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Center for Nanotechnology in Society

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Non-Governmental Organizations and Nanotechnologies Futures

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Herrara Corral (2011) *Nature* 476

WORLD VIEW *A personal take on events*

Stand up against the anti-technology terrorists

Home-made bombs are being sent to physicists in Mexico. Colleagues around the world should ensure their own security, urges **Gerardo Herrera Corral.**

My elder brother, Armando Herrera Corral, was this month sent a tube of dynamite by terrorists who oppose his scientific research. The home-made bomb, which was in a shoe-box-sized package labelled as an award for his personal attention, explodi
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of mankind, and predicts that the world will become dominated by self-aware artificial-intelligence technology. Scientists who work to advance such technology, it says, are seeking to advance control over people by 'the system'. The group praises Theodore Kaczynski, the

ACTIVISM

Anarchists attack scie

Armed extremists are targeting nuclear and nanotechnology workers.

BY LEIGH PHILLIPS

A loose coalition of eco-anarchist groups is increasingly launching violent attacks on scientists.

A group calling itself the Olga Cell of the Informal Anarchist Federation International Revolutionary Front has claimed responsibility for the non-fatal shooting of a nuclear-engineering executive on 7 May in Genoa, Italy. The same group sent a letter bomb to a Swiss pro-nuclear lobby group in 2011; attempted to bomb IBM's nanotechnology laboratory in Switzerland in 2010; and has ties with a group responsible for at least four bomb attacks on nanotechnology facilities in Mexico. Security authorities say that such eco-anarchist groups are forging stronger links.

On 11 May, the cell sent a four-page letter to the Italian newspaper *Corriere della Sera* claiming responsibility for the shooting of Roberto Adinolfi, the chief executive of Ansaldo Nucleare, the nuclear-engineering subsidiary

nanotechnology facility in Zurich earlier that year. In a situation report published this month, the Swiss Federal Intelligence Service explicitly linked the federation to the IBM attack.

The Informal Anarchist Federation argues that technology, and indeed civilization, is responsible for the world's ills, and that scien-

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P. PARTIN/AFP/GETTY

Investigations of the shooting of nuclear-engineering head Roberto Adinolfi have confirmed the involvement of an eco-anarchist group.

Phillips (2012) *Nature* 485

Under attack: policemen stand guard outside the Monterrey Institute of Technology and Higher Education after a letter bomb exploded there in August 2011.

ARMED RESISTANCE

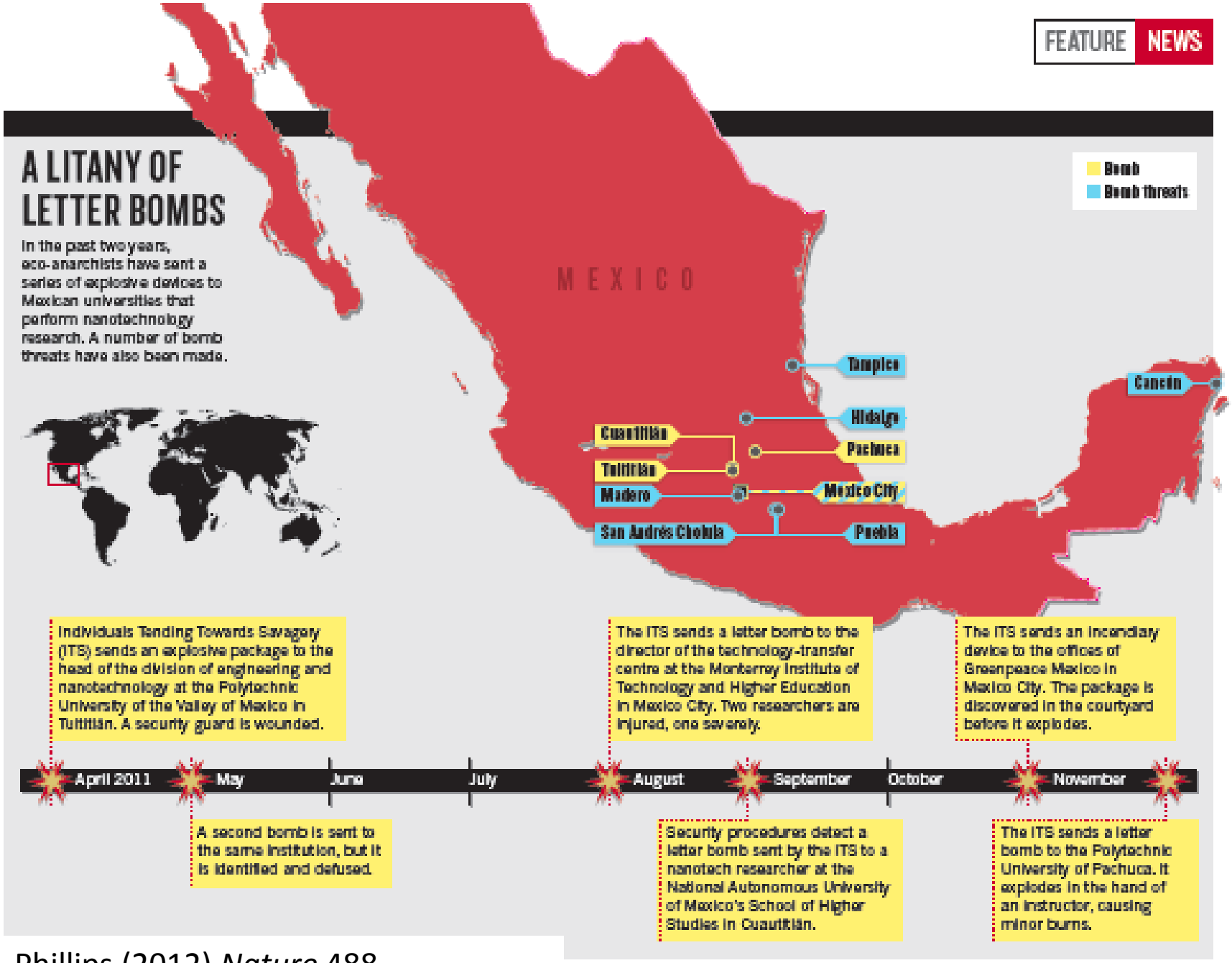
Nature *assesses the aftermath of a series of nanotechnology-lab bombings in Mexico — and asks how the country became a target of eco-anarchists.*

BY LEIGH PHILLIPS

The shoe-box-sized package was addressed to Armando Herrera Corral. It stated that he was the recipient of an award and it was covered in official-looking stamps. Herrera, a computer scientist at the Monterrey Institute of Technology and Higher Education in Mexico City, shook the box a number of times, and something solid jiggled inside. What could it be? He was excited and a little nervous — so much so, that he walked down the hall to the office of a colleague, robotics researcher Alejandro Aceves López, and asked Aceves to open it for him.

Aceves sat down at his desk to tear the box open. So when the 20-centimetre-long pipe bomb inside exploded, on 8 August 2011, Aceves took the full force in his chest. Metal pierced one of his lungs. "He was in intensive care. He was really bad," says Herrera's brother Gerardo, a theoretical physicist at the nearby Centre for Research and Advanced Studies of

Phillips (2012) *Nature* 488



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More prominent characteristics of **environmental movements** (Rootes 2007):

- Formalized organizational structure
- Reform goals
- Institutional channels of influence (e.g. lobbying)

Nano-focused environmental rights organizations (Hess 2010):

Moratorium Industry guidelines Institutional channels

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Context:

- Without disruptive event (c.f. Walsh 1981)
- Low public awareness (Satterfield et al. 2009)

Example NGOs:

Friends of the Earth

EDF ENVIRONMENTAL DEFENSE FUND
Finding the ways that work

GREENPEACE

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FRAMING (how issues are communicated)

- Frame resonance (Snow & Benford 1988)
  - Important to NGOs:
    - Mobilizing
    - Political impact
    - Institutional survival (e.g. ability to raise money)
- NGO risk perceptions
- Predictive of NGO (Brulle 2000):
  - Formalization (having a structure)
  - Reform/revolution
  - Institutional (e.g. lobby)/non-institutional (e.g. protest)

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How do NGOs frame (i.e. communicate) the potential:

- Promises?
- Risks?
- Broader issues of governance, sustainability, or social and distributive justice?

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Parameters

job creation

technological innovation

industrial growth

grey goo

sustainable development

EHS research

labeling

moratorium

no regulations

public participation

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Parameters:
NGO as Social Movement Organization

Social movement (Tilly 2004):

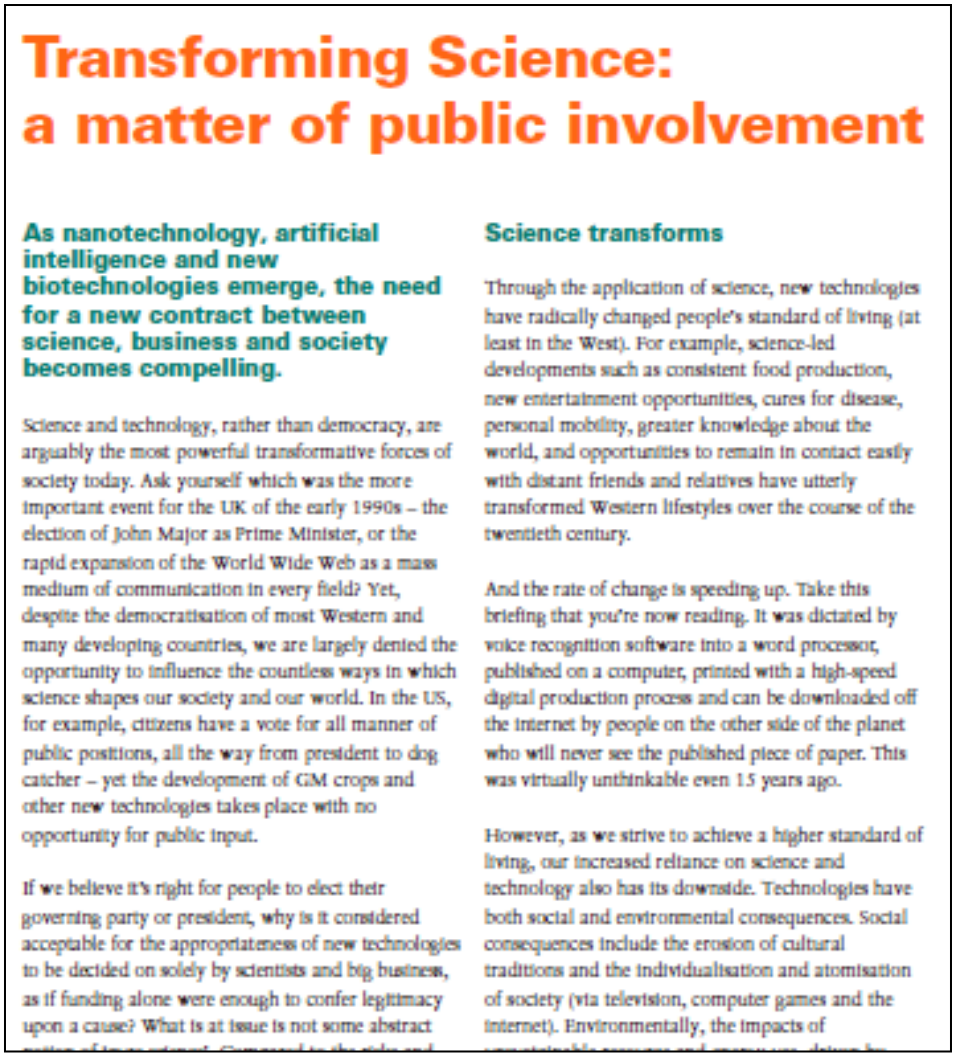
- Contentious politics/collective claims
- Through action using range of tactics

Methods

Online research

http://www.greenpeace.org/usa/en/

Download publications
Articles/reports/
press releases



Transforming Science: a matter of public involvement

As nanotechnology, artificial intelligence and new biotechnologies emerge, the need for a new contract between science, business and society becomes compelling.

Science and technology, rather than democracy, are arguably the most powerful transformative forces of society today. Ask yourself which was the more important event for the UK of the early 1990s – the election of John Major as Prime Minister, or the rapid expansion of the World Wide Web as a mass medium of communication in every field? Yet, despite the democratisation of most Western and many developing countries, we are largely denied the opportunity to influence the countless ways in which science shapes our society and our world. In the US, for example, citizens have a vote for all manner of public positions, all the way from president to dog catcher – yet the development of GM crops and other new technologies takes place with no opportunity for public input.

If we believe it's right for people to elect their governing party or president, why is it considered acceptable for the appropriateness of new technologies to be decided on solely by scientists and big business, as if funding alone were enough to confer legitimacy upon a cause? What is at issue is not some abstract

Science transforms

Through the application of science, new technologies have radically changed people's standard of living (at least in the West). For example, science-led developments such as consistent food production, new entertainment opportunities, cures for disease, personal mobility, greater knowledge about the world, and opportunities to remain in contact easily with distant friends and relatives have utterly transformed Western lifestyles over the course of the twentieth century.

And the rate of change is speeding up. Take this briefing that you're now reading. It was dictated by voice recognition software into a word processor, published on a computer, printed with a high-speed digital production process and can be downloaded off the internet by people on the other side of the planet who will never see the published piece of paper. This was virtually unthinkable even 15 years ago.

However, as we strive to achieve a higher standard of living, our increased reliance on science and technology also has its downside. Technologies have both social and environmental consequences. Social consequences include the erosion of cultural traditions and the individualisation and atomisation of society (via television, computer games and the internet). Environmentally, the impacts of

Methods

Transforming Science:

Principles for the Oversight of Nanotechnologies and Nanomaterials

The undersigned, a broad coalition of civil society, public interest, environmental and labor organizations concerned about various aspects of nanotechnology's human health, environmental, social, ethical, and other impacts, submit the following Declaration, *Principles for the Oversight of Nanotechnologies and Nanomaterials*.

Introduction

Governments, universities, and businesses around the world are racing to commercialize

Respectfully submitted,

American Federation of Labor and Congress of Industrial Organizations
Beyond Pesticides
Brazilian Research Network in Nanotechnology, Society and Environment
Center for Environmental Health
Center for Food Safety
Corporate Watch
Edmonds Institute

More NGOs

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Background information:

- Headquarter location
- Organizational structure (member-based?), etc.

Emergence and Framing:

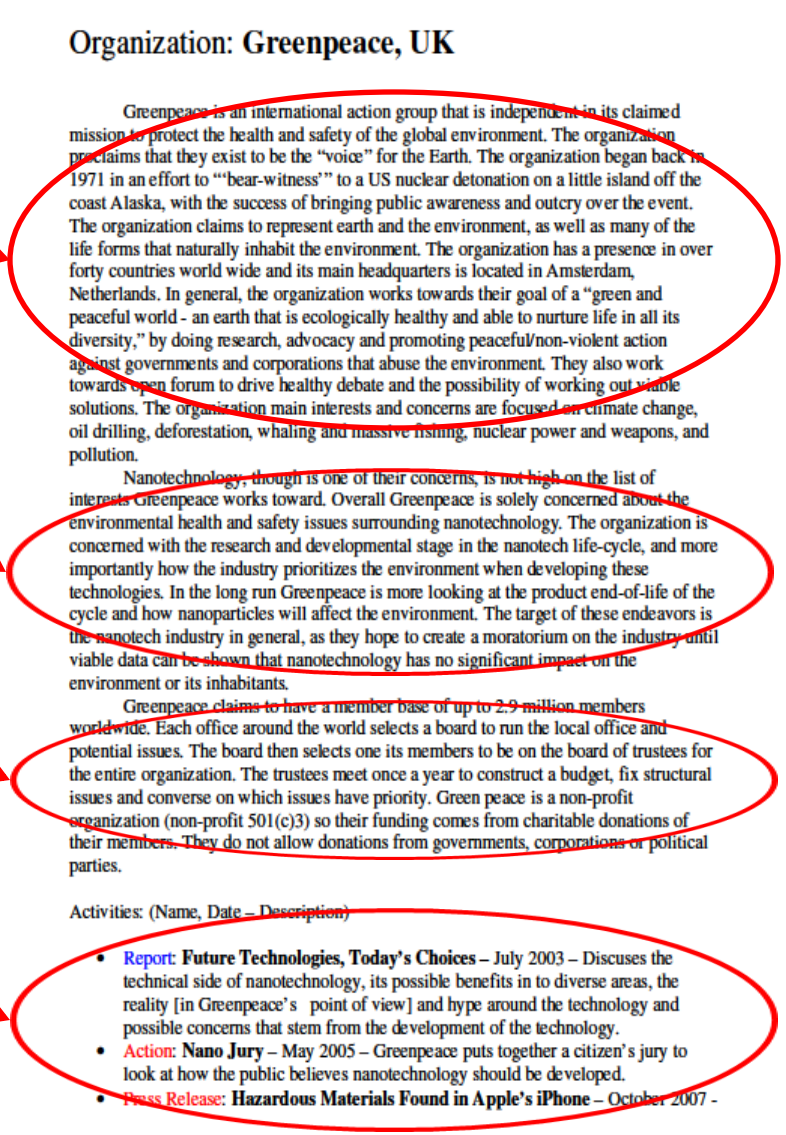
- Specific nanomaterials
- Specific application domains
- Analogies
- Goals (social change/status-quo)
- Target/audience
- Location of actions and targets

Organizational history/summary

Nano-specific issues/concerns

Organizational structure

Action timeline (tactics and targets)



Organization: **Greenpeace, UK**

Greenpeace is an international action group that is independent in its claimed mission to protect the health and safety of the global environment. The organization proclaims that they exist to be the "voice" for the Earth. The organization began back in 1971 in an effort to "'bear-witness'" to a US nuclear detonation on a little island off the coast Alaska, with the success of bringing public awareness and outcry over the event. The organization claims to represent earth and the environment, as well as many of the life forms that naturally inhabit the environment. The organization has a presence in over forty countries world wide and its main headquarters is located in Amsterdam, Netherlands. In general, the organization works towards their goal of a "green and peaceful world - an earth that is ecologically healthy and able to nurture life in all its diversity," by doing research, advocacy and promoting peaceful/non-violent action against governments and corporations that abuse the environment. They also work towards open forum to drive healthy debate and the possibility of working out viable solutions. The organization main interests and concerns are focused on climate change, oil drilling, deforestation, whaling and massive fishing, nuclear power and weapons, and pollution.

Nanotechnology, though is one of their concerns, is not high on the list of interests Greenpeace works toward. Overall Greenpeace is solely concerned about the environmental health and safety issues surrounding nanotechnology. The organization is concerned with the research and developmental stage in the nanotech life-cycle, and more importantly how the industry prioritizes the environment when developing these technologies. In the long run Greenpeace is more looking at the product end-of-life of the cycle and how nanoparticles will affect the environment. The target of these endeavors is the nanotech industry in general, as they hope to create a moratorium on the industry until viable data can be shown that nanotechnology has no significant impact on the environment or its inhabitants.

Greenpeace claims to have a member base of up to 2.9 million members worldwide. Each office around the world selects a board to run the local office and potential issues. The board then selects one its members to be on the board of trustees for the entire organization. The trustees meet once a year to construct a budget, fix structural issues and converse on which issues have priority. Green peace is a non-profit organization (non-profit 501(c)3) so their funding comes from charitable donations of their members. They do not allow donations from governments, corporations or political parties.

Activities: (Name, Date – Description)

- Report: **Future Technologies, Today's Choices** – July 2003 – Discuses the technical side of nanotechnology, its possible benefits in to diverse areas, the reality [in Greenpeace's point of view] and hype around the technology and possible concerns that stem from the development of the technology.
- Action: **Nano Jury** – May 2005 – Greenpeace puts together a citizen's jury to look at how the public believes nanotechnology should be developed.
- Press Release: **Hazardous Materials Found in Apple's iPhone** – October 2007 -

125 Organizations in database
60 organizations "actively engaged" in nanotechnology issues

BIOLOGICAL FARMERS OF AUSTRALIA

CRN
Center for Responsible Nanotechnology

GREENPEACE

CIEL
The Center for International Environmental Law

ETC Group
ENERGY ENGINEERING FOR A SUSTAINABLE FUTURE

ITA INTERNATIONAL CENTER FOR TECHNOLOGY ASSESSMENT

Friends of the Earth

The Loka Institute

NRDC
THE EARTH'S BEST DEFENSE

SOIL ASSOCIATION · ORGANIC STANDARD ·
Soil Association

NIA
Nanotechnology Industries Association

SILICON VALLEY TOXICS COALITION
SVTC

EDF
ENVIRONMENTAL DEFENSE FUND
Finding the ways that work

CANADIAN ENVIRONMENTAL LAW ASSOCIATION

food&waterwatch

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Nanotechnology issues?	• Public outreach/shared knowledge • Consumer safety • Environmental protection/life cycle • Environmental justice
Specific nanomaterials?	• No, nanotechnology generally • Nanosilver • Titanium dioxide
Specific applications?	• Military • Agriculture • Sunscreen

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Goals?

- Moratorium
- More EHS research
- Regulation

Target?

- Government (regional, national, international; FDA, EPA)
- Industry
- Actions -> Media

Tactics?

- Issue reports, public statements, press releases
- Organize forums
- Lesser extent: industry collaboration; litigation

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Future Research

- Code and analyze NGO statements, reports, etc.
- Interviews
- How have discursive frames of nanotechnology changed over time?

Longer-term Future Research

Why has nanotechnology emerged as an issue of interest for NGOs?

- Matched comparison to groups without nano focus

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Conclusions

- Public engagement include organized representatives of publics/NGOs
- Goals common with other stakeholders demonstrate potential for productive dialogue
- Failure to recognize NGO diversity & distinguish between violent & non-violent groups stifles public dialogue for sustainable nanotechnology

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Thank you!

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