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Loka Institute Response to the DuPont/Environmental Defense Nanotechnology Risk Framework (at www.nanoriskframework.com)

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The Loka Institute is a U.S. non-profit organization that advocates “making research, science and technology responsive to democratically-decided social and environmental concerns.” One important tool for such responsiveness is the requirement in the federal 21st Century Nanotechnology Research and Development Act that requires “public input and outreach to be integrated into the Program by the convening of regular and ongoing public discussions, through mechanisms such as citizens' panels, consensus conferences, and educational events.”

Our interest in robust public participation in nanotechnology policymaking formed early and remains active. Loka President Langdon Winner of the Rensselaer Polytechnic Institute, testified on the need for such input before the House Science Committee during the legislative process (testimony attached). Loka also organized a workshop at Howard University in 2004 for community activists from around the country to make recommendations about how to implement that provision after it became law (final report also attached). And we continue to participate, in panels, seminars and the like, to promote the voices of everyday citizens -- not just entrepreneurs and policy wonks -- in policymaking for science and technology.

Environmental Defense consulted with Loka representatives in the process of working on the framework. We discussed several innovative possibilities for involving representatives of the general public, workers, and groups representing the public interest directly and formally, both in the framework process and in whatever final framework was proposed.

The draft, however, ignores the wisdom of such public participation. The draft framework appears to exclude any direct role for members or representatives of the

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general public throughout the entire process of generating and reviewing data about risks, and making decisions about how to respond to those risks. We are also concerned that the role outlined for workers, in terms of specifically representing workers' safety interests, appears to be limited to having one representative on the company team that would review risks near the end of product development. The participation of workers (we emphasize the plural) is critical throughout the entire process of researching and assessing the risks of new materials that they will be exposed to, as well as in decision-making related to those risks.

So is the participation of the public, who like the workers whose health and safety are at stake, will necessarily bring a very different perspective to the table on what is a reasonable or unreasonable risk to a community's environment, health, or safety, than will company officials responsible for producing and selling new products. The public, too, needs to be directly involved throughout the entire process of studying and assessing risks of new technologies and products, and in the decision-making process about such risks.

The draft also attempts to outline a framework for "responsible" nanotechnology without providing a way for issues of social and political impacts to be examined and assessed. Of course, the participation of the public and public-interest groups would be essential in that broader discussion as well – and close scrutiny of the social and political impacts would be an urgent requirement for the responsible development of any major new technology.

But the framework flounders on an even more fundamental issue that we urge Environmental Defense and DuPont to address more directly in revising its draft. The text of the 87-page document tiptoes around the profound risks that companies now selling engineered nanomaterials are imposing on workers and on society at large, both in this country and around the globe. You fail to spell out the disturbing questions that have been raised by the research that has been done to date on the biological fate and behavior of nanomaterials, their safety, and their environmental impacts. However, clearly the gravity and legitimacy of those concerns are at the root of your entire effort. Yes, the research exploring risks has been seriously under-funded, compared to what governments and industry have spent to speed the development of nanotechnology. But what little has been done points to real dangers related to this "dazzling" new technology – including dangers related to the many products already on the market.

Also, the draft does repeatedly acknowledge how much research still remains to be done just to develop sound methods to accurately characterize the risks suggested by the

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research to date. In effect, your own document indicates the need for companies to slow down and back away from assumptions that nanotechnology as a science is ready to be commercialized. Based on the evidence the draft cites, far more research on the risks and a far deeper, broader public discussion of the risks and benefits should occur before commercialization proceeds. Is there really such a public clamor for wrinkle-free jeans, stainless socks, or transparent sunscreens? What's the rush, from the public's point of view? Too much is at stake, given the revolutionary possibilities of nanotechnology for good and ill to rush forward without a clearer sense of the potential harms, as well as the potential benefits.

From this perspective alone, the current framework is unworkable. Questions of environmental, health, and safety risks primarily affect both workers and the general public, who are both consumers of products engineered with nanomaterials and also the downstream neighbors of others who use the products. We urge you to reconsider your underlying assumption that attempts to commercialize must proceed before, rather than after, the research on major risks is conducted. The logical conclusion from the evidence that your own careful process has documented here, in terms of the many serious questions about risk for which there is not yet the technical capacity to adequately research, is just the opposite. This is especially the case, given how unlikely it is that all or even most companies would voluntarily examine all of the risk issues you wisely point out. We urge you to stand behind your own findings here and clearly call for a halt to commercialization.

We also urge you to clarify in your final document that any product engineered with nanomaterials that HAS been released should be clearly labeled so, as the public has the right and the need to know.

Another main concern we have is that the Framework will contribute to a confusion of government and private roles in the development of new technology. No doubt the framework improves on existing risk management practices. However, the framework can only serve your goal of supporting "the formulation of a practical model for reasonable governmental policy on nanotechnology safety," in the context of a much broader and more participatory public discourse on nanotech than we have seen to date. That would be consistent with the public input and outreach clause in the Act cited above.

In short, we are concerned that the framework not be used to *eclipse* an informed, deliberative, participatory, and sustained public discourse.

It is also troubling that a project focused on a cost of doing business (managing the risks of production) is publicly subsidized by the Environmental Protection Agency, through its support for Environmental Defense, a tax-exempt nonprofit. The reasoning behind this is probably that it is to the public's benefit to encourage industry to collaborate with

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advocates for the public interest. But an alliance with Environmental Defense does not reach broadly into the spectrum of public opinion on these issues, so we think there is cause to question the reasoning in this case. That's a special concern, given the small role that the public input and outreach requirements of the nanotech act have played in its overall implementation to date.

One suggestion that may be acceptable to the sponsors of the Framework document would be to spell out their underlying values and perspectives, and to offer a justification for them in direct juxtaposition with models such as the Precautionary Principle (on the latter, see Nancy J. Myers and Carolyn Raffensperger, *Precautionary Tools for Reshaping Environmental Policy*, MIT Press, 2006). In the absence of clarity on where differences lie, meaningful public discourse is unlikely.

Over all, then, we urge you to address all of the issues above, to ensure that whatever Framework you finally propose makes a constructive contribution.