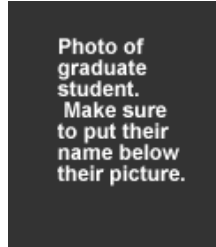


NANOPARTICLES IN THE ENVIRONMENT: EXAMINING EXPOSURE PATHWAYS AND TOXICOLOGICAL EFFECTS

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Goals:

- 1) Determine the in vivo toxicity effects of carbon nanomaterials upon direct exposure to fish embryos
- 2) Determine the in vivo toxicity effects of carbon nanomaterials to fish under aqueous exposure
- 3) Determine the in vivo toxicity effect of nanomaterials when fed to fish

Statement of Problem:

Over the last few years, there has been a boom in nanomaterial research, resulting in the production of hundreds of new materials developed at the nanoscale (<100nm). These nanoparticles have a wide range of applications, from biological (such as drug delivery and personal care products) to engineering (such as nanocircuitry and material science) applications.

Unfortunately, this great explosion of new products and applications has lacked an assessment of the potential environmental impacts posed by these particles. Furthermore, most sectors of nanotechnology are developing with no environmental regulations in place, despite the fact that there is a clear opportunity for these particles to be released to the environment and contaminate air, water and soil. In addition, very little is known about the toxicology of nanoparticles.

Current Activities:

Exposure studies:

- Exposure of fathead minnows to different concentrations of functionalized carbon nanotubes
- Determination of lethal concentrations
- Determination of sublethal effects