Nanotechnology – The invisible threat

Position Paper WECF
Women in Europe for a Common Future
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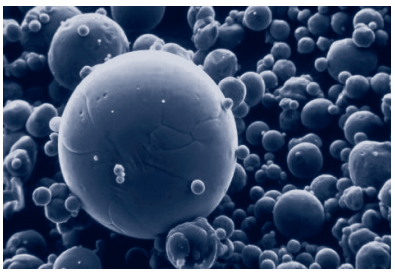

Nanotechnology is the latest buzzword in the global technology revolution. It is the science of 'small things', the precision engineering of substances at atomic and molecular level for a variety of applications ranging from medicine, cosmetics, the chemicals industry, consumer products and technology.
It is claimed that nanotechnology will revolutionise many areas of our lives: a change for the better. However, the rapid development and marketing of this technology has not been accompanied by proper risk assessments. Nano materials are unregulated and no labelling requirement exists. A growing number of studies show that inhalation and retention of these particles can cause significant health risks, and warn of a time bomb comparable to that of asbestos.
Against this background, WECF is calling for proper risk research and assessment before these materials are released on to the market, and in particular regulation to ensure there are no harmful effects to either human health or the environment. A special safety threshold should be applied for children in particular, and the risk assessment should also be gender-differentiated. Furthermore, WECF demands that regulating bodies, such as the European Chemicals Agency (ECHA), monitor carefully the risks of all applications of nanotechnology to human health and to the environment. Finally, WECF demands that full information about possible health risks of nanotechnology as well as access to information on which products contain nanoparticles are provided to the public without delay.

What is nanotechnology and how is it used?

Put simply, nanotechnology is the ability to produce and use tiny structures or particles on a very small scale. It is now possible to manipulate structures or systems ranging in size from a single atom to a structure of 300 nanometers. To put this scale in context, the width of a human hair is 80,000 nanometers.
As consumers, we are already using nanotechnology in our everyday products. Around 600 products containing nanomaterials are on the market as of April 2008, with 3-4 being added every week. Some common uses are to make sunscreen transparent, to keep packaged food fresher, to aid the absorption of medicines, as anti-bacterials in clothes, in cleaning products to make surfaces dirt resistant. These 'first generation' nanomaterials include nanoparticles (e.g. metal oxides), nanotubes, nanowires, quantum dots and carbon fullerenes (buckyballs), to name only a few. Therefore this technology is all around us, and tiny synthetic particles are being released, inhaled and retained in our bodies, yet no real risk assessment of the potential impact on health has been carried out.

Is nanotechnology dangerous?

Nanosubstances should be treated as a new category of chemical substance which poses a potential risk in the workplace, to consumers and during disposal. Their tiny size increases their effect and toxicity, since the dose in terms of particle numbers increases as size decreases. In addition, nanosubstances can penetrate the body through skin absorption, inhaling or ingestion, and they can enter cells, the placenta and body tissue. Recent research has identified that carbon nanotubes, which are needle-shaped fibres very similar to asbestos, may in the long term cause mesothelioma (cancer of the lining of the lungs), and many scientists' groups are concerned about long term health effects. The environmental risk of the release of these particles has also not been taken into account. Nanomaterials could act as transporters of pollutants, for example. The end of life cycle is also a concern: where do these particles end up, and what are their effects?

Lack of risk assessment and research

So far, there has been inadequate and insufficient risk assessment, which means consumers are being exposed to uncontrolled substances with unknown consequences. Products have been rushed on to the market, and health and environmental risk assessments have been apportioned tiny budgets in comparison with the money spent on researching and developing new products. The industry has not so far shown responded appropriately to calls for better risk assessment.
A related problem is that the risk assessment methodologies and even equipment are lagging behind the rapid pace of technological development. These need to be updated in order to cope with these new substances.

Lack of regulation

Engineered nano particles are not currently subject to any special regulation, either at EU or international level. Therefore the use and development of nano substances is effectively unregulated worldwide. The EU REACH regulation only requires controls on substances which are imported or produced at the level of at least one tonne, which is far greater than the volumes produced by most nanosubstances, due to their tiny size. Thus only a few larger nanoformulations are likely to be registered, and even then, they will not be listed as new substances, merely as the same substances in smaller form, despite that fact that, the properties of these smaller particles differ dramatically from the original substances produced in bulk form. For example aluminium is stable in the 'big world' but behaves as an explosive as a nano particle.

Lack of information

There is currently no right of information for consumers or requirement for companies to label products which contain nanosubstances, or to register their presences in a product. No safety standards exist to protect anyone coming into contact with the substances, or to protect the environment. This means there is no way for consumers to avoid exposure.

WECF's position concerning nanotechnology

WECF is very concerned about human exposure to nanosubstances without assessment and regulation regarding the risks involved. WECF believes that the precautionary principle must be applied in order to safeguard health, particularly that of children. Lessons learned from the past in the potentially devastating effects of using innovative materials without proper risk assessments (asbestos) should be remembered. Consumers and the general public should be informed and be involved in decision-making regarding nanotechnology, risk assessment and protective measures to avoid health and environmental damage. And finally, companies must be engaged in assuring the safety of their products in the long term.

Children, Gender and nanotechnology

WECF works for a toxic free future. WECF is especially concerned about the effects of nanosubstances on the health of women, children and other vulnerable groups. Pregnant mothers can pass nanoparticles easily to their unborn babies, and such particles can be transmitted in breastmilk. WECF is greatly concerned about the effects nanoparticles can have on the development of the brain and other organs of the foetus. All children are more vulnerable because their bodies and organs are not fully developed and their body mass is smaller, allowing greater absorption of toxic substances and lifelong damaging effects. Women and men are likely to be exposed to nano particles in different ways, in the workplace, at the point of disposal, in cleaning products, cosmetics, food packaging, and these gender-differentiated risks should be assessed.

WECF calls for seven actions to be taken on nano technology:

Nanosubstances should be treated as new substances

WECF demands that nanosubstances be treated as totally new substances. In addition, WECF demands a standardised nomenclature including CAS-numbers for nanosubstances and their different characteristics.

Nanosubstances should be subject to a far-reaching risk assessment (health, environment)

Because often heir unique properties it is unclear how damaging nanosubstances can be to the human body and to the environment. Furthermore, it is unknown how nanoparticles react with other chemicals because this varies based on their size and structure. These risks need first to be assessed through research before allowing widespread use of nanomaterials.

REACH should be extended to include nanosubstances

Whilst WECF welcomes the REACH regulation, the scope must be widened to include the new chemical substances which emerge from nanotechnology. Using tonnage as a indication for risk is inappropriate in this instance and this category could be amended so as to integrate the new substances effectively under the REACH mechanism.

Implementation of the precautionary principle and producers' liability

WECF asks decision makers to implement the precautionary principle and producers' liability in the case of nanotechnology. This means that producers are reliable and accountable for possible damage caused by their products. These principles force producers to research and assess the risks of using nanotechnology in their products.

All products for and used near children must be nano-free until it is proven that there are no risks for human health and the environment

WECF considers the sale of products including nanoparticles without adequate risk research as absolutely irresponsible. Our children's health must be guaranteed. Therefore, we demand that products for children remain nano-free until valid data is available proving that it is safe.

Compulsory labelling of all products containing nanosubstances which are sold in the EU

Consumers and workers in processing industries have the right to information about the products they are using, especially when the effects are unknown. Consumers should have the chance to decide for themselves if they want to take the risks of exposing themselves to this potential danger or not.

Citizens must be informed and involved

Any "technological revolution" requires public participation and involvement. Women and men should have their voices heard and concerns listened to. WECF demands a wide-ranging information campaign in Europe and involvement of citizens.

Authors and editors:

Alexandra Caterbow,
alexandra.caterbow@wecf.eu
Gemma Ferst, gemma.ferst@wecf.eu

WECF

WECF The Netherlands
PO Box 13047
3507 LA, Utrecht
The Netherlands
Phone: +31 - 30 - 23 10 300
Fax: +31 - 30 - 23 40 878

WECF Germany
Sankt-Jakobs-Platz 10
D – 80331 München
Germany
Phone: +49 - 89 - 23 23 938 - 0
Fax: +49 - 89 - 23 23 938 - 11

WECF France
BP 100
74103 ANNEMASSE
Tel/fax: + 33 450 49 97 38

Website: www.wecf.eu
E-mail: wecf@wecf.eu