Community Advisory Council
March 13, 2008
Action Items/Notes

Final

These notes are in the following order:

1. Attendance
2. Correspondence and Handouts
3. Administrative Items
4. Recommendation on Proposed Remedial Action Plan for the High Flux Beam Reactor
5. Agenda Setting
6. Community Comment
7. Environmental Impacts and Controls Associated with Work Involving Nanomaterials, Deborah Bauer, Environmental Compliance Representative, Basic Energy Sciences Directorate

1. Attendance

Members/Alternates Present:
See Attached Sheets.

Others Present:
S. Aronson, D. Bauer, M. Bebon, P. Bond, J. Carter, K. Conkling, H. Corrano, J. D'Ascoli, K. Geiger, G. Goode, L. Hill, M. Holland, S. Johnson, M. Lynch, R. McKay, J. Misewich, L. Nelson, A. Rapiejko, R. Sabatini, J. Selva,

2. Correspondence and Handouts

Items one through three were mailed with a cover letter dated February 8, 2008. Items four, five, and six were provided in the member's folders.

1. March 13, 2008 draft agenda
2. Draft notes for February 14, 2008
3. Final notes for January 10, 2008
4. A copy of the corrected chart (Fig. 2) from the responses to questions on the HFBR
5. A copy of the presentation on the Environmental Impacts and Controls Associated with Work Involving Nanomaterials, Deborah Bauer
6. Information on CAC membership

3. Administrative

The meeting began at approximately 6:37 p.m. Reed Hodgin reviewed the ground rules and the draft agenda. Those present introduced themselves.

Approval of Minutes
Reed asked for corrections, additions or deletions to the February 14 draft notes. The notes were approved with no corrections and four abstentions.

Mike Holland spoke briefly on the proposed budget for FY09. There has been a significant proposed cut to the environmental side of the budget. The two positives are that there is funding for all the systems that are now in place and operating, the soils, groundwater, and river monitoring and the work that would be done on the High Flux Beam Reactor, the proposed remediation plan stays as is with the control rod blades and the beam plugs being removed of and disposed of this summer. If there is a potential impact, if this goes from a proposed budget to an actual budget, it would be limited to the Graphite Reactor. Both the Site Office and the Laboratory are looking into what those potential impacts might be. There is a still a ways to go in the budget process, this is a proposed budget. The next step is that it goes to the legislature, where Congress will take a look at it and weighs in on it. It is still too early to tell with any certainty which way this will go. I just wanted to give you a sense of what we are seeing right now, and the fact that we are looking into what might be able to be done about this.

Member Shea asked if it would be helpful for the CAC to write a letter.

Holland replied that a lot of people are working on this right now and that would be a little premature. That is a possibility in the future.

Member Biss said she saw ads in the paper that the nano center is hiring and asked if that was already in the budget.

Holland responded that is the science side of the budget, which looks very positive.

Member Sprintzen said that he had volunteered to serve on the committee to plan the 10th anniversary celebration for the CAC along with Member Mannhaupt. He has not been able to get in touch with her and asked if anyone else was willing to work with him.

Member Esposito asked about the party budget and offered to help.

Member Garber asked when the anniversary would be.

Reed responded September or October.

There was some discussion about who should serve on the committee. Member Esposito suggested that Members Kaplan and Conklin, as well as Member Garber be asked to help on the planning committee.

4. Recommendation on Proposed Remedial Action Plan for the High Flux Beam Reactor

Reed explained that the process tonight is one of consensus building. The information gathering part of this is now predominantly over with. We do have some representatives with us tonight. Their main function is going to be looking for accuracy in data and helping us from that standpoint. We aren't looking for more interaction between the CAC and the regulators. This is your time to come up with your recommendation. Consensus is about coming to a conclusion in which all the dominant interests of the people at the table are met. That does not mean you get everything that you want, but it does mean there are no losers. Your dominant interests will be met. When you reach that point, you are ready to declare consensus. The objective of this evening is to develop a recommendation from the CAC to the Laboratory Director of BNL concerning the alternatives that have been put forth for the cleanup of the HFBR. What I am going to do as part of our process is to start us off by going around the table taking a poll, which has a great deal of benefit all on its own. What I'd like to ask each of you to do is to tell me what you think are the most important points that you would like to bring to the table in order to have your interests met in the recommendation. This is not about positions, it's about interests.

Position is a specific thing you want; interest is a value that you really want to have met. I'd like to hear that from each of us around the table and then we'll look for areas of commonality and we'll look for areas of differences. Just list the key things that you think the CAC should be telling the Laboratory in order to serve your interests.

Member Chaudhry: My major concern is the uncertainty we are facing in the future. Who knows what will happen in the coming years. With the innovations and discovery and improvements in technology I am hopeful that change will be for the better. I am in favor of Alternative C. In time, perhaps any of the other alternatives may become feasible, but at this time, I vote for Alternative C.

Member Henagan: The biggest concern that we have in Ridge is the time frame. We don't want to see this thing sit here forever. The alternatives that move this forward in the safest, most expedient manner would be favorable. Alternative C looks like the best alternative with the modifications that were proposed at the last meeting.

Member Esposito: I would like to reiterate my organization's position from the last meeting, which is that we agree with Alternative C with the modification of the last three boxes to say, after a decay period not to exceed 50 years. We would be okay with that, we would have preferred more, but in the interest of consensus building and working toward consensus, we would be agreeable to that. Of course with the Five-year CERCLA review in there as well.

Member Amper: In the interest of time we would be supportive of the 50-year modification of the last three categories in Alternative C. We would ask one other important thing, and that is, it is so hard to predict the future and we think we should build into this option a review, an assessment that would occur every five years to determine whether what we thought we knew we were doing in 2008 actually makes sense in 2028 or 2035. We would suggest that this be subject to some sort of review. It would be nice to have someone come back and revisit this to decide whether we were very smart or very stupid to agree to this plan way back in 2008.

Member Martin: I need to hear more before I can say anything conclusive. My concerns are real problems versus imagined problems and versus predictions of future technology. I am also concerned about cost benefit.

Member Heil: I am interested in having a technical and economically doable project with protection of the workers. I foresee the receiving site, I don't want to refer to it as disposal, because it is more placement and allow technological improvements over the project duration. I support Alternative C.

Member Campbell: Our main concern is the safety of the process. The current situation is stable and it is probably one of the best places in the short term for this stuff to sit and cool down a little bit. The key to safety and removal is removal of lower activity materials, which means wait. Looking at the various alternatives, the only difference between B and C, which are the only two reasonable alternatives, is almost a moot point. They are planning on getting those CRBs and beam plugs out before this time anyway. It is currently scheduled, so at that point there is no difference, so I would go with Alternative C.

Member Kaplan: I concur with Member Campbell. As I mentioned at the last meeting, the 50 years would still allow the work to be done within all of our concerns about worker safety. (There is a mistake in the February notes – perplexity should be complexity). Alternative C is fine with us.

Member Biss: Since this will be going on for many years, I think the five-year review should be about what changes have taken place in those five years. What we know and what is going on

could change in five years. You have to have an open mind at the end of five years. Do we want to go on in the same way or do we want to re-organize it for the next five years. This should not be locked in stone, but based on what happens and what we see in another five years.

Member Sprintzen: I am concerned about the quality of worker safety I am concerned about the changes that could take place over time both in terms of degradation or miscalculations, or changes in government policy but also in technological developments. So I think some kinds of reviews are appropriate. I am also concerned about the expenditure of funds and how they can best be used.

Member Garber: At the last meeting, I brought up the possibility of having a ROD with a decision-making aspect to it. We need to establish whether the ROD could have, after a certain period of time, a reassessment. I can envision a time in the future where all cleanup will be robotically. If you do an assessment in 50 years, it will make no economic difference whether you do it right now or wait an additional 15 years. The other thing that needs to be brought up is if the Lab keeps growing, that property which is in the central core could be valuable. The ROD could have specific tests at certain prescribed periods of time to determine whether the economics are comparable to waiting the remaining time or do it now. Also consider other factors, like is the space needed for something else.

Member Jordan-Sweet: My concern is mostly for any unnecessary exposure to the RAD workers that are taking care of this. So as things are assessed, if this can be cleaned up in 50 years robotically with no increased exposure to workers, I would be happy with that too. It is a balancing act between unnecessary radiation exposure, cost, etc.

Member Giacomaro: Alternative C addresses most of our concerns with a 50-year cap on it would be acceptable as well.

Member McLoughlin: I am at a tremendous disadvantage since I have not been at a meeting in a while, so I reserve comment.

Member Shea: I think that Alternative C with the modification to 50 years is the best proposal right now. But I also think that a five-year review is imperative and the community must be involved somehow with this process in a direct way.

Member Henigin: Alternative C is acceptable with us with modification. I would hope it would be evaluated at even more frequent intervals. So if we need to spell it out, I think the five-year review would be a good idea.

Member Conklin: I feel that Member Jordan-Sweet hit the nail on the head and I echo her comments.

Member Graves: To share the concerns about the timeframe and the budget. Regarding the five-year review; if there are funds available to accelerate the cleanup, then that should be taken into account. That has been a factor with some of the past cleanups.

Member Amper said that Member Shea mentioned that there should be community involvement. I would go so far as to say that it should be this CAC. I agree that we should do Alternative C with the modification of 50 years and a review every five years.

Member Heil asked if anything had come out of the public meetings and hearings that have been held.

John Carter, DOE, responded that there were two information sessions last Tuesday, March 4, one in the afternoon and one in the evening. The afternoon session had a number of former HFBR employees attend and during the evening no one showed up. Last Thursday night we had an actual public hearing and three members of the public attended. Two were former HFBR employees who came to learn about the alternatives so that they would be informed when others asked. The other person was Michael Branch, who is on Assemblyman Marc Alessi's staff. He had many questions, but there were actually no official public comments made during the meeting.

Member Esposito responded saying, so we are the official public comment.

Reed replied that there is one written comment by someone who lives in Maryland or Virginia. I can't explain that, but that's it.

Member Biss reiterated that if something comes up sooner than five years that there should be a way to go back in and look at what's happening. If something changes, we might need to explore why.

Reed responded that what you are looking for is in addition to the five year review, a continuous monitoring and surveillance with an attitude of if we find something wrong, we deal with it then instead of waiting for the five year review. Let's check to see what we have consensus on right now. I am going to suggest what we have heard and see if this meets your interests and then we can go into more detail. What I have heard is Alternative C with a 50 year time frame and five year reviews that have specific content to the reviews which we list. Specific items you want to have reviewed in each of the five year reviews. That's what I have heard so far as being key points that seem to be resounding around the table. Is there anyone around the table that feels that their interests or the interests of the part of the community that they represent would not be served with Alternative C and a 50-year time frame for those last three boxes?

Member Chaudhry replied that he does not support the 50-year time frame. At 65 years you will have full decay and you will reach 100 mrem/hr, which is the standard. What will you gain by doing it in 50 years and ending up with eight times the dosage than would be in 65 years? This is a highly technical matter. I don't think we should follow certain traditions. I strongly oppose the amendment of 50 years. Twenty or twenty-five years from now there will be another generation of people around.

Reed reiterated that it looks like your interest isn't about 50 versus 65 years; it's about increasing dose to the workers. So if it could be done in 50 years without increasing the dose to the workers, you would be ok with that?

Member Chaudhry stated that in 20 or 25 years things will be so different, so we don't need to make these relatively small changes in the standard now.

Reed stated that what I think you are saying is that it is the 100 mrem dose to workers that's important to you.

Member Chaudhry agreed.

Reed continued, and finding through technology and any other way, the quickest time in which the cleanup can be done with no more dose than that to workers is where your interest is. The 65 years isn't magic to you, it's the 100 mrem that's important to you.

Member Garber said that originally we had talked about 65 or 75 years because the decay was such that that could be done with the least exposure to workers at a reasonable expense

robotically. I personally would think that the more important thing in the ROD is actually this subsequent review seeing if the situation has changed and we could do the cleanup with less exposure than 100 mrem to the worker. The robotics may come to the age where there's no radiation to the workers and then let's go for it. We are presuming that is going to happen. What happens if the robotics have not improved in 50 years? Do you want to mandate that the cleanup be done? Say, it's the same technology as now. I don't think you want to say we should go ahead, rather than wait the additional fifteen years. The important thing should be this review. It has taken us five years to review the HFBR cleanup now, so every five years implies continuous meetings of this committee for another 50 years. I think that the critical thing here is the ROD should have these test studies done to determine when the appropriate time to do the cleanup and demolition is.

Member Campbell said that there is a required CERCLA review every five years anyway. This is not what we are talking about though. We are looking to include community participation. My impression is the CERCLA review is more to see how well you are sticking to this ROD which is regarded as being cast in concrete. I think what we are saying is we don't want the ROD to be cast in concrete. If we can do things better, we should do it and evaluate it every five years to see if we can do it better. I think that we should be fairly explicit about what we need and what in addition we want done at these five- year reviews.

Member Heil asked Les Hill to give a comparison of 50 years versus 65 years in terms of decay. Hill responded the difference is the dose rates. The difference is about three Cobalt 60 half-lives. Cobalt 60 is the dominant nuclide in all of this. If we are talking about 100 mrem/hr at one foot at 65 years, you double that three times and you get 800 mrem/hr at a foot. You are looking at a continuum. When we put this together, we were looking at a standard benchmark. That is the 100 mrem/hr value. That is value that had the most meaning to us. At 800 mrem/hr it is still manageable.

Member Heil asked if there were any other factors.

Hill answered, no. There is no bright line, it is a continuum.

Member Esposito wanted to clarify her reasoning for the 50-year time limit. It is not because it is traditional. I was promoting it originally because it is consistent with every other time line for cleanup with the exception of the Strontium 90 and the reason we have been using it as a timeline is because we felt that it presented an element of being responsible and holding ourselves accountable to what is a reasonable time line so we are not leaving this lingering on and on for generations to come. It was more of a time line that we felt showed an element of us being responsible and attentive to the need for an expedited cleanup but at the same time having a careful cleanup that is protective of workers and the public. That is where the 50 years came from and I think that after the discussion we had last month, which was very extensive and thorough, we came to the conclusion that there was not an increased exposure and it would be hard to believe that there wouldn't be an increase in development and advancement of robotics in 50 years. If there isn't then we have much bigger problems as a society. I have to believe that in that particular field there will be advancement. I don't think that it is responsible for any of us to say, well they will look at it in twenty years and if they can do it quicker they will, so let's just leave it. I think that would be an inappropriate thing for us to say. I think it is responsible for us to come up with a time line that is reasonable, safe, but also meaningful and if it needs to be adjusted in the future, to be sure that would be good, but we should not rely on that to occur.

Member Amper reminded everyone that they don't get to decide this here. We all have a lot of opinions and we don't get to decide this so, our recommendation is our only crack at this and I ask my colleagues to consider the benefit of restraint. Not just for consensus, but for unanimous

recommendation in terms of accomplishing what we are trying to accomplish since part of our capacity to influence this process is based upon how strong of a consensus we produce. I would suggest that having built in the process of review every five years and having everyone here be concerned about worker safety, if we discovered 15 or 20 years from now that we have not made progress and by waiting a bit longer, we can protect workers. I don't think anybody sitting around the table at that point would do anything other than that. I think that your legitimate concern about worker safety is built into the process. I think it would be sensational if we could all agree in a unanimous way that this is the way to insure everybody's concerns are met. This is based in large on the degree of unanimity of opinion. I would love it if we all come together and say that we are behind this.

Member Chaudhry said that he is all for the five-year review. My concern is the 50-year versus 65-year time limit.

Member Jordan Sweet commented that she would prefer an action point as opposed to an action date, not to exceed 65 years. Whenever worker exposure would be at 100 mrem/hr or less.

Member Sprintzen said that while looking at the graph, the blue area makes me uncomfortable. It rises up very quickly. It does look to me like there is an extremely significant difference between the 50 and 65-year time period. I do expect that technology will be so far advanced that this whole discussion may be academic. I see funding as a potential problem. There are major cuts in environmental restoration right now, so that is problematic and could be a reason to get this done as quickly as possible. But at the same time I am worried about the impact to the workers that this suggests.

Reed replied that what he is hearing is that the CAC wants cleanup to occur as quickly as possible, with worker dose not to exceed 100 mrem/hr, to make sure that workers are protected. That is to be accomplished in 50 years or less if practical. Practical means all the things that you are going to put into your five- year review: technology, economics, land use, etc. This is not just about the years, it is about worker safety. It's about if you could do it faster than 50 years, you would like to do so. You don't have a desire to have it done in 50 years if it can be done in 40 years. Yet there are large numbers of people around the table in which having a year value is important. So I have put a year value in that seems to fit the interest of the most people around the table. The practical part allows you to say that if in 40 years things can't possibly be done for some reason you could reassess the remedy and send it the other way if you had to. Is this something that would work well enough so that you could take it to the Laboratory together?

Member Esposito replied, no, you have some conflicting things there. We just heard Les say that in 50 years there would be 800 mrem/hr exposure to the workers, so the second statement seems to conflict with the first one.

Member Henagan said that the fixation on 100 mrem/hr is based on current recommendations. We have looked at robotic technology but we have not looked into advances in protective gear for the workers or even changes in what is acceptable dosing. Advances in medicine might make it possible that we can repair radiation damage. It may become acceptable to have 800 mrem or whatever. Instead of saying not to exceed 100 mrem, I'd rather see it say not exceeding current recommended safety doses. That covers all the bases. In 50 years we may find the criteria changes to where you can't expose someone to more than 25 mrem. So it would be better to say based on current recommendations.

Reed said, how about if it said, based on current regulatory standards or current standards as defined by the cognizant regulator for the ROD.

Member Martin commented that that sounds good.

Reed said that he doesn't know that 100 mrem is the current regulatory standard of this. That is the value that was placed in the alternative for the purpose of the alternative.

Hill said that we have been thinking this through a lot. As the technology changes you have additional freedom in a positive direction. One of the things I have seen in working in the nuclear industry is a drive downward in the amount of radiation exposure that is acceptable to workers. We have thought about the pluses and minuses of all this.

Reed said that there will always be an amount established by regulation that is permissible and you could go by that.

Member Shea wanted to follow-up on the radiation and exposure set at 100 mrem/hr. Isn't the Lab working on exposure limits for people traveling, like astronauts, and coming up with supplement formulas so that people will not be affected by excessive radiation? Could you comment on that?

Aronson answered that there is a beam line at the AGS that is run by NASA to study the biological effects of radiation, mostly aimed at understanding what is safe for space travel. In dealing with radiation, according to the principles under ALARA, there are a number of factors that come into play. One is the strength of the source, so the dose you get depends on how long you stand at the given distance. It is a product of the time and the distance from the source. The basics of it are to plan your work so you spend as little time in high radiation areas as possible. Stay as far away from the source as you can, that's where robotics come into play, so you can lower the dose where you actually work. We may have different technologies that enable you to do the work at a given distance in a given time from a higher radiation source. But the principles are not going to change, spend as little time as far away as possible from the source and use any shielding that you can arrange to further reduce the dose.

Member Shea asked if there was work going on right now on supplements to protect the person internally from radiation.

Aronson replied, I don't know about any specific work that is being done to reverse or delay the effects of radiation by taking supplements or vitamins.

Reed said that right now he is hearing that the CAC would like: Cleanup as quickly as possible with worker doses not exceeding standards established by regulations. That means that as standards go down you would be recommending that cleanup be done as fast as possible while protecting workers according to the way worker protection is defined by the current regulations. Is there anyone whose interests are not being met by that definition?

This does not set a specific level, it says whatever the level at any date is the level that you want the Laboratory held to.

Member Martin asked if the word practical is intended to refer to the first bullet.

Reed replied, no, the word regulation is intended to refer to the first bullet.

Member Martin asked what was meant by the word practical.

Reed answered that it means to do it in less than 50 years if practical based on the terms that are in the five year review list. If it is economically feasible, if you have the technology to do it, that's what practical means.

Member Esposito said that in order to see if it meets their needs they need to then apply it to the chart. So, in the chart, the first four boxes stay the same. And then the last three are after a decay period not to exceed X number of years. Now we have, not to exceed the dose level and to be accomplished in 50 years or less, if practical. Does the "if practical" apply to the "or less" or does it apply to the "50 years" as well? I am not thrilled about the way it is phrased. Can you clarify what is meant by the "if practical"?

Reed replied, what would you want it to mean? It was to be 50 years or less subject to the five-year reviews is what I meant by it.

Member Amper suggested an amendment that said if we can meet the standard in fewer than 50 years, we would support that, but not to exceed 50 years.

Member Henagan said that in 50 years you are subjecting the workers to unsafe radiation levels.

Member Esposito replied that is if there are workers. So all we have is bunch of verbiage which brings us back to Alternative C. I don't think we should mask it.

Member Amper said it is worse than Alternative C. It is saying that if we don't meet that standard in 65 years, it could be 120 years.

Reed asked how to word it to meet the interest of everybody around the table.

Member Amper said that if we accept Alternative C, this is going to be done in 65 years regardless of dose rates. What we are saying is, let's make the goal be 50 years. With reviews every five years to determine the practicality and to use as our standard for expediting the process, the capacity to stay with whatever the current level is at that time. We do need to put a fixed time on it. That was something we agreed to from the beginning.

Member Kaplan commented that everyone is concerned about worker safety. It appears that in 50 years the workers will not be at risk. There seems to be consensus here except for clarifying whether we are fixed on the 50-year time frame or not.

Member Esposito said it is an issue of accountability. A clear endpoint provides clearer accountability. I don't want to leave it vague. I am looking for clarity and accountability and something that says the job is going to get done at this point in time. I think that's reasonable, that is the way most cleanups are done. I know this is different because of the exposure issue. This is an issue of accountability and acceptability.

Member Kaplan responded that Member Amper used the word goal, does that helps us out?

Member Amper said that all the people here can do is make the strongest recommendation to set public policy today. Even then, it is only advice. Twenty-five years from now there will be another group of people sitting around another table and they might say, if we wait five more years we can reduce worker liability to nothing. Let's leave that problem to them. What we want to start today is a specific, accountable, predictable objective that says 50 years from now, this process is over. We will review it every five years, if we can do it sooner, we'd like to see it done. We have to assume there will be people as bright and caring as we are that will move it back five years if it is going to make all the difference in the world. Let's just focus on what we can do in 2008. We can agree to set a limit as to how long this process is going to take and make it clear that we care very much about the workers that will be engaged in the process. If

we all do that then maybe the DOE and this Laboratory will say, let's try it. Failing that, we have done nothing for those who will follow us. We have done nothing to set this on a course.

Member Sweet said that she is concerned with the vague wording affecting the sooner part of this. I would think regulations are more concerned with total dose rather than dose rate. If you use those regulations, then you could clean up at any time and it would just be more expensive. You are discounting any economics.

Member Chaudhry said he does not like leaving this open ended. It might go on for 120 years. We need to put a number on it or it becomes diluted. My feeling is still 65, but I would go with 50.

Reed said, it needs to be 50 years and it needs to be protective of worker safety as defined by current regulations as you go forward.

Member Amper said that is potentially contradictory. If we say 50 years and current regulations, we don't know what we have agreed upon. We don't know what current is going to be. What I have heard is that 50 years is something we are all comfortable with. Les has said it is not problematic; we don't have a bright line. We also have made it clear that safety is a concern. This is not going to be decided by us, it is going to be decided by someone else because it is not going to be decided in our lifetime, so let's just decide what we can do in terms of what we think should be done from the viewpoint of smart caring people in 2008.

Member Martin commented that we have consensus on two things. The five-year evaluation of regulations, technologies, risk, etc. and also that it be done sooner if possible. What I am puzzled by is if there are no changes, then 65 years is the number that brings it down into tolerable exposure rates. In 50 years, if nothing changes, it is still not tolerable but we have to do it anyhow.

Reed said that either the 100 mrem at 65 years or the 800 mrem at 50 years was tolerable.

Hill responded that the job can be done at 50 years and it can be done at 65 years, the difference is dose rate. The dose rate can be managed in 50 years. So I guess it is tolerable, but it's a judgment standard. What is tolerable?

Member Sprintzen said he needed clarification on the health effects of 100 mrem exposure and 800 mrem exposure to the workers. Does that mean you use more workers for a shorter period of time? Is that what makes it tolerable? Does it increase the cost?

Member Esposito asked if the workers are going to be exposed to 800 mrem.

Reed asked if that is the dose to the worker or is that the dose at a distance from the item.

Hill responded that those are the dose rates at a foot away. You would not work hands-on. We would use shielding, decreased time, using robots. The workers would not see 800 mrem. We simply wouldn't allow that.

Member Esposito asked if they would use protective gear even if it's 200 mrem.

Hill said they would use robots. You wouldn't put people adjacent to that kind of source.

Member Amper said he would like to seek unanimity.

Member Giacomaro stated that they have been going around in circles.

Member Shea said that she thinks 50 years is important. And we could build into the review as a priority, worker safety.

Reed suggested that the CAC say:

1. Cleanup in 50 years
2. Five-year review with specific review activities looking toward an earlier cleanup if possible.
   The specifics of the five- year reviews to be to:
   a) Evaluate the remedy to achieve cleanup as quickly as possible with safety to workers
   b) Address changes in technology
   c) Evaluate the economics
   d) Evaluate land use
   e) Bring in community perspective deliberately
   f) Evaluate the effectiveness of the remedy
   g) Evaluate the future projection of safety and stability of the remedy
   h) Evaluate environmental factors

So that would be Alternative C with the 50-year time limit with subsequent five-year reviews, including the listed items.

Member Sprintzen said he feels the 50 years is totally arbitrary and he cannot support it, but he will not stand in the way of consensus. Saying 50 years suggests that we are not really concerned about worker safety. But I do expect that there will be sufficient technological development and this is really a verbal discussion.

Member Esposito commented that Alternative D says it could be done by the year 2026 not because they want to kill workers, but because they think it can be done safely sooner. I think you completely misunderstood and assigned a meaning to this that does not exist.

Member Sprintzen said depending on cost and expenditure it could probably be done in the next few years.

Reed said I think we have consensus. Looking at your core interests and what you want to achieve is Alternative C with a 50-year time frame in the last three boxes and subsequent five-year reviews with the items listed sufficient to meet the interests you bring to the table, so that you can join the other members in consensus? Is there anyone here where that does not sufficiently meet your interests? If that is so we need to understand and deal with that.

Member Sprintzen responded that it does not meet his interest, but he would not block consensus.

Member Biss said you need to add what the current standards are for that time.

Reed said so we will add regulatory standards at each five-year review. Ok, is there anybody whose interests cannot be met by what I said?

No one indicated that their interests were not met.

Reed said we now have consensus, where no one will block that consensus. We will now close this discussion.

5. Agenda Setting

Reed said the agenda for April will include a presentation by Steve Schwartz on global warming, a discussion on membership, and the Peconic River presentation.

Member Giacomaro asked if the CAC should be writing a letter of recommendation now that they have reached consensus.

J. D'Ascoli explained that the process is that your recommendation will be included in a letter to Dr. Aronson who will then send it on as the CAC recommendation to DOE.

Member Giacomaro asked if the CAC members would get a copy of that letter before the next meeting.

D'Ascoli responded that a copy would be sent out in the next mailing, but it is going to be exactly as you put it, it will be verbatim.

Reed said that next month it will be Peconic, Steve Schwartz on global warming and membership. The committee on nano will meet and come back to you with their considerations for a path forward.

D'Ascoli commented that she was not available this last month and that is why there has not been a meeting for the committee on nano yet. She will call one next week. She will poll everyone on the committee by e-mail to see what their availability is.

Member Henagan asked to be on the committee.

D'Ascoli listed the committee members as: Jim Heil, Ed Kaplan, Mary Joan Shea, Mike Giacomaro, Jean Mannhaupt, Pat Henagan, Robert Conklin, Bruce Martin, and George Proios

April Agenda
Peconic River
Global Warming – Steve Schwartz
Membership
Committee Report

6. Community Comment

Member Chaudhry commented that the CAC is not a jury and he wanted to know why 100% was needed for consensus.

Reed explained that there is a decision-making process in which the preferred recommendation is a consensus in which every member's core interests are met. If consensus cannot be obtained, then a process in which the CAC goes to a super majority, which is a vote, is instituted. If a super majority cannot be reached or the CAC does not wish to use that process, then you a poll of the members is taken and the information from the poll is passed on to the Laboratory Director without an actual vote taking place. There is a graded process that the CAC goes through.

Member Giacomaro asked if it was in the charter.

Reed answered, yes it is.

7. Presentation on Environmental Impacts and Controls Associated with Work Involving Nanomaterials, Deborah Bauer, Environmental Compliance Representative, Basic Energy Sciences Directorate

Deborah Bauer, Environmental Compliance Representative for the Basic Energy Sciences Directorate, gave a presentation on the Environmental Impacts and Controls Associated with Work Involving Nanomaterials. Bauer explained nanotechnology and described naturally occurring, incidental, and intentional types of nanomaterials. She spoke about engineered nanomaterials and the nano-scale. Bauer said that the Laboratory's approach to risk management was precautionary and she described work planning and controls including the Experimental Safety Review process. She said her role was to assess the potential for environmental impact to air, ground/surface water, soils, and flora/fauna and to assure that the proper controls are established to mitigate the impacts. Bauer explained the risk identification hierarchy and talked about the scope of work with engineered nanomaterials at the Lab.

Bauer described the established controls for air emissions, waste, and effluent. She told the CAC that no nanomaterials are thrown out in the trash or go down the drain. She explained the controls for housekeeping and spills and for transporting experimental materials and said that the Lab treats all nano waste as if it were hazardous waste and sends it to an EPA-permitted incinerator for disposal. She told the CAC that the Lab is working to understand the environmental impacts of engineered nanomaterials, uses very small quantities of engineered nanomaterials, is implementing conservative controls to keep engineered nanomaterials from entering the environment and that the Lab is actively searching out new information regarding impacts and controls. She said that available national guidelines and requirements are followed.

The CAC asked many questions after the presentation.

Member Giacomaro asked about nanomaterials on a fixed substrate and if the HEPA filter was more than one filter stacked on top of the other.

Bauer said she couldn't answer that question, but the scientists know how the materials will change when they are applied to a fixed substrate. And, she said that the HEPA filter is one very thick filter.

Member Martin asked about the efficiency of a vacuum cleaner compared to the HEPA filters.

Bauer told him she does not know the efficiency, but a household vacuum is not as efficient and still does a very good job of filtering the air. They are very good at capturing very small particles and work well for people with allergies.

Member Giacomaro asked if the incinerators are monitored for nanomaterials.

Bauer said keep in mind that EPA has not passed regulations regulating nanomaterials so they are not asking anyone to monitor specifically for them.

Member Henagan commented that just as a point of clarification, combustion creates nanomaterials.

Member Martin asked if there were some nanomaterials that the temperatures are not high enough to destroy.

Bauer said she didn't know the combustion temperatures of all the nanomaterials. This is the best means we have right now to manage them.

Member Chaudhry commented that this is based on the assumption that all nanomaterials are dangerous.

Bauer said that the EPA is funding research looking at the environmental impact of nanomaterials. DuPont has agreed to share their information. EPA is not writing regulations yet.

Member Chaudhry asked what the end product is after burning the nanomaterials.
Bauer said it isn't that we think they are so dangerous, it is just that we don't know so we are treating them as conservatively as possible. We are looking for any information to either back up what we are doing, or that gives us better means of handling them, or shows that we don't have to be this conservative.

Member Chaudhry said since we don't know we assume they're dangerous and since we don't know we burn them.

Bauer said that we're using the best methods we have right now.

Member Kaplan asked about excluding naturally occurring nanomaterials, why?

Bauer replied that we are focusing on what is going on here at the Lab. The Lab is not doing research on incidental nanomaterials.

Member Kaplan asked if there are there any biologicals involved here.

Bauer replied that there biological materials that would fall within the nanoscale. It is very heavily controlled work.

Member Kaplan said he was confused. If a researcher creates something as part of a process, that's a by-product, how do you know what the risks are?

Bauer replied that is not how we are using the term. We're trying to keep from including the researcher's powders. It's a hard line to draw, but we can't regulate all the powders at the Lab, we have to focus on the ones that we thinking may pose some sort of hazard. What you are calling a by-product we are calling an engineered nanomaterial, even though I understand why you are calling it a by-product. By-products from the experiments are considered in the scope of work part of what we are controlling. By-products from your experiment are considering in your scope of work, part of what we're controlling.

Member Martin asked if it wasn't better to encapsulate the nano waste rather than incinerate it. Is the hazardous waste incinerator for all kinds of stuff or only for nanomaterials?

Bauer responded that the EPA doesn't recognize nanomaterials as a hazardous waste. It's for waste that EPA says should be incinerated.

Member Martin said some of which may contain nanomaterials.

Member Martin continued it is a little unclear as to whether the temperature is sufficient to break down the structure of all nanomaterials. Instead of burning, maybe we should encapsulate and contain them.

Bauer said that is an option.

Member Biss asked where the ash goes.

Bauer responded that EPA has permitted hazardous waste landfills where all hazardous waste that goes through incineration goes to these landfills. These landfills are designed with controls to keep rainwater out. Rainwater is the main issue.

Member Biss asked where the landfills are located.

Bauer answered the one we are using is in Port Arthur, Texas.

George Goode, BNL, Waste Management responded we are using this technology because we think it is the best available, it's probably overkill for most of the stuff that we are sending there. This is designated to burn the most toxic stuff in the world. 2000 degrees has been determined sufficient to destroy hazardous waste by the EPA. There are two primary waste streams that come from the incineration process. One is called bottom ash and the other called fly ash. The bottom ash is the heavy stuff, the remnants of glass bottles and things like that. Fly ash is the light stuff which is probably absolutely loaded with nanomaterials. It is called fly ash because it is small and it flies. They all have scrubber systems which are part of that which spray a sodium bicarbonate solution which captures and washes that fly ash out of the waste stream. That waste stream is then filtered and that fly ash and bottom ash is combined and stabilized. Usually with a concrete or lime type of a component to solidify it and then it is sent to a hazardous waste landfill, which is a double bind landfill designated for this type of material which has a leachate collection system and it is eventually capped with a permeable membrane to prevent water infiltration. This is what happens to all hazardous that we generate around the world.
Member Sprintzen asked about problems with small particles getting through containers and skin.

Bauer explained that as the particles get smaller they tend to stick or bind together, which is why you can contain them.

Member Sprintzen asked at what point the clothing and equipment that is used and re-used becomes waste?

Bauer said that there is another side of the nano issue on industrial hygiene that will be the focus of a future presentation.

Member Kaplan asked how the used HEPA filters are handled.

Bauer explained that they are designed with the bag in, bag out design. There is a bag in the housing, when the person goes to change it, they are sticking their hands into arm holes in this bag and then they put the bag around the filter and tie it off. So the unit becomes enclosed and does not present a risk when it is changed out.

Member Giacomaro asked if the biological research was done at the CFN or in Medical?

Bauer explained that the Life Sciences group has worked with the materials. She said not all nano research will occur in the CFN. We are applying the controls across the Lab.

Member Chaudhry asked if viruses were nanomaterials.

Bauer said that viruses fall into another area a little bit above the nanoscale. The work on viruses falls into another regulatory framework, but if there's cross-over where nanomaterials are added to viruses, we may considered that.

Member Sprintzen asked about nanomaterials in relation to technology.

Reed said we will add the application of nanomaterials in building computers to the list.

The CAC thanked Bauer for her presentation.

Reed summarized next month's agenda items as global warming, Peconic River, and membership. Membership is a hold-over from last June. You are to bring recommendations for candidates for the open positions.

The meeting adjourned at approximately 9:36 p.m.

Agenda Topics	Votes
Global Warming, Stony Brook, Pine Barrens (1-10-08)	15
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Energy	9
Overview of programs	9
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Anti-terrorism update	7
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Nuclear power plant safety	6
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Sustainable transportation	4
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Nano ES & H (October 11, 2007)	3
Safety and Security	3
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Latest RHIC findings	2
How the Lab supports nuclear facilities in the N/E region	2
Status of P-2 road show	2
Heating plant and efficiency research	2
Lyme Disease	2
CAC process	2
Alternative fuels	2
Update on phyto/bacterial contamination remediation research	1
Deforestation	0
Work planning process	0

New Topics Added After September 2007 Vote

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 FDA
Renewable energy research at the Lab
BNL/CSHarbor/Stony Brook collaboration

P = Present 2008 Affiliation		First Name	Last Name	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
ABCO (Garber added on 4/10/02)	Member	Don	Garber	P	P	P									
ABCO	Alternate														
Brookhaven Retired Employees Association	Member	Graham	Campbell	P	P	P									
Brookhaven Retired Employees Association (L. Jacobson new alternate as of 4/99)(A. Peskin 5/04)	Alternate	Arnie	Peskin												
CHEC (Community Health & Environment Coalition (added 10/04)	Member	Sarah	Anker		P										
		Ann Marie	Reed												
Citizens Campaign for the Environment	Member	Adrienne	Esposito	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												
E. Yaphank Civic Association	Member	Michael	Giacomaro	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												
Educator (B. Martin - 9/01)	Alternate	Bruce	Martin			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											
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										
Fire Rescue and Emergency Services	Alternate	James	McLoughlin			P									
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										
Health Care	Member	Jane	Corrarino		P										
Health Care	Alternate														
Huntington Breast Cancer Coalition	Member	Mary Joan	Shea		P	P									
Huntington Breast Cancer Coalition	Alternate	Scott	Carlin												
Intl. Brotherhood of Electrical Workers/Local 2230	Member	Scott	Krsnak												

P = Present 2008 Affiliation		First Name	Last Name	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
(S.Krsnak replaced M. Walker 1/11/07)				P	P										
IBEW/Local 2230	Alternate	Philip	Pizzo												
L.I. Pine Barrens Society	Member	Richard	Amper		P	P									
L.I. Pine Barrens Society (added P. Loris 6/05)	Alternate	Elina	Alayeva	P											
L.I. Pine Barrens Society	Alternate	Susie	Husted												
L.I. Progressive Coalition	Member	David	Sprintzen	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									
Lake Panamoka Civic Association (Rita Biss new alternate as of 3/99)	Alternate	Joe	Gibbons												
Long Island Association (Groneman replace 10/05)	Member														
Long Island Association	Alternate	William	Evanzia												
Longwood Alliance	Member	Tom	Talbot	P	P										
Longwood Alliance	Alternate	Kevin	Crowley												
Longwood Central School Dist. (switched 11/02)	Member	Barbara	Henigan	P		P									
Longwood Central School Dist.	Alternate	Allan	Gerstenlauer												
NEAR	Member	Jean	Mannhaupt												
NEAR (prospect taken off ¾)(Blumer added 10/04	Alternate	Karen	Blumer	P											
NSLS User	Member	Jean	Jordan-Sweet	P		P									
NSLS User	Alternate	Peter	Stephens												
Peconic River Sportsmen's Club (added 4/8/04)	Member	John	Hall	P											
Peconic River Sportsmen's Club	Alternate	Jeff	Schneider												
Ridge Civic Association	Member	Pat	Henagan	P		P									
Science & Technology (added 1/13/05)	Member	Iqbal	Chaudhry	P	P	P									
Town of Brookhaven (Graves made member 6/06)	Member	Anthony	Graves	P		P									
Town of Brookhaven	Alternate	None	None												
Town of Brookhaven, Senior Citizens	Member	James	Heil	P		P									
Town of Brookhaven, Senior Citizens (open slot as of 4/99)	Alternate	None	None												
Town of Riverhead	Member	Robert	Conklin	P		P									
Town of Riverhead (K. Skinner alternate as of 4/99)	Alternate	Kim	Skinner												
Wading River Civic Association	Member	Helga	Guthy	P	P										
Wading River Civic Association	Alternate	Sid	Bail												