Nanoparticles

Potential Hazards – Why are we concerned?

Concerns with safety regarding the use of nanotechnology have arisen primarily from the recognition of several unique attributes of nanoparticles:

- The ultra-small particle size permits the particles to be carried deeply into tissues. Particles may be respired into lungs; may pass through the blood-brain barrier; or translocate between organs.
- The molecular structure of nanoparticles and the relatively greater surface area confer on these particles different chemical reactivates than for larger structures made from the same elements or molecules.

Some evidence suggests that nanoparticles may be more toxic to tissues than larger molecular structures. In addition to concerns about toxicity of nanoparticles that are inhaled, ingested, or absorbed through dermal exposure during initial contact, nanoparticles waste may present a hazard in the environment.

Nanoparticle Research and Safe Handling Guidelines at UNC-Charlotte

A number of research programs study the behavior or application of nanoparticles. Currently, there is limited occupational safety and health information on nanoparticles. The Office of Environmental, Health and Safety is committed to ensuring employees working with nanotechnology are aware of the potential hazards involved and control measures that should be utilized to limit exposures. The following partial guidelines and links are available to assist you in safely handling nanoparticles.

- Nanoparticles should be conservatively assumed to be potentially hazardous materials until shown to be otherwise.
- Never weigh out or otherwise use nanoparticles on an open bench. Always use a fume hood or a glove box to weigh out or use nanoparticles.
- All personnel should wash their hands and arms, immediately after the completion of any procedures.
- Wear the appropriate PPE and adhere to all safety precautions. There is limited data on protection that current respirator technology may provide, therefore you should never rely solely on a mask or respirator for protection. Wear gloves when handling nanoparticles, and dispose of gloves as a hazardous waste.
- Contact EH&S at 7-1111 if you plan on or are currently using nanoparticles in your laboratory.