

standards should be developed before nanotechnology is made available commercially across multiple industries.

“We saw that it was important to take early action with standards, in order to create a scientific-based standard description covering the whole field,” says Willis.

In the field of biotechnology, he recalls that standards were developed afterwards, which caused problems later-on in the commercialization of that technology.

“We didn’t want the same thing to happen in nanotechnology, simply because we haven’t taken early steps,” says Willis.

From incorporating nanoparticles into cosmetics (which is already happening), to manufacturing lighter-weight and stronger composites to create more durable and sustainable materials, this small science is en-route to make a large impact on just about every sector of the market.

“Nanotechnology will allow us to be more efficient across the board in a way we haven’t been before,” says

Willis. “When we see it applied across the traditional industrial sectors, we are going to see a lot of differences—niche products tailored to optimally respond to their specific applications. It’s going to be very different, but incrementally different. I don’t see that in 10 to 15 years we’re going to have a world we had not envisaged before because of nanotechnology.”

Willis is confident that nanotechnology’s benefits outweigh any risk, provided the industry understands and manages the risks.

“Even in its early stages, we are seeing so much promise and we haven’t really engineered the field yet,” he says. “It’s exciting and really going to change our lives for the better.” ■

<sup>1</sup> 2008. Canadian Cancer Society. *General Cancer Stats for 2008*. ([www.cancer.ca](http://www.cancer.ca))

## Establishing nanotech standards



Despite being a relatively new field of science, through the application of standards, nanotechnology has the potential to affect the physical and social well-being of Canadians and people all over the world.

Within the health sector alone, there are countless applications of nanotechnology: from new and improved cancer and central nervous system therapies; to diagnostic tests based on nanoarrays and quantum dots; to enhanced imaging capabilities enabling detection of disease states; to diverse medical implants, such as bone replacement materials; to antibody labels and DNA probes that speed testing and research.

Establishing a series of agreed-upon standards is vital to nanotechnology—in the collection of research data, in providing evidence of emerging health issues,

and in order to give governments a starting point when creating regulations and legislation.

Both the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) are developing numerous standards that will help ensure the safe and responsible use of nanotechnologies. The technical committees working on these standards include participants from more than 30 countries, Canada among them.

Members of the Canadian advisory committee contribute and effectively participate directly in the development of international standards for use in Canada.

The Canadian Standards Association (CSA) facilitates this work through the involvement of its experts from industry, government, research, consumer, and other interests across Canada.

As of mid-2008, nanotechnology-related standards development work spanned some 50 individual projects. These diverse projects are expected to establish the foundation for the international standards that will be used in the commercialization of products and applied by the Canadian regulatory system. ■