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Virology Institute gets a state-of-the-art laboratory

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PUNE: From a humble beginning as a temporary Virus Research Centre in 1953 to study only arthropod-borne viruses, the now-prestigious National Institute of Virology (NIV) here is all set to operationalise its state-of-the-art laboratory in compliance with international standards.

The new laboratory, graded Bio-Safety Level (BSL)-4, is housed in the Microbial Containment Complex (MCC) premises and is the first of its kind in Asia to have the highest level of bio-safety where highly infectious and exotic viruses impacting human health will be tested. Just last month, the World Health Organisation recognised the NIV as a collaborating centre for emerging and re-emerging infectious diseases.

A BSL is the level of containment precautions needed to isolate dangerous biological agents in an enclosed facility. The levels of containment range from the lowest BSL-1 to the highest at level 4.

"We already have a BSL-3+ laboratory at MCC, but with BSL-4 we will have a laboratory on par with the Centres for Disease Control and Prevention at Atlanta," D.T. Mourya, Group Leader, High Containment Laboratory, told *The Hindu*.

Expected to be made functional by this year-end, the Institute has already trained people who will have access to this lab. This level is required for work with dangerous and exotic agents that pose a high individual risk of aerosol-transmitted laboratory infections, agents which cause severe to fatal disease in humans for which vaccines or other treatments are not available, such as Bolivian and Argentine hemorrhagic fever, Lassa fever, Crimean Congo haemorrhagic fever (CCHF) and smallpox, to name a few.

While dealing with biological hazards at this level, the use of a protective gear and a self-contained oxygen supply is mandatory. The entrance and exit of a Level-4 bio-lab contains contain multiple showers, a vacuum room and other safety precautions designed to destroy all traces of the bio-hazard. Multiple airlocks are employed and electronically secured to prevent both doors opening at the same time. All air and water service going to and coming from a BSL-4 lab have to undergo similar decontamination procedures to eliminate the possibility of an accidental release.

"We have carried out the highest bio-risk assessment for the laboratory to ensure no virus goes out into the environment even during the most adverse conditions like an earthquake. It is equipped to deal with bio-terrorism too. The vault of the laboratory will never be damaged or destroyed and hence infectious viruses can never be released into the environment," said Dr. Mourya.

The existing BSL-3 MCC lab at NIV has already handled a CCHF outbreak in Ahmedabad. The virus was identified within 24 hours and instructions issued to the local administration for isolation and handling of patients within hours helped in containing the fatal disease that claimed four lives, including those of the doctor and a nurse who treated the patient.