Risk Assessment as a Critical Tool for Everyday Challenges

This course offers hands-on training in the primary areas of risk assessment (i.e., hazard identification, dose-response assessment, exposure assessment, risk characterization) and in risk communication because outreach to the public and other stakeholders is essential to the successful implementation of risk assessment.

The training course focuses on knowledge sharing among science experts in the field of risk assessment. The full two days course consists of six modules.

Following is outlines of the course modules:

Module-1: Introduction to Risk Assessment and EPA's Office of Research and Development Course Description: The objective of this module was to provide participants with a basic introduction to the fundamental concepts and terminology associated with risk assessments (e.g., human health, ecological, microbial, etc.). How the risk assessment process is related to research and informs risk management policies was also covered. The mission and organizational structure of EPA's Office of Research and Development was covered, focusing on how ORD performs research and development to identify and understand current and future environmental problems and how this research informs the EPA's risk assessment goals. Finally, examples of how the federal government applies the risk assessment paradigm were covered, including real-world examples of human health and ecological risk assessments.

Module-2: Laws and Regulatory Foundations for Risk Assessment: The objectives of this module were to provide participants with knowledge of the specific legal and regulatory underpinnings of the federal risk assessment paradigm, especially as they relate to the U.S. EPA and other federal agencies such as FDA and USDA. Specific laws and executive orders covered include: the Clean Air Act (CAA, as amended), the Clean Water Act (CWA) and Safe Drinking Water Act (SDWA), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Superfund Amendments and Reauthorization Act (SARA), the Toxic Substances Control Act (TSCA), the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and Executive Order 13045.

Module-3: Development and Overview of Current Regulatory and Advisory Values. The objectives of this module were to provide participants with a basic overview and understanding of the types of available reference values developed by the Federal government, state governments, and national and international associations. Organizations specifically covered include the Environmental Protection Agency (EPA), FDA, USDA, American Conference of Governmental and Industrial Hygienists (ACGIH), American Industrial Health Association (AIHA), National Institute of Occupational Safety and Health (NIOSH), and Occupational Safety and Health Administration (OSHA). The general development, application, and enforcement of these values were discussed. Values were presented within three different application contexts: Emergency, Occupational, and General Public.

Module-4: Overview of Human Health Risk Assessment. The objectives of this module are to provide participants with understanding in greater depth the four fundamental components in the human health risk assessment process and how they are applied. The students will understand the four components of risk assessment as recognized by National Research Council (NRC) and EPA and how they apply specifically to human health risk assessment as conducted by EPA. Also, they will understand the types of data used to inform the different components of risk assessment and how they are used. In addition they will explore what risk assessment is and what it is not (i.e., what its results can and cannot be used for in decision making)

Module-5: Gain knowledge of the meaning, development, and application of cancer and noncancer health effect risk and reference values derived by EPA and other entities. The objectives of this module were to provide participants with a basic overview and understanding of the basic components of dose-response assessment and the differences between the current default approaches for developing risk and reference values for cancer and noncancer human health effects. In addition the role of key events and pathogenesis in dose-response assessment for noncancer or cancer endpoints was presented.

Module -6: Overview of the Integrated Risk Information System (IRIS) Assessment Development Process: The objectives of this module were to provide participants with a basic understanding of the components of an IRIS assessment and the process used to develop an IRIS assessment based on the current IRIS Standard Operating Procedures.