CDC/NCEH/Health Studies Section: Environmental Epidemiology and Toxicological Outbreak Investigation Pre-workshop Training

Purpose

CDC's Health Studies Section (HSS) in the National Center for Environmental Health aims to prevent exposure to and disease from non-infectious environmental hazards by building environmental epidemiologic capacity needed for public health action, providing evidence-based information on the potential impact of environmental hazards on human health, and responding to environmental public health emergencies.

Environmental epidemiologists within HSS assist public health agencies in the United States and many countries around the world with responding to and preventing outbreaks of illness caused by non-infectious, toxic agents (for example, heavy metals or pesticides). Investigating these outbreaks requires some unique considerations and skills that are different from those used to investigate infectious disease outbreaks. To contribute meaningfully as an environmental epidemiologist, it is important to know the different types of potential environmental hazards, how they occur, and the consequences they have for society.

Course Goal

The goal of the Environmental Epidemiology and Toxicological Outbreak Investigation Course is to provide information, resources, and learning activities to help public health practitioners gain the knowledge and skills needed to investigate a toxicological outbreak.

Target Audience

The target audience includes public health practitioners who are responsible for responding to environmental hazards.

Prerequisites

Participants should have basic knowledge of epidemiological principles and outbreak investigation.

Course Overview

Skill-based learning objectives are introduced by referencing and describing the steps a public health practitioner will need to perform in a toxicological outbreak investigation and demonstrating how the procedures and job aids provided in the Toxicological Outbreak Course Tool Kit are used to accomplish those steps. The skill-based learning objectives include a Case Study Activity in which participants

describe and demonstrate how the procedures and job aids would be applied in the assessment of a specific toxicological outbreak.

Learning Objectives

Participants in this course will achieve the following learning objectives:

1. Define the basic principle of environmental epidemiology
2. Define the basic steps for an outbreak investigation
3. Recognize factors indicating that a toxic agent may have caused an outbreak
4. Identify nuances to investigating a toxicological outbreak compared with investigating an infectious disease outbreak
5. Demonstrate how the materials in the Toxicological Outbreak Course Tool Kit can be used in an outbreak investigation
6. Understand how CDC can assist in these outbreaks and who to contact for assistance

Course Materials

- Web links for toolkit, and PowerPoint© slide sets for six modules, including a toxicological outbreak investigation scenario and case study.
    1. Introduction
    2. Toxicological Principles
    3. Laboratory Principles
    4. Epidemiologic Principles: Analyzing and Interpreting Laboratory Data
    5. Steps of an Outbreak Investigation (3 parts: a, b, and c)
    6. Case Study (International)
- Tool Kit
    - Templates of commonly used investigative tools (e.g., epidemiologic questionnaire, chart abstraction forms, line list, sample log)
    - Examples of questionnaires used in prior outbreaks

Logistics for Facilitator-led Delivery

- A/V equipment needed: computer with PowerPoint©, projector, and screen
- Materials: copies of participant workbook, toolkit, pens, flip chart, and markers

required Time

- Eight hours (Full day)

Course FACILITATORS and COFACILITATORS

- Tesfaye Bayleyegn, MD, MPH, Senior Service Fellow,Acting Senior Advisor for International Relation Office of Health Studies Section Chief
  Center for Disease Control and Prevention, National Center for Environmental Health,Division of Environmental Health Science and Practice
- Johnni H. Daniel, DHSc, MPH, Chief of Health Studies Section, Division of Environmental Health Science and Practice, National Center for Environmental Health, U.S. Centers for Disease Control and Prevention
- Tatek Bogale, MD,MPH, Regional Technical Coordinator, AFENET, Horn of Africa

Time	Description	Instructor
8:30 – 9:00	Overview of CDC Health Studies Section Environmental Epidemiology activities	Dr. Bayleyegn, Tesfaye
9:30 – 10:00	Previous Outbreak of Toxic Etiology: Investigation of Unknown Liver Disease—Tigray Ethiopia, March 2011	Dr. Bayleyegn, Tesfaye
10:00 – 10:15	Module 1: Course Introduction and Overview	Dr. Daniel, Johnni
10:15 – 10:30	Break	
10:30 – 11:00	Module 2: Toxicological Principles	Dr. Daniel, Johnni
11:00 – 12:00	Module 3: Laboratory Principles	Dr. Bayleyegn, Tesfaye
12:00 – 1:00	Lunch	
Time	**Description**	**Instructor**
1:00 – 2:00	Module 4: Epidemiologic Principles: Analyzing and Interpreting Laboratory Data	Dr. Daniel, Johnni
2:00 – 2:30	Module 5a: Steps of an Outbreak Investigation	Dr. Bayleyegn, Tesfaye
2:30 – 3:00	Module 5b and 5c: Steps of an Outbreak Investigation	Dr. Daniel, Johnni
3:00 – 3:15	BREAK	
3:15 – 3:45	Previous Outbreaks of Toxic Etiology: Mass Poisoning Associated with Homebrewed Alcoholic Beverage in Mozambique	Dr. Daniel, Johnni
3:45 – 4:30	Module 6: Case Study	Group
4:30 – 5:00	Discussion and wrap-up	Dr. Bayleyegn, Tesfaye