THE UNIVERSITY of WISCONSIN MADISON

Sen. Mark Miller and Rep. Chuck Benedict, co-chairs
Legislative Council Special Committee on Nanotechnology
PO Box 2536
Madison, WI 53701-2536

September 25, 2010

Dear Sen. Miller and Rep. Benedict:

Congratulations to the Wisconsin Legislature and the Legislative Council for studying the state of the nanotechnology industry nationally as well as in Wisconsin. It is my understanding the committee's interests include:

- A review of current and proposed state, federal and local regulatory initiatives;
- Possible establishment of a Wisconsin information clearinghouse or registry for nanotech businesses, including best practices for handling nanomaterials;
- Examining the needs of "first response" personnel who may become involved if there is a release of nano-materials into an open environment;
- Developing strategies to facilitate the development of nanotechnology to create and retain jobs in Wisconsin, including ways in which government can help nanotechnology researchers, small firms, and start-ups address potential risks and meet regulatory requirements.

As Co-PI of the Center for Nanotechnology in Society and currently as a Visiting Fellow at the Shorenstein Center on the Press, Politics and Public Policy here at Harvard I conduct research on the market and policy dynamics surrounding nanotechnology. This includes surveys with leading commercial and academic researchers in the field, as well as tracking of public attitudes on risks and regulations.

As you know, local municipalities, such as Cambridge, MA, and Berkeley, CA, have pondered or implemented similar regulations and reporting requirements in the past. Interestingly, neither California nor Massachusetts has engaged in any statewide efforts to adopt these local guidelines. And there are good reasons for that. Similar to Wisconsin, both California and Massachusetts are states with very vibrant innovation clusters for emerging technologies, such as nanotechnology, that (a) provide a competitive advantage over other states in terms attracting investment capital, and (b) deliver locally-relevant know how for agricultural sectors and other vital stakeholders in the state.

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Just to illustrate this point: According to the latest predictions, nanotechnology will create a $3.1 trillion global industry with 15 percent of all U.S. manufacturing jobs moving to nano-related fields by 2015. We currently have over 1,000 consumer end products on the market, and federal funding for this area of research has more than quadrupled since 2001. In spite of all of these investments, global competition is fierce, and nanotechnology is one of the first emerging technologies in recent history where U.S. researchers are falling behind China in terms of research publications and patents filed worldwide.

As the committee deliberates on these issues, I would therefore like to emphasize the critical importance of a regulatory approach that does *not* put Wisconsin at a competitive disadvantage in relation to other regions in the U.S. and across the globe. In fact, our most recent nationally representative survey of the leading nano experts in the U.S. showed that they see the highest likelihood for success in national and international regulations rather than local guidelines. This expert assessment is very much in line with the views of many policy makers who have xpressed grave concerns about reporting requirements, similar to the ones implemented by the City of Berkeley, that create an unrealistic administrative burden for academic and commercial labs, and have pushed investors to other areas of the country.

In short, taking a unilateral approach to local regulation will likely have a chilling effect on the climate of innovation surrounding nanotechnology in Wisconsin. For instance, a September 2010 ranking of U.S. universities based on the number nano patents they had filed listed the University of California system as clear leader, and Northwestern, Michigan, Illinois, and Minnesota as the only top-10 representatives in the Midwest. Wisconsin was not in the top-10. Unilateral regulations carry a serious risk of having Wisconsin fall even further behind other (neighboring) states, with potentially detrimental effects on the state economy.

Our expert interviews also highlighted the fact that nanotechnology is an enabling technology, i.e., has applications in a wide variety of fields that cannot be directly compared and will require different regulatory approaches across federal agencies. Many experts, for example, see the need for federal regulations of nanotechnology in research fields, such as nanobiological engineering, but less so for manufacturers of market applications of nanotechnology, such as computers.

All of this is not to say that regulations are not important. In fact, I am part of a committee assembled by the National Nanotechnology Coordination Office (NNCO) dealing with the environmental and health Impacts of nanomaterials, as well as ethical, legal, and other societal issues. In part based on the work of our committee, the NNCO will soon release a report with concrete recommendations for national and international regulatory frameworks. And most federal agencies have already increased their focus on issues related to environmental health and safety (EHS) aspects of nanomaterials. In fact, Dr. John P. Holdren, Director of the U.S. Office of Science and Technology Policy, announced earlier this year that “the 2011 Budget increases the priority of nano EHS research with a request of $117 million, more than 27 percent above the 2010 level.”

In closing, let me quickly reiterate the main points that I am hoping the committee will be able to take into account when deliberating this issue:

- The funding for additional research and development of regulations is well underway at the federal level.
- These regulations will address both workplace and consumer end market EHS issues.
- Leading nano experts in the U.S. see the highest likelihood for success in national and international regulations rather than local guidelines.
- In fact, local regulations are likely to create competitive disadvantages within the U.S. and create nano clusters elsewhere.
- Finally, experts agree regulations are more urgent for some application areas (e.g., nanobiology) than others (e.g., instrumentation and machines).

Thank you very much for the opportunity to share these views with you. Nanotechnology is an important technology with tremendous potential for the long-term economic health of Wisconsin and the U.S. Please do not hesitate to contact me with any additional questions or concerns you may have.

Sincerely,

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