عنوان مقاله:

Nanotechnology Used in Agriculture

محل انتشار:

دومین کنگره بین المللی علوم و فناوری نانو (سال: 1387)

تعداد صفحات اصل مقاله: 3

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خلاصه مقاله:

In the absence of mandatory product labeling, public debate or laws to ensure their safety, products created using nanotechnology have entered the food chain. Manufactured nanoparticles, nano-mulsions and nano-capsules are now found in agricultural chemicals, processed foods, food packaging and food contact materials including food storage containers, cutlery and chopping boards. Friends of the Earth have identified 104 of these products, which are now on sale internationally. However given that many food manufacturers may be unwilling to advertise the nanomaterial content of their products, we believe this to be just a small fraction of the total number of products now available worldwide1.Nanotechnology has been provisionally defined as relating to materials, systems and processes which exist or operate at a scale of 100 nanometres (nm) or less. It involves the manipulation of materials and the creation of structures and systems at the scale of atoms and molecules, the nanoscale. The properties and effects of nanoscale particles and materials differ significantly from larger particles of the same chemical composition.Nanoparticles can be more chemically reactive and more bioactive than larger particles. Because of their very small size, nanoparticles also have much greater access to our bodies, so they are more likely than larger particles to enter cells, tissues and organs. These novel properties offer many new opportunities for food industry applications, for example as potent nutritional additives, stronger flavorings and colorings, or antibacterial ingredients for food packaging. However these same properties may also result in greater toxicity risks for human health and the environment2.There is a rapidly expanding body of scientific studies demonstrating that some of the nanomaterials now being used in foods and agricultural products introduce new risks to human health and the environment. For example, nanoparticles of silver, titanium dioxide, zinc and zinc oxide, materials now used in nutritional supplements, food packaging and food contact materials, have been found to be highly toxic to cells in test tube studies. Preliminary environmental studies also suggest that these substances may be toxic to ecologically important species such as water fleas. Yet there is still no nanotechnology-specific regulation or safety testing required before manufactured nanomaterials can be used in food, food packaging, or agricultural products. Early studies of public opinion show that ... given the ongoing scientific uncertainty about the safety of manufactured na

کلمات کلیدی: