

Useful reports, articles and links that provide information on ethical, legal and social issues raised by research in nanotechnology.

General

[EU Action Plan](#)

In 2004 the European Commission published its strategy for Nanotechnology. One of five key dynamics identified is the need to “integrate the societal dimension” (page 17-19). It argues that ethical principles must be respected and that public dialogue can be an important contributor to developing socially beneficial nanotechnologies.

[Nanoscience and Nanotechnologies: Opportunities and Uncertainties](#)

Report by the UK’s Royal Society and Royal Academy of Engineering published in 2004. This influential report calls for responsible development of nanotechnologies with recommendations to the UK Government including:

- More research needed on possible adverse health, safety and environmental impacts of manufactured nanoparticles and nanotubes
- Review existing regulation to ensure that it covers issues raised by nanotechnologies
- Consideration of ethical and social issues should form part of the formal training of research students
- Governments should organise public dialogues around the development of nanotechnologies.

Social and Ethical Issues

[Mind the Gap](#) [PDF]

Mnyusiwalla, A., A.S. Daar and P.A. Singer (2003) “‘Mind the gap’: science and ethics in nanotechnology”, *Nanotechnology* 14(3): R9-R13.

This article lists some of the ethical issues that developments in nanotechnology pose to society:

- Equity – Who will benefit, who will lose out? Will developments in nanotechnology increase or decrease global inequality?
- Privacy and security – How will new surveillance and military capabilities be used?
- Environmental issues – will manufactured nanoparticles become “the next asbestos”?
- Human or machine? – Are there boundaries that should be respected?

[What Counts as a 'Social and Ethical Issue'](#)

Lewenstein, B.V. (2005) “What Counts as a 'Social and Ethical Issue' in Nanotechnology?” *Hyle* 11(1): 5-18.

This article includes a summary of ethical issues posed by nanotechnology research that have been discussed in recent years. The author is a leading US academic working on science communication. Issues he identifies include:

- Environmental issues
- Economic issues
- Privacy issues
- Intellectual property issues
- Human enhancement

[Nanoethics as a research area](#)

iNANO Centre has identified "Nanoethics" as a research area. Mette Ebbesen, a Ph.D. student at the Centre for Bioethics and iNANO Center, has published studies on nanoethics: www.inano.dk/sw6992.asp

Public Dialogue

[Stakeholder and public dialogue](#) [PDF]

Chapter 6 of the 2004 report of the UK Royal Society and Royal Academy of Engineering provides a good introduction to arguments for public dialogue on nanotechnologies.

[Download Informed Public Perceptions of Nanotechnology and Trust in Government](#)

A study published in 2005 which reveals that while Americans welcome new potential life-saving and -enhancing applications promised by nanotechnology, they voice concern over its potential long-term human health and environmental effects and the ability of government and the private sectors to manage such risks.

[European Commission – communication and debate](#)

Resources for scientists who want to get involved in public communication and debate about nanotechnology

[Nanologue](#)

EU FP6 funded project that uses stakeholder dialogues to map ethical, legal and social aspects of nanotechnology applications that might be on the market in 2010.

[Nanotechnology Engagement Group](#)

A research project that reviews all nanotechnology public engagement projects with the aim of drawing lessons for science policy. Funded by the UK Government.