

Environmental Health



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INTRODUCTION

Environmental and occupational health are important public health disciplines. Training and education in these fields can shed light on current public health problems, local and regional health issues, future health needs and challenges, epidemiology of diseases related to environmental or occupational exposures; and assist legislators with their decisions on health policies.

Countries in the EMR suffer from a wide variety of environmental and occupational problems, ranging from basic sanitary control measures to a lack of advanced research in this field. Issues exist in the region regarding agricultural health, workplace safety, outdoor and indoor air quality, food safety, water quality, toxic waste, and issues related to climate change. Therefore, offering training programs in this field is crucial for the safety of people and for the advancement of the economy and life quality in the EMR region, in addition to providing stability in war-torn countries.

Short Courses: There are 15 courses under three programs:

Foundations in Global Environmental and Occupational Health

- Course 1: Introduction to Public Health
- Course 2: Basic Epidemiology
- Course 3: Epidemiology of Environmental and Occupational Health
- Course 4: Introduction to Global Environmental Health
- Course 5: Principles of Toxicology

Environmental Health Management

- Course 6: Food Safety and Public Health
- Course 7: Water Quality Management
- Course 8: Air Pollution and Air Sampling
- Course 9: Environmental Epidemiology
- Course 10: Applied Research in Environmental Health

Environmental Health Risk Management

- Course 11: Environmental Risk Assessment
- Course 12: Environmental Risk Management
- Course 13: Environmental Risk Communication
- Course 14: Management and Leadership
- Course 15: Scientific Writing

Each training course is delivered in (30) Learning Hours. These courses can be taken as part of the three-month programs for a Technical Diploma, or as stand-alone courses. Upon meeting the course requirements, the participant will be awarded a Successful Completion Certificate by the International Academy of Public Health (IAPH) and accredited by the Agency for Public Health Education Accreditation (APHEA).

Training Delivery Methods:

- In-class method
- Online method

Duration: 30 Learning Hours
25 CPD Points



Course Outline

- Introduction to Public Health
- Global Health and Health Security
- International Health Regulations
- Health Services
- Scientific Research
- The Sustainable Development Goals (SDGs)
- Universal Health Coverage Introduction and Path Toward UHC Session
- Assessment of Populations Health

Description

History to the public health is a review of accomplishments and errors of health care. The critical analysis of the past events allows for accelerating the improvement of health. The restructuring of the health services necessitates the tracing of health problem through their historical development. It is therefore imperative that candidates be equipped with the knowledge of the establishment of modern health care and the understanding of current debate and thinking.

This course is designed to fill the gaps in the knowledge and skills for the health practitioners in the field of public health, and to enhance critical thinking on various public health challenges along with the exploration of different public health approaches and models. It covers important topics like public health ethics, global health and health security

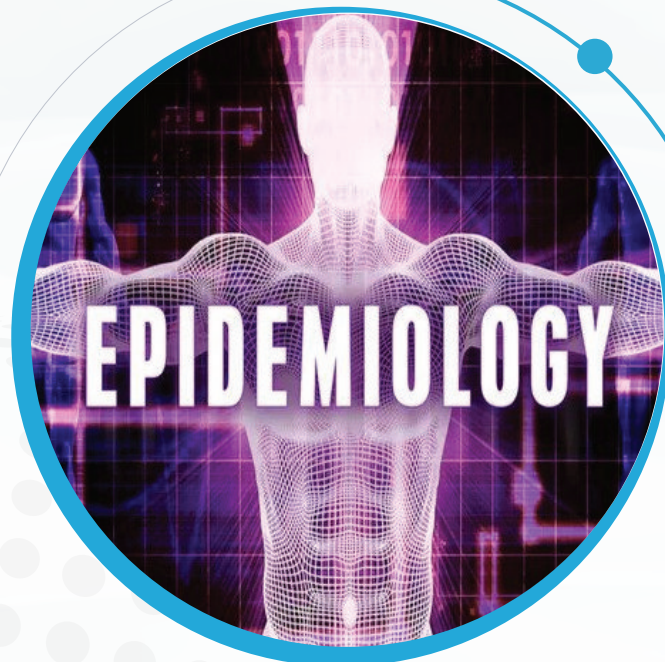


Learning Outcomes

By the end of this course, participants will be able to:

- 1- Evaluate a range of public health definitions and their relative advantages
- 2- Explain the phases in the development of this discipline and make a difference between traditional and new public health
- 3- Assess the benefit of a framework for essential public health functions
- 4- Recognize the basic fields of public health research together with quantitative and qualitative methods used in the investigation of public health problems
- 5- Analyze the comprehensive system of public health within the current threats and challenges at national and regional level

Duration: 30 Learning Hours
25 CPD Points



Course Outline

- Introduction to Epidemiology
- Descriptive Epidemiology
- Introduction to Biostatistics Part 1
- Introduction to Biostatistics Part 2
- Public Health Surveillance
- Data Analysis and Displaying
- Outbreak Investigation Part 1
- Outbreak Investigation Part 2
- Writing outbreak investigation Report
- Data Quality

Description

Epidemiology, often referred to as the “cornerstone” of public health, is the study of the distribution and determinants of diseases, health conditions, or events in populations, as well as the application of that knowledge to the control of health problems.

This course is designed to introduce participants to basic epidemiological concepts and methods and provide them with core skills in epidemiology, that is with working knowledge of the acquisition, analysis, and interpretation of information about disease occurrence in populations. Participants will gain practical experience in planning epidemiological research studies along with the appraisal of epidemiological literature.



Learning Outcomes

By the end of this course, participants will be able to:

- 1- Discuss the role of epidemiology within the broader field of public health and identify its relationship to the fields of medicine, environmental health, social and behavioural sciences and health policy
- 2- Demonstrate a sound knowledge of basic concepts and methods of epidemiology
- 3- Use descriptive epidemiological concepts such as person, time, and place to describe the distribution of disease
- 4- Calculate and interpret epidemiological measures taught in the course (e.g. incidence, prevalence, risks, odds ratio, etc.)
- 5- Plan and design public health research
- 6- Demonstrate the application of epidemiological research for the formulation, implementation and evaluation of health policies

**Duration: 30 Learning Hours
25 CPD Points**



Course Outline

- Environmental Epidemiology: Basic Principles and General Practice
- Study Designs in Environmental Epidemiology
- Assessments in Environmental Epidemiology
- Toxic Effects of Heavy Metals
- Environmental Disease: Mutation, Cancer, and Birth Defects - Part 1
- Environmental Disease: Mutation, Cancer, and Birth Defects - Part 2
- Epidemiology of Indoor Air Pollution
- Benefits of SEA

Description

This course is concerned with the environmental and occupational branches of epidemiology. It introduces the basic epidemiologic concepts within the framework of environmental health. Occupational epidemiology studies the effect of a variety of exposures in the workplace, such as chemical, biological or physical (e.g., noise, heat, radiation) agents on workers and evaluate adverse health outcomes in order to determine if an agent or set of agents may explain their disease.

Participants will learn to link external factors that affect the incidence, prevalence, and geographic range of health conditions. They will also illustrate how they are used to address public health problems. This course also covers a wide range of topics that are related to the application of epidemiological methods in populations of workers.



Learning Outcomes

By the end of this course, participants will be able to:

- 1- Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety.
- 2- Explain the general mechanisms of toxicity in eliciting a toxic response to various environmental exposures.
- 3- Comprehend basic ethical and legal principles pertaining to the collection, maintenance, use and dissemination of epidemiologic data.
- 4- Draw appropriate inferences from epidemiologic data.
- 5- Evaluate the strengths and limitations of epidemiologic reports
- 6- Bridge the connection between fundamentals of study design and principles in epidemiologic methods
- 7- Use epidemiological techniques to conduct occupational studies that are suitable to assess risk in a workplace
- 8- Evaluate the occupational studies methodologies, flaws and limitations.

Duration: 30 Learning Hours
25 CPD Points



Course Outline

- Introduction to Environmental Health
- Core Concepts of Environmental Health
- Environmental Health Indicators
- Environmental Inequalities
- Basic Concept of Global Health
- Growth Theory
- Introduction to Environmental Health and Challenges in SDGs
- Environmental Challenges Overview
- Emerging Environmental Challenges
- Climate Change
- Forestry Resources Degradation

Description

Environmental health is a branch of public health. This course is an introduction to the field, current issues, and interventions for solving environmental health problems. The course will assist the participant in becoming aware of the scope of the field of environmental health and the ideas on which environmental health interventions are based. This course also will provide an interdisciplinary introduction to the concept of global health, with a special focus on developing countries.

There are numerous global challenges facing the world today, which will be reviewed in the course in addition to address common issues known to burden health care globally. Such challenges are growing over time which produces disparities in health between and within countries.



Learning Outcomes

By the end of this course, participants will be able to:

- 1- Identify the major environmental agents, their interactions, and adverse effects
- 2- Predict the nature of the agent's adverse effects from its physical, chemical, or infectious properties, and how that may influence environmental or public health
- 3- Describe and use models for predicting the magnitude of adverse effects in biological systems
- 4- Identify significant gaps in the current knowledge base concerning health effects of environmental agents, and areas of uncertainty in the risk-assessment process
- 5- Recognize the current legislation and regulation regarding environmental issues

5 Principles of Toxicology

Duration: 30 Learning Hours
25 CPD Points



Course Outline

- Introduction to Toxicology
- Toxicodynamics and Toxicokinetics
- Reproductive Toxicity, Immunotoxicity, and Skin Toxicity
- Pesticides Toxicity
- Metals Toxicity
- Respiratory Toxicology
- Hepatotoxicity and Nephrotoxicity

Description

This course focuses on the fundamentals of toxicology and the mechanisms by which environmental and occupational chemical agents affect human health. The principles and mechanisms will be approached in three areas: 1) General principles: Route of exposure; dose response; absorption, distribution, storage, metabolism and excretion; 2) Effects on target organs: liver, kidney, blood, respiratory system and nervous system; and 3) Application of the principles of toxicology using: solvents, pesticides and metals. At the end of this course, the participant will be able to apply the principles of toxicology for compounds found in the environment and workplace.



Learning Outcomes

By the end of this course, participants will be able to:

- 1- Explain the impact of the conditions of exposure, routes, duration, and frequency on the toxic effects of compounds
- 2- Explain and interpret the relationship between dose and the toxic response
- 3- Describe the processes of absorption, distribution, storage, and excretion and apply the principles of toxicant transport across membranes to the uptake, action and excretion of chemical agents
- 4- Describe and characterize the types of reactions in Phase I and Phase II metabolic pathways and give prototypical examples of each
- 5- Explain mechanisms whereby toxicants cause injury to the liver, kidney, lung, and nervous system and give examples of prototypical toxicants for each organ
- 6- Identify the acute and chronic effects of hydrocarbons, halogenated hydrocarbons, pesticides, and heavy metals; characterize their mechanisms of toxicity, and describe measures to preventive or decrease toxic effects

Duration: 30 Learning Hours
25 CPD Points



Course Outline

- Burden of Foodborne Disease Session
- Foodborne Diseases and Hazards
- Microbial Causes of Foodborne Diseases
- Chemical Causes of Foodborne Diseases
- Physical and Mechanical Causes of Foodborne Diseases
- Control Measures and Contaminant Monitoring for Food Safety
- Surveillance Reporting and Prevention of Foodborne illnesses

Description

This course will explore major food contaminants and their public health significance. participants will explore the role of the food environment in the transmission of infectious diseases, the specific microbes that cause environmentally transmitted diseases, their prevention and control by technological and other measures and how the health risks are assessed. participants will assess different food contaminants with their associated diseases, how these agents enter, survive and spread through the environment to result in human exposures, how their risks are assessed and measured and how these risks are prevented, controlled and managed through engineered/technical, policy and regulatory approaches.



Learning Outcomes

By the end of this course, participants will be able to:

- 1- Identify major microbes and infectious diseases of health concern and the environmental routes of their transmission
- 2- Explain the biology and ecology the microbes spread by human and animal waste, water, air, food, fomites and vectors
- 3- Develop basic skills for working with and analyzing for microbes and how to detect them in environmental media
- 4- Estimate and characterize human disease risk from environmental exposures, assessment of infection and disease risk using microbial risk assessment and investigation and characterization of patterns of disease spread, such as outbreaks and other epidemiological evidence.
- 5- Explain the methods used to remove or destroy microbes in environmental media to prevent human exposure via wastes, water, food, fomites, air and vectors

Duration: 30 Learning Hours
25 CPD Points



Course Outline

- Water Quality and Standards
- Water Treatment - Part 1
- Water Treatment - Part 2
- Water Treatment - Part 3
- Microbiological Quality Control
- Water Treatment-3 Residuals, Plan Design vs Quality, Effectiveness
- Community-Based Water Resource Management (CBWRM) During Emergency
- Water Quality Assessments in Emergency Settings

Description

The course presents the basic concepts concerning policy, evaluation, and implementation of pertinent water quality management issues.

Topics of focus include: water quality standards and criteria; principles of water quality management; regulatory considerations; eutrophication; diffuse pollution and global aspects of sustainable water quality control strategies, treatment plans management, solid/liquid by-products.



Learning Outcomes

By the end of this course, participants will be able to:

- 1- Delineate the significance of terms and parameters pertinent to water quality management.
- 2- Address current local water quality and quantity issues.
- 3- Evaluate the significance of pertinent water quality legislation.
- 4- Apply water quality criteria requirements based on use including: municipal; industrial; recreational; aquatic life; and, agricultural.
- 5- Explain the main management criteria in water treatment plans and ensure best quality
- 6- Interpret the basic concepts of water quality management

Duration: 30 Learning Hours
25 CPD Points



Course Outline

- Air Pollution and Air Sampling
- Air Pollutants and Air Pollution in EMR
- Respiratory Health Outcomes in EMR
- Selected Topics on Air Pollution
- Health Outcomes

Description

Air pollution in the atmosphere is everywhere; air pollutants have different effects on the atmosphere, vegetation, animals, and materials and human being. This course covers the following topics: structure, composition, and physical characteristics of the atmosphere and its various layers; pollutant behavior in the atmosphere; global, regional, and community air pollutants; indoor air quality; human health effects of exposure to air pollutants; standards and regulations pertaining to air pollution; atmospheric dispersion modeling techniques; and control of particulate matter and gaseous air pollutants.



Learning Outcomes

By the end of this course, participants will be able to:

- 1- Describe and discuss the composition, structure, and characteristics of the atmosphere.
- 2- List the general types of air pollutants and discuss their behavior and fate in the atmosphere.
- 3- Explain the mechanisms, sources, and impacts of global air pollutants including greenhouse gases and ozone depleting substances.
- 4- Discuss the Ambient Air Quality Standards and the pollutants covered in Clean Air Act and its amendments.
- 5- Identify and discuss the effects of community and regional air pollutants on man, animals, vegetation, materials, and the environment.
- 6- Recognize and discuss the limitations of the basic and advanced Gaussian atmospheric dispersion models.
- 7- Discuss the principles and theory of controls and management of particulate and gaseous pollutants.
- 8- Describe the sources, effects, and controls of indoor air pollutants.

Duration: 30 Learning Hours
25 CPD Points



Course Outline

- Environmental Health in Disasters
- Rapid WASH Needs Assessment During Emergencies
- Water Pollutant
- Water Quality Assessments in Emergency Settings
- Emergency Sanitation
- Solid Waste Management for Better Health
- Hygiene Promotion and Community Outreach
- Community-Based Water Resource Management in Emergency
- Monitoring and Evaluation of WASH Activities
- WASH Cluster and Coordination

Description

Environmental Health hazards are closely associated with disasters and emergencies in a variety of ways. Environmental health activities are interdisciplinary and involve engineering, health sciences, chemistry and biology, together with a variety of social, management and information sciences. In times of disaster and recovery, people from many backgrounds engage in activities designed to monitor, restore and maintain public health.

In addition to providing an introduction, this course will discuss: physical, biological, chemical and social factors leading to threats; surveillance, health indicators and making assessments; preparedness processes; sanitation and vector control; evacuation and temporary settlement; and post-disaster environmental health activities and sustainable development.



Learning Outcomes

By the end of this course, participants will be able to:

- 1- Identify and predict environmental health risks in emergency situations
- 2- Explain public health interventions to manage environmental threats during emergencies
- 3- Respond to emergencies with appropriate environmental health activities (water supply and sanitation, vector control, etc.)
- 4- Provide guidance on environmental health priority needs and actions in the prevention, preparedness, response and recovery stages of the disaster-management cycle
- 5- Coordinate and collaborate between all sectors related to environmental health

Duration: 30 Learning Hours
25 CPD Points



Course Outline

- Materials and Methods, Study Designs
- Study Design Selection, Study Area/Setting
- Study Population and Sampling
- Basics of Sample Size
- Study Variables, and Data Collection Tools and Techniques
- Data Analysis and Presentation
- Potential Errors in Research and Critical Appraisal

Description

This course allows participants to learn and use various concepts in research methods in Environmental Health. The course also contains in-class exercises that allow participants to match learnt concepts to their prospective research projects. It builds the capacity to correctly frame their samples, calculate the sample size and use suitable tools and techniques to collect the data.



Learning Outcomes

By the end of this course, participants will be able to:

- 1- Define research variables
- 2- Identify study population
- 3- Utilize appropriate sampling techniques
- 4- Identify and differentiate between random sampling error and bias
- 5- Calculate sample size for different study designs
- 6- Use various data collection technique and tools

Duration: 30 Learning Hours
25 CPD Points



Course Outline

- Introduction to Risk Assessment
- Environmental Risk Assessment
- Occupational Health Risks for Healthcare Workers
- Health Assessment and Surveillance
- Uncertainties in Risk Assessments

Description

This course develops the qualitative and quantitative skills necessary to evaluate the probability of health effects from exposure to environmental contaminants. Basic concepts of qualitative and quantitative risk assessment are demonstrated with practical case studies.

Emphasis is placed on hazard identification, dose-response evaluation, exposure assessment, and risk characterization. Integration of risk assessment with risk management and communicating risks to the public are discussed. Regulatory aspects of risk assessment in the promulgation of environmental standards are presented.



Learning Outcomes

By the end of this course, participants will be able to:

- 1- Define and discuss basic risk assessment concepts and their basis in human health toxicology
- 2- Identify and explain the four steps in qualitative and quantitative risk assessment: hazard identification, dose-response evaluation, exposure assessment, and risk characterization
- 3- Use quantitative risk assessment methods and mathematical models for high-to-low dose extrapolation in non-cancer health outcomes
- 4- Use quantitative risk assessment methods and non-threshold mathematical models for cancer risk assessment
- 5- Discuss the derivation, uses, limitations, and applications of uncertainty analysis and probabilistic risk assessments
- 6- Perform exposure assessments based on data from case studies
- 7- Evaluate the use of risk assessments within risk management and risk reduction decision making
- 8- Obtain and use published risk assessment guidelines and information resources for databases supporting the public health professional involved in risk assessment

12 Environmental Risk Management

Duration: 30 Learning Hours
25 CPD Points



Course Outline

- Risk Management
- Disaster Risk Management Frameworks
- Disaster Management Plan
- Information Management in Disasters
- Economics of Risk Management
- Environmental Hazards and Human Health

Description

Public health is impacted via a wide spectrum of hazards ranging from physical, chemical and biological factors. When they interact with people and health system vulnerability factors, people health and lives become at risks.

In order to minimize those risks, robust risk reduction measures need to be taken. The main objective of this course is to learn how to manage risks in the proper way that is suitable to human health and the environment.



Learning Outcomes

By the end of this course, participants will be able to:

- 1- Describe the cost of risks and the benefits of reducing them
- 2- Demonstrate the development of risk reduction plans
- 3- Budget for risk management
- 4- Take management decisions based on risk assessment outcomes

13 Environmental Risk Communication

Duration: 30 Learning Hours
25 CPD Points

Course Outline

- Introduction to Risk Communication During Emergencies
- Basics of Communication Skills
- Psychology of Crises
- Building Blocks of Risk Communication
- Setting Communication Objectives
- Development of Risk Communication Plans
- Development of Communication Message and Material Session
- Role of Information Technology in Risk Communication
- Media and Mass Communication Channels
- Messages and Audiences
- Spokesperson
- Community Engagement and Social Mobilization
- Resources, Stakeholder and Partners for Risk Communication

Description

Risk communication refers to the dissemination of information to the public about health risks and events and encompasses the range of communication skills required through the preparedness, response and recovery phases of a public health event. Risk communication is one of the core pillars of the response to public health risks and plays a vital role in influencing informed decisions and making positive behavior change.

The objective of this course is to improve written and oral communication skills and to provide hands on experience in the art of two-way communication of environmental and occupational issues between scientists and managers, policy makers and the public.



Learning Outcomes

By the end of this course, participants will be able to:

- 1- Explain the fundamental principles of communication and message development
- 2- Explain factors that contribute to the public's perception of risk, compare and contrast the public's views with scientists' views
- 3- Describe techniques for addressing and listening to community concerns
- 4- Discuss factors and methods for working with the news media on environmental issues
- 5- Discuss and demonstrate the approach and level of scientific detail for communicating with policy makers
- 6- Research current issues, assimilate findings, and communicate a conflicting scientific opinion and/or public opinion.
- 7- Develop written communication skills targeting the public communities, policy makers, and the news media.

Duration: 30 Learning Hours
25 CPD Points

Course Outline

- Teambuilding
- Leadership Styles and Theories
- Project Management
- Health Program Planning Building Health Programs that work
- Stakeholder Analysis
- Resource Management
- Health Policy
- Organizational Management
- Health Service Delivery
- Change Management
- Interpersonal Communication Skills
- SelfAwareness and SelfAssessment
- Conflict Management
- Problem Analysis
- Manage your time and manage your stress

Description

This course provides participants with basic concepts and principles of health systems, health policy, planning and management. It enables them to analyze the key aspects of health policy in developing health systems and the changing role of governments and ministries of health in health care delivery.

It provides the opportunity to understand and critically analyze issues like health system development and reforms, policy change and centralized versus decentralized health systems.



Learning Outcomes

By the end of this course, participants will be able to:

- 1- Distinguish and apply log frames, results and rights-based approaches in developing health plans
- 2- Identify key principles of policy development, planning, and management of health resources
- 3- Apply management skills and functions according to the principles of organizational management
- 4- Recognize and apply Change Management
- 5- Demonstrate the skills of teamwork and communication skills
- 6- Develop and assess leadership management skills and styles, specifically: delegation, active listening, conflict resolution and time management

Duration: 30 Learning Hours
25 CPD Points



Course Outline

- Research Process and Argument Matrix
- Writing Title Page, Abstract, and Introduction
- Writing the Research Methods
- Writing the Research Results
- Writing Discussion, Conclusion and References
- Good Manuscript Writing

Description

This course is designed to review the steps involved in, peer reviewing, and revising manuscripts for publication. The course participants will refine and demonstrate writing, reading, editing, and reviewing skills through exercises and class discussions. This course aims to teach the fundamentals of effective scientific writing.

Instruction will focus primarily on the process of writing and publishing scientific manuscripts only. The course will be presented in two segments: part (1) teaches participants how to write effectively, concisely, and clearly and part (2) takes them through the preparation of an actual scientific manuscript.



Learning Outcomes

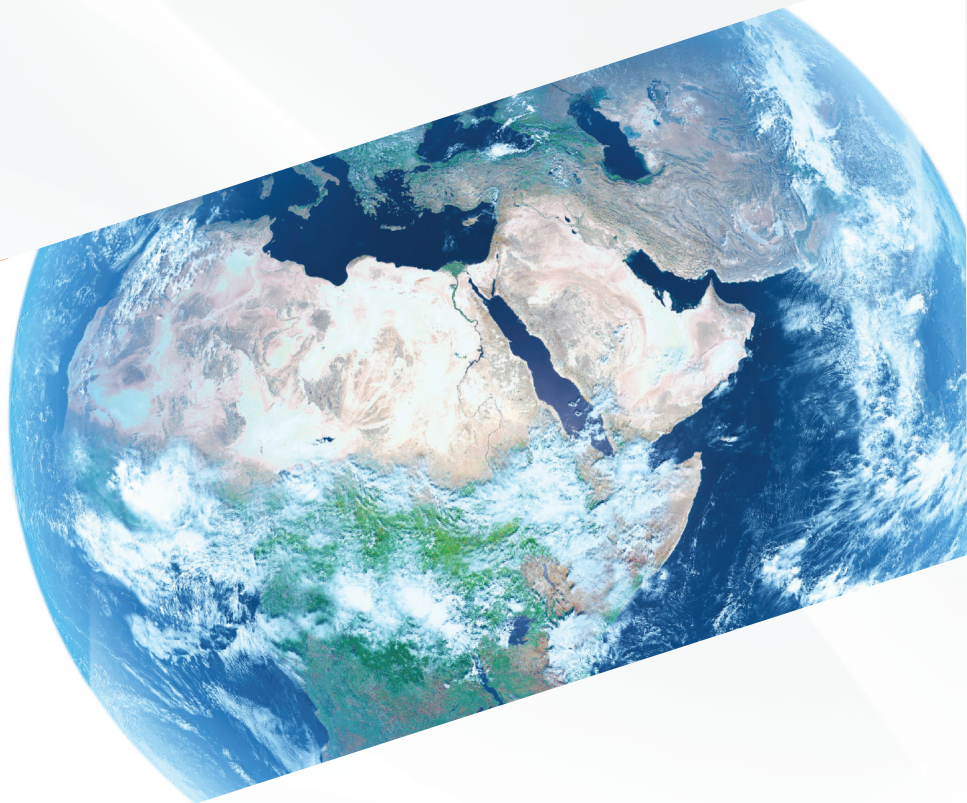
By the end of this course, participants will be able to:

- 1- write a scientific manuscript effectively, concisely, and clearly in the Environmental Health area
- 2- Identify the publications best suited for their work
- 3- Have greater insight into the needs of readers and reviewers
- 4- Comprehend the purpose of each section in a research paper
- 5- Have a wider repertoire of practical strategies to improve their own research writing
- 6- Make strategic choices about how, where and when to publish their research



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