

Written Evidence from Cargill

Cargill is an international producer and marketer of food, agricultural, financial and industrial products and services. Founded in 1865, the privately held company employs 160,000 people in 67 countries. Cargill helps customers succeed through collaboration and innovation, and is committed to applying its global knowledge and experience to help meet economic, environmental and social challenges wherever it does business. For more information, visit www.cargill.co.

Nanotechnology in Cargill

Materials of nano dimension have been present in the food chain for a long time. Our comments to this enquiry will be focussed on the deliberate fabrication of “nanoscale” materials, potentially of value because of their novel physico-chemical properties, or the novel processes by which these are fabricated and incorporated into products. It is of vital importance to Cargill that the regulatory definitions of nanotechnology only encompass new, deliberately fabricated materials. Any broader scope could inadvertently and significantly impact existing global food and feed supply chains.

The recent developments in material science that have made possible the study and control of matter at atomic and molecular scale, nano-technology, have resulted in the introduction of over 300 new products intentionally derived from this technology in non-food areas (e.g. cosmetics, coatings) and in some cases in the food and agricultural sectors. A recent review (see [Woodrow Wilson Int. Center](#)) has identified that in the food sector, these products cover

- Forms: nanoparticles, nano-emulsions, nano-catalyst, liquid crystals, nano-fluids, nano-crystals,
- Functions: inc. solubility/uptake, stability, flavor release/enhancement, colour release, packaging-antimicrobials
- Needs: nutrition, improved immune system, flavor, fun, individualization, stability, safety
- Products: oils, supplement, chocolate, beverages, gum, ice cream, dressing, fillings

Cargill is well aware of these opportunities and believes that nanotechnology-based materials may offer valuable benefits to the food chain such as measurement sensors to enhance safety and quality.

However, after spending considerable time analysing the subject within the company, we have concluded that the potential safety risks, the emerging regulatory environment and the level of consumer acceptance of products incorporating nanotechnology are not generally well understood. In particular the investigation of the **health, safety, and environmental aspects** of these novel substances has not matched investment in nanotechnology research and development.

Consequently there are many gaps in understanding the effects of nanotechnology-enabled products on health and on the environment and particularly how their use in the food chain may expose our employees, customers and consumers to these materials. It is our understanding from the peer-reviewed science that the extremely small size of nano-particles permits possible transfer, after inhalation or ingestion, into and through human tissue by new and unknown routes. This potential toxicological hazard is difficult to measure and assess, and represents a significant risk until detailed studies have been carried out. This uncertainty about toxicological risk is a significant gap in determining safety legislation on which proper controls should be based. We support investigation into these issues.

Furthermore **consumer surveys** on nanotechnology, including specific applications in foods, indicate that the public has a low level of understanding of nanotechnology.

Experience has shown that the successful introduction of a new technology, especially one with potential health, safety and environmental impacts, requires a clear science-based regulatory regime, overseen by credible governmental authorities, and that the technology providers engage the public and other stakeholders to convince them of the advantages of the technology. None of these steps has been taken for nanotechnology

As a result, Cargill will not incorporate intentionally-engineered nano-materials into its products for the foreseeable future until these shortcomings are remedied.

This position does not mean that we will not maintain our interest in nanotechnology, especially where materials can be fabricated into devices and wholly enclosing nano-materials and where no human exposures need result. We will continue to assess these “non contact” uses in terms of their benefit to process control and product quality.