

# NIAB Seminar

24<sup>th</sup> September 2014

## “BIOSAFETY AND BIOSECURITY FOR HUMAN AND ANIMAL HEALTH”

*Speaker*

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**Current Affiliation:** Dr Pradhan is currently working as Bio-safety consultant at Bhubaneswar, Odisha.

**Outline of the Talk:** Infectious diseases have always affected humans and animals, and always will. Biologists have recognized a great variety of pathogens and the hazards of dealing with them. Special precautions are necessary for protection of work, workers and the environments. Due to wide variety of research and diagnostic work carried out with pathogens, no single set of bio-safety guide lines can be framed to fit all situations. It is up to the institutions/laboratories to establish and enforce sets of guide lines tailored to the safety requirements of each laboratory. The bio-safety and bio-security program must be integral part of all techniques used in the laboratory. Recent emergence of SARS, avian influenza, Pandemic influenza, Nipah, Hendra, Ebola, CCHF virus infections have created awareness among scientists and general public and many countries are now keen to establish containment laboratories to deal with such high risk organisms.

WHO basis for Risk Grouping (RG 1-5) defines a scheme for classification of micro-organisms provides a method for defining the minimal safety conditions necessary when using these agents. Each country should draw up a risk group classification of agents in that country. The organisms not encountered in the country (exotic) are classified under a special category (RG-5). Biologics derived from recombinant organisms and hybridomas are classified in to three broad categories, based on the biological characteristics of the new product and the safety concerns they present. Animal experimentation with pathogens requires facilities to ensure appropriate levels of environmental quality, safety and care. Containment animal facilities are extensions of the laboratory, and in some institutions are integral to and inseparable from the laboratory. Three basic elements of containing organisms in the laboratory are laboratory practices and techniques, safety equipment (primary containment barrier) and facility design (secondary containment barrier). Incorporation of these elements in to a laboratory is required for safe handling of human and animal pathogens, including recombinant organisms of various risk groups. These form the basis for classification of laboratories. Four bio-safety levels (BSL), in ascending order, are described for laboratories dealing with organisms of RG1-4. The corresponding laboratories are BSL 1, 2, 3, and 4. The BSL-4 laboratory could be cabinet type or suit type. The descriptions BSL 1-4, parallel to those of P 1-4 in the National Institute of Health (NIH, USA) guide lines for research involving rDNA technology, are consistent with general criteria used in assigning agents to classes 1-4 in classification of pathogens on the basis of risk.

Presently India has several BSL-3 laboratories and many more are being established in both health and animal sector with primary funding from the Government. Six BSL-3 laboratories exist in the health sector and three more coming up, five of which are pre-fabricated. Two BSL-4 facilities exist at HSADL, Bhopal and NIV Pune while one is being built at Under ICAR at Bhubaneswar. It is clear that the implementation of International Health Regulations (2005) requires a basic core capacity in the health delivery system and the road ahead is full of opportunities and challenges. Quality laboratory services and efficient bio-safety measures are an integral part of core capacity which all member countries need to work on.

**Venue: Auditorium, NIAB, D. No. 1-121/1, 4<sup>th</sup> & 5<sup>th</sup> Floors, Axis Clinicals Building,  
Opp. Talkie Town, Miyapur, Hyderabad**

**Time: 4 PM to 5 PM**

All are cordially invited.

Director, NIAB