



# MAHATMA GANDHI MISSION'S COLLEGE OF ENGINEERING & TECHNOLOGY

Affiliated to University of MUMBAI & Approved by AICTE, New Delhi

An ISO 9001: 2000 Certified Institute  
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## DEPARTMENT OF BIOTECHNOLOGY

Guest Lecture by Dr. Raman P. Yadav on 31.03.2017

### Topic: IPR and Biosafety

Dr. Raman P. Yadav delivered a lecture on “IPR & Biosafety” to TE, Biotech students from 2 pm to 4 pm.

Major topics covered were as followed:

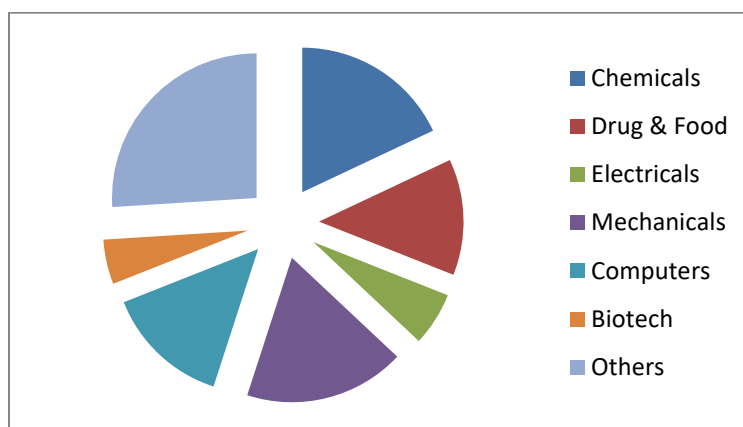
**Definition of IPR:** These are legal rights which result from intellectual; activity in industrial, scientific, literary and artistic field.

**Types of IPR:** Patents, Trademarks, Copyrights & Related Rights, Geographical Indications, Industrial Designs, Trade secrets, Layout designs for Integrated Circuits, protection of new plant varieties.

### History of IPR:

- Signing on paintings and creations by ancient artists
- Rewards & Monopolies granted by Emperors.
- Stamping of jewelers' initials on jewelry.
- US patent Law enacted by Congress in 1790 as part of the Constitution.
- First patent was granted for “Salt Making” in 1641.
- Indian Patent Act 1970

### Patent sector Wise Analysis



### Academia: Requirements & Challenges

- IP awareness, IP knowledge, realizing ground realities
- Counselling of Scientists/Scholars/Students
- Pre-publication Screening Gateways

- IP Policy: Confidentiality, Agreement and Contract
- IP coordinators
- IP Management Cell

### **Some Breakthrough Technologies**

- Termite inspired Heating & Cooling Air Conditioning Systems
- Making building blocks – cement from CO<sub>2</sub> inspired by Mollusca
- Plastic from CO & CO<sub>2</sub> inspired by Citrus
- Drinking water inspired by Namibian bug

### **What is the purpose of Patenting?**

To seek an exclusive right to use the invention.

### **The Indian Patent act 1970**

- Process Patent
- 5 years for food, drugs, medicines and 14 years for other inventions.
- Focus on generic & neglect the discovery of new drugs.
- Latest amendment-2016

### **Different Types of Patent:**

- Process patent
- Product patent
- Design patent
- Utility patent

### **Criteria for Patentability**

- Novelty
- Non obviousness
- Useful
- Industrial applications

### **IPR potential in Biotechnology**

IP protection for biotech is currently in a state of flux. It is an integrated field which involves fields like Enzyme engineering, Chemical technology, Genetics, Process technology, Tissue culture etc. therefore there is a lot of scope for IPR in the field of Biotechnology.

### **Prior Art**

- Any information in public domain.
- Why do you need prior art search
- Sites related to prior Art Search-Scopus, JHU, USPTO etc.

### **Process for filing Patent**

- Submission of Application
- Publication and examination of application.
- Opposition to grant of patent
- Grant and Sealing of Patent

## BIOSAFETY

### Biosafety:

- It is the prevention of large-scale loss of biological integrity, focusing both on ecology and human health.
- These prevention mechanisms include conduction of regular reviews of the biosafety in laboratory settings, as well as strict guidelines to follow.
- Biosafety is used to protect from harmful incidents. Many laboratories handling biohazards employ an ongoing risk management assessment and enforcement process for biosafety.
- Human error and poor technique contribute to unnecessary exposure and compromise the best safeguards set into place for protection.

A **biosafety level** is a set of biocontainment precautions required to isolate dangerous biological agents in an enclosed laboratory facility. The levels of containment range from the lowest biosafety level 1 (BSL-1) to the highest at level 4 (BSL-4).

**Biosafety level 1:** Biosafety level 1 (BSL-1) is suitable for work with well-characterized agents which do not cause disease in healthy humans. In general, these agents should pose minimal potential hazard to laboratory personnel and the environment.

**Biosafety level 2:** At this level, all precautions used at Biosafety Level 1 are followed, and some additional precautions are taken. BSL-2 differs from BSL-1 in that:

- Laboratory personnel have specific training in handling pathogenic agents and are directed by scientists with advanced training.
- Access to the laboratory is limited when work is being conducted.
- Extreme precautions are taken with contaminated sharp items.
- Certain procedures in which infectious aerosols or splashes may be created are conducted in biological safety cabinets or other physical containment equipment.

**Biosafety level 3:** Biosafety level 3 is appropriate for work involving microbes which can cause serious and potentially lethal disease via the inhalation route.

- All laboratory personnel are provided medical surveillance and offered relevant immunizations (where available) to reduce the risk of an accidental or unnoticed infection.
- All procedures involving infectious material must be done within a biological safety cabinet.
- Laboratory personnel must wear solid-front protective clothing (i.e. gowns that tie in the back). This cannot be worn outside of the laboratory and must be discarded or decontaminated after each use.
- A laboratory-specific biosafety manual must be drafted which details how the laboratory will operate in compliance with all safety requirements.

**Biosafety level 4:** Biosafety level 4 (BSL-4) is the highest level of biosafety precautions, and is appropriate for work with agents that could easily be aerosol-transmitted within the laboratory and cause severe to fatal disease in humans for which there are no available vaccines or treatments. BSL-4 laboratories are generally set up to be either cabinet laboratories or protective suit laboratories.

## RISK ASSESMENT

Pathogenicity of materials, Routes of their transmission, Agent stability, Infectious dose, Concentration, Origin of materials, Availability of effective prophylaxis, Skill level of staff, Medical surveillance.



