Report on Industrial Visit to National Dope Testing Laboratory

Date: 7th and 8th April,2025

Target Group: Students of B.Sc. Forensic Science and M.Sc. Forensic Science

Location: National Dope Testing Laboratory, JLN Stadium, New Delhi

Coordinators: Dr. Shivani Sehgal (Assistant Professor, SBAS) and Ms. Kritika Singh (Assistant Professor)

Organized by: School of Basic and Applied Sciences, Forensic Sciences, K R Mangalam University, Gurugram

Participants: 100

Introduction:

On 07/04/2025 and 08/04/2025, School of Basic and Applied Sciences successfully organized an industrial visit to the National Dope testing Laboratory, JLN stadium, New Delhi. The objective of this visit was to provide students a practical exposure and learning of the various specialized instruments and equipment's used in Dope Testing of elite level athletes and enhance their understanding of theoretical concepts related to high end technologies like GCMS, LCMS and much more.

Objective:

The primary objectives of the visit to the National Dope Testing Laboratory were:

- To understand the workflow and processes involved in the testing of athlete samples for prohibited substances.
- To observe the infrastructure and equipment used for anti-doping analysis.
- To gain insights into the scientific and procedural rigor followed in compliance with international standards set by WADA (World Anti-Doping Agency).
- To interact with technical personnel and understand their roles in the testing process.

Summary of Events:

The visit commenced with a warm welcome by Dr. Anand Rajan , Scientist B and Quality Manager, NDTL. Further Dr. P.L. Sahu, Director, NDTL, held an introductory session with

the students and provided an overview of the functions of NDTL and various sections of the NDTL. The key stages observed during the visit are detailed below:

a. Sample Receiving Section

- The first section visited was the **Sample Receiving Area**, where urine samples are received directly from the **NADA (National Anti-Doping Agency)** approved collection authorities.
- Each athlete's sample arrives in two sealed bottles – **Bottle A and Bottle B**, each containing varying volume.
- The bottle A had a minimum of 60ml and a maximum of 90 ml of the sample, while the bottle B had a minimum requirement of 30 ml and a maximum of 90 ml of the sample. The B bottle when received was placed directly at -20-degree Celsius, while Bottle A was opened using a specialized machine and sent for further processing.
- Accompanying the samples is the **Doping Control Form (DCF)**, which includes necessary information like volume of the sample, specific gravity with sealed intact for identification, handling, and testing.
- After that 15 ml of the sample from bottle A is taken out and distributed to the various sections for further analysis.
- The samples then reached the Sample processing room where it is further distributed into various other sections for specific testing and analysis.
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b. Sample Distribution Process

- This aliquot is then distributed across multiple specialized sections of the laboratory, namely:
  - **ITP Section (Internal Testing Procedure):**
    - This is the preliminary stage where samples undergo internal screening for banned substances through standardized protocols.
  - **LC-MS Room (Liquid Chromatography–Mass Spectrometry):**
    - Advanced instruments here are used to detect and quantify the presence of prohibited substances, such as anabolic agents and stimulants.

- **GC-MS Room (Gas Chromatography–Mass Spectrometry):**
  - This section further analyzes volatile and semi-volatile substances, complementing the findings of the LC-MS tests.
- **Biology Section:**
  - Specific tests are conducted here for **Erythropoietin (EPO)** and other peptide hormones using immunoassay and other biological techniques.

Conclusion:

The visit to the National Dope Testing Laboratory provided valuable exposure to the procedures involved in anti-doping science. It highlighted the meticulous steps followed to maintain sample integrity, ensure unbiased analysis, and uphold international standards. The use of sophisticated technology and strict protocols reflects NDTL's pivotal role in ensuring fair play in sports in India.

Images (non-geotagged & geotagged) with Date and Captions:

Image 1-Dr. P.L. Sahu, Director NDTL and Students of B.Sc. and M.Sc. forensic science accompanied with two forensic faculties (DAY 1)

Image 2- Dr. P.L. Sahu, Director, NDTL addressing students of B.Sc. and M.Sc. forensic science in the conference hall (DAY 1)

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Image 3- Interactive session held by Dr. P.L. Sahu, Director, NDTL with students of B.Sc. and M.Sc. forensic science in the conference hall (DAY 1)

Image 4- Group photograph of students of B.Sc. and M.Sc. forensic science with Dr. P.L. Sahu, Director, NDTL and Dr. Anand Rajan, Scientist B and Quality Manager, NDTL (DAY 1)

Image 5- NDTL Director Dr. P.L. Sahu and Dr. Anand Rajan, Scientist -B and Quality Manager with Forensic Faculties of K.R. Mangalam university– Dr. Shivani Sehgal and Ms. Kritika Singh. (DAY1)

Image 6- NDTL Director Dr. P.L. Sahu and Dr. Anand Rajan, Scientist -B and Quality Manager with Forensic Faculties of K.R. Mangalam university– Dr. Shivani Sehgal and Ms. Kritika Singh. (DAY2)

Image 7- Interaction of Forensic faculty, KRMU with NDTL Director Dr. P.L. Sahu and Dr. Anand Rajan, Scientist -B and Quality Manager (DAY 2)

Image 8- Expert demonstrating working of LC MS to students