# Potential use of nanomaterials as food additives or food ingredients in relation to consumer safety and regulatory controls

Area of research interest: Chemical hazards in food and feed
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Back to top

## Background

The advent of nanotechnology, that involves manufacture and use of materials in the size range of up to 100 nanometres, has opened up a way for a multibillion dollar global industry in recent years.

The applications of nanotechnology in the food sector are emerging, but they are predicted to grow rapidly in the coming years. This is because food industry has always been looking out for new technologies to improve the nutritional value, shelf life, and traceability of food products, and to provide new tastes, flavours, textures etc. A number of new processes and materials derived from nanotechnology can provide answers to such needs.

Back to top

## Research Approach

The study was undertaken to meet the following objectives:

- to collate and assess information in relation to the current and projected use of nanomaterials as food additives or food ingredients
- to assess the potential hazards that might be associated with the nano-sized food additives or food ingredients
- to assess the likely implications of the use of nano-sized food additives or food ingredients in terms of consumer safety and current regulatory controls in the UK; and
- to identify any gaps in knowledge and regulations, and to provide guidance on the needs for future R&D, and any needs for supporting (new or adjusted) regulatory frameworks

Back to top

## Results

The findings of this study are in agreement with a recent report by Cientifica (2006) that nanotechnology applications in the EU's food industry are at an elementary stage. As with any new technology, most nanotechnology applications for food are likely to be for high-value

products in the short term. This study has shown that a number of nanotechnology based food/ supplements/ nutraceuticals are available in some countries. It is also widely anticipated that such applications will start to emerge on the UK/ EU market in the next few years. This, therefore, provides an opportunity to address the main uncertainties and gaps in knowledge ahead of the full-scale emergence of nanofoods in the UK/ EU.

This study has highlighted gaps in knowledge that require further research to establish whether the consumption of nanofoods may lead to any consumer health implications. For example, research is needed into physicochemical properties, behaviour, fate and effects of manufactured nanoparticles used as food additives or ingredients.

The authors conclude that there are uncertainties in current regulatory frameworks in relation to nanofoods that need appropriate amendments. For example, relevant definitions of novel food need clarifying in relation to nanotechnology derived food. Similarly, the use of food additives already approved for use needs revisiting if their nano-forms are used to allow testing of any potential changes in physicochemical properties, absorption, bioavailability, and health effects that may have a bearing on their permissible limits in food.
It is likely that the application of nanotechnologies in agriculture and food will attract significant public interest in the coming years. The report therefore recommended that a dialogue with key stakeholders should be initiated.

Research report

## England, Northern Ireland and Wales

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