



## Science Foundation, EPA join forces for study of nanotechnology

**By Tom Katsouleas : Guest columnist**  
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A remarkable thing for society happened last week in Durham and Los Angeles. The National Science Foundation and the Environmental Protection Agency announced the opening of two new research centers -- one led by UCLA and one led by Duke University -- dedicated to understanding the environmental impact of nanotechnology. While the research of these centers will be significant, what is more significant is they represent a paradigm shift in the way we as a society take responsibility for our innovations.

These centers are the first to address societal consequences of an invention -- in this case the use of nanoparticles in technology -- in advance.

Nanoparticles are as much as a million times smaller than the head of a pin, and have unusual properties compared with larger objects made from the same material. These unusual properties make nanomaterials attractive for use in everything from computer hard-drives to sunscreens, cosmetics and medical technologies. However, the environmental implications of these materials are virtually unknown.

We are all familiar with examples of the unintended side effects of engineering innovation, such as leaded gasoline and freon-based air conditioners. These problematic technologies were later redesigned, but not before they caused considerable environmental damage.

University professors use these examples to teach our engineering students to anticipate the possible negative impacts of technology and to incorporate these possibilities into their engineering decisions. But until now that anticipation had not been part of the basic research process that drives invention.

I want to commend the NSF and EPA for taking this milestone step to fund research that recognizes the tremendous potential that nanotechnology offers to society -- from curing disease to providing unlimited renewable energy -- and anticipates that, by understanding the environmental implications of this new technology, we can chart a course that achieves the benefits while protecting the environment.

To quote early 20th century Danish-Anglo engineer Ove Arup: "Engineering problems are under-defined, there are many solutions, good, bad and indifferent. The art is to arrive at a good solution. This is a creative activity, involving imagination, intuition and deliberate choice."

Although Arup's remark was no doubt aimed at engineers, it can be taken in a broader context. To arrive at good solutions for society's biggest challenges requires the imagination and intuition of people not just from engineering but from business, social sciences, the arts, law and public policy.

This new partnership of a science foundation and regulatory agency is a good start. It is a model we need to replicate if we are to take advantage of innovations that both improve our lives and protect our planet.

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