Nanotechnology

Advisory Committee for Novel Foods and Processes ACNFP/76/3
Discussion Paper. March 2006.
Nanotechnology and Food

For information: There are several potential uses for nanotechnology in the food industry. Current regulation should be effective in controlling intentional usage.

The paper updates the ACNFP committee on nanotechnology and nanomaterials where these are, or could be, involved with food or food processing and packaging.

Nanotechnology provides opportunities for improvements in food safety, quality, authentication and consumer information.

Concern over uses of nanotechnology is potentially focussed on nanoparticles which could arise in foods in a number of ways:

- o from environmental contamination;
- o from migration from packaging; nano particle coatings could increase shelf life;
- o by use of nanoparticles as delivery systems for active substances (e.g. nutrients or functional ingredients);
- o as ingredients added in nanoparticulate form, to aid incorporation of poorly soluble materials;
- o as surface coatings with possible anti-bacterial action;
- o as pigments with altered optical characteristics.

At present:

- o nanoparticulate titanium dioxide is being marketed for use in food packaging applications as a UV blocker
- o synthetic nanoparticles of lycopene are reported to have been developed and tested, in order to facilitate incorporation into aqueous foods. Note: synthetic lycopene is classed as a novel food ingredient in the EU and an application for authorisation is currently under evaluation in the Netherlands.

There are no specific criteria against which to consider particle size under the novel foods and processes regulations. All novel ingredients could be assessed for nutritional value, metabolism, intended use and studies on the toxicology and allergenicity of the novel food. The scope of the regulations should be sufficient to deal with intentional use of nano ingredients. However, it may be possible to use a previously approved ingredient, but now in nano form, without seeking further approval. In this case the general safety articles of the EU Food Law Regulation (178/2002) would apply.

Comment
Pre market authorisation would be required if nanoparticles were novel ingredients or if a currently approved ingredient has significantly different biological properties when in nano form. It seems unlikely to us that a nano additive or ingredient would be incorporated in food without first considering the relevant regulations.

Packaging laws seem to cover all eventualities for the use of nano technology in packaging.

The only example of control of food additives relates to the specification for microcrystalline cellulose, where the presence of small particles (<5 microns) is limited because of uncertainties over their safety. New additives would be assessed by the European Food Standards Agency (EFSA).

Animals which are fed or treated with nanoparticles may retain them in tissues later used for human consumption. Feed and veterinary regulations would require prior approval.