

# Nanotechnology Law Report

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**Nanotechnology Advancement and New Opportunities Act.** Nanowerk News is reporting that Representative Mike Honda (D-San Jose) introduced HR 3235, the Nanotechnology Advancement and New Opportunities (NANO) Act. The legislation is to "promote the development and responsible stewardship of nanotechnology in the United States." Representative Honda drew on the report, "Thinking Big About Thinking Small" when drafting the legislation for Congressional consideration.

The Act is designed to address the health and safety concerns surrounding nanotechnology. Said Representative Honda, "The NANO Act requires the development of a nanotechnology research strategy that establishes research priorities for the federal government and industry that will ensure the development and responsible stewardship of nanotechnology."

HR 3235 was assigned to four House committees: the Committees on Science and Technology, Ways and Means, Energy and Commerce, and Homeland Security. If it receives House approval, the Senate would then have to approve the language for it to become law.

If enacted, the Bill would:

1. Create a public-private investment partnership to address nanotechnology commercialization and related issues;
2. Create tax credits to encourage investment in nanotechnology companies, training, and education programs;
3. Create grant programs to spur development of "nanotechnology incubators," encourage nanotechnology research for environmental, energy, homeland security, and health programs, and spur development of interdisciplinary nanotechnology courses at colleges and universities;
4. Establish the Nanoscale Science and Engineering Center;

5. Direct the National Science Foundation to work with manufacturers to partner with occupational training centers to promote training programs for workers in the nanotechnology manufacturing industry; and

6. Call for the development of a strategy that increases the interaction between the Department of Energy's national laboratories and private research labs.

**Nanowaste End of Life Environmental Issues.** Two authors from the Environmental Law Institute recently considered the timely question of "how various forms of nanomaterials will be disposed of and treated at the end of their use."

L. Breggin and J. Pendergrass, "Where Does the Nano Go? End-of Life Regulation of Nanotechnologies," Woodrow Wilson INTERNATIONAL CENTER FOR SCHOLARS, PROJECT ON EMERGING NANOTECHNOLOGIES, July 2007.

The article begins with the observation that "[a]s we are learning, when we throw something away, there really is no 'away.'" Key to the authors' article is the question of whether "regulation designed to deal with end-of-life issues [will] work for nanotechnology." To address this issue, the authors analyzed two end-of-life environmental laws: (i) Resource Conservation and Recovery Act (RCRA), and (ii) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Regarding RCRA, the authors determined that the statute "covers nanowastes, although focused on mass as a determinant of regulatory coverage is not necessarily appropriate for nanowastes." They also recommended further scientific research to determine whether existing handling, treating, storing, and disposing practices are sufficient for nanowastes. Further, the authors appear to implicitly endorse labeling nanowastes as "hazardous wastes" in order to ensure they are covered by RCRA: "Though, as of yet, no nanowastes have been regulated as hazardous waste, this authority seems the most

likely mechanism for dealing with risks associated with nanowastes under the existing regulations." Additionally, they note four RCRA-specific questions EPA should resolve: (i) are the four traditional characteristics for determining whether a substance is a "hazardous waste" under RCRA (ignitability, corrosivity, reactivity, and toxicity) also appropriate for nanowastes? (ii) is the Toxicity Characteristic Leaching Procedure currently in place adequate for nanowastes? (iii) should specific nanowastes or categories of nanowastes be listed as "hazardous wastes?" and (iv) are current handling, treating, storing, and disposal practices sufficient for nanowastes?

Regarding CERCLA, the authors determined that the statute will cover nanowastes if they are eventually defined as "hazardous substances." They also believe that "even if nanomaterials are not hazardous substances, the statute provides broad authority to EPA to address releases of pollutants and contaminants that present an imminent and substantial danger." The authors presented two CERCLA-related questions for EPA to resolve: (i) whether any CERCLA listed substances are produced in nano form and if so, does the listing cover it in nano form, and (ii) whether EPA should evaluate nanomaterials to determine whether they should be classified as "hazardous substances" under CERCLA.

Finally, the paper reminds businesses that even if nanowastes are not currently considered "hazardous wastes" under environmental statutes, they may be deemed as such in the future and should be treated accordingly.

**EPA has No Immediate Plans to Issue Comprehensive SNUR Under TSCA Covering All Nanoscale Materials.** At a recent public meeting on EPA's proposed Nanoscale Materials Stewardship Program, Charlie Auer, Director of EPA's Office of Pollution Prevention and Toxics indicated EPA is not currently working on a general "significant new use rule" encompassing all nanoscale materials under the Toxic Substances Control Act (TSCA), as several environmental law attorneys and NGO's have recommended in the past.

As our readers may recall, EPA recently published a paper explaining its treatment of nanoscale substances under TSCA as "new" versus "existing" chemicals. "TSCA Inventory Status of Nanoscale Substances -- General Approach." EPA indicated in this paper that it

does not intend to consider nanoscale materials "new" substances for TSCA purposes just because of their diminutive size -- they must have a distinct molecular identity that is not shared with any other chemical on TSCA's existing Chemical Substance Inventory before they are considered "new."

Beyond the paper, we noted that a significant "sibling issue" still remained undecided -- whether the use of nanoscale materials constitutes a "significant new use" of an existing chemical substance which also triggers TSCA's premanufacturing notice and approval requirements. Mr. Auer's statement went a long way to addressing this issue in a preliminary fashion.

The normal factors in a SNUR consideration are: (i) the projected volume of manufacturing and processing of a chemical substance, (ii) the extent to which a use changes the type or form of exposure of human beings or the environment to a chemical substance, (iii) the extent to which a use increases the magnitude and duration of exposure of human beings or the environment to a chemical substance, and (iv) the reasonably anticipated manner and methods of manufacturing, processing, distribution in commerce, and disposal of a chemical substance.

Mr. Auer's statement effectively means EPA does not intend (at least anytime soon) to issue a broad SNUR covering all nanoscale materials based on the above-listed factors. Rather, EPA intends to give NMSP some time to generate the data and information needed before EPA tackles SNUR issues, and then they may be addressed on a targeted basis.

**Environmental Interest Coalition Provides Nano-Oversight Recommendations.** A coalition of public interest, environmental and labor organizations published their nano-oversight recommendations in:

"Principles for the Oversight of Nanotechnologies and Nanomaterial," July 31, 2007

The coalition begins its paper with the observation that "[t]he current situation does not give us hope that we will 'get it right' with nanotechnology," ... "manufacturing and laboratory settings operate without proper safety guidance or protection measures," ... consumers are being exposed to nanomaterials "without being informed of

potential risks" ... and "nanomaterials are being disposed of and released into the environment despite unknown impacts" and adequate detection methods.

The coalition then provides eight specific recommendations based on this assessment. Obviously, many of the recommendations only make sense if you accept the coalition's rather bleak assessment of the current state of nano-affairs. Nevertheless, the coalition's Eight Fundamental Principles are:

1. Precautionary Foundation – The coalition believes “[w]hen an activity raises threat of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.” This principle places the burden on manufacturers to provide comprehensive EHS testing data before their products are released into the market. The coalition says the principle is simply “no health and safety data, [means] no market.”

2. Mandatory Nano-Specific Regulations – The coalition believes the federal government has failed to act on this issue in a timely fashion. Accordingly, it recommends the adjustment of current environmental regulations on a temporary basis to cover nanoscale materials until comprehensive new nanospecific laws are enacted. These future laws would have retroactive application. The coalition also takes the position that voluntary initiatives are wholly inadequate because of trust and transparency concerns.

3. Health and Safety of the Public – This principle advocates preventing known and potential exposures to nanomaterials that have not been proved safe. The coalition notes inadequate federal funding for the underlying research in this area, and that existing standards must be scrutinized for their applicability when developing EHS tests.

4. Environmental Protection – This principle advocates a full life-cycle analysis for environmental, health, and safety issues prior to the commercialization of any product containing nanoscale materials. The coalition also recommends increased government funding for EHS research.

5. Transparency – The coalition recommends mandatory product labeling for all products containing nanoscale materials;

amending workplace right to know laws to cover nanomaterials; the creation of a publicly accessible government sponsored EHS inventory; and making all safety testing data available for public review.

6. Public participation – The coalition believes there should be equal input from all interested and affected parties, and that it should be meaningful, not “one way” or after the fact.

7. Inclusion of Broader Impacts – Larger consideration should be given to the possible disruption of markets for existing commodities; military uses of nanomaterials; and the enhancement of human performance. The coalition also asserts “social impact, ethical assessment, equity, justice and individual community preferences should guide the allocation of public funding research.”

8. Manufacturer Liability – Finally, the coalition believes nano-manufacturers “must be held accountable for liabilities incurred from their products.” It also advocates the creation of a recovery fund by manufacturers to ensure funds are available to compensate potentially injured parties.

**Reminder: Comments Sought by US EPA on Nanoscale Materials Stewardship Program.**

Just a reminder to those interested in commenting on US EPA's draft documents concerning the Nanoscale Materials Stewardship Program (NMSP): comments are due to the Agency on or before September 10, 2007.

US EPA is seeking comments on three draft publications: the "Concept Paper for the Nanoscale Materials Stewardship Program under TSCA," the "TSCA Inventory Status of Nanoscale Substances - General Approach," and the Information Collection Request (ICR) in Support of EPA's Stewardship Program for Nanoscale Materials.

The full text of all three can be found at <http://www.epa.gov/oppt/nano/nmspfr.htm>.

Specifically, EPA is seeking comments on the following:

1. Whether the data elements that have been identified in the NMSP are appropriate for nanoscale materials;
2. Timing and phasing of submissions under the NMSP basic and in-depth programs

and whether approaches for tiering data submissions are appropriate;

3. Who would participate in the NMSP and how to encourage participation, especially from small and medium sized enterprises;

4. What criteria to use for NMSP program evaluation and views on the timing and nature of any reports the Agency may issue;

5. How to engage industry and other stakeholders in the NMSP in-depth program and approaches for generating test data;

6. The processes and roles for EPA, participants, and other stakeholders during development and evaluation of data for the in-depth program;

7. Possible approaches for identification and use of alternative sources of data, in order to minimize the burden of information collection associated with the NMSP;

8. Uses for the data submitted to EPA under the NMSP ;

9. Issues relevant to scope, definitions and descriptions;

10. The suitability of the approach for determining the TSCA Inventory status of nanoscale materials discussed in the Inventory paper; and,

11. Whether, in combination, the TSCA Inventory paper and the NMSP concept paper are sufficiently clear in how EPA plans at this time to address nanoscale materials that are new or existing chemicals under TSCA and the NMSP.

**The new "NINE."** Spearheaded by Sandia National Labs, a group of universities and industry has formed the National Institute for Nano-Engineering (NINE) to address the science and engineering education concerns related to nanotechnology. The NINE "hub" will be located at Sandia, and is designed to "broaden students' education through a unique team research experience by engaging in multi-disciplinary teams working on per-competitive research in leading-edge technical areas." All levels of students will be involved in the project, from pre-college students to post-graduates. The program will also address other aspects of research, including the business, legal, political, and social aspects of research.

Members of NINE include: Intel Corp., Exxon Mobil, IBM, Lockheed Martin, Goodyear Tire and

Rubber, University of Wisconsin, Rice University, Yale University, Rensselaer Polytechnic Institute, and several more companies and universities.

More information on NINE can be found at <http://www.azonano.com/news.asp?newsID=4729>.

**Friends of the Earth Pummel Nano-Sunscreens (Again).** Friends of the Earth ("FOE") published another "warning" paper about sunscreens containing nanoscale materials.

I. Illuminato, et al., "A Consumer Guide for Avoiding Nano-Sunscreens," Friends of the Earth, August 2007.

The tone of the paper is set with a cover photograph of a grandparent applying sunscreen (possibly containing nanoscale materials???) to the back and neck of an unsuspecting child at a family beach outing. FOE's position on sunscreens containing nanoscale materials is then quickly made clear with statements such as: "These nanoparticles are being added without appropriate labeling or reliable safety information." "While nanoparticles are invisible to the human eye, their potential health impacts are huge . . ." including "unprecedented mobility and enhanced toxicity." "Nanoparticles can potentially weak havoc on our health if absorbed through the skin." They "[c]an enter vital organs, tissues and even our bodies' cells."

"Nanoparticles used in sunscreens can cause severe damage to our DNA, disrupt the function of our cells, and even lead to cell death."

The most unfortunate thing about FOE's hyperbolic attack on nano-sunscreens is that it purports to be science-based. For example, great attention is given to studies indicating certain nanoscale materials may have the ability to penetrate the skin down into living tissue. Unfortunately, no converse studies are cited, and several of the cited studies have nothing to do with nano-sunscreen ingredients (e.g./ quantum dots). Rather than providing a true overview of the state of the science regarding nanoscale titanium dioxide and/or zinc oxide used in sunscreens, the article attempts to shock and scare consumers into believing sunscreen manufacturers are knowingly incorporating deadly substances into their products.

Beyond, the verbal rhetoric, the article also purports to contain the results of a survey of

more than 120 sunscreens manufacturers to determine whether their products contain nanoscale materials. Probably anticipating where the article was headed even before it was written, only nine manufacturers responded to the survey. These nine apparently answered that their products do not contain nanoscale materials, for which they received a "green" rating by FOE. Products from the other 111 companies who declined to participate in the survey were then divided into two remaining categories: (i) uncertain/might contain nanoscale materials ("yellow" rating), and (ii) definitely contain nanoscale materials ("red" rating).

Even though they did not participate in the survey, the "red" category companies were branded as such on the basis of information found on the Woodrow Wilson International Center for Scholars' consumer nano-product database. While the concept of a consumer nano-product database may have value, companies should be aware WWI posts no limit on the use of its database, making it fair game for NGO's like FOE to use in whatever manner they see fit.

The article concludes by reiterating FEO's call for an "immediate moratorium on the commercial release of all nanotechnological materials and products until such time as . . . they are proved safe and effective to FEO's satisfaction. The article also asks readers to contact FDA and complain that nanoscale materials are not being properly regulated (in FOE's opinion), and also to contact the "yellow" rated companies and ask them to disclose whether or not their products actually contain nanoscale materials.

**NNI Seeks Public Comment On Nano EHS Research Priorities.** SmallTimes is reporting that the National Nanotechnology Coordination Office at NNI is requesting public comment, until September 17, 2007, on its proposed "Prioritization of Environmental, Health and Safety Research Needs for Engineered Nanoscale Materials: An Interim Document For Public Comment."

According to the SmallTimes article,

The comment period is an opportunity for public input into the prioritization of research and information needs related to environmental, health, and safety aspects of nanomaterials," groups note, adding that the research priorities will be an important part of the NNI EHS research strategy, which will

be used by the Federal agencies to support research within their mission areas.

The NNCO established 25 research priorities. However, to make the list more manageable, it broke the 25 priorities into five broad categories. Overall, the government approach to these research priorities appear reasonable. They are asking the right questions about (1) how engineered nanomaterials interact with biological systems and the environment, (2) how to measure exposure to nanomaterials -- both in workers and to the general public, and (3) what impact nanomaterial exposure has on health. The report also calls for risk management to be a research priority.

These are NNCO's five proposed categories:

Instrumentation, Metrology, and Analytical Methods

The priority research needs for this category provide an integrated approach essential to understanding, predicting, and quantifying the chemical and physical properties and behavior of nanomaterials. The priorities under this research category underpin, and are fundamental to, all five categories of EHS research and information needs.

Nanomaterials and Human Health

Research on human health often involves complex, interrelated scientific concepts that are investigated most efficiently by a parallel, rather than serial, research paradigm. This parallel structure permits the investigation of single or integrated research questions and the leveraging of progress in related areas. Evaluation of the human health research needs against this paradigm and the value-of-information principle led to identification of an overarching research priority. The task force identified five broad research needs that are critical to addressing this overarching priority and to establishing the fundamental principles for nanomaterial interactions with living systems. Overarching Research Priority: Understand general characteristics of nanomaterials in relation to toxicity in biological systems.

Nanomaterials and the Environment

The priority research needs for this category represent those that were presented in the EHS Research Needs document, with revisions to ensure complete coverage of environmental issues.

### Health and Environmental Exposure Assessment

Research in this category is aimed at assessing exposure to, rather than hazards of, nanomaterials. The priority research needs for this category identify work to enable the collection of exposure information. Data collection should group individuals into exposure categories and relate groups potentially exposed to nanomaterials, including workers, patients, consumers, and neighbors of production or utilization plants. Information on the process, task, and location variables should be evaluated to understand how nanomaterials behave in workplace environments and what factors determine the exposures to nanomaterials in such environments.

### Risk Management Methods

The many research needs for this category, as identified in the EHS Research Needs document, were grouped by the risk management methods task force into five broad research needs, which were then prioritized. The broad research needs are listed below, ranked from highest to lowest priority. The task force recognized one of the research needs identified in the EHS Research needs document as encompassing the overarching research priority for this category. Overarching Research Priority: Evaluate the appropriateness and effectiveness of current and emerging risk management approaches for identifying those nanomaterials with the greatest potential risks.

**EU Nanopackaging Initiative.** Food & Drug Packaging recently reported the EU is funding a four-year \$48.4 million project ("SustainPack") to develop biodegradable packaging using nanoscale additives with existing packaging materials. The envisioned nano-packaging would be stronger, present greater barriers to grease and other substances, and would keep food fresher for a longer period of time. Friends of the Earth has condemned the initiative, as well as the current use of nanoscale silver in current products and packaging for anti-microbial purposes, claiming "Companies incorporating nanosilver particles into their products are exposing people and the environment to unknown threats."

### **Some MSDS Guidance for Nanomaterials.**

The National Institute for Occupational Safety and Health has published the material safety and data sheets ("MSDS") for four commercial nanoscale materials on its website. The four

MSDS provide manufacturers with an example of how other companies are treating nanoscale materials for disclosure purposes.

Three of the MSDS cover quantum dot products from Evident Technologies in Troy, New York. The MSDS for all three quantum dots use existing CAS numbers from their parent/bulk counterparts for identification purposes. Cadmium Selenide quantum dots are labeled with a 1306-24-7 CAS number, while Lead Selenide quantum dots are labeled with a 12069-00-0 CAS number. Exposure limits for bulk/parent materials are also used, and traditional environmental controls and personal protective devices/clothing are recommended. However, Evident Technologies also explains that "to the best of our knowledge the acute and chronic toxicity of [this substance] is not fully known. [This substance] in the form of nanocrystal may or may not represent the same health hazards as a larger [this substance] containing molecules. It is therefore encouraged to use caution when handling this product as its toxicity and modes of exposure are not well characterized or understood."

The fourth MSDS covers single wall carbon nanotubes produced by HELIX Material Solutions, Inc., in Richardson, Texas. HELIX's MSDS uses the existing CAS number 7782-42-5 (graphite), and notes the bulk/parent material is listed and regulated under TSCA. The MSDS also indicates there are no known toxicological hazards associated with the material, but points out that data on potential ecological impacts remains unknown. HELIX warns users to "avoid handling material in presence of air drafts or near fans," and also recommends the use of standard exposure controls and personal protective devices.

**Welcome to SAFENANO.org.** In the ever growing world of nanotechnology information and research, a new system was launched earlier this week. SAFENANO is attempting to become "the UK's premier resource on nanotechnology hazard and risk." It is managed by the United Kingdom's Institute for Occupational Medicine located in Edinburgh, Scotland.

SAFENANO will serve as a clearinghouse for "collecting, interpreting, and disseminating the emerging scientific issues on nanotechnology," and will feature "the latest scientific research, information about good practice, standards, news, events, and articles from leading opinion

formers in industry, government and academia in the UK and world wide. It includes a regular bulletin service, comprehensive database of relevant publications, and a community site where users can share information about common challenges and their solutions on a global basis."

SAFENANO's ultimate goal is to provide unbiased information to help with the "safe and responsible development" and commercialization of nanotechnologies and nanomaterials.

While still new to the arena, increased, and easily accessible, information on nanotechnology developments is a worthwhile venture. A quick look at SAFENANO's website shows they are watching all facets of nanotechnology developments worldwide, and could easily serve as a central information point once fully developed. This is a site worth keeping an eye on.

**Nanohorn Toxicity Study.** Research scientists from Oak Ridge National Laboratory are publishing the results of their recent in vivo pulmonary toxicity testing of single-walled carbon nanohorns (SWCNHs) in the next print edition of *Nanotoxicology*.

R. Lynch, et al., "Assessing the pulmonary toxicity of single-walled carbon nanohorns," *NANOTOXICOLOGY*, Month 2007; 00(0):1-10 (forthcoming).

The scientists explored the toxicity of SWCNHs because prior toxicity testing of multi-walled carbon nanotubes (MWCNT) and single-walled carbon nanotubes (SWCNT) indicated in certain circumstances SWCNTs can be more toxic than both MWCNTs and/or fullerenes. Accordingly, the authors theorized "the results from previous SWCNT toxicity studies do not immediately imply the toxicity of other carbon based nanoparticles," and "the potential toxicity of a nanomaterial cannot be inferred from its elemental composition alone."

Regarding the test material, the scientists described it as self-aggregated SWCNHs formed into 80-100nm structures with the tips of the individual nanohorns projecting outward from the center in all directions. The researchers chose an inhalation exposure route because of concerns that nanoparticle aerosols may deposit in the alveolar lung regions and may not be expelled through normal lung clearing mechanisms. The article explained that this can

lead to oxidative stress and pulmonary inflammation, which can in turn trigger fibrotic change and loss of pulmonary function.

Regarding the test itself, lab mice were subjected to 30 mg of surfactant-suspended SWCNHs through pharyngeal aspiration for 24 hour and 7 day intervals. The scientists selected a 30 mg dose because Shredova (2005) determined mouse exposure to a 20 mg dose of SWCNTs is equivalent to human exposure to 20 eight hour workdays of graphite particles at OSHA permissible exposure limits.

The results were an "early but mild inflammatory response which is primarily resolved by 7 days post-exposure." Lung microarray analysis showed no robust changes in gene expression, and histological analysis showed no evidence of granuloma formation or fibrosis. However, the researchers noted the lungs of exposed mice were slightly darker than those of non-exposed mice 7 days out, "indicating that the nanoparticles were well distributed through the lung and that complete clearance of SWCNHs had not occurred."

The scientists concluded "[t]he combined results suggest that SWCNH is a relatively innocuous nanomaterial when delivery to mice in vivo using aspiration as a delivery mechanism."

**Antimicrobial Nano-Neckties.** The August 28, 2007 Science Letter reports about SafeSmart's new antimicrobial necktie which is designed to reduce "the speed of infectious disease and foodborne illnesses in healthcare, hospitality and food service settings." Although not initially instinctive, contaminated neckties evidently pose a significant risk of infection in certain settings. For example, the article points to a 2004 presentation at an American Society for Microbiology conference in which the speaker explained "doctors' neckties were eight times more likely to carry bacteria and spread infections than ties worn by hospital workers who did not have contact with patients." SmartSafe's website does not indicate the specific antimicrobial nanoparticles used to coat the neckties. However, SmartSafe claims cytotoxicity testing has shown its neckties to be 100% safe. The silk ties come in 24 different patterns including solids, stripes, and "practical patterns." SafeSmart can also custom make the ties with your company logo. There is no mention on SmartSafe's website as to whether the company has attempted to register the product with EPA under FIFRA.

**Lab Experiments Suggest "Buckyballs" Not Toxic.** Recent experiments involving "in vivo" testing of C-60 fullerenes, or "buckyballs" appears to conflict with prior, "in vitro" tests and shows that the nanomaterials may not be toxic when inhaled. Scientists at DuPont conducted experiments on lab rats by implanting the C-60 compound into the rats' tracheas and then looked for signs of damage.

Upon review, the scientists determined that while the rats experienced inflammation and cell damage one day after exposure, but that there appeared to be no long-term damage. The long term exposure did not differ significantly than the responses noted in the control group. These results seem to run counter to prior, in vitro tests performed on human cells, that showed some amount of damage.

These results indicate a couple of points. First, it is clearly too early in the testing of nanomaterials to declare them, *carte blanche*, safe or harmful. Much more study is needed to resolve the apparent conflicts in data results. Second, testing using in vitro methods alone may not be sufficient to gain a clear understanding of the health impacts on nanomaterials. Third, using in vitro experiments to predict in vivo responses may be inappropriate.

These latest results underscore the need for more, and more thorough, research involving nanomaterials and the potential health impacts. Any stated conclusion concerning the safety of nanomaterials is premature at this stage, and such statements should be viewed with an air of skepticism.

### Events and Publications

**Nanocomposites 2007.** John Monica is speaking on “Government Regulation of Nanotechnology” at ECM’s upcoming 3 day polymeric nanocomposite symposium taking place in Las Vegas, Nevada from September 5 - 7, 2007.

**NanoBiotech 2007.** John Monica is speaking on “Environmental Issues of NanoBiotechnologies – FDA, EPA and the Media” at Rensselaer Polytechnic Institute on September 17, 2007.

**Cambridge Nano-Ordinance Advisory Panel.** The next meeting of the Cambridge Nano-Ordinance Advisory Panel is set for September 19, 2007. Please call or email for further details.

**nanoTX’07.** John Monica is speaking on nanotechnology issues as part of the business session of nanoTX’07 at the Dallas Convention Center October 3, 2007.

**Nanotechnology Application Summit.** Porter Wright’s nanotechnology practice group will be teaching an Environmental Health and Safety workshop at NanoAppSummit 2007 taking place in Cleveland, Ohio on October 22 - 25, 2007. The group is also taking an active role in assisting with the summit and in arranging speakers. The summit will offer four days of interesting activities including: a basic nanotechnology tutorial; EHS workshop; automotive session; cleantech session; and defense application session.

**Nanotechnology Manufacturer’s Forum.** John Monica is speaking on nano-related EHS legal issues at the Nanotechnology Manufacturer’s Forum taking places in Youngstown, Ohio on October 26, 2007.

**Nanotechnology Environmental Issues Forum.** John Monica is speaking on nano-related legal issues at the Nanotechnology Environmental Issues Forum for regulators being held by the New York State Department of Environmental Conservation’s Division of Solid Waste & Hazardous Materials in Albany, New York on November 1, 2007.

**NanoCon 2007.** PWMA’s nanotechnology practice group will be hosting the pre-conference workshop “Environmental, Health & Safety: Regulation Overview and Best Practices,” on Tuesday, November 13, 2007 at SmallTimes Magazine’s NanoCon in Santa Clara, California.

**Nanotechnology and Occupational Health and Safety Conference.** John Monica is speaking on nano-related EHS legal issues at CNS-UCSB’s Nanotechnology and Occupational Health and Safety Conference in Santa Barbara, California on November 16, 2007.

**Risk 007: Agents of Analysis.** John Monica will be speaking on nano-related legal issues at the 2007 Annual Meeting of the Society for Risk Analysis, December 9 – 12, 2007 in San Antonio, Texas.

**Innovative Approaches to Nanotechnology Environmental Governance.** George Washington University Law School, Porter Wright Morris & Arthur LLP, and the Environmental Law Institute will jointly host a conference addressing Innovative Approaches to Nanotechnology Environmental Governance in Washington, D.C. in late January 2008. The morning session will feature speakers on prominent issues surrounding the environmental regulation and governance of nanotechnology. The afternoon session will be a panel discussion with audience participation focusing on the issue of whether it is possible or desirable to merge existing approaches to create a comprehensive environmental governance regime for nanotechnology. Stay tuned for more details as conference development progresses.

**EPA’s Nanoscale Materials Stewardship Program.** PWMA’s nanotechnology practice group will be publishing a short article on EPA’s proposed Nanoscale Materials Stewardship Program in the next print edition of Small Times Magazine.

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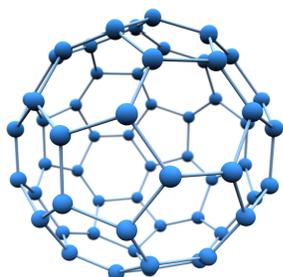
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