

Crime Laboratory, Toxicology Laboratory

Summary

The Civil Grand Jury investigated the Crime Laboratory of the San Francisco Police Department (SFPD/CL) and the Toxicology Laboratory of the San Francisco Medical Examiner's Office (SFME/TL) to ascertain whether these laboratories are providing services which are accurate, valid, and unbiased and are performing these services in a timely manner within the applicable government code sections.

We discovered that the SFPD/CL has substantially less personnel, equipment, and space for its operation when compared with crime laboratories in neighboring counties.

The SFME/TL has undergone continuous budget reductions, about a cut in budget, during the past five years. The SFME/TL has also lost a forensic toxicologist during this same time period.

It is obvious that both laboratories need to seek funds to hire additional staff, replace obsolete equipment, and acquire necessary modern equipment for analyses which will produce results that meet quality assurance standards. The Crime Laboratory must correct those deficiencies cited by the review inspectors of the American Society of Crime Laboratory Directors/Lab (ASCLD/LAB).

Background

- The recent O.J. Simpson trial in Los Angeles raised questions about deficiencies in the operation of the Los Angeles Police Department, their crime laboratory, and their Medical Examiner's office. Similar questions were then raised by citizens of San Francisco about the SFME/TL and the SFPD/CL.
- As part of its investigation, the Civil Grand Jury conducted extensive interviews, visited numerous sites and reviewed many documents (see [Appendix E](#) and [Appendix F](#)).
- In 1994, a San Francisco Crime Laboratory technician, now dismissed, failed to perform the confirmatory tests required by standard laboratory procedures. This resulted in the Public Defender's challenge to overturn the felony drug convictions obtained as a result of evidence examined by this technician over the course of several years.
- On June 5, 1995, the American Society of Crime Laboratory Directors (ASCLD) produced a report, "An ASCLD/LAB Review of Quality Assurance Procedures in the San Francisco Police Department Laboratory," which contains valuable information, suggestions, and a critique based on the Standards of Criteria contained in the ASCLD/LAB Accreditation Manual.
- The Medical Examiner and the Police Department will oftentimes work together on a criminal investigation. Each department conducts an investigation in its own area of expertise, and the departments coordinate with and consult each other on the same case for the criminal justice system. It also should be noted that the SFME/TL reports to the Chief Administrative Officer (CAO) and the SFPD/CL reports directly to the Deputy Chief, Investigation Bureau of the San Francisco Police Department.

Findings - San Francisco Police Department/Crime Laboratory (SFPD/CL) (see [Appendix B](#))

1. Laboratory Space (work environment):

a. In 1960 the SFPD/CL occupied 3,750 sq. ft. of laboratory space. Currently, this space lacks basic maintenance and contains dilapidated work benches, outdated safety equipment, inadequate lighting and poorly laid out work areas. ([See Appendix F, Architectural Study](#))

During 1991, an additional 1,500 sq. ft. of office space (for a total area of 5,250 sq. ft.) was occupied. This space is currently dedicated to DNA genetic typing and serology work. However, this area lacks fundamental laboratory equipment and utilities; contains no work benches, no running water, and no gas lines; and is deficient in much needed lighting and electrical outlets for the 10 technicians assigned.

In comparison, the Oakland Police Crime Laboratory, which was built about the same time, 1960, with 3,700 sq. ft., now occupies a total of 6,700 sq. ft. (an entire 6th floor of the Oakland Police Department) and employs 10 technologists. Their laboratory is well laid out, has good lighting and adequate working space, and is well maintained.

b. The SFPD/CL lacks sufficient secure storage space for evidence. Some evidence is stored on the fourth floor and the remainder in the basement area, a situation which is unacceptable for security reasons.

2. Laboratory Case Load:

a. Since 1979, narcotics cases have been processed by the SFPD/CL at the rate of approximately 6,500 per year, and the rate is increasing. Presently, there are about 10,000 cases per year, with the laboratory analyzing every sample submitted. San Francisco has a higher narcotics case load than other counties in northern California. Major cases investigated, such as homicides, sexual assaults, and robberies, have increased in number from 660 per year to 800 per year during the same time period.

In comparison, the Oakland Crime Laboratory does not test every drug sample brought to the laboratory. They test only specific drugs as required by the Vice Control Section which reviews the charges and decides which cases need analysis to support the charges. For example, of approximately 7,000 cases brought into the laboratory, only 4,000 samples are analyzed. The SFPD/CL tests every sample brought in.

b. The complexity of testing procedures has changed over time. Before the 1970's, only ABO blood typing was performed. In the 1970's, enzyme blood grouping became available and, now, DNA genetic typing is the current technology.

c. New ongoing programs place information on all firearms seized and booked into a data bank. This centralized database produces information to solve open cases such as drive-by shootings.

d. Defense attorneys are requiring additional criminalist time in court to validate some of the long established testing procedures.

3. Laboratory Equipment: ([See Appendix A](#))

The SFPD/CL has some obsolete equipment which poses a liability to the prosecution in the sense that, with up-to-date equipment, it could generate better documented evidence for a case, more information conducive to solving a crime, or even sufficient evidence to prosecute a case. Presented with more and superior evidence, the defense might be willing to plead guilty rather than go to trial.

Standard crime laboratory equipment which the SFPD/CL either does not have or has in outdated/obsolete models includes:

a. Fourier Transform Infrared Spectrophotometer

Currently this unit is unserviceable. It is required as a supplemental procedure for confirmation of narcotics analyses as prescribed in the Laboratory's Standard Operating Procedures (SOP) manual. This equipment is very discriminating and, for certain drugs, it can be used as a "stand alone" method of identification.

b. Ultraviolet Spectrophotometer

This unit is 15 years old. A new model would be valuable in avoiding time consuming analysis -- 20 minutes to an hour as compared to 2 to 3 minutes on the new instrument. This instrument provides a quantitative assay on drugs as well as seminal enzymes and proteins which are essential for advanced serological analyses. It provides documented evidence (printout) of the analysis. This equipment is prescribed in the Laboratory's Standard Operating Procedures (SOP) manual for UV quantitative analysis for man-made drugs.

c. Gas Chromatography/Mass Spectrometer (GC/MS)

This standard equipment for the analysis of drugs is being adopted by most laboratories throughout the nation. It is prescribed in the Laboratory's SOP manual for use as a supplemental test for many types of drugs. It is very discriminating and, for certain drugs, can be used as a "stand alone" method of identification.

d. Drugfire (Automated Firearms Identification System)

This system provides identification data and digital imagery of microscopic marks on fired ammunition in unsolved shooting cases, information which can be stored in a database. Designed by the Federal Bureau of Investigation (FBI), it allows nationwide comparison with data from other jurisdictions. It should be noted that the Drugfire system of the FBI is different from the IBIS system used by the United States Government Bureau of Alcohol, Tobacco and Firearms (ATF).

Presently, the Crime Laboratory maintains only a manual photograph of the cartridge casing that has been recovered at the crime scene.

Note: This type of automated firearm identification equipment is important to Oakland given the number of gun-related crimes that occur in that city. Other identification systems may also be used. Time is required for input and for matching, and there can be substantial backlogs. Their firearm computer database equipment known as Integrated Ballistic Identification System (IBIS) was acquired in 1994 and is connected with the U.S. Bureau of Alcohol, Tobacco and Firearms (ATF) in Walnut Creek.

e. Scanning Electron Microscope/Energy Dispersion X-Ray (SEM/EDX) Analyzer

It is used to detect gunshot residue and to trace samples of paint, glass, hair, and fibers. Presently, the cost for analysis is paid out of the Police Chief's Contingency Fund or by the District Attorney's Office to an outside vendor. Annual cost for these analyses has been about \$40,000 to \$50,000, not including the Medical Examiner's cases. All full-service crime laboratories have this instrumentation with the exception of Oakland and San Francisco.

4. Management and Operation:

a. Implementation of the SFPD/CL's PCR DNA analysis program ([see Glossary pg. 11](#)) was put on hold due to the loss of a project criminalist. DNA genetic evidence is powerful in its ability to exculpate the innocent as well as to incriminate the guilty. It is able to distinguish the identity of one individual out of several million.

Presently DNA genetic testing is sent out to a private laboratory, such as the Forensic Science Associates at Richmond, or the State Department of Justice at Berkeley, at a cost of approximately \$3,000 per case and \$150 per hour for court testimony time. The SFPD/CL personnel assert that, if they were able to conduct the analyses, the cost would be reduced to \$200 per case with testimony time included. (This does not include estimates of costs such as hiring personnel, purchasing equipment, and providing training.)

In contrast to the SFPD/CL, the Oakland Crime Laboratory's DNA program was fully implemented in September 1992 using DNA typing method DQ Alpha, and in February 1993 it was the first laboratory in the nation to be accredited in forensic DNA analysis by the ASCLD/LAB Accreditation Board. However, Oakland also had implementation problems when their analyst resigned in September 1993, and the position was vacant for the remainder of 1993 and until April 1994 when the position was filled.

b. The budget system of the San Francisco Police Department does not, at present, allow the SFPD/CL Director to have budgetary autonomy over his division. Wages are annually negotiated between the Mayor and the unions. Expenses, supplies, services and maintenance are usually increased annually by 5%, or remain the same, depending on the projected annual cost increase. Requests for new personnel or capital improvement and/or replacement of equipment are submitted by the Director for the new fiscal year's budget.

Based upon the SFPD/CL budget requests for FY 1993-94, FY 1994-95 and FY 1995-96, additional funds are needed to meet the requirements for staffing, to replace outmoded equipment and to acquire new equipment to improve laboratory capabilities. As a result, laboratory staff claim that they have been unable to take on new projects and to upgrade or replace obsolete equipment, because these requests have been denied. For FY 1996-97, they are making the same request for personnel to update protocol and get the equipment on-line. They are also requesting equipment to improve laboratory capabilities and the necessary funding for laboratory services.

c. The SFPD/CL is in the process of making changes in their laboratory procedures based on the ASCLD/LAB audit. Even if budgetary constraints preclude their full compliance with ASCLD/LAB guidelines, these changes bring them closer to meeting established standards and improving the quality of service to their clients.

d. The SFPD/CL management in the late summer of 1994 requested that ASCLD/LAB review their Quality Assurance procedures as a prelude for accreditation preparation.

Two qualified ASCLD/LAB inspectors were assigned the task -- a Research and Development Program Administrator in the Bureau of Forensic Sciences of the Illinois State Police in Morton, Illinois and a retired Director of the Centre of Forensic Sciences of the Ministry of the Solicitor General and Correctional Services in Toronto, Ontario.

From the Summary of Criteria on the ASCLD's review of the Crime Laboratory, the findings are:

Essential % yes: 51.3

Important % yes: 26.8

Desirable % yes: 40.9

The grading system, as defined by ASCLD, requires that a laboratory achieve not less than 100% of the Essential, 70% of the Important, and 50% of the Desirable.

It was noted in the ASCLD report's conclusion that "staff appear to be strongly motivated and have the experience in forensic science to accomplish most of the requirements. A major problem is the physical facility which requires some enhancements in order to meet accreditation requirements."

By obtaining laboratory accreditation, the SFPD/CL would demonstrate that its management, operations, personnel, procedures, equipment, physical plant, security, and health and safety procedures meet established standards.

5. Laboratory Space (work environment):

The SFME/TL appears to have adequate space and laboratory instrumentation, well laid out working areas, good lighting and safety equipment.

6. Laboratory Case Load:

The number of toxicological requests on living subjects has increased as responsibilities in compliance with various State and City ordinance requirements are met.

7. Laboratory Equipment:

Of the major instruments in the SFME/TL, 4 out of 11 have reached and passed their life expectancy. The laboratory recently acquired a head space gas chromatograph for forensic alcohol analysis, replacing an obsolete instrument.

In general, manufacturers do not fully support instruments 15 years old or older. Replacement parts generally need to be hand fabricated or scavenged from other used equipment.

8. Management and Operation: (see [Appendix C](#))

a. The SFME/TL also plays a role in the criminal justice system.

Information that the toxicology analyses generate helps the Medical Examiner to determine the cause of death, and also helps evaluate the significance of chemicals obtained from the living.

Toxicological analyses are performed on suspects in criminal cases (e.g., homicide, driving under the influence (DUI), probation failure, assaults) for various law enforcement agencies, such as the District Attorney, Public Defender, City Attorney, Police Department, and California Highway Patrol.

Results and data obtained from the SFME/TL assist in interpreting the behavior of a suspect and advise the law enforcement agency regarding the effect of the drug.

The SFME/TL performs examinations and tests in the following kinds of cases:

- Sexual assault injuries
- Victims and suspects for trace evidence and injuries
- Collection of blood from suspects and victims for serology, toxicology testing
- Alcohol and drug interaction in DUI cases
- Analysis for drugs on management control cases for the County
- Analysis for drugs on patients on probation

b. Replacing outdated and outmoded equipment and improving the laboratory capabilities are a major goal. Problems facing the Medical Examiner's Office include the need to restore a toxicologist and the need to designate space for future expansion. Updating protocol, getting equipment on-line, and upgrading toxicology procedures continue as ongoing needs.

Recommendations-San Francisco Police Department/Crime Laboratory (SFPD/CL)

1. Secure financial support to acquire the aforementioned necessary staffing and standard crime laboratory equipment, including the equipment prescribed in the SOP manual (see [Appendix A](#)) to be on a par with other crime laboratories.
2. Place the DNA genetic testing program on-line as soon as possible.
3. Obtain ASCLD/LAB accreditation which will establish acceptable standards, quality assurance, integrity, security, and credibility for the evidence produced in serving the citizens and the criminal justice system.

In order for the SFPD/CL to achieve the above recommended objectives, management of the SFPD/CL must be proactive in appealing to the Chief of Police, to the Mayor, and to the Board of Supervisors for desperately needed space and funds. The SFPD/CL must be given a much higher priority within the Police Department.

4. The SFPD/CL should have a mission statement which includes their statement of purpose, goals and objectives for moving into the 21st Century (see [Appendix D](#)).

This statement of purpose should be similar to the mission statement established by the Santa Clara County District Attorney's Crime Laboratory, and might well include the following points:

- Provide the Criminal Justice System with quality laboratory services through accurate and valid testing in a timely manner.
 - Promote a working relationship with the agencies of the criminal justice system in the City and County through improved communication and training.
 - Establish a state-of-the-art full-service laboratory through quality assurance programs, modern instrumentation, and automated analysis procedures.
5. Seek funds to replace those instruments that have passed their life expectancy and update necessary equipment.
 6. Designate space (work environment) for future expansion.
 7. Restore the position of Toxicologist.
 8. If there is no continued significant improvement consistent with the above recommendations by June 1997, serious consideration must be given to combining the SFPD/CL and the SFME/TL under the aegis of another City Department where a

Forensic Laboratory Director would have budgetary autonomy to oversee needs and administration of the combined laboratory. The combined laboratory would provide service and results that are accurate, reliable, valid and unbiased -- results which can stand up to review by other qualified laboratories in the nation and scrutiny by the courts.

9. If all the above recommendations are not acceptable, the Civil Grand Jury recommends that a Request for Proposal (RFP) be developed and let out for bid to qualified professional laboratories to perform all testing on a contractual basis for a limited duration of time (out-sourcing).

GLOSSARY

Chromatography - a method of separation based on selective absorption.

DNA - deoxyribonucleic acid.

Mass - the quantity of matter contained by a body, regardless of its location. Mass is constant and is distinguished from weight.

PCR - polymerase chain reaction.

Serology - the medical science that deals with serums.

Toxicology - the study of nature, effects, and detection of poisons and the treatment of poisoning.

Responses Required

Mayor

Board of Supervisors

Chief Administrative Officer

District Attorney

San Francisco Police Department

San Francisco Medical Examiner's Office

Appendices