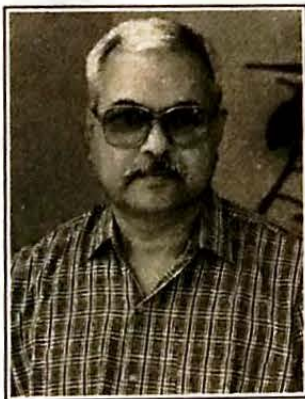


# UTTAR PRADESH FORENSIC SCIENCE LABORATORIES

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## Brief History

In the year 1945 a committee was appointed under the chairmanship of the then advisor, Home Department, Government of United Provinces, Mr. G.L. Vivion to consider the proposal of setting up a Forensic Science Laboratory in the United Provinces. Amongst others Dr. K.S. Krishnan, FRS was also a member of the committee. He headed the sub-committee of specialists for establishment of the Forensic Science Laboratory. It was proposed to amalgamate the then Chemical Examiner's Laboratory at Agra and the Scientific Section, Criminal Investigation Department at Allahabad to establish Forensic Science Laboratory at Lucknow. For some reasons, the proposal did not materialise at that time but it was perhaps the earliest effort known to have been made for setting up a comprehensive Forensic Science Laboratory in the country.

After independence, the Scientific Section of Criminal Investigation Department was brought to Lucknow from Allahabad in the year 1953, and a proposal of bringing Chemical Examiner's Laboratory also to Lucknow and setting up of a fullfledged Forensic Science Laboratory in Uttar Pradesh was again put up in the year 1954. The construction of a building for the Forensic Science Laboratory was sanctioned in the year 1956 which was ready for occupation in early 1959. A committee was set up by the Government in February 1959 to finalise, inter alia, the procedure of bringing Chemical Examiner's Laboratory from Agra, which was under the Health Department, to Lucknow and to consider the appointment of the Director, Forensic Science Laboratory, Uttar Pradesh. Unfortunately, the merger of Chemical Examiner's Laboratory and Scientific Section was deferred again because of the differences between the concerned departments over certain administrative points.

In the year 1960 the Dy. Insp. Genl. of Police, Criminal Investigation Department U.P. was appointed ex-officio Director of Forensic Science Laboratory and it was decided to develop the Scientific Section of CID into a full-fledged forensic science laboratory. The efforts of developing Scientific Section into a forensic science laboratory proved to be futile again due to various reasons.

In the year 1967 the Dy. Insp. Genl. of Police, Headquarters, Allahabad submitted a detailed proposal superseding all the previous proposals to set-up a Forensic Science Laboratory in the State. Finally in February 1969, a Government order was issued to convert Scientific Section, Criminal Investigation Department into a Forensic Science Laboratory. A number of civilian posts were also created and it was decided to revert the Police Officers to their parent department, after the newly created posts were filled up. For some reasons the Government order could not be implemented effectively and there was not much improvement in the set up, it continued to work as "Scientific Section" under a new name.

The U.P. Police Commission 1970-71 recommended to merge the Chemical Examiner's Laboratory at Agra with the Forensic Science Laboratory at Lucknow and establish three full-fledged Forensic Science Laboratories at Agra, Lucknow and Varanasi. The Government of U.P. appointed a three men working group under the chairmanship of the then Commissioner and Secretary Home (Police) Sri B.J. Khodaiji to examine the requirements of U.P. Police and to suggest means for implementation of the recommendations of the U.P. Police Commission. On the basis of the suggestions of the three men working group, a Govt. order was issued in the year 1979 for integration of the Chemical Examiner's laboratory, Agra and the Forensic Science Laboratory, Lucknow

and to develop these two laboratories as full-fledged Forensic Science Laboratories, having all the modern equipments necessary for different divisions. A number of Gazetted and Non-Gazetted posts were created to man the additional divisions of the laboratories. It was also decided to establish a full-fledged Forensic Science Laboratory at Varanasi. The following seven divisions were sanctioned in each of the laboratories at Lucknow and Agra. **The nature of examinations that can be undertaken in these divisions** are briefly enumerated below :

**Physics Division :** Physical examination of paint, glass, soil, ropes, strings, electrical transmission wires, textiles, lottery tickets, seals etc., comparison of tool marks, restoration of erased identification number/marks, contour matching of accidentally broken pieces for source correspondence, examination of broken glass pieces for the direction of impact etc. examination of counterfeit coins, trace elements analysis for the comparison and identification exhibits.

**Documents Divison :** Comparison of questioned writing, typewriting, printing matter, signatures with the known standards to establish genuineness or forgery, examination of documents for erasures, alterations, obliterations and secret writing, decipherment of indented writings; determination of relative age of the writings/papers, examination of the charred documents, examination of postage stamps, revenue stamps, cheques etc.

**Ballistics Division :** Examination of fire arms for their service ability and to find out whether they come under the purview of Arms Act, determination of probable type or make of firearms from fired bullets/cartridges, to determine whether two or more bullets/cartidge case have been fired from the same or different fire arms, to establish the linkage of a bullet/cartidge case with a particular

## ANALYTICAL WORK (Receipt and Disposal of cases in the year 1996-1997)

Divisions	Cases Pending as on 1st April'96	Cases received during 1996-97	Cases examined during 1996-97	Cases pending as on 31st March'97
Documents	14	583	570	27
Physics	2	832	813	21
Chemistry	1444	9973	10710	707
Ballistics	93	785	730	148
Serology	148	4383	4125	406
Biology	17	625	584	58
Toxicology	59	1182	1092	149
Explosive	413	1366	1699	80

firearm, examination of a firearm to detect evidence of firing, checking firearms against the possibility of accidental discharge, estimation of distance of firing, identification of bullet holes/shooter by detecting fire arm discharge residues; general examination for the reconstruction of a scene of firing etc.

**Chemistry Division :** Examination of opium and its alkaloids heroin, ganja, bhang, charas and other narcotics and psychotropic substances; examination of illicit liquors, varnish, petrol, diesel, kerosene etc, examination of inflammable fluids and solids in suspected cases of arson; examination of alcoholic medicines etc; examination of dyes, inks, stains and other organic and inorganic chemicals.

**Toxicology Division :** Examination of viscera, stomach wash, vomit, etc, for poisons of vegetable origin (Dhatura, Oleander, opium, madar aconite, nux vomica etc), inorganic salts (arsenic, copper sulphate, cyanides etc.), acids, drugs, alkaloids, insecticides (DDT, BHC parathion, malathion, aldrin, zinc phosphide, aluminium phosphide, etc) and all other types of poisons including powdered glass, etc.

**Biology Division :** Examination of the biological fluids e.g semen, saliva, sweat, urine, faecal matter etc, histological and histopathological examination of tissues of human/animal origin, morphological examination of hair, wool and fibres, examination of skeletal remains for determination of origin, age, sex, stature etc; examination of paper pulp, identification of plant portions such as seeds, leaf fragments, flowers, wood bark, twigs etc; bacteriological and entomological examination, identification of minute vegetable forms e.g diatoms and other micro organism, mould, algae, fungi etc.

**Serology Division :** Chemical, microscopical and spectroscopical examination for the detection of blood, serological examination of blood stains, seminal stains and other biological stains for their origin and grouping, examination of barr bodies for sex determination from blood stains, hair roots, saliva etc.

### Present Status

The implementation of the above orders were initially very slow but it picked up some momentum in the year 1982. The efforts were made to equip the laboratories and to fill up the newly created posts. Some of the posts were

filled up on deputation by officers from the Government of India in the year 1983. A regular appointment of the Director, Forensic Science Laboratory was made for the first time in the year 1986 through Public Service Commission, U.P. The other posts were also advertised by the U.P. Public Service Commission in 1986. Meanwhile the basic equipments and some of the modern analytical instruments needed for different divisions of the laboratories were procured. The "nucleus" of each division in both the laboratories were established. The examination of exhibits in each division of both the laboratories began, for the first time, on 1st April, 1987. The jurisdiction of both the laboratories was defined in July, 1987 and thus, the laboratories at Agra and Lucknow started functioning as full fledged and independent centres, catering to the needs of the districts under their jurisdictions.

In the year 1985 an Explosive division was also sanctioned for undertaking the examination of explosive substances and remnants of explosive devices after explosion. This division also started functioning at Agra in the year 1987. It is expected to cater to the needs of all the districts in the State. In the year 1990, several posts were sanctioned by the Government for the newly created Medicolegal, lie-detection and Instrumental Analysis division in the Lucknow Laboratory and Instrumental Analysis and Explosive divisions, in the Agra Laboratory.

### Staff strength of Forensic Science Laboratories Uttar Pradesh (including posts sanctioned for district field units)

S.N.	Name of the Post	Number
1.	Director	1
2.	Joint Director	2
3.	Assistant Director	17

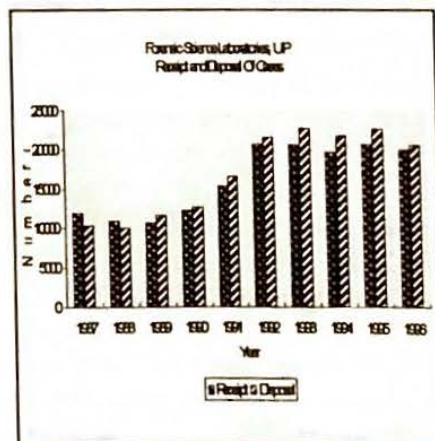
4.	Scientific Officer	33
5.	Sr. Scientific Assistant	74
6.	Scientific Assistant	92
7.	Head Photographer	02
8.	Photographer	15
9.	Asst. Photographer	04
10.	Laboratory Assistant	25
11.	Librarian-cum-Museum Astt.	01
12.	Assistant Lib-cum Curator	01
13.	X-ray Technician	01
14.	Turner	01
15.	Mechanic-cum Electrician	02
16.	Carpenter	04
17.	Gas man	02
18.	Gas man helper	02
19.	Laboratory Attendants	94
20.	Head clerk	02
21.	Stenographer	04
22.	Senior Clerk	06
23.	Accountant	02
24.	Jr. Clerk	16
25.	Head Constable-Armed Guard	01
26.	Head Constable Armourer	02
27.	Constable Armed Guard	04
28.	Constable Drivers	68
29.	Driver	01
30.	Daftari	02
31.	peon	11

32.	Mali	02
33.	Chaukidar	02
34.	Farash	01
35.	Waterman	01
36.	Animal Keeper	01
37.	Sweepers	08

The application of science to crime investigation is becoming popular with the law enforcement agencies day by day. It is clearly reflected in the increase of the number of cases referred to the forensic science laboratories during the previous years. In the year 1979, when the Government of Uttar Pradesh decided to reorganise the scientific facilities available to the investigating agencies of the state, the total number of cases referred to the laboratories at Agra and Lucknow were about 7,500 only. Today, the average input to these laboratories is about 21,000 cases.

It may be mentioned here that it is becoming very difficult to manage timely disposal of the cases referred to the laboratories with practically the same manpower and infrastructure, which was sanctioned at the time of reorganisation of the laboratories in the year 1979. Efforts are made, at the cost of research, development, and other scientific and academic activities of the scientists, to examine and report the cases received in the laboratories within a period ranging from one month to two months. It is expected that the situation may improve if the proposed laboratory at Varanasi comes up in near future. With the increasing importance of scientific investigation of crime and other social disputes the state would need more laboratories in future.

In an effort to equip the laboratories with modern equipments a number of sophisticated instruments such as comparison microscope, video spectral comparator, Projectina universal comparison projector, yashica cameras, infrared spectrophotometer, ultra violet



spectrophotometer, I.C.P. emission spectrometer, velocity measurement system, polarising and fluorescence microscope, gas liquid chromatograph, stereomicroscope, Atomic absorption spectrometer, scanning electron microscope, etc. were imported for the laboratories under the scheme of modernisation of police forces, financed by the Government of India.

Forensic Science Laboratory, U.P., Lucknow was selected for strengthening under UNFDAC project of the United Nations Development Program and was provided with modern Analytical instruments like HPLC, GLC and TLC in the year 1990 for analysis and identification of seized Narcotic drugs and Psychotropic substances. These instruments are being used for routine analytical work.

The Director, Forensic Science Laboratory, U.P., Lucknow led the Indian delegation to the 11th Interpol Forensic Science Symposium held at Lyons, France in the year 1995. He was elected as a member of the Organising Committee of the 12th Interpol Forensic Science Symposium to be held in 1998. India is represented on the Organising Committee for the first time. The FSL, UP, Lucknow was accepted as co-ordinating laboratory for the evidence types paint and glass for the 12th Inerpol Symposium.

In addition to the routine examination of samples of criminal cases received in the laboratories, research and development work is also taken up by the scientists. The research and development programmes being conducted in the laboratories at present are : Morphological studies of a variety of sample using Scanning Electron Microscope, Development of latent fingerprints of different non-porous surfaces by Scanning Electron Microscope, Forensic Application of X-ray Diffraction Technique, Tagging of Aluminium Metal (in collaboration with

the NAA Unit, ACD, BARC), Proximity Determination within Tattooing Range, Data base generation of Diatom diversity of different water bodies in U.P. for diagnosis of drowning, Trace Element Analysis of cigarette foils of different batches and brands by Atomic Absorption Spectrophotometry, and Effect of different environmental factors on blood stains.

The scientists of the Forensic Science Laboratory U.P. deliver lectures to the trainees of various organisations for example; National Institute of Criminology & Forensic Sciences (NICFS), Judicial Training Research Institute (JTRI), Police Training College (P.T.C.), Nationalised Banks, Direct Taxes Regional Training Institute, National Academy of Direct Taxes. Trainees from the National Institute of Criminology & Forensic Science, Govt. of India, Delhi and M.Sc students of Sagar University, Sagar, are attached to the FSLs U.P. from time to time for practical training. Trainees from various other organisations in the country such as Central Bureau of Investigation, Judicial Training and Research Institute, National Police Academy, Police Training College, etc. visit the Forensic Science Laboratory for practical orientation.

The scientists of the forensic science laboratories, Uttar Pradesh, participate in scientific meetings, seminars, symposia and workshops organised in their fields of specialisation.

### **Computerisation of routine laboratory work**

The developments in the field of computers have transformed the way work is conducted in the offices and laboratories today. The computerisation of routine laboratory work was taken up in the year 1993, when a PC-AT was purchased in the F.S.L. Lucknow. The Application Software for case management, statements, recruitments, etc. were developed in the laboratory.

The reports of the cases examined in the Chemistry and Toxicology divisions are produced on computers since 1994. A Local Area Network of one file server and six nodes were installed in the F.S.L., Lucknow in January 1997. A comprehensive application software 'Rakshit', for the management and reporting of cases received in all the divisions of the laboratory was developed. All the reports originating from the F.S.L., Lucknow are produced on the computers since April 1997. The development of other application software is in progress. A local Area Network with one file server and six nodes is being installed in the F.S.L., Agra. The LANs in the two laboratories will be connected through Modems.

### **Laboratory Accreditation Programme**

With the increasing importance and use of forensic science in the criminal justice system, there has arisen a need to raise standards of practice and the quality of work performance in forensic science laboratories. This struggle for performance has made many laboratories in the world adopt accreditation through various organisations. Additionally, because of the growing international nature of criminal activities there is also perceived requirement for laboratories in different countries to standardise their procedures to facilitate an exchange of information. Such standardisation is greatly assisted by the development of standard work methods and operating procedures as a requirement of accreditation bodies.

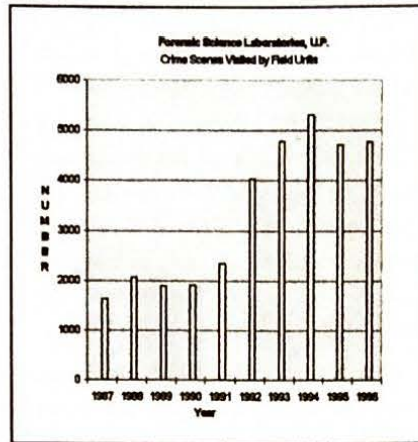
In India the National Accreditation Board for Testing & Calibration Laboratories (NABL), Department of Science and Technology, Govt. of India is an accreditation body for laboratories. It has adopted the ISO/IEC Guide 25 criteria for laboratory accreditation.

It is proposed to develop a Quality System in the forensic science laboratories in Uttar Pradesh and get them accredited by the NABL. Some of the senior scientists of the FSLs have already attended courses on Laboratory Quality System (NABL-101) conducted by the Department of Science and Technology. A few more scientists would be deputed for the course in the near future. It is also proposed to conduct a course for the benefit of most of the senior scientific staff of the laboratories in the state. The process of developing written procedure and methods has already set in. Efforts will be made to develop the Quality System soon so that application for accreditation may be submitted to the NABL, DST, Govt. of India.

### Establishment of Field Units

The collection of important clue materials from the scenes of crime is of more importance than their examination in the laboratory. In most of the cases it may be possible to repeat the examination in the laboratory, but it is never possible to get relevant physical evidence from the scene of crime once it is disturbed. With this in view a Field Unit of the then Scientific Section of CID, U.P., was established on experimental basis at Lucknow in the year, 1960. Ten more field units were established in the year 1968 at Meerut, Agra, Jhansi, Allahabad, Faizabad, Varanasi, Gorakhpur, Bareilly, Moradabad and Kanpur. The field Units were kept under administrative control of the Superintendent of Police, scientific section CID, U.P.

A meeting was held under the chairmanship of then Commissioner and Home Secretary Shri J.A. Kalyankrishnan in the year 1976 to consider the establishment of field units in the districts where crime rate was high and to evaluate the usefulness of the existing field units. It was decided, inter



alia, that separate staff should be appointed for the field units, as the persons drawn from the civil police do not have the desired interest in the working of field units. It was decided that the field units should be under the administrative control of the Director, Forensic Science Laboratory, U.P. It may be mentioned here that it was decided by the Government in the year, 1969 to develop the Scientific Section of the CID, into a fullfledged Forensic Science Laboratory. These decisions could not be implemented for a long time due to various reasons. Ultimately, in the year 1985-86 it was decided by the Government to establish the field units of the Forensic Science Laboratory under the Modernisation of Police Forces Scheme, in every district of the State. Vehicle, wireless sets, cameras, crime-kit boxes, etc. were sanctioned for the newly created field units, but the desired posts were not sanctioned at that time. Meanwhile, senior Supdt. of Police/Supdt. of Police in-charge of all the districts were requested to make the necessary staff available from the District Police for the newly established field units in their districts, till the new posts are created and filled up. Training program in photography and crime scene investigations were organised by the Director, Forensic Science Laboratory for the desirous persons, thus attached to the field units in the districts. In the

year 1988-89 the scientific posts for the field units were sanctioned by the Government.

At present, only some of the field units of the districts have scientific staff with them. Others are manned by police personnel of the respective districts. The appointment of scientists recruited against posts sanctioned for the field units is being processed and it is expected that most of the field units would have scientific staff within a short period. The use of field units has not become very popular with the investigating officers as yet. However, the awareness of the importance of scientific aids to crime investigation is catching up with the investigation officers and the use of the field units by them is on the increase.

### Looking Ahead

The field units set up at the district headquarters are facing acute problem of suitable accommodation for the dark room/laboratory etc. It has been proposed to construct a small building consisting of a photographic dark room, working space and sitting space for the staff and to equip these units with photographic goods and other laboratory facilities for preliminary scientific investigations.

A full fledged Forensic Science Laboratory equipped with modern instruments is to be established at Varanasi. Efforts are being made to acquire suitable land for this laboratory.

The day is not far when the Forensic Science Laboratory, Uttar Pradesh, will be a fully grown organisation of three full-fledged laboratories and field units in all the districts of the state with a total of about 750 staff members, and the Scientific Aids to Investigations would be available at hand in every corner of the State. □