Australia needs a nanosafety authority, say experts

12 December 2017

New nanomaterials that benefit humanity are being synthesised every day. Researchers want to work with regulators to make sure they are safe.

Academics at the University of Sydney have today called for the establishment of a national standards body to monitor the safety of nanomaterials commonly found in food, house paint, supplements and cosmetics sold in Australia.

Some of these products, such as colloidal silver and titanium dioxide, are restricted or under review in the European Union but freely available in the Australian market. Nanomaterials are engineered particles smaller than 100 nanometres in size – about a thousand times smaller than the width of a human hair.

Associate Professor Wojciech Chrzanowski from the Faculty of Pharmacy and Sydney Nano said: "Our bodies are well evolved to deal with most nanoparticles if our cells are healthy.

"What we don't fully understand is what impact they have on cells that are under stress or in people with suppressed immune systems, such as chemotherapy patients or people living with HIV," he said.

Associate Professor Chrzanowski is an adviser to the World Health Organisation on nanosafety. He said that the revolution in nanotechnology has been overwhelmingly positive for human health, particularly in improved drug delivery.

However, he said that the science is developing faster than our regulatory oversight.

"There are new nanoparticles being synthesised every day and the truth is we don't know exactly what impact they can have on human health," Associate Professor Chrzanowski said.

"We are calling for the establishment of Nanosafety Australia to work with existing regulatory bodies to ensure that we fully understand any risks we face from introducing nanomaterials into our diet and environment."

Associate Professor Chrzanowski and Dr Laurence Macia, an immunologist in University of Sydney's School of Medical Sciences, are delivering a talk today at a Nanosafety Symposium about the impact of food-grade titanium dioxide on the immune system.

Dr Macia said: "Titanium dioxide is found in toothpaste, icing and in coatings for chewing gum and other sweets, such as Mentos. It's even a recommended additive in at least one recipe on the MasterChef website.

"My research is looking at the impact of titanium dioxide on gut microbia and how this can affect the human immune system," she said.

"There is a debate in the EU about this already. France and Germany have removed some products that contain nanomaterials, such as titanium dioxide, and it is a requirement products are labelled to show they have nanomaterials, but there isn't even a discussion in Australia.

"We actually don't know the impact these materials have on our immune systems over time."

Professor Susan Pond, director of the University of Sydney Nano Institute, said: "Nanotechnology is delivering profoundly positive changes for health and medicine, including new ways to diagnose diseases early. Nanotechnology is also allowing us to deliver medicines precisely to target cells and to produce implantable medical devices for a wide range of clinical indications, including heart disease, hearing loss, intractable wounds and arthritis.

"However we must also ensure we fully understand

the impacts new technology has on society. That is the essential mission of Sydney Nano: to discover, develop and harness nanotechnology for the benefit of humanity."

Provided by University of Sydney