

From: [Haase, Lorraine](#)
To: [REDACTED]@au.nestle.com
Subject: Fwd: Nano in formula - Science media centre expert commentary [SEC=UNOFFICIAL]
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Attachments: [image003.jpg](#)
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FYI

Happy for you to share with contacts. The SMC makes this public if the story breaks.

Sent from my iPhone

Hi Peter & Lorraine— I've sent the comments to Esther at Fairfax.
See below for the comments.
Cheers
Joe

Adjunct Professor Andrew Bartholomaeus is a consultant toxicologist with Adjunct Professor appointments at the University of Canberra and the University of Queensland. He has previously been the Chief Toxicologist for the Therapeutic Goods Administration and the General Manager of the Risk Assessment Branch of FSANZ.

"The Friends of the Earth slide deck presents the rather unexciting and facile observation that a food containing high levels of calcium and phosphate and undergoing a variety of processes during production has a small quantity of calcium phosphate crystals (Ca apatite).

Regardless of the provenance of the observed material, calcium apatite is a normal human component of teeth and bones and small quantities of nanoparticulate deposits of this material can be found in normal human tissue.

Calcium apatite is also soluble in acidic conditions so the small quantity of the material present in infant formula would dissolve into essential nutrients and cease to be nano.

Similarly, silicon dioxide has been used as an ingredient of food, cosmetics, pharmaceuticals and a wide range of other products for the better part of a century without evidence of adverse health effects and the very low levels claimed to be present in the formula are highly unlikely to present a human health risk.

There is no evidence to indicate that nano dimensions of particulates are of themselves a risk to human health, and normal human breast milk is composed of a nano material (casein protein agglomerates).

Nano particulate materials form naturally in the gut due to the action of the intestinal microbiome and the commercial production of some nanoparticulate metals utilises this process.

Consequently, small quantities of nanoparticulates are a normal aspect of the human diet and present no basis for concern.

One would hope that Friends of the Earth have sufficient moral compass to not seek to exploit the natural concern of mothers for the health of their children to further their corporate objectives by scaremongering analytical findings of no especial significance."

Dr Ian Musgrave is a Senior Lecturer in the Faculty of Medicine, School of Medicine Sciences, within the Discipline of Pharmacology at the University of Adelaide

"Nanoparticles have become the latest boogeyman, despite nanoparticles occurring naturally. The PowerPoint presentation "Detecting Engineered Nanomaterials in Australian Procured Infant Formula" fails to put nanoparticles in their natural biological context, or to provide any significant support that particles detected in milk are engineered nanomaterials.

Infant formula is based on milk, which naturally contains calcium and phosphorus (as phosphates). The calcium and phosphates are in a complex balance between soluble and protein-bound forms.

One of the forms of calcium phosphate in milk is hydroxyapatite. So it is unsurprising that hydroxyapatite is found in dried infant formula which is predominantly dried milk powder. Experiments with drying milk have found that nanometre-sized particles of calcium phosphate form naturally. The health effects of hydroxyapatite nanoparticles have been studied in animals with no toxicity at levels well above those present in milk. There are no significant public health implications for the finding of small crystals of naturally occurring calcium phosphates in milk-based products."

Dr. Emad Kiriakous is a Senior lecturer in nanotechnology and molecular sciences at the Queensland University of Technology

"The use of nanotechnology and nanomaterials in food products is increasing worldwide. It is inevitable that intended and unintended human exposure to nanomaterials will increase. Some nanomaterials are toxic to animals and humans. Therefore, the current regulations of food nanotechnology should take into account the risk characteristics of nanomaterials used in the food industry.

The presence of nano silicon and oxygen particulates in Australian Infant Formula is not alarming. Silicon dioxide and silicates have had a history of use in food without detrimental

effects. However, the presence of needle shaped hydroxyapatite nanoparticles in infant formulas is significant since there is growing scientific evidence that the cytotoxicity of hydroxyapatite nanoparticles is shape- and cell-dependent.

Recent research has shown that hydroxyapatite nanoparticles of needle-like geometry cause cell-specific cytotoxicity.

Many international regulatory agencies have issued guidance documents with respect to the potential risks posed by nanomaterials. Therefore, with the recent findings by Arizona State University, it is important that Food Standards Australia New Zealand (FSANZ) setup comprehensive guidelines for the food industry on nanomaterials, their safe shape and size, and their potential intestinal uptake and cytotoxicity. It is very important to commit the food industry to using only safe nanomaterials."

Professor Ian Rae is is an expert on chemicals in the environment and is an Honorary Professorial Fellow in the Faculty of Arts at the University of Melbourne. He is also an advisor to the United Nations Environment Programme on chemicals in the environment.

"This is a classical NANO SCARE. The clue that the investigators are pushing an agenda is in their repeated use of the phrase 'needle like' to describe the crystals of hydroxyapatite. It's a 'dog whistle' for 'you will be feeding your babies sharp objects if you use these products'.

The truth is that these particles are the natural form of hydroxyapatite and they dissolve easily in the acids of the digestive system. Moreover, the particles are extremely small - much smaller than the diameter of a human hair - and they make up a tiny proportion of the products.

The use of all that analytical chemical firepower might serve to over-awe the non-expert reader. Anyone who understands them and can assess the numbers will just ask 'so what?'. "

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