

January 25, 2012

With Prevalence of Nanomaterials Rising, Panel Urges Review of Risks

By **CORNELIA DEAN**

Tiny substances called nanomaterials have moved into the marketplace over the last decade, in products as varied as cosmetics, clothing and paint. But not enough is known about their potential health and environmental risks, which should be studied further, an expert panel of the [National Academy of Sciences](#) said on Wednesday.

Nanoscale forms of substances like silver, carbon, zinc and aluminum have many useful properties. Nano zinc oxide sunscreen goes on smoothly, for example, and nano carbon is lighter and stronger than its everyday or "bulk" form. But researchers say these products and others can also be ingested, inhaled or possibly absorbed through the skin. And they can seep into the environment during manufacturing or disposal.

Nanomaterials are engineered on the scale of a billionth of a meter, perhaps one ten-thousandth the width of a human hair, or less. Not enough is known about the effects, if any, that nanomaterials have on human health and the environment, according to [a report issued by the academy's expert panel](#). The report says that "critical gaps" in understanding have been identified but "have not been addressed with needed research."

And because the nanotechnology market is expanding — it represented \$225 billion in product sales in 2009 and is expected to grow rapidly in the next decade — "today's exposure scenarios may not resemble those of the future," the report says.

The panel called for a four-part research effort focusing on identifying sources of nanomaterial releases, processes that affect exposure and hazards, nanomaterial interactions at subcellular to ecosystem-wide levels and ways to accelerate research progress.

"A lot of things are being done right, but we need to think about how to regroup those efforts to get more power from the punch," said Mark R. Wiesner, an engineering professor at Duke University

and a member of the panel. As director of the [Center for the Environmental Implications of Nanotechnology](#) at Duke, he leads a group studying the movement and effects of nanomaterials in the environment.

“We cannot knock these things off on a case-by-case basis,” Dr. Wiesner said in a telephone interview. “The number and variety of nanomaterials that is possible is just mind-boggling. There are not enough beakers to do all the experiments required.”

The last time the academy weighed in on this was in a report in 2008 that included a sweeping critique of the [National Nanotechnology Initiative](#), the federal body that coordinates nano-related activities across agencies. In its report on Wednesday, the academy acknowledged the initiative’s progress, but added that “there has not been sufficient linkage between research and research findings and the creation of strategies to prevent and manage risk.”

The report noted that the initiative lacked budget and management authority to direct research and added that its dual goals of promoting nanotechnology and mitigating its risks “impede implementation and evaluation” of risk research.

The panel was convened by the [National Research Council](#), the academy’s research arm, at the request of the Environmental Protection Agency. It posted its report on Wednesday.

Dr. Jonathan M. Samet, an epidemiologist at the University of Southern California and the chairman of the panel, said his group would revisit the issue in 18 months. By then, he said, “We will hope the planning is in place and the N.N.I. and others are moving forward” with research.