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Debunking the Nanotech Myths

Public attitudes toward nanotechnology are currently pretty neutral. It's up to government and the media to provide realistic assessments of risks and rewards

by [Steven C. Currall](#)

Nanotechnology has been around for years, but the general public is just beginning to learn about it. While many other emerging technologies have been boldly presented to the world's consumers (for instance, genetically modified food), nanotechnology remains something of an enigma.

Like any other new technology, risks and benefits emerge only after time, money, and research. And research is beginning to emerge on nanotechnology and its commercial implications. This new research examines what the general public, as consumers, know about this technology and their willingness to use commercial products containing nanotechnology.

Nanotechnology involves human-designed materials or machines at extremely small sizes (atomic or molecular level) that have unique chemical, physical, electrical, or other properties. The name derives from nanometer, a unit of measurement equal to one-billionth of a meter. The opportunities to do things differently with nanotechnology have enormous potential to change and benefit society.

Together with my colleagues, I recently carried out and published the findings of three national surveys of consumers and their perceptions of nanotechnology. The National Science Foundation, through Rice University's Center for Biological & Environmental Nanotechnology, funded our work. In the first large-scale studies of their kind, we examined consumers' perceptions of risk vs. benefit when using products containing nanotechnology. The findings exposed several common myths. Here's a look at some of them, and the truth behind each.

Myth 1: Nanotechnology is a "science project" whose commercial products will only emerge some years in the future.

Nanotechnology is no longer just a science project. In fact, there are currently more than 370 products on the market utilizing nanotechnology. These range from car tires and sports equipment to electronics, clothing, and cosmetics. Reports indicated that nanotechnology-enabled products were worth over \$32 billion in 2005.

Myth 2: Consumers must fully understand nanotechnology to have opinions and attitudes toward it.

To the contrary, consumers will form opinions and attitudes despite having little information about nanotechnology. How are consumers learning about nanotechnology? Most are learning from the popular media such as newspapers, magazines, and the Internet. This means that journalists must present information about nanotechnology in an even-handed and impartial manner.

Myth 3: Consumers see the risks of nanotechnology as greater, and the benefits as less, than many everyday consumer products.

One core finding of our research revealed that current public sentiment towards nanotechnology is relatively neutral. It was perceived to be riskier and less beneficial than other technologies, such as solar power and

vaccinations, but more beneficial and less risky than pesticides, chemical disinfectants, and alcoholic drinks, for example.

As public awareness increases, consumers will begin to shift their sentiments toward nanotechnology, ultimately influencing its general acceptance (or rejection) within society. Research has already shown that as people learn more about nanotechnology, their attitudes tend to become more positive.

Myth 4: Consumers wish to first fully comprehend the risks of nanotechnology before considering the benefits.

Based on our findings, we question an assumption by many of our science and engineering colleagues that the public thinks about nanotechnology applications only in terms of possible risks. To the contrary, our results showed that public perceptions of nanotechnology weren't as simple as previously assumed—risks and benefits are both enmeshed in a complex decision-making calculus.

In essence, the public engages in a tradeoff of risks and benefits. The perceived level of risks depends on the extent of benefits and vice-versa. The upshot is that when deciding whether or not to use a product, consumers are quite sophisticated in weighing risks and benefits.

Myth 5: The best strategy for advancing the burgeoning nanotechnology industry is to first accumulate all evidence on any risks of nanotechnology and then distribute the findings to the public.

We will never know every possible environmental, health, or safety risk. Therefore, governmental and business leaders must simultaneously push for greater understanding of possible risks while at the same time being responsible in exploring how nanotechnology may be used in products that can have dramatic societal benefits. It's vital that researchers are transparent and timely in providing their findings to society about risks and benefits.

We can't expect to know everything about nanotechnology before we commercialize it. But we must urge business leaders and government regulators to develop comprehensive and thorough sources of information about the properties of nanotechnology and distribute that information accordingly. Armed with solid information, consumers will make their own responsible decisions about using commercial products containing nanotechnology.

Consumer acceptance or rejection of nanotechnology will be absolutely vital to the future of the world economy and technology industry. As nanotechnology will undoubtedly affect the way we live our daily lives, my advice is for you to familiarize yourself and make educated decisions when purchasing new and existing nanotechnology products. There's much more to come from nanotechnology—the future seems bright for how the emerging industry will improve our lives.

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