



Final Report to the Nell Newman Foundation, Grant #0002

As You Sow thanks the Nell Newman Foundation for its support for Product Testing in our Nanomaterials in Food Initiative, whose goal is to avoid the use of nanomaterials in foods unless and until they are proven safe for health and the environment. Over the grant period we have, among other campaign activities: identified food products and additives likely to contain nanomaterials; developed testing methodologies in collaboration with certified laboratories; successfully undertaken the testing of 22 products; convened a group of allies to develop a unified nanomaterials policy recommendation for food companies and regulators; and continued outreach and dialogues with a variety of industry stakeholders.

Below is our Final Report on progress, achievements, and challenges in product testing over the grant period. Please also refer to the enclosed Media Packet for press on this critical work to safeguard our food supply and our health.

What Occurred

Our testing program is designed to develop critical information about where and to what extent engineered nanoparticles are being introduced into the food supply. With this information we can bring the case against nanoparticles directly to the companies who are using the technology; generate national press and consumer awareness about the issue of nanomaterials in foods; and convince other manufacturers to avoid becoming entangled in the issue by avoiding use of nanoparticles until the safety issues are resolved.

As pioneers in the effort to test food for nanoparticles, we have faced many unforeseen challenges, including trial-and-error with multiple testing methodologies and significant laboratory delays as methodologies were researched and developed. We have worked through those challenges and are now successfully testing a broad range of products to pressure the most significant food industry players to acknowledge and take action where nanomaterials are found in their food products.

In testing, and in our campaign more broadly, we have focused our efforts on nano food-grade titanium dioxide (TiO₂), a highly prevalent nanoscale food additive used primarily to impart brightness and whiteness to food products. Due to the fact that the relatively small number of producers of food-grade titanium dioxide do not appear to offer non-nano alternatives, nanomaterials have already entered a wide range of processed foods. Food safety regulation for nanomaterials is still nonexistent, and nanotechnology development by the food industry is increasing. However, we have an opportunity to address this public health issue before more nanomaterials are used in food without the public's knowledge.

1. Identified Target Foods and Companies For Testing

As one of our first campaign actions to assess what nanomaterials to test for, we conducted research on the food industry and the existing set of nanotoxicology studies. We found that the nanomaterials most likely to be found in food are nanoscale versions of common food additives, primarily titanium dioxide, although countless applications of nanomaterials are being developed, including coatings on fruits and

antimicrobials in food packaging. For instance, the food industry is beginning to use silver nanoparticles in food packaging as an antimicrobial agent.

We next reviewed product labels of well-known brands and companies, identifying those manufacturers that noted the use of titanium dioxide in the product. Our testing confirms whether the manufacturers' products do or do not, in fact, contain nanomaterials.

Since so many companies remain publicly and privately non-committal about their use of nanomaterials, or claim no use of nano at all, our testing allows us to focus our discussions with companies on the actual facts. Whether the company claims it does not know, or improperly claims it is not using nano, our test results provide the evidence we need to press our concerns and requests for immediate action. The test results also allow us to be authoritative with press about whether companies are using nanomaterials.

2. Developed Testing Methodology

Our testing of food products, and the development of a testing methodology, was more difficult and time intensive than expected, but the testing methodology we created is sound and strongly supportable. In testing for nanomaterials in foods, we were faced with a unique challenge. Rather than analyzing individual materials in isolation, the testing of foods requires a multi-step process, starting with removing the organics in the product and leaving the metals, salts, and minerals behind. Through consultation with several experts, including scientists at five environmental laboratories, we employed and compared several combinations of technologies. One of the scientists we consulted, Paul Westerhoff at Arizona State University, has published one of the only studies on nanomaterials in consumer food products, and he [recently received a \\$5 million grant from the Environmental Protection Agency](#) to better understand the impacts of nanomaterials throughout their life cycle.

As part of our process, we evaluated each test method for cost and precision. Because this type of testing is so novel, our laboratory experts spent time researching new test methods and experimenting with how best to display and count particles to ensure accuracy. As we proceeded, learned more about the subject and the available testing processes, and analyzed results, we identified issues along the way that required alterations in test methods and twice meant moving the process to a new lab. We also faced severe delays from two of the laboratories, pushing back our expected timeline several times as we waited for reports. (These labs were run by extremely competent individuals who were willing to work with us to develop processes that fit our needs, but because they were not running standard processes, and often were required to conduct research, they tended to get seriously backed up).

Counting and characterizing the distribution of particles has also been a sticking point which we needed to work through. One of the first methods we employed, Transmission Electron Microscopy (TEM), proved effective at finding nanoparticles and reporting their size. However, since the particles are counted by hand with the microscope, only a few hundred particles can be reasonably analyzed (out of a few million in the sample). To ensure that we were using the most accurate technology available to test for nanoparticles, we tried other technologies that were computer-controlled, including Nanoparticle Tracking Analysis (NTA) and computer-controlled Scanning Electron Microscopy (SEM), which report data on up to 100,000 particles.

We found that Nanoparticle Tracking Analysis (NTA) is a highly-accurate and cost-effective method for characterizing homogenous samples. It is ideal for testing pure titanium dioxide for nanoparticles, but it

cannot differentiate between different materials in a food sample. After NTA, we employed the “gold standard” of particle size analysis, a computer-controlled Scanning Electron Microscope (CC-SEM), working with the renowned group that developed the technique. This group spent nearly two months developing a method for CC-SEM analysis of titanium particles (it was difficult to differentiate them from the other minerals present, such as calcium), and helped us refine our sample preparation methodology. However, this group was unable to finish the project, becoming stalled for reasons they did not specify.

Given all of the complications, and lessons learned in the past year, we decided to use TEM analysis performed by a well-established local laboratory. In consultation with our experts, we have verified that analyzing 500 particles by hand (using our newly refined sample preparation method) will provide accurate results about the nanoparticles in the food samples we are testing. We have 15 products that are currently undergoing analysis at this laboratory, and the results are due in mid-November.

3. Scientific Advisory Board

At the time of our grant proposal, we planned to convene a Scientific Advisory Board with respected scientists from academia, governmental agencies, and non-profits to develop appropriate methodologies, provide credibility for our results, and help us anticipate issues and obstacles as we move forward in this process. As our research and testing program proceeded, however, we re-evaluated the need to convene such a body, given the time and cost involved, the lack of challenges from industry about our methods (even our admittedly rather primitive initial test method), and the work that was being done by other specialized and authoritative bodies. We found that other organizations and agencies had begun developing testing methodologies for widespread approval and that working with on-the-ground laboratory scientists was proving fruitful. We did, however, in a less formal manner, consult with various organizations and experts over the last year to assist us in comparing the results of several methods and deciding on a methodology.

Similarly, we concluded that developing a formally accepted methodology (by EPA, the FDA, or other testing body) for characterizing the size of particles (and, equivalently, the presence of nanoparticles) was beyond our means and was better done by formal organizations such as the International Organization for Standardization (ISO), ASTM (formerly American Society for Testing and Materials), and the federal government’s National Institute of Standards and Technology (NIST), which is currently developing Nanoparticle Measurements and Standards for Biomedical Applications and Health. The International Life Sciences Institute (ILSI)’s NanoRelease Food Additive Project (a project made up of representatives from industry, government, academia, and NGOs, including As You Sow) is also working to evaluate and develop methods to detect, characterize, and evaluate nanoparticles released from food along the alimentary tract.

The work that we have done with leading testing labs is significant, though, and has assisted them to develop methods that can be standardized in the future.

4. Tested 22 Products

In early 2013, we launched a [crowd-funding campaign](#) that raised \$6,800 to conduct nanomaterial testing for two child-oriented food products, Pop-Tarts and M&Ms, and we found nanoparticles in both. We further developed an informational video to include on the crowd-funding site that was viewed over 1,200 times. We followed up by testing Sun-Maid Vanilla Yogurt-Covered Raisins and Hostess Twinkies. The results for both the raisins and Twinkies indicated that the amount of titanium present is minuscule.

We then tested food-grade titanium dioxide from the world's largest manufacturers, Huntsman International and Kronos Worldwide. Huntsman and Kronos are part of the "Big Five" titanium dioxide manufacturers, who supply 60% of the world's titanium dioxide as of 2012. Huntsman and Kronos are the only companies in the Big Five that produce a food-grade version of titanium dioxide. We found that the Huntsman product had a median particle size of 138 nm, the Kronos product had a median particle size of 129 nm, and both products had more than 10% of their particles smaller than 100 nm. This is significant because initial (and inadequate) regulatory considerations have focused on particles smaller than 100 nm, and because research suggests that the novel properties (and thus potential to harm cells) increase as particle size decreases. Our data is also significant because it contradicts the information materials from the Titanium Dioxide Stewardship Council, the industry's trade group, which reported that food-grade TiO₂ has a primary particle size between 200 nm and 350 nm. In addition, Huntsman technical documents report a median particle size of 360 nm, and the Kronos technical documents report 200 nm. A peer-reviewed study by Paul Westerhoff supports our findings. Westerhoff found that five food-grade titanium dioxide samples ordered from an online vendor had average sizes of 106 nm to 132 nm, with an average of 17 to 35% of particles under 100 nm. Given the data from the Huntsman and Kronos samples and Westerhoff's findings, it is reasonable to suspect that all food-grade titanium dioxide (or at the very least, a majority of it) contains nanoparticles. In our future testing, we plan to focus our efforts farther up the supply chain, and continue to test food additives from major suppliers.

In addition, we have ongoing tests for 15 more products of large or well-known food manufacturers which we believe are likely to garner press and public attention. The lab we are working with has provided us data on the amount of titanium dioxide present, and the full results (including particle size analysis) are scheduled to be available to us on November 14. This testing should confirm our suspicions with regard to the ubiquity of nanoparticles in food grade titanium dioxide.

Depending on the momentum we generate in the food industry with titanium dioxide, we are likely to expand our testing to other nanomaterials, such as silver, which is entering the market as an antibacterial/pesticide in food containers and food packaging. We currently are assessing whether to develop a new report or simply conduct a large media splash for the results of the 15 products currently in testing. We are discussing combining our results with results from Friends of the Earth's testing of fruits and vegetables, either in a joint report or joint media release or, at a minimum, to closely coordinate messaging.

5. Convened Allies for a Nanomaterials Policy Recommendation

In our initial discussions with manufacturers, whom we asked to undertake a series of actions around nanomaterials – from disclosure to supply side requirements -- it became clear that a jointly accepted policy, supported by the major non-profit groups working on nano issues, would go a long way in convincing manufacturers to consider taking the action we are requesting. We therefore set forth to convene a small group and work to agree on a set of minimum requirements and an acceptable "definition" of nanomaterials, to use in discussions with the food industry and government agencies. This step is critical, since so many manufacturers are stating they do not use nanotechnology when they, in fact, do use particles in the nanometer range, including dimensions both smaller and larger than 100 nm.

We are in the process of finalizing and circulating a policy recommendation. Once the policy has been drafted, we plan to take it out to a larger group of NGOs. We believe that mobilizing advocacy

organizations behind a single policy, supported by peer-reviewed science, will provide a concrete benchmark for corporate action. We are also coordinating consumer advocacy campaigns targeting companies that may lag behind their peers, while engaging with industry leaders to adopt comprehensive nanomaterials policies.

6. Continued Industry Outreach and Dialogue

To highlight growing investor concern about nanomaterials in food and food packaging, in January 2014 we crafted, organized, and sent a letter signed by investor groups collectively representing more than \$26.2 billion in assets under management to 34 food processing, packaging, and retailing companies. The letter expressed investors' growing concern about safety issues associated with use of nanomaterials in foods before they are proven safe and requested further dialogue, information about nanomaterials usage, and supply chain policies. As a result of this campaign, more companies have been willing to discuss the use of nanomaterials in food and food packaging with us and to potentially take steps to address our concerns. We have engaged senior management at Yum! Brands, Dunkin' Brands, Whole Foods Market, Safeway, PepsiCo, Starbucks, Kellogg, Campbell's Soup, Mondelez, and DuPont. Our investor letter has prompted responses from six companies that we have not previously engaged on the issue (General Mills, Coca-Cola, Dannon, Sonoco, Newell Rubbermaid, and Tupperware). We have engaged Kronos Worldwide and Huntsman International, two of the world's largest manufacturers of food-grade titanium dioxide, as well as Brenntag, who is the North American distributor for Kronos Worldwide. We have had discussion with representatives from the U.S. Department of Agriculture's National Organic Program, and are scheduling further dialogues with representatives from the titanium dioxide industry's trade organization.

Our 2014 [shareholder resolution with Dunkin' Donuts](#) was the first shareholder resolution on nanomaterials in food to go to a vote. At the company's annual meeting in May, a very strong 18.7% of voting shares supported our resolution calling for the company to disclose the extent and the risks of its nanomaterials use. This is a very strong vote for a first year resolution, and it garnered significant press. Major outlets covering the story include [The Guardian](#), [The Wall Street Journal's MarketWatch](#), [TechInsider](#), and [International Business Times](#); and our CEO Andrew Behar was invited to discuss the resolution on a [CNBC television program](#). Dunkin' Donuts has been unwilling to admit any risk, so we will seek to re-engage again this year based on the fact that nearly one fifth of its shareholders are concerned about this issue.

After two years of work, we are also now seeing food industry leaders and laggards begin to emerge. In July 2014, Krispy Kreme independently responded to our investor letter, informing us that it has eliminated titanium dioxide from certain products; is in the process of eliminating it from its other products; has requested TiO₂-free samples of products to compare originals; and will begin testing a new ingredient which may be a substitute for TiO₂. This is important because our research and testing is beginning to demonstrate that all food grade TiO₂ contains nanomaterials, or at least the majority of it does (we have not yet identified any nano-free TiO₂ supplier, but it is possible that such an entity exists). We are following up with Krispy Kreme to discuss its nanomaterials policies in greater depth, and we plan to independently test Krispy Kreme products to verify its claims. We hope to announce Krispy Kreme's leadership to the press in the near future.

As we have engaged with companies, we have heard from many that consumers have not been active enough on this issue. We are therefore reaching out to a range of consumer advocacy organizations to brief them on the nano issue or, for those groups working on nano, to brief them on our interactions

with companies and discuss how we might work together to initiate consumer campaigns and petitions. We are working now with petition groups with the goal of launching a petition later this year in conjunction with the next round of our testing results. We also have heard from multiple companies, including Whole Foods, that they would be more willing to adopt a public policy on nanomaterials if it is widely supported by NGOs. This reasonable advice formed the impetus for our formation of the Nanomaterials Policy Recommendation and the small group that we have convened.

7. Achieved Widespread Media Coverage

Please see attached Media Packet. When analyses of the 15 products currently at the lab are completed, we will publicly announce the results in a media blitz or in a new report, coordinated with the launch of consumer groups' petitions targeting strategic companies, as noted above.

Nanomaterials in Food

Media Highlights – Apr. 2013 – Oct. 2014

- **The Guardian – p.2**
 - Activists Take Aim at Nanomaterials in Dunkin' Donuts.
 - *Jul. 11, 2014.*
- **MarketWatch – p.4**
 - Nanotechnology: What Substances May Be Creeping Into Food Products?
 - *Jul. 1, 2014.*
- **CNBC – Watch the video at: <http://video.cnbc.com/gallery/?video=3000282015>**
 - Nano-materials in Dunkin Donuts' products?
 - *Jun. 14, 2014.*
- **Tech Insider – p.6**
 - Dunkin Brands Group Inc's Products Risky for Customers: Andrew Behar.
 - *Jun. 6, 2014.*
- **International Business Times – p.7**
 - Nanomaterials in Food: Is it Safe to Eat Nanoparticles?
 - *May 22, 2014.*
- **Full list of Nanomaterials initiative media coverage – p.9**

Activists Take Aim at Nanomaterials in Dunkin' Donuts

The donut giant - along with Kraft and McDonald's – faces challenges over microscopic materials in its food chain. Is this the next GMO crisis?

Sarah Shemkus | Jul. 11 2014

The activists at environmental nonprofit **As You Sow** want you to take another look at your breakfast doughnut. The organization recently filed a shareholder resolution asking Dunkin' Brands, the parent company of Dunkin' Donuts, to identify products that may contain nanomaterials and to prepare a report assessing the risks of using these substances in foods.

Their resolution received a fair amount of support: at the company's annual general meeting in May, 18.7% of shareholders, representing \$547m in investment, voted for it. Danielle Fugere, **As You Sow's** president, claims that it was the first such resolution to ever receive a vote. Though it did not pass, she says that she is encouraged by the support it received.

"That's a substantial number of votes in favor, especially for a first-time resolution," she says.

The measure was driven by recent testing sponsored by **As You Sow**, which found nanoparticles of titanium dioxide in the powdered sugar that coats some of the donut chain's products. An additive widely used to boost whiteness in products from toothpaste to plastic, microscopic titanium dioxide has not been conclusively proven unsafe for human consumption. Then again, **As You Sow** contends, there also isn't proof that it is harmless.

"Until a company can demonstrate the use of nanomaterials is safe, we're asking companies either to not use them or to provide labels," says Fugere. "It would make more sense to understand these materials before putting them in our food."

As You Sow is currently having 16 more foods tested. The result should be available later this summer, Fugere says.

Differing corporate responses

Nanoparticles are tiny pieces of matter measuring less than 100 billionths of a meter — one-thousandth the thickness of a sheet of newspaper — on at least one dimension. Nanotechnology is often hailed for its potential to advance medicine, environmental clean-up, energy efficiency, and even theft prevention. In food, these particles promise creamier textures, longer freshness, and more vivid colors. But Fugere and others are wary about the dangers of having customers consume particles that have not been proven safe.

These worries will sound familiar to anyone who has followed the rising tide of concern about genetically modified organisms in the foodstream. But the difference with nanoparticles, Fugere says, is that use of these materials is not yet widespread.

"The concern has been to avoid what has happened with GMOs, where you've got something that becomes part of the food system that's very difficult to remove," she says.



Microscopic nanomaterials, often used to add creaminess and color to foods, may also add a health risk. Photograph: Simon Belcher/Alamy

In a statement, Dunkin' Donuts argues that the titanium dioxide identified by **As You Sow** does not qualify as a nanomaterial according to European Union rules or draft US Food and Drug Administration regulations. The company also points out that there is no agreed-upon standard method for identifying nanoparticles in food.

"Dunkin' Brands continues to monitor research being conducted on nanomaterials, and we are actively engaged in discussions on the topic with our suppliers and leading researchers in the field," the statement claims.

In 2008, **As You Sow** filed nanomaterial labeling resolutions with McDonald's and Kraft Foods. In response, McDonald's released a statement declaring that it does not support the use of nanomaterials in its food, packaging or toys. Kraft responded that it would make sure to address health and safety concerns before ever using nanomaterials in its products.

Inconclusive studies

In some studies of nanoscale titanium dioxide, "it has been shown to exhibit toxicity in cell cultures and in animals at high doses," says Geoffrey Bothun, director of the Rhode Island Consortium for Nanoscience and Nanotechnology. Those results, however, don't necessarily mean that the additive poses a threat to humans. As Bothun points out, "I don't believe humans would be exposed to such doses in their food products."

Other studies have raised concerns about the safety of some nanomaterials. Research recently conducted by the Massachusetts Institute of Technology and Harvard University's Center for Nanotechnology and Nanotoxicology suggests that some nanoparticles could cause significant damage to DNA. Another study by researchers at Indiana University-Purdue University Indianapolis indicates that carbon nanoparticles can have an adverse impact on kidney cells.

Part of the problem is that nanoparticles are a relatively recent addition to the food stream. "I don't think the long term studies have been conducted, [so] we cannot yet draw concrete conclusions," Bothun explains.

Nanotechnology's small size, the very feature that makes it so potentially powerful, might also be what makes it hazardous, the thinking goes. Materials that tiny may be able to move through and affect the human body in ways that larger particles of the same substance do not.

Research into nanomaterials by academia, industry, and the government is ongoing and widespread, Bothun says. The field is a large one, encompassing many different materials, and it is therefore difficult to make any generalizations about the safety of nanoparticles for humans, he says.

"Consumers should be aware of if and how nanomaterials are currently used in their foods, but not overly concerned about problematic nanomaterials," he says. "The issue is that in some cases we don't know if a nanomaterial is problematic because the long-term research hasn't been conducted."

Nanotechnology: What Substances May Be Creeping into Food Products?

Shu Zhang | Jul. 1, 2014

Growing concerns over infinitesimal substances that are finding their way into everyday food and cosmetic products via the growing field of nanotechnology is setting off alarm bells among public health watchdogs, who fret over what ingredients may be creeping into the culinary process.

Those concerns are raising the eyebrows of the U.S. Food and Drug Administration, which has been exploring this burgeoning realm, but the agency appears reluctant to push the panic button. FDA officials recently issued broad guidelines on nanotechnology, but didn't go so far as to establish regulatory definitions of what it is, saying the science hasn't progressed to the point where it can be fully understood.

Agency spokesman Jeff Ventura said the FDA doesn't make "a categorical judgment that nanotechnology is inherently safe or harmful."

The watchdog group **As You Sow** says the FDA needs to go farther, and points out that without a definition for nanotechnology, manufacturers can come up with their own definition of "nanotech-free" products.

"The guidance is simply insufficient," said Danielle Fugere, president of **As You Sow**, based in Oakland, Calif. "It doesn't provide clarity. It doesn't provide a standard to industry,"

Fugere adds: "Companies are saying they don't use nanotechnology because they are defining nanotechnology as the majority of particles are larger than one to one hundred nanometers. When they deny they are using nano, we believe they are."

As You Sow contends Kraft Foods Group Inc. KRFT -0.02% and several other major food firms are also using nanotechnology, Fugere says.

"We identified titanium dioxide as ingredients in their foods," she said, referring to an ingredient used in paint and sunscreen. "What that means is we have also detected titanium dioxide from most of the major manufacturers."

On Kraft's website, the Chicago-based processed food giant says it is "nanotech-free."

"There are some ingredients in our products that may be nano-sized," said Russ Dyer, Kraft spokesman. "But that would be infrequent because they are not intentionally engineered on the nano-scale."

Fugere adds sub-microscopic particles of titanium dioxide have been found in Dunkin' Donuts DNKN goods as well.

As You Sow filed an open letter requesting the board of Dunkin's Brand to publish a report by Nov. 1, on policies regarding public health concerns of nanomaterials in its products or packaging.



One group wonders what substances are creeping into Dunkin' Donuts.
Photo: Shu Zhang/MarketWatch

“We are concerned about liability arising from use of nanotechnology in food products,” the group said in the letter. “Because of their small size, nanoparticles are more likely to enter cells, tissues, and organs where they may interfere with normal cellular function and cause damage and cell death.”

Michelle King, Dunkin’s senior director of global public relations, said the company is “reviewing the Food and Drug Administration’s new guidance on nanomaterials in food products.”

Out of 1,795 nano-enabled products identified by The Project on Emerging Nanotechnologies, backed by The Woodrow Wilson Center, a Washington research institute, 117 were listed under the food and beverage sector.

One nano-enabled product is adhesive for McDonald’s Corp.’s MCD burger containers, the project says, but company spokeswoman Terri Hickey rejects the claim. There is concern that whatever material may be on the containers could creep into the

“At this time McDonald’s does not support using nano-engineered materials in production of any of our food, packaging and toys,” she said. “We will evaluate this position as progress is made in further understanding the potential impact of nanotechnology and nano-engineered materials.”

Dunkin Brands Group Inc (DNKN)'s Products Risky for Customers: Andrew Behar

Viki K. | June 6, 2014

Shareholder Advocacy Group **As You Sow**'s CEO Andrew Behar was on CNBC's Street Signs last night and he explained the reason why his group is calling for an investigation to look into the risks of using nano materials in **Dunkin Brands Group Inc (NASDAQ:DNKN)**'s subsidiary Dunkin Donuts products.



As You Sow created a poll on if the investigation should be carried out to identify the risks involved in using nano materials used to coat the donuts. Behar also cleared how the shareholders resolutions work. He stated:

“The way that Shareholder resolutions go, they are non-binding. So even if you get a majority, the company doesn’t have to do anything.”

However, he was very impressed by the percentage of voters favoring the investigation. Around 20% investors voted in favor of investigation, which is considered extraordinary, taking into account that the minimum requirement by the SEC is 3% to request for an investigation. A total of \$547 million worth of shares voted positive for the resolution.

Though Dunkin Brands Group Inc (NASDAQ:DNKN) might have taken a look into this voting, Behar was asked if the vote was merely institutional vote or were there majorly institutional voters while there were few retail mom and pop investors too.

The key issue raised here with Dunkin Brands Group Inc (NASDAQ:DNKN) is that the nano materials are very small and have a size of about 8 to 9 atoms. These can even pass through a cell membrane. There has been no research at all on whether these are safe or not. These materials contain nano titanium dioxide. So the resolution wants to ask the company why its risking the lives of its customers without any huge benefit for anyone out it.

The company can buy regular powdered sugar that doesn’t have any nano materials and there won’t be any change of taste. So there is no way for the customer to notice the change and there would be no impact to the brand name what so ever and all this without any risk.

When asked if this shift of using regular powdered sugar to cover the donuts would impact the sales, Behar said:

“I don’t really think that it’s going to have any effect on the sales. When people go into a Dunkin shop, they are going to buy a Donut whether it’s really bright white or whether is less white.”

So Behar wants the investigation to be made but as the rules state, he or the vote cannot force Dunkin Brands Group Inc (NASDAQ:DNKN) into an investigation. Alkeon Capital Management holds a significant number of shares in the company with around 1.76 shares as of March 31 2014. The other key investors in Dunkin Brands Group Inc (NASDAQ:DNKN) are Tremblant Capital with 1.48 million shares and Jim Simons’ Renaissance Technologies that has 559,300 shares.

Nanomaterials In Food: Is It Safe To Eat Nanoparticles?

Connor Adams Sheets | May 22, 2014

Do you know what you're eating? The number of American food products containing nanomaterials has increased tenfold since 2008, said a report released this week, reviving concerns about the miniscule particles and their place on our plates.

The Friends of the Earth environmental group, which conducted the study, reports that its researchers found unregulated, “unlabeled nano-ingredients” in dozens of popular food products ranging from Oreos and Twinkies to Kraft American Singles and Betty Crocker Mashed Potatoes.

Titled “Tiny Ingredients, Big Risks,” the report suggests that the prevalence of nanoparticles in food products presents serious dangers to human health. Some nanomaterials “have been found to be highly toxic to cells in test tube and animal studies,” and a number of individual nanoparticles have been identified as carcinogenic, the report said. But there is little evidence on the impact of humans' ingestion of nanomaterials.

Nanomaterials, also referred to as nanoparticles or nanofoods, are loosely defined as any material with a dimension -- length or width -- of less than 100 nanometers. In food, they're used mainly for aesthetic purposes such as making powdered toppings whiter and frostings shinier. They are often intentionally added during the manufacturing process as industrially produced powders but are also created inadvertently as a byproduct of the process of grinding ingredients.

Nanomaterials have existed in the natural environment for thousands of years and have been used in products like sunscreen and paint for several years.

Still, many experts and activists worry that ingesting products containing the particles could lead to health problems, and say that further research is needed.

“We learned our lesson from technologies of the past, like dangerous chemicals like DDT that were used in all these agricultural chemicals before we knew they were harmful. Now that new technologies are coming along, we need to be cautious and careful before we widely use them,” said Georgios Pyrgiotakis, research fellow at the Center of Nanotechnology and Nanotoxicology at the Harvard School of Public Health.

“This is an open-ended question. We know a lot but we need to know a lot more before we can assess potential toxicity and safety in general.”

In the absence of reliable data about possible health risks, there are two key lines of concern about the unregulated use of nanoparticles in consumable goods.

First is the fact that nanoparticles are able to pass through cell walls much more easily than larger particles. This implies a wide range of potential effects on the human body. Second is the fact that though much is known about how larger particles of many chemicals and compounds interact with the human body, little is known about what happens when nanoparticles -- which often have different properties than their larger counterparts -- are consumed.



Freshly-baked Oreo cookies pass along a conveyor belt at a Kraft Foods' factory in Suzhou, Jiangsu province on May 30, 2012. Reuters/Aly Song

“More and more people want to take advantage of the antimicrobial properties of silver by applying true nano-scale silver particles ... to different products, and we don’t really know what the health effects are,” Craig Schwandt, senior researcher scientist and director of industrial services at McCrone Associates in Westmont, Ill., explained.

“Those particles can move through cell walls and into the body,” he continued. “If you ingest too much silver you can have problems with darkening the whites of your eyes, and if you have too much silver iodine exposure it can permanently blacken your skin.”

The fears about possible risks have prompted a grassroots effort to push the U.S. government to study and regulate their potential impact and commercial use.

As You Sow, an Oakland, California-based non-profit foundation that advises corporations on environmental and social responsibility, is advocating for in-depth research on nanomaterials. The foundation argues that companies should weigh the often minor benefits of using the emerging technologies against the potential fallout if they end up harming people in the end.

“Companies used asbestos before the health risks were known, and essentially they’ve run into billions of dollars [in settlements and fines] and all of the lost lives because they didn’t do the due diligence needed. These companies shouldn’t be using these products in foods until we know what the health risks are,” Danielle Fugere, president of **As You Sow**, said. “Do doughnuts really need to be whiter? Are customers really asking for that?”



Nanomaterials have been used to make the powdered sugar coating on some doughnuts whiter. Wikimedia Commons

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| Youngstown Vindicator | There is a Darker Side to Sunblock | 20140730 | http://www.vindy.com/news/2014/jul/30/there-is-a-darker-side-to-sunblock/?newswatch |
| Columbia Missourian | GUEST COMMENTARY: Know About Sunblock Ingredients Before Applying It | 20140729 | http://www.columbiamissourian.com/a/177246/guest-commentary-know-about-sunblock-ingredients-before-applying-it/ |
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