Non-Consensual Blood Draw Request form to the medical personnel and request the blood be drawn according to the Illinois Department of State Police's Standards and Procedures for Testing for Alcohol and/or Other Drugs by Breath, Blood and Urine Analysis. (ISP's blood test kit, if available).
9. Witness collection of blood sample according to ISP regulations.
10. Transport suspect back to jail facility.
11. Complete law enforcement sworn report for refusing the original test(s) (#5 above) requested and distribute accordingly.
12. Complete bonding procedures.
13. Deliver the blood sample to a laboratory certified by the ISP for DUI analysis.
14. Non-Consensual Blood Draw Request form distribution: one exact copy to the prosecuting authority and retain one copy with the field report.

**ZERO TOLERANCE
WARNING TO MOTORIST UNDER 21**

TRAFFIC CITATION NO.

SUBSEQUENT TO YOUR ARREST AS EVIDENCED BY THE ISSUANCE OF A UNIFORM TRAFFIC TICKET FOR ANY VIOLATION OF THE ILLINOIS VEHICLE CODE OR SIMILAR PROVISIONS OF A LOCAL ORDINANCE AND PURSUANT TO SECTION 11-501.8 OF THE ILLINOIS VEHICLE CODE, YOU ARE HEREBY NOTIFIED AND WARNED THAT:

AS PROVIDED IN SECTION 6-208.2 OF THE ILLINOIS VEHICLE CODE, YOU ARE A FIRST OFFENDER UNLESS PRIOR TO THIS ARREST YOU HAVE HAD A PREVIOUS DRIVER'S LICENSE SUSPENSION UNDER SECTION 11-501.8 OF THE ILLINOIS VEHICLE CODE FOR REFUSING OR FAILING TO COMPLETE CHEMICAL TEST(S) OR FOR SUBMITTING TO CHEMICAL TESTING DISCLOSING AN ALCOHOL CONCENTRATION GREATER THAN 0.00.

CONSIDERING THE ABOVE, YOU ARE WARNED:

1. If you refuse or fail to complete all chemical tests requested and:
If you are a first offender, **your driving privileges will be suspended for a minimum of six (6) months; or**
If you are not a first offender, **your driving privileges will be suspended for a minimum of two (2) years.**

2. If you submit to a chemical test(s) disclosing an alcohol concentration greater than 0.00 and:
If you are a first offender, **your driving privileges will be suspended for a minimum of three (3) months; or**
If you are not a first offender, **your driving privileges will be suspended for a minimum of one (1) year.**

3. You are warned that if you are a CDL holder, your CDL privileges will be disqualified if you refuse or fail to complete all chemical tests requested or submit to a chemical test disclosing an alcohol concentration greater than 0.00:
 - For 12 months if you are a first offender; or
 - For LIFE if you are not a first offender.

Warning Issued To _____
Name of Motorist Driver's License Number

Under penalties as provided by law pursuant to Section 1-109 of the Illinois Code of Civil Procedure, the undersigned certifies that the statements set forth in this instrument are true and correct.

Signature of Arresting Officer Identifying Number

Law Enforcement Agency Address
am
pm

Date of Warning Time of Warning

POLICE OFFICER - GIVE TO MOTORIST

INSTRUCTIONS FOR COMPLETING THE "ZERO TOLERANCE WARNING TO MOTORIST UNDER 21"

- (A) Enter the ticket number for the IVC violation. This citation must be for the initial stop (i.e., speeding, loud muffler, etc.)
- (B) Enter the motorist's name and driver's license number.
- (C) Signature of arresting officer and agency identification number.
- (D) Law enforcement agency name and address.
- (E) Enter the date and time of issuance of "Warning to Motorist."

NOTE: THIS IS A (3) COPY FORM. A COPY IS NOT SENT TO THE COURTS!!!

ZERO TOLERANCE SWORN REPORT

TRAFFIC CITATION NO.

Name _____
Last
First
Middle

<input type="checkbox"/> CDL	Driver's License Number	State																				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; height: 20px;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> </table>																					

OPERATING: Commercial Motor Vehicle Placarded Haz. Mat. Vehicle

Street Address _____	Arrest Date _____
City & State _____	City and/or County of Arrest _____ AM PM
	Mo. / Day / Yr. / Time

Sex _____	Date of Birth _____	Place of Refusal or Location of Test(s) _____
Notice of Zero Tolerance Suspension Given _____		Ref. or Test Date _____ AM PM
		Mo. / Day / Yr. / Time

THE SUSPENSION SHALL TAKE EFFECT ON THE 46TH DAY FOLLOWING ISSUANCE OF THIS NOTICE OF ZERO TOLERANCE SUSPENSION. SUBSEQUENT TO AN ARREST FOR ANY VIOLATION OF THE ILLINOIS VEHICLE CODE, OR A SIMILAR PROVISION OF A LOCAL ORDINANCE, YOU ARE HEREBY NOTIFIED that on the date shown above you were asked to submit to a chemical test(s) to determine the alcohol content of your blood and warned of the consequences pursuant to Sections 6-208.2 and 11-501.8 of The Illinois Vehicle Code.

- Because you refused to submit to or failed to complete testing, your driver's license and/or privileges will be suspended for a minimum of six (6) months.*
- Because you submitted to testing conducted pursuant to Section 11-501.8 which disclosed an alcohol concentration of _____, which is greater than 0.00, your driving privileges will be suspended for a minimum of three (3) months.*

*NOTE: IF IT IS DETERMINED THAT YOU ARE NOT A "FIRST OFFENDER", as stated in Section 6-208.2 of The Illinois Vehicle Code and:
 You refused to submit to, or failed to complete, all requested chemical testing, the period of suspension will be a minimum of two (2) years; or if
 You submitted to chemical testing which resulted in an alcohol concentration greater than 0.00, the period of suspension will be a minimum of one (1) year.

I have complied with Section 11-501.8 of the Illinois Vehicle Code by issuing the Uniform Traffic Ticket for any violation of the Illinois Vehicle Code or a similar provision of a local ordinance and by having probable cause to believe the arrestee had consumed any amount of an alcoholic beverage: (Explain) _____

- Pursuant to Section 11-501.8 of the Illinois Vehicle Code I have:
- Served immediate notice of Zero Tolerance Suspension of driving privileges on the above named person.
 - Given notice of Zero Tolerance Suspension of driving privileges to the above named person by depositing in the United States mail said notice in an envelope with the postage prepaid addressed to said person at the address as shown on the Uniform Traffic Ticket.

Under penalties as provided by law pursuant to Section 1-109 of the Illinois Code of Civil Procedure, the undersigned certifies that the statements set forth in this instrument are true and correct.

Signature of Arresting Officer _____ Identifying Number _____

Law Enforcement Agency _____ Address _____

DSG DC-167.4
51 8261 709
DEC 2005

00004173

POLICE OFFICER - SEND TO SECRETARY OF STATE

INSTRUCTIONS FOR COMPLETING THE "ZERO TOLERANCE SWORN REPORT"

- (A) Enter the ticket number for the IVC violation. This citation must be for the initial stop (i.e., speeding, loud muffler, etc.)
- (B) Enter full name, including middle initial or (NMI) if none.
- (C) Enter the driver's license number. Indicate whether they have a CDL or if they were driving a commercial motor vehicle, and was placarded Hazardous Materials.
- (D) Enter driver's current address. Indicate street address as well as city and state.
- (E) Enter arrest location. City and/or county are sufficient for the Secretary of State's office.
- (F) Enter driver's gender.
- (G) Enter date and time arrest occurred. This is the time of initial stop.
- (H) Enter location where driver refused or submitted to chemical testing. The driver cannot refuse until he or she has been warned.
- (I) Enter the date and time driver refused or submitted to chemical testing. The date and time of chemical test should reflect the time breath, blood, or urine testing was administered.
- (J) Enter the date "Notice of Zero Tolerance Suspension" was issued to driver. In the case of blood or urine testing, this date will be after the results are received from the lab.
- (K) Check the box that reflects the reason the sworn report was issued.
- (L) This space is provided for explaining the probable cause for believing the suspect had consumed any amount of alcoholic beverage.
- (M) Indicate whether the form was served immediately or sent in the mail.
- (N) Signature of arresting officer and agency officer's identification number.
- (O) Enter the name and address of law enforcement agency.

NOTE: THIS IS A (3) COPY FORM. A COPY IS NOT SENT TO THE COURTS!!!

TRAFFIC CRASH WARNING TO MOTORIST

TRAFFIC CITATION NO.	ACCIDENT REPORT NO.
DATE OF ACCIDENT	

Subsequent to your involvement in a crash involving either Type A personal injury (which includes severely bleeding wounds, distorted extremities, and injuries that require the injured party to be carried from the scene) that requires immediate professional attention in either a doctor's office or a medical facility, or a fatality, as evidenced by the issuance of a uniform traffic ticket for any violation of the Illinois Vehicle Code or similar provisions of a local ordinance with the exception of equipment violations contained in Chapter 12 of this code or similar provisions of local ordinances and pursuant to Section 11-501.6 of the Illinois Vehicle Code, you are hereby notified and warned that:

As provided in Section 11-500 of the Illinois Vehicle Code, you are a first offender unless within the last 5 years of this arrest you have had:

- A previous conviction or court-assigned supervision for DUI or a similar provision of a local ordinance; or
- A conviction in any other state for DUI or a similar offense where the cause of action is the same or substantially similar to the Illinois Vehicle Code; or
- A driver's license suspension for violating Section 11-501.1 of the Illinois Vehicle Code, except in cases where you submitted to a chemical test(s) disclosing an alcohol concentration of .08 or more or any amount of a drug, substance or intoxicating compound resulting from the unlawful use or consumption of cannabis as listed in the Cannabis Control Act; a controlled substance as listed in the Illinois Controlled Substances Act; an intoxicating compound as listed in the Use of Intoxicating Compounds Act; or methamphetamine as listed in the Methamphetamine Control and Community Protection Act, and were subsequently found not guilty of Section 11-501 of the Illinois Vehicle Code or a similar provision of a local ordinance.

Considering the above, you are warned:

1. If you refuse to submit to or fail to complete all chemical tests requested and:
 - If you are a first offender, your driving privileges will be suspended for a minimum of 12 months; or
 - If you are not a first offender, your driving privileges will be suspended for a minimum of 3 years.
2. If you submit to a chemical test(s) disclosing an alcohol concentration of .08 or more or any amount of a drug, substance or intoxicating compound resulting from the unlawful use or consumption of cannabis as listed in the Cannabis Control Act; a controlled substance as listed in the Illinois Controlled Substances Act; an intoxicating compound as listed in the Use of Intoxicating Compounds Act; or methamphetamine as listed in the Methamphetamine Control and Community Protection Act, and:
 - If you are a first offender, your driving privileges will be suspended for a minimum of 6 months; or
 - If you are not a first offender, your driving privileges will be suspended for a minimum of 1 year.

You are further warned that if you are a Commercial Driver's License (CDL) holder, your CDL privileges will be disqualified for the following time period if you refuse to submit to or fail to complete all chemical tests requested, or submit to a chemical test(s) disclosing an alcohol concentration of .08 or more or any amount of a drug, substance or intoxicating compound resulting from the unlawful use or consumption of cannabis as listed in the Cannabis Control Act; a controlled substance as listed in the Illinois Controlled Substances Act; an intoxicating compound as listed in the Use of Intoxicating Compounds Act; or methamphetamine as listed in the Methamphetamine Control and Community Protection Act:

- If you are a first offender, your CDL privileges will be disqualified for 12 months; or
- If you are not a first offender, your CDL privileges will be disqualified for life.

Warning Issued To _____
Name of Motorist Driver's License Number

Under penalties as provided by law pursuant to Section 1-109 of the Illinois Code of Civil Procedure, the undersigned certifies that the statements set forth in this instrument are true and correct.

Signature of Arresting Officer ID Number

Law Enforcement Agency Address

Date of Warning Time of Warning

a.m.
p.m.

INSTRUCTIONS FOR COMPLETING THE "TRAFFIC ACCIDENT WARNING TO MOTORIST"

- (A) Enter the ticket number.
- (B) Enter the Crash Report Number.
- (C) Enter the date of accident.
- (D) Enter the motorist's name and driver's license number.
- (E) Signature of arresting officer and agency identification number.
- (F) Law enforcement agency name and address.
- (G) Enter the date and time of issuance of "Traffic Accident Warning to Motorist."

NOTE: THIS IS A (3) COPY FORM. A COPY IS NOT SENT TO THE COURTS!!!

TRAFFIC CRASH SWORN REPORT

TRAFFIC CITATION NO.	ACCIDENT REPORT NO.
DATE OF ACCIDENT	

Name _____
Last
First
Middle

<input type="checkbox"/> CDL	Driver's License Number	State

Street Address	City and/or County of Arrest
City & State	Arrest Date a.m. p.m.
Sex Date of Birth	Place of Refusal or Location of Test(s)
Notice of Summary Suspension Given On	Refusal or Test Date a.m. p.m.
<small>Month Day Year</small>	<small>Month Day Year Time</small>

The suspension shall take effect on the 46th day following the notice date of the suspension. Because of your involvement in a personal injury (Type A) or fatal motor vehicle accident, and by the issuance of a uniform traffic ticket for any violation of the Illinois Vehicle Code or a similar provision of a local ordinance with the exception of equipment violations contained in Chapter 12 of the Code, or similar provisions of local ordinances, and pursuant to Section 11-501.6 of the Illinois Vehicle Code, you are hereby notified that on the date shown above you were asked to submit to a chemical test(s) to determine the alcohol, other drug(s) or intoxicating compound(s), or any combination thereof, content of your breath, blood, or urine and warned of the consequences:

- Because you refused to submit to or failed to complete testing, your driver's license and/or privileges will be suspended for a minimum of 12 months.*
- Because you submitted to testing which disclosed:
 - an alcohol concentration of _____, which is .08 or more; or
 - any amount of a drug, substance or intoxicating compound in your blood or urine resulting from the unlawful use or consumption of cannabis as listed in the Cannabis Control Act; a controlled substance as listed in the Illinois Controlled Substances Act; an intoxicating compound as listed in the Use of Intoxicating Compounds Act; or methamphetamine as listed in the Methamphetamine Control and Community Protection Act;
 your driving privileges will be suspended for a minimum of 6 months.*

*NOTE: If it is determined that you are not a "first offender," as defined in Section 11-500 of the Illinois Vehicle Code, and:

- You refused to submit to or failed to complete all requested chemical tests, the period of suspension will be a minimum of 3 years; or
- You submitted to chemical testing that disclosed an alcohol concentration of .08 or more or any amount of a drug, substance or intoxicating compound resulting from the unlawful use or consumption of cannabis as listed in the Cannabis Control Act; a controlled substance as listed in the Illinois Controlled Substances Act; an intoxicating compound as listed in the Use of Intoxicating Compounds Act; or methamphetamine as listed in the Methamphetamine Control and Community Protection Act; the period of suspension will be a minimum of 1 year.

I have complied with Section 11-501.6 of the Illinois Vehicle Code by issuing the Uniform Traffic Ticket for any violation of the Illinois Vehicle Code or a similar provision of a local ordinance with the exception of equipment violations contained in Chapter 12 of the Illinois Vehicle Code, or similar provisions of local ordinances, subsequent to a personal injury (Type A) or fatal motor vehicle accident.

Pursuant to Section 11-501.6 of the Illinois Vehicle Code I have:

- Served immediate notice of suspension of driving privileges on the above-named person.
- Given notice of suspension of driving privileges to the above-named person by depositing in the U.S. mail said notice in a prepaid postage envelope addressed to said person at the address as shown on the Uniform Traffic Ticket.

Under penalties as provided by law pursuant to Section 1-109 of the Illinois Code of Civil Procedure, the undersigned certifies that the statements set forth in this instrument are true and correct.

Signature of Arresting Officer	ID Number
Law Enforcement Agency	Date Month / Day / Year

INSTRUCTIONS FOR COMPLETING THE "TRAFFIC ACCIDENT SWORN REPORT"

- (A) Enter the ticket number. Citation should be for a violation of the IVC, except for Chapter 12 (equipment) violations.
- (B) Enter the Crash Report Number.
- (C) Enter the date of accident.
- (D) Enter full name, including middle initial or (NMI) if none.
- (E) Enter the driver's license number. Indicate whether they have a CDL or if they were driving a commercial motor vehicle, and was it placarded Hazardous Materials.
- (F) Enter driver's current address. Indicate street address as well as city and state.
- (G) Enter arrest location. City and/or county are sufficient for the Secretary of State's office.
- (H) Enter driver's gender.
- (I) Enter date and time arrest occurred.
- (J) Enter location where driver refused or submitted to chemical testing. The driver cannot refuse until he or she has been warned.
- (K) Enter the date and time driver refused or submitted to chemical testing. The date and time of chemical test should reflect the time breath, blood, or urine testing administered.
- (L) Enter the date "Notice of Suspension" was issued to driver. In cases where blood or urine testing occurred, this date will be after the results are received from the lab.
- (M) Check the box that reflects the reason the sworn report was issued.
- (N) This space is provided for explaining the probable cause for believing the suspect had consumed any amount of alcoholic beverage.
- (O) Indicate whether the form was served immediately or sent in the mail.
- (P) Signature of arresting officer and agency officer's identification number.
- (Q) Enter the name of law enforcement agency.
- (R) Enter the date the "Sworn Report" was issued. This should agree with (Box L).

NOTE: IS A (3) COPY FORM. A COPY IS NOT SENT TO THE COURTS!!!

WARNING TO COMMERCIAL MOTOR VEHICLE DRIVER

Sworn Document No. _____

DUI TRAFFIC CITATION NO. (11-501A1)

DUI TRAFFIC CITATION NO. (11-501A2)

DUI TRAFFIC CITATION NO. (OTHER)

Name _____
Last
First
Middle

	Driver's License Number										Classification	State	
<input type="checkbox"/> CDL													

Street Address _____ License Plate Number or VIN _____

City _____ State _____ ZIP _____ State _____ Placarded HazMat. Vehicle

Sex _____ Date of Birth _____

Location of Stop or Detainment: _____ County: _____

Subsequent to a lawful request by a police officer to submit to a chemical test(s) pursuant to Section 6-516 of the Illinois Vehicle Code, you are hereby warned and notified that pursuant to Sections 6-514, 6-515 and 6-517 of the Illinois Vehicle Code:

1. If you refuse to submit to or fail to complete all chemical tests requested by this police officer, you will be placed immediately "out-of-service" for the next 24 hours, during which time you are prohibited from operating a commercial motor vehicle; and you will subsequently be disqualified from operating a commercial motor vehicle for a minimum of 12 months.
2. If you submit to a chemical test(s) which discloses an alcohol concentration of more than .00 but less than .04, or any amount of a drug, substance or intoxicating compound resulting from the unlawful use or consumption of cannabis as listed in the Cannabis Control Act; a controlled substance as listed in the Illinois Controlled Substances Act; an intoxicating compound as listed in the Use of Intoxicating Compounds Act; or methamphetamine as listed in the Methamphetamine Control and Community Protection Act, you will be placed immediately "out-of-service" for the next 24 hours, during which time you are prohibited from operating a commercial motor vehicle.
3. If you submit to a chemical test(s) which discloses an alcohol concentration of .04 or more, or any amount of a drug, substance or intoxicating compound resulting from the unlawful use or consumption of cannabis as listed in the Cannabis Control Act; a controlled substance as listed in the Illinois Controlled Substances Act; an intoxicating compound as listed in the Use of Intoxicating Compounds Act; or methamphetamine as listed in the Methamphetamine Control and Community Protection Act, you will be placed immediately "out-of-service" for the next 24 hours, during which time you are prohibited from operating a commercial motor vehicle; and you will subsequently be disqualified from operating a commercial motor vehicle for a minimum of 12 months.
4. If you submit to a chemical test(s) which discloses an alcohol concentration of .08 or more or any amount of a drug, substance or intoxicating compound resulting from the unlawful use or consumption of cannabis as listed in the Cannabis Control Act; a controlled substance as listed in the Illinois Controlled Substances Act; an intoxicating compound as listed in the Use of Intoxicating Compounds Act; or methamphetamine as listed in the Methamphetamine Control and Community Protection Act, you will be placed immediately "out-of-service" for the next 24 hours, during which time you are prohibited from operating a commercial motor vehicle; and you will subsequently be disqualified from operating a commercial motor vehicle for a minimum of 12 months. You are further warned that the results of such testing may be admissible in prosecution of violating Section 11-501 of the Illinois Vehicle Code or similar provisions of local ordinances; however, such results may not be used to impose any driving sanctions pursuant to Section 11-501.1 of the Illinois Vehicle Code.
5. If any of the aforementioned actions occur while you are operating a vehicle hauling hazardous materials, the nature of which requires the vehicle to be placarded, you will be disqualified from operating a commercial motor vehicle for a minimum of 3 years.
6. If any such offense or refusal, or combination thereof, including a conviction of Section 11-501 or a similar provision of a local ordinance, is committed a second time involving separate incidents, you will be disqualified from operating a commercial motor vehicle for life.

Under penalties as provided by law pursuant to Section 1-109 of the Illinois Code of Civil Procedure, the undersigned certifies that the statements set forth in this instrument are true and correct.

a.m. / /
p.m. / /

Signature of Issuing Officer _____ ID Number _____ Time _____ Date _____

Law Enforcement Agency _____ Mailing Address _____ ZIP _____

INSTRUCTIONS FOR COMPLETING THE "WARNING TO COMMERCIAL MOTOR VEHICLE DRIVER"

- (A) Enter Sworn Document Number - Enter the Sworn Document Number from the attached Sworn Report.
- (B) Enter ticket number for the charge of 11-501(a) 1.
- (C) Enter ticket number for the charge of 11-501(a) 2.
- (D) Enter ticket number for other DUI citations issued for 11-501(a) 3, 4, 5, or 6.
- (E) Enter driver's license number/classification/state - Enter driver's license number, classification of driver's license, and state issuance. Indicate in CDL box if the driver has a CDL.
- (F) Enter name of driver.
- (G) Enter date of birth of driver.
- (H) Enter sex of driver.
- (I) Enter address of driver.
- (J) Enter the plate or VIN of the commercial vehicle. Check the box if the vehicle is hauling hazardous material.
- (K) Enter the location of stop or detainment; include the county where stop occurred.
- (L) Signature of arresting officer and identifying number. Enter the department ID for arresting officer.
- (M) Enter the time and date of detainment.
This entry is important because it will establish the start of the 24-hour out-of-service time.
- (N) Enter the law enforcement agency name and mailing address.

NOTE: THIS IS A (3) COPY FORM. A COPY IS NOT SENT TO THE COURTS!!!

COMMERCIAL DRIVER "OUT-OF-SERVICE" ORDER — SWORN REPORT

"Out-of-Service" Order & Sworn Document No. _____

DUI TRAFFIC CITATION NO. (IL-501A1)

DUI TRAFFIC CITATION NO. (IL-501A2)

DUI TRAFFIC CITATION NO. (OTHER)

Name _____
Last First Middle

	Driver's License Number										Classification	State	
<input type="checkbox"/> CDL													

Street Address _____ License Plate Number or VEN _____

City _____ State _____ ZIP _____ State _____ Placarded HazMat. Vehicle

Sex _____ Date of Birth _____

Location of Stop or Detainment: _____ County: _____

Notice: You are hereby placed immediately "out-of-service" for 24 hours, pursuant to Section 6-515 of the Illinois Vehicle Code, beginning at the time recorded below. During this time you are strictly prohibited from operating a commercial motor vehicle on the highways.

This action is being taken because, subsequent to a stop or detainment pursuant to Section 6-516 of the Illinois Vehicle Code, you were operating a commercial motor vehicle and after establishing probable cause to believe you had alcohol or other drugs in your system, a police officer:

- Requested you to submit to a chemical test(s) to determine the presence of alcohol or other drugs in your system, and:
 - You refused to submit to or failed to complete the chemical test(s); or
 - You submitted to chemical testing which disclosed an alcohol concentration of _____, which is more than .00.
- Otherwise established probable cause that you did in fact have alcohol or other drugs in your system.

The police officer established probable cause by personally observing or detecting the following:

You are further advised that: If you committed any one of the following offenses while operating a commercial motor vehicle, you will be disqualified pursuant to Section 6-514 of the Illinois Vehicle Code. A Disqualification Order will be issued by the Secretary of State, which will take effect on the 46th day following the date shown below and prohibit you from operating a commercial motor vehicle on the highways for:

- A minimum of 12 months if you refused to submit to or failed to complete a chemical test(s); or
- A minimum of 12 months if you submitted to chemical testing which disclosed an alcohol concentration of _____, which is .04 or more; or
- A minimum of 3 years if the aforementioned actions occurred while you were transporting hazardous material in a vehicle required by law to be placarded.

NOTE: If you are not an Illinois domiciled commercial driver, the information contained in this sworn document will be forwarded to your state of domicile for appropriate processing.

Under penalties as provided by law pursuant to Section 1-109 of the Illinois Code of Civil Procedure, the undersigned certifies that the statements set forth in this instrument are true and correct.

Signature of Issuing Officer _____ ID Number _____ Time _____ Date _____
a.m.
p.m.

Law Enforcement Agency _____ Mailing Address _____ ZIP _____

0211581

POLICE OFFICER - SEND TO SECRETARY OF STATE

OCT 2008 — DSD CDL 3.2

*INSTRUCTIONS FOR COMPLETING THE
"COMMERCIAL DRIVER OUT-OF-SERVICE ORDER - SWORN REPORT"*

- (A) Sworn Document Number - Enter the Sworn Document Number from the bottom of the Sworn Report.
- (B) Enter ticket number for the charge of 11-501(a) 1.
- (C) Enter ticket number for the charge of 11-501(a) 2.
- (D) Enter ticket number for other DUI citations issued for 11-501(a) 3, 4, 5, or 6.
- (E) Enter driver's license number/classification/state - Enter driver's license number, classification of driver's license, and state issuance. Indicate in CDL box if the driver has a CDL.
- (F) Enter name of driver.
- (G) Enter date of birth of driver.
- (H) Enter sex of driver.
- (I) Enter address of driver.
- (J) Enter the plate or VIN of the commercial vehicle. Check the box if the vehicle is hauling hazardous material.
- (K) Enter the location of stop or detainment; include the county where stop occurred.
- (L) Check appropriate box indicating whether the driver submitted or refused the chemical test.
- (M) Articulate the facts to establish probable cause for the arrest or out-of-service.
- (N) Check the appropriate box to indicate the disqualification period.
- (O) Signature of arresting officer and identifying number. Enter the department ID for arresting officer.
- (P) Enter the time and date of detainment. This entry is important because it will establish the start of the 24-hour out-of-service time.
- (Q) Enter the law enforcement agency name and mailing address.

NOTE: THIS IS A (3) COPY FORM. A COPY IS NOT SENT TO THE COURTS!!!

**ZERO TOLERANCE
WARNING TO MOTORIST POSSESSING
ILLINOIS SCHOOL BUS DRIVER PERMIT**

TRAFFIC CITATION NO.

SUBSEQUENT TO YOUR ARREST AS EVIDENCED BY THE ISSUANCE OF A UNIFORM TRAFFIC TICKET FOR ANY VIOLATION OF THE ILLINOIS VEHICLE CODE OR SIMILAR PROVISIONS OF A LOCAL ORDINANCE AND PURSUANT TO SECTIONS 6-106.1a AND 6-106.1b OF THE ILLINOIS VEHICLE CODE, YOU ARE HEREBY NOTIFIED AND WARNED THAT:

1. Your refusal or failure to complete all chemical tests requested will result in the loss of your privilege to possess an Illinois School Bus Driver Permit for a period of three years.
2. Your submission to a chemical test(s) disclosing an alcohol concentration greater than 0.00 will result in the loss of your privilege to possess an Illinois School Bus Driver Permit for a period of three years.

Warning Issued To _____
Name of Motorist Driver's License Number

Under penalties as provided by law pursuant to Section 1-109 of the Illinois Code of Civil Procedure, the undersigned certifies that the statement set forth in this instrument are true and correct.

Signature of Arresting Officer Identifying Number

Law Enforcement Agency Address

Date of Warning POLICE OFFICER-GIVE TO MOTORIST Time of Warning
am
pm

*INSTRUCTIONS FOR COMPLETING THE "ZERO TOLERANCE WARNING TO MOTORIST POSSESSING
ILLINOIS SCHOOL BUS DRIVER PERMIT"*

- (A) Enter the ticket number for the IVC violation. This citation must be for the initial stop.
- (B) Enter the motorist's name and driver's license number.
- (C) Signature of arresting officer and agency identification number.
- (D) Law enforcement agency name and address.
- (E) Enter the date and time of issuance of "warning to motorist."

NOTE: THIS IS A (3) COPY FORM. A COPY IS NOT SENT TO THE COURTS!!!

*INSTRUCTIONS FOR COMPLETING THE "ZERO TOLERANCE ILLINOIS SCHOOL BUS DRIVER PERMIT
SWORN REPORT"*

- (A) Enter the ticket number for the IVC violation. This citation must be for the initial stop.
- (B) Enter full name, including middle initial or (NMI) if none.
- (C) Enter the driver's license number. Indicate whether they have a CDL or if they were driving a commercial motor vehicle, and was it placarded Hazardous Materials.
- (D) Enter driver's current address. Indicate street address as well as city and state.
- (E) Enter arrest location. City and/or county are sufficient for the Secretary of State's office.
- (F) Enter driver's sex.
- (G) Enter date and time arrest occurred. This is the time of initial stop.
- (H) Enter location where driver refused or submitted to chemical testing. The driver cannot refuse until he or she has been warned.
- (I) Enter the date and time driver refused or submitted to chemical testing. The date and time of chemical test should reflect the time breath, blood, or urine testing was administered.
- (J) Enter the date "Notice of Zero Tolerance Cancellation" was issued to driver. In case of blood or urine testing, this date will be after the results are received from the lab.
- (K) Check the box that reflects the reason the Sworn Report was issued.
- (L) This space is provided for explaining the probable cause for believing the suspect had consumed any amount of alcoholic beverage.
- (M) Indicate whether the form was served immediately or sent in the mail.
- (N) Signature of arresting officer and agency officer's identification number.
- (O) Enter the name and address of law enforcement agency.

NOTE: THIS IS A (3) COPY FORM. A COPY IS NOT SENT TO THE COURTS!!!

REFERENCES

REFERENCES

- Alcohol and the Impaired Driver. A Manual on the Medicolegal Aspects of Chemical Tests for Intoxication. Committee on Medicolegal Problems, American Medical Association, Chicago, Illinois, 1976
- Baselt, Randall C. and Cravey, Robert H. Disposition of Toxic Drugs and Chemicals in Man, 4th Edition, Chemical Toxicology Institute, Foster City, CA, 1995, ISBN 0-9626523-1-8, pg. 293 - 296.
- Behavioral Risk Factor Surveillance System, <http://www.cdc.gov/nccdphp/brfss/>
- Borkenstein, R. R., Crowther, R. F., Shumate, R. P., Ziel, W. B., and Zylman, R. The Role of the Drinking Driver in Traffic Accidents. Edited by Allen Dale, Department of Police Administration, Indiana University, Bloomington, Indiana, 1964.
- Case, Glenn J. , B.S., Distefano, Sandra , B.S., and Logan, Barry K., Ph.D., DAFBT **Preliminary Report of Alcohol Content of Beer and Malt Beverages: Forensic Considerations**, International Association of Chemical Testing, Newsletter, Vol 10, No. 1, March, 1999.
- Centers for Disease Control and Prevention, <http://www.cdc.gov>
- Donigan, R. L. Chemical Test and the Law. Traffic Institute, Northwestern University, Evanston, Illinois, 1966.
- Erwin, R. E. Defense of Drunk Driving Cases. New York: Matthew Bender, 1966.
- Erwin, R. E. Defense of Drunk Driving Cases. Cumulative Supplement. New York: Matthew Bender, 1976.
- Forney, R. B., and Hughes, F. W. Combined Effects of Alcohol and Other Drugs. Springfield, Illinois: Charles C. Thomas, 1968.
- Garriott, James C. , Editor, Medicolegal Aspects of Alcohol Determination in Biological Specimens, Lawyers and Judges Publishing Co., Tucson, AZ, 1993, ISBN 0-88450-088-8, pg. 37.
- Glending, B. L., Rush, A. C., and Duffet, N. C. A Statewide Program of Drunken Driver Detection Utilizing the State Public Health Laboratory (Kansas). A report given to the American Association of Public Health in Houston, Texas, October 28, 1970.
- Harger, R. N., and Forney, R. B. "Aliphatic Alcohols." In A. Stolman, Progress in Chemical Toxicology. Vol. 3. New York: Academic Press, 1967, 1-61.
- Hricko, A. R. "British Pre-Arrest Breath Tests - Constitutional in the United States." Traffic Digest and Review. Traffic Institute, Northwestern University, December, 1969.
- Implied Consent Laws. Traffic Laws Commentary, National Committee on Uniform Traffic Law and

Ordinances, 25 April 1970, 70-74.

Jones, A.W., "Measuring alcohol in blood and breath for forensic purposes. A historical review.", Forensic Science Review, 1996, 8, 13-44.

Morbidity and Mortality Weekly Report (MMWR), <http://www.cdc.gov/mmwr/>

National Committee on Uniform Traffic Laws and Ordinances. Uniform Vehicle Code. Washington, D.C., 1962.

National Safety Council, <http://www.nsc.org>.

National Highway Transportation Administration, <http://www.nhtsa.dot.gov>

Http://www.osha-slc.gov/dts/chemicalsampling/data/CH_239700.html

Roberts, D. L., and Fletcher, D. C. "A Comparative Study of Blood Alcohol Testing Devices." Rocky Mountain Medical Journal. reprint from 1969.

Shipley, Charles V. , Chemical Tests Manual for Kentucky, Traffic Safety Institute, Eastern Kentucky University, 1970

Spector, N. H. "Alcohol Breath Tests: Gross Errors in Current Methods of Measuring Alveolar Gas Concentrations." Science, 1971, 172, 57-59.

Substance Abuse and Mental Health Services Administration,
<http://www.samhsa.gov/oas/teds/99TEDS/99Teds.pdf>

Traffic Officer in Court. Traffic Law Enforcement Series, Traffic Institute, Northwestern University, 1965.

U.S. Department of Transportation, National Highway Safety Bureau. Alcohol in Relation to Highway Safety. Highway Safety Program Standard 8, Washington, D.C., 27 June 1967.

U.S. Department of Transportation, National Highway Safety Bureau. Alcohol Safety Countermeasure Program. Washington, D.C., 8 June 1970.

U.S. Department of Transportation. 1968 Alcohol and Highway Safety Report. Washington, D.C.: U.S. Government Printing Office, 1968.

Watts, L. P. "Some Observations on Police Administered Tests for Intoxication." North Carolina Law Review, 1966, 45, 35-118.

BREATH ANALYSIS OPERATOR LABORATORY WORK RECORD

STUDENT: _____
CLASS DATE: _____

INSTRUCTOR: _____
CLASS LOCATION: _____

#	instrument	known	result
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

#	instrument	known	result
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			

#	instrument	known	result
51			
52			
53			
54			
55			
56			
57			
58			
59			
60			
61			
62			
63			
64			
65			
66			
67			
68			
69			
70			
71			
72			
73			
74			
75			

MOUTH ALCOHOL

Whiskey / Beer

	time	result
1		
2		
3		
4		
5		

RBT-IV

	action	p / f	initials
1			
2			

8000

	action	p / f	initials
1			
2			

EC/IR

	action	p / f	initials
1			
2			

EC/IR II

	action	p / f	initials
1			
2			

PBT - EXAMINER

AS III	AS IV	S-D2	S-D5	FST

Instructor/Course Evaluation

(Revised 10-06-04)

Instructor Name: _____

Block of Instruction: _____

Date of Instruction: _____

Cadet Class #: _____ Recruit Class #: _____ Other: _____

Instructor Evaluation:

Using the following scale, rate the instructor by circling the appropriate number next to each element of instruction.

	Strongly Disagree 1	Disagree 2	Neither Agree nor Disagree 3	Agree 4	Strongly Agree 5			
1. Instructor was prepared for class.....				1	2	3	4	5
(Comments):	_____							
2. Instructor stated major points / objectives.....				1	2	3	4	5
(Comments):	_____							
3. Instructor encouraged class participation.....				1	2	3	4	5
(Comments):	_____							
4. Instructor was knowledgeable about topic.....				1	2	3	4	5
(Comments):	_____							
5. Instructor spoke at a pace easy to follow.....				1	2	3	4	5
(Comments):	_____							
6. The volume of the instructor's voice was adequate.....				1	2	3	4	5
(Comments):	_____							
7. Instructor used the appropriate amount of time (started promptly, gave appropriate breaks, etc.).....				1	2	3	4	5
(Comments):	_____							
8. Instructor responded appropriately to questions.....				1	2	3	4	5
(Comments):	_____							
9. Instructor checked periodically for student's understanding.....				1	2	3	4	5
(Comments):	_____							
10. Instructor summarized major points.....				1	2	3	4	5
(Comments):	_____							

ADDITIONAL COMMENTS:

See other side for Course Evaluation

Course Evaluation:

Using the following scale, rate the course by circling the appropriate number next to each component.

	Strongly Disagree 1	Disagree 2	Neither Agree nor Disagree 3	Agree 4	Strongly Agree 5
1. Student Performance Objectives were covered in class or in reading assignments.....	1	2	3	4	5
(Comments):					
2. The course was organized in a logical manner.....	1	2	3	4	5
(Comments):					
3. The visual aids were effective.....	1	2	3	4	5
(Comments):					
4. Test/quiz questions were covered in class or in reading assignments.....	1	2	3	4	5
(Comments):					
5. The time frame was adequate to cover the material.....	1	2	3	4	5
(Comments):					
6. The course met my expectations/needs.....	1	2	3	4	5
(Comments):					
7. The handouts will be useful as references back on the job.....	1	2	3	4	5
(Comments):					
8. I feel the presentation could be improved.....	1	2	3	4	5
(Comments):					

Additional Comments:
