

**Motivational talk of Ponnala Vimal Mosahari on January 18, 2025 at 11am**

**Venue- Footwear Fabrication lab, Tannery, D.E.I**

**Organized by- Department of Footwear Technology, Faculty of Engineering**

**Dayalbagh Educational Institute (Deemed to be University)**

**Dayalbagh, Agra-282005, India**

**Topic- Industrial Hazard and Safety Measures in Industries**

### **Introduction of Speaker**

Ponnala Vimal Mosahari did B.Tech. in Mechanical Engineering from Dr. A. P. J. Abdul Kalam Technical University, Lucknow, UP in 2009. After this, Mosahari completed M.Tech. in Engineering Systems from Dayalbagh Educational Institute (Deemed to be University), Agra, UP in 2015. Later on, Mosahari completed his Ph.D (Area: Health & Human Systems Engineering) from Indian Institute of Technology Guwahati, Kamrup, Assam in 2022. **Dissertation:** Evidence-based Assessment of Environmental Toxicity due to Pesticides and Nanomaterials Exposure.

### **WORK EXPERIENCE**

- **Dean of Academics; Coordinator, Centre for Interdisciplinary Research & Innovation; & Assistant Professor of Mechanical Engg.** (Aug. 2023 – Present)  
Neelam College of Engineering & Technology, Agra
- **Manager & Chief Technology Officer** (Jan. 2024 – present)  
Neelam Innovation & Incubation Foundation, Agra
- **Environmental Policy and Sustainability Consultant** (Apr. 2022 – Jun. 2023)  
Former Chairman (Cabinet Rank), ASIDC & Former MLA, Tamulpur LAC, Assam
- **Research Fellow** (Jul. 2014 – Oct. 2020)  
Bioengineering Research Laboratory, Indian Institute of Technology Guwahati
- **Assistant Lecturer of Mechanical Engineering** (Mar. 2010 – Jan. 2014)  
DEI Technical College, Agra

### **AWARD / FELLOWSHIP /MEMBERSHIP**

- **‘Young Scientist Award’** presented by Dr. Bhimrao Ambedkar University, Agra & Koshambi Foundation, Agra in association with Office of the Principal Scientific Advisor to the Govt. of India, during the ICMRP 2023 at Dr. Bhimrao Ambedkar University, Agra, India on December 18, 2023.
- PhD Fellowship from 2014 to 2020 by the Ministry of Education, Government of India.
- Communication Secretary (Founder Member), Bodo Science Society (A national-level science promotion society)
- Senior Member, Indian Institution of Industrial Engineering {SM 11450 (41)}

- Life Member, Systems Society of India (LM-31207)
- Associate Member, The Institution of Engineers (India) (AM1885262)

## **Introduction**

Dr. Ponnala Vimal Mosahari began his lecture by emphasizing the critical importance of safety in industrial environments, particularly in the footwear sector. He highlighted how the industry's processes, involving chemical usage, machinery, and physical labor, make it prone to various hazards. Ensuring safety not only protects workers but also enhances operational efficiency and compliance with legal standards.

## **Understanding Industrial Hazards**

Dr. Mosahari classified industrial hazards into four main categories and explained their relevance to the footwear industry:

- 1. Chemical Hazards:**
  - Use of adhesives, dyes, and solvents in footwear production can expose workers to toxic chemicals.
  - Prolonged exposure can lead to respiratory issues, skin irritation, or long-term health conditions like cancer.
  - Improper handling or storage of chemicals increases the risk of spills and fires.
- 2. Physical Hazards:**
  - Noise from machinery like cutting and sewing equipment can lead to hearing loss over time.
  - Poor lighting, high temperatures, and repetitive motions contribute to workplace fatigue and injuries.
- 3. Mechanical Hazards:**
  - High-speed machines like cutting presses, stitching machines, and sole bonding units pose risks of cuts, crushing, and entanglement.
  - Faulty equipment and lack of protective guards further increase risks.
- 4. Ergonomic Hazards:**
  - Poor workstation design and prolonged standing during assembly processes can lead to musculoskeletal disorders.
  - Inadequate training in lifting techniques results in back injuries.
- 5. Fire and Explosion Hazards:**
  - Flammable materials such as adhesives and rubber compounds heighten the risk of fires.
  - Improper storage or handling of these substances can cause explosions.

## **Common Safety Incidents in Footwear Industries**

Dr. Mosahari highlighted real-world examples of accidents in the footwear industry, such as:

- Chemical burns from adhesive spills.
- Injuries caused by unguarded machinery.
- Fire outbreaks due to improper handling of flammable materials.

These examples underscored the importance of adopting stringent safety measures.

## Safety Measures in Footwear Industries

Dr. Mosahari outlined comprehensive safety measures to mitigate risks:

1. **Chemical Safety:**
  - Use of personal protective equipment (PPE) like gloves, masks, and goggles when handling chemicals.
  - Installation of proper ventilation systems to reduce inhalation of fumes.
  - Safe storage practices, including using labeled containers and maintaining Material Safety Data Sheets (MSDS).
2. **Physical Safety:**
  - Ensuring well-lit and temperature-controlled workspaces.
  - Providing workers with noise-canceling ear protection.
  - Regular breaks to avoid fatigue from repetitive tasks.
3. **Mechanical Safety:**
  - Installing safety guards on all machinery.
  - Conducting routine maintenance and inspections.
  - Providing emergency stop mechanisms on machines.
4. **Ergonomic Safety:**
  - Designing workstations to minimize strain, including adjustable seating and anti-fatigue mats.
  - Rotating tasks among workers to prevent repetitive strain injuries.
  - Training on proper lifting techniques and posture.
5. **Fire Safety:**
  - Installing fire extinguishers and sprinklers at key locations.
  - Conducting regular fire drills and training workers on emergency response.
  - Proper segregation and storage of flammable substances.

## Legal and Regulatory Framework

Dr. Mosahari discussed the key legal standards governing industrial safety, including:

- **Factories Act, 1948:** Outlining safety and welfare provisions for workers in industrial environments.
- **OSHA (Occupational Safety and Health Administration)** guidelines: Emphasizing worker safety in chemical handling and machine operation.
- **Environmental Protection Laws:** Mandating proper disposal of hazardous waste to minimize environmental impact.

He stressed the importance of adhering to these regulations to avoid penalties and ensure worker safety.

## Role of Safety Management Systems

Dr. Mosahari explained how implementing a robust safety management system can transform workplace safety:

1. **Hazard Identification and Risk Assessment (HIRA):**
  - Regularly identifying potential hazards in the workplace.

- Assessing the likelihood and severity of risks to prioritize preventive measures.
- 2. **Training and Awareness Programs:**
  - Conducting safety orientation sessions for new employees.
  - Organizing workshops on handling emergencies and using PPE effectively.
- 3. **Emergency Preparedness:**
  - Developing clear evacuation plans and ensuring workers are familiar with them.
  - Establishing first-aid stations and training employees in basic first aid.
- 4. **Monitoring and Continuous Improvement:**
  - Regular audits to identify gaps in safety protocols.
  - Encouraging worker feedback to improve safety practices.

### **Importance of a Safety-First Culture**

Dr. Mosahari emphasized creating a safety-first culture in the workplace. This involves:

- Leadership commitment to enforcing safety policies.
- Encouraging workers to report hazards without fear of retaliation.
- Recognizing and rewarding adherence to safety practices.

### **Emerging Technologies for Industrial Safety**

He discussed how technology is revolutionizing workplace safety:

1. **Wearable Devices:**
  - Smart helmets and wristbands monitor worker health and alert supervisors to potential risks.
2. **Automation:**
  - Using robotics and automated systems to perform high-risk tasks, reducing human involvement in hazardous processes.
3. **IoT and AI:**
  - Internets of Things (IoT) devices monitor environmental conditions like air quality and temperature.
  - AI-powered analytics predict potential hazards and recommend preventive actions.

### **Conclusion**

Dr. Mosahari concluded the lecture by reiterating the importance of industrial safety in the footwear sector. He encouraged students to view safety not as a compliance requirement but as a cornerstone of ethical and efficient business practices. By adopting proactive measures, leveraging technology, and fostering a culture of safety, future professionals can ensure a secure and productive work environment.





### Noise Pollution in Footwear Manufacturing

- Sources of Noise
- Health Impacts
- Control Measures



