Community Advisory Council
October 11, 2007
Action Items/Notes

Final

These notes are in the following order:

1. Attendance
2. Correspondence and Handouts
3. Administrative Items
4. Center for Functional Nanomaterials, Past, Present and Future presentation, Emilio Mendez, Director, CFN
5. Community Comment
6. Agenda Discussion
7. Regulations/Standards Development for Nanotechnology presentation, Steve Hoey, ESH Coordinator for CFN

1. Attendance

Members/Alternates Present:
See Attached Sheets.

Others Present:
S. Aronson, M. Bebon, P. Bond, H. Carrano, J. Carter, J. D'Ascoli, K. Geiger, S. Hoey, M. Holland, S. Johnson, M. Lynch, R. McKay, E. Mendez, S. Penn, J. Petschauer, E. Rehbein, M. Schaeffer, A. Sprintzen

2. Correspondence and Handouts
Items one through three were mailed with a cover letter dated September 7, 2007. Items four through six were provided in the member's folders.

1. A copy of the October 11 draft agenda
2. Draft notes for September 13, 2007
3. Final notes for August 9, 2007
4. Revised list of prioritized agenda topics
5. Copy of CFN , Past, Present and Future presentation
6. Copy of the Regulations/Standards Development for Nanotechnology presentation

3. Administrative Items
The meeting began at approximately 5:34 p.m. Reed Hodgin began by reviewing the ground rules and agenda. Those present introduced themselves.

Reed explained that the recording equipment had failed in September, therefore, the requested corrections to the June notes were not captured. He asked the CAC to restate their changes. Iqbal Chaudhry said that on page 11, the second line from the bottom should say, "tendency to push production at the expense of safety". The June minutes were approved as amended with three abstentions.

Reed asked for corrections, additions or deletions to the September draft notes. The September minutes were approved with no corrections. There were four abstentions.

4. Center for Functional Nanomaterials, Past, Present and Future, Emilio Mendez, Director, CFN

Emilio Mendez, Director of the CFN, began his presentation by giving his background information. He said that science is moving forward in nanotechnology, and the amount of money spent on research has increased. Private industry invests the most, with the cosmetic industry in the lead over other industries. L'Oreal currently holds the most patents. He explained that everything smaller than 100 nanometers is considered nanotechnology and that as things are made smaller their surface area increases. A nanometer is one millionth of a millimeter. A nanowire is 1/1000 of a hair's width. When something is made smaller, the properties of that item change.

Member Giacomaro asked if the properties change, does that mean that something that was not dangerous could now become dangerous.

Mendez replied that yes that can happen, or vice versa. Things that were dangerous can now become safer. That is why we need to be careful how we treat nanoparticles.

Mendez explained the three drivers of nanotechnology. The first is microelectronics. The need for smaller, more compact transistors is pushing technology forward. The second is new tools can be invented. One of the tools is a tiny microscope which allows atoms to be visualized and manipulated. The third driver is that new materials, such as nanotubes, are discovered. Nanotechnology is useful in creating electronic circuits, flat television screens, and smart clothes (clothes equipped with thermo regulators, so they can be worn in all temperatures). It can be used in the color and preservation of certain foods and for smart paper for display surfaces. He also spoke about energy efficient light bulbs that use diodes that emit white light. They have replaced almost all the traffic lights on Long Island and save $2,000 per year per traffic light in energy costs. Researchers are working on ways to produce hydrogen from sunlight using nanotechnology, and are developing new catalysts. Nanotechnology can be used in medicine to develop instruments that can diagnose and treat medical conditions, making it possible to target the precise area that needs treatment without side effects.

Mendez spoke about the $80 million cost of the new CFN facility. The cost of the building was $40 million, $25 million will be used for equipment and the remaining $15 million will be used to hire scientists.

Member Sprintzen asked about exposure to nanomaterials being harmful. He cited a recent Consumer Reports article about the dangers of nanoparticles already present in products like sunscreen that the public is not even aware of. How does one address the unknown?

Mendez replied one has to be careful with any new technology. He said all the measures are in place for protection. We work with extremely small samples, not in large quantities.

Member Shea asked how we know if we are taking the necessary precautions when we don't know the properties yet?

Mendez answered that we are working on it, taking extra care with those that we don't know how they behave. We are taking all the precautions that we can think of.

Member Mannhaupt replied, I'm sure that Brookhaven National Lab is taking all sorts of precautions and not taking nanoscience for granted. But according to this spending budget, the government is spending less than the private sector. The cosmetic industry, I don't believe is taking all the security measures they could possibly take as you would do here. So, I think nanoscience, depending on where it's being researched and developed, is a community thing, depending on what kind of community site you have, as with the medical industry. The

private sector is rushing ahead with nanotechnology and that's going to cause problems. What those problems might be, we don't know. But I'm sure the Center will do its utmost to provide for standards and resources and it's hopeful that BNL will stay on the cutting edge and DOE will have the foresight to see that this Center is very important. Those nanomaterials that you look at here within the different disciplines may cause us to go into the private sector and create standards and regulations, because you have stumbled across something that will ultimately be a problem for the public to have in their hair or on their faces.

Mendez said that he could not speak for the private industry but there is an awareness of the dangers and the private sector does have some regulations.

Member Sprintzen said one of the things that the science community should do is to speak up about the dangers associated with nanomaterials.

Member Henagan said that he previously worked for a pharmaceutical company involved in nano research and the security and protective measures that they used were extreme. Nanotechnology is not new; there have been years of testing. We have been living with nanoparticles and were not even aware of it. In fact, we've been breathing C-60 nanoparticles for years, every candle emits them.

Mendez said that Steve Hoey would give a presentation on nanosafety later in the meeting.

Member Giacomaro said that in nanotechnology you refer to materials. Do you refer to it at all in a biological sense, tissues, and organs? Is that being referred as nanotechnology too?

Mendez replied, yes, cells are part of nanoscience. We are trying to control artificially made nanomaterials.

The CAC thanked Dr. Mendez for his presentation.

DINNER BREAK

Reed congratulated the CAC on their 9-year anniversary.

Dr. Aronson congratulated the CAC on all their accomplishments during the last 9 years. He said he is looking forward to many more years of this kind of interactive, cooperative work in keeping the Lab the good neighbor that it has become in the last nine years. He thanked everyone for their faithful participation and encouraged members to continue.

Jeanne D'Ascoli offered her congratulations on the 9th anniversary as well and invited the CAC to presentations on October 31 and December 12 by Bob Crease, the historian for the Laboratory. The talks will be at 4 PM in the afternoon and all are welcome to attend.

After congratulating the CAC, Mike Bebon spoke about the Integrated Safety Management review that occurred in the latter part of August. The Lab had the review and it turned out rather well. A team of 20 people were at BNL for a two-week period and took an in depth look at a number of safety program elements. They do this throughout the DOE complex and they grade on three areas: Effective Performance, Needs Improvement, and Significant Weakness. He was happy to report that the Lab received no significant weaknesses; in fact BNL is the only DOE site in the last two years to not have any significant weaknesses. BNL had seven areas out of 17 that were found to be fully effective, no further action required, and 10 areas where suggestions were made for additional improvement. Bebon offered to come back with a presentation at a later date if the CAC would like further information.

Tour of the CFN, Mike Schaeffer
Mike Schaeffer, Deputy Project Director for the CFN gave the CAC a tour of the CFN building. Schaeffer told the CAC the tour would include the laboratories and that he would try to explain the functionality of them and how the building complied with the Leadership in Energy and Environmental Design Program (LEED). He told them that the CFN is a green building and that he would be showing them the equipment and tools as well.

During the tour Schaeffer explained that in a clean room the air is filtered to 100 to 1,000 particulates per square foot, whereas most air has one million particulates per square foot circulating in it. Certain areas of CFN's labs tested down to one or zero particulates per square foot. There is a continuous flow of air – it filters down from the ceiling and then up the walls. A temperature of one degree Celsius has to be maintained. They use padding to prevent noise and vibration. All labs are on the first floor, have isolated floors and aluminum and steel shielding. They must be shielded from electromagnetic interference.

CAC members expressed concern over the loss of heat due to the high ceilings. Schaeffer explained that it is minimal and the high ceilings are necessary for the equipment in the labs.

Members questioned why there weren't any drains in the emergency showers that are in the labs. They wondered what would happen to the waste if it became necessary to use the showers.

Schaeffer responded that hopefully the showers will never be used. If they are, the waste would have to be cleaned up instead of going out through a drain.

5. Community Comment
There were no community comments.

6. Agenda Discussion
Reed went over the list of agenda items that the CAC voted on at the September meeting. According to the prioritized list the number one topic of interest is global warming. He asked if the CAC wanted a presentation on global warming from the Stony Brook speaker or if they would like a presentation from BNL experts on the topic.

The CAC indicated that they would like to invite Stony Brook professor Gilbert Hanson to speak to them about global warming and its effects on the Pine Barrens at a future meeting and they would also like to have a presentation from Lab researchers on global warming.

Reed asked for someone who had attended the August meeting to explain what was meant by the second topic on the agenda list - the CAC as a conduit to the community. He wanted to know if they were referring to BNL issues, or BNL research?

Member Guthy said that for her, it would be both.

Reed then asked if they meant taking things out as individuals to their constituencies, or sponsoring a workshop or symposium about BNL.

Member Guthy said that it should be both. She thought that on a regular basis it should be done on an individual level, but then if someone has an idea or thought about doing something on a larger scale, they could invite the community to participate.

Member Sprintzen said that the effort on pollution prevention is one topic that could be discussed. They could have some information about the Lab presented to the community at an outside location.

Reed thought that a good way to begin this process would be to set aside some time on the agenda at an upcoming meeting so the CAC could work out a plan and come up with some specific actions that they could take. The CAC indicated that they agreed with this strategy.

The third topic on the agenda list was the Emergency Operation Center (EOC) tour and drill. Reed said that he thought the HFBR would be back on the agenda and that this spring would probably be the best time to go out to tour the EOC.

J.D'Ascoli added that more than likely the HFBR will be coming up in December so that only leaves next month and she didn't think the Lab could put the tour together that quickly. Having the EOC tour and the HFBR on the same agenda would be very difficult. She thought it made more sense to wait until the HFBR is finished. She'll work with Lab staff on it.

The next item was nanotechnology. Reed said that there are two categories of nano to talk about: the specific research that is going on and nano safety. He asked the CAC if there was a priority or if they wanted to have some research and some safety presentations as they go forward with nano, or if they would rather focus on one area or another.

Member Giacomaro said that he would like to focus on safety first, and then look at the research.

Member Sprintzen said he didn't know how that could be done. He questioned, how can you talk about safety when you don't have a handle on the technology? He thought safety and research should be together.

Member Giacomaro asked if biology is already in the nanotechnology field, could they use the technology for safety.

Member Schwartz said that he thought they'd gotten a nice introduction to the nano issues this evening and he wondered what's being done on the other set of topics.

Member Mannhaupt thought that project and research went hand-in-hand with environmental safety and health; you're not going to run the project without considering the environment, the safety and health.

Reed replied, so they're pretty integrated and you think that we ought to look at it that way.

Member Guthy said that once we know what they are going to do and what kind of technology they're working on, then I'd like to know what safety things will be put in place to control it.

Reed said, OK, so you want to get more specific about safety for the specific projects they're doing at BNL.

Member Henagan said, basically we've just skimmed the surface regarding technology. There is a lot more to nano than that they are very small particles.

Dr Aronson commented that he thought the presentation later this evening might be a good introduction to the general issues of nano safety and it is widely applicable to the work that's going to be done here. It might be a jumping off point for people to ask more specific questions at more specific presentations in the future.

Member Mannhaupt said nanotechnology is a separate thing to her. We need to understand about the nanoscience that BNL is doing in order be supportive and helpful and to ask the tough questions when necessary, because this is a groundbreaking field. I don't believe that every scientist has considered all the ramifications of the environmental safety and health; otherwise we'd all go home. I'd like to put on the agenda, at some point, to understand nanotechnology use in cosmetics, and for the medical field from BNL's point of

view. The Lab is doing leading science and can tap into those resources in those fields to help us understand more when they come in conflict. There are two nanotechnologies going on in my mind in regard to the resources of BNL.

Member Proios said that this particular topic is different from anything else the CAC has ever done. In the past, we've worked on things that we had some history on and knew what we were dealing with. There were elements and compounds and we understood what they did. There were rules and regulations that we applied to them that weren't followed. That's how we came up with cleanups and such. If we spent another nine years, I don't think we'd get to the point where we'd understand what nanotechnology is. I would like to see a discussion on policy issues and have someone come from DOE, EPA, and the FDA. The FDA, the company that gave us Vioxx, do we have any confidence that they're going to protect us from a new technology? Do they even have physicists that have experience with nanotechnology? Or the EPA that told everybody the air was clean at ground zero. How are they in a position to even offer any kind of regulations on this? I don't think they have a physicist on staff. I'd like to have a discussion on this topic: When the DOE decides to set up five nanotechnology centers; do they give any one of them a charge or primary responsibility to focus on the potential impact to the environment? I'd like to know from a management policy perspective, if there is somebody up there that has this as a primary responsibility, or is this something that is coming from the ground floor up. It would be nice if it's from the top down, but it doesn't seem like that's the way it evolved.

Reed said that this may be refined after Steve's discussion this evening, but what he's hearing now is that nano is an area that you want to focus on significantly. You want to learn the science that's going on at BNL, learn about ES&H issues and how they are going to work at BNL, and beyond BNL, and you want to examine the management policy issues that go with those as well. That's what I'm hearing right now as areas you'd like to bring into the CAC to talk about. That and perhaps some sort of panel discussion that Member Proios described.

7. Regulations/Standards Development for Nanotechnology, Steve Hoey, ESH Coordinator for CFN

Steve Hoey reminded the CAC that last year both he and Doon Gibbs, who is the Deputy Director of Science, spoke to them. Gibbs talked about the type of nanotechnology done at the Laboratory and he spoke about nano safety at a very high level, according to what was known a year ago. Hoey talked about the NSRC (Nanoscale Science Research Centers), which has put together a best practices-type manual. BNL has implemented that manual quite well and he is happy to report that the other NSRC's have implemented it as well. It is really being pushed out by the DOE community as a whole and also several of us within the NSRCs have reached out to industries and shared this document with them. It is getting a lot of visibility. Right now it is getting some national and international recognition. We are really at the forefront of advocating for these best practices and controls.

Tonight, you are going to get a really short recap of the Nano risks I talked about last year, but I also want to bring you up to speed on why we are doing what we're doing. I want to spend a little bit of time on research directions and regulatory development and talk about the NNI (National Nanotechnology Initiative), which is the body that pulls all the agencies together, working toward regulatory development, spending projections and research areas. Then I'll talk a little bit about those specific agencies.

A year ago, the definition of nanotechnology was quite controversial, no one could agree on what the definition should be. People seem to be gravitating more toward the NNI definition now. What we are looking at is understanding and controlling matter that is 100 nanometers, where unique properties exist. What we really want to talk about is engineered nanomaterials; that's really what we are interested in. Materials that have been purposely manufactured or synthesized with at least one dimension in this 100 nanometer range, exhibiting unique properties determined by that particular size. I want to make it clear we are excluding naturally occurring nanomaterials. Naturally occurring nanomaterials have been around for quite some time - volcanic action, soot

from fires, incidental nanomaterials (byproducts) like combustion from engines or diesel exhaust. What we are looking at and where the direction of standards in research is going is in the direction of engineered nanomaterials. We're talking about stuff that is being manipulated in the laboratory.

Hoey explained that there is a lot we know and a lot we don't know about nanomaterials: We know there are some potential hazards. We don't know the nature and extent of those hazards. We know there is some exposure and some risk. We don't know the extent of those. We know we can measure nanoparticles. We're not exactly sure what to measure and we don't exactly have the measurement techniques that we really need. I'll talk more about that later, it's a major priority for research. We know nanoparticles can be controlled. We don't know the limitations of those controls. The best practices document is all about controls that have been put in place because we don't have answers to a lot of these questions. We're starting to gain more information on respirators and filters. We originally thought that they weren't very effective. Now we know HEPA filters should be fairly effective down to a very small range. With materials at the 300 range, the HEPA filter is the least efficient, but as the particulate size gets smaller and smaller the nanoparticles move at a much more rapid pace and actually embed themselves into the filter. That's the reason why we are installing HEPA filters in a lot of our laboratories.

There are no specific exposure limits at this time, we don't know what limits are appropriate. That is what we are chomping at the bit for; we are trying to find out what level we need to protect people to. What is the threshold? That is the unknown factor at this point in time, thus the very conservative controls.

We know toxicology has to do with the chemistry of materials, morphology, and surface charges. We know it has a lot to do with the surface area. As particles become smaller and smaller, the surface area actually increases so the material acts completely different than the material that is more to scale. There are a lot of studies out there. There is some conflicting information on toxicology. The bottom line is we know there are some toxicological responses to certain nanomaterials, but not every nanomaterial. We fully expect that some of these materials will be quite benign; we also expect that some of these materials will be quite toxic and will have to be handled in an appropriate manner. So until all this information gets out, we have to act in a conservative nature.

This all comes down to unknown risk. Because of this unknown risk we need to prioritize what our environment, safety and health research is going to be on. What do we need to control? What standards do we have to put in place? What agencies really need to engage in this arena of risk?

Hoey said that he wanted to give the CAC a high level overview and some resources for future conversations.

He explained the NNI (National Nanotechnology Initiative) to the CAC. The NNI is an interagency program that coordinates federal nanoscale research and development activities and related efforts among 26 participating entities. The federal budget for FY08 has projected that $1.4 billion will be spent on nanotechnology. Of that, $58.6 million will be used for Environmental, Safety and Health research. This is not a huge number but it is a 55% increase over 2006.

Hoey said that the NNI is looking at the big picture of understanding and controlling of matter at the nanoscale level and they want it to lead to a revolution in this technology and industry. He talked about their four basic goals and the importance of the fourth goal which is to support responsible development of nanotechnology. He also talked about the participating agencies and explained that the Nanoscale Science & Engineering Technology Subcommittee (NSET) administers the functions of the Initiative. He told the CAC about some of the interagency activities that they facilitate and mentioned that there are a lot of technical reports and policy documents available. (He said that he would leave those he had with him for the CAC to review.)

Member Sprintzen asked about the general brochure.

Hoey said that it had just come out, is on the web and it is for the general population. It describes what nanotechnology is and the risks involved. He thought that some had been ordered for the CAC.

ACTION ITEM: Distribute nano brochure to CAC as soon as it is received.

Hoey said that the NNI is very engaged in the educational process. NSET, as the governing board for NNI, is attempting to promote effective interagency communication, coordination, and joint programs. There are four major working groups that have been established: Nanotechnology Innovation and Liaison with Industry (NILI); Global Issues in Nanotechnology (GIN); the Nanotechnology Public Engagement Group (NPEG); and Nanotechnology Environmental and Health Implications (NEHI). He noted that DOE is represented on the NEHI.

Member Proios asked if NNI was strictly a government agency, or if it included the private sector.

Hoey explained that the NNI is more of a concept; it is a government initiative to work toward better and safer nanotechnology. NSET is the group that runs it; it is the administrative body for NNI.

Member Proios asked if the members were government employees or if they were from the private sector.

Hoey said that both are included and that the list of committee members is included in some of the documents he has available for review.

Hoey discussed the Environmental Health and Safety Research Needs for Engineered Nanoscale Materials report or the *EHS Research Needs* document that was recently refined and put out for public comment by the NEHI Working Group. He talked about the five ESH research priorities and about standards development in the NNI Strategic Plan.

He spoke about emerging consensus standards and the DOE Secretarial policy. He said that standards are key to addressing the highly multi-disciplinary and broad-based nature of nanotechnology. Standards on nomenclature, measurement, and environment, health, and safety (EHS) are a high priority.

He noted that BNL had input into the American Standard for Testing Material (ASTM) E56 standard (Standard guide for handling unbound nanoparticles in an occupational setting). The DOE Secretarial Policy states that, as contractors, BNL must identify and manage potential health and safety hazards and potential environmental impacts at sites through the use of existing Integrated Safety Management Systems, including Environmental Management Systems. The Integrated Safety Management System states that before work is performed, the associated hazards shall be evaluated and an agreed-upon set of safety standards and requirements shall be established which, if properly implemented, will provide adequate assurance that the public, the workers, and the environment are protected from adverse consequences. Hoey said this is a very effective system and they have a rule called the “Worker Safety and Health Rule”, which has a section on nano safety. It is not populated yet, because they are considering writing a nanosafety order. If BNL violates any of these rules, they can be fined. Part of the reason this order hasn’t been written yet is because DOE is reviewing the first document to see what changes need to be made.

Hoey also described the Environmental Protection Agency’s role and regulatory efforts.

Hoey summarized his comments and gave the CAC some websites for additional information.
NNI – http://www.nano.gov

EPA White Paper – www.epa.gov/OSA/nanotech.htm

EPA nano grants – www.epa.gov/ncer/nano

NIOSH Approaches to Safe Nanotechnology: An Information Exchange with NIOSH
www.cdec.gov/niosh/topics/nanotech/

NSRC Approach to Nanomaterial ESH –
http://orise.orau.gov/ihos/nanotechnology/files/NSRC%20ESH%20%Approach%20Doc%20Rev2.pdf

Member Sprintzen asked to what extent, if any, is the consensus approach a way of assuring that the government doesn't put specific regulations on businesses they don't like.

Hoey replied, historically, consensus documents wind up wrapped up into the regulatory statutes. They get rolled up into OSHA as reference. Once they get quoted as reference, they are actually part of that statute. If you look at an OSHA handbook, you will see there are thousands of consensus standards pulled in. It is the consensus document that will give the details that are needed to understand how to control the technology.

Member Biss asked if people wear gloves and masks when handling nano materials. I would think any small particle like that would be bad news for people.

Hoey answered, usually we try to keep the material bound in a matrix, or suspended in a solution. The last level we would want to touch them as would be loose particulates, something that could be easily inhaled or put out into the environment. We tell our scientists that if you really have to use particulates; these are the precautions you have to take. That works quite well because the actual exposure potential is a lot lower. But yes, they wear personal protective equipment - gloves, long-sleeved coats – things like that. There are a lot of engineering controls that also might be used.

Member Biss commented, I'm sure the materials are very toxic to people.

Hoey replied, we are assuming so, but we don't know yet. The toxicology results are not in. We assume that some will be quite benign, but we have to treat it as highly toxic material until we know.

Member Shea said her biggest question is about labeling. Unless we enforce labeling of these products we will never know what the safety and health effects are because there will be no way to document them. There are a lot of cosmetic products on the market right now that use nanoparticles that aren't labeled. What good is all this unless we have labeling?

Hoey replied; that's a very good question and a very controversial topic. The FDA is taking an approach similar to the EPA. They are looking at and doing some research and trying to figure out if the rules that they have in place could cover some of these materials. The FDA needs to determine if something fits into a pre-approved class or needs individual approval. Cosmetics fall into a more generic class. They are struggling with the nano aspects of that. They are trying to determine if they need to pull that out of a general category and start doing some specific testing on certain materials. It is incumbent on the manufacturer to provide a safe product. It is also incumbent on the FDA to notify people on product labeling if there is a hazard with that product.

Member Shea, commented, that usually happens after the fact.

Hoey said, unfortunately, the FDA has struggled over the years with certain products. Case in point, there are a lot of drugs on the market that after a few people die, they take off the market, or put different labeling on it. These agencies are struggling with new technologies. They have scientific information available to them. One would hope that they are going to take into account when making policy decisions, this scientific information and keep up with what is going on in the field to make sure that they put the proper controls in place. The FDA just

came out with a report that covers this, and they talk about these issues; about how they are struggling with this issue of labeling. I am leaving information here. The FDA report is a very good summary of the types of issues that they have to fit into their regulatory regime.

Member Mannhaupt asked for copies of all the documents.

ACTION ITEM: Make sure documents are available. (Web link for the FDA nano report - http://www.fda.gov/nanotechnology/taskforce/report2007.pdf)

Hoey encouraged the CAC members to visit the CFN page to view the documents and links that are available there (http://www.bnl.gov/cfn/).

Member Mannhaupt asked how many NSRCs the DOE had.

Hoey answered there are five NSRC facilities.

Member Mannhaupt replied this is a new concept for all these agencies to be overlapping and working together to reach similar goals.

Hoey said, yes, it is unprecedented.

Member Mannhaupt commented that the CFN needs an advisory committee that is an offshoot of the CAC. It is not single and separate. You've got everybody at the table, unprecedented, but you still don't have your stakeholders and your stakeholders need to be at the table while you're discussing this.

Hoey replied good point, thank you Jean.

Member Giacomaro questioned with all the agencies that were mentioned, who is accumulating data and tracking things like death or environmental issues or pollution? Who puts it all together and can track things regarding nanotechnology?

Hoey answered; the NNI. You have different agencies that specialize in different things. NIOSH is looking at worker safety and health. EPA is looking at environmental aspects. FDA is looking at food and drug applications. NNI is the agency that pulls all that information together and puts together reports that are made accessible to the general public and provides the information at one point. Historically, agencies didn't work together and it was very hard to extract information. Now that we have the NNI and the Internet where we can post things; that information is quite readily available. NIOSH would track things like injury and death, from a worker's safety and health aspect. I would suspect that as time goes on, you will see immunological reports. Again the technology is a little new. There's a huge body of science out there and immunological reports out there and that type of science is not all that different from what we're looking at with nanotechnology. From an ESH perspective we use a lot of that research to help us figure out what controls we need to put in place and what type of research we need to do.

Member Giacomaro asked about merging the date together to see if there is a trend.

Hoey replied that Rice University is compiling data and has a whole library of information. We have experts out there who are putting together research papers, databases of papers. All of those will need to be pulled together at some point on a national scale.

Member Sprintzen said on page 3, you mentioned toxicity and increased inflammatory response. Would it be appropriate to have a discussion on those at some point?

Hoey said that there are some scientific experts at Brookhaven who can come and speak to the CAC about toxicity. There are a lot of people working on that issue.

Member Proios asked for additional information on NNI.

Hoey replied that the NNI was promulgated under the Clinton administration by Presidential Order. Whether it is a physical entity with a building, I don't think so. The NSET Committee is made up of a broad spectrum of people from DOE, EPA, DOD, FDA, local, regional and state people.

John Carter, DOE said that there was a lot of information available at www.nano.gov on the history and current activities of NNI. It is pretty extensive.

Hoey said that the first page of all these documents have a listing of who's who, doing what on nano research.

J. Petschauer explained that NNI was codified by statute, by law. The law was the 21st Century Nanotechnology Act, and it was developed in 2003. The idea for NNI was developed under President Clinton's administration, but it actually became law, an idea, an initiative that's legally mandated, and then from that authorization eventually there was an appropriation of funding. When you look at the list of players involved, that was described in the legislation. NNI was the initiative; NSET is the people and the different agencies that fall under it.

The CAC thanked Steve for the presentation.

Reed said that at least four ES&H topics came out of Steve's presentation. We'll talk more about that next time. Perhaps we can get toxicology of nano materials on the agenda. I also understand that the Laboratory is ready to talk to you about the annual environmental report, the environmental status of BNL. So those are items for the agenda for November. Then we're looking at December, January, and February toward HFBR if things work out. That's where we stand right now. Is there anything we need to look at before we adjourn?

The meeting adjourned at 9:18 PM.

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Global warming – BNL research	
Nano toxicology	
Nano ES&H issues at BNL and beyond	
Nanotechnology/science at BNL	
Nano management policy issues	
Nano panel discussion with the DOE, EPA, and	

2007 Affiliation		First Name	Last Name	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Chart Key - P = Present															
ABCO (Garber added on 4/10/02)	Member	Don	Garber	P		P	P	P	P				P		
ABCO	Alternate	Doug	Dittko												
Brookhaven Retired Employees Association	Member	Graham	Campbell	P	P	P	P		P			P	P		
Brookhaven Retired Employees Association (L. Jacobson new alternate as of 4/99)(A. Peskin 5/04)	Alternate	Arnie	Peskin		P										
CHEC (Community Health & Environment Coalition (added 10/04)	Member	Sarah	Anker		P	P	P		P						
		Ann Marie	Reed												
Citizens Campaign for the Environment	Member	Adrienne	Esposito		P			P				P	P		
Citizens Campaign for the Environment (Ottney added 4/02-takenoff 1/05 Mahoney put on)(7/06 add Kasey Jacobs)	Alternate	Kasey	Jacobs	P		P			P						
E. Yaphank Civic Association	Member	Michael	Giacomaro	P	P	P	P	P	P			P	P		
E. Yaphank Civic Association (J. Minasi new alternate as of 3/99) (M. Triber 11/05) (Munson 6/06)	Alternate	Brian	Munson												
Educator (changed 7/2006)	Member	Adam	Martin	P											
Educator (B. Martin - 9/01)	Alternate	Bruce	Martin					P	P						
Educator (A. Martin new alternate 2/00) (Adam to college 8/01)(add. alternate 9/02) (changed 7/2006)	Alternate	Audrey	Capozzi												
Environmental Economic Roundtable (Berger resigned, Proios became member 1/01)	Member	George	Proios	P	P	P		P					P		
Environmental Economic Roundtable (3/99, L. Snead changed to be alternate for EDF)	Alternate	None	None												
Fire Rescue and Emergency Services	Member	Joe	Williams												
Fire Rescue and Emergency Services	Alternate	Don	Lynch	P	P	P	P	P				P	P		
Fire Rescue and Emergency Services	Alternate	James	McLoughlin												
Friends of Brookhaven (E.Kaplan changed to become member 7/1/01)	Member	Ed	Kaplan			P	P								
Friends of Brookhaven (E.Kaplan changed to become member 7/1/01)(Schwartz added 11/18/02)	Alternate	Steve	Schwartz			P			P				P		
Health Care	Member	Jane	Corrarino			P			P				P		
Health Care	Alternate														
Huntington Breast Cancer Coalition	Member	Mary Joan	Shea	P	P	P	P		P			P	P		
Huntington Breast Cancer Coalition	Alternate	Scott	Carlin												

2007 Affiliation		First Name	Last Name	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Intl. Brotherhood of Electrical Workers/Local 2230 (S.Krsnak replaced M. Walker 1/11/07)	Member	Scott	Krsnak	P	P	P	P					P			
IBEW/Local 2230	Alternate	Philip	Pizzo												
L.I. Pine Barrens Society	Member	Richard	Amper		P	P						P	P		
L.I. Pine Barrens Society (added P. Loris 6/05)	Alternate	Elina	Alayeva	P	P		P		P				P		
L.I. Pine Barrens Society	Alternate	Susie	Husted												
L.I. Progressive Coalition	Member	David	Sprintzen	P	P	P	P	P	P			P	P		
L.I. Progressive Coalition	Alternate	None	None												
Lake Panamoka Civic Association (Biss as of 4/02)	Member	Rita	Biss	P	P			P	P				P		
Lake Panamoka Civic Association (Rita Biss new alternate as of 3/99)	Alternate	Joe	Gibbons												
Long Island Association (Groneman replace 10/05)(Deering replaces Hill 9/07)	Member	Michael	Deering												
Long Island Association	Alternate	William	Evanzia	P				P							
Longwood Alliance	Member	Tom	Talbot	P	P		P	P	P			P			
Longwood Alliance	Alternate	Kevin	Crowley												
Longwood Central School Dist. (switched 11/02)	Member	Barbara	Henigan	P		P		P	P				P		
Longwood Central School Dist.	Alternate	Allan	Gerstenlauer												
NEAR	Member	Jean	Mannhaupt		P			P	P			P	P		
NEAR (prospect taken off ¾)(Blumer added 10/04	Alternate	Liz	Bowman												
NSLS User	Member	Jean	Jordan-Sweet	P	P	P			P			P	P		
NSLS User	Alternate	Peter	Stephens												
Peconic River Sportsmen's Club (added 4/8/04)	Member	John	Hall		P	P	P	P				P	P		
Peconic River Sportsmen's Club	Alternate	Jeff	Schneider												
Ridge Civic Association	Member	Pat	Henagan	P	P		P	P	P			P	P		
Science & Technology (added 1/13/05)	Member	Iqbal	Chaudhry	P		P			P			P	P		
Town of Brookhaven (Graves made member 6/06)	Member	Anthony	Graves		P	P	P	P	P			P	P		
Town of Brookhaven	Alternate	None	None												
Town of Brookhaven, Senior Citizens	Member	James	Heil	P	P	P	P	P	P			P	P		
Town of Brookhaven, Senior Citizens (open slot as of 4/99)	Alternate	None	None												
Town of Riverhead	Member	Robert	Conklin	P	P	P	P	P	P			P	P		
Town of Riverhead (K. Skinner alternate as of 4/99)	Alternate	Kim	Skinner												
Wading River Civic Association	Member	Helga	Guthy	P		P		P				P	P		
Wading River Civic Association	Alternate	Sid	Bail												