Add-on Course

SAFETY MEASURES IN CHEMISTRY LABORATORY

DEPARTMENT OF CHEMISTRY
R.I.H.S. BHOGRAI, BALASORE

OBJECTIVE OF COURSE:

This introductory course in laboratory chemical safety is required for all entering chemistry graduate students. Topics to be covered include laboratory emergencies, chemical hazards, lab inspections and compliance, managing and working with chemicals, waste handling, laboratory equipments.

UNIT-1 Principles, Ethics, and Practices: The Four Principles of Safety. Green Chemistry, Rethinking Safety: Learning from Laboratory Incidents. Green Chemistry in Organic Chemistry. Laws and Regulations Pertaining to Safety.

Emergency Response; Responding to Laboratory Emergencies, Fire Emergencies in Introductory Courses. Chemical Spills: On You and in the Lab oratory. First Aid in Chemistry Laboratories. Fire Emergencies in Organic and Advanced Courses. Chemical Spills: Containment and Clean-up. (8 Classes)

UNIT-2 Minimizing, Controlling and Managing Hazards: Managing Risk – Making Decisions about Safety. Laboratory Eye Protection. Protecting Your Skin – Clothes, Gloves and Tools.. Chemical Hoods in Introductory Laboratories. More about Eye and Face Protection. Protecting Your Skin in Advanced Laboratories. Containment and Ventilation in Advanced Laboratories. Safety Measures for Common Laboratory Operations. Radiation Safety. Protective Clothing and Respirators. (8 Classes)

UNIT-3 Recognizing Laboratory Hazards: Toxic Substances and Biological Agents: Introduction to Toxicology. Acute Toxicity. Chronic Toxicity., Carcinogens.. Biotransformation, Bioaccumulation, and Elimination of Toxicants. Biological Hazards and Biosafety.

Risk Assessment: Risk Assessment - Living Safely with Hazards. Using the GHS to Evaluate Chemical Toxic Hazards. Understanding Occupational Exposure Limits. Assessing Chemical Exposure. Working or Visiting in a New Laboratory. Safety Planning for New Experiments. (8 Classes)

UNIT-4 Chemical Management: Inspections, Storage, Wastes, and Security: Introduction to Handling Chemical Wastes. Storing Flammables and Corrosives. Doing Your Own Safety Inspection. Managing Chemicals in Your Laboratory. Chemical Inventories and Storage. Handling Hazardous Laboratory Waste. Chemical Security. (8 Classes)

DURATION OF COURSE: 3 Months.

References:

1. **Laboratory Safety for Chemistry Students:**

   By Prof. Robert H. Hill Jr., David C. Finster
2. **Laboratory Safty :**

   By Benjamin R. Sveinbjornsson and Sveinbjorn Gizurarson
3. **Laboratory Safety for Chemistry Students:**
   By Robert H. Hill Jr., David C. Finster