Forensic Science Services IN CONNECTICUT

The Report of

The Evidentiary Services Task Force

January 18, 1980

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The Report of The Evidentiary Services Task Force

Compiled by:

Connecticut
Justice
Commission

Date: January 18, 1980

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I. Introduction and Overview

The role, function and use of crime laboratories by all parties in the criminal justice system has steadily expanded in the last 10 years. Spurred by Supreme Court decisions, technological advances, the "drug crisis" and a number of other events, the forensic science field has become essential to criminal justice proceedings. Many segments of the justice system—police, courts, prosecutors, defense attorneys--have become dependent upon the testimony of experts in evidence examination.

With this rapid growth in use of and demand for any service has come certain difficulties. Often many different service providers become started, with little coordination of overall effort. In addition, resources become strained and, therefore, service suffers. An initial identification of these problems prompted the Connecticut Justice Commission to undertake a study of the forensic sciences services in Connecticut. This study, begun in January, 1979, included both a research and a recommendation phase. The results of both of these phases are discussed in this report. Altogether, this report points toward a strategy for solving the basic problems in the forensic science service system. In this sense it represents a routine to be detailed in the coming years.

II. Methodology

This report and the work of the Justice Commission has included both a research and an analysis phase. The Commission formed a Task Force of users and providers of forensic science services to oversee both phases of the project. The membership of the Task Force is listed inside the cover of this report.

The research phase of the study involved two separate activities. First, material describing the operations and capabilities of each of the laboratory facilities in the state was compiled. Much of the material used in this phase was originally described in a study by Bartell Associates in 1973 under the auspice of the Judicial Department. That study was entitled "Evidentiary Services for Law Enforcement." The material collected and written at that time was updated to the present by the lab directors. Almost all labs experienced changes in the types and/or amounts of services being performed in the intervening 6 years; material on the new lab begun since that time (New Haven) was collected by CJC staff.

The second portion of the research phase involved two user surveys. The purpose of these surveys was to ascertain the opinions of users of forensic science services (police, judges, prosecutors, defenders). Two survey instruments, one for police and one for judicial department employees (judges, prosecutors and public defenders) were prepared by Dr. Joseph Peterson of Forensic Sciences Foundation and modified by CJC staff and Task Force members. The surveys were mailed to all police departments, criminal judges (superior court, parts A & B) prosecutors and public defenders. Response rates varied from a low of 36.7% among prosecutors to a high of 54% among local police. A total of 145 of 321 surveys were returned. This data base was more than adequate for further analysis.

Geographic distribution of respondents was further examined to insure sample validity. All samples showed substantial geographic distribution of respondents around the state. Despite these tests, it is nevertheless likely that the sample was biased toward the response of those most interested in forensic science services. The opinions expressed by the users, therefore, are likely to be stronger, both positively and negatively, than those of the "average" user. The amount of their usage and/or contact with labs is also likely to be higher, although comparing data from the police survey with the lab reported usage rates indicate that this bias is slight.

The survey results were then keypunched and analyzed statistically. Conclusions were presented in a pair of reports to the Task Force.

Having reviewed the conclusions and issues raised by the data on the laboratories and reports of users of these services, the Task Force then examined the alternatives to change. A draft report on alternatives was submitted by Joseph Peterson. A number of the suggestions in this first draft were discussed and modified. The recommendations section of this report represents the end product of those modifications.

Finally, the recommendations requiring legislative action were drafted by CJC staff and reviewed by the Task Force. Proposed legislation stemming from these recommendations is appended to this report.

In total, hundreds of hours of staff and Task Force time were devoted to the preparation of this comprehensive report. The results are a product based on a careful analysis of the current situation and a complete overview and analysis of the changes required to build a better evidentiary service system.

III. Analysis of Laboratory Capacities

The capacity and physical plant of each of the major instate laboratories are examined in this section. The only out-of-state facility utilized heavily by state agencies is the FBI laboratory. A description of this lab is not included here; utilization figures on the FBI lab are included in section IV.A. of the report, however.

A. State Toxicology Laboratory

The State Toxicology Laboratory, located in Hartford, Connecticut employs a full-time staff of 38 including 3 administrators, 26 analysts or technicians, and 9 clerks, with a total budget of $806,827 in 1978. The laboratory provides services in the examination of toxicological and physical evidence specimens including qualitative and quantitative examinations.

The Toxicology Laboratory is located within the Department of Health of the State of Connecticut, and, according to the legislation authorizing the Health Department, "The Commissioner of Health shall establish and maintain within the Department of Health a special laboratory for examination, research and analysis of poisons, body fluids, tissues and all related toxicological matters. The facilities of such laboratory and its personnel shall be under the supervision of the Commissioner, be available to the Coroners and the Office of the Medical Examiner and all duly constituted prosecuting, police and investigating agencies of the State".

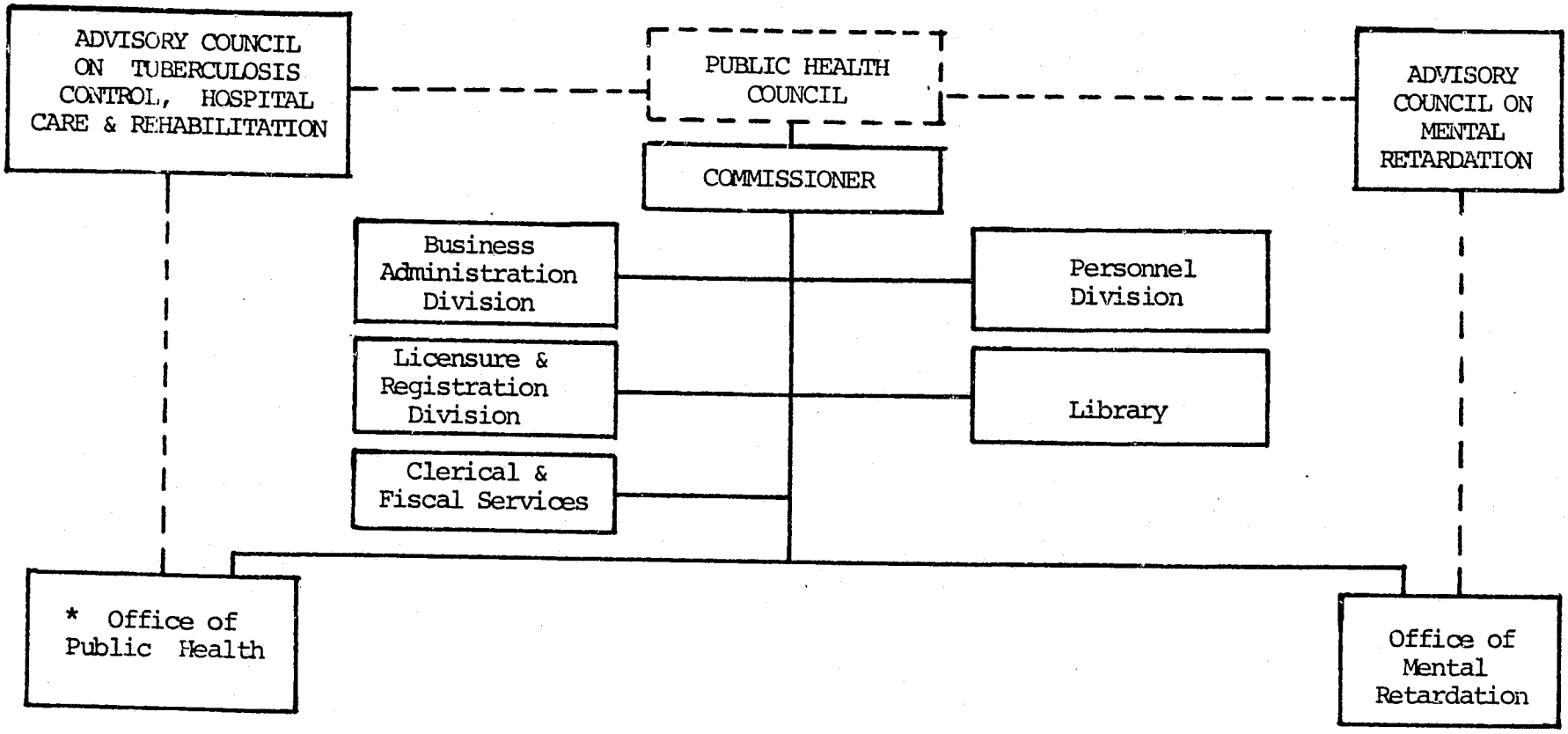
1. Organizational Arrangements

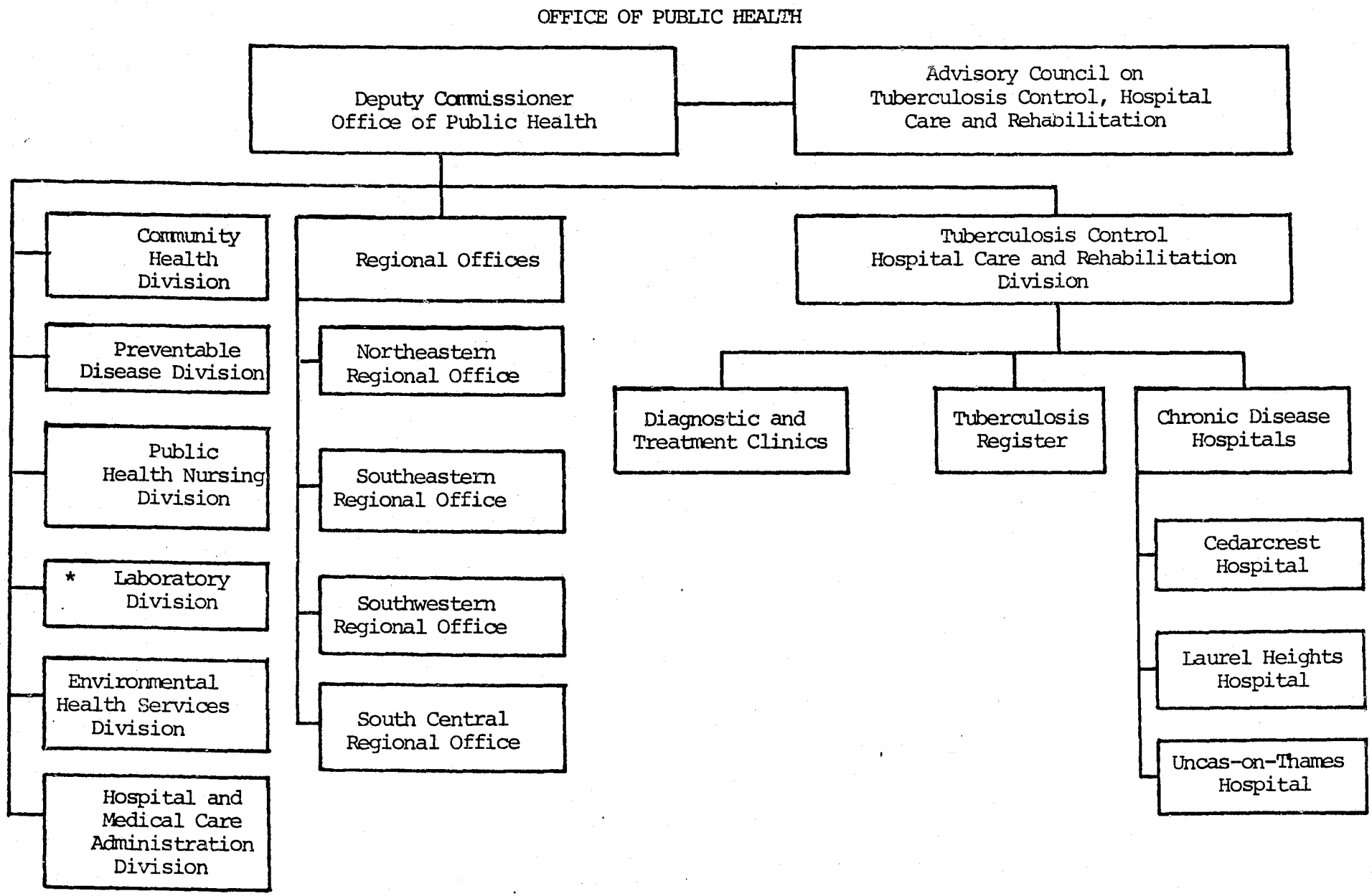
The Toxicology Laboratory, which functions within the organizational framework of the Connecticut State Department of Health, is the laboratory acting on the most requests from the criminal justice system in the State of Connecticut. Organizational charts on the next four pages illustrate where the Toxicology Laboratory is located within the hierarchy of the State Department of Health. It is part of the Laboratory Division which is under the Office of Public Health, one of two main sub-divisions answering directly to the Commissioner.

2. Operations Summary

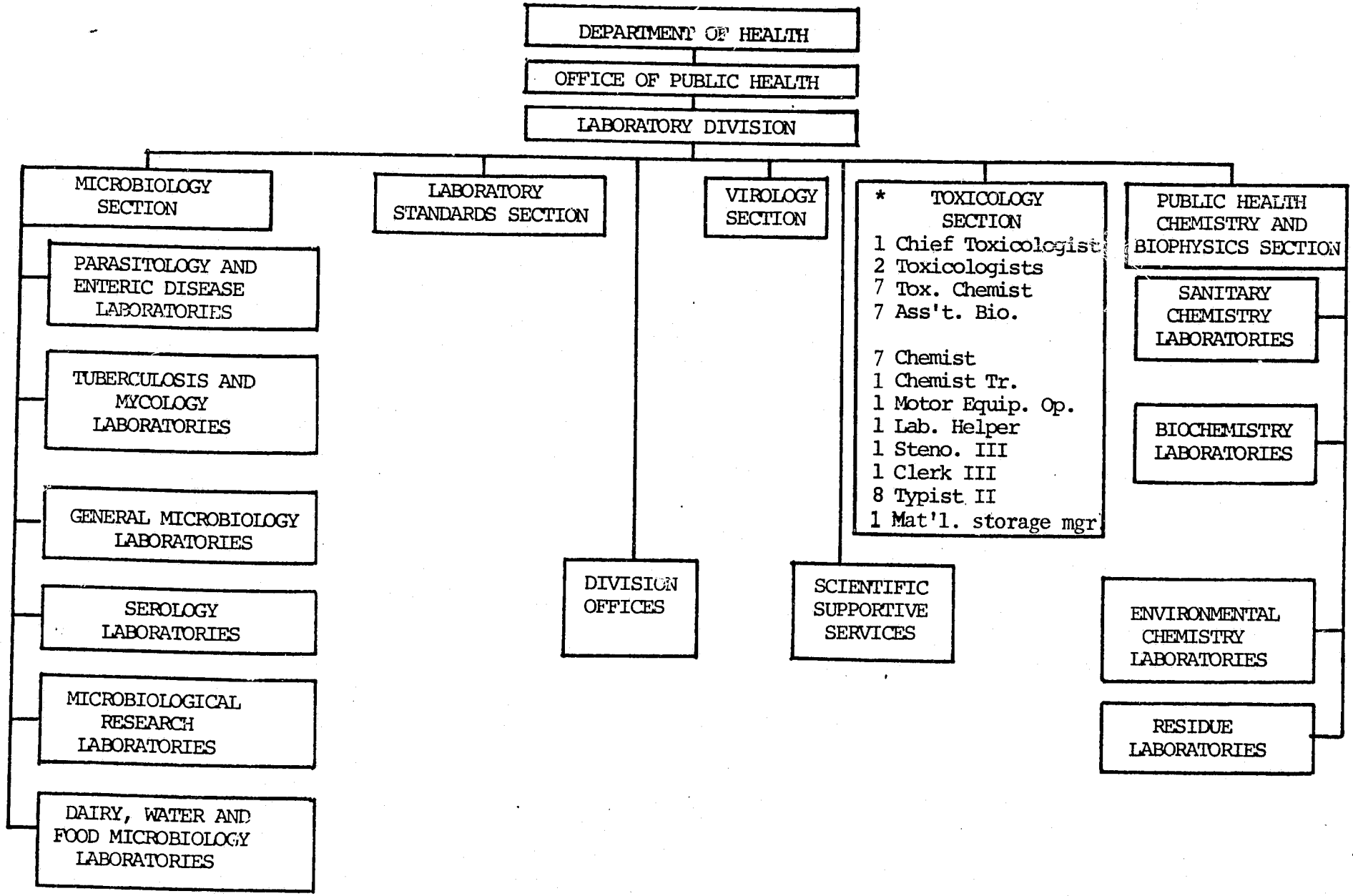
Specimens are accepted by the Toxicology Laboratory from Police Departments, Pathologists, and Medical Examiners (although all toxicology on cases examined by the Chief Medical Examiner's office is performed in that office). The referred specimens are categorized as toxicology or physical evidence specimens and handled accordingly. Toxicology specimens include blood, urine, breath samples and body tissues from both living and deceased humans, and sometimes from animals. Toxicology specimens are generally examined to determine cause of illness or cause of death, but in many cases they are examined in connection with a possible crime, and are so cross-referenced with criminal evidence specimens or cases. The chart on the following

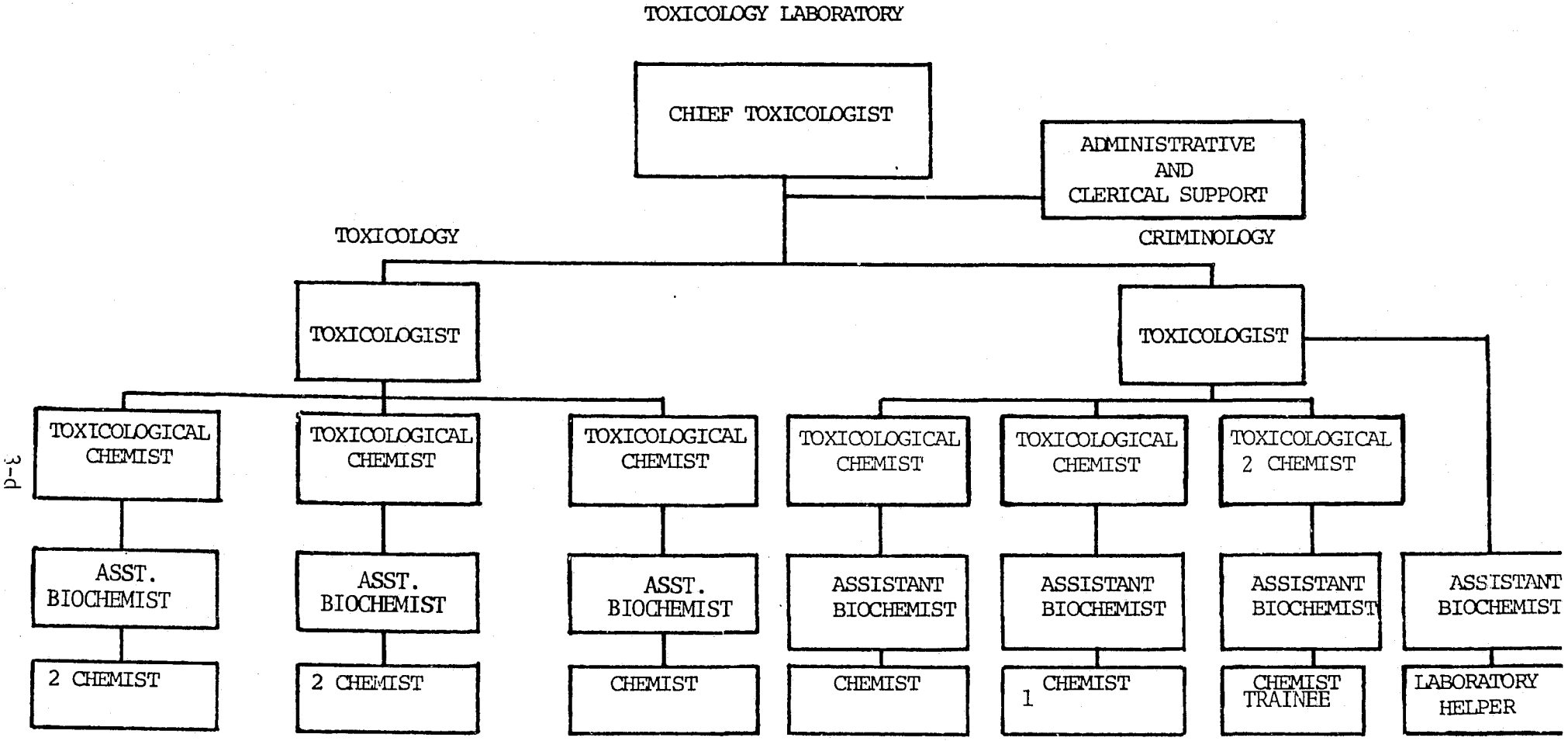
CONNECTICUT STATE DEPARTMENT OF HEALTH




OFFICE OF PUBLIC HEALTH
Deputy Commissioner
Office of Public Health
Advisory Council on
Tuberculosis Control, Hospital
Care and Rehabilitation
Community
Health
Division
Preventable
Disease Division
Public
Health Nursing
Division
* Laboratory
Division
Environmental
Health Services
Division
Hospital and
Medical Care
Administration
Division
Regional Offices
Northeastern
Regional Office
Southeastern
Regional Office
Southwestern
Regional Office
South Central
Regional Office
Tuberculosis Control
Hospital Care and Rehabilitation
Division
Diagnostic and
Treatment Clinics
Tuberculosis
Register
Chronic Disease
Hospitals
Cedarcrest
Hospital
Laurel Heights
Hospital
Uncas-on-Thames
Hospital

CONNECTICUT STATE DEPARTMENT OF HEALTH
LABORATORY DIVISION




TOXICOLOGY LABORATORY
CHIEF TOXICOLOGIST
ADMINISTRATIVE AND CLERICAL SUPPORT
TOXICOLOGY
CRIMINOLOGY
TOXICOLOGIST
TOXICOLOGIST
TOXICOLOGICAL CHEMIST
TOXICOLOGICAL CHEMIST
TOXICOLOGICAL CHEMIST
TOXICOLOGICAL CHEMIST
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ASST. BIOCHEMIST
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CHEMIST
CHEMIST
1 CHEMIST
CHEMIST TRAINEE
LABORATORY HELPER

page illustrates the physical handling or flow of specimens to and within the Toxicology Laboratory. As shown in the chart, substances from authorized sources arrive at 10 Clinton Street in Hartford by mail, by a Toxicology Laboratory Courier, while much of the criminal evidence is hand-carried by nearby members of Police Departments. Criminal evidence constitutes about 80% of the bulk material received by the laboratory. The agencies authorized to request analytic services are provided blank forms and containers to use for forwarding specimens to the laboratory. The containers are generally suited to the forwarding of Toxicology specimens such as body fluids, breath samples or tissues, and these containers are provided with serially numbered seals for control. Most of these specimens arrive by mail.

Criminal evidence runs the gamut from suspect potted plants to seminal stains on clothing, and as such, does not suit itself to shipment in standardized containers. Most of the criminal evidence much of is either hand-carried by a police agent or delivered by special courier.

As mentioned, special multi-page forms are provided for handling of toxicology specimens and criminal evidence. Authorized agencies are provided these forms, and initiate them when a need arises. Toxicology specimens are transmitted with an accompanying two-part, two-color form, entitled, "Identification of Specimen for Toxicology Laboratory".

Form OL-167, with seven parts and entitled, "Evidence Examination Request and Findings", is used to transmit items believed to have potential value as physical evidence in a criminal case.

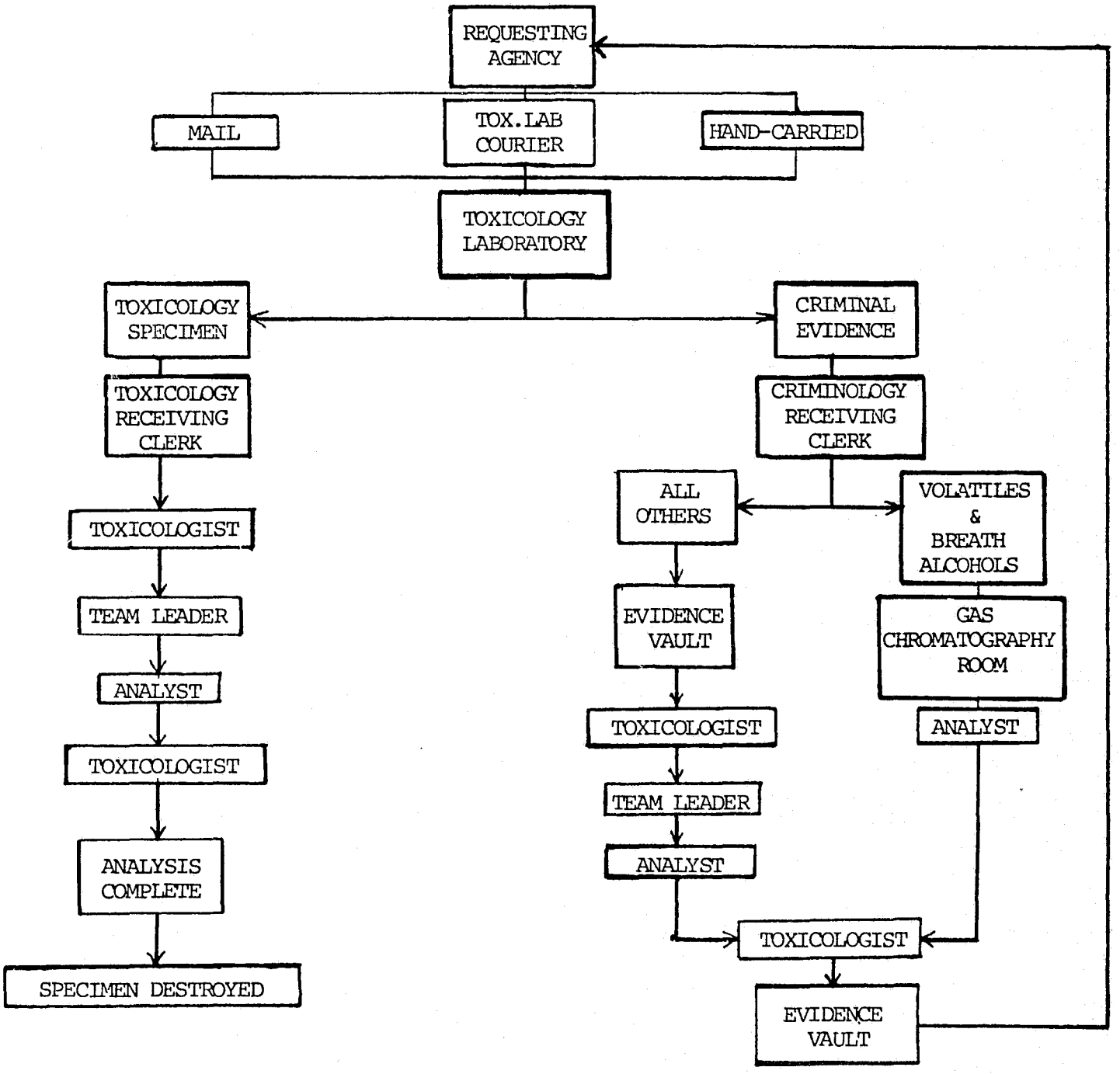
Authorized agencies initiate the appropriate forms and forward their specimens to the Laboratory.

Upon arrival, specimens of the two categories are sorted and forwarded to either a toxicology receiving clerk or a criminal evidence receiving clerk for processing.

a. Toxicology Specimens

Toxicology specimens are first handled by one of two administrative clerks. One clerk handles fatal cases, sperm slides and specimens from correctional centers. The other processes specimens from living cases other than from correctional centers and all blood and urine specimens. Specimens are logged-in on an internal form TX-19, "Listing of Toxicology Specimen". The logging-in process includes assigning a "T" number which identifies the year, category of specimen and numerical sequence. For example, the first toxicological specimen received in 1974 was logged-in as No. 74-T-1. Substances from living patients, inmates, parolees and suspected drunken drivers are identified by a red entry on the log sheet, and these cases are given priority treatment.

SPECIMEN FLOW
TOXICOLOGY LABORATORY
CONNECTICUT STATE HEALTH DEPARTMENT



The appropriate clerk checks the seal and seal number on the container against that listed on the form OL-143 and completes filling out the bottom portion of the form. As part of the administrative processing, line-a-deck index strips are prepared and a manila folder file is opened for each case.

Specimens other than breath samples are taken to a specified laboratory technician who logs them in on an internal control form TX-23, entitled "Toxicology Specimens Only". Toxicological Chemists under the supervision of a Toxicologist assign specimens to individual analysts who perform the designated procedures. As a control measure the analyst initials the form TX-23 when a specimen is assigned to him, and lines through the log entry when his analysis is completed.

Breath samples are accumulated in a designated area and batch analyses are routinely performed using gas chromatography intoximeters (GCI) to test for alcoholic content.

There are many internal laboratory forms for use by laboratory technicians to describe the analytic techniques performed on each specimen.

The results of routine analyses are taken directly to the Chief Toxicologist for review. Results of unusual or more complicated procedures are given a preliminary review by one of the two Toxicologists before forwarding to the Chief. Upon approval by the Chief Toxicologist, the test results for Toxicology specimens are typed on one of two special report forms. Form OL-151, a five part form entitled, "Chemical Analysis of Blood or Breath Sample for Alcohol Content" is used for all such samples for suspected drunken drivers.

In other Toxicological cases, a short form OL-154 or a long form OL-161A, "Report of Toxicological Examination" is used. Copies of these reports are forwarded to interested individuals or agencies and a copy is retained in the Toxicology Laboratory case file. When Toxicology examinations are completed, specimens are destroyed.

b. Physical Evidence

Physical evidence is logged-in by a receiving clerk who checks the form OL-167, "Evidence Examination Request and Findings" for accuracy and has one of the Toxicologists sign the receipt portion of the form. Criminology specimens are assigned a "C" number consisting of the year, the letter "C" indicating the category of specimen and a sequential number. For example, the first physical evidence received in 1974 was logged-in as No. 74-C-1. The name of the person involved with the evidence, the "C" number, the agency and

type of material are entered in the log on internal form TX-18, "Listing of Criminology Specimens". Volatiles are entered in a separate log and taken immediately to the Gas Chromatography Room for priority handling. Part 4 (Lab Findings Worksheet) of form OL-167 remains with the specimen. Parts 5 and 6 are returned to the requesting agency. Part 5 is a receipt for the evidence, and Part 6 is used to inform the Court Prosecutor that physical evidence is in the laboratory. A manila folder file is opened for each "C" number, and the remaining parts of the seven-part form are placed in the folder. Except for perishables and other rush cases which are handled immediately, criminology specimens are stored in the evidence vault.

The criminal specimen backlog continues to be such that the laboratory of necessity responds to urgent needs. This backlog situation has been present for at least the past 6 years. When the lab is informed that a court hearing is imminent, a blue "Expedite" slip, form TX-24 is prepared in triplicate. One copy is held in the Administrative Office and two copies accompany the evidence to the designated Toxicologist who assigns an analyst. The Toxicologist retains one expedite slip. The assigned analyst initials the third copy and returns it to the Administrative Office for control and to facilitate replying to future queries.

When a criminal evidence analysis is completed, the analyst takes his worksheet to the appropriate Toxicologist for review and approval. When the Toxicologist is satisfied with the analysis the report is typed at the bottom of Parts 1, 2, 3 of the Evidence Examination Request and Findings Form, OL-167, and the evidence is returned to the vault. Part 1 of the report goes to the Prosecutor, Part 2 to the requesting agency, and Part 3 is retained in the lab files. Arrangements are made to return the physical evidence to the requesting agency, and in all likelihood the responsible Toxicologist will be called upon to testify when the case goes to trial. Part 7 of the report is used as authorization for disposal, or as a receipt for return of the evidence to the submitting agency.

3. Services Provided

In order to gain a better perspective of the types of services provided by the laboratory, the Table on the following page entitled "Ability to Process Specialized Evidence Or Perform Specialized Functions" is presented. The Table lists a total of 27 analysis categories and wheter the Toxicology Laboratory provides services in that category and to what level analysis is available.

Function or Process	Capability
Autopsy	No
Body Fluids and Organs	Yes
Drugs	Yes
Alcohol	Yes
Poison Analysis	Yes
Document Examination	Yes - Micro Only
Hairs and Fibers	Yes
Clothing and Fibers	Yes
Toolmarks	Yes
Metal Analysis	Yes
Woods and Sawdust	No
Glass	Capable of Comparison
Paints	Capable of Comparison
Building and Other Materials	Capable of Comparison
Safe Burglary	Capable of Comparison
Firearms and Ammunition	Capable of Comparison
Explosives, Bombs, Fireworks	Capable of Determining if Explosive
Soils and Sands	Capable of Comparison
Arson	Yes
Photograph	No
Fingerprints, Palms, Feet	No
Tire	No
Polygraph	No
Neutron Activation	No
Blood Alcohol	Yes
Crime Scene Search	No
Specialized Photography	No

As mentioned earlier, the major types of analyses performed by the laboratory involve the qualitative and quantitative examination of evidence. The small amount of work done with glass, paints, building and other materials, safe burglary materials, and soils and sands involves comparison work.

4. Personnel Breakdown

A list of the personnel employed by the Toxicology Laboratory, and their area of expertise is presented in the Table on the following pages. The top position in the laboratory is a Chief Toxicologist with 24 years of service. The Chief Toxicologist is court qualified as well as the two Toxicologists under him. The remainder of the personnel fall into different categories of Chemists. There are seven Toxicological Chemists.

Seven Assistant Biochemists are employed by the laboratory as well as seven general Chemists. A Motor Equipment Operator and a Laboratory Helper are also employed by the laboratory. Finally, there are 9 Clerical Personnel and a Material Storage Manager.

The picture that emerges is one of a well-educated and trained staff skilled in the toxicological examination of evidence.

One personnel problem of the laboratory, however, is a high attrition rate in some of the positions including Toxicologist.

5. Equipment Inventory

The Table on the following six pages presents an equipment inventory of the Toxicology Laboratory including manufacturer, model number, year purchased cost, approximate replacement date, cases used in, and percent. The 1/4 million dollar inventory of analytical instruments in use at the Toxicology Laboratory is a well selected group of industrial grade equipment by the accepted leaders in each area.

The large number (12) of gas chromatograph units would indicate that this is a dedicated group of instruments, each containing a different type column. The wide capabilities of G.C. are therefore made available with very little waiting time, otherwise opening the heating chamber to change a column could require 2 - 3 hours of down time.

The group of 9 Beckman Ultra Violet spectrometers contains a few older DBG (electron tube type) models, 4 DBGT (solid state) models and 3 other more expensive models that reflect current state-of-the-art without making the next big jump into research grade equipment (Cary-Varian).

The Perken-Elmer Model 467 infrared spectrometers (2 available) usually hold up very well and can be expected to produce 2,000 scans a year with a minimum of maintenance. This model can be used by inexperienced personnel for simple drug identification.

TOXICOLOGY LABORATORY

PERSONNEL

Position	No. of Persons
Chief Toxicologist	1
Toxicologist	2
Toxicological Chemist	7
Assistant Biochemist	7
Chemist	7
Chemist Trainee	1
Motor Equipment Operator	1
Material Storage Manager	1
Laboratory Helper	1
Stenographer Grade III	1
Clerk Grade III	1
Typist Grade II	7

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Equipment	Manufacturer	Model Number	Year Purchased	Cost	Approx. Replacement Date	Cases Used In	Percent
Gas Chromatograph	Perkin-Elmer	PEP.I	6/72	19,800	1985	Alcohol	60%
						Body Fluids & Organs	
						Drugs	
						Arson	
Memory Module	Perkin-Elmer	051-01000	12/73	4,000			
Amplifier	Perkin-Elmer	009-0614	12/73	890			
Gas Chromatograph	Perkin-Elmer	900	6/72	5,795			
056 Two Pen Recorder	Coleman		11/72	1,570			
Gas Chromatograph	Perkin-Elmer	MARC II	11/72	2,380			
Recorder	Perkin-Elmer	56	6/72	1,060			
Strip Chart Recorder	Leeds & Northrup	W	5/69	1,050			
Gas Chromatograph		PE 14					
Gas Chromatograph		PE 881					
Gas Chromatograph	Hewlett Packard	902	1/69	7,546			
Gas Chromatograph	Perkin-Elmer	F40	6/73	10,600			
Gas Chromatograph	Perkin-Elmer	F4	8/73	13,952			
Gas Chromatograph	Perkin-Elmer	F40	3/71	12,649			

Toxicology Laboratory
Equipment Inventory

Equipment	Manufacturer	Model Number	Year Purchased	Cost	Approx. Replacement Date	Cases Used In	Percent
Gas Chromatograph	Perkin-Elmer	F40	1/71	9,745			
Gas Chromatograph	Hewlett Packard	7621 A	3/71	6,075			
Gas Chromatograph	Hewlett Packard		6/72	10,836			
Spectrometer	Beckman	DBG	1/69	4,719	1978	Body Fluids & Organs	80%
						Drugs	20%
						Poison Analysis	10%
Spectrometer	Beckman	DBG	1/69	4,719	1978	Body Fluids & Organs	80%
						Drugs	20%
						Poison Analysis	10%
Fluorescent Speedrometer	American Instrument Co.	SPF	1965	6,700	1975	Drugs	90%
						Poison Analysis	10%
Centrifuge	Sorvail	GLCI	3/69	520	1975	Drugs	80%
						Body Fluids & Organs	20%
Microscope	American Optical		10/72	3,940	1980	Drugs	100%
Microscope	American Optical		10/72	5,085		Hairs & Fibers	100%
Intoximeter Mark II		GCI	1/72	2,575	1975	Alcohol	100%

Toxicology Laboratory
Equipment Inventory

Equipment	Manufacturer	Model Number	Year Purchased	Cost	Approx. Replacement Date	Cases Used In	Percent
Intoximeter Mark II		GCI	1/72	2,575			
IR Speedrometer	Perkin-Elmer	467	5/72	8,920	1985	Drugs	80%
						Body Fluids & Organs	15%
						Poison Analysis	3%
						Arson	1%
						Explosives, Bombs, Fireworks	1%
IR	Perkin-Elmer		5/72	11,010			
Co-Oximeter	Instrument Lab Co.		10/71	2,810		Body Fluids & Organs	100%
Distillation Apparatus	Kontes		7/73	420	1990	Body Fluids & Organs	40%
						Drugs	40%
						Alcohol	10%
						Poison Analysis	10%
Balance	Mettler		3/69	850	1980	Drugs	100%
Balance			5/71	664	1975	Drugs	70%
						Alcohol	20%
						Body Fluids & Organs	10%
Ph Meter	Corning	10	5/73	800	1983	Body Fluids & Organs	70%
						Drugs	20%
						Poison Analysis	10%

Toxicology Laboratory
Equipment Inventory

Equipment	Manufacturer	Model Number	Year Purchased	Cost	Approx. Replacement Date	Cases Used In	Percent
Ph Meter	VWR	110		616	1975	Drugs	70%
						Body Fluids & Organs	30%
Lasser Microprobe	Jarrell-Ash	45-604	11/72	20,710	1885	Paints	50%
						Firearms & Ammunition	10%
						Glass	10%
						Metal Analysis	10%
						Building & Other Material	10%
						Explosives, Bombs, Fireworks	5%
						Soils & Sands	5%
Lasser Microprobe	Jarrell-Ash	45-604	11/72	16,000			
Wadsworth Stigmatic Spectrograph	Jarrell-Ash		11/72	3,000			
Refrigerate Centrifuge	Beckman	J21	4/73	2,974	1983	Body Fluids & Organs	80%
						Drugs	20%
Centrifuge	HNS	SR 711	5/70	551	1980	Body Fluids & Organs	80%
						Drugs	20%
Micro Centrifuge	Eppendorf	3200/30	7/73	455	1988	Body Fluids & Organs	80%

Toxicology Laboratory
Equipment Inventory

Equipment	Manufacturer	Model Number	Year Purchased	Cost	Approx. Replacement Date	Cases Used In	Percent
						Drugs	10%
Fluorescent Spectrometer	Perkin-Elmer	MPF 2A	5/72	9,295	1987	Drugs	90%
						Poison Analysis	10%
Strip Chart Recorder	Leeds and Northrup		5/72	1,465			
Ultra-Violet Spectrometer	Beckman	DBGT	1/73	5,290	1978	Drugs	70%
						Body Fluids & Organs	20%
						Poison Analysis	10%
Ultra-Violet Spectrometer	Beckman	DBGT	1/73	5,290	1978	Drugs	70%
						Body Fluids & Organs	20%
						Poison Analysis	10%
Ultra-Violet Spectrometer	Beckman	DBGT	1/73	3,855	1978	Drugs	70%
						Body Fluids & Organs	20%
						Poison Analysis	10%
Ultra-Violet Spectrometer	Beckman	DBGT	1/73	3,755	1978	Drugs	70%
						Body Fluids & Organs	20%
						Poison Analysis	10%

Toxicology Laboratory
Equipment Inventory

Equipment	Manufacturer	Model Number	Year Purchased	Cost	Approx. Replacement Date	Cases Used In	Percent
Spectrometer	Beckman	8284	6/72	13,780	1987	Drugs	70%
						Body Fluids & Organs	20%
						Poison Analysis	10%
Spectrometer	Beckman	8284	1/72	7,980			
UV Spectrometer	Beckman	ACTA II	8/72	11,302	1987	Drugs	70%
						Body Fluids & Organs	20%
						Poison Analysis	10%
Atomic Absorption	Perkin-Elmer	403		11,750			
Sweep Column Distillation Apparatus	Kontes			454			

The Coleman (Perkin-Elmer) model 56 recorder used with the P-E Marc II G.C. system may require extra maintenance if used very hard. The Hewlett Packard or Honeywell equivalent equipment would probably do better. The inexpensive Houston recorder is easily serviced and often holds up quite well, it is available as a Fisher item with package discount possibilities. Delivery of the small Mass Spectrometer to the Toxicology Laboratory will probably require the services of a dedicated operator, for unlike the other spectrometers it may have 10 - 20% down time for cleaning and maintenance. For maximum efficiency of this sample consuming instrument the operator should group his samples and plan his work so that "dirty" samples are run late in the day thus permitting overnight "bake out and pump down" time. One cannot predict the number of samples that can be handled in a given week. One dirty sample (nicotine) can require many hours of bake out time or a complete tear down and clean up. An accurate logbook is required.

Purchase of an NMR spectrometer (Varian $25,000) would expand the laboratory capability for investigation of organic compounds. This non-destructive method is fast and 20 milligrams of dissolved material or a few drops of liquid is often enough to obtain usuable spectra. It is best used for solvent and drug identification rather then water based material. Like the Mass Spectrometer it operates best with a dedicated operator.

If "in house" repair and maintenance services are not currently available the next staff expansion should include an electronic technician with mechanical ability and a scientific interest. A $5,000 investment in tools and test equipment plus a $2,000 stock of parts would enable him to take care of most instrument problems. In addition to giving repair services this person could conduct monthly "proof of performance" and preventive maintenance procedures. Construction of small accessories and general lab repair work might be within his realm. Cancellation of any existing service contracts may completely offset his salary.

6. Physical Plant

The Table on the following two pages presents some major physical plant specifications with comments on the Toxicology Laboratory. In terms of square feet and space, the State Toxicology Laboratory has some serious problems in that there is not enough space for equipment and personnel which has resulted in problems in evidentiary storage. There is presently no expansion ability in the present facility, however, a wing is planned which will double the present space available. Other than the present cramped conditions, the building is constructed very well with adequate lighting, security, and other physical plant conditions such as temperature control, electric power, etc. required for the sophisticated instrumentation available.

TOXICOLOGY LABORATORY
LABORATORY PHYSICAL PLANT REVIEW

Specifications	Comments
Square Feet	Not enough space for equipment and personnel - serious problem.
Evidence Vault	A serious problem in that size too small for current usage.
Expansion	Use expansion 0%, backup of evidence, as well as turning it into a storage space for evidence that hasn't been authorized to be destroyed threatens to magnify the problem.
Intake Room	Yes
24-Hour Operation	No. Present venting problems does not allow this to be possible.
Room Security	2 security systems for the building, and night watchmen for nights. During the day a person is available at the building entrance.
Room Lighting	Fluorescent - Good
Working Conditions	Cramped conditions. Need more room for the equipment. The noise is not bad, a radio plays softly. Color ok. Cleanliness is lacking.
Space Utilization	Space is used to a maximum, to the point where there is little room to walk or sit.
Outside Appearance	Adequate
Direction Markings	Not adequate
Parking Available	Yes. Visitors 5 - 6 spaces.
Neighborhood Status	Urban
Transportation Access	1/4 mile to main street. (Close to 91 and 84) 1 mile to the highway.
Ceiling Height	8 feet
Building Tightness	Very good
Floor Covering	Tile and Concrete

Air Conditioned	One room is air conditioned. The rest of the building is temperature controlled.
Hoods Available	Yes
Electric Power Incoming Line	2,000 Amps, 420 - 208 3 phase volts, 11/65 installed, 208 - 230 3 phase, breaker
Fire Fighting Equipment	Carbondioxide Extinguishers
First Aid	Emergency showers, eye washers, first aid kits, stretchers
Emergency Lighting Available	Yes - for exits and stairs only
Building Construction	Brick reinforced with steel beams. Built in 1968. Roof construction is flat. Aluminum windows.
Widest Door Opening	(Loading Dock) It has double doors. Window openings available via any route are all the same.
Refrigeration	Yes

NOTE: No explosive and combustible evidence storage. There is a vacuum available. Disposal for old evidence, combustible materials.

7. Summary and Conclusions

The State Toxicology Laboratory provides qualitative and quantitative evidence processing for the State of Connecticut. Organizationally, the laboratory is located within the Department of Health and is part of the laboratory division. The Toxicology Laboratory itself is well-organized and provides for no inherent weakness. In terms of evidence chain of custody, the procedure including documentation and forms used could use some streamlining to provide for more efficient service.

The services provided by the laboratory, as mentioned, deal mainly in the qualitative and quantitative analysis of narcotics, body fluids and organs, etc. It is recommended that this service area not be expanded but rather the present service areas should be improved as much as possible.

In terms of personnel, the attrition rate in the laboratory is a problem and some effort should be made to remedy the situation. Also, some effort should be made to train and expose new personnel to the judicial process in order for them to take the place of retirees, who are qualified to testify in court.

As seen in the equipment inventory section, the equipment of the State Toxicology Laboratory is highly sophisticated and provides for excellent service. As caseload increases, however, expansion will be necessary.

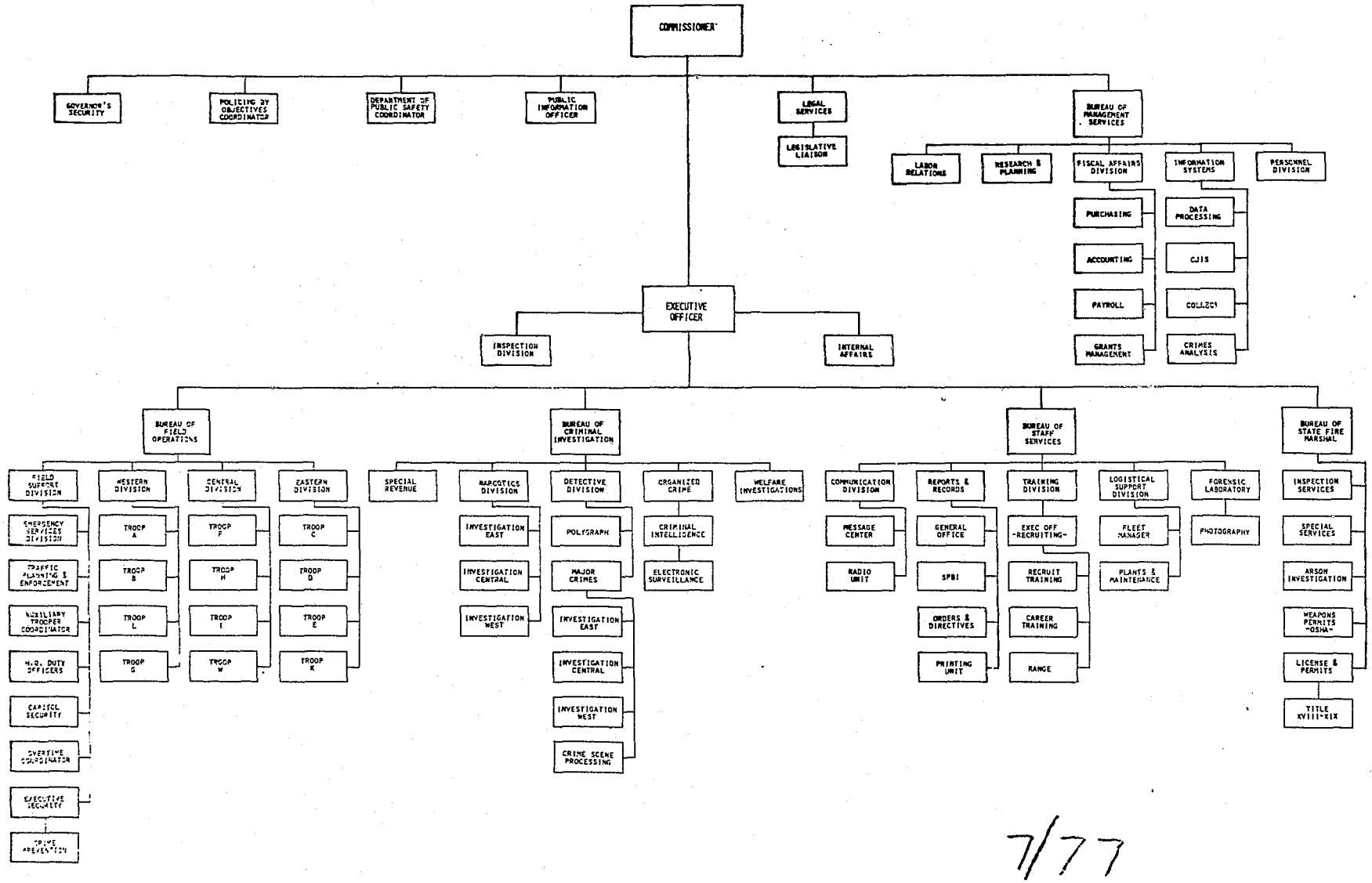
As is also evident from the preceding description, the State Toxicology Laboratory presently has a serious spacial utilization problem. This will be solved, however, with the planned expansion program. It is highly recommended, however, that when the new wing is completed, that the laboratory be arranged so as to allow for maximum space utilization. This is especially important for the storage of evidence which should be securely and efficiently stored.

In general, the laboratory is providing excellent service to the cases it is able to process. As will be discussed later, however, the backlog at the laboratory causes only priority cases to be processed with many never processed at all.

The cause of this problem originates from various sources including lack of personnel, equipment, space, and an efficient evidence processing procedure.

B. Connecticut State Police Forensic Science Laboratory

The Connecticut State Bureau of Identification is located in Bethany, Connecticut and employs a full-time staff of 19 including 1 administrator, 7 analysts, 10 technicians and 1 clerical person. The laboratory provides services state-wide, in firearms, toolmarks, latent fingerprint identification, photography, documents, and chemistry. In 1978 the laboratory processed approximately 1,200 cases which included over 60,000 examinations.


COMMISSIONER
GOVERNOR'S SECURITY
POLICING BY OBJECTIVES COORDINATOR
DEPARTMENT OF PUBLIC SAFETY COORDINATOR
PUBLIC INFORMATION OFFICER
LEGAL SERVICES
LEGISLATIVE LIAISON
BUREAU OF MANAGEMENT SERVICES
LABOR RELATIONS
RESEARCH & PLANNING
FISCAL AFFAIRS DIVISION
INFORMATION SYSTEMS
PERSONNEL DIVISION
PURCHASING
ACCOUNTING
PAYROLL
GRANTS MANAGEMENT
DATA PROCESSING
CJIS
COLLECT
CRIMES ANALYSIS
EXECUTIVE OFFICER
INSPECTION DIVISION
INTERNAL AFFAIRS
BUREAU OF FIELD OPERATIONS
BUREAU OF CRIMINAL INVESTIGATION
BUREAU OF STAFF SERVICES
BUREAU OF STATE FIRE MARSHAL
FIELD SUPPORT DIVISION
EMERGENCY SERVICES DIVISION
TRAFFIC PLANNING & ENFORCEMENT
AUXILIARY TROOPER COORDINATOR
H.Q. DUTY OFFICERS
CAPITOL SECURITY
OVERTIME COORDINATOR
EXECUTIVE SECURITY
CRIME PREVENTION
WESTERN DIVISION
TROOP A
TROOP B
TROOP L
TROOP G
CENTRAL DIVISION
TROOP F
TROOP H
TROOP I
TROOP W
EASTERN DIVISION
TROOP C
TROOP D
TROOP E
TROOP K
SPECIAL REVENUE
NARCOTICS DIVISION
INVESTIGATION EAST
INVESTIGATION CENTRAL
INVESTIGATION WEST
DETECTIVE DIVISION
POLYGRAPH
MAJOR CRIMES
INVESTIGATION EAST
INVESTIGATION CENTRAL
INVESTIGATION WEST
CRIME SCENE PROCESSING
ORGANIZED CRIME
CRIMINAL INTELLIGENCE
ELECTRONIC SURVEILLANCE
WELFARE INVESTIGATIONS
COMMUNICATION DIVISION
MESSAGE CENTER
RADIO UNIT
REPORTS & RECORDS
GENERAL OFFICE
SBI
ORDERS & DIRECTIVES
PRINTING UNIT
TRAINING DIVISION
EXEC OFF -RECRUITING-
RECRUIT TRAINING
CAREER TRAINING
RANGE
LOGISTICAL SUPPORT DIVISION
FLEET MANAGER
PLANTS & MAINTENANCE
FORENSIC LABORATORY
PHOTOGRAPHY
INSPECTION SERVICES
SPECIAL SERVICES
ARSON INVESTIGATION
WEAPONS PERMITS "OSHA"
LICENSE & PERMITS
TITLE XVIII-XIX

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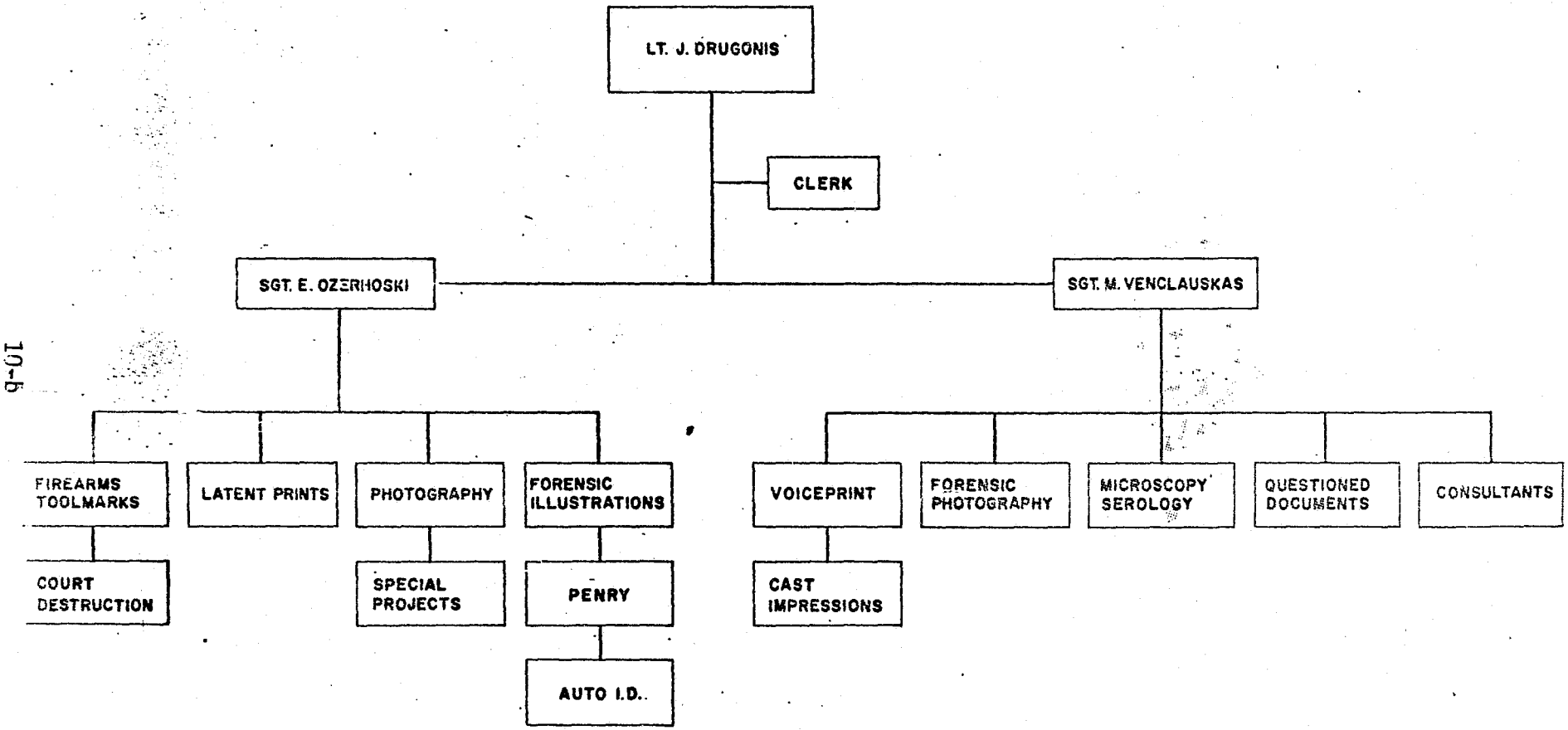
FORENSIC LABORATORY



1. External and Internal Organizational Arrangement

The Chart on the following page presents the organizational placement of the Crime Laboratory within the Connecticut Department of State Police. As is evident from the chart, the Connecticut State Police Division is headed by a Commissioner and an Executive Officer. It is then divided into three major divisions of Field Operations, Staff Services, and Administrative Services. The laboratory is located under the Staff Services Division.

The internal organizational arrangement of the laboratory is presented in the Chart on the second following page. The laboratory is directed by a Lieutenant who is in charge of all laboratory operations. The laboratory is then divided into a number of sections which are defined by service areas. There are six of these areas including voice identification, photography, questioned documents, serology-microscopy, firearms-toolmarks, and latent prints. The photography sections are located at three physical locations - one in Hartford at Headquarters, one in Bethany at the Main Laboratory facility, and one in Meriden at the Police Academy.

The organizational arrangement of the crime laboratory provides for the following:

- Sound and clear-cut allocation of responsibilities as well as an equitable distribution of workloads among elements and individuals.

- Coordination of effort as well as administrative control and feedback is maintained by having the commanding officer deal only in administrative matters and not on a technical level.

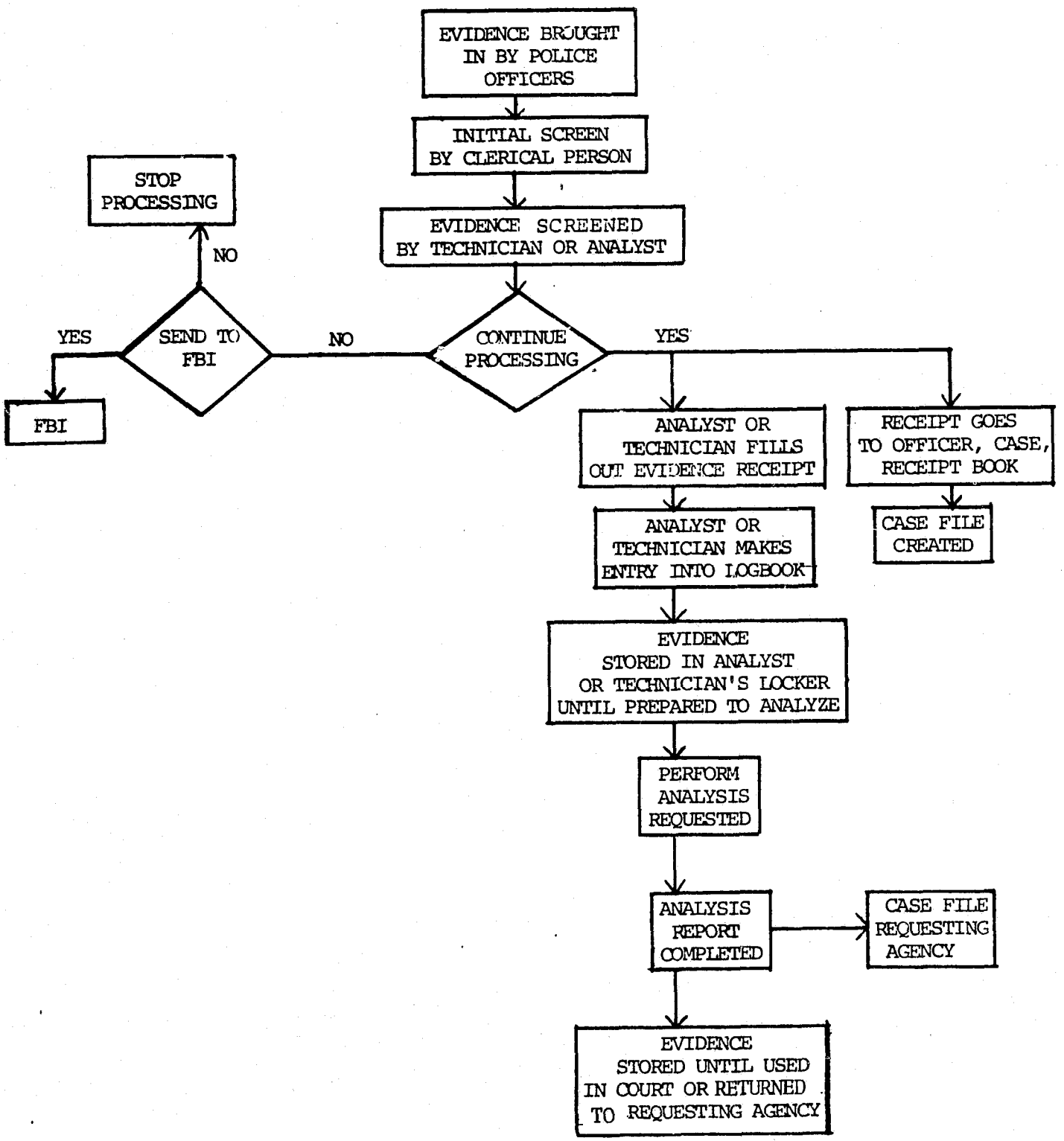
2. Operations Summary

To further explain the operations of the Connecticut State Police Forensic Science Lab, the Flow Diagram of the Evidence Chain of Custody is presented on the following page. The first step in the chain of custody begins with the police officer physically transporting the evidence to the Crime Laboratory. It is highly encouraged that the evidence is transported to the laboratory by the police officers, themselves, to keep the chain of custody as tight as possible. There are no special containers supplied by the laboratory, but rather the evidence is brought in in various types of containers at the discretion of the officer bringing in the evidence. The Federal Bureau of Investigation's Handbook of Forensic Science is utilized as one departmental guide; the laboratory is currently preparing its own handbook.

Once the evidence is brought in, it is screened initially by a clerical person to determine which analyst or technician should be assigned to the case. The determination as to which analyst or technician is assigned to the case depends on the service area requested, i.e., firearms, toolmarks, documents, etc. Once this is

CONNECTICUT STATE POLICE CRIME LABORATORY

FLOW OF EVIDENCE



determined, the analyst or technician to be assigned to the case is summoned by the clerical person doing the initial screening. The analyst or technician then screens the evidence and, quizzes the requesting officer to determine what exact type of services are being requested, if more should be done, and whether the evidence is capable of being processed or not by the State Police Laboratory. If the lab is not capable of analyzing the evidence, it is usually sent to the FBI for analysis; it might also be handled through a consultant. If the evidence is inappropriate for analysis, the requesting officer is informed and the evidence flow stops.

If the evidence is capable of being processed by the lab, the analyst or technician fills out sequentially numbered evidence receipt which includes information such as Date and Time Received, Whom the Evidence was Delivered and Received By, the Case Number and Town, the Service Requested, and a Description of and a numerical listing of the Evidence Received. One copy of the receipt goes into a lab central file, one to the submitting officer and one to the case file.

The next step in the evidence chain of custody consists of the analyst or technician making an entry into the laboratory logbook which also indicates the type of service requested. Cases are filed into the logbook by lab case number, submitting agency case number, town, date and type of service.

The evidence received by the analyst or technician is then stored in an evidence locker until the analyst or technician is prepared to process it. Priorities of processing evidence are subjective at this time and, generally, relatively routine, less severe cases are processed in the order in which they are received while more serious cases are given immediate attention.

Once the analyst or technician has analyzed the evidence, an analysis report is completed. There is a generally specified structure of the analysis report. One copy of the report is forwarded to the requesting agency, one goes in the case file, and one is forwarded to court when required. Finally, the evidence may be stored at the laboratory, in some instances, until used in court at which time the analyst or technician will testify, or will be returned to the original submitting agency. The chain of custody is then basically kept to three people - the police officer, who brings in the evidence; the clerical person, who screens the evidence; and the analyst or technician, who performs the evidentiary analysis.

3. Services Provided

To obtain a more detailed breakdown of the types of services available at the State Police Laboratory, the Table on the following page entitled "Ability to Process Specialized Evidence or Perform Specialized Functions" is presented. The Table lists a total of 27 categories of analyses that may be performed by a crime laboratory and states whether the State Police Laboratory is capable of providing that service.

CONNECTICUT STATE POLICE FORENSIC SCIENCE LAB

ABILITY TO PROCESS SPECIALIZED EVIDENCE

OR PERFORM SPECIALIZED FUNCTIONS

Function or Process	Capability
Autopsy	No
Body Fluids	Yes - strong blood capability
Drugs	Yes - limited capability
Alcohol	No
Poison Analysis	No
Document Examination	Yes - strong
Hairs and Fibers	Yes - strong
Clothing	Yes*
Toolmarks	Yes - strong
Metal Analysis	Yes
Woods and Sawdust	Capable of comparison
Glass	Yes
Paints	Capable of Comparison*
Building and Other Materials	No
Safe Burglary	Capable of Comparison*
Firearms and Ammunition	Yes - strong
Explosives, Bombs, Fireworks	Slight capability
Soils and Sands	Capable of Comparison
Arson	Yes
Photography	Yes - strong
Fingerprints	Yes
Tire Impressions	Capable of comparison

Function or Process	Capability
Neutron Activation	No
Blood Alcohol	No
Crime Scene Search	Yes - On request
Specialized Photography (Micro/Macro)	Yes - strong
Voice Identification	Strong

*Test procedure limited to microscophy. Chemistry is seldom utilized.

According to the Table, the State Police Laboratory has a slight capability in body fluids using serological examination techniques. As mentioned earlier, services in documents are provided and the laboratory has a strong capability in this area. In terms of hairs, fibers, and clothing, the laboratory has developed a capability for comparison. However, standard comparison samples are still being developed. Toolmark analysis capability by the laboratory is very strong and the laboratory is also capable of comparison analysis in the areas of metal analysis, woods and sawdust, paints, and safe burglary material. Again, as mentioned earlier, the laboratory is very strong in firearms and ammunition and also has some capability in the comparison of sands. There is a strong capability in photography and fingerprints and there is also the capability to perform examinations of tire or foot impressions. In most cases, the laboratory will perform crime scene searches upon request. Finally, the laboratory will contract with Kodak for color film processing with all black and white film processed in-house.

4. Personnel Breakdown

As mentioned the laboratory maintains 19 full-time personnel. The Table on the followin page presents 19 of the 19 personnel including the position, years of service, whether the person filling the position is court qualified or not, areas of expertise, and minimum retirement date. The Table shows that there is presently one commanding officer in charge of administration with a retirement date of 1983. The commanding officer is not involved in the analysis of evidence but deals only in administration. There are nine personnel in the laboratory with an area of expertise in forensic photography, photography or photo-developing. Three of the photographers, however, are qualified to testify in court. Except for the person in photo-developing, who has a minimum retirement date of 1977, the remainder of the personnel with an expertise in photography have at least 9 years before their minimum retirement date. Three of the personnel in the laboratory have an expertise in fingerprints all of whom are court qualified and have retirement dates of 1978 and 1982 and 1983. In firearms-toolmarks, two personnel are available, both of whom are court qualified one has a retirement date of 1986 with the other's retirement date in 1991. There are also three court qualified personnel in documents, one having a retirement date of 1977 and one has a retirement date of 1982. The other has a retirement date of 1992. Finally, there is one serologist-microscopist who is court qualified and has a retirement date of 1986.

The above information demonstrates that the laboratory has personnel qualified in their six major service areas: voice identification, fingerprints, photography, firearms-toolmarks, documents, and serology-microscopy. In six of the six major service areas, thereis at least one person who is qualified to testify in court.

CONNECTICUT STATE POLICE FORENSIC SCIENCE LABORATORY
PERSONNEL COMPLIMENT

POSITION	YEARS OF SERVICE	COURT QUALIFIED YES	COURT QUALIFIED NO	AREAS OF EXPERTISE	MIN.RET.DATE
Director	19		NO	Administration	1983
Photographer II	31		NO	Forensic Photography	1986
Photographer II	16	YES		Forensic Photography	1983
Photographer II	5		NO	Photography	1993
Trooper	15	YES		Forensic Photography (inc. documents)	1983
Trooper	14½	YES		Photography, (inc. medical)	1984
Trooper	21		NO	Photo-Developing	1978
Trooper	17		NO	Photo-Developing, Penry	1982
Sergeant	19	YES		Latent Prints, Forensic Illus.	1983
Trooper	22	YES		Latent Prints, Crime Scenes	1978
Trooper	18	YES		Latent Prints, Crime Scenes	1982
Trooper	14	YES		Firearms, Toolmarks, Serial #'s, Physical Matching, Photography	1986
Trooper	9½	YES		Firearms, toolmarks, Serial #'s, Physical Matching, Crime Scenes, Penry	1991
Trooper	14	YES		Serology, Microscopy, Crime Scenes	1986
Sergeant	17	YES		Documents, Photography, Crime Scenes	1982
Trooper	15½	YES		Documents, Crime Scenes, Penry	1992
Document Examiner	32	YES		Documents, Fingerprints	1977
Trooper	17½	YES		Voice Identification, Photography, Crime Scenes, Forensic Illus. Casts	1984
Clerk III	2½		No	Clerical, Secretarial	2017

5. Equipment Inventory

The Table on the following page includes some of the major equipment of the Connecticut State Police Forensic Science Laboratory that is used in performing the services of the laboratory. Examinations performed cannot be deemed preliminary. This includes photography equipment such as an enlarging copy camera, carousel auto-focus with zoom, wide-angle lens, print dryers and washers, contact printer, enlargers, safe lights, developing tanks as well as other development equipment. A variety of microscopes are also available for use in ballistics, toolmarks, handwriting and chemistry. Such include an optical comparison microscope, UFM-2 forensic microscope, various comparison microscopes, wide field binocular microscope, compound microscope, and a polarizing microscope. For fingerprint analysis, the major equipment includes a fingerprint comparator and a fuming hood. The equipment is quite up-to-date, and in good condition.

6. Physical Facility

The charts on the following two pages compare the principal important physical plan specifications with the current physical facility. In general, the laboratory is limited for the present use with adequate square feet, room lighting, floor covering, and building construction materials.

A new laboratory facility is currently being renovated on the grounds of the Meriden Police Complex. This new facility, when completed, should be a more than adequate physical plan for many years.

7. Summary and Conclusions

As the previous data demonstrates, the Connecticut State Bureau of Identification is well equipped for performing evidentiary analysis. They are well equipped in all of the areas discussed above and the following conclusions can be drawn.

- The organizational structure is sound and provides for a smooth flow of operations.
- Their evidence chain of custody is tight enough to meet judicial process requirements. The record system used to document the evidence chain of custody, has been streamlined for ease in retrieval of past records.
- The personnel, equipment, and physical plant are sufficient to provide the service outputs of the laboratory.
- Emphasis should be placed on training new personnel in the speciality areas so that as personnel retire, court qualified experts are able to take their place.
- When purchasing equipment, care should be taken not to purchase or obtain equipment that is technically out of date even though operating ability is good.

CONNECTICUT STATE BUREAU OF IDENTIFICATION

LABORATORY PHYSICAL PLANT

Specifications	Comments
Square Feet	Total square feet (limited)
Evidence Vault	Available, large enough for present needs.
Intake Room	No. Evidence can be left at State Police barracks.
24-Hour Operation	No.
Room Security	State Police are next door; K-9 Corps nearby; building is equipped with alarms.
Room Lighting	Sufficient for lab use - fluorescent.
Working Conditions	Building is well kept and pleasant.
Space Utilization	Excellent. Some personnel have insufficient work area.
Expansion Ability	Current facility at capacity. New facility being renovated in Meriden.
Direction Markings	Adequate
Parking	Available and to be expanded.
Transportation Access	Located on state highway; nearest public transportation is 15 miles away in New Haven.
Ceiling Height	Varies between 7-1/2 - 19 feet.
Building Tightness	Very good.
Floor Covering	Tile
Building Construction Materials	Brick and steel. Built 1941, roof is patched slightly.
Air Conditioning	None
Heat	Oil fired steam.
Hoods Available and Vented	Yes.
Sewage System	Floor drains; septic system.

Specifications	Comments
Fire Fighting Equipment	Extinguishers - 2 acid type, 4 chemical. No fire sensing equipment, no sprinkler system.
Fire Department	1/2 mile, less than 5 minutes.
Emergency Power	No.
Emergency Lighting	No.
Storage Area For Inflammables	Yes.
Window Type	Sliding Casement - Storm Sash
Elevator Available	No.
Lab Bench Top Material	Wood, glass, fiberglas and metal, slate
Widest Door Opening	5-1/2 feet.
Widest Available Opening	28" x 72".
Refrigeration	Yes.
Explosive and Combustible Evidence Storage	No.
Disposal For Old Evidence, Combustible Material, etc.	No.

- Standard Operating Procedures have been developed for field officers in evidence collection including packaging, tagging, and the evidence chain of custody.

C. Office of the Medical Examiner

The Commission of Medicolegal Investigations was established as an independent administrative commission by Public Act 699 (Medicolegal Investigations Act) of the 1969 General Assembly. The Commission operates according to powers conferred upon it under Chapter 362 of the Connecticut General Statutes, as amended, and the principle Title governing the operations of the Commission is Title 19. The Commission appoints the Chief Medical Examiner, sets his term of office, and supervises the operations of the Office of the Medical Examiner. The Office of the Medical Examiner, directed by Elliot M. Gross, M.D. employs a full-time staff of 10 persons and has an annual budget of $873,621. (1977-78 fiscal year).

The Administration Offices were originally located in a mobile trailer unit at the rear of the University - McCook Hospital but in July, 1974 the Office of the Medical Examiner moved into a renovated building at the University of Connecticut Health Center in Farmington, Connecticut. The Office provides the State of Connecticut with autopsy services including histologic, toxicologic, bacteriologic and serologic tests. The Office also maintains records of all deaths reported, notifies the Coroner and Office of State's Attorney of all deaths requiring further investigation, and furnishes copies of records of deaths investigated to the public as requested.

1. Legislation

According to the legislation authorizing the Office of the Medical Examiner, the Office is governed by a Commission on medicolegal investigations which, as mentioned above, is an independent administrative Commission, consisting of nine members: Two full professors of Pathology, two full professors of Law, a member of the Connecticut Medical Society, a member of the Connecticut Bar Association, two members of the public selected by the Governor, and the State Commissioner of Health Services. According to the legislation, "the Commission may promulgate regulations necessary or appropriate to carry out effectively the Administrative provisions of this Chapter".

The Commission is charged with the responsibility of appointing a Chief Medical Examiner, who has the following powers and duties:

- With the approval of the Commission, appoint a deputy who acts in the Chief Medical Examiner's absence, and Assistant Medical Examiners, Pathologist, Toxicologist, Laboratory Technicians and other professional staff as the Commission may specify.

- Investigate all human deaths in the following categories:

  (1) Violent deaths, whether apparently homicidal, suicidal or accidental.

  (2) Sudden or unexpected deaths not caused by readily recognizable disease.

  (3) Deaths under suspicious circumstances.

  (4) Deaths of persons whose bodies are to be cremated, buried at sea or otherwise disposed of as to be therefore unavailable for examination.

  (5) Deaths related to disease resulting from employment or to accident while employed.

  (6) Deaths related to disease which might constitute a threat to public health.

- Designate Pathologists who are certified by the State Department of Health to perform autopsies in connection with the investigation of any deaths in the categories listed above.

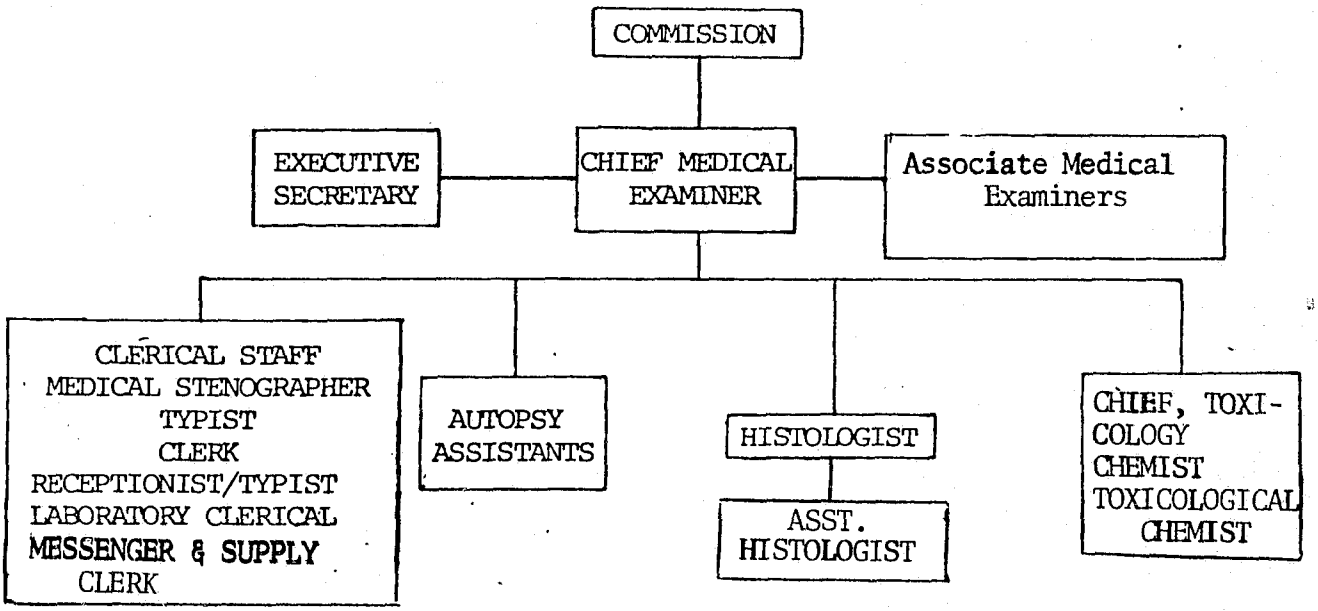
- Investigate or cause to be investigated by a Deputy Medical Examiner or Assistant Medical Examiner the circumstances of deaths as well as the body to determine if an autopsy is warranted. When required, perform autopsies or cause autopsies to be performed by the Deputy Medical Examiner or Pathologist.

Other than operational procedures and administrative responsibilities which shall be outlined below, the legislation also authorizes the Office of the Medical Examiner to maintain a laboratory or laboratories suitably equipped with medical, scientific, and other facilities for the performance of the responsibilities.

2. Organizational Arrangement

As of October 1, 1974, a new set of rules and regulations were instituted. A number of new procedures of the office were implemented at this time and will be discussed below. The Organizational Chart on the following page presents the organizational arrangement of the Office of the Medical Examiner as of October 1, 1978. The major change in the Office of the Medical Examiner has been one of expansion rather than one of a major revision in that the Commissioner still exists as well as the Chief Medical Examiner. The clerical staff has been expanded to handle increased workload, as well as adding Autopsy Assistants, a Histology Section, and a Toxicology Section for the analysis of body fluids and organs, tissues, etc.

OFFICE OF MEDICAL EXAMINER
ORGANIZATIONAL ARRANGEMENT



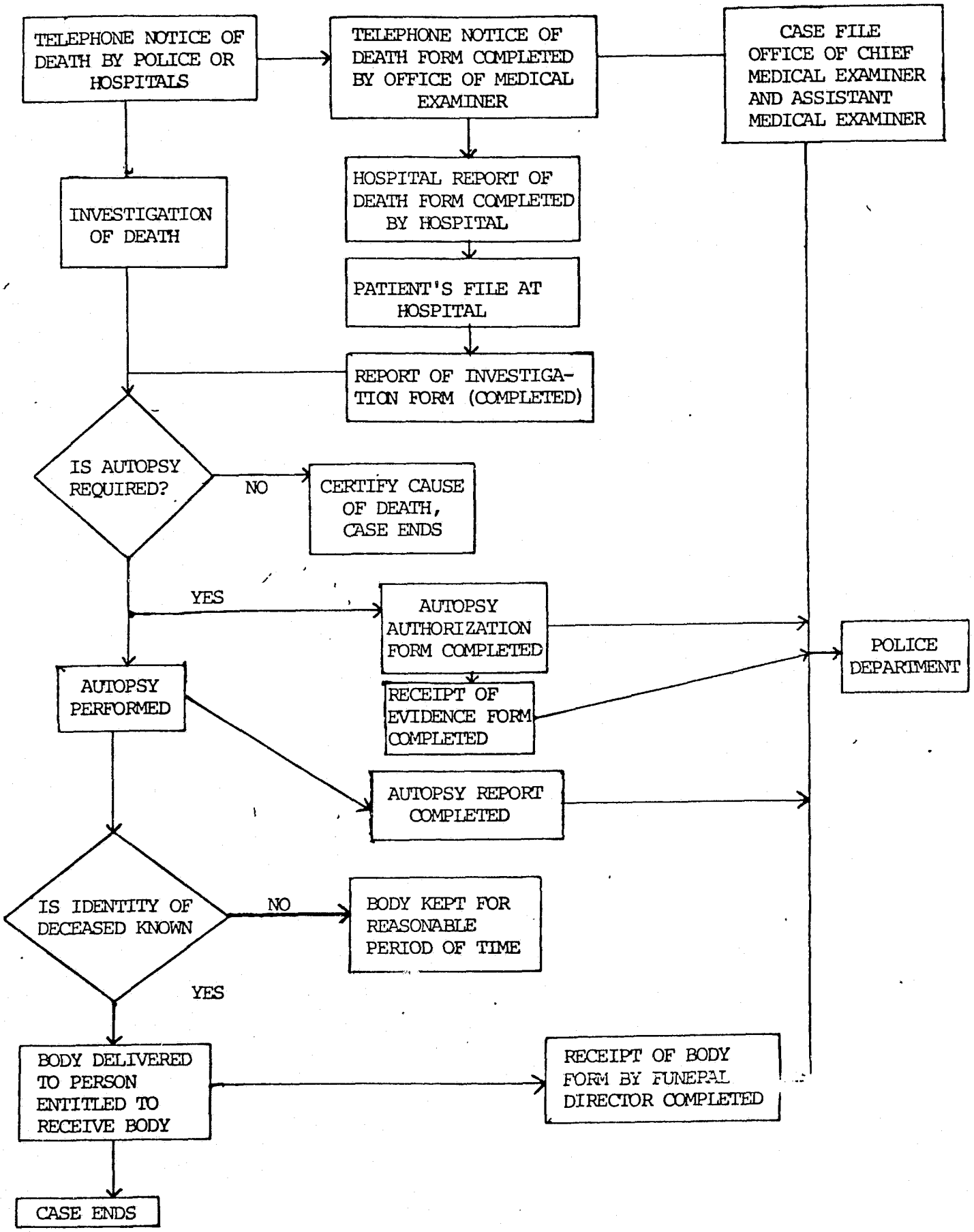
3. Operations Summary

To gain a better understanding of the method of operation of the Office of the Medical Examiner, a Flow Diagram is presented on the following page.

When a death which falls into one of the categories of reportable deaths occurs other than in a hospital, the police department responsible for the investigation must immediately telephone the Office of the Medical Examiner, giving the name of the person, if known, and the place and manner of death and the time the body was discovered. At this time a telephone notice of death form is completed by the Office of the Medical Examiner. If a person dies in a hospital and the death is subject to investigation, the administrator of the hospital must telephone the Office of the Medical Examiner giving pertinent information surrounding the death. The administrator must also report the death on a form provided by the Office of the Medical Examiner and information pertaining to the hospitalization, and any diagnostic, operative or therapeutic procedures and circumstances of admission, if known, must be completed by the physician attending at the time of death. The telephone notice of death form and/or the Hospital Report of Death Form are filed in a case file.

The next step in the method of operation begins with an investigation of the death by the Chief Medical Examiner, Assistant Medical Examiner or Pathologist to determine if an autopsy is required or not. At this time a "Report of Investigation" form is completed and filed in the case file. If it is determined that an autopsy is not required, the cause of death is certified and the case ends. If it is determined that an autopsy is required, an autopsy authorization form is completed as well as an evidence receipt form for any evidence such as clothes which may indicate cause of death. Both of these forms are placed in the case file and one copy of the evidence receipt form goes to the Police Department reporting the death. The autopsy is performed at the Office of the Medical Examiner or at one of 33 hospitals in the State depending on the location of the death. Once the autopsy is completed, an autopsy report is completed by person performing the autopsy, i.e., Chief Medical Examiner, Assistant Medical Examiner, or Pathologist; and is placed in the case file. If the identity of the diseased person is known, the body is delivered to a person entitled to receive the body such as a relative. At this time, a Report of Body by Funeral Director Form is completed and the case ends until at such time the Chief Medical Examiner, Assistant Medical Examiner or Pathologist may be required to testify in Court on the case. If the identity of the body is unknown, or the body is not claimed, the body is kept for a reasonable period of time at the Office of the Medical Examiner or the Morgue of a hospital in the town or nearest to the town in which the death occurred until the proper authorities of the town in which the death occurred or the dead body was discovered are notified by the Chief Medical Examiner in writing to dispose of the body. As is evident, the method of operation of the office of the Medical Examiner is well planned in terms of actual operations and records flow.

METHOD OF OPERATION
OFFICE OF MEDICAL EXAMINER



4. Personnel Breakdown

As mentioned earlier, the Office of the Medical Examiner employs 25 full-time personnel and 3 part-time personnel as of January 1, 1979. The following is a breakdown of the type of personnel the office presently has or plans to have in the future.

POSITION	COURT QUALIFIED	AREA OF EXPERTISE
Chief Medical Examiner	X	Pathologist
Associate Medical Examiner	X	Pathologist
Chief, Toxicology Laboratory	X	Toxicologist
Administrator: Autopsies and Examinations		Office Management
Executive Secretary		Secretarial
Medical Stenographer		Stenographer of Autopsy Reports & Death Certificates
Business Services Officer		Business Functions
Accounting Clerk		Bookkeeping Functions
Clerk		Files Records
Typist		General Clerical
Receptionist/Typist		Communication
Typist		Handles Records Reports
Histologist		Prepares Microscopic Slides
Histologist Assistant		Assists Histologist
Messenger & Supply Clerk		Inventory & Records
Toxicologist Chemist		Assists Chief Toxicologist
Chemists		Assists Toxicologist Chemists
Autopsy Assistants		Assists in Autopsies
Laboratory/Clerical		Handle notification of death calls 24 hours/day, 365 days/year, administrative work

The Office of the Medical Examiner employs at this time a Chief Medical Examiner and an Associate Examiner who perform all autopsies at the Office of the Medical Examiner. They are supported by a substantial clerical staff. The Chief Medical Examiner is also supported by a technical staff of 1 Histologist, an Assistant Histologist, 1 Toxicologist, a Toxicologist Chemist and a General Chemist. In addition, the Chief Medical Examiner is supported by 130 Assistant Medical Examiners throughout the State. This increased staff will provide the Office of the Medical Examiner with the capability of remaining open to telephone notice of deaths 24 hours a day and 365 days a year as well as handling an increased caseload. In addition, the laboratory will be capable of handling its own analysis of body fluids and organs, etc. resulting from autopsies. Such analyses are presently being handled by the State Toxicology Laboratory at Hartford.

5. Equipment and Physical Plant

In terms of equipment, the Office of the Medical Examiner is presently fully equipped to perform autopsies and will be fully equipped by January 1 to perform related histological and toxicological examinations.

The physical location of the Office of the Medical Examiner has a total area of 6,500 square feet and is an excellent facility equipped with sufficient office and laboratory space to handle the needs of the Office for the next few years. However, in cases of mass deaths such as a plane crash other emergency holding facilities would be required.

6. Summary and Conclusions

The Office of the Medical Examiner performs a vital function in the State in the investigation of death and performance or autopsies. From a legislative and organizational viewpoint, the Office is provided with enough flexibility to have an efficient operation.

In terms of personnel, equipment, and physical facilities, the Office is again well equipped to provide services to law enforcement agencies in the State. It must be pointed out, however, that as with the preceding two laboratories, the Office of the Medical Examiner is one major service area - investigating deaths and performing autopsies.

D. Hartford Police Department Ballistics Laboratory

The Ballistics Laboratory in the Hartford Police Department was established on January 1, 1963 with one full-time employee who acts as administrator, analyst and technician. The laboratory provides physical examination and identification services in ballistics for the Hartford Police Department and some police departments surrounding Hartford. In 1978 the laboratory processed 559 weapons.

Due to the small size of this laboratory and the limited number of services it provides compared to the other existing laboratories in the State its impact on the total evidentiary services system in the State is minimal. However, to gain a total perspective of the evidentiary system, a description of this laboratory, even though brief, is necessary.

The Ballistics Laboratory has no formal resolution, by-laws, or standard operating procedures governing its operations to date. Since the lab began its operations with one full-time person, it has been the responsibility of that person to develop the lab as well as its procedures and the exact services it will provide. The laboratory procedures or operations therefore are dictated by the person who is directly responsible for it.

1. Organizational Arrangement

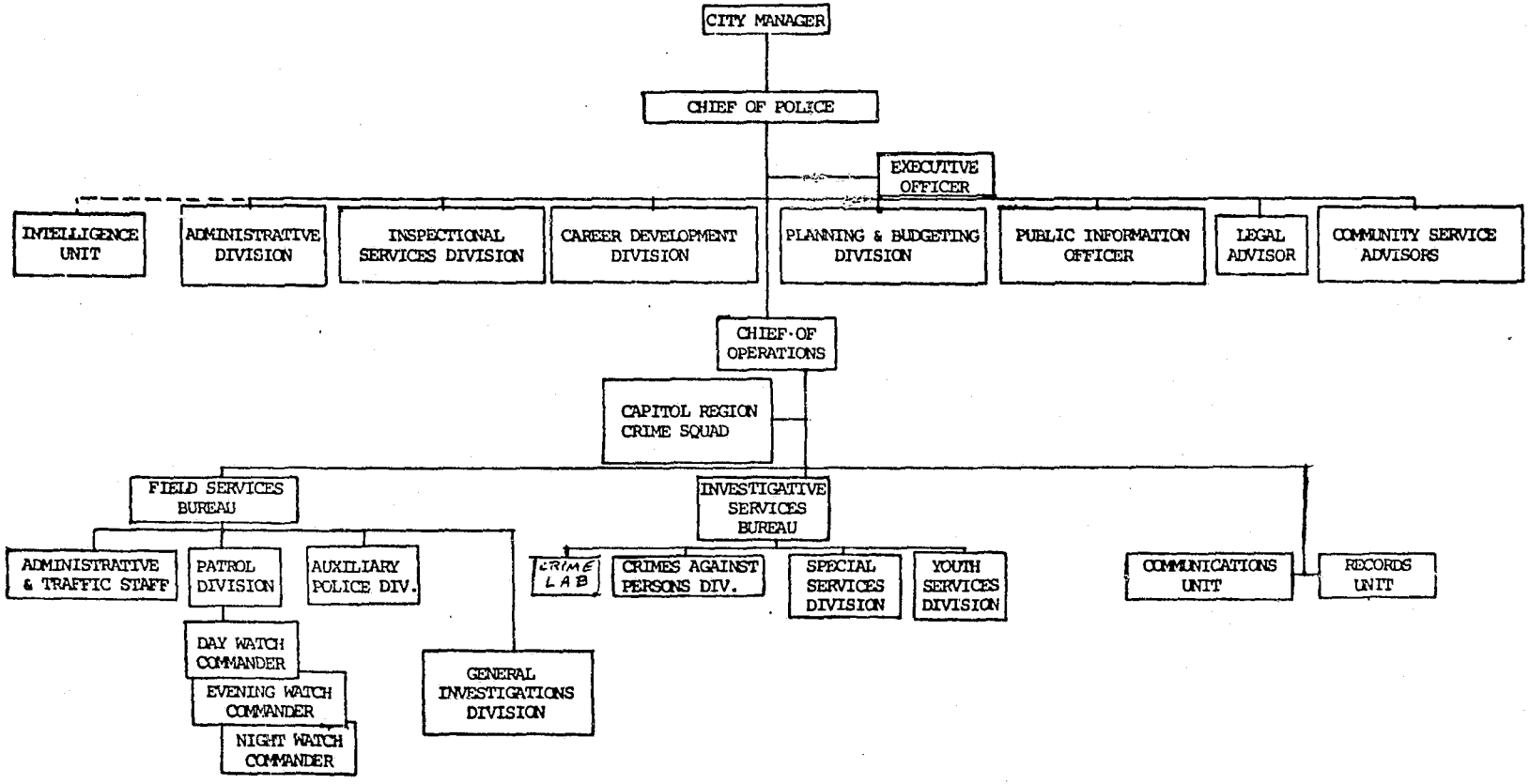
The Chart on the following page presents the organizational placement of the Crime Laboratory within the Hartford Police Department. As is evident, the Crime Laboratory is located in the support services division directly under the records unit of the Police Department. The Crime Laboratory is a supportive service to the Police Department and should be located in the Support Services Division. However, its placement under the records unit is questionable when considering the different service outputs of a records unit and crime laboratory. The Crime Laboratory should optimally report directly to the Commanding Officer of the Support Services Division. Since the laboratory is a one-man operation, however, with a large amount of independence, its placement in the organization becomes purely academic.

2. Operations Summary

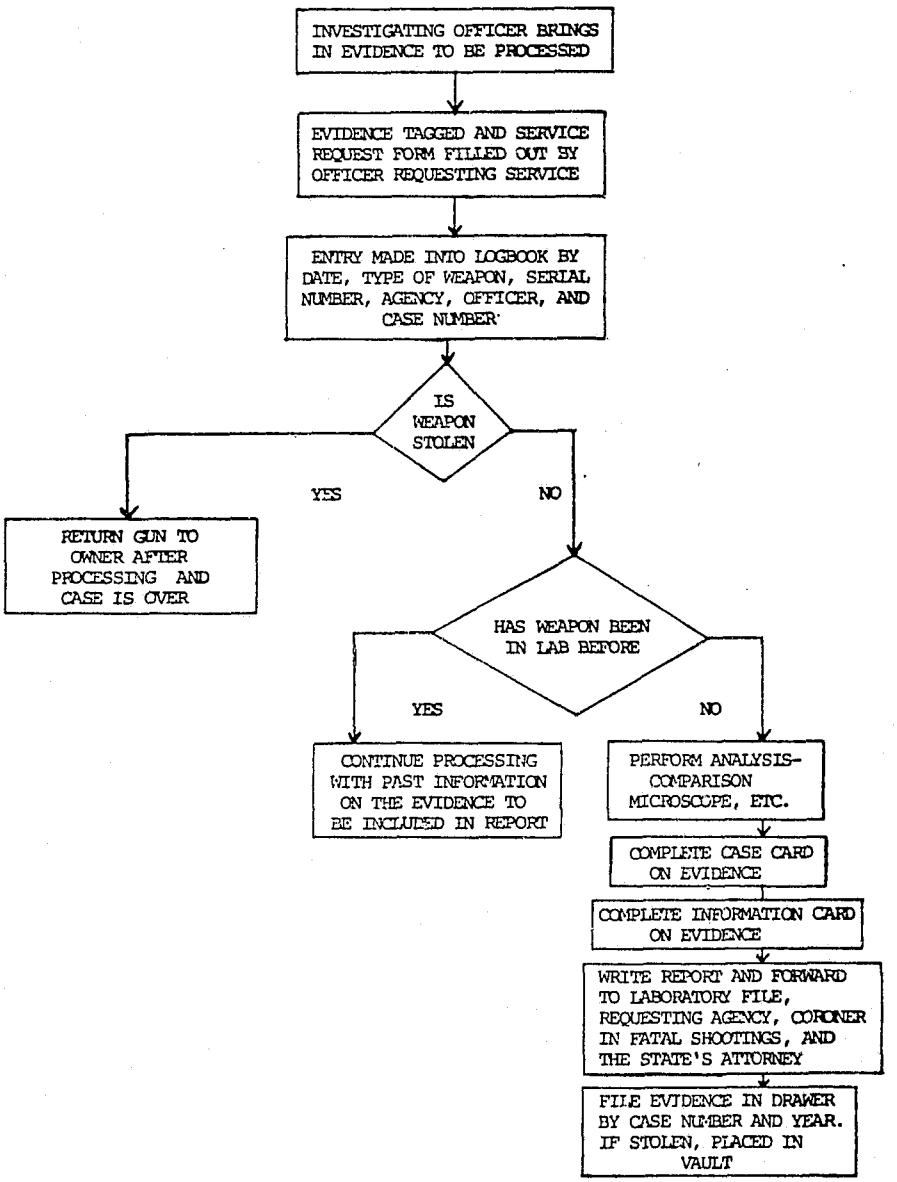
To further explain the operations of the Hartford Ballistics Laboratory, the Flow Diagram of the flow of evidence is presented on the second following page. The investigating officer with a firearm or ammunition to be processed physically brings the evidence to the laboratory. At the laboratory, the officer completes an evidence tag which contains information on the name of the article, identification or marks, date, time, exact location of finding, including address, name and rank, and any remarks he may have. In addition, the officer completes an evidence request form which includes information on a brief description of the evidence, the serial number, service requested, person arrested, age, address, charge, victim's name and the name of the officer delivering the evidence.

Once the above two forms are completed, the laboratory administrator makes an entry into the laboratory logbook by date, type of weapon, serial number, agency, officer, and case number. The processing of the evidence then begins. A determination is first made if the weapon is stolen or not by checking the stolen gun file. If the gun is stolen, it is returned to the owner after processing and after the case is completed. The next step is to determine if the weapon has ever been processed in the lab before. If it has, processing will continue but with the knowledge of previous information on the weapon which would be included in the report. The next step involves the actual analysis which, as mentioned earlier, is limited to physical examination and identification through the use of comparison microscopes, stereo microscopes, bullet trap to determine distance, weighing of ammunition, etc. Once the evidence is processed, a case card is completed on the evidence including the case number, type of evidence, result of analysis, whether the evidence is retained at the laboratory or returned to the requesting agency, owner, etc. and whether test shots were fired or not. An information card is also completed for each weapon which includes information on the weapon: model, type, lands, grooves, twist, origin, who the evidence was submitted by, the court date, case number, owner, caliber, and appropriate dates.

HARTFORD POLICE DEPARTMENT
ORGANIZATIONAL ARRANGEMENT



FLOW OF EVIDENCE
HARTFORD POLICE DEPARTMENT
BALLISTICS LABORATORY



The final step consists of writing a report which is filed at the laboratory and a copy sent to the requesting agency, the coroner in fatal shootings, and the State' Attorney. The evidence is then filed in a file drawer by case number and year. If stolen, it is placed in a vault.

As is evident, the flow of evidence is relatively simple at the Hartford Laboratory and is necessarily so due to its small size and its single service output, i.e., physical examination and identification of firearms and ammunition. The equipment available to perform the physical examinations is also only that necessary for ballistics consisting of a bullet recovery box, balance scales, bullet trap, two stereo microscopes, and a comparison microscope. Having moved to a new police facility, the laboratory quarters are quite limited, even for this small operational scope.

As is evident from the above description, the Ballistics Laboratory at the Hartford Police Department is minor in nature when compared to the other laboratories in the evidentiary services system in the State of Connecticut. Even though the laboratory only deals in ballistics, the services it provides in this area are excellent. The person in charge of the laboratory has a great deal of experience in ballistics and is qualified to testify in Court as an expert witness.

E. New Haven Police Forensic Laboratory

The New Haven Police Department Lab was established in 1973. The lab brought together three different elements - an equipped laboratory in a new central police facility, a forensic scientist and a mobile van for search of crime scenes. The resulting laboratory is equipped to do fingerprints and latent print analysis, photography, firearms, toolmarks, drug screening, rape evidence and other types of physical evidence comparisons. An arson capacity and expanded chemical analysis capabilities are being developed.

The New Haven Police laboratory accepts requests from other towns and cities in the state and region under a set of written guidelines. These guidelines indicate the chain of command which must be used to request assistance and the types of cases in which assistance will be considered. Clearly, the Department's own work takes precedence. The one exception to this is the mobile crime scene van which, because it was originally obtained via an LEAA grant to the region, still allows for a more uniform regional access. During 1977 12 regional towns used the lab to examine 500 pieces of evidence, approximately 27% of the total number of pieces of evidence examined by the lab.

Because of the regional and statewide nature during that period of this laboratory's operation and because of its more extensive analysis capabilities, its impact on the State's evidentiary service system must be considered.

1. Organizational Arrangement

The chart on the following page outlines the organization of the New Haven Police Department. The Forensic Lab is placed under the Director of Operations, within the Investigative Unit.

The placement of the lab allows for close interaction between it and other investigative functions and, as a result, the lab is heavily involved in assisting investigations.

The Lieutenant in charge of the forensic function has 11 professionals assigned to him. Six individuals are "road" people, dispatched to crime scenes to assist in evidence collection. One individual in the base lab is assigned to each of the following functional areas:

- latent print identification
- laboratory scientist
- polygraph/lab assistant
- photography
- light duty/clerical

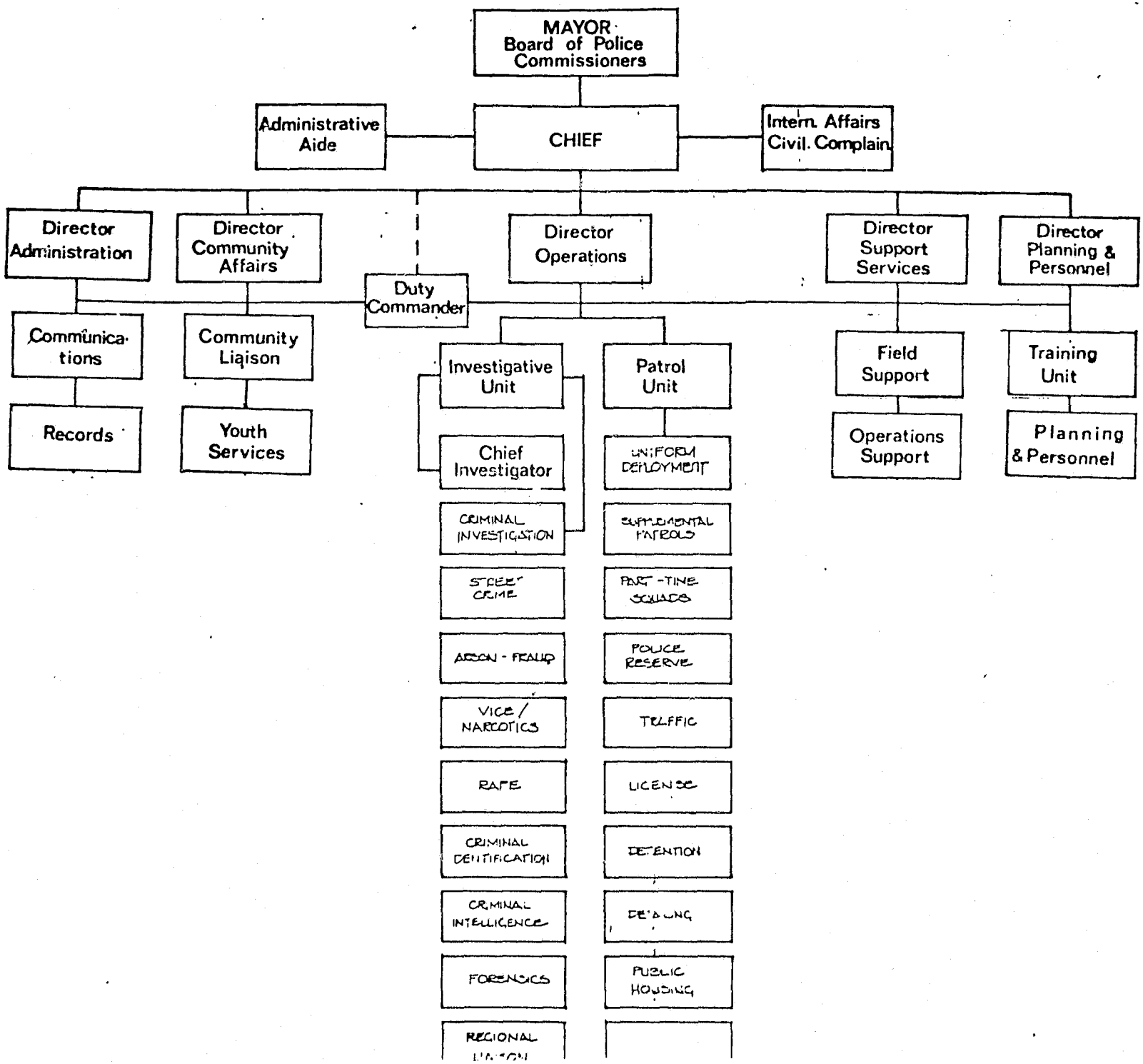
The only non-sworn person in the group is the laboratory scientist. All of the remaining personnel are sworn officers.

The organization of the New Haven laboratory provides for clear-cut organizational responsibilities. The chain of command is well-developed. A major strength of the lab is its close tie with the investigative function which, while it carries the danger of potentially compromising the impartiality of the forensic function, clearly increases its usefulness in police work.

2. Operations Summary

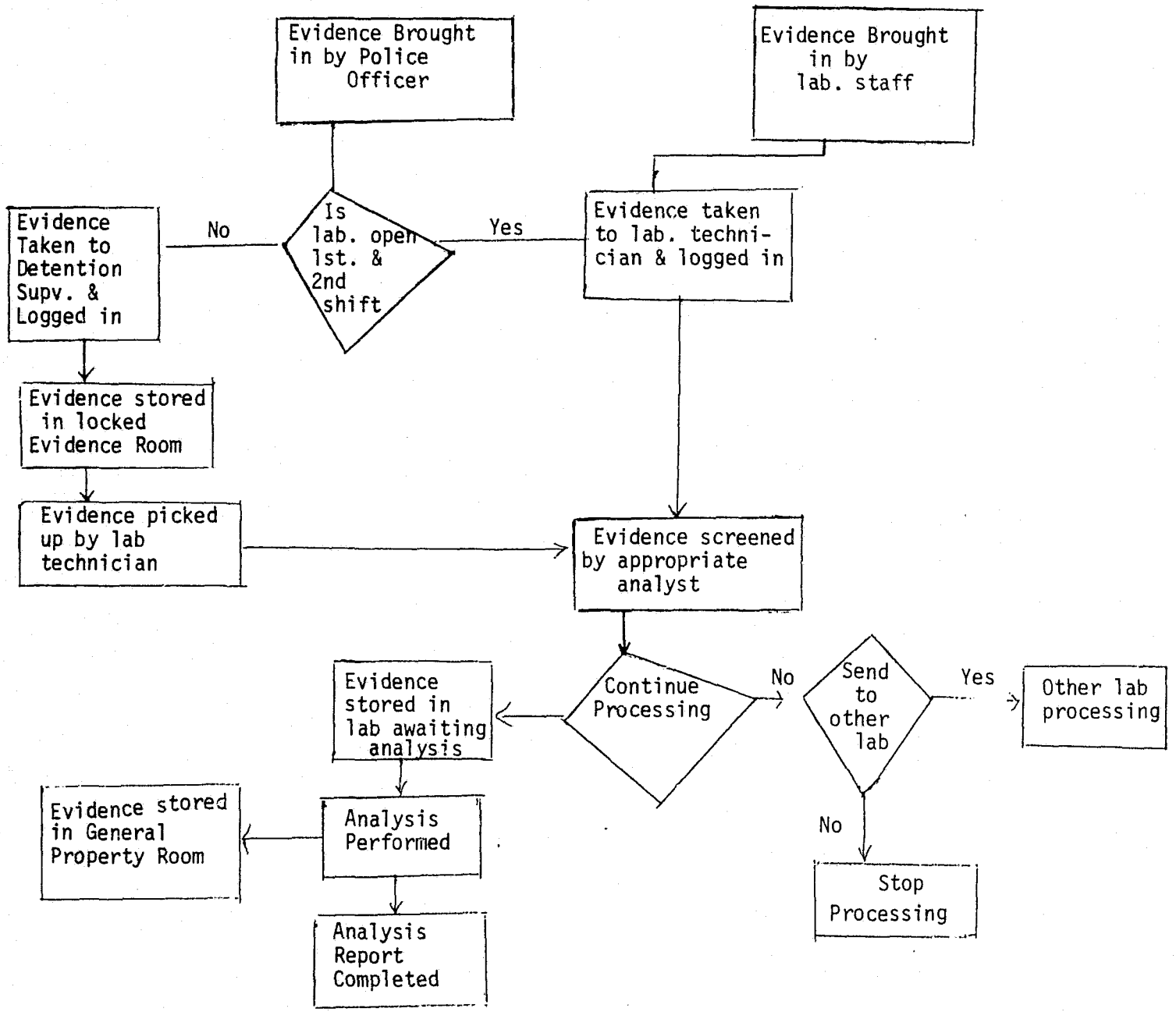
Evidence is most often brought into the lab by a lab person, since the "road" function is part of the lab's operation. In the case of outside New Haven analysis, evidence does not follow this procedure. The procedure utilized in these cases depends on the seriousness of the crime (in many murder cases, New Haven will dispatch its own personnel) and the procedures of the particular local department. (e.g. some towns use the crime scene van, with personnel specifically trained in this area.)

The attached chart summarizes the flow of evidence in all New Haven cases. In the case of evidence submitted by another department, the procedure is exactly the same, except that storage after testing is currently maintained within the laboratory in boxes. A report is given to the submitting agency on the results of the analysis. Storage of this evidence is a recognized problem area.


MAYOR
Board of Police Commissioners
Administrative Aide
CHIEF
Intern. Affairs Civil. Complain
Director Administration
Director Community Affairs
Director Operations
Director Support Services
Director Planning & Personnel
Duty Commander
Communications
Community Liaison
Records
Youth Services
Investigative Unit
Chief Investigator
CRIMINAL INVESTIGATION
STREET CRIME
ARSON - FRAUD
VICE / NARCOTICS
RAPE
CRIMINAL IDENTIFICATION
CRIMINAL INTELLIGENCE
FORENSICS
REGIONAL
Patrol Unit
UNIFORM DEPLOYMENT
SUPPLEMENTAL PATROLS
PART-TIME SQUADS
POLICE RESERVE
TRAFFIC
LICENSE
DETENTION
PUBLIC HOUSING
Field Support
Operations Support
Training Unit
Planning & Personnel

New Haven Police Department

Flow of Evidence



3. Services Provided

The same basic table as that presented in the State Police Section of this report is presented here in order to aid in comparing capacities. The table "Ability to Process Specialized Evidence or Perform Specialized Functions" analyzes each category for the ability of the New Haven laboratory to perform that function.

NEW HAVEN POLICE DEPT. LABORATORY
ABILITY TO PROCESS SPECIALIZED EVIDENCE
OR PERFORM SPECIALIZED FUNCTIONS

Function or Process	Capability
Autopsy	No
Body Fluids and Organs	No
Drugs	Yes - Slight Capability*
Alcohol	No
Poison Analysis	No
Docment Examination	Yes - Strong
Hairs and Fibers	Yes - Strong
Clothing	Yes*
Toolmarks	Yes
Metal Analysis	No**
Woods and Sawdust	No**
Glass	No**
Paints	Capable of Comparison*
Building and Other Materials	No
Safe Burglary	No**
Firearms and Ammunition	Yes - Strong
Explosive, Bombs, Fireworks	No
Soils and Sands	Soils - No; Sands - No; Capable of Comparison*
Arson	No*
Photography	Yes - Strong

Fingerprints	Yes - Strong
Tire Impressions	Capable of Comparison
Polygraph	Yes - Strong
Neutron Activation	No
Blood Alcohol	No
Crime Scene Search	Yes
Specialized Photography (Micro/Macro)	Yes

*Test procedure limited to microscophy. Chemistry is seldom utilized.

**Spectrograph & gaschromotograph capacties being developed (equipment in place)

As can be seen from the attached table above the New Haven lab shares roughly the same capacities as the state police. The New Haven lab has no chemical analysis facilities, but has strong capabilities in microscopic evidence comparison. Their photo lab is very well-equipped and provides an extensive, speedy in-house capacity.

4. Personnel Breakdown

The laboratory has 11 full-time professional personnel. Each of their areas of expertise has been outlined previously. Beyond the fingerprint area, in which a number of people have qualified to testify in court, there is only one individual in the lab qualified to give testimony, the laboratory scientist. This individual has an extensive background in laboratory work and is currently seeking to expand his skills into chemical analysis areas. The lab is heavily dependent on this individual, and would not have another individual qualified to fill this role if he were to leave. This potential problem is to be expected in a lab of the size and volume of the New Haven job.

5. Equipment Inventory

The New Haven Forensic Laboratory has purchased equipment for its laboratory relatively recently. None of the current equipment can, therefore, be considered outdated; most has a considerable life remaining.

The laboratory has available the following devices:

- 7 crime scene double-lens reflex camera kits
- 3 35 mm. cameras

- 1 copy camera
- 2 1-to-1 cameras
- 2 photo enlargers, one black and white, one color
- 2 automated photo developing units, one black and white, one color
- 1 hair and fiber microscope
- 1 comparison microscope
- 1 scanner scope
- 1 stereoscope (on order)
- 1 gas chromatograph
- 1 infrared spectrophotometer
- 1 fuming hood
- 1 polygraph plus tape recording devices

6. Physical Facility

The laboratory is located on a new physical plant in a location specifically designed for laboratory use. Two fully-equipped darkrooms, one for color processing and the other for black and white, are available. Within the physical evidence area, adequate space is available for storage of materials, etc.

Two problems may be pointed out in the physical facilities area. First, we previously noted, the storage of evidence received from outside New Haven (after analysis) is a problem. Second, the office space available at the facility is quite limited. As functions and staff have grown, the office area has been most affected. If any additional expansion is contemplated, this problem could become serious.

7. Summary and Conclusions

The previous discussion indicates that the New Haven laboratory has gone from a plan on paper to a wide-ranging operation in a short period of time. A major reason for the overall successful growth of the lab has clearly been a departmental commitment to the lab and integration of its role within the police function.

The major conclusion pointed out by an analysis of the lab areas follows.

- The organizational structure provides for high integration of the lab with the police investigative function.

- The chain of custody for evidence is excellent, except for some problem in longer-term storage of evidence received from outside of the city of New Haven.

- Personnel, equipment and physical plant meet the lab's current needs. The overall dependence on one court-qualified scientist could present future problems.

- Expansion of services to cover the region with the same level of services of New Haven could create some space and linkage problems, none of which seem insurmountable.

F. Waterbury Police Crime Laboratory

While not yet in operation, the City of Waterbury will soon have in operation a crime laboratory of roughly similar scope to the lab in New Haven, with the exception that no plans have been made for an evidence collection van. The plans for the laboratory call for a regional service area covering most of northwestern Connecticut. Specific procedures of how the lab will be utilized by other towns remain to be developed. Because of the small size of the towns surrounding Waterbury, the majority of requests for lab services will clearly come from Waterbury. The lab is slated to begin operations in June, 1979. It will be located in a newly-constructed central police facility.

G. Supplemental Information on State Police and Toxicology Labs and Medical Examiners Office

The information in this supplemental material results from a survey of the directors of the three major statewide laboratories. The survey covered three basic areas not covered in detail in the foregoing review. Crime scene search capabilities of the labs, internal mechanisms for training, quality control, etc. and suggestions for system improvement. Most of the material collected via the survey, because of the differences in the operations and missions of the labs, is not comparative. A summary of the key information revealed by the survey follows.

1. Crime Scene Search

The only statewide laboratory that engages in the crime scene search function is the State Police lab. In fact, this lab is the only one which expressed an interest in performing this function in the future. Correspondingly, this lab rated of the quality of physical evidence collection by law enforcement agencies as inadequate.

2. Quality Control, Training and Resources

All of the 3 statewide labs indicate that they maintain a quality control program. Both the Toxicology Lab and the State

Medical Examiner's Office indicate external verification of at least some portion of their examination function; the state police lab indicates that fiscal constraints have made external testing no longer possible.

In the training area, all 3 statewide labs have some continuing education program. On the job training is informal as a rule; seminars and workshops are periodically offered for staff at all 3 labs. All of the labs allow time off to attend professional meetings; travel allowances and registration fees are often paid. Policies on attendance in college course vary widely. On the whole, this form of training is less encouraged than others. Only one laboratory (State Medical Examiner's Office) indicates the use of formal education as a criteria for promotion.

Research activities are or have been a part of the operations of the Toxicology Lab and the Medical Examiner's office. Library services available to the labs are rated as adequate to meet the needs.

3. Suggestions for Improvement

In general, the 3 state labs feel that prosecutors and defense attorneys are not adequately trained in the use of the lab. Improvements suggested in the lab service system centered on expanded facilities and staffing, as well as organizational changes.

IV. Laboratory Utilization

The forensic laboratories have no consistent format for reporting usage rates, largely related to the varied types of analyses performed by various labs. The definition of a case, for example is quite different for the person performing an autopsy and the individual analyzing a document. The amount of time spent on each case also varies widely.* In the first section, lab-reported use rates, statistics are reported in whatever form the labs themselves used. The user section focuses on the number of cases submitted as the definition of usage. One case may involve a number of distinct analyses and, in some cases, a number of different labs. Because of this, cse submissions to a lab are not synonomous with workload.

This section gives an analysis of lab usage in Connecticut reported by the labs themselves. It also gives a report of FBI lab usage. The Waterbury lab has been omitted from this section, since it is not yet in operation. A general confirmation of the lab-reported data can be found in the police-reported data on lab usage found in Section V.A. of this report.

A. State Toxicology Laboratory

For the fiscal year of 1977-78 the State Toxicology Laboratory examined 50,471 specimens. A total of 112,249 tests were conducted on these specimens of which 96,673 resulted in isolation or identification of the particular substance involved. Thus, the isolation rate was close to 86% of all tests conducted. As to the type of services provided to on-going investigations practically all involved identification of various drugs, especially marijuana and other alkaloids. Less than 2,000 examinations were non-toxicological in character; these were greatly overshadowed by the toxicological examinations. From these data it seems fair to conclude that the prevailing use made of the laboratory is to identify substances uncovered by police in narcotics cases. A review of the laboratory's last five years of operation showed this same tendency, the only difference being that the number of drug cases increased dramatically while criminological examinations increased less dramatically. Since toxicological examinations take much less turn-around time than criminological ones, perhaps some of this trend is to be expected.

The table on the following page summarizes how the laboratory caseload changed over time. Note that over the ten-year period the number of specimens handled more than quadrupled. Much of the growth occurred in earlier years, however, with the last three years showing a tendency to reach a new plateau on its overall growth curve. A rapid period of growth in the 1974-75 period has once again been followed by a period of greater stability. An increase in staff and narcotic case enforcement efforts were indicated as major factors related to this second increase.

*The variation in analysis required under the general term "case" cannot be overemphasized. The time required by a crime laboratory to analyze a "case" may vary from a few minutes to many hours.

SUMMARY OF WORKLOAD FOR
STATE TOXICOLOGY LABORATORY

Fiscal Year	Total Specimens	Total Isolated	Total Not Isolated	Total
1968-69	9,775	17,324	7,468	24,792
1969-70	13,144	26,011	7,691	33,702
1970-71	18,142	40,727	8,809	49,536
1971-72	18,175	39,038	10,080	49,118
1972-73	20,137	40,497	13,336	53,833
1973-74	20,856	43,885	12,462	56,347
1974-75	40,341	104,054	14,408	118,462
1975-76	43,241	98,578	13,933	112,511
1976-77	50,094	99,063	16,690	115,753
1977-78	50,471	96,673	15,576	112,249

The final data of interest concerning the Toxicology Laboratory involve caseload per month. The caseload per month is presently turning higher than what could be processed by the staff. The result is a slowly-growing backlog of growing size. The laboratory allows significant delays to occur in many cases which are not of high priority and, if never requested for results, these analyses may not be performed.

B. Connecticut State Police Laboratory

The State Police Lab workload has followed a pattern of increasing case volume until the last two years. Prior to 1976, the workload of the lab increased at a rate of 16% per year. Since that time, a decrease of 10.7% per year has been recorded. The decrease may be attributed to a variety of factors, including the increase in local crime lab capacities, increasing use of the FBI laboratory, dissatisfaction by some local police departments with the services of the State Police lab and removal of the polygraph unit from the lab's jurisdiction.

The table below illustrates the caseload of the lab, with the analysis statistics for the most recent year broken down by type. As can readily be seen, the bulk of the examinations performed by the lab (over 90%) are fingerprint examinations.

Summary of Workload for
State Police Laboratory

	1976	1977	1978
Number of cases	1553	1308	1220

Number of examinations in 1978:

Arson	2
Blood	630
Documents	1,535
Fiber	23
Fingerprints	55,998
Firearms	2,014
Glass	9
Hair	39
Footprints	34
Tire prints	12
Paint	24
Semen stain	205
Serial Number	8
Toolmark	240
Voice	203
Misc.	39
Total Examinations	61,015

C. Medical Examiner's Office

The Office of the Medical Examiner has consistently expanded its workload since 1973. While the number of deaths in the state has risen by only 1.6% per year, the number of autopsies performed by the Medical Examiner's Office has risen over 100% per year. This rapid growth has slowed somewhat in recent years, with an increase of only 16% projected for the 1978-79 fiscal year. The number of autopsies performed in hospitals during the 5-year span has decreased slightly.

COMMISSION ON MEDICOLEGAL INVESTIGATIONS
OFFICE OF THE MEDICAL EXAMINER

COMPARATIVE AGENCY STATISTICS

	1973-74	1974-75	1975-76	1976-77	1977-78	PROJECTED[a] 1978-79
DEATHS REPORTED	7349	8039	8653	8347	8823	8819
INVESTIGATIONS AND EXAMINATIONS						
ASSISTANT MEDICAL EXAMINERS	--	8642	7323	6571	7372	7372
MEDICAL EXAMINER'S OFFICE	--	2	5	4	10	10
AUTOPSIES						
HOSPITALS [b]	1049	1024 (88%)	866 (81%)	937 (80%)	965 (69%)	979 (66%)
MEDICAL EXAMINER's OFFICE [c]	64	145 (12%)	206 (19%)	239 (20%)	431 (31%)	500 (34%)
TOTAL	1113	1169	1072	1176	1396	1479
TRANSPORTATION OF CASES						
OUTSIDE SERVICES	--	147	211	186 (73%)	329 (65%)	410 (62%)
MEDICAL EXAMINER's OFFICE[d]	--	--	--	69 (27%)	176 (35%)	248 (38%)
TOTAL				255	505	658
HISTOLOGIC SLIDES						
MEDICAL EXAMINER'S OFFICE	999	1317	1978	1739	1986	2101
TOXICOLOGICAL ANALYSES[e]						
MEDICAL EXAMINER CASES	--	--	--	226 (79%)	375 (82%)	400 (72%)
HOSPITAL M.E. CASES	--	--	--	55 (19%)	75 (16%)	146 (26%)
CSDH M.E. CASES	--	--	--	5 (2%)	9 (2%)	12 (2%)
TOTAL				286	459	558
TESTIMONY[f]						
GRAND JURY AND SUPERIOR COURT	11	19	25	13	32	42

(a) Projection based on statistics gathered during the period July 1 to December 31, 1978.

(b) Autopsies for which payment made during FY indicated.

(c) Projected figures represent a 6% increase over the previous fiscal year. Includes autopsies at Medical Examiner's Office by Certified Pathologist: FY-77-78 50
FY-78-79 56

(d) Projected figures represent 41% increase over the previous fiscal year.

(e) Projected figures represent a 22% increase over the previous fiscal year.

(f) Professional Staff Medical Examiner's Office

COMMISSION ON MEDICOLEGAL INVESTIGATIONS
OFFICE OF THE MEDICAL EXAMINER

AUTOPSIES
OFFICE OF THE MEDICAL EXAMINER
FY 1977-78

CLASSIFICATION BY MANNER OF DEATH

NATURAL	74	(17.2%)
ACCIDENT	78	(18.1%)
SUICIDE	51	(11.8%)
HOMICIDE[a]	96	(22.3%)
UNDETERMINED[b]	61	(14.2%)
PENDING INVESTIGATION[c]	39	(9.0%)
PENDING FURTHER STUDY OR CHEMICAL EXAMINATION[d]	32	(7.4%)

(a) Deaths classified as Homicides and in which autopsies performed at the Medical Examiner's Office comprised 75% of total number (128) of Homicides reported to the Office of the Medical Examiner during 1977-78.

(b) Refers to determination following receipt of reports of Police investigations, and/or of chemical analyses and/or microscopic examination.

(c) Refers to determination awaiting receipt of report of Police investigation. (Includes a death by natural causes following altercation and an unattended birth, cause of death undetermined, pending investigation.)

(d) Refers to determination awaiting completion of microscopic and/or chemical analyses.

In addition, as the chart on the following page reveals, the Medical Examiner's Office now has a fully-equipped Toxicology Lab (begun in fiscal year 1976-77) and has also developed its own transporation unit, which now handles over 1/3 of all cases needing transportation.

Together, these facts indicate that the Medical Examiner's Office has moved to create a larger and more self-sufficient operation over the last 5 years. The amount of court testimony provided by the office has increased, indicating a larger involvement with the criminal justice system. Another indicator of this is that over 75% of all homicides reported in the State are now examined at the Medical Examiner's Office. Homicides account for the largest single group of examinations performed.

D. The Hartford P.D. Crime Laboratory

The Hartford Police Laboratory deals only in ballistics, fingerprints and police photography. The lab supports the Hartford Police Department and, to a limited extent a number of surrounding communities. The following table summarizes the use of the lab over the last five years.

Table: Hartford Police Lab Workload

	Total Cases	Cases of Which Other Towns Assisted	Stolen Guns Recovered
1974	596	27	52
1975	675	30	54
1976	624	28	54
1977	527	19	35
1978	559	18	34

As can readily be seen, the use of the lab by other towns is less than 5% of the total lab cases. The chart also reveals that the laboratory maintains a file of stolen guns recovered by the Department. Lab use has not changed demonstrably in the five year period and, because of the somewhat limited range of services, would not be expected to change dramatically in the near future.

E. New Haven P.D. Crime Lab

The New Haven Police Crime Lab has been in full operation for less than 3 years. Statistics from the lab indicate that workload over the 1977-78 period has been relatively stable. The statistical breakdown for 1977 given below reveals the breakdown of New Haven and non-New Haven examinations performed by the lab.

New Haven Police Lab Workload: 1977

	Cases								
	Latent Print	Firearm	Toolmark	Footprint	Document	Physical Evidence	External Fit	Total Cases	Pieces Examined
Non-New Haven	75	24	20	3	10	17	5	154	698
New Haven	69	127	10	2	9	19	2	238	1,330
Total	144	151	30	5	19	36	7	392	2,028
% of Total Cases	36.7	38.5	7.7	1.3	4.8	9.2	1.8	100%	

Cases from outside New Haven amount to slightly less thatn 40% of the total use of the lab. However, within individual categories, cases vary from 15.9% (firearms) from outside New Haven to 71.4% (external fit) from surrounding towns and cities.

The lab's primary uses are firearm and latent print examinations. Together these two account for over 75% of the total lab use.

F. FBI Crime Laboratory

The FBI Crime Laboratory continues to be an important resource to the State's forensic system. Unfortunately, records are no longer kept by the FBI in a fashion which discriminates the specific examinations conducted on a state-by-state basis. The chart on the following page, therefore, groups the examinations into three sections: Documents, Scientific Analysis and Engineering. The Document Section performs document, cryptanalytic, gambling, extortionate credit transaction, polygraph, and translatory related examinations. The Scientific Analysis Section performs forensic examinations related to chemistry, toxicology, elemental analysis, explosives, firearms, toolmarks, instrumental analysis, microscopic analysis, mineralogy, metallurgy, and serology. The Engineering Section conducts electronic and acoustic related examinations.

As can readily be seen from the attached chart, the use of the FBI laboratory by Connecticut agencies has increased; largely in the examinations performed during fiscal 1978. Specimens examined have increased steadily at a rate of over 10% per year. Almost all of this increase has been in the scientific analysis area. An average of over three examinations are performed by the lab on each specimen. Compared to in-state labs involved in similar examinations, this is reasonably consistent.

G. Summary and Comparison of Laboratory Usage

Comparison of crime laboratory usage across the six labs currently in operation is difficult because of the varied nature of the labs. For example, the Medical Examiner's Office is responsible for autopsies; this is not a function of any other lab. The following chart compares the relative amount of activity in each lab for the most recent year for which statistics are available.

CATEGORY	SECTION	FY75	FY76*	FY77	FY78
REQUESTS	Document	46	79	69	54
	Scientific Analysis	137	229	164	202
	Engineering	1	--	3	1
TOTAL		184	308	236	257
SPECIMENS	Document	139	251	509	222
	Scientific Analysis	1369	1751	1067	2062
	Engineering	5	--	5	2
TOTAL		1513	2002	1581	2286
EXAMINATIONS	Document	186	318	622	299
	Scientific Analysis	3791	4560	3242	6861
	Engineering	1	--	26	4
TOTAL		3978	4878	3890	7164

*Due to the Fiscal Year transitional period, statistics for the months of July, August, and September of 1976 are shown with FY76 (7/75-6/76) figures.

Chart: Comparison of Reported Laboratory Usage

	Toxicology Lab	State Police Lab	Medical Examiners	Hartford P.D. Lab	New Haven P.D. Lab	FBI Lab
Cases	*	1,220	431	559	392	257
Specimens	50,471	*	*	*	2,028	2,286
Examinations	96,673	61,015	*	*	*	7,164

*missing data

These statistics imply that the Toxicology Laboratory is still the most highly utilized in the State. After this, the State Police Lab indicates the second highest volume, largely as a result of its fingerprint operation. Each of the other labs, while having less volume, has a significant share of the state's total laboratory activity.

A more detailed comparison can be made between three labs because of the similar nature of the services they offer. These three are the State Police Lab, the New Haven Police Lab and the FBI Lab. A comparison of these three labs reveal the following information:

1. State Police, because of its statewide fingerprint verification function, has the largest total volume.

2. When fingerprints are removed from consideration, the three labs perform an almost equal number of total examinations. (The New Haven Lab may be slightly smaller in volume than the other two when prints are removed).

3. In at least two of the labs, firearms constitute the majority of examined cases and specimens (if the latest statistics available from the FBI lab are still accurate as a relative indicator, they would imply that firearm examination is of lesser frequency there).

4. Document examination is a larger function at the State Police Lab than either of the others.

5. A higher amount of bio-chemical examinations are performed by the FBI.

Beyond the differing emphasis outlined in 1, 3, 4 and 5 above, the same basic examinations are performed by the three labs.

Overall, the lab use statistics reveal a specialized pattern of usage with respect to toxicology, autopsy/death and other laboratory usage and a diversified pattern within the "other laboratory usage area". The conclusion that there is the potential for duplication of effort and/or less than efficient use of resources in the "other lab" area is inescapable. At the current time, however, little evidence is available to indicate that personnel at the labs are underutilized. There is some evidence to suggest

that personnel working in the "other lab" area are called upon to perform analyses in a number of different areas, raising the concern that less than ideal competence would be able to be developed and maintained in all areas.

V. Laboratory User Perceptions and Evaluations

This section on laboratory user perceptions and evaluations has divided users into two main groups. The first group, police, represent both input and output users of lab services. Police are the greatest source of evidence for analysis. The analysis done (as output) is relevant to the police investigation process. The second user group surveyed included three separate subgroups within the Judicial Department: public defenders, judges and state's attorneys. This group is primarily an output user. Although in some cases an attorney may be involved in an evidence submission to the lab, the use primarily focuses on the interpretation of results in court proceedings, both pre-trial and trial. Given the distinctly different uses of the laboratory system by these two user groups, the survey results are presented separately.

A. Connecticut Police and Forensic Science Services

1. Description

A survey was sent to all police departments in the State. The primary areas of interest were:

a. the extent to which the police department maintains in-house crime lab capabilities;

b. the Department's use and evaluation of the forensic services they utilize;

c. the evidence collection procedures and capabilities of the Department;

d. the Department's rate of using evidence for certain offenses;

e. the Department's feelings about the usefulness of evidence in its work; and

f. suggestions for improving laboratory services.

It was determined that these six areas would give a good picture of forensic science capabilities, needs and resources from the standpoint of the major source of input to the system. Since police are the primary source of input for physical evidence, their policies and actions in these six areas are critical to a well-functioning forensic science service system.

2. Methodology

A survey was distributed to all 91 police departments in the State and to the State Police. This survey, prepared by Forensic Sciences Foundation, Inc., was distributed in two phases. The first phase was direct mail distribution from the Connecticut Justice Commission. The second phase, following approval of the survey instrument by the Connecticut Chiefs of Police Association, was a handout distribution at a Chiefs' meeting. The first phase produced

36 responses, the second phase 14, for a total of 50 responses, 49 from local police. The total response rate, therefore, was approximately 54% of the local police departments in the state.

Beyond the six items described in the survey description, the survey also asked a number of demographic questions about the departments, including the size of the jurisdiction, number of part I crimes and size of the police department. These quesitons enable tests for representativeness of the sample to be done. More importantly, they lend themselves to comparative analyses (e.g. do larger departments tend to have more in-house identification?).

The data collected on these surveys has been punched onto a computer tape. The analysis of the data includes a straightforward analysis of answers on a question by question basis. For example, the question of how many police departments would prefer a single in-state lab is a question of that type. It also includes comparative and hypothesis-testing analysis and allows hypotheses to be tested. For example, we may hypothesize that smaller police forces would prefer a single, in-state lab than larger ones because they have less desire to develop in-house capacities and handle less evidence. The analysis is able to test such hypotheses.

3. Results

The responses to the survey have been grouped into the six areas outlined in the description of the survey.

a. Police department in-house crime lab capabilities

Most of the Departments in the survey do not maintain an in-house crime lab. Of those responding to the survey, only 12% (N=6) indicate an actual in-house crime lab. Three of those indicating this are New Haven, Hartford and the State Police, all of which are described in the lab description section of this report. The other three are essentially organized identification units, the concept of a lab merely being taken as a defined place with some personnel and equipment rather than a more complete crime lab.

While most of the departments do not have in-house lab facilities, almost half (48%, N=24) do maintain an in-house identification unit. The following table illustrates the capabilities of these units, ranked from the most common capability to the least common.

Table a.1 - Capabilities of Police Department Identification Units

	Type of Identification	Number able to perform	% of total P.D.'s (N=50)	% of those with any in-house capacity (N=24)
1.	Photography	28	56%	114% *
2.	Fingerprints	27	54%	111% *

CONTINUED

1 OF 2

3.	Latent prints	26	52%	107% *
4.	Drug screening	10	20%	43%
5.	Toolmarks	5	10%	21%
5.	Alcohol	5	10%	21%
7.	Rape evidence	4	8%	17%
7.	Firearms	4	8%	17%
9.	Documents	3	6%	13%
9.	Dried Blood	3	6%	13%
	Other	3	6%	13%

*Some departments do not indicate any in-house identification unit, but do perform a few limited analyses, usually fingerprints and photography. Because of this, the number able to perform a function is slightly higher in a few cases than the number who describe their operation as an identification unit.

The responses to this question fall into four main groups. In the first group are three common types of identification which more than half of the departments in the sample can perform: photography, fingerprints, and latent prints. In the second group is one identification, drug screening, which a substantial minority of departments (20%, N=10) can perform. In group 3 are four identifications which almost no one but the three "full-service" labs (New Haven, Hartford and the State Police) can perform: toolmarks, alcohol screening, rape evidence and firearms. The final group includes document examination; dried blood and other tests which only the three larger labs can perform.

In viewing these results, it must be remembered that these are self-reported responses to a yes or no question. The respondent's self report of a capability may be inflated; it may be deflated. It is also likely that the degree to which a particular type of identification can be performed may vary widely among those indicating they have a particular capacity.

The basic conclusions reached from this portion of the survey are as follows:

* police department in-house capabilities for evidence analysis are, in general, limited to identification.

* the most common types of identifications performed are photography, fingerprint and latent print. At least 40% of those sampled, however, could not perform these basic functions.

* in general, only the three largest police-related labs can perform identifications of evidence other than photography, fingerprint, latent print and drug screening.

b. Police Department use and evaluation of major labs in the State

1. State police lab - The State police lab is utilized by all but five of the 40 departments responding to this question. Table b.1.1. below shows the rate of use of this lab by the departments. As the table shows, the mean use by departments reporting use is 18.4% of their total evidence caseload being sent to the State lab; the median use is 12%. The range of response is very broad, from a low of 1% to a high of 90% of total evidence submitted to this lab, with little clustering of responses.

Percentage of Total Requests

Code	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
1.	4	8.0	11.4	11.4
2.	1	2.0	2.9	14.3
4.	3	6.0	8.6	22.9
5.	2	4.0	5.7	28.6
8.	2	4.0	5.7	34.3
9.	1	2.0	2.9	37.1
10.	4	8.0	11.4	48.6
12.	1	2.0	2.9	51.4
13.	1	2.0	2.9	54.3
15.	2	4.0	5.7	60.0
20.	3	6.0	8.6	68.6
22.	1	2.0	2.9	71.4
25.	3	6.0	8.6	80.0
35.	2	4.0	5.7	85.7
40.	2	4.0	5.7	91.4
50.	2	4.0	5.7	97.1
90	1	2.0	2.9	100.0
88.	5	10.0	Missing	100.0
99.	10	20.0	Missing	100.0
Total	50	100.0	100.0	

Table b.1.1. Percentage of Total Police Evidence Requests Sent to State Police Lab

MEAN	18.429	STD ERR	3.162	MEDIAN	12.000
MODE	1.000	STD DEV	18.709	VARIANCE	350.017
KURTOSIS	5.168	SKEWNESS	1.973	RANGE	89.000
MINIMUM	1.000	MAXIMUM	90.000		
VALID CASES		35	MISSING CASES		15

FREQUENCIES

The actual number of cases submitted in the past year to the State Police Lab varies from 0 to 100. The total number of cases the 37 departments reporting submitted was 585, a mean average of slightly less than 15.8 cases per

department. The median was 10 cases per department. If these departments are representative of the State and local police use of this lab, this would mean that approximately 1,300 cases were submitted to the State Police Lab in 1978, a figure within 6% of the 1,220 reported by the lab itself.

The evaluation of services offered by the State Police Lab includes two items: turnaround time and overall subjective evaluation. Table b.1.2. shows the police evaluation of response time by the Lab. As the table reveals, 51.5% of those responding (N-33) rate the response time as under 15 days. The mean average response time is rated at 30 days.

Table b.1.2. Average Turn-Around Time of State Police Lab

Category Label	Code	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
Less than 15 days	1.	17	34.0	51.5	51.5
15-29 days	2.	5	10.0	15.2	66.7
30-49 days	3.	7	14.0	21.2	87.9
50-69 days	4.	2	4.0	6.1	93.9
70-89 days	5.	1	2.0	3.0	97.0
90 days +	6.	1	2.0	3.0	100.0
Other	7.	2	4.0	Missing	100.0
Not Applic.	8.	5	10.0	Missing	100.0
Missing data	9.	10	20.0	Missing	100.0
Total		50	100.0	100.0	

The overall subjective evaluation of the services of the State Police Lab was that they were, on mean average "adequate", with approximately 43.5% of those responding (N=44) rating the service as excellent. One respondent (2% of the respondents) rated the lab as unacceptable; 6 others (13% of the respondents) rated it as poor.

2. State Toxicology Lab - The State Toxicology Laboratory is utilized by all of the 40 Departments responding to the question. Table b.2.1. shows the rate of use of this lab by these departments. As the table reveals, the mean use by the departments is approximately 2/3 of their total evidence requests, making this the most highly utilized lab by police respondents. The median use of the lab by users is almost 75% of total requests. The range of responses is from a low of 10% to a high of 96%.

Table b.2.1. Percentage of Total Police Evidence Requests Sent to State Toxicology Lab

Code	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
10.	2	4.0	5.3	5.3
25.	2	4.0	5.3	10.5
29.	1	2.0	2.6	13.2
40.	1	2.0	2.6	15.8
42.	1	2.0	2.6	18.4
43.	1	2.0	2.6	21.1
45.	1	2.0	2.6	23.7
50.	3	6.0	7.9	31.6
60.	3	6.0	7.9	39.5
72.	1	2.0	2.6	42.1
73.	1	2.0	2.6	44.7
75.	5	10.0	13.2	57.9
79.	1	2.0	2.6	60.5
80.	2	4.0	5.3	65.8
83.	1	2.0	2.6	68.4
84.	1	2.0	2.6	71.1
85.	1	2.0	2.6	73.7
86.	2	4.0	5.3	78.9
90.	2	4.0	5.3	84.2
91	1	2.0	2.6	86.8
92.	1	2.0	2.6	89.5
94.	1	2.0	2.6	92.1
95.	1	2.0	2.6	94.7
96.	2	4.0	5.3	100.0
88.	2	4.0	Missing	100.0
99.	10	20.0	Missing	100.0
Total	50	100.0	100.0	

The actual number of cases sent to the State Toxicology Lab by the 25 departments reporting this figure ranged from 0 to 1,200. A total of 4,344 cases were submitted by the 35 departments, an average of 124 cases per department. The median number of cases was 50. Projection of these figures to all state police departments would indicate that approximately 11,400 cases were submitted to this lab by police departments in 1978.

The evaluation of services offered by the lab includes both turnaround time and an overall subjective evaluation. In terms of turnaround time, responses on the toxicology lab varied widely. The mean time, as shown on Table b.2.2. is approximately 37 days for the 39 departments responding.

Table b.2.2. Average Turnaround Time: State Toxicology Lab

Category Label	Code	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
Less than 15 days	1.	7	14.0	22.6	22.6
15-29 days	2.	10	20.0	32.3	54.8
30-49 days	3.	10	20.0	32.3	87.1

50-69 days		4.	1	2.0	3.2	90.3
90 days +		6.	3	6.0	9.7	100.0
Other		7.	8	16.0	Missing	100.0
Not Applic.		8.	2	4.0	Missing	100.0
Missing data		9.	9	18.0	Missing	100.0
Total			50	100.0	100.0	

Mean	2.548	Std Err	0.253	Median	2.350
Mode	2.000	Std Dev	1.410	Variance	1.989
Kurtosis	1.530	Skewness	1.266	Range	5.000
Minimum	1.000	Maximum	6.000		

Valid Cases 31 Missing Cases 19

Frequencies

The overall subjective evaluation of the Toxicology lab shows that, on the average, service is rated as somewhat better-than-adequate. Four respondents (9% of the 45 responding) rated the lab as poor.

3. Medical Examiner's Office. The Medical Examiner's Office is used by 28 of the 37 departments reporting. The percentage of use of each of the departments is displayed in Table b.3.1. As can be seen from the table, the percentage of use by users of this lab varies from 0-40%, with a mean response of 6.5% of total cases submitted to this lab. The relatively small use of this lab is not surprising, given the specialized nature of the work it performs.

Table b.3.1. Percentage of Total Police Evidence Requests Sent to Office of the Medical Examiner

Category Label	Code	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
	0.	1	2.0	3.4	3.4
	1.	6	12.0	20.7	24.1
	2.	1	2.0	3.4	27.6
	3.	2	4.0	6.9	34.5
	4.	4	8.0	13.8	48.3
	5.	7	14.0	24.1	72.4
	6.	1	2.0	3.4	75.9
	8.	1	2.0	3.4	79.3
	10.	2	4.0	6.9	86.2
	15.	2	4.0	6.9	93.1
	20.	1	2.0	3.4	96.6
	40.	1	2.0	3.4	100.0
	88.	8	16.0	Missing	100.0
	99.	13	26.0	Missing	100.0
Total	50	100.0	100.0		

Mean	6.517	Std Err	1.483	Median	4.571
Mode	5.000	Std Dev	7.985	Variance	63.759
Kurtosis	10.900	Skewness	2.995	Range	40.000
Minimum	0.0	Maximum	40.000		

Valid Cases 29 Missing Cases 21
Frequencies

The total number of cases sent to the Medical Examiner is also quite low. A total of 229 cases were submitted by the 24 departments reporting submission, an average of roughly 9 cases per department. *Because of the smaller number of departments reporting and the greater likelihood of skewing these small numbers by the responses of a few larger jurisdictions, it is not possible to estimate a total State submission based on this data.

The evaluation of the labs turnaround time is displayed in Table b.3.2. As shown in the table, average mean turnaround time was approximately 39 days with the median time at approximately 32 days. Only 22 departments (44% of the 50 returns) actually rated this question, giving the impression that response time is either harder to estimate or less predictable.

Note: "Submissions" to the Medical Examiner's office is somewhat of a misnomer, since a submission is a body. In addition, the Medical Examiner has complete control over whether or not analysis is needed and performed.

Table b.3.2. Average Turnaround Time of State Medical Examiners

Category Label	Code	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
	0.	1	2.0	4.5	4.5
Less than 15 days	1.	8	16.0	36.4	40.9
15-29 days	2.	3	6.0	13.6	54.5
30-49 days	3.	4	8.0	18.2	72.7
50-69 days	4.	2	4.0	9.1	81.8
70-89 days	5.	1	2.0	4.5	86.4
90 days +	6.	3	6.0	13.6	100.0
Other	7.	3	6.0	Missing	100.0
Not applic.	8.	11	22.0	Missing	100.0
Missing data	9.	14	28.0	Missing	100.0
Total		50	100.0	100.0	

Mean	2.591	Std Err	0.398	Median	2.167
Mode	1.000	Std Dev	1.869	Variance	3.491
Kurtosis	0.654	Skewness	0.711	Range	6.000
Minimum	0.0	Maximum	6.000		

Valid Cases 22 Missing Cases 28
Frequencies

File Police (Creation Date = 06/14/79) Lab Services

The subjective evaluation of the Medical Examiner's Office shows a mean response of slightly better than adequate by the 32 departments responding. Four (12.5% of the respondents) rated this service as poor.

4. FBI Lab - The FBI lab was utilized by during the past year 32 of the 41 departments reporting on this question. The range of use varies from 0% to 90% of total cases, with a mean of 11.3% of cases sent there by users. The median use is much lower, approximately 5.4%. Table b.4.1. displays these data.

Table b.4.1. - Percentage of Total Police Evidence Requests Sent to FBI Lab

Category Label	Code	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
	0.	1	2.0	3.0	3.0
	1.	6	12.0	18.2	21.2
	2.	2	4.0	6.1	27.3
	3.	2	4.0	6.1	33.3
	4.	2	4.0	6.1	39.4
	5.	4	8.0	12.1	51.5
	6.	1	2.0	3.0	54.5
	8.	3	6.0	9.1	63.6
	10.	4	8.0	12.1	75.8
	11.	1	2.0	3.0	78.8
	15.	3	6.0	9.1	87.9
	20.	1	2.0	3.0	90.9
	33.	1	2.0	3.0	93.9
	60.	1	2.0	3.0	97.0
	90.	1	2.0	3.0	100.0
	88.	8	16.0	Missing	100.0
	99.	9	18.0	Missing	100.0
		50	100.0	100.0	

Mean	11.303	Std Err	3.162	Median	5.375
Mode	1.000	Std Dev	18.167	Variance	330.030
Kurtosis	12.041	Skewness	3.335	Range	90.000
Minimum	0.0	Maximum	90.000		

Valid Cases 33 Missing Cases 17
Frequencies

The total number of cases sent by users to this laboratory during 1978 is given as 735 for the 36 departments reporting. This constitutes an average use of 20

cases per department. Projected over the State, this would translate to a total of 1,820 cases submitted to the FBI lab, very close to the FY 77 specimens record provided by the lab (within 15%). The range of submission was from 0 to 300 cases.

The evaluations of the FBI lab included turnaround time and an overall subjective evaluation. Turnaround time is shown in Table b.4.2. As shown in this table, the mean average turnaround time is approximately 39 days, with a median time of 34 days.

Table b.4.2. Average Turnaround Time of FBI Lab

Category Label	Code	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
Less than 15 days	1.	5	10.0	17.9	17.9
15-29 days	2.	11	22.0	39.3	57.1
30-49 days	3.	8	16.0	28.6	85.7
50-69 days	4.	1	2.0	3.6	89.3
90 days +	6.	3	6.0	10.7	100.0
Not applic.	8.	9	18.0	Missing	100.0
Missing data	9.	13	26.0	Missing	100.0
Total		50	100.0	100.0	

Mean	2.607	Std Err	0.269	Median	2.318
Mode	2.000	Std Dev	1.423	Variance	2.025
Kurtosis	1.558	Skewness	1.344	Range	5.000
Minimum	1.000	Maximum	6.000		

Valid Cases 28 Missing Cases 22
Frequencies

The overall evaluation of services offered by the FBI lab is far better than adequate, with 74% of those responding (N=35) rating the service as excellent. One of the 35 respondents ranked the service as poor. This high rating may in part be accounted for by the fact that the use of this service is much more a matter of choice. Those who might rate the service less adequate may have chosen not to use it.

5. Other Labs - The most common lab mentioned in the other lab section is the New Haven laboratory. However, the number of respondents for any one lab is not adequate to perform the type of analysis performed for the other four labs. Generally, other labs were only used by 22% (N=11) of the departments submitting the survey. The total number of cases submitted to other labs by the 10 departments reporting these statistics was 290, an average of 29 cases per department. However, the New Haven department accounted for 200 of these submissions, lowering the rate to 10 per department for the remaining 9. The low (22 days) mean

average response time and low (15 days) median average may be a reason for using these other labs. As can be expected by the voluntary nature of use, ratings of the other labs was somewhat better than average. Five out of the 50 departments (10%) used private labs in 1978. None spent more than $500 for these services.

While cited as a major factor in determining laboratory submissions in a number of national studies, distance does not appear to be a major factor correlated with number of submissions, means of delivery or overall satisfaction in Connecticut. This is probably used due to the small size of the state. Labs are rarely more than 50 miles distant from the submitting police department in Connecticut. The beyond 50 mile yardstick is a commonly used national standard.

6. Conclusions - A number of comparative conclusions can be drawn from the survey of use and evaluation of the major labs. Prior to reviewing these conclusions, it should be noted that, in the case of Medical Examiner's office and Toxicology Lab, the choice of whether or not to use the lab and what lab to use is not optional. Only in the case of the State Police and FBI labs can departments actually be said to have a choice on when to use a lab and what lab to use. These conclusions are listed in outline form below:

* The State Toxicology Lab is by far the most frequently used lab. This lab alone accounted for over 70% of the total cases submitted to the labs by the departments reporting (4,344 of 6,133 cases).

* The reported use of the FBI lab is slightly larger than that of the State Police Lab, although the number of departments not using this lab at all is approximately 10% more.

* The mean average turnaround time of all of the four major labs ranged from 30-39 days, with the State Police Lab rated slightly faster than the others. The other labs were rated as much more timely in returning responses, with a mean average of only 22 days. These relatively slow response times imply that the use of lab results in the course of an investigation would in general be quite difficult.

* None of the labs received consistently low subjective ratings. Subjective ratings were generally most positive in relation to the State Toxicology Lab, least positive with the respect to the State Police Lab. The low similarity between this response and turnaround time would indicate that this is not the most important factor which is taken into account when rating the labs.

* Distance is not a major factor in relation to rate of submission evaluation of labs in the state. The small size of the state makes distance a minor concern.

(Note: Specific improvements were suggested in narrative form. These are noted in section g., which follows).

c. Evidence collection procedures and capabilities of the departments

The Department's evidence-gathering capabilities were assessed in a variety of different ways. Among these are the number of officers and civilians involved in evidence collection exclusively, the number who have evidence technicians involved in evidence collection, the types and amounts of training offered, the use of forensic science trainers, the chain of command in determining evidence submission, the self-evaluation of the department's own collection methods and the need for lab personnel to assist in evidence collection. A description of the responses to each of the items is given below.

Only 2 of the 50 agencies responding to the survey indicated that their department was not responsible for the collection of physical evidence in their jurisdiction. However, only 3 departments indicated the use of full-time evidence-gathering personnel (the 3 with their own laboratories); two of these 3 also have civilians involved in evidence collection. The clear picture is that most departments assign evidence collection as one of a number of duties for most police personnel. Most of the personnel involved in collection are sworn officers (only 5 departments of the 50 reported only civilian involvement). A strong minority (20%) of the departments reported the use of officers officially designated as technicians in the evidence collection process. The use of evidence technician correlated strongly with the number of full-time officers (T=4.58, probability=.00), population of the town (T=5.17, Probability=0.0) and number of Part I crimes (T=4.66, Probability=.00). The clear implication is that evidence technicians are generally available when the community, crime and police force are of sufficient magnitude to warrant this specialization of function.

Training responses varied widely. The most common forum for training, on-the-job training, is largely informal. Less than 40% of those indicating that there was on-the-job training (N=44) described this training as formal. Recruit, in-service and other training in this area were reported by 70% of the departments. Only 36% reported training by a lab. The number of mandatory training hours for detectives was a mean average of 17.6 hours; patrol officers was 12 hours; technician training averaged 29 hours. The median average for each of these groups was less than 1/2 hour, however, because almost half of the departments reported no

mandatory hours for any of the 3 groups. The training available from forensic scientists was almost uniformly ranked as excellent by the 8 departments indicating that they had such training. This means that 42 departments, or 84%, had no such training. Training by labs, if available, was rated as having potential benefit by all those responding.

The decision as to who submits evidence varies widely. The most common policy is to assign evidence submission to the head of detectives, but this is only the case in 27.7% of those departments responding (N=47). The Chief, the Investigating Officer and the Shift Commander are the next most common decision-makers, each accounting for approximately 19% of the departments responding. Thirty-seven of the 44 departments responding would prefer lab personnel to be dispatched to the scene to assist in evidence collection.

The major conclusions to be reached from this analysis of procedures and capabilities in the area of evidence collection and handling are:

* Formalized training in this area by qualified laboratory people is relatively rare, but most said it would be beneficial.

* Training procedures and types vary widely by department.

* Most agencies utilize sworn officers who have other duties in evidence collection, although a substantial minority have designated evidence technicians (not full-time).

* The departmental policies on evidence submission vary widely.

* Most departments would prefer direct laboratory assistance in the evidence-gathering phase of investigations.

d. Rate of use of evidence for Part I crimes

The rate of use of evidence in police work related to Part I crime varies widely depending on the nature of the crime involved. Crimes such as homicide and rape tend, by their violent nature, to result in intensive evidence collection. Drunk driving and narcotics cases also depend heavily on the use of evidence. In general, evidence is the essential proof in these cases. Remaining offenses tend to involve less frequent collection of evidence, either because of lack of availability of evidence in the case or lower priority for use of limited police resources to collect evidence or both. The chart below rank orders from highest to lowest the rate of use of evidence by police in Connecticut for various offenses.

Table d.1
Rate of Evidence use by Connecticut Police Departments
for Selected Offenses

	Mean Percentage Offense	Mean Percentage evidence use	Median Percentage evidence use
1.	homicide	95%	96.4%
2.	rape	90.7%	96.3%
3.	narcotics	81.7%	97.8%
4.	drunk driving	77.9%	96.3%
5.	arson	51.1%	51.3%
6.	robbery	31.4%	20.5%
7.	aggravated assault	28.0%	17.5%
8.	burglary	27.6%	19.9%
9.	larceny	8.3%	4.7%
10.	motor vehicle theft	5.3%	.5%

The clearance rates for the crimes involving physical evidence analysis tend to be much higher than those involving no evidence. Caution should be taken in interpreting this result since the top two crimes also make more intensive use of police investigative resources generally (and would therefore tend to have a higher clearance) and the next two on the list are only known violations when the evidence is in hand. It could not reliably be stated, therefore, that increasing use of forensic laboratories "causes" a higher clearance rate; the nature of the offense and the police work involved appear to be more significant factors.

The idea of a relationship between clearance rate and rate of evidence use was, however, tested on an offense by offense basis. For the majority of offenses, no relationship was discerned between police departments reporting a higher clearance rate and those reporting a higher rate of evidence use. In three cases, two of which were highly significant, a positive correlation was noted. These three are: drunk driving (correlation (R) = .55, R^2= .30, significance = .0007), narcotics (correlation (R) = .74, R^2 = .55, significance = .0000) and arson (correlation (R) = .32, R^2= .087). In one case rape, a negative correlation was noted (correlation (R) = -.35, R^2=.12, significance = .051). The positive correlations for the first three results would tend to indicate that departments utilizing evidence on the most regular basis also tend to clear the highest percentage of these types of cases. Given the strong relationship between physical evidence collection and clearance for each of these three areas, these results are easily seen. The negative correlation in the rape area is probably due to the fact that only 2 departments in the sample reported a less than 100% evidence collection rate and these two departments both had 100% clearance

rates. In addition, the actual number of reported cases are very low in this area. It should not be inferred from this that rape cases are cleared without use of physical evidence.

The major conclusions to be drawn from this section are:

* The rate of use of physical evidence by a police department varies widely by offense type. The relative amount of police resources and time spent on an offense and the availability and necessity of collection of evidence in the offense are logical explanations for this disparity.

* In a number of specific offense categories, especially drunk driving and narcotics, the use of evidence correlates highly with the rate of clearance by police departments.

e. Utility of Physical Evidence in Police Work

A series of questions was structured to analyze the points at which police feel that evidence aids their work and the types of evidence that most frequently produce useful results. An initial rough indicator question asked whether submissions to laboratories could be expected to increase, decrease or remain the same in the coming year. Not suprisingly, eighty-four percent (N=38) of the 45 departments responding to this question indicated that they anticipated a rise in requests.

The usefulness of various types of evidence ranged from certain types routinely described as most useful to others described as seldom useful. Given the capacities of the State's lab system, the results are not suprising. Table E.1. gives a rank-ordered listing from the types of evidence ranked most useful to those ranked least useful.

Table E.1.
Rank Ordered List of Police--Perceived Utility of Evidence in Investigation

		Means Usefulness Rating
Most Useful	1. Controlled Substance	4.449
	2. Alcohol/drug driving	4.417
	3. Fingerprints	3.646
	4. Physiological materials	3.082
	5. Weapons	3.041
	6. Physical match (e.g. toolmarks)	2.796
	7. Document materials	2.667
Least Useful	8. Structural materials (e.g. paint)	2.531

9. Transfer materials (e.g. soil) 2.367

The results illustrated on this table may be grouped into four groups. The most useful group, chemicals, are also the most widely tested. Alcohol and drug testing is primarily done by the State Toxicology lab. The second group consists of Item #3, fingerprints. These are also widely tested, largely by the police departments themselves. Perhaps in recognition of some of the problems of obtaining and matching prints, these are not quite as useful (or as immediately conclusive) as the tests in group 1. The third group includes physiological materials and weapons. The final group consists of physical match evidence, documents and structural and transfer materials. The police departments in the sample clearly consider the use of these results to be the most rare. The lesser utility of items in these final categories may be further support for the idea that evidence is difficult to obtain and is not commonly analyzed.

The final set of questions in this area analyzed the use of evidence within the various stages of the investigative process. The five areas examined including their mean usefulness rating, are ranked as follows:

1. Cause of death determination (3.60)
2. Linking a suspect to a crime (3.38)
3. Development of leads (3.04)
4. Elimination of suspects (3.02)
5. Reconstruction of events (2.88)

This listing is also consistent with other collected data. Certainly the slowness of response time leads to evidence being more useful in the later stages of the investigative process. The cause of death determination and linking of an existing suspect to a crime lend themselves to this explanation. However, this explanation cannot be stretched too far, since the development of leads is ranked third most beneficial use of evidence; this is required the earliest in time of the five statements. (It should be noted that the elimination of suspects, #4, was almost equal to the development of leads). The fact that reconstruction of events is placed last on the list may reflect a more general feeling that, in the majority of evidence-related cases, reconstruction of events is not as much related to the physical evidence.

General conclusions from this section on the perceived utility of evidence in police work include the following:

* Police generally see the role of evidence in their work as increasing.

* The perceived utility of various types of evidence correlates highly with the frequency of its use. The perceived utility of drug, alcohol, and fingerprint evidence is relatively high. Less often used physical evidence is perceived as less useful to police investigation.

* The most useful place of evidence in the current investigatory process is in the later stages, either after a suspect is identified or in determination of cause of death. Evidence is more rarely used to help reconstruct events.

f. Recommendations for Improvement

Many of the recommendations for improvement of the lab services were given in narrative form. A summary of these responses is given in Section g.

The only survey question which requested police to examine the future in non-narrative terms was a question on the basic structuring of forensic science services. The 48 respondents to this question did not reveal a basic agreement over what should be done. The largest percentage (46%, N=22) felt that a single lab should be established. Eleven respondents (23%) favored a bolstering of the resources available to the current labs with no structural change. Seven (15%) favored setting up a state coordinating commission. Five (10%) favored some other change. The remaining 3 (6%) felt that laboratory services are fine as they are and that no change was needed. In summary, the responses:

* favor, by a margin of approximately 2 to 1 some sort of structural reorganization of State lab services

* do not agree on the type of change, although most of those favoring change would prefer a single lab

g. Narrative Responses of Police

Thirty-six of the forty-eight police departments who responded to the lab services questionnaire made some comment at some point on the questionnaire. While in some cases answers were very widely scattered, a few central concerns did emerge as predominant.

The largest number of responses, twenty-four, was to question 29, which asked for suggestions on ways of strengthening forensic laboratory services. Like many judicial department staff, many departments saw a need for committing greater resources to lab services (twelve answers) and for speeding up turnaround time (nine answers).

There was also a strong current of opinion which would like to see regional labs (ten answers, although only eight under question 29). Many of the advocates of regional laboratories see them as a way of reducing the delays and the strains on manpower involved in dealing with labs some distance away.

In addition to these concerns, six departments expressed a desire for more training in forensic methods, four wanted one central forensic lab for the State, three wanted more technical help at crime scenes, and three wanted to strengthen their own ID divisions. No other suggestion was mentioned more than once.

The second most frequently answered question was No. 6, which asked for areas in which the laboratories listed in the previous question needed improvement. Again, by far the most common concerns were turnaround time and a desire to see more resources committed to certain labs. The chart below shows the distribution of these concerns among the various labs.

Chart g.l.
Classification of Police Suggestions for Lab Improvements

Lab	No. desiring faster turnaround	No desiring more resources
State Police	4	5
State Toxicology	6	4
FBI	4	-
State Medical Examiner	6	-
"all"	2	-
New Haven PD	1	-

There was also a scattering of comments on other aspects of lab operations. Four of these comments were on the State Medical Examiner's office (the main objection was unclear and/or inconclusive reports) and three on the State Police lab (one on quality of reports, one on inconclusiveness of reports, and one expressing a desire for lab personnel to help at crime scenes).

Four other questions drew a significant number of comments. There were fourteen responses to questions 30 or 31; these were widely scattered. Two respondents wanted more information on lab services to be disseminated to the general law enforcement community, while two others wanted more lab resources. No other suggestion was mentioned more than once.

Question 9, on investigation of deaths, drew nine responses. Six criticized the State Medical Examiner's operation, as either understaffed, inexpert, having too much discretion, or tying up police officers for long periods. Others were widely scattered. Only one response criticized the police—a pronounced contrast to the responses of judicial department staff.

The only other question to draw as many as five responses was No. 23, which had to do with the possibility of laboratory personnel assisting police at crime scenes. Five of the departments which answered the question specified particular types of crimes with which they would like assistance—generally the more serious and/or violent crimes.

In summary, the narrative responses indicate:

* a strong sentiment toward the need for more resources in the lab services field

* a strong minority who feel that a regional lab structure should be developed

* a high level of concern about turnaround time

* a strong minority of concern about the manner of death examination in the State

h. Summary and Conclusions

The police survey response points to a number of needs and concerns which must be addressed before a well-functioning forensic science service system may be developed. Among the most significant policy issues are the following:

1. Significant differences between departments exist in the evidence resources which are brought to bear. In many cases basic capacities such as fingerprint identification are lacking.

2. The State's use of the FBI lab as a primary, rather than a backup, resource persists.

3. The turnaround time of state labs appears to be far too slow to assist in the investigation process. In some cases, it may even be slow enough to result in court delay of cases with arrested suspects.

4. Departmental policies on evidence submission are not well-organized in many cases. Training

of police is inconsistent. Contact with lab personnel in a training or evidence gathering capacity is rare.

5. Distance from the lab is not a factor in the rate of submission of evidence in Connecticut.

6. An increase in use of evidence and labs is foreseen and favored.

7. Structural changes are, in general, seen as being necessary to achieve any significant increase in use, turnaround time and coordination with police.

8. No matter what changes are made, police feel that more resources will be required to make evidence services more responsive to their needs and more available to them.

These eight policy-related conclusions help provide a basis for examining the changes necessary in Connecticut's forensic science service system.

B. Connecticut Judicial Department and Forensic Science Services

1. Description

As the primary users of the output of forensic laboratories, the perceptions and needs of judges, district attorneys and defense attorneys are clearly necessary to any consideration of what should be done to improve these services. A survey was sent to all criminal court judges, state's attorneys and public defenders. The purpose of the survey was to assess three major issues:

1. The frequency and type of court use of forensic labs currently perceived;

2. Perceptions about and relationship with individual labs;

3. Suggestions for system improvement.

These three areas together give a general overview of the perceived utility of forensic science services on the part of court-related personnel. As the ultimate users of forensic science services, these perceptions are important to a systematic consideration of forensic laboratory services.

2. Methodology

A survey was mailed to all state's attorneys, public defenders and judges of the Connecticut Superior Court. In all, 230 surveys were distributed and 95 were returned, a response rate of slightly

over 41%. This is a good response for a mailed survey. Response rate ranged from a high of 45.2% among public defenders to 42.5% among judges and 36.7% among prosecutors. The process used consisted of an original mailing from the Justice Commission followed by a reminder letter from the heads of each of the three units.

Surveys were coded and placed on computer tape. This allowed for easy handling of the large amount of data generated. Analysis consists of straight-forward frequency counts and testing of various correlations of the data. Since generally the data were non-numeric, the relative amount of usable comparative analysis was less than the police user survey.

*The term judicial as used in this text, will refer to all three groups: prosecutors, public defenders and judges. When only judges are meant, the term judges will be used.

3. Results

This results section consists of a general analysis of the frequency of responses of all judges, prosecutors and public defenders returning the survey.

The responses to the survey have been grouped into the three areas outlined in the description section.

a. Frequency and Type of Current Court Use of Labs

The most general question in the area of frequency and type of court evidence use was a request to estimate the frequency of overall evidence use in court. The overall average rating of evidence use was 6% of the total court cases. However, the range of responses was quite broad, with four of the 83 respondents (5%) indicating that evidence was used in over 75% of the cases they are involved with. There was a tendency for prosecutors to rate the percentage of evidence cases higher than the other two groups, perhaps because of their greater contact with the investigative process. Table a.1. below displays the results.

Table a.1.
Percentage of Judicial Department Cases
Involuntary Use of Scientific Evidence

Category Label	Code	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
5% or less	1.	38	40.0	45.8	45.8
6%-25%	2.	22	23.2	26.5	72.3
26%-50%	3.	15	15.8	18.1	90.4
51%-75%	4.	4	4.2	4.8	95.2

76% or more	5.	4	4.2	4.8	100.0
Missing data	9.	12	12.6	Missing	100.0
Total		95	100.0	100.0	

Mean	1.964	Std Err	0.124	Median	1.659
Mode	1.000	Std Dev	1.131	Variance	1.279
Kurtosis	0.566	Skewness	1.109	Range	4.000
Minimum	1.000	Maximum	5.000		

Valid Cases 83 Missing Cases 12
Frequencies

This broad information on use of lab results in cases was then broken down to address the use of results at various stages of the judicial proceedings. Table a.2. below ranks in order the responses to these questions from the stage where evidence results are considered most beneficial to the stage where they are considered of least aid.

Table a.2.
Rank Ordered Listing of Perceived Usefulness of Lab Results in Judicial Proceedings

	Stage of Proceedings	Mean "beneficial" Rating
Most beneficial	1. trial	1.587
	2. in plea bargaining	2.013
	3. to issue a warrant	2.810
	4. to obtain indictments	2.877
	5. at preliminary hearing	3.013
Least beneficial	6. at arraignment	3.346

The results of this rank-ordering clearly reveal that lab results are most likely to be used in the later stages of the actual court proceedings. The exception to this rule is the issuance of a warrant which, since it usually follows a police investigation, often could contain a lab report. The value in plea bargaining is ranked very high, perhaps because evidence use at the stage can easily result in a plea. The most common example would probably be drug-related cases.

As could be expected, some differences exist between the three subgroups in perceived utility of results. Taking judges as the norm (because of the relatively larger number of respondents, the results shown tend in that direction), state's attorneys were generally more positive about the utility of evidence at every stage. In particular they were much more positive about the use of lab results in obtaining indictments. (mean score = 2.538 for 26 prosecutors vs. mean score 3.056 for 36 judges) Given the closer relationship of the prosecutor to the investigative process, these results are not suprising.

The public defenders tend to regard lab results at the indictment stage as well as results at the preliminary hearing as even more important than the prosecutors. Use of lab results at arraignment is perceived as having somewhat less utility and use of results at the warrant stage is perceived as far less useful than either of the other groups. Given the role and timing of involvement of the public defenders the tendency to place a higher value on these intermediate steps in the court proceeding is not suprising.

A number of questions focused on the relative availability and use of lab results by the two sides, prosecution and defense. (Table a.3. below displays the overall rating of the percentage of total cases in which the prosecution presents evidence is presented by the defense rather than the prosecution.) As the table shows, the use of lab results by the prosecution side of the adversary proceedings is a mean of approximately 80% of the cases (N=80). The median use is 83%. This means that, overall, prosecutors utilize lab results at least 4 times more often than defense attorneys. Few differences were noted between the three groups, indicating wide agreement with this perception.

Table a.3.
Percentage of Evidence Use
Originated by the Prosecution

Category Label	Code	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
46-50%	10.	3	3.2	3.7	3.7
56-60%	12.	1	1.1	1.2	5.0
61-65%	13.	1	1.1	1.2	6.3
66-70%	14.	3	3.2	3.7	10.0
71-75%	15.	16	16.8	20.0	30.0
76-80%	16.	13	13.7	16.2	46.2
81-85%	17.	1	1.1	1.2	47.5
86-90%	18.	19	20.0	23.7	71.2
91-95%	19.	11	11.6	13.7	85.0
96-100%	20.	12	12.6	15.0	100.0
Missing data	99.	15	15.8	Missing	100.0
Total		95	100.0	100.0	

Mean	16.912	Std Err	0.270	Median	17.605
Mode	18.000	Std Dev	2.419	Variance	5.853
Kurtosis	0.642	Skewness	0.814	Range	10.000
Minimum	10.000	Maximum	20.000		

Valid Cases 80 Missing Cases 15
Frequencies

A number of other questions assessed this subject further. 65% of the 60 persons responding felt that the defense has adequate access to crime labs; 67% felt that there was equal effort to exonerate and incriminate; 62% felt that there were adequate defense funds for the use of independent labs. Respondents seemed somewhat less certain about the number of labs available for the defense, with 57% of the only 37 respondents feeling that this was adequate. As could be expected, the results among public defenders were the opposite of the norm in every instance. The strongest reversals were on the questions of access and equal effort to exonerate and incriminate, where 83% and 78% percent, respectively, of the public defenders felt that this system was not adequate. A chi-square test on this showed the variation among the groups to be highly significant (X^2= 25.78, significance = .0000 for defense access).

Another picture of the defense access question was provided when the perceived impact of prosecution and defense evidence on the verdict was compared. As predicted from the above responses, respondents tended to rate the use of lab results by the prosecution as more persuasive than their rating of use by the defense. The public defenders did tend to rank the influence of defense evidence more positively than did the other two groups.

Glimpses of the use and utility of forensic evidence in court were provided by three other questions. In general respondents were evenly divided on the question of involvement in a case within the past two years where scientific evidence played a major role. Judges tended to be less able to recall such a case than other of the groups of attorneys. Respondents overwhelmingly (89%, N=71) felt that jurors can comprehend scientific evidence; most also felt that Supreme Court decisions had led to a greater emphasis on evidence use in recent years (65%, N=62).

Comparative analysis of the frequency of perceived use of forensic evidence found little or no correlation between this and the perceived impact of evidence on the verdict, adequacy of defense access or ratings of the services offered by the labs. This would appear to indicate that the rate of use of lab services is minimally dependent on factors related to the lab service system. A major reason for this may be related to the lack of contact with labs described more fully in section below.

In summary, a clear picture of the overall use of evidence in Connecticut's courts emerges. The following outlines the key points made in this description.

- The use of lab results visibly affects a relatively small percentage of court proceedings (6% on average). The greater

involvement of prosecutors in the investigative process probably involves them in evidence use more frequently. (They estimate approximately 15% of their cases involve evidence use.)

- Lab results are generally perceived as most beneficial to the court in the later stages of its proceedings and in those stages most connected with the investigative process (i.e. issuance of a warrant). Each group tends to see the relative importance of evidence as more important at stages where they have greatest involvement.

- Prosecutors tend to utilize lab results at a rate at least four times as frequent as defense attorneys.

- Overall, the current situation is perceived as being adequate for defense purposes. However, public defender responses differ radically, alleging a lack of equal access to labs and of equal attention to exonerating and incriminating defendants. Defense lab testimony impact on the verdict was rated by all parties as less than prosecution lab testimony.

- A tendency exists to see lab results as having become more important to court proceedings, perhaps as a result of Supreme Court decisions. Judges tend to have less case-by-case awareness of the initial nature of lab testimony than attorneys. All felt positively toward the ability of jurors to comprehend lab results.

b. Perception About and Relationship With Individual Labs

Two initial questions were asked to determine whether respondents were aware of current evidence procedures and were able to rate the evidence collection process. When asked who was responsible for the collection of evidence at death scenes and at other crime scenes, almost all of those who responded were aware that the police are the primary evidence collection agents in Connecticut. However, over 50% of those queried did not respond to these questions, indicating an underlying high level of uncertainty.

The overall rating of evidence collection procedures was slightly less than adequate by the 63 persons responding to this question. (Because of the level of uncertainty expressed in answer to the other two questions, however, this result will require further analysis to determine its actual strength among respondents who are at least familiar with who is responsible for evidence collection.)

Most respondents (81%, N=75) would prefer evidence to be collected by evidence technicians.

In terms of the individual labs, table b.l. rank orders the satisfaction expressed with each lab from the one with which respondents are most satisfied to that with which they are least satisfied. At most 74% and in one case only 29% of the total number of survey respondents answered these questions, indicating a potentially high lack of specific knowledge about the labs. No lab-specific response rates among the judges were particularly high.

Table b.l.
Rank Ordered Satisfaction With Lab Services

	Lab Rated	Mean Rating	Response Rate (%; No. of Respondents Total Sample
1.	State toxicology lab	1.643	74%, N=70
2.	F.B.I. lab	1.643	29%, N=28
3.	State Police Lab	2.466	61%, N=58
4.	State Medical Examiner	2.638	61%, N=58

Other labs were evaluated by only nine of the respondents. When used, these tended to be evaluated very highly (mean satisfaction index of 1.222). This high rating could be a reason for the use of another lab.

As can be seen from the table, both the State Toxicology Lab and F.B.I. lab have high satisfaction indices. The other two labs are both rated as less adequate by those responding. The results on the question of how good a relationship respondents have with the labs fall into the same pattern, with less spread between the top and bottom responses (1.313, F.B.I. - to - 1.630, Medical Examiner). On this question, respondents were on the whole less critical.

Prosecutors tended to offer generally higher ratings of the labs and of their relationship with lab personnel than either of the other groups; public defender ratings were generally lower. These results may correlate with the question of access to the labs (i.e. the less access, the lower rating). In particular prosecutors tended to feel substantially more positive about the state police lab, although still rating it below the F.B.I. and Toxicology laboratories.

When asked about conferring with lab personnel, respondents indicated an overall tendency not to confer. If

they confer at all, pre-trial conferences and interpretations of results were the two most common occasions upon which discussion took place. Rates of conferring do not tend to match with ratings of the labs, either positively or negatively. The Toxicology Lab and State Police lab appear to do slightly more conferring than the other two. Judges as a group do far less conferring than either group of attorneys.

The subjective rating of the individual lab in most cases appears to have no significant relationship to the rate of conferring with the lab. The one exception to this is the FBI lab where the rate of conferring on pre-trial and lab result interpretation appears to be significantly correlated with the rating given to the lab (Kendall's Tau C = .33, significance = .0398 on interpretation, Kendall's Tau C = .38, significance = .0287 on pre-trial). In the case of the FBI lab, those who confer are also those who rank the lab most highly. The reasons for this are not readily apparent from the data.

As can be expected from the above results, responses to the questions of comparing state labs with F.B.I. lab were generally that they (not statistically significant) are comparable, with a tendency toward rating the F.B.I. lab as superior. Responses of prosecutors were the most negative toward state labs.

Forty-three persons responding indicated that they feel lab resources are directed toward offenses which have the greatest benefit to the judicial system, although the low level of response (51% of survey respondents) shows that a high number had no opinion. Seventy-five percent of the 66 respondents to the question about death investigations are satisfied with the way this is handled. Public defenders are somewhat less positive than the other two groups in this area.

In summary, this evaluation of the current lab services system by members of the judicial department, reveals the following points:

- There is probably a high level of uncertainty and low level of contact about the specifics of evidence collection and processing, particularly among judges.
- The State Toxicology Lab and F.B.I. Lab are generally rated as better than adequate. The State Police Lab and the State Medical Examiner's office receive lower ratings. The reasons for this are not clear from the survey.
- Prosecutors generally are more favorable toward the individual labs; public defenders are generally less favorable.

- Altogether respondents do not indicate a high level of dissatisfaction with the lab/judicial relationship.

c. Suggestions for System Improvement

A number of questions were structured to determine whether or not various improvements in lab services were deemed necessary. Table c.1. rank orders the improvement felt to be necessary in the labs. As can be seen, the demand for specific improvements appears to be relatively low, except in the area of response time. This may in large degree be due to the construction of this portion of the survey, in which no-responses cannot be differentiated from "does not need improvement: That is, those items checked clearly are indicated as needing improvement; those items not checked may indicate either indifference/"don't know" or no need for improvement.

Table c.1.
Percentage of Respondents Indicating Need for Specified Laboratory Improvements

	Area of Concern	% Indicating Need for Improvement	
1.	Response time	38.9%	N=37
2.	Equipment	16.8%	N=16
3.	Distance from users	15.8%	N=15
4.	Facilities	14.7%	N=14
5.	Results	10.5%	N=10
6.	Performance in court	10.5%	N=10
7.	Training	9.5%	N=9
8.	Attitude	8.4%	N=8
9.	Administration	5.3%	N=5
10.	Security and safety	4.2%	N=4

Because of this, the responses primarily serve to gauge the relative felt need for improvement between the items and only secondarily serve to indicate an indication of the absolute felt need among those familiar enough to assess this: As the table indicates, response time is far the greatest concern; when judges are removed, almost 50% of the attorneys checked this need. Next most mentioned problems were equipment, distance from users and facilities. Security and safety and administration seem to be relatively infrequent concerns.

Respondents overwhelmingly favored greater emphasis on evidence collection in the future (94.6% of those responding, N=70). However, the type of action to be taken in the evidence area received relatively little agreement. Over 70% of those responding felt the need for some sort of systemic change (43 of 61 respondents).

The majority of these respondents support a single lab (N=27); however, this group constitutes only 44% of the total respondents. Prosecutors, perhaps because of their closer relationship with existing labs, were the least-oriented in this direction. Responses gave somewhat more support for bolstering individual labs (40% of the 20 prosecutors responding favored this alternative.)

In summary, a number of suggestions for improvement emerge:

- Response time is rated as the most important individual area needing improvement. Equipment, distance from users and facilities are also areas of concern.

- Prosecutors, judges and public defenders express little agreement on how to reorganize labs. Although a substantial majority favored a structured change in the system, agreement on the extent and type of this change is not clear.

d. Narrative Comment

1. Judges

Of the fifty-five, thirty-one judges responding entered some additional comment or comments on the lab services questionnaire. There were widely scattered comments, with only two questions drawing more than five responses. One was question 17, which asked for the respondent's experience of cases within the last two years in which scientific evidence played a major role. The other was question 21, which asked what could be done to improve laboratory services in Connecticut. In answer to question 17, judges listed nineteen different cases or groups of cases in which scientific evidence played an important role. One was a civil case, while two episodes involved acquittals - one in which two burglary prosecutions failed, in the judge's opinion, because of the failure of the police to check for fingerprints, and another case in which unspecified scientific evidence presented by the prosecution failed to convince a jury. In three responses the outcome of the case was not clear, while in thirteen instances the case or cases apparently ended in conviction connected with scientific evidence presented.

The cases which judges mentioned as involving scientific evidence involved a very large number of serious and/or violent crimes. The eighteen criminal cases or types of cases mentioned included foun homicides, three sexual assaults, and three robberies.

In seven other cases the exact nature of the offense was unclear from the judge's comments, but at least four of the seven involved the use of violence and/or deadly weapons. The one remaining episode was the two burglaries mentioned above. This tendency toward remembering evidence use in violent crime cases may, of course, be exaggerated by the fact that serious crimes are more likely to lead to trials than others, and possibly because serious crimes may be more likely to stick in a judge's mind.

The type of evidence presented varied widely; even the most common types (ballistics and fingerprints) were specifically mentioned only three and two times, respectively. In many instances, it was difficult to tell what the precise nature of the evidence was.

Seventeen judges commented on question 21. By far the strongest concern which emerged from this question was a desire for the commitment of more resources to the laboratories serving the criminal justice system. Eight judges said the labs should get more personnel, two said more equipment, and one said more money. The main purpose of committing more resources would seem to be to speed up turn-around time; eight judges mentioned this as an objective, and several explicitly connected it to the commitment of more resources. In addition to this concentration, there were ten other responses to question 21 each of which was only mentioned once.

Answers to other questions were widely scattered. The only other question to draw as many as five responses was question 14, which asked whether judges were satisfied with the way in which deaths were investigated in their jurisdictions. Most judges answered "yes", but those who answered "no" stated why. One said that the police in general often do a "sloppy job"; and said that the police are sometimes more careless when the suspect is a juvenile than when he is an adult. Two judges singled out particular police departments as generally doing a poor job. One judge who answered the question "yes" said that the answer only applied to juvenile cases, since he had no experience with adults.

2. State's Attorneys

Twenty-four of the twenty-nine state's attorneys responding entered some kind of comment on their responses to the lab services questionnaire. Like the judges, state's attorneys concentrated most of their comments on question 17 (cases in which they

had been involved), 21 (suggestions for improvement), and to a lesser extent, 14 (investigations of deaths).

Fifteen state's attorneys answered the question about cases in which they had been involved (omitting one who clearly misunderstood the question). In six answers, it was unclear what kinds of offenses were involved. The other nine mentioned twelve different cases or groups of cases, and although there was a large concentration of personal crimes of violence the offenses described were more diverse than those mentioned by the judges. There were four homicides, and one case each of negligent homicide, election-law violation, mischief, kidnap-rape, misconduct with a motor vehicle, sexual assault, falsely reporting an incident, and arson.

Eleven answers specified the type of evidence involved; there were four mentions of fingerprints, two of ballistic evidence, and one each of expert engineering testimony, handwriting analysis, analysis of blood, alcohol readings, semen, voice analysis, and blood and hair. This adds up to thirteen, because some responses mentioned more than one type of evidence.

Cases mentioned by state's attorneys overwhelmingly resulted in conviction; only two mentioned cases which did not.

Sixteen state's attorneys had some suggestions about improving lab services; most were listed under question 21, with two listings under question 22. The answers were more scattered than those of the judges. Seven answers showed a concern for improving on-the-scene collection of evidence; some by improved police training, some by other methods such as mobile labs or getting lab personnel out in the field. Three respondents wanted to commit increased resources to laboratories, while three others wanted to see turnaround time reduced — two concerns which may, of course, be related. Two wanted to set up local or regional labs -- an idea which, as we will see, also has a good deal of support among the police. The other answers were widely scattered.

Eight state's attorneys commented in question 8; as a group state's attorneys showed more dissatisfaction with investigations of death than did judges. Seven criticized some aspect of police performance — either general lack of expertise, failure to use good reporting or chemical testing methods, and failure to obtain sufficiently probative statements from witnesses. The one who did not criticize the police was dissatisfied with the performance of the coroner.

Comments in response to other questions were widely scattered, but some may be worth mentioning. Two state's attorneys said that defense attorneys should have no access to government laboratories, in disagreement with public defenders who want expanded access. One said that scientific evidence was generally more useful at the plea-bargaining stage than at actual trials. Another said that the state labs spent too much time analyzing small amounts of marijuana -- an interesting fact because one public defender agreed with him.

3. Public Defenders

Eleven of the fourteen Public Defenders responding made some comment on the lab services questionnaire. Most of their concerns were in the same general areas of those of the judges and state's attorneys, but their views of some questions were sharply different.

Five public defenders mentioned cases they had been involved in which had involved scientific evidence. One said "mostly fingerprints", and one said scientific evidence had led to an arson conviction. The other three mentioned cases which did not lead to conviction; one said scientific evidence had led to the dismissal of a homicide charge, one mentioned a lab finding which, contrary to a police report, found no narcotic drug, and one mentioned a case involving voice prints which was nolled because of the unavailability of expert testimony.

The greatest concentration of public defender comments was on suggestions for improvement. There was some support for the popular panaceas of more resources (two) and quicker results (one). The most common concern, however, reflects the situation of public defenders as adversaries of the police, prosecutors, and their allies. Four public defenders said that there were problems with access to government labs and their test results, while one said that the defense got adequate access "with a struggle." Another wrote across the front of his questionnaire, "I do not believe that in an adversary system one lab can serve two sides." Six public defenders in the sample see the government labs as largely part of the other side in the adversary system.

Comments about death investigations were less frequent, but reflected a similar situation. Whereas judges and state's attorneys who criticized death investigations thought that they were incompetent, public defenders who criticized them thought that

they were biased. Four public defenders commented on this question; and three said that the police and/or coroners were prosecution - oriented and unwilling to look for or consider exonerating evidence. One public defender based his criticism on lack of investigative expertise.

Other public defender comments were few and widely scattered -- although one agreed with the prosecutor who thought that the state labs spent too much effort on minor drug cases.

4. Contrasts Among Narrative Comments - Summary

1. Public defenders differed from prosecutors in that a majority of specific cases which they mentioned had not ended in conviction, while virtually all cases mentioned by prosecutors ended in conviction. Judges were somewhere in between.

2. On both overall performance of laboratories and on investigations of death, the main complaints of judges, prosecutors, and police focused on slow turnaround time, inadequate resources, and general lack of expertise. (Turnaround time may be largely a symptom of the other problems mentioned.) The main complaint of public defenders was that laboratories and/or death investigations were in one way or another biased towards the prosecution.

3. On death investigations the judicial department (if they had any complaints) tended to be critical of the police, while police tended to be critical of others involved.

4. There seemed to be some differences between judges and prosecutors in types of cases recalled. Judges mentioned overwhelmingly serious and/or violent crimes; while prosecutors also mentioned many such crimes, the cases they remembered were more diverse.

e. Summary and Conclusions

As the major consumers of the results of forensic science services, the input of the Judicial Department is critical to the development of a plan for service improvement. In a supply and demand situation, consumers could pick appropriate providers based on a rational assessment of quality, cost and other factors. This choice mechanism is a direct vehicle for feedback. Since the

forensic science field allows for limited choice of providers this type of feedback exists only to a limited extent. Other mechanisms for the regular obtaining and integration of feedback such as that gained in this survey must be found.

To summarize the results of the survey, the following policy-related issues have emerged:

- Lab results are most used by the court in the later stages of their proceedings or by prosecutors following a police investigation. This result may be explained by the generally slow turn around time of the labs.

- The use of lab results by the defense is a subject of controversy within the Judicial Department. Public defenders feel a lack of access to lab services; judges and prosecutors feel defense access is adequate (some even feel there should be none.) Prosecutors tend to use lab results at least four times as frequently as defense attorneys.

- Judges' consciousness of detailed information with respect to the labs themselves and specific cases involving laboratory evidence is limited, especially when compared with the attorneys.

- The relationship between the Judicial Department and labs, while somewhat distant, is not generally perceived as problematic. Reponse time is a major concern.

- State's attorneys, who have the closest relationship of the three groups to the lab personnel, tend to rank the labs most favorably. If this principle holds, it would argue for the need for a closer working relationship among other groups as well.

VI. Summary of Key Problems*

A. Introduction

Forensic science may be defined as the application of science to the just resolution of social and legal issues. The forensic sciences have become integral components of the system of justice in this country by providing legal decision makers with objective, scientific information which is otherwise unobtainable through conventional means of fact finding. In the last decade the forensic sciences have emerged as a major force in efforts by the criminal justice system to upgrade the investigative and adjudicative processes, control crime and ensure a high quality of justice.

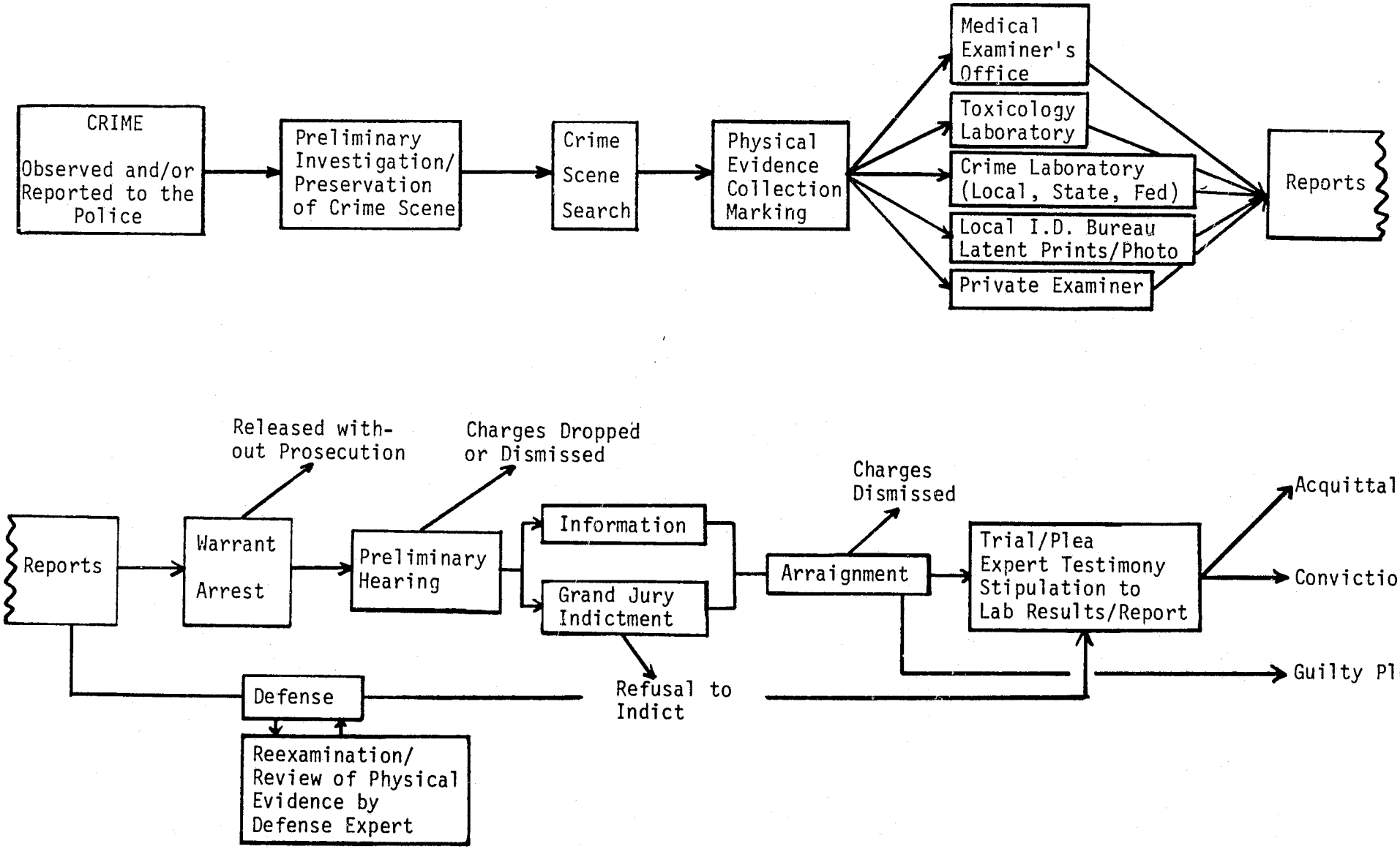
The physical evidence utilization process may be illustrated as a series of decision points beginning with the commission of the criminal act and its attendant changes in the physical environment, the examination of which may assist in:

- Determining if a crime did indeed occur;
- Reconstructing the crime;
- Developing information and leads on likely suspects;
- Linking offenders with the crime scene or victim through physical evidence;
- Demonstrating the noninvolvement of suspected offenders in the crime.

In order for this information to be used by those who try fact in any given case, the evidence must be recognized, gathered, preserved, examined and properly interpreted by trained forensic science personnel.

Figure I illustrates how this physical and scientific evidence may flow through the criminal justice system, tracing it from the crime scene to the ultimate disposition of the case. Figure II is another view of the flow of evidence and emphasizes the fact that the vast majority of potential scientific evidence is screened from the investigative process before it can even reach the laboratory for analysis.

*Most of the material in this section, as well as many of the recommendations, were formulated for the Justice Commission by Dr. Joseph Peterson, acting as a consultant to the Task Force from Forensic Sciences Foundation, Inc.


CRIME
Observed and/or Reported to the Police
Preliminary Investigation/ Preservation of Crime Scene
Crime Scene Search
Physical Evidence Collection Marking
Medical Examiner's Office
Toxicology Laboratory
Crime Laboratory (Local, State, Fed)
Local I.D. Bureau Latent Prints/Photo
Private Examiner
Reports
Released without Prosecution
Charges Dropped or Dismissed
Reports
Warrant Arrest
Preliminary Hearing
Information
Grand Jury Indictment
Refusal to Indict
Charges Dismissed
Arraignment
Trial/Plea Expert Testimony Stipulation to Lab Results/Report
Acquittal
Conviction
Guilty Plea
Defense
Reexamination/ Review of Physical Evidence by Defense Expert

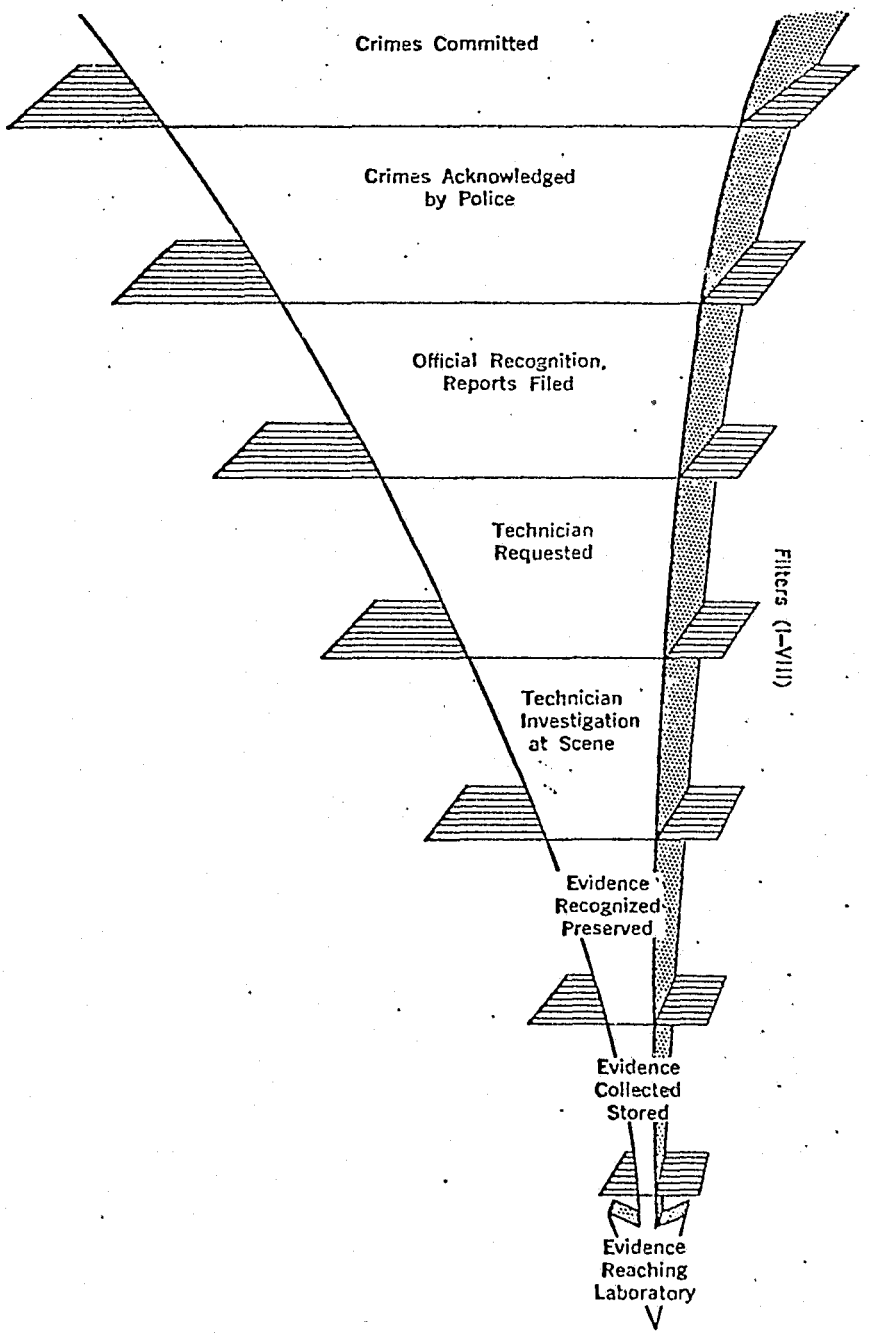

Crimes Committed
Crimes Acknowledged by Police
Official Recognition, Reports Filed
Technician Requested
Technician Investigation at Scene
Evidence Recognized Preserved
Evidence Collected Stored
Evidence Reaching Laboratory
Filters (I–VIII)

FIGURE II.

Despite the strides made by the criminal justice system in its use of scientific methods in recent years, major unsolved problems remain. Many laboratories nationwide suffer from overwhelming caseloads and backlogs which delay the timely examination of evidence, sometimes stalling investigations. The recent LEAA funded Crime Laboratory Proficiency Testing Research Program focused attention on the sometimes substandard quality of results emanating from many of the nation's laboratories. The working conditions and budgets of many forensic laboratories are totally inadequate, with scientific services receiving an almost negligible proportion of its parent law enforcement agency's budgetary allocation. Among the most critical yet poorly trained personnel in the evidence utilization process are the law enforcement personnel and legal practitioners who have primary responsibility for the collection of physical evidence and ultimate utilization of information derived from scientific analysis.

Many of these very same national problems are present, although on a reduced scale in the State of Connecticut. Through consultation with the members of Evidentiary Services Task Force, interviews with scientific laboratory personnel and the review of data collected from the principal users of forensic services in Connecticut, several basic problem themes have emerged which coincide with the stages in the evidence utilization process outlined in Figures I and II. That is, the problems facing policy makers who may set out to improve the quality of forensic science services in Connecticut are not limited to the confines of the individual forensic laboratories in the State. There are serious problems in the quality and effectiveness of procedures to gather evidence from the field. Equally serious problems are present at the judicial level of the process where attorneys and judges lack the necessary training and information to make proper use of scientific evidence. The total system problems also extend upward into state government where interest in and support of the forensic sciences has largely been absent. The Connecticut Justice Commission itself is without a program plan or long range policy with respect to forensic science services which has inhibited the development of a workable State system of forensic services.

The material which follows lists some of the points which emerge most clearly from a comparison of the Connecticut forensic science services with the model briefly presented in the last few paragraphs. These points are not the only ones which emerge; in fact, many of the recommendations outlined in section VII address additional problem areas not on this list. The listing which follows is a summary of the key problems which face the entire forensic science service system in its attempt to adequately serve the needs of the justice system.

B. Overview of the Forensic Science Problem In Connecticut

1. In general, forensic science services in the State of Connecticut are in highly underdeveloped condition and suffer from inadequate facilities, too few and poorly trained personnel and the absence of the most modern instrumentation and technologies which are in use in many forensic laboratories nationwide. Specific laboratory conditions are of high quality; a general facility, personnel and technology problem perists.

2. Criminalistics services are a direct reflection of the inadequate budgets and resources allotted them by their parent law enforcement and scientific agencies and by the various organizational and budgetary constraints faced by the labs and their parent agencies.

3. Users of forensic science services in the State are justifiably dissatisfied with the quality, scope and timeliness of forensic science services.

4. The existing forensic laboratory services in the State are not well coordinated and suffer from poor and/or non-existent communications between laboratories, non-uniform evidence handling procedures and poor coordination among the respective laboratory heads. In some areas, no services are available; in other areas, duplication of service exists.

5. Law enforcement agencies support of and cooperation with laboratories is lacking and results in police investigations which are deficient in their utilization of physical evidence.

6. The judiciary's support and knowledge of forensic services is not satisfactory and rarely provides the laboratories with the type of guidance and feedback they need to truly satisfy the court's information requirements.

In sum, these six problem statements reveal that the state's forensic science services have developed in a disorderly fashion over the past 10-20 years. The development of services has been uneven and lacks coordination and planning. A serious need exists to establish mechanisms which can adequately support needed services and define responsibilities of the parties involved, and which can link these resources in order to sustain a cooperative relationship with those in the criminal justice system who use the service.

VII. Recommendations

The recommendations offered in this report give a clear starting point and direction to begin the development of a more efficient, well-equipped and organized system of forensic science services in the state. They are not exhaustive nor do they address a very specific need. Instead, these recommendations lay the initial groundwork and, in doing so, describe the breadth of activity which is needed. In addition, the recommendations build ways for the forensic science services in the state to develop over time in a more responsive and organized fahsion than these services have previously grown.

Each of the recommendations presented has been reviewed by the Evidentiary Services Task Force. Some recommendations were the subject of detailed and lengthy review, discussion and redrafting; others were agreed upon quickly. Most importantly, the recommendations represent a consensus of people with diverse points of view and, because of this, have the needed agreement to be carried into action.

The recommendations are not arranged in a priority order. Instead, they proceed on a timeline through the needs of the system. That is, collection and police-related areas are addressed first. Recommendations in these areas are followed by lab-related recommendations and then by recommendations relating to the adjudication process.

Some of the recommendations contained in this document require legislative changes. A draft of proposed legislation is appended to this report.

A. Recognition, Collection and Preservation of Physical Evidence

This stage of the physical evidence utilization process is the first critical level in full exploitation of physical evidence. This ranks among the highest priorities of areas requiring immediate attention throughout the State of Connecticut.

Problem: Based upon discussions with law enforcement, judicial, and scientific personnel and the review of the survey results it is clear that state and local police agents are not performing adquately in the collection and preservation of physical evidence.

Recommendations:

1. A major effort should be launched to expand and improve crime scene search operations throughout the entire State. Police Standard 12.1 of the National Advisory Commission on Criminal Justice Standards and Goals has stated: "Every State and every police agency should acknowledge the importance of efficient identification, collection, and preservation of physical evidence; its accurate and speedy analysis; and its proper presentation in criminal court proceedings. These are essential to professional criminal investigation, increased clearance of criminal cases, and ultimately, the reduction of crime. Every agency should insure the deployment of specially trained personnel to gather physical evidence 24 hours a day."

2. Departments with 75 or more sworn personnel employ dedicated, full-time evidence technicians to investigate crime scenes.

3. The centralized State Forensic Science Laboratory should maintain its own special crime scene search unit which would provide assistance to local agencies in certain serious crimes and when requested; this unit should be under the supervision of the head of the crime laboratory.

4. All of the other smaller, local police agencies in the State should designate "technician-patrolmen" who when not on routine patrol duty be available as needed for crime scene searches and who would receive special training in evidence collection.

Discussion:

The results of the user agency questionnaires listed crime scene search operations as one of the major problem areas in the State. This function is not, however, a candidate for consolidation at the State level. The presence of qualified evidence gatherers who can respond to the scenes of all felony crimes to search for evidence demands that such an effort be decentralized in police agencies around the State. These personnel must be present to gather physical evidence from routine burglaries as well as the most serious crimes such as homicide.

Although part-time evidence gatherers are less desirable than full-time technicians, most departments do not have sufficient crime or manpower to justify full-time specialists. Still, these departments should designate certain individuals on their staffs to perform this function and not disperse the responsibility among all patrolmen or detectives. This then allows for appropriate training of these individuals and for the development of necessary specialized expertise.

Problem: The State is without an adequate crime scene search training program for personnel charged with this responsibility.

Recommendations:

1. The Connecticut Forensic Services Laboratory should design and offer as often as required a two-week, eighty hour crime scene search and physical evidence handling training course. Police personnel in the State who have crime scene search responsibilities should be afforded the opportunity to attend this course.

2. Forensic science laboratory personnel must be very active in the design, delivery and evaluation of these training courses.

3. A special, additional two-day homicide investigation program concentrating on the physical evidence to be expected in suspicious death investigations should be sponsored jointly by the Medical Examiners Office and the state Forensic Science Laboratory.

Discussion:

All sworn personnel throughout the State should receive some formalized training in crime scene preservation and evidence recognition, most likely at the recruit training level. Evidence technicians require additional advanced training in the proper collection, marking and packaging of evidence. They must know the capabilities of existing laboratories at the State and federal levels and be able to discriminate among evidence that is potentially valuable and that which is not.

There are several good models for training programs in existence. The course must be a proper balance of theory and practical mock crime scene work for it to be of value. The State of Virginia's Division of Consolidated Laboratory Services has developed one of the most extensive programs in crime scene training and should be considered as one possible model. The program developed by Mr. Richard Fox when he directed the Regional Criminalistics Laboratory in Independence, Missouri and which resulted in the Crime Scene Search and Physical Evidence Manual is another good model.

Problem: The more than ninety police agencies in the State lack comparable guidelines, procedures manuals and report forms in the area of evidence gathering.

Recommendations:

1. The State Forensic Science Laboratory should be charged with the responsibility of formulating an evidentiary management policy and procedures manual to include development and distribution of evidence reports forms to all law enforcement agencies in the State.

2. These procedures should also address the problem of feedback from the laboratory to submitting technicians so as to advise them of the results of examinations and any problems with the evidence submitted.

3. All law enforcement agencies should be encouraged to afford proper recognition to and support of crime scene search personnel in the State with commensurate salaries, fringe benefits and opportunity for career advancement. Standards in this area are one possible alternative.

Discussion:

It would be highly desirable if all law enforcement agencies in Connecticut adopted a similar evidence collection and report form. Similarly, all agencies should follow the same procedures in marking, packaging and delivering the evidence to the State Forensic Science facility.

In a similar vein, local agencies should be encouraged to give evidence technicians and patrolmen-technicians appropriate recognition and pay incentives for their work as evidence specialists. Some departments around the country, such as the Monroe County (New York)

Sheriff's Department, give technicians a special "warrant officer" status which is equivalent to an added half-step between the patrolman and detective levels.

Technicians must also be given proper departmental recognition of their work as technicians and opportunity for career advancement. Two departments nationally which have addressed themselves to this problem are the Baltimore, Maryland Police Department and the Dade County, Florida Department of Public Safety. Technicians in Dade County have the opportunity to be promoted into the crime laboratory, as long as they satisfy education and experience requirements.

Problem: With few exceptions, local departments in the State are without the necessary equipment and supplies to properly search, collect and preserve physical evidence.

Recommendations:

1. Personnel charged with searching scenes of crimes must be provided with the necessary transportation, equipment and supplies to gather physical evidence. The State Forensic Science Laboratory should facilitate this process through providing guidelines for State and local police departments. Agencies are discouraged from procuring so-called "mobile crime laboratories" and under no circumstances should place a greater emphasis on equipment acquisition than the preparation of personnel.

2. Special crime scene equipment not needed for the routine processing of scenes should be maintained at the central State Forensic Science facility.

Discussion:

A standard police cruiser, outfitted with a basic evidence processing kit and camera will satisfy the physical resource needs of most evidence technicians. Evidence, as a rule, should not be analyzed in the field but should be preserved, packaged properly and routed to the laboratory for examination. Mobile crime laboratories are largely a waste of funds and cannot be justified for their public relations value.

B. Scientific Analysis of Physical Evidence

There are many serious problems associated with the scientific analysis of physical evidence in the State of Connecticut. Each laboratory has its own unique problems as well as its strong features. Given the brevity and limited scope of this current study only general problems and recommendations will be discussed. The thrust of these recommendation center primarily on the criminalistics capabilities in Connecticut, and to a far lesser extent on the Medical Examiner's operation. The principal reason for this is that the criminalistics area is in greater need of upgrading. Unless so noted these recommendations, therefore, pertain primarily to criminalistics services.

Each of the three principal examination facilities (State Police, Medical Examiner, State Toxicology Laboratory) in the State has developed, internally, its own set of priorities and programs for upgrading services.

Problem: A primary problem facing forensic laboratories in the State is inadequate budgetary support. This is a serious and chronic problem and one which is primarily responsible for the many other problems outlined in this section.

Recommendations:

1. Laboratories must be allowed a stronger voice in the budgetary process of their agencies. The laboratory director must be a participant in the budgeting process in his own agency and not fall victim to other division heads diverting laboratory funds to their operations once the total budget for the agency has been approved.

2. The Connecticut Justice Commission should consider special, one time grants to forensic laboratories in the State to correct the most serious deficiencies outlined in this report. Special allocations from the State treasury may also be necessary.

3. Funding for the State's Evidentiary Service system should primarily come from state and federal sources, rather than a local assessment.

Discussion:

The National Criminal Justice Standards and Goals Report (Standard 12.1 - The Crime Laboratory) stated "Too often the laboratory is not considered a primary budget item and is one of the first units to suffer when budgets are trimmed." The report went on to recommend "Laboratories must receive the financial support necessary for them to achieve a level of professionalism consistent with their importance to police operations."

This report and other national studies have concluded that full-service crime laboratories are beyond the means of most local agencies. This speaks to the need for state facilities which, with a greater service base, can obtain the necessary funds to support a high quality operation.

A local assessment for these services is not feasible given the state's primary role in this field. Local governments will be expected to make commitments in the areas of upgraded training, uniform submission criteria and better evidence collection. State and federal resources should be applied to the State Forensic Lab function.

Once established, a state forensic science lab should consider the feasibility of providing services to other criminal justice individuals and groups on a fee-for-service basis. Among the needs which have been mentioned are urine surveillance for drug abuse and correctional agencies and services for private defense attorneys.

Problem: There are overlapping services and duplication of capabilities among the three principal forensic laboratories in Connecticut. This had led to confusion among submitting agencies, conflicts among laboratory directors, inefficiency and long delays with respect to analyses and some duplication of equipment and personnel.

Recommendations:

1. Given the limited geographical size and population of Connecticut it is recommended that the primary responsibility for examining similar physical evidence types rest with only one examination facility.

A State Forensic Science Lab, established under a separate Commission, attached administratively by the Department of Public Safety, and utilizing all available existing resources, should be developed. The services of this lab should include:

1. Physical evidence examination
2. Physiological material
3. Finger, palm and footprints
4. Controlled substance identification
5. All toxicology related to criminal investigation (e.g. blood alcohol)

Adequate staffing and equipment should be maintained to perform these functions in a timely, accurate fashion. On the basis of this recommendation, some services currently performed by the State Toxicology Laboratory (and possibly some resources) would have to be transferred to the State Criminalistics Lab. A workload and resource analysis would have to be undertaken within the Toxicology Lab to accomplish this. Statutory changes would also be required.

In addition, the recommendation implies that services within local police departments should be limited to fingerprints and photography. As much as possible, Departments with existing labs should be integrated within this structure, in order to create uniform, highly competent service.

The only criminal-related function which would remain outside the Criminalistics Lab would be the Chief Medical Examiner's Office. This office should be expanded to perform all toxicological and serological examinations related to autopsy.

Discussion:

The centralization of criminalistics functions within a single laboratory clearly has benefits in the area of uniform system management. The only function it is not practically possible to integrate directly within this administrative structure is the autopsy function. For this reason, this office should retain its overall autonomy (while allowing for coordination via the Commission established to oversee evidentiary services).

It seems feasible to separate out the toxicological functions, with the Health Department Toxicology Lab being removed from the criminal justice field. While some analyses, equipment and personnel would remain constant, the volume of this work and the separate form of submission allow for easy separation of these functions.

The trend toward an efficient and competent state lab should eliminate the need for one-man local labs. It should also provide a superior service than a small, less adequately trained agency.

Finally, the FBI Laboratory, which has taken a significant share of the total forensic caseload in Connecticut is cutting back on its direct examination function for state and local law enforcement agencies. This creates a situation in which state lab capabilities must be increased.

2. The law enforcement and judicial agencies within the State must reduce their dependence on the FBI Laboratory in Washington and look toward laboratories within Connecticut as their primary scientific resource.

Discussion:

The FBI Laboratory has issued a policy directive restricting services to state and local laboratories and police agencies (see attached statement). Agencies must begin now to reduce their dependence on federal laboratories and direct their efforts toward improving scientific facilities within their own state. The FBI will still, of course, be available as a back-up resource for cases requiring special assistance or consultation.

3. Local departments should restrict the "criminalistics" examinations to fingerprints and photography. It is recommended all other evidence be forwarded to the new expanded facility in Meriden.

Discussion:

This is a most difficult decision, but under the circumstances the one which is most defensible from service, financial and efficiency viewpoints. Historically, examining facilities were developed by local agencies because they were not getting the service they required from the State Police and/or Toxicology Laboratories. However, if the recommendations in this report are followed, the timeliness and quality of analyses performed at the State Criminalistics Laboratory will soon surpass that which is possible at the local level.

Problem: The separation and diverse placement of forensic laboratories in various governmental units has created problems in securing adequate budgets, difficulties in coordinating evidence examinations and supplying feedback to user agencies, and communication problems among the laboratories themselves.

Recommendations:

The overall coordination of the state's criminal evidence laboratory function should be consolidated under the Department of Public Safety. An Advisory Commission to oversee forensic science services should be set up. This Commission would include the Commissioner of Public Safety, the Chief Public Defender and Chief State's Attorney, the Chief Court Administrator, a representative from the Connecticut Chiefs of Police and from local government, the Chief Medical Examiner, representation from the public, a House and Senate member of the Judiciary Committee and the Commissioner of Public Health. This Commission would have responsibilities in the following areas:

1. Overall planning, policy development and budget review for criminal evidence lab services

2. Direct oversight of the State Forensic Science lab and the Toxicology Lab through a central administrative function

3. Development of management systems designed to make best use of the state's lab capabilities

The Commission should be legislatively established and should be assigned administratively to the Department of Public Safety.

Discussion:

The recommendation both establishes a locus for the forensic lab function within state government and creates an expanded role for the organization created as a result. The major choices for locating such a structure are within the Judicial Department and within the Department of Public Safety. Within either Department the choice could be made between a separate organization and location within an existing division (e.g. State's Attorney's Office, State Police). A separate organization was chosen because of the need to elevate the forensic science system to a more prominent position and because of a recognition that this is a separate function. The Department of Public Safety was chosen over the Judicial Department because, despite the project's tie to the adjudication process, the lab function is primarily an investigative one. The location within Public Safety (as opposed to State Police) should allow for expanded services to defense and courts without jeopardizing the essential tie with law enforcement.

The Task Force considered very seriously the question of whether the Commission should be an Advisory body, responsible either directly to the Commissioner of Public Safety or to both the Commissioner of Public Health and Public Safety, or a policy-making body. A clear majority of the Task Force members felt the Advisory structure would not achieve the desired results, especially in the areas of delineation of service reponsibilities of laboratories and policy and procedure developments.

2. The current trend toward the total centralization of medico-legal autopsies at a single laboratory is a worthy goal and should result in a more cost/effective service. Plans to build the new medical examiner's laboratory in Farmington should proceed immediately.

Discussion:

Although it would be very desirable to have the medical examiner, toxicology and criminalistics laboratories under the same roof, for the present such a move appears impractical for the State of Connecticut. The Southwestern Institute of Forensic Sciences in Dallas, Texas is one such operation where all services are consolidated in a single building and under the control of one person, the medical examiner.

However, Farmington, Meriden and Hartford are in such close proximity to one another, that they can function as a team even though they are not in the same physical structure.

Problem: The current personnel structure of the State Police Laboratory in which sworn personnel are employed as examiners has not allowed this laboratory to develop the breadth and depth of scientific expertise required in a full-service criminalistics laboratory.

Recommendations:

1. Proposed steps by the State Police to gradually civilianize the laboratory prior to the full implementation of these recommendations should be strongly encouraged and endorsed by the Task Force.

2. The State should undertake a complete inventory of its scientific personnel, establish minimum education and training requirements for these personnel and offer the necessary opportunities to these scientists.

Discussion:

Forensic science laboratory requirements are such that scientifically trained persons are essential in filling most positions. Eventually, even firearms and toolmark examiners and fingerprint technicians will require a bachelors degree. Of necessity there will be a transition period during which sworn staff having expertise in particular examinations areas must be retained. However, new hires should be in the civilian category.

C. Judicial Utilization of Forensic Services

Problem: It seems clear that judicial personnel in the State are not up-to-date in their knowledge and use of forensic science services.

Recommendations:

1. Steps should be taken immediately to develop training programs for all judicial personnel in the State in the proper use and interpretation of scientific analyses. The Judicial Department and the state Forensic Sciences Laboratory should work jointly on this project.

2. Personnel should be strongly encouraged (required) to attend such workshops and seminars on a continuing basis.

Discussion:

Judges, prosecutors and defense attorneys must be better educated in the capabilities and limitations of the forensic sciences. This conclusion (on a nationwide basis) has also received strong support in the recently published proceedings of LEAA's Special National Workshop on Forensic Science Services and the Administration of Justice (1979).

Problem: Judicial personnel (prosecutors in particular) fail to discuss the significance of scientific reports with laboratory personnel prior to judicial proceedings and fail to provide scientific staff with feedback rountinely on the use and significance of scientific examinations and testimony.

Recommendations:

1. Pretrial conferences with scientific personnel should be adopted as standard policy in cases involving physical evidence.

2. The State Forensic Laboratory shall institute evaluation mechanisms which supply laboratories with the information they require insofar as evaluating their examinations and quality of testimony.

Discussion:

Judicial personnel must make a concerted effort to communicate more frequently and meaningfully with scientific personnel. Regularly scheduled conferences (perhaps monthly) between the chief prosecutor, public defender and laboratory heads would be most desirable. At the case level, prosecutors and defense attorneys should routinely confer with forensic scientists regarding the significance and impact of scientific evidence.

Problem: Defense counsel should have equal and confidential access to the findings of State forensic laboratories as do prosecutors.

Recommendations:

1. A standard policy by the State Forensic Sciences Commission should be implemented providing a copy of all laboratory examination reports to the defense as well as prosecution.

2. Defense counsel should also expect access to the laboratory for the examination of evidence in their possession. In the case of public defenders, this service should be provided by the State. Private defense attorneys should have access at least on a fee-for-service basis. Records of analysis should be shared with defense counsel on the same confidential basis as they are with the prosecutor's office.

3. If the defense demonstrates the need to have evidence re-examined, the laboratories should cooperate with such procedures and work with defense appointed experts. The Forensic Science Commission should promulgate specific policies on this issue.

Discussion:

Unquestionably, laboratories must maintain their close working relationships with police and prosecutorial agencies but, on the other hand, must also provide equal support and assistance to the defense. In particular, confidential defense analysis is necessary in order that the balance of the adversary proceeding may be preserved. The placement of the lab as an independent entity should facilitate this process.

Appendices

AN ACT ESTABLISHING A STATE FORENSIC SCIENCE LABORATORY COMMISSION

Section 1. Section 19-8 of the general statutes is repealed and the following is submitted in lieu thereof:

The commissioner of health services shall establish and maintain, under the direction of the state forensic science laboratory commission, [within the department of health services] a special laboratory for examination, research and analysis of poisons, body fluids, tissues and all related toxicological matters for the protection and preservation of the public health. The facilities of such laboratory and of its personnel [shall] may, under the supervision of the commission [commissioner], be made available to the [coroners and the] office of the medical examiner and all duly constituted prosecuting, police and investigating agencies of the state.

Section 2. Section 19-534 of the general statutes is repealed and the following is submitted in lieu thereof.

The office of the medical examiner shall maintain a laboratory or laboratories suitably equipped with medical, scientific and other facilities for performance of the duties imposed by this chapter. Laboratories may be maintained in collaboration with the University of Connecticut or any other medical school or hospital and any other agencies in the state which have facilities that can be utilized in performing the duties of the office. Such laboratory or laboratories may, under the supervision of the medical examiner, be made available to the department of health services and the department of public safety to supplement laboratories maintained by those departments, in time of need. The manner of compliance with this section shall be in the discretion of the commission.

Section 3. (NEW)(a) There is established in the executive branch of government and independent State of Connecticut forensic science laboratory commission which shall be within the Department of Public Safety for administrative purposes only. The commission shall consist of ten members: the commissioner of public safety; the chief states's attorney; the chief public defender; the chief court administrator; the chief medical examiner; the commissioner of public health; a chief of a municipal police department who shall be appointed by and serve at the pleasure of the governor, and three members of the public, who shall also be appointed by and serve at the pleasure of the governor. Members of the commission shall receive no compensation but shall be reimbursed for their actual expenses incurred in service on the commission. The commission shall adopt its own rules for the conduct of its meetings, and shall elect one member to serve as chairman for one year. The commission shall meet at least once each year and oftener as its duties require, upon the request of the chairman or any two members.

(b) The commission shall oversee and direct all matters related to the provision of forensic evidentiary services within this state, including but not limited to the formulation of policies and operating procedures, facilities equipment and personnel, type of services to be provided, coordination of services with other state laboratories and those operated by local, federal and private agencies, and coordination of evidential services among all criminal justice agencies in this state. The commission may conduct research and make recommendations to improve the state's capabilities to provide evidential services to the criminal justice system.

Section 4. (NEW)(a). The department of public safety shall maintain, under the direction of the state forensic science laboratory commission, a state criminalistics laboratory or laboratories with suitable facilities, personnel and equipment to provide forensic evidential services in a timely and accurate manner to all criminal justice agencies in the state. The state criminalistics laboratory shall provide the following services: physical evidence examination; physiological materials examination; finger, palm and foot print identification; controlled substance identification; toxicological analysis in all matters related to criminal investigations; and any other services as may be necessary in support of the criminal justice system.

Section 5. This act shall take effect January 1, 1981.

dml

FORENSIC SCIENCE SURVEY

JUDICIAL DEPARTMENT

This brief questionnaire stems from an effort by the Connecticut Justice Commission to study and, where necessary, assist in improving forensic science (crime lab) services in the State. The effort is a cooperative one, involving police, court and laboratory personnel. A critical part of this activity is the perceptions which those who use crime lab information in the judicial process have. Would you please take a few minutes to fill out this questionnaire and return it in the envelope enclosed. Please return this questionnaire by April 4.

1. IN WHAT PERCENTAGE OF ALL CASES IN WHICH YOU ARE INVOLVED IS SCIENTIFIC EVIDENCE USED?

   [ ] 5% or Less
   [ ] 6% - 25%
   [ ] 26% - 50%
   [ ] 51% - 75%
   [ ] 76% or more

2. OF ALL SCIENTIFIC EVIDENCE-RELATED TESTIMONY DELIVERED IN COURT, WHAT PERCENTAGE IS OFFERED BY THE:

   (a) Prosecution? _____%

   (b) Defense? _____%

3. GENERALLY, TO WHAT DEGREE ARE LABORATORY RESULTS USEFUL? *(Check appropriate answer to the right for each of the following)*

	CRUCIAL	VERY BENEFICIAL	MODERATELY BENEFICIAL	OF LITTLE OR NO AID	NO OPINION
(a) In the decision to issue a warrant or complaint?					
(b) In preliminary hearings or arraignments?					
(c) To obtain an information or grand jury indictment?					
(d) At the arraignment?					
(e) During plea bargaining?					
(f) At trial?					
(g) Other *(Specify)* _____					

4. WHO COLLECTS THE PHYSICAL EVIDENCE FROM CRIME SCENES IN YOUR JURISDICTION? *(If not aware leave blank)*

   (a) In death scenes:

   (b) In all other cases:

5. HOW DO YOU RATE THE PHYSICAL EVIDENCE COLLECTION PROCEDURES CURRENTLY EMPLOYED IN YOUR JURISDICTION? *(Check one)*

   [ ] Unacceptable

   [ ] Poor

   [ ] Adequate

   [ ] Excellent

   [ ] Unfamiliar with present procedures

6. WHO WOULD YOU PREFER HAD THE PRIMARY RESPONSIBILITY FOR COLLECTING PHYSICAL EVIDENCE FROM THE CRIME SCENE? *(Check one)*

   [ ] Patrol officers

   [ ] Detectives

   [ ] Evidence technicians (personnel specifically trained in physical evidence collection)

   [ ] Laboratory personnel

   [ ] Other *(Specify)*

7. THE FOLLOWING QUESTIONS PERTAIN TO THE FORENSIC SCIENCE LABORATORIES YOU UTILIZE OR WITH WHOM YOU ARE IN CONTACT. *Please list the names and addresses of these laboratories and answer questions (a) through (d) on TABLE I for <u>each</u> laboratory you list.*

   (a) How would you evaluate the overall services offered by the laboratory? *(Check appropriate answer for each laboratory)*

   (b) Do you feel that scientific personnel are generally qualified in the examination of physical evidence? *(Check if "Yes")*

   (c) Do you confer regularly with laboratory personnel:

      (1) On proper interpretation of analytical results? *(Check if "Yes")*

      (2) Prior to trial to review scientific results and testimony of the expert? *(Check if "Yes")*

      (3) To give the laboratory feedback on impact of evidence? *(Check if "Yes")*

(d) How would you evaluate the general relationship between personnel of your office and laboratory personnel? *(Check appropriate term for each laboratory)*

TABLE I

Names and Addresses of Laboratories	(a) EXCELLENT	ADEQUATE	POOR	UNACCEPTABLE	NO OPINION	(b) "YES"	(c) (1) "YES"	(2) "YES"	(3) "YES"	(d) EXCELLENT	ADEQUATE	POOR	UNACCEPTABLE	NO CONTACT
1. State Police Laboratory Bethany, CT	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
2. State Toxicology Lab Health Department 10 Clinton Street Hartford, CT	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
3. State Medical Examiners Office UCONN Medical Center Farmington, CT	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
4. FBI Laboratory	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
5.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
6.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
7.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

other -- please name

8. HOW WOULD YOU RANK STATE AND LOCAL LABORATORY PERFORMANCE WITH THAT OF THE FBI LABORATORY?

[ ] Inferior to the FBI Laboratory.

[ ] Compares to the FBI Laboratory.

[ ] Superior to the FBI Laboratory.

9. IN YOUR OPINION, ARE LOCAL LABORATORY RESOURCES BEING DIRECTED TO THOSE OFFENSE CATEGORIES WHICH WILL RESULT IN THE GREATEST BENEFIT TO THE JUDICIAL SYSTEM?

[ ] Yes [ ] No

If "No", please explain:

10. IN YOUR OPINION, DOES THE DEFENSE HAVE ADEQUATE ACCESSIBILITY TO THE GOVERNMENTAL CRIME LABORATORIES?

[ ] Yes [ ] No

11. DO GOVERNMENT SCIENTISTS EXERT THE SAME EFFORT TO SEEK OUT EVIDENCE THAT MIGHT EXONERATE AN ALLEGED OFFENDER AS THEY DO IN DEVELOPING EVIDENCE TO PROSECUTE DEFENDANTS?

[ ] Yes [ ] No

12. IS THE NUMBER OF INDEPENDENT FORENSIC LABORATORIES ACCESSIBLE TO THE DEFENSE ADEQUATE?

[ ] Yes [ ] No

13. ARE ADEQUATE FUNDS MADE AVAILABLE TO THE DEFENSE (PUBLIC DEFENDER) TO HAVE EVIDENCE ANALYZED AT INDEPENDENT LABORATORIES?

[ ] Yes [ ] No

14. ARE YOU SATISFIED WITH THE MANNER IN WHICH DEATHS ARE INVESTIGATED IN YOUR JURISDICTION?

[ ] Yes [ ] No

IF NO, WHY?

15. IN WHAT AREAS OF THE FORENSIC LABORATORY ARE SIGNIFICANT IMPROVEMENTS NEEDED? *(Check all appropriate and briefly explain.)*

[ ] Administration

[ ] Personnel Training

[ ] Personnel Attitudes

[ ] Facility

[ ] Equipment

[ ] Response Time

[ ] Quality and Completeness of Results

[ ] Performance (in court)

[ ] Distance (from user agency)

[ ] Security and safety

[ ] Others (Specify)

16. WHAT IS THE GENERAL IMPACT OF EXPERT SCIENTIFIC TESTIMONY ON THE VERDICT (other than in drug or drunk driving cases) WHEN:

(a) It is offered by the prosecution? *(Check best answer)*

[ ] Totally persuasive

[ ] Persuasive in close cases

[ ] No influence

[ ] Of negative impact

(b) It is offered by the defense? *(Check best answer)*

[ ] Totally persuasive

[ ] Persuasive in close cases

[ ] No influence

[ ] Of negative impact

17. IN THE LAST TWO YEARS WERE YOU INVOLVED IN A CASE IN WHICH FORENSIC SCIENCE RESULTS PLAYED A DECISIVE ROLE (other than in drug and drunk driving cases)?

[ ] Yes [ ] No

If "Yes", please give a brief description of its impact:

18. IS THE PRESENTATION OF EXPERT TESTIMONY CONCERNING SCIENTIFIC EVIDENCE SUCH THAT THE AVERAGE JUROR CAN COMPREHEND THE TESTIMONY?

[ ] Yes [ ] No

19. HAVE SUPREME COURT DECISIONS (e.g., Escobedo, Miranda, etc.) LED TO MORE EMPHASIS ON PHYSICAL EVIDENCE AND SUBSEQUENT UTILIZATION OF THE LABORATORY?

[ ] Yes [ ] No

20. SHOULD GREATER EMPHASIS BE PLACED ON PHYSICAL EVIDENCE COLLECTION AND LABORATORY UTILIZATION IN THE FUTURE?

[ ] Yes [ ] No

21. HOW COULD LABORATORY SERVICES BE IMPROVED IN:

(a) Your jurisdiction?

(b) State of Connecticut?

22. OF THE FOLLOWING POSSIBLE OPTIONS, WHAT ACTION DO YOU FEEL SHOULD BE TAKEN WITH RESPECT TO FORENSIC SCIENCE SERVICES IN THE STATE OF CONNECTICUT?

[ ] No action is necessary, laboratory services are fine as they are.

[ ] Existing, individual laboratories should remain independent but be bolstered with additional funds, scientific personnel and equipment.

[ ] Existing laboratories should receive added resources and, in addition, be brought under the control of a single state coordinating commission.

[ ] A single state wide forensic laboratory be developed serving all jurisdictions throughout the state.

[ ] Other: Please explain.

PLEASE RETURN IN THE ENCLOSED ENVELOPE.

LAW ENFORCEMENT AGENCY QUESTIONNAIRE

This brief questionnaire is designed to assist a Task Force representing police, court and laboratory personnel to improve crime lab services. Would you please take a few minutes to fill out this questionnaire and return it in the envelope enclosed. PLEASE RETURN THE COMPLETED QUESTIONNAIRE BY FRIDAY, APRIL 6.

1. JURISDICTION SERVED:

   a. Population:

   b. Square Miles:

   c. Form of Government (e.g., town, city, borough, etc.):

   d. Number of Part I Crimes (1978):

2. DOES YOUR AGENCY HAVE ITS OWN IN-HOUSE CRIME LABORATORY, HAVING AT LEAST ONE FULL-TIME PERSON WITH SCIENTIFIC TRAINING WHO EXAMINES PHYSICAL EVIDENCE AND PRESENTS FINDINGS IN A COURT OF LAW?

   [ ] Yes [ ] No

3. IF YOU MAINTAIN A LABORATORY, PLEASE PROVIDE THE NAME AND TITLE OF THE PERSON IN CHARGE.

4. DOES YOUR DEPARTMENT MAINTAIN AN IDENTIFICATION UNIT (NOT A CRIME LABORATORY) IN-HOUSE WHICH ALLOWS YOU TO PERFORM EXAMINATIONS?

   [ ] Yes [ ] No

   IF YES:

EVIDENCE CATEGORY	EXAMINATIONS PERFORMED? YES	NO	EVIDENCE CATEGORY	EXAMINATIONS PERFORMED? YES	NO
Fingerprints	[ ]	[ ]	Alcohol	[ ]	[ ]
Latent prints	[ ]	[ ]	Drug screening	[ ]	[ ]
Photography	[ ]	[ ]	Dried blood	[ ]	[ ]
Firearms	[ ]	[ ]	Rape evidence	[ ]	[ ]
Tool marks	[ ]	[ ]	Others (specify)	[ ]	[ ]
Documents	[ ]	[ ]	_____	[ ]	[ ]
			_____	[ ]	[ ]

5. PLEASE COMPLETE THE FOLLOWING TABLE:

TABLE I

Name and Address of laboratories to whom you submit evidence for analysis *(include all local, state, and Federal labs., if applicable)*	Approx. Distance from your Agency to the Lab *(in miles)*	Usual Means of Delivery of Evidence to the Lab (e.g., by Mail, Hand Carried, etc.)	Number of Cases Submitted to this Lab in 1978	Average Turn Around Time (Time from Delivery of Evidence to Lab Til Receipt of Lab Report) *(in days)*	% of your Total Requests Submitted to this Particular Laboratory	Do Not Use this Lab at All	Evaluation of the Overall Service Offered by this Particular Laboratory *(Check one for each lab)*				
							UNACCEPTABLE	POOR	ADEQUATE	EXCELLENT	COMMENTS
A. State Police Laboratory Bethany, CT											
B. State Toxicology Lab Health Department 10 Clinton Street Hartford, CT											
C. State Medical Examiner's Off. UCONN Medical Center Farmington, CT											
D. FBI Laboratory											
E. Other-please name											

6. ARE THERE AREAS WHERE YOU FEEL THE FORENSIC LABORATORIES LISTED ABOVE NEED SIGNIFICANT IMPROVEMENT OR ADDED CAPABILITIES?

LABORATORY NAME	TYPE OF IMPROVEMENT NEEDED
A.	
B.	
C.	
D.	
E.	

7. DO YOU EVER EMPLOY PRIVATE EXAMINERS OR LABORATORIES TO ANALYZE EVIDENCE?

[ ] Yes [ ] No

FOR WHAT TYPES OF EVIDENCE?

8. WHAT WAS THE APPROXIMATE COST OF SUCH SERVICES IN 1978?

9. ARE YOU SATISFIED WITH THE MANNER IN WHICH DEATHS ARE INVESTIGATED IN YOUR JURISDICTION?

[ ] Yes [ ] No

IF NO, WHY?

Please answer the following questions in reference to your agency.

10. NUMBER OF FULL TIME EQUIVALENT SWORN OFFICERS:_____

11. NUMBER OF FULL TIME EQUIVALENT CIVILIAN PERSONNEL:_____

12. NUMBER OF PATROL OFFICERS (*excluding evidence technicians*):_____

13. NUMBER OF INVESTIGATORS (DETECTIVES):_____

14. DOES YOUR AGENCY ROUTINELY COLLECT THE PHYSICAL EVIDENCE FROM THE SCENES OF CRIMES IN YOUR JURISDICTION?

[ ] Yes [ ] No

If "Yes", answer Questions 16 through 24

If "No", go on to Question 25

15. NUMBER OF EVIDENCE TECHNICIANS *(Specifically trained personnel assigned to physical evidence collection):* _____

How many are: (a) Sworn Officers exclusively involved in evidence collection:_____

(b) Sworn Officers collecting evidence as well as having other duties:_____

(c) Civilians exclusively involved in evidence collection:_____

(d) Civilians collecting evidence as well as having other duties:_____

16. WHICH OF THE FOLLOWING GROUPS IN YOUR AGENCY ARE ROUTINELY INVOLVED IN PHYSICAL EVIDENCE COLLECTION? *(Check all appropriate)*

[ ] Detectives

[ ] Patrol Officers

[ ] Evidence Technicians

[ ] Other *(Specify)*

17. WHAT SPECIALIZED TRAINING DO YOUR CRIME SCENE SEARCH PERSONNEL RECEIVE? *(Check all appropriate)*

[ ] On-the-job training:

[ ] Informal (e.g., ride along with experienced investigator)

[ ] Formal (e.g., outlines, reading assignments, etc.)

[ ] Recruit training

[ ] In-service training (i.e., continued coursework)

[ ] Training offered by crime laboratory(s)

[ ] Training offered by other agencies *(Please specify)*_____

_____

[ ] Other *(Specify)*

[ ] None

18. HOW MANY HOURS OF MANDATORY TRAINING IN PHYSICAL EVIDENCE COLLECTION DO EACH OF THE FOLLOWING GROUPS OF PERSONNEL RECEIVE IN YOUR AGENCY?

Detectives: _____

Patrol Officers: _____

Evidence Technicians: _____

Other *(Specify)*: _____

19. IF YOUR PERSONNEL RECEIVE TRAINING IN EVIDENCE COLLECTION FROM A FORENSIC SCIENTIST, HOW WOULD YOU EVALUATE THIS TRAINING PROGRAM? *(Check one)*

NAME OF FORENSIC SCIENTIST/LABORATORY	EVALUATION	
A.	[ ] Unacceptable [ ] Poor [ ] Adequate	[ ] Excellent [ ] Not Applicable
B.	[ ] Unacceptable [ ] Poor [ ] Adequate	[ ] Excellent [ ] Not Applicable

Add others as appropriate.

20. IF YOUR PERSONNEL RECEIVE NO (OR LIMITED) TRAINING IN PHYSICAL EVIDENCE COLLECTION, WOULD SUCH TRAINING, IF PROVIDED BY A LABORATORY, BE BENEFICIAL?

[ ] Yes [ ] No [ ] Not Applicable

21. WHO DECIDES IF EVIDENCE IS TO BE SUBMITTED TO THE LABORATORY?

22. HOW DO YOU EVALUATE THE QUALITY OF PHYSICAL EVIDENCE COLLECTION BY YOUR OWN AGENCY? *(Check one)*

[ ] Unacceptable

[ ] Poor

[ ] Adequate

[ ] Excellent

23. IF YOUR AGENCY DOES NOT HAVE ITS OWN LAB, WOULD YOU PREFER THAT LAB PERSONNEL BE DISPATCHED TO CRIME SCENES TO GATHER EVIDENCE?

[ ] Yes [ ] No

24. IF YOUR AGENCY IS NOT RESPONSIBLE FOR THE COLLECTION OF PHYSICAL EVIDENCE, WHO IS?

Are you content with this arrangement? [ ] Yes [ ] No

25. PLEASE ANSWER THE FOLLOWING QUESTIONS IN THE SPACE PROVIDED IN TABLE II BELOW.

(a) How many crimes in the following offense categories were committed in your jurisdiction in calendar year 1978?

(b) How many of these cases were cleared by arrest?

(c) What approximate percentage of these crimes involved physical evidence being collected and submitted to a forensic laboratory for analysis?

TABLE II

TYPE OF OFFENSE	(a) Offenses Committed	(b) Cleared	(c) Evidence %
Homicide and non-negligent manslaughter			
Aggravated assault			
Forcible rape			
Robbery			
Burglary			
Larceny-theft			
Motor vehicle theft			
Arson			
Narcotics and dangerous drugs			
Driving under the influence of alcohol			

26. IN THE COMING YEAR DO YOU EXPECT SUBMISSIONS TO FORENSIC LABORATORIES TO:

[ ] Increase

[ ] Decrease

[ ] Remain the Same

27. PLEASE INDICATE THE NUMBER THAT EACH OF THE FOLLOWING EVIDENCE CATEGORIES PRODUCES LABORATORY RESULTS THAT AID THE INVESTIGATION. *(Indicate the frequency for each by placing a number in the appropriate space according to the following scale)*

Scale: 1 - Most Frequently

2 - Frequently

3 - Occasionally

4 - Seldom

5 - Never

[ ] Finger, Palm and Footprints

[ ] Physiological Material (Tissues, Blood, Perspiration, Hair, Saliva, Semen, Fecal Matter)

[ ] Physical Match Problems (Tools; Tool Marks; Shoe Impressions; Tire Impressions; Broken Glass, Fabrics; Fracture, Cut and Tear Patterns)

[ ] Weapons (Firearms, Ammunition Components, Gunshot Residue, including Clothing, Stabbing, Cutting or Blunt Instruments)

[ ] Structural Materials (Safe Insulation, Glass, Wood, Paint)

[ ] Transfer Materials (Dust, Soil, Botanical, Fragments, Hairs, Fibers, Grease)

[ ] Document Materials (Documents, Exemplars, Ink, Paper)

[ ] Driving Under the Influence of Alcohol/Drugs

[ ] Controlled Substances (Dangerous Drugs, Narcotics)

28. IN GENERAL, HOW USEFUL DO YOU FIND PHYSICAL EVIDENCE?:
(Please circle the number corresponding to your answer.)

(a) For the development of leads?

1 - Crucial

2 - Very Beneficial

3 - Moderately Beneficial

4 - Of Little or No Aid

(b) For reconstruction of events?

1 - Crucial

2 - Very Beneficial

3 - Moderately Beneficial

4 - Of Little or No Aid

(c) For elimination of suspects?

1 - Crucial

2 - Very Beneficial

3 - Moderately Beneficial

4 - Of Little or No Aid

(d) In linking a suspect to a crime scene, victim or crime?

1 - Crucial

2 - Very Beneficial

3 - Moderately Beneficial

4 - Of Little or No Aid

(e) Determining cause of death?

1 - Crucial

2 - Very Beneficial

3 - Moderately Beneficial

4 - Of Little or No Aid

29. WHAT SUGGESTIONS DO YOU HAVE FOR IMPROVING FORENSIC LABORATORY SERVICES IN: (*Answer all appropriate*)

(a) Your own jurisdiction?

(b) State of Connecticut?

30. OF THE FOLLOWING POSSIBLE OPTIONS, WHAT ACTION DO YOU FEEL SHOULD BE TAKEN WITH RESPECT TO FORENSIC SCIENCE SERVICES IN THE STATE OF CONNECTICUT?

[ ] No action is necessary, laboratory services are fine as they are.

[ ] Existing, individual laboratories should remain independent but be bolstered with additional funds, scientific personnel and equipment.

[ ] Existing laboratories should receive added resources and, in addition, be brought under the control of a single state coordinating commission.

[ ] A single state wide forensic laboratory be developed serving all jurisdictions throughout the state.

[ ] Other: Please explain.

31. PLEASE SUPPLY ANY ADDITIONAL COMMENTS YOU MAY HAVE CONCERNING FORENSIC LABORATORIES. PLEASE INCLUDE ANY CRITICISMS OR SUGGESTIONS THAT HAVE NOT APPEARED ELSEWHERE IN THIS QUESTIONNAIRE.

32. IN CASE OF QUESTIONS (OPTIONAL): NAME OF PERSON FILLING QUESTIONNAIRE _____ TITLE _____

STATE OF CONNECTICUT
CONNECTICUT JUSTICE COMMISSION
75 ELM STREET, HARTFORD, CONN. 06115
TELEPHONE (203) 566-3020

ELLA GRASSO
GOVERNOR

WILLIAM H. CARBONE
EXECUTIVE DIRECTOR

SUPPLEMENTAL FORENSIC LABORATORY QUESTIONNAIRE

CRIME SCENE SEARCH PROCEDURES

1. PLEASE ANSWER THE FOLLOWING QUESTIONS CONCERNING THE COLLECTION OF EVIDENCE FROM CRIME SCENES.

   (a) Do your laboratory personnel engage in crime scene search activities?:

   [ ] Never
   [ ] Occasionally
   [ ] Regularly
   [ ] Other (please explain)

   (b) Who is responsible for the majority of physical evidence submissions to your laboratory?:

   [ ] Law enforcement officers
   [ ] Laboratory personnel
   [ ] Other (please identify)

   (c) Would you prefer that the crime scene search function be controlled by the laboratory?:

   [ ] Yes [ ] No

2. HOW WOULD YOU EVALUATE THE QUALITY OF PHYSICAL EVIDENCE COLLECTION:

   (a) By your laboratory personnel?

   [ ] Unacceptable [ ] Adequate [ ] Not Applicable
   [ ] Inadequate [ ] Excellent

   (b) By law enforcement agents?

   [ ] Unacceptable [ ] Adequate [ ] Not Applicable
   [ ] Inadequate [ ] Excellent

QUALITY ASSURANCE

3. DO YOU MAINTAIN OR PARTICIPATE IN A QUALITY CONTROL PROGRAM IN YOUR LABORATORY? [ ] Yes [ ] No

4. IS THIS PROGRAM MANAGED:

[ ] Internally?

[ ] Externally *(please identify source)*?

EDUCATION, TRAINING AND RESEARCH

5. DOES YOUR LABORATORY HAVE A CONTINUING EDUCATION PROGRAM?

[ ] Yes [ ] No

If "Yes", please answer the following: *(Check all appropriate)*

(a) On-the-job training

[ ] Informal

[ ] Formal (e.g. outlines, reading assignments, etc.)

Subjects covered:

(b) Seminars (routinely)

[ ] By educational institutions *(Name)*

[ ] By your own laboratory staff

[ ] By manufacturer representative *(Name of company)*

[ ] By professional society *(Name)*

Subjects covered *(in all seminars)*:

5. (Continued)

(c) Workshops *("hands-on" laboratory instruction)*

[ ] By educational institutions *(Name)*

[ ] By your own laboratory staff

[ ] By manufacturer representative *(Name of company)*

[ ] By professional society *(Name)*

Subjects covered:

(d) Professional meetings

[ ] Allow time off for attendance

[ ] Offer travel allowances

[ ] Pay registration fees

[ ] Encourage attendance

6. DOES YOUR LABORATORY HAVE A POLICY WHICH ENCOURAGES OR OTHERWISE ALLOWS ATTENDANCE OF LABORATORY PERSONNEL IN OUTSIDE COLLEGE OR UNIVERSITY PROGRAMS? [ ] Yes [ ] No

If "Yes", allowances are in what form? *(Check all appropriate)*

[ ] Tuition support *(Specify %)*

[ ] Textbook support *(Specify %)*

[ ] Time off with pay

[ ] Time off without pay

[ ] Other *(Specify)*

7. IS FORMAL EDUCATION USED AS A CRITERIA FOR PROMOTION OF LABORATORY PERSONNEL?

[ ] Yes [ ] No

8. DO YOU ENCOURAGE MEMBERSHIP OF PERSONNEL IN NATIONAL/REGIONAL PROFESSIONAL ORGANIZATIONS? [ ] Yes [ ] No

If "Yes", which organizations?

9. ARE PROFESSIONAL DEVELOPMENT ACTIVITIES OF LAB PERSONNEL ENCOURAGED THROUGH:

[ ] Partial or complete payment of annual dues

[ ] Time off to attend meetings

[ ] Travel support

[ ] Other

10. DOES YOUR LABORATORY CONDUCT RESEARCH? [ ] Yes [ ] No

If "Yes", please identify types of research projects and indicate if LEAA funded:

(a) Past Projects:

(b) Current Projects:

(c) Proposed Projects:

11. HOW MANY PUBLICATIONS HAS YOUR LABORATORY PRODUCED WITHIN THE PAST TWELVE-MONTH PERIOD?

12. DOES YOUR LABORATORY HAVE AN IN-HOUSE LIBRARY? [ ] Yes [ ] No

If "Yes", is it adequate to suit your needs? [ ] Yes [ ] No

If no in-house library, is a library easily accessible to your laboratory personnel? [ ] Yes [ ] No

Is this library adequate to serve your needs? [ ] Yes [ ] No

What improvements could you suggest?

13. DOES YOUR LABORATORY PROVIDE INSTRUCTION IN THE UTILIZATION OF PHYSICAL EVIDENCE TO POLICE ACADEMIES OR OTHER USER AGENCIES?

[ ] Yes [ ] No

If "Yes", please specify agency, courses taught and time spent:

14. ARE ANY OF YOUR LABORATORY PERSONNEL INVOLVED IN TEACHING AT THE COLLEGE/UNIVERSITY LEVEL?

[ ] Yes [ ] No

If "Yes", please specify courses taught and time pent:

15. WHAT ALTERATIONS OR IMPROVEMENTS CAN YOU RECOMMEND WHICH WOULD RESULT IN USER AGENCIES GAINING FULL, OR GREATER, BENEFITS FROM YOUR LABORATORY?

16. DO YOU FEEL THAT PROSECUTING AND DEFENSE ATTORNEYS ARE PROPERLY TRAINED AND KNOWLEDGEABLE AS TO THE "STATE-OF-THE-ART" OF THE FORENSIC SCIENCES?

PROSECUTING ATTORNEYS		DEFENSE ATTORNEYS	
[ ] Yes	[ ] No	[ ] Yes	[ ] No

17. DO YOU FEEL THAT JUDGES ARE PROPERLY TRAINED AND KNOWLEDGEABLE AS TO THE "STATE-OF-THE-ART" OF THE FORENSIC SCIENCES?

[ ] Yes [ ] No

18. THIS QUESTION PERTAINS TO THE CRIMINALISTICS NEEDS OF THE ENTIRE STATE OF CONNECTICUT. IN YOUR OPINION, WHAT WOULD YOU SAY ARE THE MOST PRESSING NEEDS? *(Please be as specific as possible and list those "needs" in order of priority.)*

19. PLEASE SUMMARIZE THE PRIORITIES IN YOUR OWN JURISDICTION. *(Once again, please list these priorities in order, beginning with the most important.)*

20. OF THE FOLLOWING POSSIBLE OPTIONS, WHAT ACTION DO YOU FEEL SHOULD BE TAKEN WITH RESPECT TO FORENSIC SCIENCE SERVICES IN THE STATE OF CONNECTICUT?

[ ] No action is necessary, laboratory services are fine as they are.

[ ] Existing, individual laboratories should remain independent but be bolstered with additional funds, scientific personnel and equipment.

[ ] Existing laboratories should receive added resources and, in addition, be brought under the control of a single state coordinating commission.

[ ] A single state wide forensic laboratory be developed serving all jurisdictions throughout the state.

[ ] Other: Please explain.

END