

### Title: 3B. Assessing Nanotechnology Health Risks

**Goal:** The goal for this module is to provide students an understanding how health risks are assessed.

**Module Objectives:** This module will provide the students with an overview of the health risks related to nanomaterials and how the human body is affected. Topics covered in the module: 1) dose-response assessment; 2) dose-response evaluation, and risk characterization; 3) Human health and toxicology: - short and long term toxicity studies ; 4) understanding and determining toxic doses; 5) Role of the National Institute for Occupational Safety and Health (NIOSH); and 6)nanotechnology safety programs in the workplace: - training and incentives.

### Prerequisites by Topic:

- None

**Required Text:** N/A

**Reading:** Write-up of this module

**References:** [Refs. 38, 45-50]

### Student Learning Outcomes:

- Students will understand the dose-response evaluation, and risk characterization of nanomaterials
- Students will understand health and toxicology effects of nanomaterials by reading research on short and long term toxicity studies
- Students will understand how toxic doses can affect the human body
- Student will learn the role of the National Institute for Occupational Safety and Health (NIOSH) to safety of nanotechnology/nanomaterials
- Students will learn the importance of nanotechnology safety programs in the workplace: - training and incentives

**Topics Covered:** (Green highlighted topics are priority#1, Yellow highlighted are if time permits)

- **Lecture I**
  - Health Risks:--dose-response assessment - dose-response evaluation, and risk characterization.
  - Human health and toxicology--short and long term toxicity studies - understanding and determining toxic doses
- **Lecture II**
  - Role of the National Institute for Occupational Safety and Health (NIOSH); and 6)nanotechnology safety programs in the workplace: - training and incentives

**Relationship to ABET Program Outcomes**

[Note: Please, refer ABET program outcomes list (a) through (l) in attached standard template.]

- (f) An understanding of professional and ethical responsibility.
- (j) A knowledge of contemporary issues.