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Nanotechnology In Everyday Life

By Lydia Kulbida, News Channel 13, Schenectady, New York

The business of working with tiny particles is going through a huge growth spurt. Nanotechnology is already used in hundreds of products, maybe even the skin cream you just put on, but how far can the technology go? And why are some predicting hazards along the way?

From cars, to condoms, to tennis balls, nanotechnology is out of the lab and in the items we use every day. "People would be shocked if they realized what they're using, eating, wearing, applying on their face, all these products incorporate nanoparticles, nanomaterials, nanocomponents in one form or another," says Dr. Raj Bawa of Bawa Biotechnology Consulting (Ashburn, VA) and Rensselaer Polytechnic Institute (Troy, NY). The number of nanotech consumer products grew 175% in the last 18 months.

"This industry ... was about 100 billion in revenue two years ago, it's going to be 2.1 trillion by 2014," according to Dr. Alain Kaloyeros, President of Albany NanoTech and SUNY (Albany, NY). So how small is nano? Dr. Kaloyeros says, "one human hair is about 100,000 nanometers."

When you take something down to nano size, you eliminate space between the particles. That's why cars reflect light more evenly and look shinier but that's just the beginning. Dr. Bawa says, "it has unique optical properties, conducter properties, so it's become a little different than what it started out and then those properties you can harvest to develop products and that's really what nanotechnology is."

Maybe because we can't see the nanoscale materials that make tennis balls more durable and skin smoother, we're not that interested yet. A recent national survey finds only 6% said they had heard a lot about nanotechnology. But with nanotech poised to become the globe's next big economic driver, industry leaders say we need to get interested and fast. According to Dr. Kaloyeros, "by 2014 the US is going to need two million nanotech trained individuals."

Education will be important and with the nanotech story even on cereal boxes at the grocery store, the capital region is becoming more savvy about the impact. "This area is considered a hotspot according to trade magazines, and it's ranked in the top 10 every year. There's a lot of research and development, at RPI its materials based and at SUNY it's electronics based," says Dr. Bawa. While electronics was the early generator of products, most of the future growth is predicted in nanomedicine. "From biochips, to recovering eyesight, spinal cord injury, sensors to track and cure cancer, to all sorts of applications and the sky's the limit," says Dr. Kaloyeros. But with the promise of amazing advances, come concerns about possible new health and environmental hazards. Dr. Bawa says, "of course there are concerns when you are dealing with something of this scale, you can't see it, you can't feel it, you can only see the down stream effects of it." A number of federal agencies are currently studying nanotech products, but Dr. Bawa says the agencies are stretched pretty thin.