



ETC Group
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UK Report: More Hits than Misses on Nanotech

After a year-long investigation, the United Kingdom's Royal Society and Royal Academy of Engineering released its final report today examining the health, safety, environmental, ethical and societal implications of nano-scale technologies. The report was commissioned by the UK government last June. The UK's Trade Union Congress today supported the Royal Society's report and called for strong regulations to prevent worker exposure to manufactured nanoparticles. "There have been plenty of red flags, but the dollar signs have blotted out the warnings signs," said Rory O'Neill, spokesman for the Trade Union Congress.

"The report is a good start toward addressing the potential negative health and environmental impacts of nano-scale technologies, particularly the use of nanoparticles," said Jim Thomas, European Programme Manager of the ETC Group based in Oxford. "Just one year ago Lord Sainsbury [UK Science Minister] said that nanotech was adequately covered by regulations – he was wrong. We welcome the Royal Society's precautionary language on the environment and strong recommendations on nanoparticles."

Today's report vindicates many of those, like ETC Group, who have expressed concerns about the dangers of nanotechnology for human health and the environment in the absence of regulatory oversight.

Importantly, the Royal Society considered many broader societal issues and seems to have listened carefully to the key questions raised by Prince Charles in his July 11 editorial on nanotechnology appearing in *The Independent on Sunday* – who controls nanotechnology and who will benefit from it?

"The report is undeniably impressive and constructive. It raises all the right questions, even though some of its answers are incomplete and uneven," notes Thomas. "While acknowledging the issues of ownership and control as fundamental, it fails to adequately address them. There is no discussion of nanotech monopolies or the implications of nanotech for the global South. And despite the UK's colossal controversy over agbiotech, the report fails to examine the impacts of nanotech on agriculture and food production."

The Royal Society's report also falls short in its assessment of the potential risks of nanobiotechnology. It naïvely puts the impacts of nanobiotech in the distant future (more than 10 years), and it starts with the premise that nanobiotech applications will not include the production and enhancement of biological material through genetic modification

technologies. Considering genetic modification and nano-scale technologies as separate spheres of science allows the authors to dismiss self-replication as an irrelevant concern. "In reality, nanotech and biotech are already converging to create hybrid materials, machines and living organisms," asserts Thomas. "The report itself acknowledges hybrid bio-nano machines and recognizes converging technologies as a profound issue. The report's dismissal of the relevance of genetic modification to nanobiotechnology is contradictory."

Health, Safety & Environment: The Royal Society's report considered but rejected the need for a moratorium on nanotechnology, which the ETC Group called for two years ago, but it unambiguously concludes that uncertainties about the risks of manufactured nanoparticles "need to be addressed immediately" to safeguard workers and consumers. The Royal Society's decision to reject the call for a moratorium seems to be based more on politics than science in light of their bold recommendations:

- Ingredients in the form of nanoparticles should undergo full safety assessment (even if the substance has already been assessed in larger forms) before being commercialized. [*De facto* moratorium? What should be done about nanotech products already on the shelf?]
- The use of free manufactured nanoparticles (not fixed to or within a material) in environmental applications such as remediation should be prohibited until appropriate research has been undertaken.
- Chemicals in the forms of nanoparticles should be treated by regulators as new substances (thus acknowledging that properties of nanoscale particles may be different from the same chemical substance in larger forms).
- Factories and research laboratories should treat manufactured nanoparticles and nanotubes as if they are hazardous and seek to reduce or remove them from waste streams.
- Industry should make public all relevant data related to safety assessments of manufactured nanoparticles, and demonstrate how they have taken into account that properties of nanoparticles may be different from larger forms.
- Consumer products containing manufactured nanoparticles should be labeled on ingredients lists.
- All relevant regulatory bodies in the UK should review whether existing regulations are appropriate to protect humans and the environment from potential nanotech hazards, and report on how regulatory gaps will be addressed.
- With the support of the UK, the European Commission should review the adequacy of current regulations with respect to the introduction of nanoparticles into any consumer products.

Convergence: The report notes that the future convergence of nanotech with biotechnology, information and cognitive sciences could be used for "radical human enhancement" and that, if realized, would raise "profound ethical questions" regarding what we understand to be

human, normal and abnormal. With input from Richard Light, Director of the Centre for Disability and Human Rights, and from Gregor Wolbring, Director of the Centre for Bioethics, Culture and Disability, the report points to the problematic nature of a “technical fix” to address “disability.” Clearly, new technologies can’t solve social injustices.

The Bigger Picture: The report recommends that the impacts of emerging technologies “be addressed with some urgency.” Specifically, the Royal Society recommends the establishment of a multi-stakeholder group to look at new and emerging technologies and to identify and advise “at the earliest possible stage” where potential health, safety, environmental, social, ethical and regulatory issues may arise and how to address them. The group’s work “should be made public so that all stakeholders can be encouraged to engage with the emerging issues.” The report also recommends that the government initiate adequately funded public dialogue around the development of nanotechnologies.

“We are pleased to see that the Royal Society takes seriously the need to create a new body that has the mandate to assess the broader societal impacts of new technologies, similar to what we have called for at the intergovernmental level,” said Pat Mooney, Executive Director of ETC Group. The ETC Group advocates for the establishment of a United Nations body, the International Convention on the Evaluation of New Technologies.

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Note to editors:

The Royal Society’s report, “Nanoscience and nanotechnologies: opportunities and uncertainties,” is available on the Internet: <http://www.nanotec.org.uk/finalReport.htm>

The Trade Union Congress report, “Nanotechnology - the new asbestos,” is available on the Internet:

<http://www.hazards.org/nanotech>

For a basic introduction to nano-scale technologies and an analysis of their implications, see *The Big Down, From Genomes to Atoms: Technologies Converging at the Nano-scale*

<http://www.etcgroup.org/documents/TheBigDown.pdf>

For a critique of the strategy of converging technologies and an analysis of its implications, see “The Little BANG Theory”

<http://www.etcgroup.org/documents/comBANG2003.pdf>

For an introduction to the issues surrounding the toxicity of engineered nanoparticles, see “No Small Matter!” and ETC Group’s Occasional Paper “Size Matters!” for a more detailed analysis and a list of products containing nanoparticles.
http://www.etcgroup.org/documents/Occ.Paper_Nanosafety.pdf

For a short list of the most worrying scientific findings involving nano-scale technologies, see Ten Toxic Warnings in “Nano’s Troubled Waters”
http://www.etcgroup.org/documents/GT_TroubledWater_April1.pdf

For a brief analysis of nanotech governance, see “26 Governments Tiptoe Toward Global Nano Governance” <http://www.etcgroup.org/documents/globalgovfinal.pdf>

The Action Group on Erosion, Technology and Concentration, formerly RAFI, is an international civil society organization headquartered in Canada. The ETC group is dedicated to the advancement of cultural and ecological diversity and human rights. www.etcgroup.org. The ETC group is also a member of the Community Biodiversity Development and Conservation Programme (CBDC). The CBDC is a collaborative experimental initiative involving civil society organizations and public research institutions in 14 countries. The CBDC is dedicated to the exploration of community-directed programmes to strengthen the conservation and enhancement of agricultural biodiversity. The CBDC website is www.cbdcprogram.org.