Friends of the Earth

Public information, public participation & nanotechnology

Supplementary information provided by
Friends of the Earth Australia to the
NSW Parliamentary Inquiry into Nanotechnology

Friends of the Earth Australia suggests that there are three key areas for the NSW Government to consider in relation to improving public access to information about nanotechnology, and public involvement in nanotechnology decision making:

1. Ensure mandatory labelling of manufactured nanomaterial ingredients in all consumer and industrial products
2. Support genuine public involvement in nanotechnology decision making
3. Provide balanced information on nanotechnology, its opportunities, risks and challenges; ensure a wide spectrum of interests and perspectives are heard

1. Ensure mandatory labelling of manufactured nanomaterial ingredients in all consumer and industrial products

The need for labeling of consumer products

It should be emphasised that labelling is in no way a substitute for or alternative to implementing appropriate, nanotechnology-specific risk management. However mandatory labelling of manufactured nanomaterial ingredients is essential to enable people to make an informed choice about whether or not they want to use nano products. In the absence of a requirement for manufacturers to identify on product labels whether or not they include manufactured nanoparticles, there is no way to know if a given sunscreen, moisturiser, chocolate bar or cooking oil contains nano ingredients.

Public concerns about nanotechnology are greatest when nanotechnology is applied to food and consumer products that are likely to present comparatively high exposure risks, for example cosmetics and sunscreens. Early studies indicate serious public reservations about nanotoxicity risks in consumer products, especially in food and agriculture, and a key wish for transparency to enable people to make informed food choices. However, many sectors are pushing ahead with the commercialisation of nanoproducts while refusing to disclose which products now contain nanomaterials. For example although BASF sells its nano synthetic lycopene to the world's major food and beverage companies, it has refused to identify the companies to which it sells the nano lycopene or the products in which it is used.

The absence of mandatory labelling of nano-ingredients robs consumers of the capacity to make an informed choice about whether or not to eat nanofoods or use other nanoproducts. Transparency in labelling is consistently supported by the majority of the Australian public. During the controversy over genetically engineered foods, surveys showed that 93% of the public wanted genetically engineered ingredients labelled[1]. Transparent labelling of genetically engineered ingredients was also supported unanimously by Australia's "consensus conference" on genetically engineered foods[2]. Yet despite growing numbers of nanoproducts reaching the global market, there is still no requirement for manufacturers to list nano-ingredients on product labels.

In addition to preventing people from making informed choices about whether or not they want to eat nanofoods or use nano cosmetics, the absence of mandatory labelling has compromised the ability of even government regulators to determine whether or not nanomaterials are already in commercial use. For example whereas nanotechnology industry analysts suggest that as many as

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600 nanofood products may now be commercially available, conversations with US, Australian and German food regulators reveal that they have extremely limited information about whether foods, food packaging and agricultural products now contain manufactured nanomaterials, let alone which nanomaterials are used in which products. This clearly undermines the capacity of those charged with ensuring the safety of our foods to know whether or not existing safety standards are meeting the new challenges associated with nanofoods.

In its 2004 report, the United Kingdom's Royal Society and Royal Academy of Engineering recommended that ingredients lists of consumer products should identify wherever nanomaterials had been included[3]. The Institute of Food Science and Technology (IFST), the leading European independent professional qualifying body for food scientists and technologists, have also argued for transparent and mandatory labelling of nano-ingredients, especially in foods. They suggest that, in the case of food additives, labelling could be done by modifying the E-number system with a subscript "n"[4].

The need for labelling of manufactured nanomaterials in products handled in the workplace

Workers may be exposed to nanoparticles during the research, development, manufacture, packaging, handling and transport of nanotech products. Exposure may also occur in cleaning and maintaining research, production and handling facilities[5]. However, current knowledge of worker exposure to nanoparticles is wholly inadequate for risk assessment purposes. Partly because of the absence of requirements for mandatory labeling of products that contain manufactured nanomaterials, we don't know how many companies are using nanomaterials, how many workers are exposed to nanomaterials, or the source or levels of their exposure. This is of extremely serious concern given recent studies demonstrating the link between exposure to multi-walled carbon nanotubes and the development of asbestos-like pathogenicity[6].

The UK Government carried out a scoping study[7] into the manufacture and use of nanoparticles in the UK in 2005. The authors noted that due to the absence of a legal requirement for companies to disclose their production or use of nanomaterials, obtaining information on current commercial use, including quantities, proved very difficult[8]. We do know that even in 2006 over 720 products containing nanomaterials were commercially available[9], and that the number of industry sectors using products that incorporate nanomaterials is expanding rapidly. This means that workers across diverse sectors are likely to face occupational exposure to nanomaterials

We have very few data about actual exposure levels in workplaces where nanomaterials are produced or used. In its occupational hygiene review[10], the HSE noted that "there is some reassurance" that the few studies that had been conducted in workplaces where nanomaterials were being manufactured had not identified high airborne concentrations. However, it also observed that "it is not easy to be confident that in all workplaces where these materials are being manufactured an adequate assessment of the risks has or will be made". This may be particularly true of packaging and handling processes far removed from the safety conscious environs of laboratories.

In order to safeguard the principle of a workers' 'right to know', and also in the interests of ensuring greater transparency and responsibility in management of occupational exposure to manufactured nanomaterials, it is essential that the nanomaterial content of all products be labelled and declared throughout the manufacturing, handling and supply chains.

2. Support genuine public participation in nanotechnology decision making

There are 3 principle reasons to support a genuine, robust program of public participation in nanotechnology decision making.

- Recognition that people have a right to participate in decision making about a technology predicted to drive such widespread and disruptive change.
- Recognition that public participation in government decision making improves outcomes.
- Recognition that if industry and government do not involve the public in decision making, they risk running a repeat of the genetic engineering backlash.

Lessons from the GM backlash include the importance of ensuring that: risk governance has public confidence; social and ethical issues are addressed alongside safety issues; and a two-way dialogue is established between the public and decision makers early in the technology's development to inform decision making in relation to the allocation of public funding and research priorities, governance and regulation. Studies have identified that these issues are also important in relation to nanotechnology[11].

A nanotechnology public participation program should include the following elements:

- Leadership from the top. Explicit public statements from relevant State Ministers that commit the government to a genuine, robust, transparent process of public participation, in order to inform development of future policy and governance.
- Clear goal for outcomes of public participation to inform subsequent decision making and policy development. That is, to define a goal of public *participation in decision making*, not public education with a view to promoting acceptance of decisions made by others, or unfocused 'engagement'
- Clear objective to identify public preferences and priorities for nanotechnology development, in the context of broader innovation and technology policy. Commitment to ensure that public preferences and priorities will inform subsequent decision making, including in the instance that the public does not want to pursue certain aspects of nanotechnology development.
- Commitment to the program including the following elements:
    - Participation from senior bureaucrats, representing the State Government, throughout the program. Government to commit to making formal response to the public participation program's findings at its close
    - Core activities to be led by an independent institution or individuals with expertise in public participation
    - Oversight from a steering group comprising a range of stakeholders (eg government, industry, research, labour, civil society)
    - Broad range of activities that include those based on the deliberative design model (eg citizen juries or consensus conferences), open public forums and stakeholder engagement
    - Appropriate and adequate resourcing
    - Transparency in process, including public reporting of the program's goals and objectives, structure, process and outcomes

A brief introduction to deliberative design

This section is based on materials developed by Lyn Carson, a politics lecturer at Sydney University, who maintains a fantastic 'active democracy' website with useful links to a whole range of deliberative sites and mechanisms, and a wide range of her own and others' writings http://www.activedemocracy.net/

Deliberative design attempts to provide a mechanism for 'ordinary' members of the community to provide direct input into public policy and/ or governance. A key underlying principle is that all members of the community are capable of making a valuable contribution to public policy development, when supported with appropriate resources, information, facilitation and time. Another key principle is that ordinary people have a right to be involved in the development of public policy that will affect them – that this should not be the exclusive province of government, industry or interest group stakeholders.

The deliberative design is ideally based around a group of randomly selected members of the general public, who are guided by professional facilitators. The participants are compensated for their involvement, gather for a period of time (at least several days), receive a range of information about a complex or controversial topic (often from 'stakeholders' or interest groups), then deliberate and produce a collective set of written recommendations. Examples include:

- Consensus conferences, used by the Danish Board of Technology since 1987, and since taken up by a number of other countries including Canada, Australia. In this model the participants set the debate agenda and decide the basis for assessment http://www.tekno.dk/subpage.php3?article=468&toppic=kategori12&language=uk
- Citizens' juries, created by The Jefferson Centre in the USA in 1974, and since used in Europe, South America, Australia and elsewhere. In this model, juries are usually asked to respond to a pre-determined set of questions http://www.jefferson-center.org/
- Planning cells, developed by Professor Peter Dienel in 1972. Planning cells are similar to the citizens' juries, but have multiple cells operating independently at the same time. Planning cells are also initiated in response to government requests, and have been integrated into the decision making process http://www.planet-thanet.fsnet.co.uk/groups/wdd/99_planning_cells.htm

Another comprehensive list of techniques and methods is provided by the Danish Board of Technology, a pioneer in this area, at:
http://www.tekno.dk/subpage.php3?listall=1&category=12&language=uk

The United Kingdom government lists conditions and variables in its published program for public engagement on nanotechnology that it feels have to be met for such processes to be useful:
http://www.ost.gov.uk/policy/issues/programme12.pdf

Why would deliberative design models for public participation be useful for nanotechnology?

Nanotechnology raises a complex range of issues that are difficult to communicate to the general public. There are low levels of public awareness about the issue, and even key 'stakeholder' organizations remain unaware of the issues or at least unengaged in the debate.

Relying on traditional public consultation models (eg call for submissions) is likely to result in low participation rates that do not reflect the degree of concern likely to be felt within the community were people actually aware of what it was all about.

This is problematic for anyone in government or industry who wanted to know what 'ordinary' people think about these issues. It is quite likely that as the industry expands and/ or problems emerge, media interest will pick up and public awareness will grow – with a resultant backlash because people feel they were not adequately consulted.

3. Provide balanced information on nanotechnology, its opportunities, risks and challenges; ensure a wide spectrum of interests and perspectives are heard

One of the key challenges in delivering effective communication of the opportunities, risks and challenges associated with emerging technologies is ensuring that the information provided does not simply reflect the viewpoints of certain stakeholders, for example technology proponents.

An option the Committee may wish to consider is to establish a 'Nanotechnology Engagement Group', which has representation from a range of interests (eg government, industry, research, labour, civil society), to oversee development of some basic information and communication materials. This could ensure that the materials developed are of high quality, are seen to be credible by a range of key 'stakeholders', and are not seen to be promoting a pre-determined agenda. These materials could provide an introduction to nanotechnology and nanomaterials, common applications in consumer products, future applications across diverse industry sectors, health and environmental implications and broader social issues.

References

1 Organic Consumers Association (2000). "Intense Battle Over GE Food Labeling in Australia and New Zealand: GM Food Labeling Down Under". Available at: http://www.organicconsumers.org/ge/nzlabelling.cfm
2 The Lab, ABC (1999). "Waiter: There's a gene in my food". Available at: http://www.abc.net.au/science/slab/consconf/report.htm
3 P86 Recommendation 12(iii), The Royal Society and The Royal Academy of Engineering, UK (2004). Nanoscience and nanotechnologies. Available at http://www.royalsoc.ac.uk/
4 IFST 2006. Information Statement: Nanotechnology. Institute of Food Science & Technology Trust Fund, London. Available at: http://www.ifst.org/uploadedfiles/cms/store/ATTACHMENTS/Nanotechnology.pdf (accessed 15 January 2008).
5 Institute of Occupational Medicine for the Health and Safety Executive (2004). Nanoparticles: An occupational hygiene review. Available at http://www.hse.gov.uk
6 Takagai A, Hirose A, Nishimura T, Fukumori N, Ogata A, Ohashi N, Kitajima S, Kanno J (2008). Induction of mesothelioma in p53+/- mouse by intraperitoneal application of multi-walled carbon nanotubes. Journal of Toxicological Sciences 33(1):105-116; Poland A, Duffin R, Kinloch I, Maynard A, Wallace W, Seaton A, Stone V, Brown S, MacNee W, Donaldson K (2008). Carbon nanotubes introduced into the abdominal cavity of mice show asbestos-like pathogenicity in a pilot study. Nature Nanotechnology. Published online 21 May 2008.
7 DEFRA (2005). A scoping study into the manufacture and use of nanomaterials in the UK. Available at: http://www.defra.gov.uk/environment/nanotech/nrcg/reports/index.htm Accessed 28.02.06
8 P2, DEFRA (2005). A scoping study into the manufacture and use of nanomaterials in the UK. Available at: http://www.defra.gov.uk/environment/nanotech/nrcg/reports/index.htm Accessed 28.02.06
9 Shand H and Wetter K (2006). "Shrinking Science: an introduction to nanotechnology". Chapter 5 In State of the World 2006: Special focus: China and India". The Worldwatch Institute. WW Norton & Company, New York, USA.
10 P41, Institute of Occupational Medicine for the Health and Safety Executive (2004). Nanoparticles: An occupational hygiene review. Available at http://www.hse.gov.uk
11 Macoubrie J (2006). "Nanotechnology: public concerns, reasoning and trust in government". Public Understanding of Science 15(2):221-241; Gavelin K, Wilson R, Doubleday R (2007). "Democratic technologies? The final report of the Nanotechnology Engagement Group. Involve, London. Available at: http://83.223.102.125/involvenew/mt/archives/blog_37/Democratic%20Technologies.pdf