Environmental, social and political impacts of nanotechnology

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http://nano.foe.org.au
Environmental, social & political impacts of nanotechnology

- Nanotechnology is predicted to “reshape the world from the atom up”
- This requires that we ask critical questions about purpose, predictability, ownership and responsibility
- The public is concerned about these issues
- Yet the primary debate about nanotechnology is focused exclusively on toxicity risks, ignoring these concerns
- Key issues are missing from the current risk debate, including critical discussion of the precautionary principle
Who is Friends of the Earth?

• Friends of the Earth (FoE) is the largest grassroots environmental organization in the world

• FoE is active in 70 countries, with around 1.5 million global members and supporters

• Working towards an environmentally sustainable and socially equitable future

• Growing number of FoE groups working on nanotechnology issues

• FoE Australia has a dedicated Nanotechnology Project
Why am I here today?

• To join the discussion about managing toxicity risk: to query where the burden of proof of safety or harm should lie; to query why workers and the public should accept nano exposure without appropriate risk management

• To urge that we expand our discussion beyond risk, to critical social and governance issues

• To emphasise that public involvement is essential

• To suggest that ICON members have a vital role to play in advancing this discussion
Why are you here today?

- Because you care about protecting human health and the environment from nanotoxicity?
- Because you believe that nanotoxicologists and risk specialists can:
  - make a valuable contribution to society’s efforts to manage nanotoxicity?
  - make a valuable contribution to the wider nanotechnology debate?
  - help communicate nanotechnology issues with the public?
Challenging the assumptions that underpin the nano debate

Common assumptions include:

• Nanotechnology will be “the next industrial revolution”
• This will necessarily bring net benefits
• Management of nanotechnology should be restricted to science-based risk assessment
• Supporting toxicity research = “responsible nanotechnology”
• We do not have the power to influence nanotechnology’s trajectory

Yet none of these assumptions is necessarily accurate
“If nanotechnology is going to revolutionise manufacturing, health care, energy supply, communications and probably defence, then it will transform labour and the workplace, the medical system, the transportation and power infrastructures and the military. None of these latter will be changed without significant social disruption”.

APEC Center for Technology Foresight
Nanotechnology will result in large-scale economic disruption

“Nanotech is poised to ripple through the economics and value chain of multiple industries, with every new corporate opportunity also representing a potential threat…

Just as the British industrial revolution knocked hand spinners and hand weavers out of business, nanotechnology will disrupt a slew of multi billion dollar companies and industries”.

Lux Research Inc.
Nanotechnology will produce more deadly weapons of mass destruction

“The potential for NT innovations in chemical and biological weapons is particularly disquieting…NT will permit chemical and biological warfare to become more feasible and effective… NT will provide qualitatively new improvements that are likely to attract the attention of an imprudent military, or terrorist groups. At this stage, it is unclear whether the countermeasures enabled by NT would prove effective enough to diminish this threat.”

NATO Parliamentary Assembly Committee
What are informed US public concerns about nanotechnology?

<table>
<thead>
<tr>
<th>Concern</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Military uses and ‘evil doers’</td>
<td>17%</td>
</tr>
<tr>
<td>Long-term health effects</td>
<td>15%</td>
</tr>
<tr>
<td>Environmental ‘footprint’</td>
<td>13%</td>
</tr>
<tr>
<td>Controllability of trajectory</td>
<td>10%</td>
</tr>
<tr>
<td>Social footprint</td>
<td>9%</td>
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<tr>
<td>Potential loss of freedoms &amp; privacy</td>
<td>7%</td>
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<tr>
<td>Regulators’ loss of control</td>
<td>6%</td>
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<tr>
<td>Losing funding for other priorities</td>
<td>6%</td>
</tr>
<tr>
<td>The possibility of ‘molecular manufacturing’</td>
<td>5%</td>
</tr>
<tr>
<td>Ethics of uses and effect on nature</td>
<td>4%</td>
</tr>
<tr>
<td>‘Insulated’ scientists and regulators</td>
<td>4%</td>
</tr>
<tr>
<td>Responsible control</td>
<td>4%</td>
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</tbody>
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The failure of the nano debate to address these central concerns

• There is a near exclusive focus on the need to research toxicity risks associated with first generation nanomaterials

• The idea of “responsible nanotechnology” is conflated with a commitment to research toxicity risks

• This precludes precautionary management of risk

• This ignores key concerns of the public and de-legitimises concerns that are not science-based

• It precludes deeper critical questioning about purpose, control and responsibility that should inform nanotechnology’s development
What are the critical questions we need to ask about nano?

• For what purposes is nanotechnology being developed?
• Why this technology, why these applications?
• How is nanotechnology being managed, and in whose interests?
• Who bears the risks, who stands to gain?
• What unintended consequences might it have?
• Does civil society have a right to be involved in decision making?
What are the critical questions we need to ask about risk?

• Where should the burden of proof lie? Should we take a precautionary approach?
• Why should workers and the public accept poorly understood risks of nano-exposure?
• Are those most exposed to risk involved in the decision making process?
• Are scientists acknowledging the limits of the capacity to predict risk?
• Are we developing risk management regimes that can cope with next generation nanotechnology?
What steps can ICON members take to address these issues?

- Consider role of precaution in risk management
- Acknowledge legitimacy of non-science based concerns
- Don’t conflate idea of “responsible nanotechnology” with commitment to research toxicity risks
- Consider how social science and public deliberation can input into ICON’s work
- Pursue greater involvement of labour organisations and people from the Global South in ICON
Friends of the Earth
Nanotechnology Project

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