



Non labelled nanoparticles found in common food products in France

Briefing, 15 June 2016

The laboratory report (in French) is available on ww.agirpourenvironnement.org

In April 2016, the French organization Agir pour l'Environnement commissioned a widely renowned French lab, the LNE (Laboratoire national de métrologie et d'essais) to test 4 processed food products commercially available in France for the presence of manufactured nanomaterials.

All 4 food products tested contained significant quantities of nanoparticles of titanium dioxide (TiO₂) and silica (SiO₂), which have not been tested or approved for consumption by the European regulator. These products should have been labelled as [nano], according to the European regulation on food information to consumers.

Methodology

The lab used an Energy dispersive X-ray spectroscopy (EDX) to first identify the nature of the nanoparticles in the product, a Scanning Electron Microscopy (SEM) to measure size, distribution and shape and then quantified the content of identified nanomaterials (TiO₂ and SiO₂) using ICP-OES (Inductively Coupled Optical Emission Spectrometry).

Labels on the food listed either E171 (titanium dioxide - TiO₂) or E551 (silicon dioxide - SiO₂).

These particles are either used :

- As anti-caking agent : SiO₂ particles allow humidity to be fixed, therefore preventing salt, sugar, spices, cocoa or other products in powder form to agglomerate
- As white pigments : TiO₂ particles are mixed to the ingredients to improve their whiteness or modify the nuancing of coloring. This product has no official dosage limit

The 4 tested products

1) Cookies LU " Napolitain signature chocolat" (chocolate type)

It contains E171 in the ingredients list.

Presence of TiO₂ particle is confirmed, with an average size of 148,9nm. 12% of the particles population (by number) is smaller than 100nm.

Lu is a brand owned by Mondelez International, the second biggest Food industry group in the world. Interestingly, on the website of the company, it is mentioned that : « *Currently we're not using nanotechnology*¹ »

1) Chewing-gums Malabar taste tutti frutti

It contains E171 in the ingredients list.

The presence of TiO₂ particle is confirmed, with an average size of 183,6 nm. 2,5% of the particles population is smaller than 100nm.

Malabar is a brand owned by Mondelez International, the second biggest Food industry group in

¹ <http://www.mondelezinternational.com/well-being/safety-of-our-people-and-products/ensuring-safe-food>

the world. Interestingly, on the website of the company, it is mentioned that “: « *Currently we’re not using nanotechnology*»²»

3) Spice mix for Guacamole, from the retailer Carrefour

It contains E551 in the ingredient list.

The presence of SiO₂ is confirmed, with an average size of 20,0 nm. 100% of the particles population is smaller than 100nm.

The Carrefour Group is the leading retailer in Europe and the second-largest retailer in the world.

4) Canned « Blanquette de veau » (cooked veal), William Saurin

It contains E171 in the ingredient list.

The presence of TiO₂ particles is confirmed, with an average size of 131,6 nm. 16% of the particles population is smaller than 100nm.

William Saurin is a French company founded in 1898 and specialized in « typical French meals ». The company is now owned by the Financière Turenne Lafayette (FTL) group, that makes one billion euros of annual sales. William Saurin company committed to « *remove all useless food additives from their recipes* » (“*supprimer les additifs inutiles de toutes (leurs) recettes*”³).

Health concerns with nano titanium dioxide and silica

This following short briefing has been realized by Friends of the Earth Australia⁴.

Nano Titanium dioxide : The European Chemicals Agency, ECHA, is currently reviewing the safety of TiO₂ – including the nano form- because of concerns it may be harmful to the environment and human health ⁵. Nano TiO₂ is highly mobile in the body and has been detected in the blood, liver, spleen, kidney, lung, heart, and brain of animals. It has been found to cause oxidative stress, inflammatory reactions, DNA damage and cell death⁶.

Studies suggest nano TiO₂ can cross the blood brain barrier and the placenta barrier⁷. A study using pregnant mice found they transferred nanoparticles of TiO₂ to their offspring. This resulted in brain damage, nerve system damage and reduced sperm production in male offspring⁸.

Nano Silica : The European Commission’s Scientific Committee (SCCS) recently found there is insufficient evidence to state that nano silica is safe for use in cosmetics⁹. Animal studies suggest that nano SiO₂ can be absorbed from the gastrointestinal tract, become systemically available, and accumulate in tissues. Some studies indicate that nano silica can cross the blood-brain barrier and possibly the placenta¹⁰. A Recent study in which rats were fed a form of nano SiO₂ – found that it caused fibrosis of the liver and accumulated in the spleen¹¹.

² <http://www.mondelezinternational.com/well-being/safety-of-our-people-and-products/ensuring-safe-food>

³ <http://www.william-saurin.fr/la-societe/>

⁴ <http://emergingtech.foe.org.au/independent-testing-finds-potentially-harmful-nanoparticles-in-common-food-products/>

⁵ ECHA (2013) Justification document for the selection of a CoRAP substance – Titanium Dioxide

⁶ LUBW (Landesanstalt für Umwelt, Messungen und Naturschutz Baden Württemberg) (2010) Nanomaterialien : Toxikologie/Ökotoxikologie & Rollerova, E. & Kuricova, M (2015) Titanium dioxide Particles : some aspects of toxicity/focus on development. Endocrine Regulations 49:97-112

⁷ Ibid.

⁸ Takeda, K et al. (2009) Nanoparticles Transferred from pregnant Mice to their Offspring can damage the genital and cranial nerve systems. Journal of Health Science 55(1):95-102. available on http://jhs.pharm.or.jp/data/55%281%29/55_95.pdf

⁹ Scientific Committee on Consumer Safety (SCCS) (2015) Opinion on Silica, Hydrated Silica, and Silica Surface Modified with Alkyl Silylated (nano form). SCCS/1545/15. March 2015, p.56 : http://ec.europa.eu/health/scientific_committees/consumer_safety/docs/sccs_o_175.pdf

¹⁰ Dekkers S, Boowmeester H, Bos P, Peters RJ, Rietveld A, Oomen AG (2013) Knowledge gaps in risk assessment of nanosilica in food : evaluation of the dissolution and toxicity of different forms of silica. Nanotoxicology 7:11

¹¹ Van Der Zande, M et al. (2014) Sub-chronic toxicity study in rats orally exposed to nanostructured silica. Particle and Fibre

Unregulated substances

These products should have been labelled as [nano], according the European regulation on « food information to consumers»¹² :

“engineered nanomaterial” means any intentionally produced material that has one or more dimensions of the order of 100 nm or less or that is composed of discrete functional parts, either internally or at the surface, many of which have one or more dimensions of the order of 100 nm or less, including structures, agglomerates or aggregates, which may have a size above the order of 100 nm but retain properties that are characteristic of the nanoscale.”

Despite difficulties to interpret or apply this definition, our investigations reveal that the nanomaterials identified in food sold on the French market should have been labelled before being put on the market.

During our investigations in different French supermarkets, we have found no [nano] labelled food products. Therefore we suspect that there are many more food products (only labelled E171, E172, E551, E552) that should be labelled.

These particles in their nano forms (which changes many of their effects) have not been tested nor approved for consumption at this size, before being commercialized.

Our demands

In consequence,

- we call for an immediate moratorium on the use of nanotechnologies in consumer goods, pending full safety assessments
- we urge the French DGCCRF (the Directorate- General for Competition, Consumption and Fraud Control) to recall these products and all the products containing nanomaterial and take action to ensure that this regulation is properly enforced
- we ask the French government to put in place a French labelling legislation to remedy the European labelling legislation failures
- we also call for proper regulation at the European level allowing a transparent and serious evaluation of nanoparticles before they're commercialized¹³

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Agir pour l'Environnement

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Toxicology 11:8

¹² <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:304:0018:0063:EN:PDF>

¹³As in : <http://www.ciel.org/news/ciel-partners-publish-recommendations-for-the-safer-development-of-nanotechnology-for-the-eus-reach-regulation-implementation/>