



ERNEST ORLANDO LAWRENCE  
BERKELEY NATIONAL LABORATORY

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Environment, Health, & Safety  
Training Program

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**EHS 344 Safe Handling of Engineered Nanoscale Particulate Matter  
Course Syllabus**

**Subject Category:** General  
**Course Length:** 30 minutes  
**Delivery Mode:** Web-based Training

**Course Prerequisite:** None  
**Medical Approval:** None  
**Frequency:** Annual

**Course Purpose:** This course is designed for employees and guests who synthesize, investigate or otherwise work with engineered nanomaterials in a manner that could result in a potential exposure or environmental release. "Engineered nanomaterials" are intentionally created and have structures <100 nanometers. NOTE: "Engineered materials" do NOT include larger materials with nanoscale features (e.g., etched silicon wafers) nor biomolecules (e.g., proteins, nucleic acids, and carbohydrates).

**Course Objectives:**

Upon completion of this training employees should be able to:

- Identify how exposure to nanoparticles might occur
- Recall that nanomaterials may display novel toxicity and reactivity
- Name which type of nanomaterial is not likely to present new hazards
- Recognize that high surface area may drive toxicity
- Recall the toxic properties of carbon nanotubes
- Select the locations nanoparticles have been shown to distribute and travel in the body
- Define what someone should always assume about novel nanoparticles
- Recall engineering controls for handling nanoparticles
- Recall proper housekeeping methods when working with nanoparticles
- Identify proper labeling and storage methods for work with nanoparticles
- Recall the personal protective equipment, including respirators needed while performing work with nanoparticles
- Define the correct nanoparticle waste disposal methods
- Recall emergency and spill procedures

**Subject Matter Expert:** Larry Mclouth

**Training Compliance Requirements:** DOE Notice 456.1 The Safe Handling of Unbound Engineered Nanoparticles

**Course Instructional Materials:** Web-based course and a PDF downloadable version of the course is available within the course.

**Performance Criteria:** Employees will be asked to demonstrate what they have learned from the web-based training by taking a quiz at the end of the course. Employees must pass the quiz with a 80% score to receive course credit.

**Web Resource:** Chemical Hygiene and Safety Plan - <http://www.lbl.gov/ehs/chsp/index.shtml> , EH&S Training Program web page @ <http://www.lbl.gov/ehs/html/training.htm>