

# Nanotech's health, environment impacts worry scientists

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The unknown human health and environmental impacts of nanotechnology are a bigger worry for scientists than for the public, according to a new report published today (Nov. 25) in the journal *Nature Nanotechnology*.

The new report was based on a national telephone survey of American households and a sampling of 363 leading U.S. nanotechnology scientists and engineers. It reveals that those with the most insight into a technology with enormous potential -- and that is already emerging in hundreds of products -- are unsure what health and environmental problems might be posed by the technology.

"Scientists aren't saying there are problems," says the study's lead author Dietram Scheufele, a University of Wisconsin-Madison professor of life sciences communication and journalism. "They're saying, 'we don't know. The research hasn't been done.'"

The new findings are in stark contrast to controversies sparked by the advent of technologies of the past such as nuclear power and genetically modified foods, which scientists perceived as having lower risks than did the public.

Nanotechnology rests on science's newfound ability to manipulate matter at the smallest scale, on the order of molecules and atoms. The field has enormous potential to develop applications ranging from new antimicrobial materials and tiny probes to sample individual cells in

human patients to vastly more powerful computers and lasers. Already products with nanotechnology built in include such things as golf clubs, tennis rackets and antimicrobial food storage containers.

At the root of the information disconnect, explains Scheufele, who conducted the survey with Elizabeth Corley at Arizona State University, is that nanotechnology is only now starting to emerge on the nation's policy agenda. Amplifying the problem is that the news media have paid scant attention to nanotechnology and its implications.

"In the long run, this information disconnect could undermine public support for federal funding in certain areas of nanotechnology research," says Corley.

"Nanotechnology is starting to emerge on the policy agenda, but with the public, it's not on their radar," says Scheufele. "That's where we have the largest communication gap."

While scientists were generally optimistic about the potential benefits of nanotechnology, they expressed significantly more concern about pollution and new health problems related to the technology. Potential health problems were in fact the highest rated concern among scientists, Scheufele notes.

Twenty percent of the scientists responding to the survey indicated a concern that new forms of nanotechnology pollution may emerge, while only 15 percent of the public thought that might be a problem. More than 30 percent of scientists expressed concern that human health may be at risk from the technology, while just 20 percent of the public held such fears.

Of more concern to the American public, according to the Nature Nanotechnology report, are a potential loss of privacy from tiny new

surveillance devices and the loss of more U.S jobs. Those fears were less of a concern for scientists.

While scientists wonder about the health and environmental implications of the new technology, their ability to spark public conversation seems to be limited, Scheufele says. "Scientists tend to treat communication as an afterthought. They're often not working with social scientists, industry or interest groups to build a channel to the public," he says.

The good news for scientists, Scheufele explains, is that of all sources of nanotechnology information, they are the most trusted by the public.

"I think the public wants to know more. The applications are out there and that concern gap has to be addressed," Scheufele argues. "The climate for having that discourse is perfect. There is definitely a huge opportunity for scientists to communicate with a public who trusts them."

Source: University of Wisconsin-Madison

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