

Nano World: Nano risk blueprint proposed

Instead of a general call for more federal research into the risks of nanotechnology, a new strategy proposes a move beyond to recommend how these investigations should get prioritized and implemented, experts tell UPI's Nano World.

Estimates from the National Nanotechnology Initiative suggest nearly \$40 million is currently devoted by federal agencies into the risks of nanotechnology. However, as little as \$11 million of the more than \$1 billion a year the U.S. government currently spends in nanotechnology research and development is actually highly relevant to concerns over what is safe and what is not, according to Andrew Maynard, chief science adviser for the Project on Emerging Nanotechnologies at the Woodrow Wilson International Center for Scholars in Washington.

"With over \$32 billion worth of products incorporating nanotechnology sold in 2005, the question of whether nanotechnology products and applications are safe is one that is not going away," said Project on Emerging Nanotechnologies Director David Rejeski.

"Nanotechnology is an emerging technology that offers us an opportunity to 'get it right' from the start," Rejeski said. "But action is needed now. Many of the same novel properties that give nanotechnologies the capacity to transform medicines, materials, and consumer products, may also present novel risks."

The current gaps in all areas of risk assessment when it comes to nanotechnology at best "create uncertainties -- and at worst, dangers -- for workers, companies, consumers, investors, and insurers," Maynard said.

To fill these gaps, a new report from Maynard released July 19 suggested a blueprint where federal agencies receive a minimum budget of \$50 million per year over the next two years to focus on the safety of technologies already in use or close to commercialization. Top priorities initially should identify and measure the extent to which nanomaterials are exposed to people and released into the environment. Next would come evaluations of nanomaterial toxicity. Then release and exposure of nanomaterials would get controlled, and best practices would get developed for working safely with them. Eventually, research could develop predictive capabilities into what nanomaterials might be toxic instead of laboring with long, costly experiments.

As part of the strategy, Maynard proposes a shift in funding and leadership to federal agencies with a clear mandate for both oversight and for research of environmental, health and safety risks, such as the Environmental Protection Agency and the National Institute for Occupational Safety & Health.

"Right now there's no central body, no agency saying which research needs to be done, no coordination," Maynard said. "There is an expressed desire to ensure nanotechnology is developed without risk and a stated desire to do research, but there is no structure or plan as to how to proceed."

In the future, to better deal with the vast realm of nanotechnology U.S. government agencies must "coordinate with the broader world, with industry and with other governments. Clearly environmental, health and safety issues are not limited to one country, but are global issues, and no one has enough resources to do everything," Maynard said.

"This is going to be a very useful and important report. It's key to get priorities when it comes to environmental, health and safety research, so we can devote more money to it and so that the money is used as efficiently as possible," said Michael Holman, analyst at nanotechnology research firm Lux Research in New York.

Holman noted \$1 million to the National Academy of Sciences to assess what specific research is needed into nanotechnology risks was requested of Congress in June by the Union of Concerned Scientists, Lux Research, Environmental Defense, the National Resources Defense Council, Foresight Nanotech Institute, DuPont, the NanoBusiness Alliance and other groups interested in nanotechnology. "If that can be appropriated, it would dovetail very nicely with a lot of recommendations made in this report by Andrew Maynard," Holman said.

When it comes to priorities in nanotechnology risk research, Holman added funding should get devoted to nanomaterials that are actually already commercially available.

"A lot of basic research done so far into the toxicity of nanomaterials is based on what materials researchers can get their hands on or are most interesting commercially, but not necessarily the most relevant commercially or the ones people are most likely to be exposed to," he said "A lot of research on carbon nanotubes are focused on single-walled nanotubes, for instance, but relatively few of those are used in any volume commercially today, but multi-walled nanotubes are used in much larger quantities and used in actual commercial products today, and there is not so much research in multi-walled nanotubes."

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