



SAN DIEGO POLICE DEPARTMENT



FORENSIC CHEMISTRY UNIT

ALCOHOL POLICY MANUAL

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1. INTRODUCTION

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1.1 UNIT DESCRIPTION

- 1.1.1 The Forensic Chemistry Unit (FCU) is budgeted for one supervising criminalist, five criminalists, and one laboratory technician. The unit will be open for customer service from 0730 to 1600 hours. Work schedules must be pre-approved by the unit supervisor.
- 1.1.2 The unit is located at Police Headquarters. Alcohol analyses are performed on the 6th floor in the FCU, located in rooms 617 and 618.
- 1.1.3 The criminalist positions in this unit are governed by civil service requirements requiring a four-year science degree as a minimum expectation.

1.2 UNIT FUNCTIONS

- 1.2.1 This unit performs alcohol analysis, and coordinates the contracted drug toxicology analysis and blood drawing services.
- 1.2.2 General duties performed include:
 - 1.2.2.1 Perform analysis of blood and urine samples for alcohol concentration.
 - 1.2.2.2 Give court testimony regarding all aspects of analysis and interpretation of results.
 - 1.2.2.3 Perform equipment maintenance and calibration.
 - 1.2.2.4 Provide staff work (generating reports, ordering supplies, validations) as needed.
- 1.2.3. The Forensic Chemistry Unit (FCU) criminalists perform analyses of blood, breath, and urine for alcohol concentration. Beverage samples may be analyzed for the presence of alcohol. FCU criminalists ensure calibrated breath alcohol instruments are available for use by authorized personnel. They provide breath instrument operator training to law enforcement and contract personnel. The laboratory technician helps support the criminalist functions by ensuring supplies and reagents are stocked for alcohol sample collection, alcohol analysis, and breath instrument operation. The laboratory technician may assist the Criminalist in performing maintenance on breath instruments.

2. PERSONNEL AND JOB DESCRIPTIONS

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2.1 SUPERVISING CRIMINALIST

The duties of the supervisor in the FCU include:

- 2.1.1 Supervision of the analysis of alcohol in blood, breath, and urine samples as well as the supervision of the analysis of controlled substances.
- 2.1.2 Ensure proper procedures are followed.
- 2.1.3 Review case packets to ensure proper documentation of analytical procedures.
- 2.1.4 Ensure adequate unit staffing levels every day.
- 2.1.5 Ensure that new analysts receive the proper training and pass appropriate proficiency tests, written tests, and moot courts.
- 2.1.6 Serve as a liaison between the laboratory and contractors, Department, District Attorney's office, City Attorney's offices, and other users of the laboratory.
- 2.1.7 Inspect logs and records to ensure unit policies are being followed.
- 2.1.8 Evaluate employee performance.
- 2.1.9 Prepare staff reports:
 - 2.1.9.1 Budget requests
 - 2.1.9.2 Monthly unit statistics
 - 2.1.9.3 Special projects
- 2.1.10 Act as an advocate for the staff to management.
- 2.1.11 Monitor, approve, and submit electronic time cards.

2.2 CRIMINALIST I and II

The duties of criminalist I and II in the FCU include:

- 2.2.1 Analyze impounded evidence including blood, urine, and controlled substances.
- 2.2.2 Perform breath alcohol tests when needed.
- 2.2.3 Monitor instruments and arrange for repair as needed.
- 2.2.4 Prepare reagents as needed.
- 2.2.5 Prepare legible notes and/or reports on all substances analyzed.
- 2.2.6 Follow proper safety procedures.
- 2.2.7 Maintain proper chain of custody for evidence.
- 2.2.8 Testify as an alcohol and controlled substance analyst as well as an alcohol impairment expert.
- 2.2.9 Keep supervisor informed of operations, problems, and unusual circumstances.
- 2.2.10 Maintain proper public relations.
- 2.2.11 Carry out special projects as requested by the supervisor.
- 2.2.12 Act as a technical resource for the Department and others as needed.
- 2.2.13 Assist newer analysts in technical and administrative procedures and with technical problems.
- 2.2.14 Participate in the development of new procedures.
- 2.2.15 Distribute reports to district and city attorneys when necessary.
- 2.2.16 Participate in annual proficiency testing with a passing score that falls within the unit's established uncertainty of the reported mean.
- 2.2.17 Perform and record calibration checks on breath testing instruments and maintain calibration and maintenance records of unit instruments used in casework.
- 2.2.18 Prepare monthly statistics.

- 2.2.18 Participate in and/or organize correlation studies as needed.
- 2.2.19 Prepare individual reports as necessary for detectives for crimes other than Health and Safety and DUI violations, including Vice, Sex Crimes, and Homicide.
- 2.2.20 Follow laboratory manuals and Title 17.
- 2.2.21 Teach breath instrument operator classes once certified as an FAA.

2.3 Laboratory Technician

- 2.3.1 Order needed supplies for Forensic Chemistry unit
- 2.3.2 Prepare and stock reagents as needed.
- 2.3.3 Wash and stock lab ware as needed.
- 2.3.4 Assist in monitoring instruments and arranging for repair as needed.
- 2.3.5 Follow proper safety procedures.
- 2.3.6 Keep supervisor informed of operations, problems, and unusual circumstances.
- 2.3.7 Maintain proper public relations.
- 2.3.8 Carry out special projects as requested by the supervisor or criminalists.
- 2.3.9 Participate in the development of new procedures, as needed.
- 2.3.10 Help maintain and stock room 158, breath instrument room.
- 2.3.11 Assist Criminalist in breath instrument maintenance and quality assurance.

2.4 BLOOD DRAW CONTRACT EMPLOYEES

Blood draw staff requirements include:

- 2.3.1 Outside staff is contracted to provide phlebotomy services for the laboratory.
- 2.3.2 Per Vehicle Code Section 23158, the contract blood draw provider must staff properly licensed or certified individuals. The contractor must submit copies of prospective personnel resumes and licenses to the crime laboratory for review. The crime laboratory will maintain a file of contract personnel.
- 2.3.3 The contractor will be notified if the applicant does or does not meet the requirements of the contract. The names of qualified applicants will be submitted by the crime laboratory to police personnel to be included on a list of individuals authorized to receive a background investigation packet.
- 2.3.4 The contractor will ensure that personnel resumes are updated at least annually, and that the crime laboratory has copies of current licenses at all times.

3. SUBMISSIONS AND HANDLING

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3.1 SAMPLE RETRIEVAL

Samples for analysis will be obtained from the Vault, or from the Property Room. For a detailed description of the procedures utilized to impound the samples into the Vault, please refer to the Narcotics Vault Manual.

3.2 CHAIN OF CUSTODY

The FileOnQ system is used to electronically track blood and urine samples. All transfers of samples will be recorded using the FileOnQ system. This information shows the hand-to-hand transfers between recoveries from the drop box, the Vault, FCU, the toxicology courier, etc.

- 3.2.1 The analyst signs alcohol samples out from vault personnel using the electronic signature pad.
- 3.2.2 Samples checked out for analysis will be placed in the alcohol GC room. This room is located within the secure Forensic Chemistry Unit laboratory. For overnight storage, samples may be locked in the analysts
- 3.2.3 Following analysis, the samples are returned sealed to the Narcotics Vault by the analyst.
- 3.2.4 Blood and Urine Alcohol Discrepancy Policy

If an impound discrepancy occurs on a blood or urine sample, the nature of the discrepancy will be evaluated to determine the following:

- The discrepancy is a minor administrative error (such as a misspelling in the name) that can easily be addressed at the Vault or analyst level. The error will be fixed and the sample will be analyzed. A note regarding the fix will be put in the FileOnQ system or in analyst's notes.
- The error is grievous (such as a misidentification or wrong label). The Vault will notify the officer. It will be the impounding officer's responsibility to rectify the impound.

If the sample is analyzed prior to a fix:

- The fix process will be documented with a corrected report.
- This corrected report will be distributed as necessary.
- A correction will be made to the analyst's notes.

If the sample is not analyzed:

- Appropriate notes will be added to FileOnQ.
- The external agency (City District Attorney's Office) and impounding officer will be notified.
- A QA report will be written and distributed as necessary.

3.3 PAPERWORK FOR SAMPLES COLLECTED FOR VIOLATIONS OTHER THAN DUI

- 3.3.1 A toxicology request will be completed by the requesting detective for alcohol analysis of non-DUI violations. These requests will generally be from the Sex Crimes, Wife, or Homicide units. The work requests are submitted to the clerical unit where they will be date stamped and logged into the LAN computer. The clerical staff will enter the case completion information into the laboratory database system. A copy of the request goes to the vault so the sample can be pulled for analysis.
- 3.3.2 Generally, requests for non-DUI samples requiring toxicological analyses or a combination of alcohol and toxicology testing will be submitted to the administrative aide for action.
- 3.3.3 In homicide cases, blood and urine samples are collected. If a breath test was provided and was negative for alcohol, no additional analyses are automatically performed. If the breath test was positive, the blood sample will be analyzed for alcohol content.
- 3.3.4 The following guidelines will be used in all cases for analysis:
- Blood Alcohol – analyzed if collection was 24 hours or less since incident
 - General Drugs – analyzed if collection was 72 hours or less since incident
 - Prescription Drugs – analyzed if collection was 48 hours or less since incident
 - Special Drugs and GHB – analyzed if collection was 8 hours or less since incident

3.4 DUI ALCOHOL SAMPLE RESULTS UNDER 0.100g%

- 3.4.1 DUI Alcohol sample results less than 0.100 g% will automatically be submitted for toxicology testing. The analyst will prepare a toxicology request form using the FileOnQ system.

- 3.4.2 The general toxicology request form is automatically generated in FileOnQ using the following steps.
- 1) Use barcode number to pull up the case in FileOnQ.
 - 2) Check the boxes for Drug Testing, Prescription, and Stop if General Positive.
 - 3) From the menu bar select Reports, then select External Reports, followed by Biotox Lab. The system will automatically prepare the Biotox Report. Print this report and provide it to the vault personnel.

3.5 BLOOD DRAW GENERAL INFORMATION

- 3.5.1. Blood draws are generally performed by licensed or certified contract personnel
- 3.5.2 The laboratory technician or FCU analysts will verify that blood vials are not expired during inventory.
- 3.5.3 All blood draws must be witnessed by an officer.
- 3.5.4 The phlebotomist will initial and note the time of collection on the label. The blood label will be placed onto the vial.
- 3.5.5 If only one vial was provided, but both alcohol and drug analyses are required, the sample will routinely be analyzed for alcohol first.

3.6 BLOOD DRAW VIALS REQUIRED

Type of Case or Analysis	Suggested Number and type of 10mL Vials
Misdemeanor alcohol analysis (23152)	1 grey top*
Alcohol and toxicology analysis for all other violations	2 grey tops*
Genetic typing analysis	1 purple top
HIV or hepatitis analysis	1 red top

*= 10 ml Grey top vials containing 20 mg Potassium Oxalate and 100 mg Sodium Fluoride, or equivalent.

3.7 BLOOD DRAW PROCEDURES

See Title 17 Blood Collection and Handling

3.8 BREATH ALCOHOL INSTRUMENTS AND SUBJECT TESTING

See Breath Alcohol Manual

3.9 BLOOD AND URINE ALCOHOL PROCEDURES

See Blood Alcohol Method Manual

3.10 TURN AROUND TIMES

- 3.10.1 Routine alcohol analyses is generally completed within a week following log in.
- 3.10.2 Felony alcohol samples are prioritized, with a goal of analysis within one day of log in.
- 3.10.3 Routinely technical and administrative reviews should be completed generally within one week of receipt.

3.11 DOCUMENTATION OF BLOOD/URINE SAMPLE COLLECTIONS

- 3.11.1 Blood draws and urine collections performed in Room 138 or off site will be entered into the FileOnQ system. The system will automatically generate a unique barcode number for the sample. The standard blood draw or sample collection procedure will be followed. If a sample is not collected, that information will be annotated in the Additional Description section in FileOnQ. FileOnQ will be the primary documentation of sample collection or attempt to collect a sample.
- 3.11.2 Samples drawn for the Medical Assistance Unit or Internal Affairs may be confidential. In those cases, case numbers may be used in place of subject names.
- 3.11.3 A notation will be made in the Additional Description field in FileOnQ if a sample is released to the law enforcement official requesting the sample collection.

3.12 GENERAL SAMPLE HANDLING PROCEDURES

- 3.12.1. Only one sample or control sample will be open at any one time.
- 3.12.2. Protective clothing will be worn when handling biological samples including laboratory coats, full protective facemask if samples are opened, and gloves.

3.13 INFORMATION ON OUTER TUBES

- 3.13.1 Outer plastic storage tubes are used to house blood vials for alcohol and toxicology testing. The person logging in the samples will affix the barcode label to the outside of the outer tube.

3.14 SEALING EVIDENCE

- 3.14.1 A vial label will be generated using FileOnQ, for DUI or drug offenses, and placed on the blood vial.
- 3.14.2 The blood vials will be placed in the provided tubes, capped, and sealed. Evidence tape will be used to cover the tube cap and urine bottle lid. The tape needs to extend over the cap and onto the sides of the container. Initial and date across the tape and container.
- 3.14.3 The evidence seal will be applied by the officer after collection.

3.15 ALCOHOL SAMPLES SUBMITTED WITH A TOXICOLOGY REQUEST

- 3.15.1 Blood and urine samples submitted for both drug and alcohol testing for 23152 VC violations are not routinely tested for drugs.
- 3.15.2 Alcohol results less than the legal limit of 0.100g% will be automatically submitted to a contract laboratory for toxicology analysis. No action is required by the submitting officer.
- 3.15.3 If there is reason to believe the individual used drugs, such as an admission, the officer should check the "Drug" box in the FileOnQ system following the procedure outlined in Section 3.4.2.
- 3.15.4 If the alcohol results are $\geq 0.100\text{g}\%$, and no justification was provided, the sample will not be sent for further testing.
- 3.15.5 For samples collected for violations other than DUI, samples will be sent for toxicology analysis following the guidelines set forth in 3.3.4.

4. POLICIES

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4.1 GENERAL ANALYTICAL PROCEDURES

The procedures for breath analysis and gas chromatograph analysis of blood and urine samples using headspace are maintained under separate cover.

- 4.1.1 Every alcohol analyst must be thoroughly familiar with the department-approved procedure for forensic analysis of blood and urine, and also Title 17 of the California Code of Regulations.
- 4.1.2 Only one blood vial or urine bottle should be opened at any one time.
- 4.1.3 Urine samples will not be routinely analyzed for alcohol.

4.2 BEVERAGE SAMPLE ANALYSIS

- 4.2.1 Samples are received and returned to either the Narcotics Vault or Property Room, by the analyst. If necessary preservative may be added to the sample, in the form of a one millilitre scoop or approximately 0.89 grams of sodium fluoride. In general, a portion of the liquid is stored with and without preservative.
- 4.2.2 Samples of suspected alcoholic beverages are submitted to the laboratory through laboratory request. The clerical staff will enter the request in the laboratory database. Once completed, the unit supervisor will enter the case completion info into the laboratory database.

4.3 IMPROPERLY COLLECTED BLOOD SAMPLES

- 4.3.1 Blood samples submitted for alcohol analysis are collected in 10-mL gray-stoppered blood vials containing sodium fluoride (100 mg), preservative, and potassium oxalate (20 mg), anticoagulant, to allow for complete analyst interpretation. Standard 0.25% sodium fluoride and 0.20% potassium oxalate vials may also be used. Any deviation from expected sample vial conditions will be handled as follows.
 - 4.3.1.1 Red Vials: Samples in red vials will be homogenized, as much as possible in the original container. Preservative and anticoagulant will be added to the vial, or the blood will be transferred to a new gray-stoppered vial. The vial and case notes will be annotated indicating that preservative and anticoagulant was added, or that the blood was transferred to a new vial.

Following this procedure, the samples will be analyzed following the method outline in the Blood and Urine Alcohol Analysis Method Manual.

4.3.1.2 Serum Separator Tubes: The original tube must be annotated as to the contents (blood or serum), and the contents transferred into a gray-stoppered vial, or the preservative and anticoagulant from a clean, gray-stoppered vial will be added. If the contents were transferred to a new vial, the new vial must be annotated to reflect its origin, and both the original and new vials must be retained. The worksheet must be annotated indicating the action taken.

- If the tube containing the gel has been centrifuged, the serum can be analyzed. Serum has a higher ethanol concentration than whole blood. The serum alcohol result would be divided by 1.1 to correlate it to the ethanol concentration in whole blood.
- If the gel has not been centrifuged, pour the blood out into a homogenizer (the gel will stay in the vial), homogenize, then transfer to a gray-stoppered vial. The sample will be analyzed following the method outline in the Blood and Urine Alcohol Analysis Method Manual.

4.3.1.3 Other Tubes: Sodium fluoride and potassium oxalate from a new gray-stoppered vial will be poured into the original noncompliant sample vial, or the blood will be transferred to a new gray-stoppered vial and the sample will be analyzed according to methods on file. The vial and case notes will be annotated indicating the preservative and anticoagulant was added. The sample will be analyzed following the method outline in the Blood and Urine Alcohol Analysis Method Manual.

4.3.1.4 Clotted Gray Vials: The sample will be homogenized prior to analysis. The extent of clotting will determine the means of sample homogenizing, including vigorous shaking or breaking up the clot by manual manipulation or tissue grinding. Clotted blood and the method used to homogenize will be annotated in the case notes. Following this procedure, the samples will be analyzed following the method outline in the Blood and Urine Alcohol Analysis Method Manual.

4.3.1.5 Unstoppered Vials: Vials received without a stopper will not be analyzed. The submitting officer should be notified as soon as practical.

4.3.2 See Section 5 “Reporting” for samples not in compliance with Title 17 guidelines.

4.4 IMPROPERLY COLLECTED URINE SAMPLES

4.4.1 If a urine sample is to be analyzed for alcohol, it must be collected in reagent bottles prepared by the laboratory, which contain a one-milliliter scoop (approximately 0.89 grams) of sodium fluoride. The only approved urine sample for alcohol quantitation is a “Second Void” sample, collected no sooner than twenty minutes after first voiding the bladder. The officer must select “First Void” or “Second Void” in FileOnQ. These samples will only be analyzed by request approved by the unit supervisor. Any deviation from proper, routine procedure will be documented on the analyst’s worksheet, and will be handled as follows:

4.4.1.1 Containers not provided by the laboratory and not containing Sodium Fluoride:

Samples received in containers not provided by the laboratory and not containing sodium fluoride will have sodium fluoride added. The container and worksheet must be annotated indicating a description of the container provided and that the preservative was added. Following this procedure, the samples will be analyzed according to methods on file.

4.4.1.2 Samples received with no designation of first or second void

Samples not annotated with information on first or second void will be treated as a first void sample. The worksheet must be annotated indicating that this information was not provided.

4.4.1.3 Samples received designated as first void

The worksheet must be annotated indicating the sample was a “first void” sample.

4.4.2 See Section 5 “Reporting” for samples not in compliance with Title 17 guidelines.

4.5 SUPPLIES

- 4.5.1 The criminalists and laboratory technician will ensure Room 138 is stocked for use.
- 4.5.2 The gas delivery truck driver brings filled compressed gases and removes the empty tanks. The tanks are currently stored in the Sally Port on the first floor. The laboratory employee that meets the driver and escorts him/her into the building will be responsible for signing the invoice and providing a copy of the invoice to the clerical staff.

4.6 NOTE TAKING/DOCUMENTATION

Any irregularities will be documented on the appropriate worksheets, and case records, etc.

4.7 PAGE NUMBERING

- 4.7.1 Worksheets and GC printouts will be numbered consecutively and the first and last page must indicate the total number of pages.
- 4.7.2 Work requests and other information which does not influence sample testing or conclusions will be bundled and the front annotated as administrative documents. These pages do not need to be numbered.

4.8 MONTHLY STATISTICAL REPORTS

- 4.8.1 The unit supervisor will complete a report of unit activity for the laboratory manager and administrative aide due by the 7th of each month.
- 4.8.2 Each criminalist is responsible for maintaining information on his or her casework conducted each month. This information is due to the unit supervisor by the 5th working day of each month.

5. REPORTING

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5.1 UNCERTAINTY OF MEASUREMENT FOR BLOOD AND URINE RESULTS

The uncertainty of measurement will be determined for each instrument which performs alcohol quantitation of blood samples following Title 17 guidelines. The uncertainty of measurement is listed on the cover sheet of each analytical run. Analytical data and calculations used to determine the measured uncertainty will be maintained in an uncertainty binder in the Forensic Chemistry Unit. For samples below 0.100g%, the uncertainty will be expressed as $\pm 0.005\text{g\%}$ per Title 17. Reporting uncertainty for values greater than or equal to 0.100g% will be expressed as the percentage at a coverage factor level of $k = 2$ and a confidence interval of approximately 95%.

The maximum combined uncertainty will be calculated at a coverage factor of $k = 2$ using the maximum standard deviation and the maximum average difference. This value must be less than 0.005g% for values under 0.100g% per Title 17. Standards must be Certified Reference Material (CRM) with values traceable to NIST Standardized Reference Material (SRM). For values over 0.100g%, the highest value will be used for reporting.

The following formula will be used for the expanded uncertainty:

$$U_c = \sqrt{u(\text{repeatability})^2 + u(\text{accuracy and linearity})^2}$$

$U = k \times U_c$ Where U is the expanded uncertainty and k is the coverage factor.

The measured uncertainty will be re-established if the quantitation capability of an instrument is affected through repair. The uncertainty will be verified by new analysts to the forensic chemistry unit to ensure it is not increased. Additionally, the dilutor will be calibrated annually to ensure there is no effect on the uncertainty. Control charts will be used to look for trends and to evaluate the diluter, controls, and material used in the analysis of blood samples. The charts will be updated with every blood run. The current uncertainty of measurement data will be kept in the FCU.

5.2 ALCOHOL RECORDS AND DISTRIBUTION

5.2.1 Copies of blood alcohol records are sent to the City Attorney's Office Discovery Unit and the South Bay District Attorney's Office. These records are scanned and sent electronically by the clerical staff.

5.2.1.1 Certified copies will be indicated by a certified cover sheet.

5.2.1.2 GC instrument maintenance log copies are forwarded monthly.

5.2.2 Breath alcohol maintenance records, calibration check reports, and GC instrument maintenance logs will be provided to the clerical staff by the Forensic Chemistry Unit staff at the beginning of each month for distribution to the City Attorney's Office and the South Bay District Attorney's Office.

5.2.2.1 The records will be scanned and emailed to the appropriate personnel in each office.

5.2.2.2 The original records will be returned to the Forensic Chemistry Unit for filing.

5.2.3 A list of Room 138 Blood and Urine Collection is forwarded to the City Attorney's Office, the South Bay District Attorney's Office, and Police Headquarters monthly by the clerical staff when received from forensic chemistry unit staff.

5.2.4 Alcohol notes, chromatograms, requests or correspondence received or generated, and the original alcohol analysis report will be maintained in the case packet folder. The folder will be identified by the date of analysis and analyst's initials.

5.2.5 All alcohol records will be maintained according to the General Laboratory Quality Assurance policies.

5.3 REPORTING RESULTS OF IMPROPERLY COLLECTED SAMPLES

5.3.1 A Non Compliance Report form will accompany the reported results for improperly collected samples for DUI related arrests. The condition of the sample non-compliance, related to those outlined in 4.3 and 4.4 will be reported along with the analytical result. Copies of this memo will be distributed along with the laboratory report, and one original will remain in the case packet

5.3.1 First void urine samples, or urine samples not designated as either First or Second void will be reported as only a positive or negative alcohol result.

5.4 RELEASE OF RESULTS TO OFFICERS/PROSECUTORS OR DMV

Official results will not be released until the analysis packet has been through technical and administrative reviews. Verbal results can be released after the analysis packet has been through technical review.

5.5 REVIEW PROCESS AND REPORT PREPARATION

- 5.5.1 The analyst will prepare an alcohol report of the samples and results for each analytical run.
- 5.5.2 The analyst will submit alcohol reports and alcohol analysis notes as a case packet for technical review. Completion of the technical review will be indicated by the initials and dates on the alcohol analysis reports below the signature block, and by initials, id#, date, and total pages reviewed on the first page of the alcohol analysis notes. The packet will then be submitted for administrative review. Completion of the administrative review will be indicated by initials and date on alcohol analysis reports, initials and date on non-compliance reports, and initials, id#, date, and total pages reviewed on the first page of the alcohol analysis notes. Following administrative review, the packet will go directly to clerical for scanning and distribution.
- 5.5.3 The alcohol analysis report must contain specific information for the DMV admin per se program. That includes the subject's name, draw date, barcode number, date samples received and analysis, dates data is compiled and the report generation result, analyst's name, title, and signature (on report). The appropriate certification statement must be on each report.

5.6 REPORT DISSEMINATION

- 5.6.1 Original reports will be maintained in the clerical files for one year then transferred to the forensic chemistry unit.
- 5.6.2 Copies of the report are sent electronically or via fax by the clerical staff to:
- DMV, Office of Driver Safety
Attn: Admin per se
1455 Frazee Rd, Ste 400
San Diego, CA 92108

- City Attorney, Lab Desk M.S. 61
- South Bay District Attorney, Discovery Desk, M.S. S-109

5.6.3 Distribution of other reports in the packet will be determined by the Forensic Chemistry Supervisor and performed by the clerical staff. This includes sex crimes or other crime reports, beverage sample reports, and non-compliance reports.

5.7 RELEASE OF RESULTS TO SUBJECTS

All alcohol results are entered into the Alcohol and Narcotics database. Subjects must personally appear at the Headquarters front desk of the Police Department with their driver's license or DMV identification and photo identification if their license was relinquished, to receive the result.

5.8 OBTAINING RESULTS FROM THE LAN

Authorized personnel can obtain alcohol results on the LAN computers using the following steps:

- 5.8.1 Click the icon "Narcotics and Alcohol Analysis Results".
- 5.8.2 Enter the sample Incident Number and click "Find."
- 5.8.3 To print, click the print icon.

5.9 DISCOVERY REQUESTS FOR DMV HEARINGS/CIVIL CASES

Refer to the laboratory general policy manual under "Civil Subpoenas" and the general policy manual, Discovery Responsibilities.

5.10 REPORTING BEVERAGE ANALYSIS RESULTS

5.10.1 For alcohol samples submitted by Vice, the following wording will be used for the results of Beverage Analysis:

- No ethyl alcohol was detected in the sample, **or**
- Ethyl alcohol is present in the sample in a concentration less than 0.50% ethanol by volume, **or**
- The sample contains ethyl alcohol in a concentration of 0.50% or more ethanol by volume.

5.10.2 For samples submitted by investigative units other than Vice, a quantitated result for the concentration of alcohol may be reported.

5.10.3 Following technical and administrative review, reports will be sent to the detective. The case packet will include a copy of the report, and all printouts and information related to the case.

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6. EQUIPMENT

6.1 ALCOHOL ANALYSIS SECTION EQUIPMENT

6.1.1 Intoxilyzer 8000

Purpose: This is the unit's breath test instrument that is used for breath alcohol analysis. It measures breath alcohol concentration and provides a digital readout, as well as a hard copy printout, of the test sequence and test results.

6.1.2 Breath Simulators

Purpose: Breath simulators warm the alcohol solutions used in annual quality assurance checks on the Intoxilyzer 8000. They are attached to the device to allow passing of the vapor from the simulator into the device for alcohol concentration measurement.

6.1.3 A Clarus 700 Gas Chromatograph, with a Turbo-matrix 110 Headspace Sampler. A Shimadzu GC-2010 Plus Gas Chromatograph, with an HS-20 Headspace Sampler.

Purpose: Both systems independently utilize a computer with instrument software for obtaining chromatograms and alcohol results.

6.1.4 Refrigerator

Purpose: For storage of standards and samples.

6.1.5 Auto Pipette/Dilutor

Purpose: Auto pipette/dilutor is used in the preparation of the blood or urine sample by drawing up a preset amount of blood or urine and internal standard then dispensing both into a sample vial.

6.1.6 Tube Rocker

Purpose: A tube rocker is used to mix blood and samples prior to analysis.

6.1.7 Miscellaneous Glassware

Purpose: Miscellaneous glassware is used including beakers, pipettes, flasks, sample vials etc.

6.1.8 Analytical Pipettes

Purpose: These pipettes are used to obtain specific quantities of components used to prepare solutions.

6.2 EQUIPMENT PERFORMANCE

Equipment performance requirements are specified by the California Code of Regulations, Title 17.

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7. QUALITY ASSURANCE

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7.1 TECHNICAL REVIEWS

- 7.1.1 Technical reviews will be performed on all alcohol case packets prior to release of reports. The review must be performed by a peer currently proficient in alcohol analysis.
- 7.1.1.1 Technical reviews will include worksheets, data sheets and printouts, reports, and any other information in the case packet. The chromatograms will be reviewed; however, reviewer initials are not required on individual pages except the first note page and on each page of the alcohol report.
- 7.1.1.2 The technical review process will check that approved laboratory procedures were used, the tests conducted and results obtained were documented and correctly transcribed onto worksheets, appropriate controls, standards, and blanks were used and within established limits. The method used must be specified. The examiner's conclusion must be appropriate and supported by the data. Calculations will be reviewed for correctness. Reports are reviewed for correct data.
- 7.1.2 The goal is to have the technical review completed within a week of its receipt for review.

7.2 ADMINISTRATIVE REVIEW

- 7.2.1. Administrative reviews will be performed on all alcohol case packets prior to release. The review is performed by the unit supervisor or a qualified analyst.
- 7.2.1.1 The administrative reviewer will:
- 1- Ensure all pages are appropriately numbered.
 - 2- Check that qualitative data are properly recorded on the worksheets.
 - 3- Ensure the final result is correct based on the raw data.
 - 4- Verify the standard, controls, and blanks are within acceptable ranges.
 - 5- Ensure a technical review was completed by a qualified analyst.
 - 6- Check that notes are legible, permanent, and contain no obliterated information.
 - 7- Ensure that the data on the report is accurate.
 - 8- Ensure the analyst and technical reviewer have initialed and dated all appropriate pages.

9- Ensure the results were correctly recorded in the entered in the Narcotics and Alcohol database,

7.2.2 Administrative reviews will similarly be conducted on breath instrument linearity and calibration checks.

7.3 ALCOHOL REAGENTS

See Alcohol Analysis Method Manual

7.4 LOGS, PREPARATION SHEETS, AND VERIFICATIONS

- 7.4.1 The Internal Standard preparation sheet, GC Maintenance logs, and Intoxilyzer 8000 Maintenance logs are maintained by Forensic Chemistry Unit staff and filed in the unit.
- 7.4.2 Binders for alcohol method verifications and value establishments, including mixture sample, and breath alcohol simulator solutions, are prepared by Forensic Chemistry Unit staff and maintained in the unit.

7.5 USE OF SPECIFICITY CHECK SOLUTION

- 7.5.1 A specificity check solution containing a mixture of acetaldehyde, methanol, isopropanol, acetone and ethanol will be run every day that samples are run.
- 7.5.1.1 The instrument must be capable of detecting all 5 peaks from the mixture in addition to the internal standard peak on the capillary column.
- 7.5.1.2 Each volatile component of the specificity solution should be run individually to determine the retention time of each component when a new specificity check solution is prepared.
- 7.5.2 The specificity check solution must be analyzed each time there is a change to the instrument that may affect sample retention time including a column change or change in instrument temperature or pressure.
- 7.5.3 Specificity check solution preparation and testing will be maintained by the Forensic Chemistry Unit staff.

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8. COURT

8.1 GENERAL COURT POLICIES

- 8.1.1 General court policies are under separate cover.
- 8.1.2 Although the laboratory receives subpoenas, the analysts operate on an “on-call” basis only. Analysts will not appear on the basis of a subpoena alone. An analyst should be placed on-call by the prosecutor when the actual date of the trial is finalized. A phone call to the analyst is required to place the analyst on-call. The analyst should be placed on-call no later than the day before they are needed, to allow time to prepare the court packet. The prosecuting agency should maintain close communication with the analyst on the day needed and allow a one-hour response time for court. At that time, the on-call trial analyst will clear their calendar and appear at the courtroom as needed.
- 8.1.3 One analyst is assigned each month as the primary on-call trial analyst for breath alcohol trials. This individual typically covers all breath alcohol trials for the month. On those occasions the on-call individual is not available, any of the remaining analysts from that unit may be available to testify. A designation of “Back-up Court Person” indicates the order of back-up assignment.
- 8.1.4 Some cases require a specific analyst be available for court. When those situations occur, it is even more critical that the prosecutor personally contact the analyst to ensure they will be available when needed.

8.2 SUBPOENAS FOR CONTRACT PERSONNEL

The laboratory is not responsible for receipt or distribution of subpoenas for contract personnel. Subpoenas should be sent directly to the contract agency.

8.4 COURT EVALUATIONS

See Quality Assurance Manual.

9. TRAINING

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9.1 GENERAL TRAINING

A new analyst will complete the following training blocks, which can be completed in any order depending upon the training needs of the unit. The training program takes approximately 1 year to complete. A formerly trained or experienced Alcohol Analyst may complete the training blocks in a more abbreviated form. The reading lists may be updated with articles that are more readily available or current to the training analyst. At the end of training, a new analyst will be certified to perform all areas of alcohol analysis and testimony.

BREATH ALCOHOL PROGRAM

Completion of Intoxilyzer Operator Training Course

Review of Title 17

Breath General

- Purpose of Forensic Alcohol Testing

- General process of absorption, distribution, and elimination

- Theory of breath alcohol analysis

- Breath testing methods

 - 15 minute waiting period

Intoxilyzer 8000

- General Operation

 - Theory

 - Infrared source

 - Ethanol structure

 - Blood-breath ratio (g/2100L)

 - Sample collection requirements

 - Instrument specifications

- SDPD set-up

 - Precautionary Checklist

 - Breath testing sequence

 - Trombetta

 - Breath strip features

 - Safeguards/Error messages

- Quality Assurance Program

 - GEBS/EGS

 - Simulators

 - Uncertainty of Measurement

- Maintenance

 - Logs

Room 138
DUI Van and cars
CMI
COBRA
Data uploads
Reviewing data
Data printouts
Practical Experience (6 months)

PAS

Purpose
Evidential v. screening device
Court Testimony
Theory

Completion of Operator Training Class (4 hours)
Written Examination (minimum passing score of 80%)
Practical Instrument Exam (Passing score of 100%)

Reading:

Breath Alcohol Instrument Operator Training Manual
Breath Alcohol Method Manual
Alcohol Policy Manual
Title 17
Gariott's Medicolegal Aspects of Alcohol, Fifth edition, Chapter 1, Methods for Breath
Analysis
NHTSA – conforming products list

Trainee: _____	Date Completed: _____
Trainer: _____	Date Completed: _____
Supervisor: _____	Date Reviewed: _____
Quality Assurance Manager: _____	Date Reviewed: _____

BLOOD ALCOHOL PROGRAM

Definition of Alcohol

Review of Title 17

Value and Purpose of Forensic Alcohol Testing

Samples

FileOnQ

Collection guidelines

Phlebotomist

Officer

Appropriate samples for analysis

DUI and non-DUI samples

Types of blood vials

Serum

Urine

Preservative/anti-coagulant

Labels

Improperly collected samples

No preservative

Urines

for 23152 charges

first void

Room 138

Supplies

Lock box

Vault

Sample retrieval/retention

Splits

Toxicology samples

Alcohol worksheets

Standards and Controls

Internal standard

Order of samples

Sample preparation for analysis

Set-up process

One sample at a time

Initial/date vial

Verify sample information

- Homogenizing samples
- Aliquoting samples
- Dilutor
- Crimper
- Improperly collected samples
- Clean-up process

- Headspace GC analysis
 - Theory – Henry’s Law
 - General Operation
 - Software
 - Gases
 - Internal Standards
 - Maintenance Log

- Evaluating the run
 - Calibration standards
 - Mixture sample
 - Controls
 - Replicate sample results
 - Requirements
 - Out of range results
 - Repeat quantitation
 - Software calculation

- Reporting
 - Truncation of results
 - Units (% , g% , g/100ml)
 - Urine/serum ratios
 - Toxicology requests
 - Case packet requirements
 - Technical and Administrative Reviews
 - Alcohol results database
 - Report Certification

- Quality Assurance Program
 - ASCLD-LAB accreditation-blood and urine program
 - Uncertainty of Measurement

- Beverage Analysis
 - Dilution of samples
 - Conversion of % (w/v) to % (v/v)

Preservative
Reporting results

Practical Demonstration

1. Complete analysis of a minimum of 25 blood samples
2. Complete analysis of beverage unknowns – results must be within $\pm 5\%$ of reported alcoholic by volume.
3. Competency test (a minimum of 4 unknown samples ranging from approximately 0.000g% to 0.250g%) – results must be within $\pm 5\%$ of reported mean above 0.100g% and $\pm 0.005\%$ below a 0.100g%
4. Written examination (Passing score minimum 80%)

Readings:

Alcohol Policy Manual
Alcohol Analysis Method Manual
Title 17

Garriott's Medicolegal Aspects of Alcohol, Fifth edition:
Chapter 5: 5.1 Blood, 5.2 Serum and Plasma, 5.3 Urine
Chapter 8: Methods for Fluid Analysis
Chapter 9: Quality Assurance
Chapter 10: Collection and Storage of Samples for Alcohol Analysis
Vehicle codes – 23152, 23153
Implied consent – VC section 23612

Trainee: _____	Date Completed: _____
Trainer: _____	Date Completed: _____
Supervisor: _____	Date Reviewed: _____
Quality Assurance Manager: _____	Date Reviewed: _____

ETHANOL EFFECTS AND DRIVING IMPAIREMENT

Ethanol

- Alcohol beverages
- Chemical information
- Class of drug
- Standard drink

Distribution of Alcohol in the Body

- Absorption
 - Peak Absorption
 - Full Absorption
 - Full/Empty Stomach
 - Venous/Arterial Distribution
- Elimination
 - Widmark's " β "
- Blood/Breath Comparison

Widmark Formula

- How and when it was developed
- Calculation of alcohol to reach a blood alcohol level
- Rho factor - Male vs. female
- Retrograde Extrapolation

Observed Effects of Alcohol

- Impairment
 - Mental impairment
 - Physical impairment
 - Correlation Study
- Field coordination tests
 - Use by officers
 - Effectiveness in evaluation of alcohol impairment
 - NHTSA validated tests
 - SDPD tests

Alcohol and Driving

- How does alcohol affect one's ability to drive safely?
- At what point are all persons are under the influence of alcohol for the purpose of driving a motor vehicle?

Complete Correlation Study

Written Examination (Minimum passing score of 80%)

Suggested Reading

- Jones.
Forensic Science Aspects of Ethanol Metabolism.
Forensic Science Progress 5, 1991, pp. 33-89
- Winek, Wahba, Dowdell, Friel, Logan, Baur.
Determination of Absorption time of Ethanol in Social Drinkers.
Forensic Science International, Vol. 77, 1996, pp 169-177
- W. Jones et al.
Peak Blood-Ethanol Concentration and the Time of its Occurrence after Rapid Drinking on an Empty Stomach.
Journal of Forensic Science, Vol. 36, No. 2, 1981, pp. 376-385
- Friel et al.
An Evaluation of the Reliability of Widmark Calculations Based on Breath Alcohol Measurements
Journal of Forensic Sciences, Vol. 40, No. 1, January 1995, pp. 91-94
- Gullberg
Comparing Road Side with Subsequent Breath alcohol Analyses and Their Relevance to the Issue of Retrograde Extrapolation
Forensic Science International, Vol. 57, 1992, pp. 193-201
- Rodney G. Gullberg
Variation in Blood Alcohol Concentration Following the Last Drink
Journal of Police Science and Administration, Vol. 10, No.1, 1982, pp.289-296
- Jones, Neri
Evaluation of Blood-Ethanol Profiles after Consumption of Alcohol Together With a Large Meal
Canadian Journal of Forensic Sciences, Vol. 24, No. 3, September 1991, pp. 165-173
- Moskowitz, Burns, Williams
Skills Performance at Low Blood Alcohol Levels
Journal of Studies on Alcohol, Vol. 46, No. 6, 1985, p. 482-485
- DOT/NHTSA (Stuster and Burns)
Validation of the Standardized Field Sobriety Test Battery at BACs Below 0.10 Percent
DOT-HS-808-839, August 1998
- DOT/NHTSA (Tharp, Burns, and Moskowitz)
Development and Field Test of Psychophysical Tests for DWI Arrest
DOT-HS-805-864
- DOT/NHTSA
A Review of the Literature on the Effects of Low Doses of Alcohol on Driving-Related Skills
DOT-HS-809-028, April 2000
- DOT/NHTSA

Driver Characteristics and Impairment at Various BACs
DOT-HS-809-075, August 2000

Jones et al.

The Course of the Blood-Alcohol Curve after Consumption of Large Amounts of Alcohol under Realistic conditions
Canadian Society of Forensic Sciences Journal No. 3, 2006, pp. 125-140.

Seidl et al

The Calculation of Blood Ethanol Concentrations in Males and Females
Internal Journal of Legal Medicine, 2000 (114): 71-77.

Breen et al.

The effect of a “One for the Road” drink of hard liquor, beer, or wine on peak breath alcohol concentration in a social drinking environment with food consumption
Med Sci Law 1998; 38(1):62-69.

P. Zador.

Alcohol-Related Relative Risk of Fatal Driver Injuries in Relation to Driver Age and Sex.
J Stud Alc 1991; 52(4):302-310.

Jackson et al.

The Contribution of Alcohol to Serious Car Crash Injuries.
Epidemiology 15(3):337-344. (2004)

Marple-Horvat et al.

Alcohol Badly Affects Eye Movement, Linked to Steering, Providing for Automatic In-Car Detection of Drink Driving.
Neuropsychology 33:849-858. (2008)

Gainsford et al.

A Large Scale Study of the Relationship Between Blood and Breath Alcohol Concentrations in New Zealand Drinking Drivers.
J Forensic Sci 51(1):173-177. 2006.

PREPARATION FOR COURT TESTIMONY

Monthly rotation

Opinions and Worksheets

Challenges to breath testing

Instrument

Software

Underlying principles

Ratio

Other volatiles

Mouth alcohol

Challenges to FSTs

Validation

Officer testimony

Challenges to blood testing

Blood vials

Instrument

Literature sources

Article searches

Building a library

Court decisions regarding chemical tests

Discovery/Records

Complete Moot Court

Forensic Alcohol Analyst Designation

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Trainee: _____	Date Completed: _____
Trainer: _____	Date Completed: _____
Supervisor: _____	Date Reviewed: _____
Quality Assurance Manager: _____	Date Reviewed: _____