

History & Development of Forensic Science



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INTRODUCTION

- Forensic science is the application of science in investigation used to reconstruct the crime there by it can provide impartial evidence in the court of law.
- Its application always depends upon the occurrence of a crime or events considered as offence in criminal law.
- Criminal law is governed by Indian Penal Code, Code of Criminal Procedure (CrPC) and Evidence Act.
- For justice the gathering of evidence and the legal proceeding against the accused are carried out.
- Evidence is crucial link to establish innocence or guilt.

Major Highlights

1. **Crime trend** prevalent in society.
2. **Pioneers** who applied forensic principle in India.
3. Establishment of **Forensic organization** and its evolution.
4. **Reformative measures** adopted by the government.
5. **Present status** of Forensic Science in India.

Forensic laboratories categories in India

1.

- **Chemical Examiner Laboratory**- initially laboratories were known by this name.

2.

- **Central Forensic Science Laboratory (CFSL)**- under the control of Directorate of Forensic Science Services (DFSS), MHA.

3.

- **State Forensic Science Laboratory (SFSL)**-established at state under the control of CFSL.

4.

- **Regional Forensic Science Laboratory (RFSL)**- at the regional or district level under the control of SFSL.

5.

- **Mobile Forensic Science Laboratory (MFSL)**- mobile vans for rapid analysis of crime scene under the control of SFSL or MFSL.

6.

- **Government Examiner of Questioned Documents (GEQD)**- for questioned document examination under the control of CFSL/SFSL.

Year wise progression of crime investigation agencies

S.No	Year	Development in Forensic Science
1	1849	Chemical Examiner laboratory, Madras
2	1853	Chemical Examiner laboratory, Kolkata
3	1864	Chemical Examiner laboratory, Agra
4	1870	Chemical Examiner laboratory, Bombay
5	1892	Anthropometric Bureau, Calcutta
6	1897	Fingerprint bureau, Calcutta
7	1898	Inspectorate Of Explosive, Nagpur
8	1905	Central Finger Print bureau (CFPB), Shimla
9	1906	Government Examiner Questioned Documents (GEQD), Shimla
10	1910	Serological and chemical examiner to the Government of India, Calcutta
11	1915	Footprint Section of Criminal Investigation Department, Bengal
12	1917	Note Forgery Section in Criminal Investigation Department, Bengal
13	1930	Ballistics Laboratory, Calcutta
14	1936	Scientific Sections in the Criminal Investigation Department, Bengal
15	1950	Introduction of Criminology in India

16	1952	State Forensic Science Laboratory, Calcutta
17	1955	Central Fingerprint Bureau(CFPB), Calcutta
18	1956	Central Detective Training School (CDTS), Calcutta
19	1957	Central Forensic Science Laboratory, Calcutta
20	1958	State Forensic Science Laboratory (SFSL), Mumbai
21	1956	Constitution of Central Advisory committee
22	1959	Sagar University, Madhya Pradesh
23	1960	Indian Academy of Forensic Science (IAFS)
24	1964	Central Detective Training School, Hyderabad
25	1967	CFSL, Hyderabad
26	1968	Central Forensic Science Laboratory(CFSL), (CBI) New Delhi
27	1969-70	Federal Scheme for financial assistance for state
28	1970	Bureau of Police Research and Development (BPR&D), New Delhi
29	1972	Institute of Criminology and Forensic, New Delhi
30	1972	Indian Academy Of Forensic Medicine, Goa

31	1972	CDTS, Hyderabad
32	1978	CFSL, Chandigarh
33	1983	Recommendations of Scientific Advisory Committee to the Cabinet
34	1994	AFIS
35	2002	Directorate of Forensic Science Services (DFSS),CGO complex, New Delhi
36	2010	DFS renamed as Directorate of Forensic science services(DFSS)
37	2011	CFSL Pune, Bhopal and Guwahati
38	2012	CDTS Jaipur
39	2016	CDTS Ghaziabad
40	2019	CFSL Kamrup, Guwahati

Central forensic laboratories in order of time

S.No	Year	CFSLs	
		State/UT	Location
1	1957	West Bengal	Calcutta
2	1968	Delhi	CBI, Lodhi road, CGO complex, New Delhi
3	1966	Hyderabad	Telangana(Earlier in Andhra Pradesh)
4	1978	Chandigarh	Sector 36 A, Chandigarh
5	2011	Maharashtra	Pune
6	2011	Madhya Pradesh	Bhopal
7	2011	Assam	Guwahati

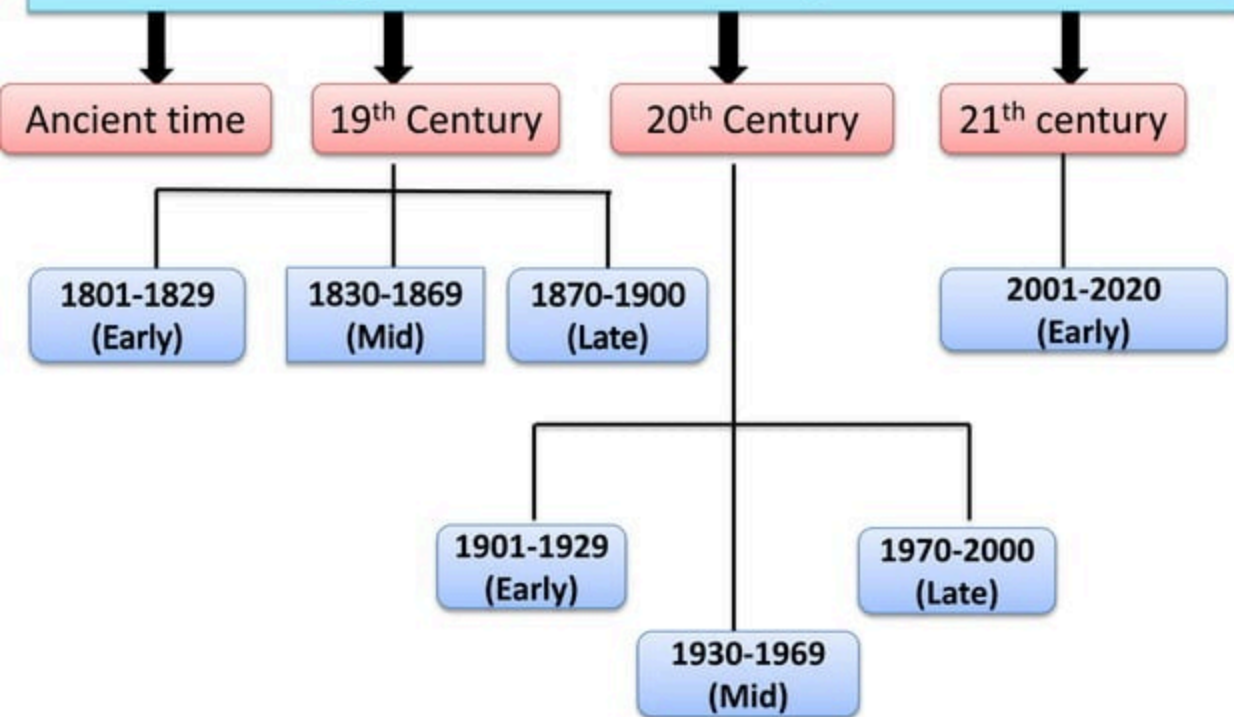
Total CFSL: 7

Current status of forensic science in India

S.No	Organization	Old data	Current data
1.	SFSLs / UT FSLs	28	67
2.	CFSLs	-	07
3.	RFSLs	32	79
4.	MFSLs	144	145

Progressive development in Forensic science in India

Chronology of Forensics Development in India



19th Century

1801-1829

(Early)

- **Intentional and accidental poisoning prevalent in India.**
- **Theft, burglary, dacoity and murder.**
- **Use of explosive for mass destruction.**

1830-1869

(Mid)

- **1849** – Chemical Examiner Laboratory, Madras.
- **1853** - Chemical Examiner Laboratory, Kolkata.
- **1864** - Chemical Examiner Laboratory, Agra.

1870-1900

(Late)

- **1870** - Chemical Examiner Laboratory, Bombay.
- **1892**-Anthropometric Bureau at Calcutta, Bengal.
- **1897**- Fingerprint Bureau at, Calcutta, Bengal.

Crime Trends & Major Establishments

Chemical Examiner Laboratory, Madras (1849)

Establishment and expansion	New Expansion	Location	Authority	Why
30th October 1849	Forensic Chemical Examiner laboratory inception	Madras, presently known as Chennai, Tamilnadu.	Government of Madras, under the control of Medical board, fort St. George, department of health headed by P Thomas Ray.	Examination of medico-legal cases.
1905	Recruitment of a coin and currency expert	Same laboratory	Head of laboratory, Govt. of Tamilnadu.	To assist police in bribe cases.
1929	Ballistics and Explosive division inception.	Same laboratory	Head of laboratory, Govt. of Tamilnadu.	Examination of firearm and explosive cases.

Establishment and expansion	New Expansion	Location	Authority	Why
1980	The police laboratory and the prohibition and the excise laboratory merged with same lab then known as Tamilnadu forensic science laboratory (TNFSL) .	Same	Government of Tamilnadu & appointed Dr. A.R. Natarajan as the first director.	-
Late 1980	Detachment of Police department then renamed as Forensic Science department.	Same		
1853, 1864 and 1870	Similar Chemical Examiner laboratory	Kolkata, Agra and Bombay respectively	-	-

Anthropometric Bureau, Calcutta (1892)

Establishment and expansion	New Expansion	Location	Authority	Why
1878	Alphonse Bertillon's Anthropometric system was adopted	Calcutta, Bengal	Government of Bengal	People change identity & committed offence like murder, dacoity and robbery.
10 th May 1892	Introduction of Bertillon system of Anthropometry for the recognition of offenders	Bengal	HJS Cotton, the chief secretary of Bengal as instructed by , Secretary of Government of India (GOI) through letter no 263 .	For recognition of offenders. (Identity can be changed but Physical measurement of body remain same)
1892	Anthropometric Bureau	Writer's Building, Calcutta	HJS Cotton, the chief secretary of Bengal	Maintenance of Body Measurement record and examination of cases.

Fingerprint Bureau, Calcutta (1897)



a) In 1858 historical Contract drew between Hooghly Magistrate Sir William James Herschel and contractor Konai using palm print for supplying road making material

b) ICS officer William James Herschel operated from Writers Building.

Figure a: Use of fingerprint in contract.
(Source: <http://ncrb.gov.in/central-fingerprint-bureau>)

Figure b: Writer's building at Calcutta
(Source: <http://ncrb.gov.in/sites/default/files/ai/be/02.07.18-CFPB-Flyer.pdf>)

Pioneer: **Francis Galton** – Identification and Individualization of fingerprint.
Classified into Loop, arch and whorl.

India : **William James Herschel** (Collector at Jungipore, Hooghly in Bengal)
– Fingerprint use for mass identification at Bengal.

Sir Edward Richard Henry (Inspector General of Police)
– 10 Digit Classification system with **Azizul Haque** and **Hem Chandra Bose**.

Establishment and expansion	New Expansion	Location	Authority	Why
1877	Institute was setup for the registration of government pensioner's fingerprint	Hoogly, Calcutta	William James Herschel	To prevent relatives from the collection of pension after the employee's death.
1877	Recorded Fingerprint of Prisoners.	Calcutta	William James Herschel	To prevent the occurrence of fraudulent events to avoid the prison sentence.

Establishment and expansion	New Expansion	Location	Authority	Why
12 th June 1897	Resolution passes to introduce fingerprint as an official mode of recognition of criminals in British India.	India	Governor General of Bengal	<ul style="list-style-type: none"> • Rise in cases of robbery all over India. • Failure of Anthropometric system in identification.
1897	World's first fingerprint bureau also known as Bengal Fingerprint Bureau	Writers' Building , Calcutta	Government of Bengal.	For maintaining record and identification of fingerprint.
1899	10 Digit Classification system.	Bengal	Azizul Haque and Hemchandra Bose.	For classification and identification of Fingerprint.

20th Century

Crime trend

- Forgery.
- Bribery.
- Murder.
- Misuse of weapon.

Committee

- 1956- Constitution of Central Advisory committee

SCHEMES

- 1969- Federal Scheme for financial assistance for state.

1901-1929 (Early)

- 1905- Central Finger Print Bureau(CFPB), Shimla.
- Government Examiner Questioned Documents (GEQD) at Shimla.
- 1910- Serological and Chemical Examiner to the GOI, Calcutta.
- 1915- Footprint Section of Criminal Investigation Department, Bengal.
- 1917- Note Forgery Section in Criminal Investigation Department, Bengal.

1930-1969 (Mid)

- 1930- Ballistics Laboratory at Calcutta, Bengal.
- 1950- Introduction of Criminology in India.
- 1952- State Forensic Science Laboratory, Calcutta, Bengal.
- 1955- Central Fingerprint Bureau (CFPB), Calcutta.

1970-2000 (Late)

- 1956-Central Detective Training School (CDTS), Calcutta.
- 1957- CFSL, Calcutta.
- 1959- Sagar University, Madhya Pradesh.
- 1960- Indian Academy of Forensic Science.
- 1968- CFSL, CBI, New Delhi.
- 1970- BPR&D, New Delhi.
- 1972- Institute of Criminology and Forensic, New Delhi.
- 1972-Indian Academy of Forensic Medicine, Goa .
- 1978-CFSL, Chandigarh.

Central Finger Print Bureau (CFPB), Shimla (1905)

Establishment and expansion	New Expansion	Location	Authority	Why
1905	<p>Central Finger Print Bureau (CFPB)</p> <p>(But dissolved due to retrenchment proposal of Inchape committee)</p>	Shimla	Recommendation of Royal Police Commission of 1902-03.	Apex investigating agency and International organization in all the matter related to Fingerprint science and also assist state fingerprint bureau in all the concerned matters.
1955	Regained functionality at Delhi under the control of IB.	Delhi	-	-Do-
August 1956	CFPB mobilized to Calcutta under IB.	From Delhi to Calcutta	-	-

Establishment and expansion	New Expansion	Location	Authority	Why
1973	Administrative control was taken by Central Bureau of Investigation (CBI).	-	-	-
July 1986	NCRB displaced CBI and overtook all its power to control CFPB	East Block-7, R.K.Puram, New Delhi	-	-
1992	Indian Version of Automated Fingerprint Identification System (AFIS) also called "Fingerprint Analysis & Criminal Tracing System" (FACTS)	-	-	-
2018	NCRB visualizes to get hold of a web based application called National Automated Fingerprint Identification System (NAFIS) with latest NIST software.	-	-	-

Government Examiner of Questioned Documents (GEQD), Shimla (1906)

Establishment and expansion	New Expansion	Location	Authority	Why
1904	Post of Government Handwriting Expert of Bengal was created & the then Superintendent in the A.G.'s office known as Mr. CR Hardless was appointed	Bengal	Government of Bengal.	To identify the handwritings on the secret documents connected with the Indian independence movement .
1906	GEQD Bengal mobilized to Shimla under the control of the Director, CID.	Shimla		
1906-1925	C R Hardless was replaced by a police officer Mr. F Brewster. Later by, military personnel R Stott.	Shimla	-	For revealing of invisible writing, training military personnel and investigating bribery and corruption cases.
1944	V O J Hodgson appointed to the post of GEQD	Shimla		For examination of Questioned document.

Note Forgery Section in Criminal Investigation Department (1917):


Establishment and expansion	New Expansion	Location	Authority	Why
1898	Currency Notes Forgery Act, 1898		Secretary Government of India, Legislative Department	Existence of Note forgery crime
1917	Note Forgery Section under CID	Bengal	Government of Bengal	Crime still prevailed

Ballistics Laboratory, Calcutta (1930):


Establishment and expansion	New Expansion	Location	Authority	Why
1857	Indian Arms act (unlicensed possession, sale, manufacture was penalized)	India	Lord Lytton , Viceroy of India	Misuse of weapon of any caliber without license
1930	Ballistic Lab under the Calcutta police department	Bengal	British government	Intensified National moments raised the misuse of unlicensed firearms.

Introduction of Criminology in India (1950)

Introduced in India in the mid -20th century, on the recommendations of UNESCO



In 1950, at New Delhi National conference of state DG of police, IG and DGP of police supported the inception of criminology and forensic courses in Indian universities



In 18th July 1959, Dr. Hari Singh Gour University in Madhya Pradesh was first to start an independent department of Criminology and Forensic Science, headed by Justice GP Bhat

Central Detective Training Institutes(CDTS)

Establishment and expansion	New Expansion	Location	Authority	Why
1956	First CDTS	CFIs building at 30, Gorachand Road, Kolkata , Bengal.	Shri B.N. Mullick, the then Director of Intelligence Bureau.	Aim to disseminate training skills to police officials on the scientific aspects of crime case investigation.
1964		Hyderabad		-Do-
1973		Chandigarh		-Do-
2012		Ghaziabad		-Do-
2016		Jaipur		-Do-

Central Forensic Science Laboratory, Calcutta (1957)

Establishment and expansion	New Expansion	Location	Authority	Why
1957	CFSL, Calcutta	30 Gorachand Road, Kolkata	Ministry of Home affairs(MHA), Government of India	To enhance the scientific analysis support in criminal and civil matters
1970	Neutron Activation Analysis Unit of CFSL, Calcutta	Bhabha Atomic Research Centre, Trombay	Ministry of Home affairs(MHA), Government of India	to extend the analysis to criminal investigation to nuclear method
1998	Received honorable title of "Centre of Excellence " in biological sciences	Kolkata	Ministry of Home affairs(MHA), Government of India	To reform its Character: <ul style="list-style-type: none"> • Carry Research & Development in field of Forensic Biology. • To conduct scientific examination of crime exhibits. • To train manpower & disseminate awareness about forensic science. • To provide consultancy to FSLs and crime investigation agencies.

Constitution of Central Advisory Committee (1956)

1956- Union Government

1. Central Forensic Science Advisory Committee

- To all Forensic matters excluding forensic medicine.
- 1972- Transformed into Standing Committee on Forensic Science, which is still active in BPR&D

Two committees
With the scope of betterment to foster the growth of existing Forensic science laboratory and inception of new one.

2. Central Medicolegal Advisory Committee

- Matter related to medicolegal procedures and practice
- 1972- dissolved.

Indian Academy of Forensic Science (IAFS), 1960

In 1960 at 30 Gora Chand road, Calcutta, presided by Dr. H. L. Bami.

Objective- To promote the exchange of knowledge of Forensic Science across the International borders

Started a scientific journal - Journal of the Indian Academy of Forensic Sciences.

Conducted conferences and seminars annually in the field of forensic science.

Central Forensic Science Laboratory (CFSL), CBI, New Delhi

- CFSL CBI was incepted at Block No.4, CGO Complex, Lodhi Road, New Delhi-110003 under the jurisdiction of CBI, New Delhi with its scientific aid unit located at CBI, Chennai.
- Dedicated to research and development in forensic science.
- Also, the scientific examination of crime scene exhibits, cases undertaken from Delhi police, Judiciary, CBI and Vigilance Departments of Ministries and State or Central Government Departments.

Federal Scheme for Financial Assistance for States (1969-70)

- **H.L. Bami** in his work reported that for the modernization of police forces, a federal scheme was launched in 1969-70.
- Under this, 70 million rupees were sanctioned for-
 - ✓ the upgradation of existing equipment & existing laboratories.
 - ✓ construction of modernized laboratories.

Bureau of Police Research & Development (BPR&D), New Delhi (1970)

Established on 28th
August 1970.
by Government of
India

Aim: The objective is to modernize the police forces and to overcome the inadequacies.

Four divisions namely:

- Development division.
- Research & statistics publication division.
- Training division.
- Correctional administration division.

RECOMMENDATION: To establish forensic science division at BPR&D to intensify the input to central government for holistic growth in the country.

In the year 1983, Chief forensic scientist post was sanctioned and Forensic Science Directorate was incepted at BPR&D

The Institute of Criminology and Forensic, New Delhi (1972)

INCEPTION: In 1955, by UNESCO symposium resolution, London

RESOLUTION: to introduce Criminology and Forensic Science in academic streams for better Comprehension and application.

1972- UGG recommended Government of India to establish the Institute of Criminology and Forensic Science with BPR&D at Rohini, New Delhi.

1976 - It came under the jurisdiction of Ministry of Home Affairs (MHA).

1991 - National Institute of Criminology and Forensic Science (NICFS) .

2003 - Lok Nayak Jayaprakash Narayan National Institute of Criminology and Forensic Science

CFSL, Chandigarh (1978)

1933- First established as CID Scientific Section of United Punjab Police Department at Lahore.

1947- Laboratory was shifted to Phillaur, Punjab.

1961- Full-fledged Forensic Science Laboratory of Punjab at Chandigarh.

1966- Laboratory came under the jurisdiction of Chandigarh Union Territory and was located at Book Depot Building at Sector 18-A, Chandigarh.

1978- Overlooked by Bureau of Police Research and Development and renamed it as **Central Forensic Science Laboratory, Chandigarh.**

1997- Declared as a **Center of Excellence in Physical Sciences** by the Ministry of Home Affairs .

Finally, the laboratory became the part of Directorate of Forensic Sciences now called as **Directorate of Forensic Science Services**), Ministry of Home affairs.

Directorate of Forensic Science Services (DFSS), New Delhi (2002)

National Human Rights Commission and Padmanabhaiah Committee on Police Reforms.

DFS and BPR&D

Recommendation



To incept Directorate of Forensic science separately headed by M. S. Rao designated as Director-cum-Chief Forensic Scientist.

Jurisdiction- CFSL at Hyderabad, Calcutta and Chandigarh and GEQD at Kolkata, Shimla and Hyderabad.

BPR&D

On December 31, 2002 - Bifurcation

DFS – Directorate of Forensic Science

2011- Inception of three CFSL namely Pune, Bhopal, Guwahati.

2010- DFS was renamed as Directorate of Forensic science services (DFSS).

Conclusion

- The occurrence of crime is failure to meet the basic livelihood needs due to poverty, unemployment, absence of desired freedom and the unawareness among the public regarding its consequences.
- In Indian scenario, it is clearly evident that the Commissions and various law enforcement agencies have suggested to infuse the scientific technology in the crime detection.
- Over a period of time, significant increase in the number of Forensic science organizations have been observed.
- Maximum number of organization were established in 20th century.
- Great emphasis has been laid to:
 - Provide modernized equipment
 - Skilled man power
 - Dissemination of knowledge to generate awareness.



THANK YOU