

LOKA ALERT

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Loka Alert 11:1
(7 August, 2007)

This Loka Alert contains an update on Loka's recent activities and plans; and an analysis based on our participation in a global network of 45 consumer, environmental, labor, public health, and techno-activist groups that has just issued *Joint Principles on the Oversight of Nanotechnologies and Nanomaterials*. Links to the principles and a press release announcing it are in the analysis below.

If you are not on our listserv and want to receive future Loka Alerts, send a message to loka-alert-subscribe@egroups.com or go to this e-group's home page at <http://www.egroups.com/list/loka-alert>.

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1. What's Up With Loka?

Loka has evolved from a staffed organization to a network of activists and scholars. There are many reasons for this, an important one being the challenge of maintaining philanthropic funding for a paid staff while also maintaining the critical edge that has distinguished Loka over the years. This dilemma (routinely encountered by social change advocacy organizations) is especially pertinent for Loka because our focus is science and technology, and serious critiques of S&T are uniquely unwelcome in our

culture. Add an action-oriented disposition to the critical posture, and one can almost hear the sucking sound as potential philanthropic dollars are pulled from the room.

The network idea came from recognizing what has actually been taking place in the past several years. Loka's most recent accomplishments have largely happened because someone or some group got fired up about an issue, and Loka provided a fitting institutional framework for taking action. The best example is our work since 2003 on nanotechnology ([summarized on our website](#)). We have also recently updated our list of "[Danish-Style, Citizen-Based Deliberative Consensus Conferences on Science and Technology Policy Worldwide](#)", largely because we came across a number of consensus conference updates from people around the world while recently tackling a backlog of 4200 emails inhabiting the Loka Inbox. The juxtaposition of real voices in a sea of spam was striking, and inspired us to get going.

Please take this Loka Alert as an invitation to share something you would like to do with Loka, or see done by people in association with Loka even if you can't see yourself as a participant. We will come back with a more detailed framework for the future after we get some input and have an opportunity to consider it together. Send your ideas to loka@loka.org.

For the immediate future, the group involved in nanotechnology (Colleen Cordes, Debonny Heart, Darshell Silva, Greg Tanaka, Rick Worthington and Lea Zeldin) remains active in advocating broader participation by everyday citizens in this "next industrial revolution." In other news, in late August Khan Rahi and Rick Worthington will attend the Living Knowledge 3 conference on science shops and science activism in Paris for presentations and networking. And we have partnered with the Center for Responsible Nanotechnology and the Center for Community Action and Environmental Justice (pending a final funding component) to develop popular education modules on nanotechnology. This was one of the recommendations from our nanotech Community Advisory Panel a few years ago.

Stay tuned, and join in!

Loka Institute Board of Trustees
Colleen Cordes
Tosha Link
Langdon Winner

Shirley Jones
Penny Newman
Rick Worthington (chair)

2. Precaution, Participation, and Nanotechnology

a. Introduction

On July 31, 2007, forty-five activist groups world wide issued a fifteen page [document](#) and [press release](#) advocating stronger regulation and social guidance of nanomaterials

and nanotechnology. The eight principles center on a precautionary approach to the commercialization of nanotechnology that prioritizes environmental quality and human health over the rush to market; transparent and participatory policy-making processes; and full legal liability for all parties that market nanotechnologies, including commercial users.

Loka was actively involved in the production of this document. We are honored to have taken part in this initiative, excited that such a broad-based group has produced a coherent, reasoned, well-documented, incisive and timely statement, and ready to press ahead with others in the coalition. We especially applaud the efforts of George Kimbrell at the International Center for Technology Assessment, who integrated wide-ranging and often-conflicting suggestions from a diverse array of participants with patience and skill. The Principles are already circulating in the press and the nano industry in addition to NGO circles.

Much of what we suggested appeared in some form in the final document. This includes:

- Strong language in the opening statement that emphasizes industry's rush to commercialize nanotech with little regard for the social and environmental consequences.
- The importance of configuring public participation so that it guides the design and use of nanotechnologies, rather than reacting to already-created hazards.
- Specifying that government R&D programs should include community-based research that will bring community voices into nanotech development.¹

As was the case for most of the parties giving input for this document, much of our supporting argumentation did not make it to the final document, reflecting, at least in part, the need to distill extensive and diverse input into a concise document.

What are the opportunities and constraints for the immediate future? Clearly, the political opening for participation in nanotechnology policy that appeared four or five years ago is coming from the top, in an effort to head off the more militant popular movements that disrupted industry plans in such cases as civilian nuclear power in the 1970s, and genetically-modified organisms in the 1990s. From the standpoint of the global managers in industry, government, and universities who promote megaprojects such as nanotechnology, participation can serve two purposes. First, broader participation can provide advance warning of the issues most likely to get traction among the citizenry, and help industry manage these issues by developing their own solutions to potential problems, rather than facing a militant opposition down the road that impairs corporate brand and diminishes shareholder value.

Second, participation can undercut the criticism that big technology projects are driven by an insular, self-serving elite. The legitimacy of megaprojects is in a continuously precarious state because they are publicly subsidized (especially through government research and development funding in the earliest stages); yet they can visit environmental and public health risks, along with social disruption, on the same citizenry. The

conventional strategy for securing legitimacy has been to complete the early R&D, often under the veil of military or corporate secrecy, and roll out products before the public has a clue that their world is being changed, then stonewall opposition when it arises in response to harms such as toxic pollution. But this is an increasingly risky strategy in the presence of the more vigilant and capable network of environmental and other advocacy groups that has evolved since the 1970s. In playing the participation card, the trick for the global managers is to divert and channel civil society participation so that the profitable high tech core of the global economy does not become subject to open deliberation and popular will. The bet by nanotechnology's boosters that they can manage this challenge successfully is well placed, as a long tradition of research in sociology and political science has established.ⁱⁱ

Nonetheless, a space has opened, and this would not have happened except for the struggles of social movements worldwide around big technological projects in the past four decades. Clearly, there has been change. Our aim is to encourage a discourse that builds on it in pursuit of Loka's mission to make "research, science and technology responsive to democratically-decided social and environmental concerns."

The following sections of this Loka Alert are adapted from input we provided for the *Joint Principles*,ⁱⁱⁱ and elaborate on items that seem crucial to us in making the most of the fragile opportunity that now exists to affect the course of nanotechnology development.

b. On the Research System and Global Democracy

"If present trends in nanoscience and nanotechnology continue, most aspects of everyday life are subject to change."

United States National Nanotechnology Initiative

"If nanotechnology is going to revolutionize manufacturing, health care, energy supply, communications and probably defense, then it will transform labor 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."

Asia Pacific Economic Cooperation Industrial
Science and Technology Working Group^{iv}

The process of designing new technological devices and systems would ideally be driven by social needs that are identified through informed deliberation and open decision-making among the affected people. This would be consistent with the "tool like" conception of technology promoted by mass media and other important institutions, which depicts users competently wielding their tools to attain clear and usually laudable ends. Unfortunately, this image conceals a reality in which human ends instead are often

adapted to the available technological means and the institutional complexes that control them.^v

Urban mobility is a compelling example. Mobility itself is now seriously impaired in most of the world's large cities by the uncontrolled reproduction and expansion of the transportation systems that are its purported means. This "reverse adaptation" of people to their tools is pervasive. So too are misguided ideas about the inevitability of technological change. Both undermine the possibilities for an open discussion of "what for?" when a new technological megaproject is advanced by powerful industrial and state interests. Megaprojects are presented and generally accepted as inevitable steps in the long march of human progress. As a result, their underlying premises or feasibility rarely encounter significant challenge before institutional momentum has become a powerful *and* destructive force.

The idea that people can be subordinated to technological systems is not new. But it takes on added urgency because advanced technology and market development are an increasingly global undertaking. The world's research and development expenditures are now approximately \$1 trillion annually. The share provided by private industry has increased steadily since the early 1980s, and the global corporations that account for most of the industry share have entered into thousands of international agreements for joint R&D, technology licensing, and other technological collaborations during the same period.^{vi}

Two factors drive this globalization. First, even the largest firms can no longer afford to keep up with industrially-relevant science and technology in-house. Joint research thus helps spread the cost and risk across multiple partners, including governments anxious to capture high tech R&D facilities and the industries connected to them. Second, the enormous cost of product development in these industries can only be recouped from a global market.

Democracy is no less desirable a goal for all this. Indeed, it is arguably more important than ever, given the profound dangers --such as climate change and the global circulation of epidemics -- in which the world's technological systems are deeply implicated.

The first principle for oversight of nanotechnologies, then, is democratic engagement in the full range of processes by which they are developed and used. This includes the possibility of saying "no" to specific applications as well as the cluster of public and private programs now promoting nanotechnologies as a whole. And it includes all the world's population, who could be profoundly affected by developments in this arena.^{vii}

c. The Case for a Pause in Nanotechnology Commercialization

With the U.S. in the lead, governments, universities, and businesses around the world are racing to commercialize nanotechnologies and nanomaterials. At least 500

nanotechnology consumer products are now for sale in global markets^{viii} and at least 600 raw materials and components comprised of nanomaterials.^{ix}

This rush to market, however, conflicts with increasing international concerns that:

- The rapid commercialization of nanotechnologies poses significant risks to human health, safety, and the environment and profound social and ethical challenges that are both local and global in nature.
- The governments, universities, and businesses speeding forward with commercialization have barely begun the research needed both to clarify and reduce risks and to inform the extensive ethical, legal and regulatory frameworks that nanotechnologies require. Yet the little research that has been done has yielded disturbing evidence of trouble ahead.
- Those promoting, producing, and selling nanomaterials and nanotechnologies have also done little to promote responsible ethical, legal and regulatory frameworks, which would need to accomplish at least the following: alert consumers to the social and environmental risks nano-engineered products may pose to themselves and others, protect workers from unnecessary and possibly dangerous exposures, protect the environment, equitably distribute the potential harms as well as the potential benefits, establish that businesses will be fully liable when they produce or sell harmful products, and create a variety of opportunities for broad, regular, informed, and ongoing public participation in key deliberations about the design and use of nanotechnologies.
- The current rush to market without a broad, deep, and ongoing public dialogue in the U.S. and in and between countries everywhere violates fundamental tenets of democracy.

Proponents of a nanotech revolution predict it will cause dramatic and sweeping changes globally in every aspect of human life. That makes the general public of every nation, their children, and their children's children the key stakeholders in this potential revolution. Accordingly, the general public everywhere must be continually informed, and a range of deliberative processes must empower them to be heard and heeded in major local, national, and international decisions about how – and whether – to design and use nanotechnologies.

Given the absence of democratic deliberations, sensible precautions, and the essential research to clarify issues of risk, we call for governments, businesses, universities, and the citizens of all nations to act immediately to stop the production, marketing, and purchasing of nano-engineered materials and products. The leading government funders of nanotechnology research and development—the United States, Japan, and the European Union, including EU members with their own national programs—bear a special responsibility for now calling this high stakes gamble to a halt.

In the short term, such an immediate moratorium will cause financial losses, inconveniences, and disruptions for some businesses, investors, and universities that have

heavily invested in this revolution. They chose to invest, however, in full knowledge that the common-sense precautions and equitable decision-making processes that should precede such a dramatic reshaping of the human environment were not in place.

In the long term, pausing now to fully incorporate each international concern above into a responsible framework for making decisions about nanotechnologies will best meet the needs of all stakeholders – including those who appear to have the most to lose from such a timeout. It is the course most likely to protect the health and safety of the general public, workers, and the low-income communities often targeted for hazardous facilities and wastes; to conserve a life-sustaining environment across the globe; to promote democracy; to restore public trust in, and support for, academic research; and to enhance the long term viability of businesses.

Much of the rush forward, after all, is driven by the intense competitive pressures on businesses to ignore the obvious risks and rashly expose themselves to potentially devastating financial liabilities. At the same time, both industry and government have acknowledged the potential dangers of nanotechnology, and the need for broad participation, more directly than they have with past megaprojects such as civilian nuclear power and genetic engineering. Civil society organizations and everyday citizens thus have their own special responsibility, which is to help these powerful actors follow through on problems they are beginning to recognize.

We call for all producers and sellers of nanotechnology products, especially consumer products, to immediately issue product recalls and information alerts communicating the most serious open questions about the personal and social risks associated with their products. We call for immediate action by governments and international organizations to implement the above. We also urge citizens and consumers in countries around the world to stop purchasing such products, to insist that manufacturers and sellers provide the information that will make such avoidance possible, and to urge governments to require that manufacturers and sellers make such information easily accessible to the public, especially through labeling.

d. On Participation in Decision-Making

The potential of nanotechnologies to transform the global social, economic, and political landscape makes it essential that the public fully participate in relevant decision-making processes. *Full* participation means that affected and diverse publics -- especially citizens who have been most disenfranchised in decisions about past technologies -- are involved in all relevant decision-making processes, on issues ranging from research and development to commercialization and regulation. *Open* participation means actively facilitating equal input from all interested and affected parties in particular projects, laws, rulings, and other institutional manifestations of nanotechnologies development and use. *Meaningful* participation means that public participation must directly inform policy development and decision-making, rather than being limited to a one-way public 'engagement' in which the government or industry 'educates' the public.

The following approaches are among the means of assuring full, open and meaningful participation.

1. A national agency or office in countries with significant nanotechnology activity – including research and production --should be dedicated to eliciting the fullest, most open, and most meaningful participation that citizens have to offer. A similar agency or agencies at the international level should do the same to encourage continuous input into decisions about nanotechnology policymaking by diverse groups of citizens convened to deliberate together on such policies across national lines. A diverse range of citizens, especially low-income citizens, from countries that do not have significant research on, or production involving, nanotechnologies should be prominently represented on such international panels of citizens.
2. The means of participation should include deliberative practices such as “consensus conferences” or “citizen panels” that empower everyday people with no pecuniary stake in nanotechnology to collaboratively inquire into nanotechnology issues over a sustained period of time, supported by access to relevant information and testimony from experts who represent a full diversity of stakeholders. Distribution of the results of these deliberations to decision-makers should be designed into projects and fully-funded.
3. A proportion of total nanotechnology research and development expenditures should be earmarked for community action research that helps citizens understand the potential benefits and dangers of nanotechnology projects in their specific communities.
4. Popular education methods should be developed in collaboration with libraries, community-oriented colleges and universities, and nonprofit organizations to enhance the accessibility of knowledge about nanotechnologies.
5. Individuals who have performed distinguished service in the above participatory activities should be recruited as members of advisory panels in government and industry.^x

e. Action Items for Loka Alert Recipients

Some suggested action items for recipients of this Loka Alert:

1. If your organization supports the [Joint Principles](#), please send a statement to that effect to loka@loka.org. We will post the list of additional supporters to our website, and forward them to the nanoactivist network.
2. The 21st Century Nanotechnology Research and Development Act provides funding through October 2008. A new bill ([HR 3235](#)) to increase spending and focus it on more rapid commercialization of nanotechnology was introduced in Congress on July 31 by Representative Mike Honda (D-CA), whose 15th Congressional district includes much of Silicon Valley. The bill was referred to the [Committee on Science and Technology](#) for

general consideration, in addition to the [Ways and Means](#), [Energy and Commerce](#), and [Homeland Security](#) committees for consideration of portions that fall within their jurisdictions. When a companion bill is introduced in the Senate, it will almost surely be referred to the [Commerce, Science and Transportation](#) committee. You can determine members of these committees by clicking on the foregoing links (navigate to separate Majority and Republican member sites for Homeland Security). If your representative is listed, we encourage you to learn their views and share yours. Even if your representatives are not on the list, a bill will ultimately have to pass the entire Congress, so input can only help in the process of educating leaders about their constituents' views.

3. Send us your ideas for actions at the point of production (research, development, marketing, etc.) for product recalls, consumer boycotts, and other direct actions that aim to make commercialization responsible. We will compile the list and distribute it in a future Loka Alert.

ⁱ Early versions of the document simply called for more social science research. While more attention to social issues is clearly warranted, our concern is that social science and ethical studies of technology are a part of the same global research and development system that is a vehicle for the nanotechnology project in the first place. As Langdon Winner put it in his testimony to Congress in 2003, "I would not advise you to pass a Nanoethicist Full Employment Act, sponsoring the creation of a new profession. Although the new academic research in this area would be of some value, there is also a tendency for those who conduct research about the ethical dimensions of emerging technology to gravitate toward the more comfortable, even trivial questions involved, avoiding issues that might become a focus of conflict. The professional field of bioethics, for example, (which might become, alas, a model for nanoethics) has a great deal to say about many fascinating things, but people in this profession rarely say 'no'." Posted at http://www.loka.org/winner_nano_testimony.pdf.

ⁱⁱ See especially John Gaventa, *Power and Powerlessness: Quiescence and Rebellion in an Appalachian Valley*, Champagne: University of Illinois Press, 1980, for an exhaustive analysis for the tools deployed by power elites to secure quiescence of groups with significant grievances.

ⁱⁱⁱ Because our input was based on a draft document, some of the draft's language is incorporated here.

^{iv} National Science and Technology Council (1999). "Nanotechnology: Shaping the world atom by atom". Interagency Working Group on Nanoscience, Engineering. Washington: p. 8; and Asia-Pacific Economic Cooperation (APEC) Industrial Science and Technology Working Group, 2002. "Nanotechnology: The Technology for the 21st Century. Vol. II: The Full Report." The APEC Center for Technology Foresight. National Science and Technology Development Agency. Bangkok.

^v Langdon Winner, *Autonomous Technology: Technics Out of Control as a Theme in Political Thought*, Cambridge: MIT Press, 1977.

^{vi} National Science Board, *Science and Engineering Indicators 2006*, Washington: National Science Foundation, passim.

^{vii} In practice, different participants will have good reasons to target specific institutions as agents of nanotechnology oversight. Participants in technology policy-making vary, for example, in their knowledge of these institutions, and their standing to appear before them (as citizens, stockholders, etc.). Action needs to be focused to be effective. However, the effectiveness derived from a concrete focus will be enhanced if the global scope and significance of emerging nanotechnologies is recognized by activists.

^{viii} See, e.g., The Woodrow Wilson International Center for Scholars, Project on Emerging Nanotechnologies, *Nanotechnology Consumer Products Inventory*, available at <http://www.nanotechproject.org/consumerproducts>

^{ix} U.S. Environmental Protection Agency, *Nanotechnology White Paper*, 100/B-07/001, Washington, D.C. (2007), p.4.

^x These recommendations were formulated by Loka's Community Advisory Committee on Federal Nanotechnology Policy as the outcome of a 2004 workshop held at Howard University. See Loka Institute, *Nanotechnology: Getting the Public Involved in Decision-making*, 2004, at <http://www.loka.org/nanotechnology.htm>