



## **Nanomaterials: Promise or Peril?**

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The U.S. government has finally begun to get down to brass tacks on the tricky subject of nanotoxicology. Yesterday, federal officials released a long-awaited interim report that lays out a strategy for addressing nagging questions about the possible dangers of tiny particles that appear in many consumer goods. But although critics praise the effort as an important first step, they argue that for now the overall strategy seems uncoordinated and could leave critical questions unaddressed.

Nanotechnology--a catchall term for engineering materials sized between 1 and 100 billionths of a meter--is widely seen as having enormous scientific and commercial potential. Much of the buzz is due to the fact that nanosized particles often have different chemical, electrical, and optical properties than their bulk counterparts. More than 500 products containing nanomaterials are already on the market. And federal officials estimate that nanomaterials will balloon into a \$1.4 trillion industry by 2012--that is, unless worries about health and environmental concerns scare consumers and companies away. Those concerns have been prompted by research that shows that nanomaterials can enter the body and even cells ([ScienceNOW](#), 15 June 2006). But just how different nanoparticles will affect humans and other organisms is largely unknown.

To help find out, last year, representatives from more than two dozen federal agencies that help oversee the U.S. National Nanotechnology Initiative released a laundry list of research questions they needed addressed. But with no way to determine, say, whether it's important to study the biological effects of nanoparticles before gauging workers' exposure to them, Congress was left

with little guidance as to how best to fund research in the field. The new report--prepared by a subpanel of the National Science and Technology Council--takes a first stab at setting those priorities by outlining five priority research categories, such as the effect of nanomaterials on human health and the effect on the environment.

Within each category, the report then outlines the top five research priorities. Under human health, for example, the report lists the top needs as finding ways to quantify biological exposure to nanoparticles and understanding how nanoparticles move through the body. The report's authors hope the list will help guide federal agencies in determining which internal and external research projects to fund.

"It's good to see [federal officials] making progress," says Andrew Maynard, chief scientist for the Project on Emerging Nanotechnologies at the Woodrow Wilson International Center for Scholars in Washington, D.C. However, Maynard argues that what's missing is a sense of the field's immediate versus long-term needs, as well as how the stated priorities will help manufacturers, regulators, and consumers know when nanomaterials are safe. Federal officials say they will be accepting public comments on the report until 17 September.

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