WISCONSIN LEGISLATIVE COUNCIL

NANOTECHNOLOGY

Room 411 South
State Capitol

September 30, 2010
10:00 a.m. – 4:00 p.m.

[The following is a summary of the September 30, 2010 meeting of the Special Committee on Nanotechnology. The file copy of this summary has appended to it a copy of each document prepared for or submitted to the committee during the meeting. A digital recording of the meeting is available on our Web site at **http://www.legis.state.wi.us/lc.**]

Call to Order and Roll Call

Chair Benedict called the committee to order. The roll was called and a quorum was present.

COMMITTEE MEMBERS PRESENT:	Rep. Benedict, Chair; Sen. Mark Miller, Vice-Chair; Sen. Sheila Harsdorf; Reps. Terese Berceau and Pat Strachota; and Public Members Jeff Cernohous, Michael Cronin, George Gruetzmacher, James Hamilton, George Lisensky, Pamela Owen, and Richard Peterson.
COMMITTEE MEMBERS EXCUSED:	Public Members Robert Hamers and Doug Hansmann.
COUNCIL STAFF PRESENT:	Mary Matthias and Pam Shannon, Senior Staff Attorneys, and Larry Konopacki, Staff Attorney.
APPEARANCES:	Tom Still, President, Wisconsin Technology Council; Greg Krohm and Jennifer Wolf Horejsh, International Association of Industrial Accident Boards and Commissions; Al Shea, Deputy Secretary, Wisconsin Department of Natural Resources; Terry Moen, Project Manager, Wisconsin Onsite Safety & Health Consultation, Wisconsin State Lab of Hygiene; Lynda Knobeloch, Senior Toxicologist, Division of Health, Wisconsin Department of Health Services; William Clare, Planning Section Supervisor, Bureau of Planning & Preparedness, Wisconsin Emergency Management, and Randi Wind Milsap, General Counsel, Wisconsin Department of Military Affairs.

Approval of the Minutes from the September 16, 2010 Meeting

Representative Berceau moved, seconded by Mr. Peterson, to approve the minutes of the September 16, 2010 meeting. The motion carried on a unanimous voice vote.

Presentation on the Promotion of Nanotechnology

- ***Tom Still, President, Wisconsin Technology Council, Charles Gibson, Professor, University of Wisconsin (UW)-Oshkosh and founder, Oshkosh Nanotechnology LLC, and John Biondi, President and CEO, Xolve, Inc.***

Mr. Still noted that the Wisconsin Technology Council (WTC) is a nonprofit entity created in state law to provide science and technology advice to the Legislature and the Governor. He described WTC's role as a catalyst for technology-based economic development in Wisconsin and cited its work with entrepreneurs and investors through the Wisconsin Innovation Network and angel investor networks. He said that the focus of any legislative recommendations should be on encouraging high-tech research and start-up companies and not creating restrictions on research that could place Wisconsin at a competitive disadvantage.

Mr. Still summarized a letter to the committee from Professor Dietram Scheufele, Department of Life Sciences Communication, UW-Madison, who also emphasized the need for a regulatory approach that does not put Wisconsin at a disadvantage in relation to other regions of the United States or other countries. Professor Scheufele's letter stated that leading nanotechnology experts believe that federal and international, rather than local, regulations are more likely to succeed and that regulations are more urgently needed in fields such as nanobiology than in others such as instrumentation and machines.

Mr. Still concluded his remarks by stating that the Legislature should "do no harm" and concentrate on the following issues: increased access to venture capital; workforce development; improving infrastructure and business climate; and technology development.

Mr. Biondi said he has been involved in several start-up companies. He explained various benefits of working with nanomaterials and noted that while there is a wealth of intellectual property being developed in the upper Midwest, entrepreneurs have a difficult time attracting venture capital to support projects in this part of the country. He explained that venture capital requires the availability of institutional funds that are located primarily on the east and west coasts. He said that, despite the lack of venture capital, Wisconsin is a great place to start up new companies, and he cautioned against creating any disincentives to doing so.

Mr. Gibson said he has been on the faculty at UW-Oshkosh since 1991 and began to focus on nanotechnology when the university took the important step of providing funding for research equipment such as electron microscopes. He said his research involves green technologies, in particular, energy storage using nanomaterials to obtain smaller units and improved performance. He noted the importance of university researchers being able to protect their intellectual property with patents through the WySiS Technology Foundation, a subsidiary of the Wisconsin Alumni Research Foundation.

Vice-Chair Miller stated the concern that there have been scientific breakthroughs in the past in which insufficient attention has been paid to the human impacts of the development of products or

materials. Mr. Still agreed that technology development sometimes outpaces the health and safety considerations.

Mr. Gibson added he believes nanotechnology should be regulated at some level and that the U.S. Environmental Protection Agency (EPA) has set the right tone by providing some protections but not stifling research. He said there needs to be a tiered structure to provide varying levels of regulation depending on the particular nanomaterials. He said that a clearinghouse to connect industry and the various UW institutions would be very helpful.

Representative Berceau asked whether having a partnership between the UW institutions and industry in the area of safety and waste disposal would help draw businesses to Wisconsin. She also asked for comments about the idea of developing a registry to provide information on nanomaterials and processes researchers are using, particularly for first responders, and the location and contents of waste being released into the environment. Mr. Still said the clearinghouse idea has potential and that WySiS is already working with UW institutions and perhaps could function in that capacity. With regard to a registry, Mr. Still said that small businesses are concerned about having to comply with numerous regulations and noted the added paperwork a registry would require.

Mr. Hamilton noted that there is a clearinghouse at UW-Platteville--the Nanotchnology Center for Collaborative Research and Development. He also cautioned against thinking about chemicals as if they were the same as radioactive materials or viruses.

Mr. Gibson commented that a registry would be unworkable to keep track of all the nanomaterials in the state and that having to comply with such a requirement would stifle entrepreneurial activity and innovation. He noted that his lab already alerts firefighters to dangers, with signs warning of flammable materials and compressed gases and added that firefighters would not know what to do if confronted with a sign that said nanomaterials were present.

Representative Strachota asked whether there are safety protocols already in place. Mr. Gibson said that UW and the federal government have protocols for handling hazardous materials, such as wearing masks to avoid inhalation hazards. Representative Strachota commented that regulating should be left to the federal government and that Wisconsin would be at a competitive disadvantage if the state adopted regulations.

Mr. Cernohous noted that large corporations are subject to more federal regulation because of the scale of nanomaterials they handle, as compared with UW institutions. He said that a registry would be spending money chasing the wrong problem.

Mr. Gruetzmacher noted that the National Institute for Occupational Safety and Health (NIOSH) has issued guidelines to businesses regarding nanomaterials and that it would be useful to know how many companies are in full compliance with those guidelines.

Ms. Owen said she favored the idea of collaboration with the universities through a clearinghouse and noted that the technical colleges are interested in training high-skilled technology workers, including in the area of safety training.

Presentation on Nanotechnology and Risk Management

- ***Greg Krohm and Jennifer Wolf Horejsh, International Association of Industrial Accident Boards and Commissions (IAIABC)***

Ms. Horejsh said that IAIABC is a nonprofit trade association representing government agencies administering the workers compensation system. She said that insurers are in the business of managing risk and therefore, are monitoring developments in the nanotechnology industry. She noted that insurance exposures could include the areas of: products liability; workers compensation; environmental impairment; and professional liability. She explained that, from a workers compensation perspective, if it was clear that there was bodily harm to a worker from exposure to nanoparticles, it would be a compensable claim. Also, she said that no state would allow exclusions for workers who were injured from exposure to engineered nanoparticles. She noted that the challenge would be to show a causative link between the injury or illness and the exposure to nanoparticles in the workplace.

She said that the property and casualty industry is supportive of nanotechnology and does not appear to be interested in exclusionary endorsements. She noted that a company known as ISO, which provides data analysis to the insurance industry, has an emerging technologies committee which is expected to announce the establishment of two new "lost cost" codes for the manufacture and the distribution of nanomaterials. She noted that several major insurance companies seem to be eager to attract nanotechnology businesses.

Ms. Horejsh cited several potential insurance barriers: limited experience with the science and engineering of nanotechnology; few studies of human exposures; no human toxicological or epidemiological studies; and no present methods for measuring and classifying risks. She noted that comparisons are being made between exposure to carbon nanotubes and to asbestos, as a result of research on the effects of carbon nanotubes on rat lungs. She noted, however, that there is no current research that shows the health implications of nanomaterial exposure in humans. She concluded by saying that health, safety, and environmental regulation will likely come from the federal government and that a registry of companies who produce and utilize nanoparticles would provide an opportunity to share information and show that Wisconsin is a leader and innovator. She said that the Wisconsin Safety Council could be utilized to provide educational programming on health and safety issues relating to nanomaterials.

Mr. Krohm noted that each type of nanomaterial must be addressed on a case-by-case basis. Regarding nanosilver in paint, he said the effects are unknown over the life cycle of the paint. He noted that another nanosilver issue is its effect on water treatment plants. He added that NIOSH is studying fish exposure to nanosilver but the results of those studies are not yet known. He said that the European Union's subcommittee on nanotechnology is conducting health and safety research to provide information and inform public policy.

Representative Berceau asked staff to look into whether any nanoindustries are monitoring workers or whether NIOSH is doing so.

Mr. Peterson said that to understand the risk of exposure to a particular nanomaterial, it is important to ask the following questions: (1) what are the hazards the exposure causes; (2) what is the dose/response relationship necessary to produce toxicity; and (3) what exposure do humans have to that material. He added it is not surprising we do not yet have data on health risks to humans, as the nanotechnology industry is new. He said that before doing human studies, it is first necessary to

conduct animal research to determine which organs are affected by particular materials and at what levels of exposure. He noted that surveying workers for health effects would not reveal whether those health problems are associated with exposure to nanomaterials. He emphasized that this is a far more complex issue than the committee may realize. He said basic studies are needed of the relationship between the shape and surface area and the toxicity of nanoparticles, in order to guide industry to choose the safest materials, and cautioned against moving forward without this data.

Presentations by Invited State Agency Staff

- ***Al Shea, Deputy Secretary, Wisconsin Department of Natural Resources (DNR)***

Mr. Shea said that the subject of nanotechnology touches all aspects of DNR's mission and that the agency recognizes the need to work with business and researchers to understand both the potential this technology offers as well as the possible impacts on health and the environment. He noted several federal laws that provide much of the state's authority for environmental regulations, including the Clear Air Act, Clean Water Act, Safe Drinking Water Act, Resource Conservation and Recovery Act, and Toxic Substance Control Act.

He said that these major regulatory programs tend to be reactive to human health impacts and environmental degradation, that compliance tends to be technology-driven, and that the regulations take a "command and control" approach. He cited some examples of recent sustainable approaches to environmental regulation to better balance the needs of the planet, people, and the economy, including the state's Green Tier law, producer responsibility for electronics recycling, and use of best management practices in agriculture. He said that under Green Tier, a business may contract with DNR for some flexibility in meeting certain environmental regulations and that those businesses have performed very well in reducing pollution.

Regarding DNR's current legal authority to address a health or environmental threat from a nanomaterial, Mr. Shea pointed out that when current statutes were drafted, they did not contemplate the unique nature of nanomaterials and, therefore, no existing statutes or administrative rules give the department *specific* regulatory authority over nanoscale materials although they may have more general authority to do so. He said that in the limited context of current rules on manufacturing and commercial waste, DNR may have the authority to require the characterization of waste containing nanomaterials.

Vice-Chair Miller noted that a process exists in state law under which a citizen may petition an agency for a finding whether a chemical has an adverse environmental impact or, in the case of a new chemical, for an expert opinion whether standards and regulations should first be put in place.

Mr. Shea agreed to provide the committee with additional information about: (1) what happens to nanoparticles that are used to "tie up" contaminants; and (2) what happens to nanosilver that ends up in wastewater and affects sewage treatment plants.

- ***Terry Moen, Project Manager, Wisconsin Onsite Safety & Health Consultation (WisCon), Wisconsin State Lab of Hygiene***

Ms. Moen said that the WisCon program is a voluntary small business assistance program, funded by OSHA, to assist employers in identifying and controlling workplace hazards. She noted that the science on health and environmental effects of nanomaterials lags behind the development and introduction of nanoproducts. She summarized NIOSH's safety recommendations, including to: take

prudent measures to control exposures to engineered nanoparticles; conduct hazard surveillance; and continue established medical surveillance approaches.

Ms. Moen said that the health effects of nanomaterials are known through hundreds of animal studies and that, despite the absence of studies on humans to date, questions of how to measure and prudently manage this hazard need to be addressed now. She cited several measures to control exposure to engineered nanoparticles, including training and use of engineering controls, closed systems, and respiratory protections. She also noted the concern that janitors cleaning in labs and workers in companies handling component parts that contain nanoscale materials are not aware of being exposed to hazardous materials.

Ms. Moen noted that OSHA's Material Safety Data Sheets (MSDS) for the OSHA hazard communication standard do not provide information on the nanoscale version of materials. She noted that the OSHA lab standard MSDS contains standard operating procedures for using various materials, which UW institutions could adopt for their labs.

She said that the idea of a registry should be explored but that the question is what information would go in it. She suggested starting with a public sector registry before moving to the private sector. She said it could be useful for people to know what is in their facility. Finally, she described the Safety and Health Achievement and Recognition Program (SHARP), in which businesses are recognized for having a comprehensive, effective safety and health management system in place and are exempt from OSHA regulations. She noted that companies use the SHARP rating as a marketing tool.

- ***Lynda Knobeloch, Senior Toxicologist, Division of Health, Wisconsin Department of Health Services (DHS)***

Ms. Knobeloch noted that her work as a toxicologist is primarily in the area of groundwater protection and that she has conducted case investigations including the relationship between the incidence of cancer in the Oshkosh area and the presence of arsenic in the drinking water. She said she also conducts education and outreach on public health subjects, including health implications of nanomaterials. She noted that she monitors the professional literature on nanomaterials and cited an August 2010 Scientific American article on nanosilver, entitled *Silver Beware: Antimicrobial Nanoparticles in Soil May Harm Plant Life*.

She noted that nanosilver is found in many consumer items, from cars and washing machines, to household disinfectants and sunscreen. She added that more information is needed about the types of nanomaterials produced, used, and sold in Wisconsin, the effect of those materials on the health of workers and others, and whether risk assessment methods would help establish safe levels of exposure.

She concluded by noting that she is a member of an informal interagency panel comprised of DHS, DNR, UW and State Lab of Hygiene staff, to study products containing nanosilver. She said they hope to be able to monitor nanosilver and other nanoparticles in environmental samples of house dust, wastewater, sediment, and possibly fish tissue. She noted that in testing whether nanosilver released from various antimicrobial socks into washing machine water could be detected, the State Lab detected nanosilver with one type of sock. However, she noted that an electron miscoscope or molecular filter would be needed to conduct further analysis.

Chair Benedict asked how DHS balances informing the public of health risks without causing alarm. Ms. Knobeloch noted that DHS has a great deal of experience in public health education, citing the advisories they issue regarding mercury in fish.

Mr. Cernohous asked whether the risk to society is from products on the market or from those in the laboratory. Ms. Knobeloch responded that she has no idea what materials are in the labs. Mr. Cernohous said that consumers have the right to know the risk and that maybe there should be a registry on a website listing products sold that contain nanomaterials.

Vice-Chair Miller asked if DHS has any policy recommendations for the committee. Ms. Kahn responded that DHS has more questions than answers, such as how to monitor worker safety, how to ensure that information regarding hazards is exchanged, how to involve industry, and how to fund any initiatives, including an information gateway. She also noted the DHS has more of a research and education role than a regulatory role.

Mr. Hamilton said he was unaware that some of the cited products contain nanosilver, noting that silver is a heavy metal and would be regulated as such. Ms. Knobeloch responded that silver is not treated as a heavy metal and has been approved as an antimicrobial by the EPA since the 1950s. She noted the presence of nanosilver in many medical devices. She said that products used to be labeled as containing nanosilver, but that because a product has to be marketed as a pesticide under the federal insecticide law (FIRFA) to claim microbial properties, the practice of labeling of items as containing nanosilver was discontinued.

Mr. Lisensky noted that some uses of nanosilver are beneficial, such as in IV tubes. He noted, too, that there are waste discharge limits and that nanosilver is not reaching those limits.

- ***William Clare, Planning Section Supervisor, Bureau of Planning & Preparedness, Wisconsin Emergency Management, and Randi Wind Milsap, General Counsel, Wisconsin Department of Military Affairs***

Ms. Milsap described the federal Emergency Planning Community Response Act (EPCRA), enacted following the Bhopal, India chemical disaster in 1987, which requires a registry of hazardous materials stored above certain threshold levels. Mr. Clare explained that the EPA maintains a list of hazardous substances and requires facilities that store more than specified amounts of those substances to develop an emergency response plan and report annually about the substances. He said that the idea behind EPCRA is that communities and the public have a right to know what hazardous materials are being stored in the area. He noted that a hazardous material is any material for which EPA has issued a MSDS, if the material is present in a quantity above a specified threshold amount.

Mr. Clare noted that emergency responders value the emergency contact information provided by facilities in case of a hazardous materials event requiring an emergency response. He said that EPCRA contains a trade secret provision to keep confidential certain reports made by facilities.

Regarding a possible role for Wisconsin Emergency Management in a clearinghouse, Mr. Clare said that the agency could collect voluntary data on nanotechnology use in the state, assist businesses, and provide training to first responders regarding risks associated with nanomaterials. Ms. Milsap agreed to provide the committee with information on requirements for the use of protective gear by firefighters.

Discussion of Committee Assignment and Plans for Future Meetings

Vice-Chair Miller said he sensed an interest in providing additional assistance to entrepreneurs about regulatory requirements and the availability of resources and facilities. Mr. Lisensky added that information should also be provided about best practices where simple measures may be taken to deal with unknown hazards. Representative Berceau noted that several state agencies are doing similar work with small businesses that could be coordinated. She said that the biggest controversy seems to be over the concept of a registry. Mr. Lisensky said the question is what threshold amount of a substance would trigger using the registry.

Mr. Hamilton said he was horrified to hear of nanosilver in water coming out of a washing machine. Mr. Cernohous agreed, stating that the biggest danger is that people are unaware of the products they are using. He said perhaps there should be a public website to provide this information.

Ms. Matthias noted that the committee could make recommendations to the federal agencies involved in nanotechnology regulation.

The next two meetings of the committee are scheduled for ***Tuesday, October 26 and Tuesday, December 7, 2010, in Room 413 North (the G.A.R. Room), State Capitol, Madison***. [Note the new meeting room.]

Adjournment

The meeting was adjourned at 4:00 p.m.

PS:jal