Nanotech promises big things for poor -- but will promises be kept?

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"Nanotechnology has the potential to generate enormous health benefits for the more than five billion people living in the developing world," according to Dr. Peter A. Singer, senior scientist at the McLaughlin-Rotman Centre for Global Health and Professor of Medicine at University of Toronto. "Nanotechnology might provide less-industrialized countries with powerful new tools for diagnosing and treating disease, and might increase the availability of clean water."

"But it remains to be seen whether novel applications of nanotechnology will deliver on their promise. A fundamental problem is that people are not engaged and are not talking to each other. Business has little incentive—as shown by the lack of new drugs for malaria, dengue fever and other diseases that disproportionately affect people in developing countries—to invest in the appropriate nanotechnology research targeted at the developing world. Government foreign assistance agencies do not often focus, or focus adequately, on science and technology. With scant public awareness of nanotechnology in any country, there are few efforts by nongovernmental organizations (NGOs) and community groups to examine how nanotechnology could be directed toward, for example, improving public health in the developing world."

Dr. Singer's group in Toronto published a study in 2005 identifying and ranking the ten nanotechnologies most likely to benefit the developing world in the near future. Nanotechnology applications related to energy storage, production, and conversion; agricultural productivity enhancement; water treatment and remediation; and diagnosis and

treatment of diseases topped the list. Dr. Singer's group has also shown that there is a surprising amount of nanotechnology R&D activity in several developing countries, and that these nations are directing their nanotechnology innovation systems to address their more pressing needs.

"Countries like Brazil, India, China and South Africa have significant nanotechnology research initiatives that could be directed toward the particular needs of the poor. But there is still a danger—if market forces are the only dynamic—that small minorities of people in wealthy nations will benefit from nanotechnology breakthroughs in the health sector, while large majorities, mainly in the developing world, will not," noted Dr. Andrew Maynard, chief science advisor for the Woodrow Wilson Center's Project on Emerging Nanotechnologies. "Responsible development of nanotechnology must include benefits for people in both rich and poor nations and at relatively low cost. This also requires that careful attention be paid to possible risks nanotechnology poses for human health and the environment."

Dr. Piotr Grodzinski, director of the Nanotechnology Alliance for Cancer at the National Cancer Institute, National Institutes of Health (NIH) discussed the impact of nanotechnology on diagnostics and therapies for cancer. He said, "It is my belief that nanomaterials and nanomedical devices will play increasingly critical and beneficial roles in improving the way we diagnose, treat, and ultimately prevent cancer and other diseases. But we face challenges; the complexity of clinical implementation and the treatment cost may cause gradual, rather than immediate, distribution of these novel yet effective approaches."

"For example, in the future, it may be possible for citizens in Bangladesh to place contaminated water in inexpensive transparent bottles that will disinfect the water when placed in direct sunlight, or for doctors in Mexico to give patients inhalable vaccines that do not need refrigeration," Dr. Maynard noted. "Nanotechnologies could

revolutionize health care in developing countries and make treatments more readily available for diseases that claim millions of lives around the world each year."

The discussion took place at a program entitled "Using Nanotechnology to Improve Health Care in Developing Countries," held at the Woodrow Wilson International Center for Scholars. The event was organized by the Wilson Center's Project on Emerging Nanotechnologies and Global Health Initiative. It was moderated by Dr. Jeff Spieler, chief of research, technology and utilization for the Office of Population and Reproductive Health at the U.S. Agency for International Development (USAID).

Source: Project on Emerging Nanotechnologies

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