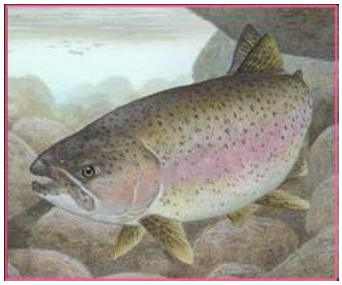
Effects of Manufactured Nanoparticles on the Immune System of Macrophages

Supporting/Contributing Agency: U.S. EPA



In our research we are trying to determine the properties of nanomaterials that may cause them to be toxic to aquatic species. The goal of this project is to generate data to help inform industry as to how to design nanomaterials that will cause the least amount of environmental harm.

In this project we are evaluating carbon-based nanomaterials that have different physical structures and chemical properties. This includes fullerenes with ___. Our research to date has shown that nanomaterials may not be toxic to immune cells, but even at low levels they are stimulatory to immune cells, indicating that the immune system is "turned on" in their presence. In addition we have determined that nanomaterials differ in their cellular toxicity and their ability to stimulate the primary immune cell, the macrophage based on their surface chemistry.

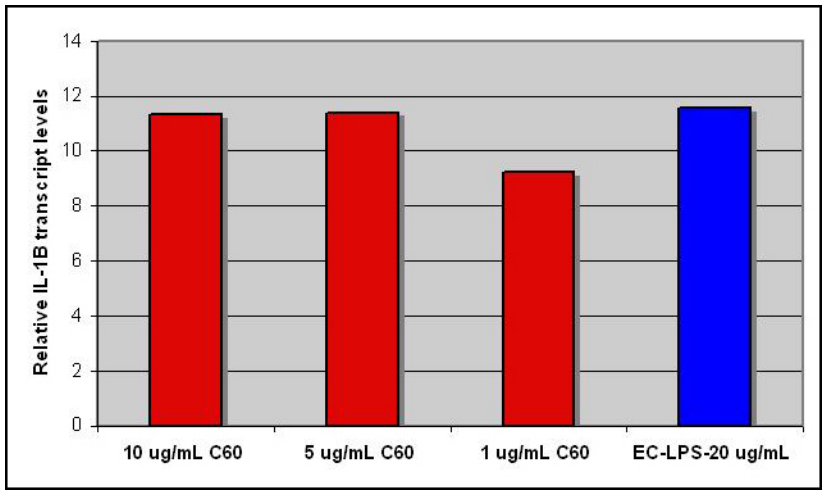


Figure. Fullerene nanomaterials are stimulatory to macrophage immune cells even at low concentrations.