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Caution Urged with Nanoparticles in Food

Andrew Schneider December 6, 2011

Experts in environmental health issues have teamed with major companies to warn food industries to exercise caution when using nano-sized, manmade creations as nutritional additives, flavorings, colorings, or anti-bacterial coatings for packaging.

The safety concerns raised by this rapidly evolving technology have yet to be fully understood, said a report issued today by As You Sow, a nonprofit organization dedicated to increasing environmental and social corporate responsibility in publicly held companies.

As "food and food packaging companies explore the use of nanomaterials to enhance products, they need also attend to potential risks introduced," the study said.

The organization said the study can help food companies develop safeguards on how to identify the presence of nanomaterials in products.

The report, "The Sourcing Framework for Food and Food Packaging Products Containing Nanomaterials," (nano in food framework.pdf) has an almost indecipherable title. But it shines a much-needed light on an area that the food industry appears reluctant to discuss.

As Food Safety News reported in June, the highly competitive food industry is disinclined to talk too much about its interest in using nanomaterials. However, it's vividly apparent at technical gatherings and conferences that food producers and processors are hiring scientists and engineers to craft the manmade nanoparticles to make food more flavorful, longer lasting on store shelves, bacteria resistant and easier to track, trace and monitor for spoilage.

As You Sow says the guidelines were created with food companies including Kraft, McDonald's, Whole Foods, Yum! Brands, and Pepsi.

Evaluating nano safety

Some of the industrial and consumer-product applications using nanoparticles border on the magical. But a growing number of solid scientific studies have, in the minds of many public health experts, justified hoisting caution flags as they repeatedly show that many nanoparticles are small enough to penetrate the skin, lungs and pass through the vital blood-brain barrier. The potential for lung cancer - especially from the inhalation of carbon nanotubes - has also surfaced in some studies.

Nano is from the Greek word for dwarf and a nanometer is a billionth of a meter, or a total of one sliver if you were to cut the period at the end of this sentence into 50,000 slices.

"Consumers should be concerned that these tiny chemicals may already be in foods and food contact materials, without being publicly disclosed," says Jennifer Sass, senior scientist and nano authority for the Natural Resources Defense

Council.

"Consumers can't even make informed choices when they don't know where these chemicals are, what they are, or how toxic they are. It's an outrageous violation of the public trust that companies are refusing to identify on the label the ingredients or food contact materials that are nano-sized, and FDA is letting them get away with it," Sass said.

The report said that because of their small size, the "intentionally engineered" nanomaterials are able to go places in the body that larger particles cannot, and it warned:

- New "nanofood" products should only be used if safety testing ensures that there are no negative impacts on human health or the environment.

- Current regulatory controls are inadequate to assess or ensure safety.

- The scientific consensus is that there is a lack of knowledge regarding how nanomaterials interact at the molecular or physiological levels and their potential impacts on health and the environment.

Is FDA doing enough?

Michael Passoff, senior strategist and co-author of the study, said the uncertainty and lack of transparency on the application of nanomaterial poses unnecessary risks for consumers, workers, companies, and investors.

"The FDA is not doing nearly enough," Passoff told Food Safety News, and added that federal regulators have so far ignored nano-food despite calls for reform by the Government Accountability Office.

The FDA allows too much control over the use of nanomaterial to remain with the food manufacturers, the report said.

The agency permits food producers using nanoparticles "to determine what safety testing they should be conducting and how transparent they should be in disclosing the results of safety tests, and if they should inform consumers that they are eating these products," Passoff said.

Many in the industry express frustration at FDA's failure to even establish an official regulatory definition of "nanotechnology," "nanoscale," "nanoparticles," or other related terms.

FDA also has not weighed in on the other parameters that health experts believe can affect the toxicity of nanoparticles. They include shape, electrical charge, the ratio of surface area to volume, or other physical or chemical properties.

FDA has long permitted the food industry, based solely on its own testing, to declare a food additive as GRAS, or "generally regarded as safe."

The GRAS designation has been controversial. Nano-foods take that worry to a new level, food safety advocates said.

"FDA's approach to regulating nanotechnology allows engineered nanomaterials to enter the food supply as GRAS substances without FDA's knowledge," the report's authors said.

"Because GRAS notification is voluntary and companies are not required to identify nanomaterials in their GRAS substances, FDA has no way of knowing the full extent to which engineered nanomaterials have entered the U.S.

food supply as part of GRAS substances," Passoff told the daily news safety online publication.

"In contrast to FDA's approach, all food ingredients that incorporate engineered nanomaterials must be submitted to regulators in Canada and the European Union before they can be marketed."

Andrew Schneider also writes for TheFoodWatchdog.com and Coldtruth.com