**DR. GOLDSTEIN:** Okay, I assume that we have some folks that have been here before, but also some new faces here, so why don't I go through the ground rules again, just to be sure that everybody's sort of heard, heard them. We have, we had yesterday, we won't have this repeated today, a presentation from the NIEHS folks, which I think are, an important aspect of it is a clear commitment to being responsive to what they hear and to what people have sent in here. We start with the basic idea that any process can be improved. This process is not perfect. It is not absolutely imperfect. It's on a continuum somewhere, and we've got to move it on this continuum to basically get it better. Obviously a primary thing on a continuum between absolute perfection and absolute imperfection is that changes can make things worse as well as better, and so obviously, they have to be considered very carefully. Many of the written comments that we've received, some of the presentations yesterday, really didn't focus on this process. They focused

on individual chemicals for which the person had concern. That got, everybody on the speakers list has got ten minutes. I would suggest to you, however, you best put that ten minutes into trying to deal with questions of process, not with questions of individual chemicals and whether or not a certain rat study was correctly interpreted or not correctly interpreted. That's really not part of what we're here at, here for, but again, you've got your time, you use it as you wish. We, everybody's comments are going to be recorded. For that reason, during the discussion period, we specifically would like you to identify yourself again and speak into the microphone. I hope we can avoid as much as possible abbreviations and jargon. That, that sort of helps everybody. We have with us two members of the Board of Scientific Counselors, Dr. Lynn Goldman, now with Johns Hopkins, previously at EPA, Dr. Clay Frederick from Rohm and Haas, and they're going to be very much involved in trying to pick out themes for the discussion period; the idea of a discussion period rather than just presentation after presentation is a bit of an experiment. We're trying to see if we can help focus the discussion on ways to improve the

process. We hope to be able to get a little bit of dialogue, not only in terms of among you, in terms of ideas that may have come forward, and one of the things you'll have to evaluate when this is over is whether that really helped or not. Based on what I heard yesterday, I think it has helped. The information that you, that will be provided, either through transcripts or through all the written comments that we've received from presenters and some written comments from those who could not be here to present, all of this will be made available, this material put together. George, I forget, I forgot what time you said it would take, you gave an estimate last, yesterday.

**DR. LUCIER:** For the written material are ready very soon after the meeting. The transcripts will probably take four to six weeks before that's completed and available, and we'll send it out to anyone who wants it at the time.

**DR. GOLDSTEIN:** You've no doubt come across a very efficient staff at NIEHS and NTP have made available help with this meeting. Any of you want the written materials or want to be on the mailing list for the others, please let me know. Okay, so that's our information. We're going to,

this morning, basically go through a series of presentations, and then take a break and have a discussion of these presentations. There are some people who haven't checked in yet. Perhaps they will be here, I'm trying to see which list I've got that describes who's here and who's not, but anyhow, we can go through the list of the folks who are planning to present. Let me first ask if the NTP folks have anything they'd like to add from what they said yesterday.

**SPEAKER:** No, thank you.

**DR. GOLDSTEIN:** So our first presenter will be Ashley Coffield of the Center for Children's Health and the Environment.

**MS. COFFIELD:** Good morning.

**DR. GOLDSTEIN:** If you'd like, why don't you use the, you're really presenting to the group out there. I'm sort of the moderator. If you need help, if anybody needs help with overheads or slides, let us know in advance. We have very effective people here to help us with that.

**MS. COFFIELD:** Hi, my name is Ashley Coffield. I'm with the Center for Children's Health and the Environment at Mount Sinai School

of Medicine. I'm here this morning on behalf of Dr. Philip Landrigan. I'm going to be reading his testimony because he was unable to be here today.

Thank you very much for inviting me to appear before you this morning to offer comments before the National Toxicology Program concerning the NTP Report on Carcinogens. My name is Philip Landrigan. I'm a pediatrician and Professor and Chair of the Department of Community and Preventive Medicine at the Mount Sinai School of Medicine in New York City. I direct the Center for Children's Health and the Environment at Mount Sinai, a children's environmental health policy center supported by the Pew Charitable Trusts. I am Co-Director of the Mount Sinai Center for Children's Environmental Health and Disease Prevention Research, a children's environmental health center supported by the National Institute of Environmental Health Sciences and the U.S. Environmental Protection Agency. I have spent the past 30 years studying the impact of environmental toxins on human health, with particular emphasis on the health of children. My purpose today is to argue strongly for the preservation of the NTP Report on Carcinogens. The Report on Carcinogens

is an extremely valuable document. It presents to Congress and thus to the American public the results of the testing and evaluation of chemicals undertaken by the U.S. National Toxicology Program, perhaps the most outstanding independent toxicology testing program in the world. The Report on Carcinogens fulfills the absolutely fundamental purpose of biomedical research in a democracy. It informs the public of the research that they have supported. The public has a right to know the results of research conducted by the U.S. Public Health Service and the National Toxicology Program because the results are directly relevant to individual decisions about the preservation of health and the prevention of illness. American citizens need to be informed about which chemicals in the environment cause cancer in order to protect themselves and their families. The biannual publication of the Report on Carcinogens is in the best tradition of Jeffersonian democracy. It is a document that must continue to be published, and the process by which it is developed must remain independent and uncorrupted by special interests. Various special interests have introduced a series of proposals that would dilute the quality and lessen

the independence of the process by which the Annual Report on Carcinogens is produced, thus fundamentally corrupting the Report. One adverse proposal would require the scientists at NTP to consider non-peer-reviewed materials as they formulate their decisions concerning the carcinogenicity of various chemicals. This is a very dangerous proposal. One of the great safeguards in the procedures that have been followed over the years by NTP in preparing past reports is that evaluations are restricted to consideration of reports that have been published or accepted for publication by the peer-reviewed literature or developed by independent peer-review bodies, such as federal agencies or the World Health Organization. To allow non-peer-reviewed junk science on the table would corrupt the review process. It would introduce data that have not been subjected to the scrutiny of peer-review. I strongly urge the NTP to reject any proposals to produce non-peer-reviewed data for consideration.

A second dangerous proposal is that the decisions of the NTP carcinogen panel should be subject to endless re-review. This proposal would have the effect of delaying the publication of the

Report on Carcinogens. Moreover, it would rapidly and inevitably degenerate into an exercise in jury-shopping. Affected parties would continually demand reexamination of data if they did not get the result that they sought the first time around. I strongly urge the NTP to reject this proposal in all its versions.

Finally, a proposal has been put forward to move the work of preparing the report from the National Toxicology Program to the National Academy of Sciences. I am a member of the Institute of Medicine of the National Academy of Sciences. I have great respect for the Academy. Over the years, I have served on and chaired a series of Academy meetings. That said, I think it absolutely inappropriate that the work of preparing the Report on Carcinogens be transferred to the National Academy of Sciences. NAS committees are staffed entirely by volunteers, people who give unstintingly of their time to evaluate pressing issues of national importance. Preparation of the Report on Carcinogens is a tedious, repetitive task that will require extensive staff resources. Those resources exist and are in place at the NTP. They do not exist at the National Academy of Sciences.

Moreover, the NIEHS has done an admirable job of keeping the National Toxicology Program and the Report on Carcinogens honest and credible. Why tamper with this success? I would argue to keep the responsibility for preparing the Report on Carcinogens within NTP. I thank you again for having allowed me this opportunity to speak before you. I respectfully request that these remarks be entered into the record. I urge you to preserve the vigor and independence of the Report on Carcinogens. Do not allow this national resource to become corrupted by special interests and affected parties. Thank you.

**DR. GOLDSTEIN:** Thank you, Ms. Coffield. Our next speaker is Philip Leber of the Goodyear Tire and Rubber Company.

**MR. LEBER:** Thank you, Mr. Chairman. Today, my comments will definitely be more along the lines of the process. The first slide, please. Let's go to the second slide.

The three main areas I want to talk about is what can we agree on. We certainly have a lot of disparity of opinions on the situation, but what can we agree on. Secondly, I'm going to very quickly go over some of the concerns, and thirdly,

get into a proposal for a process enhancement. Again, I want to say that these comments also apply to the bioassay program. Some of the reports on the NTP bioassays, I think, warrant also significant review, peer-review.

Next slide, please. Okay, the, I am, I am making the assumption today that NTP in this process accepts the concept that good science is absolutely fundamental and central to the task at hand, and that is taking a chemical, looking at the data surrounding, pertinent to that chemical, and making a truly scientific decision on the classifications which it belongs.

Secondly, in order, if this is a true assumption, then it requires that it include the qualified and informed personnel on how those data on a particular chemical can be judged appropriately within a scientific methodology to come to an appropriate enhancement classification.

Next slide. Part of the components, as I see it, of good science, are that all significant data and issues are considered and certainly the comments with regards to peer reviewed data, nobody has any objections to, that is quite appropriate, but there has to also be some debate

and discussion on the critical points within the process. Secondly, the bases for decisions need to be clearly articulated and documented in an open manner and opposing views also need to be addressed. I was a little distressed yesterday to say, to hear that there were folks who felt that dialogue was not needed, that it was superfluous, and that's just not consistent with the scientific process. Obviously there's a contention factor, how do you resolve points where there is significant disagreement. Perhaps that's when you call in an expert group of consultants and so forth to work on these, and final point there is bias, and you know, there was a lot of concern about bias from various parties, and I think that when you have, with large committees such as the BSC, the Board of Scientific Counselors, you have ten or twelve people there and if bias enters into the discussion, it's going to be eliminated. No one person who is biased is going to carry the day. So I don't think that that's really a concern. Next slide, please.

Okay, real quickly, these are some of, many of these issues were discussed yesterday. The first point though, again, I know that we've heard that there's pretty strong feeling on the part

of NTP that stakeholder inputs is not being excluded, but as I said yesterday, there's no evidence, there's no significant evidence that it is being taken into account, and the only thing we have to go on is the feedback and the form that these background documents take, and so if we, if input is given, the comments are not, or the documents are not changed, we have to assume that there is no consideration.

I'll go to, number five is semantic classifications is known. I think there's a very significant point here, and I'll discuss it a little bit further. Next slide, please. Okay, with regards to the transparency issue, if you look at the process that was outlined yesterday, the background document, the review of data proceeds for about nine, ten months and it's only at the point where there's, it's time for a Board of Scientific Counselors public meeting and a review of the background document that it comes to light what is the main issues, what has NTP nominated the chemical to be, a known carcinogen, reasonably anticipated, and so forth. We can provide input, but we don't know which direction the debate is going, and then finally, as I said too, there's just,

there's just not a, the back and forth, which is really an intrinsic and important part of scientific deliberations. Next slide.

Okay, this is, this is probably the guts of my, my presentation. It appears to me that one, many of the, the concerns would be addressed by having a chemical specific workshop invited to any and all parties who have, want to participate in a toxicological workshop and discussion. Come prepared to talk about bioassays, come with your epidemiologist, and come prepared to talk pathology, but this workshop should be held very early in the process, and I, I don't attach any, I don't want you to attach any significance to the RG2 process. It could be at the RG1 process. It even could be before that. But I think if we had a direct document that came out of a workshop and then that was passed on to RG1, RG2, we would at least be able to get into the trenches and to discuss the, the contentious issues if there are any, but that's the way to work scientific issues out, not where you are pressured with time and a large number of chemicals to make quick decisions. Again, the message is, let's, let's front load the process and, for working out the fine points, and

then I think the rest of the process will go much more smoothly. Next slide, please.

Okay, just real quickly, again I think for enhancement of the process, I'd like to see a little bit more opportunity, also for the BSC chairs or, to solicit...certainly there's enough points left in the written comments or oral comments, but there ought to be some curiosity as regards the disparity that is apparent between the panel's document and the public comments and, but I'd like to see more of an interactive type of situation, and then secondly, and then again, I don't, none of, this proposal does not want to make for further effort and time on the part of NTP staff. I think in a sense it would ease the burden both for the BSC as well as staff, which just too many chemicals to review at one time. The time factor has been discussed, and then thirdly, I think that, you know, the makeup of the BSC needs to be a little bit heavier in basic toxicology and bioassay carcinogenesis epidemiology. Next slide, please.

Secondly, I think with regards to...

**DR. GOLDSTEIN:** One minute.

**MR. LEBER:** Okay. The language in the terms being used, known Human Carcinogen.

I understand that there was a new criteria for a known human carcinogen, but we still have the situation where your limited evidence in humans progressing right to a known human carcinogen category. Let's go to reasonably anticipated plus or double A or something like that, but if it's not a known human carcinogen, let's not confuse the public by saying that it is.

Next slide, and finally, NTP is not a regulatory agency, everybody acknowledges that, so I think it's an excellent opportunity to practice strictly science, and the suggestions of let's move the process faster, let's involve less people, let's not have dialogue, that's just not in the scientific interest or the public interest. So I just don't think that there's a compelling basis to say that, you know, that certain parties should be excluded. One final slide, please.

Here's a couple of quotations that came from Carl Sagan's book and it's, science strides indeed require free exchange of ideas and its values are antithetical to secrecy. Okay, thank you very much.

**DR. GOLDSTEIN:** Our next speaker is James Hathaway, Rhodia Incorporated and also

the CMA Inorganic Acid Mists Panel.

**DR. HATHAWAY:** This first slide basically shows who I am and who I'm representing. You can go ahead to the next slide.

Here are our expectations of the process for carcinogen classification. I think they are things that everyone in the room here would agree on and based upon our experience we feel there's serious deficiencies in every one of these areas. Next slide.

Our experience is based upon the sulfuric acid mists deliberations, and from those deliberations and what's gone on afterwards, we have no ability to determine whether industry positions were ever seriously considered. There are no written reports available to understand how the internal NTP committees made their decisions. Next slide.

I do know that the materials prepared by the NTP for the external peer review committee did not include original articles. They were primarily extracts from the International Agency for Research on Cancer Monograph, and they did not discuss criticisms of key studies provided by industry. They did take one point out of context to try to

justify their position, and that was it. Next slide.

Neither of the two primary reviewers for sulfuric acid mist were epidemiologists, even though only epidemiology studies were being used for classification. Given the number of substances considered, it seems doubtful there was adequate time for other members of the committee to comprehensively evaluate the materials on sulfuric acid mist. Next slide.

There was insufficient time for public comment, limited to five minutes. Industry's comments were never seriously discussed by the review committee during their public meeting. It seemed to me they were more interested in finishing as quickly as possible so they could get home early, and industry has never seen a documented explanation for why their comments were disregarded.

Now, some of you in the room may feel that industry comments ought to be dismissed out of hand and some people feel that they make economic arguments and other things that try to persuade people to alter their classification. Our comments are strictly limited to the science and curiously, another federal agency, the Agency for

Toxic Substances and Disease Registry has issued a toxicology profile on sulfuric acid in December of 1998. As far as I know, industry did not provide any comments on that document. Our group certainly did not, and interestingly, the authors and reviewers of that document independently arrived at essentially the same conclusions as comments provided to the NTP by industry. The ATSDR document stated that the IARC based their classification on very limited human data. It also states there is no information that exposure to sulfuric acid by itself is carcinogenic. Other scientists, including those from another government agency, have criticisms of the IARC classification of sulfuric acid mists that are similar to those made by industry. Clearly, industry's scientific comments merited full consideration. However, industry's comments were apparently dismissed, no explanation was documented. If the NTP is going to act as a rubber stamp basically endorsing IARC decisions without really a critical independent review, then they ought to state that's what they're going to do. But if they really want to be an independent, careful, rigorous process, then they have to change a number of things. I think using summaries from

IARC as opposed to the original articles, limiting the amount of time available for the external peer review scientists to review this, not having people with adequate training and background for many of the items under consideration ends up with a problem. If we have an inappropriate classification based upon a flawed process, it does nobody any good. Thank you.

**DR. GOLDSTEIN:** Thank you, Dr. Hathaway. The next speaker is Michael Jacobson of the Center for Science in the Public Interest.

**DR. JACOBSON:** Good morning. Thank you very much for providing the opportunity to speak here. I'm the executive director of the Center for Science in the Public Interest. I appreciate this opportunity. CSPI focuses mostly on chemicals that occur in foods, but is also concerned about human exposure to chemicals in the air, water, workplace, and consumer products. I've become familiar with the Report on Carcinogens through my participation in the NTP's review of saccharin, the artificial sweetener. Thus, while my views might be somewhat colored by that one experience, I hope they'll still be helpful.

First, I'd like to emphasize the great value of the

report. It is critically important that some government agency review in a public way the safety of a wide variety of chemicals and provide its conclusions to the public. Decision-makers, industry, labor unions, public interest groups, journalists, and others have come to rely on the report as an authoritative listing of chemicals that may pose a cancer risk to humans. To stop publishing that listing or to prepare it in a non-public manner would be a serious loss to the public. The need for an objective report on carcinogens is all the greater considering that another ostensibly objective source of information, the International Agency for Research on Cancer, holds its meetings overseas and in secret and has numerous industry representatives serving on the committee and as participating observers. Its reviews now deserve much less credence than they once did.

Judging from my experience with the saccharin review, if the NTP is to continue overseeing the production of the report, several changes might be in order. The process of having four votes is extraordinarily cumbersome and time consuming. I suggest that the NTP devise a way to

streamline the process, perhaps eliminating at least one of the committees and two of the votes. For instance, the RG1 committee's vote might be just completely expendable. Furthermore, in practice, RG2 and the Executive Committee are hardly independent reviews, because the nominal members of the Executive Committee appear to delegate their vote to an underling, sometimes a person who sat on the RG2 committee. Thus, it might make sense to have only one government committee, either the RG2 or the Executive Committee plus the outside board of scientists.

Second, the scientific review document on saccharin was not as objective as it might have been. For instance, epidemiological evidence of carcinogenicity was downplayed and little attention was given to tumors in organs other than the urinary bladder and to the phenomenon of co-carcinogenicity. Thus the document was skewed heavily towards delisting. The NTP should, the NTP staff should consider producing these documents itself rather than hiring a consulting firm. Third, I am skeptical that members of the Board of Scientific Counselors can review carefully all the scientific data provided by the staff and consultants

and all the comments provided by the public on the sizable groups of chemicals that are discussed at individual meetings. My sense from the saccharin meeting was that some of the members did not review all the available information, had their minds made up in advance, and ignored the input from the public. The discussion of complex issues was, to say the least, perfunctory. It might be more appropriate to divide up the chemicals under review among a much larger number of scientists.

A fourth concern is that holding the meetings of the Board of Scientific Counselors in North Carolina is a sure way to minimize public input. Many people find it far less expensive, far more convenient to go to Washington than North Carolina, lovely a place as that is. Typically, the attendees at the meetings, according to one member, are almost exclusively industry representatives. What with all the citizens groups and trade associations in the Washington area, I urge that the NTP hold future meetings of the Board of Scientific Counselors in Washington.

My next point reflects the fact that any given chemical being reviewed has numerous well-funded and well-staffed corporate defenders. By

contrast, critics tend to be thinly funded and thinly staffed unions or citizens groups. That's hardly a level playing field. Twenty years ago, the Federal Trade Commission and possibly other government agencies provided public participation funding to ensure that issues were carefully and fully, fairly debated in the context of rule making proceedings. I suggest that on controversial chemicals or issues, the NTP provide modest funding to interested citizens groups to enable them to hire consultants or staff needed to conduct in-depth reviews and report their conclusions to the NTP.

Finally, the NTP should stick to its rules. In the case of saccharin, the Board of Scientific Counselors voted four to three not to delist that chemical. After that meeting, the director of the NTP, Dr. Olden, sent a letter inviting seven other scientists to provide their views on saccharin. In effect, Dr. Olden took it upon himself to create a new ad hoc committee. Worse, the NIEHS has kept secret the replies from those scientists. The agency has denied my request under the Freedom of Information Act to obtain copies. Perhaps the reason why is that, as I have learned, two of the three scientists who responded recommended that

saccharin not be delisted. So that is not on any official record. Frankly, it looked like Dr. Olden was trying to stack the deck. That kind of monkey business and the secrecy that followed has no place in what is supposed to be a public review of carcinogens.

To conclude, let me just reiterate my first and most important point. The Report on Carcinogens is a valuable document. The government should continue to produce it. Thank you.

**DR. GOLDSTEIN:** Thank you, Dr. Jacobson. Our next speaker is Donald Smith. Mr. Smith, we have no listing for your affiliation. Perhaps you have none, and you're a citizen.

**MR. SMITH:** My name is Donald L. Smith. I'm a private citizen from Tucson, Arizona, acting on a concerned basis. Thank you for allowing me to speak. The comments yesterday and today are deeply disturbing to me because common sense tells me if the background one uses to reach a decision is shown to be faulty, one is obligated to reconsider one's decision. That doesn't seem to be the philosophy here, so perhaps a new truth in dealing with NTP statement is in order, and it goes

something like this; if you send us a written comment regarding the background data we use, we won't acknowledge that we received it, nor will we let you know if it was considered, and if you choose to spend your money to come twice to testify, according to Dr. Frederick yesterday, as I understood it, we won't pay much attention to your verbal testimony. Now if that sounds a little cynical, it's because outside of the beltway, we no longer feel that the typical agencies are responsive to the public. At the close of my remarks, I'll try to suggest an alternative answer to Mr. Tozzi's provocative question yesterday, why the rush, and I am sorry, but it's impossible to talk about the generality of the process without some specifics.

My commentary, that I sent in a written format was to delist solar radiation exposure to sunlamps and sunbeds from the 9th. Next slide, please. The report, which was filed on March 1999, NTP Report on Carcinogens background document, on pages 18 and 19, place 3 and 4, please flip it. Finding of the association of cutaneous malignant melanoma with use of sunlamps and sunbeds showed these nine references as proof. Back to 2, please. However, 14 months before then in the

Journal of the American Academy of Dermatology, an article by Swerdlow and Weinstock listed 19 articles purporting to show the link between CMM and sunlamps, and they reviewed all of them, including these 9 articles, and their conclusion was, at this time, the published data were insufficient to determine whether tanning lamps caused melanoma. Furthermore, in the IARC document, in 1992, their conclusion was there was no support for non-melanoma. So therefore, there's no evidence to link sunlamps and sunbeds with any form of skin cancer.

The next slide, please. Regarding solar radiation, an article was published recently by Allen J. Christopher, a respectable physician, and his conclusion was, the conclusion that can be drawn from looking at these studies as a whole is that melanoma is not due to sun exposure. The conclusion is so clear that it is difficult to understand why scientific consensus still clings to the idea that sunlight causes melanoma. He postulated that skin temperature is the primary latitude dependent climactic factor operating in the induction of melanoma. His article is a significant package that may suggest that maybe this is a

wake-up call on global warming. So unless and until NTP ascertains that temperature's involved, then solar radiation cannot be. I have a question to ask you, for Dr. Jacobson's people. Does NTP not have a system whereby the appropriate databases are automatically scanned to routinely update your data on this? It's just a very common practice to put it into the databases now, and it will come right up and basically there we've got 14 or 15 months before this report was finalized and obviously you're not aware of it.

Next slide, please. There's a concept out that false, deceptive, misleading and unsubstantiated statements in advertising, and I submit when you are publishing documents to go to public action, that falls under the definition of advertising, and FDA and FDC have jurisdiction regarding statements regarding ultraviolet radiation. So if you look at the, at what is trying to be published in the 9th, which in my opinion is the FDMU statement, you have a faulty data linking sunlamps and sunbeds, data to consider temperature as an inducing factor for solar radiation, no economic impact, which has some severe economic consequence potentials, no paperwork impact, no

health impact, did not consider phototypes, subtypes. It assumes in the IARC documents that all phototypes, subtypes are equally as susceptible to solar radiation as a type one, and that, as we know, is definitely not true. You had no consideration for tolerance of ultraviolet radiation with the changes that built up in constitutive pigmentation and facultative pigmentation. You had no universal, biological efficacy rating scale, and yet the EPA has long had the ultraviolet index, which is an excellent tool for doing so. It failed to consider co-carcinogenicity of ultraviolet radiation among other substances, and yet we know that all genetic backgrounds are not equally susceptible. If it were so, then type fives, the brown skin, type five, the black skin would have the same incidence of skin cancer as do the more fair skinned, and that's, we know that's not true. Didn't consider smoking as a contributing factor, and yet we know that squamous cell carcinoma is reduced by 50 percent in non-smokers. It didn't consider diet, and yet a study by Black, et al and Baylor showed that a low-fat diet, the incidence of squamous cell carcinoma is reduced by 90 percent in a two-year period. It didn't consider the beneficial effects of

ultra, of exposure. It failed to consider the risk versus benefit analysis, and yet there's evidence to show that there may be four or five hundred people disadvantaged by lack of exposure to everyone that's affected by overexposure. There was a lack of consistency. It did not, it gave Tamoxifen the same beneficial information listing, but solar radiation exposure to sunlamps and sunbeds did not. Equally true was that alcoholic beverages did not have any beneficial statement. The Treasury Department has allowed statements on wine bottles showing the beneficial effects on the coronary heart disease. So those of us out there in the hinterlands, we might be reasonably expected to ask, doesn't the right hand know what the left hand is doing.

There's been some discussion about why the legal process is used by those listed that are not in agreement. Well, it's very simple. There's transparency in the legal process and accountability, so we can come in and reverse some of these things that we, we disagree with.

Three slides quickly. I submitted a Decision Tree, which I suggest that in business as common practice, when you're getting ready to

make a serious decision, that you follow a Decision Tree. It's the last three slides there you can show quickly. That Decision Tree takes you through the steps that I would submit this committee should have looked at before reaching this decision.

Finally, why the rush? Looking back and thinking about this last night and being deeply disturbed at what I heard here, I thought back at the mistakes that have been made in my 40-year business career, and they inevitably came in a rush to judgment, and in looking why did those happen. It's because a group of people had their mind made up, and when you have your mind made up, the prevailing opinion is don't confuse me with the facts. Thank you very much for your attention.

**DR. GOLDSTEIN:** Thank you, Mr. Smith. Our next speaker is Joseph Levy of the International Smart Tan Network.

**MR. LEVY:** Good morning, and thank you for the opportunity to address this group. My name is Joseph Levy, and I am executive director of the International Smart Tan Network, and I'm here to discuss the process of your group's proposal to list ultraviolet light as a known carcinogen. Smart Tan is a Michigan based

educational organization representing nearly 20,000 indoor tanning facilities in the United States, Canada, Australia, and New Zealand. More than 3,000 of these facilities are full members of the association, while an estimated 15,000 other facilities use Smart Tan training materials and so forth to train their employees and teach their customers the concepts of what we call Smart Tanning, which by definition, means teaching people of all skin types how to make appropriate decisions about their sun habits based on their individual characteristics. We're teaching them to think and be smart, based on their skin type, their heredity, and their constitutive tolerance to ultraviolet light.

For the purposes of this brief time period I have today, let us simply say that sunburn prevention is the bottom line of our responsible message, and our research within the tanning industry suggests strongly that our message, teaching prevention, is more effective at meeting that goal than the blanket approach of teaching abstinence from the sun. That's the essence to our objection to the blanket listing of ultraviolet light as a known human carcinogen in the 9th Report on Carcinogens. Treating a life-giving commodity such

as ultraviolet light, and let us not lose that perspective that we need ultraviolet light exposure to live, as a carcinogen would be a great disservice to the public. It would only serve to add to the noise of misinformation and hyperbole on this topic. It is our belief that the public needs to be educated on how to balance the potential benefits and the potential risks of ultraviolet light exposure, and much of the science, not all of it, behind that balance is discussed in my organization's 22 pages of written comments filed to your group June 2nd. Smart Tan would have prepared a more comprehensive filing June 2nd and would have participated in this entire process had we known about it earlier. Our Federal Regulatory Review Committee, which handles this type of matter, only became aware of NTP's proposed listing two weeks prior to filing that submission in June. We filed that document without benefit of having read the Background Document for Solar Radiation and Exposure to Sunlamps and Sunbeds completed in March, and we were not aware of any of the steps leading up to that point. As we are here today to discuss the procedures and the listing criteria used in the preparation of the Report on Carcinogens, I

must point out that it is a great procedural error for NTP to have ignored my organization and my industry up to this point. According to your Criteria for Listing Agents, Substances or Mixtures in the Report on Carcinogens, there are three points in the process where, quote, an agent, substance, or mixture, or exposure circumstance petitioned for listing or delisting will be announced in the Federal Register, trade journals, and NTP publications to solicit public comment. As executive director of the International Smart Tan Network, I'm the executive editor of Tanning Trends magazine, which is Smart Tan's trade journal for the indoor tanning industry, which is arguably the industry that would be most affected by your committee's actions. At no point in this process was my organization or our trade journal contacted by NIH or NTP regarding the potential listing of ultraviolet light as a known human carcinogen. Your guidelines state that you should have, and this breach of protocol served to prevent my organization's full participation in this process. That becomes a more serious consideration when one considers that the review process of this research did not include any research about positive effects of ultraviolet light

on human health. I would remind you that the field of photobiology was founded around the study of positive effects of ultraviolet light and that there are dozens of different positive effects being studied today. It is ironic that this century began with the realization that ultraviolet light and sunlight were useful in treating disease and at the end of the century, we're talking about classifying ultraviolet light blanketly as a carcinogen.

I noticed in your proposed listing the highly-publicized drug Tamoxifen on the list of carcinogens, you have parenthetically stated that Tamoxifen may also have positive effects. Interesting that ultraviolet light is not treated in the same fashion, considering the dozens of positive effects of ultraviolet light, starting with the undisputed fact that we would all die if we did not have it. I suspect that fact makes UV a very unique item on your list. Are there any other items on the list that humans need to survive? Because so much of the, because the research about ultraviolet light contains so many confounding variables and because there is so much research about the positive effects of ultraviolet light, the failure of NTP to contact my trade journal could be

construed as negligent. It certainly kept my organization from participating, and based on NTP's background document on ultraviolet light, the scope of your investigation appears to have been limited. In addition to the failure to contact the tanning industry's trade journal and the failure of NTP to take into account any positive research about ultraviolet light, I must take this opportunity to mention that your background document on this topic is flawed, fails to account for some fairly significant research, and it would only be fair of your group to allow my organization and my industry time to prepare a report on exactly why that is the case. Since we have not been included in this process up to this point, I think that would be a show of good faith on your part. Were you to proceed at this point without pausing to consider that case that my organization can present, you would be failing to consider all the evidence. Again, as Mr. Smith said, why the rush?

Additionally, I would ask you to consider all the consequences of your actions. Here is a very likely scenario: there are many diseases, including breast cancer, colon cancer, ovarian cancer, osteoporosis, rickets, and even heart

disease that research suggests may be prevented or retarded by regular ultraviolet light exposure. The biological mechanism for this phenomena has been established and is understood. Yes, more research needs to be done, but the roots are there. I want you to consider this, should this proposal pass and ultraviolet light is listed as a carcinogen, you may be unnecessarily suggesting to people that they avoid ultraviolet light exposure entirely. What would the consequences of that be? In the not too distant future, it is entirely plausible that a class-action lawsuit of, let us say, osteoporosis patients who avoided ultraviolet light because of this group's suggestion could be organized. Their case would be that your group's blanket listing of ultraviolet light as a carcinogen misinformed them of the full picture about UV light and that their disease could have been prevented had they been counseled on how to evaluate the benefits and risks of ultraviolet light exposure. This group could just as easily be breast cancer patients or colon cancer sufferers. I make this point not to you as any type of threat, my group has no intention of organizing such a case, but as a plea that you stop and consider the full set of ramifications that your

actions will have.

In closing, I'd like for you to, I'd like to ask that you allow my organization and Mr. Smith the time to officially make our case before proceeding with your listing. Because we were not included in this process from the beginning, I think that that would be in the spirit of the procedures you established to ensure fairness and accuracy in your report. Thank you very much.

**DR. GOLDSTEIN:** Thank you, Mr. Levy. We're actually running ahead of time, and we have a speaker from this afternoon who's got some changes that have to be made, and we were going to put him in at the end of this morning, but perhaps we ought to put you in now, Frank, since they, this would allow us to get back on time and if people were planning around what they thought we'd be doing, we would be much more in sync with the schedule. So, Franklin Mirer of the International Union of the United Automobile Workers. Dr. Mirer is also a member of the BSC.

**DR. MIRER:** Thank you very much, and I appreciate the opportunity to get this in. I do have to get back to Detroit this evening early, and I will summarize, summarize my written

comments which are out on the table and have been provided to the, provided by the NTP. I really can sympathize with my colleagues from NTP, NIEHS. We have a group of laboratory scientists dragged into, into a straight-up standard regulatory controversy. It's sort of like a group of civilians transported to the middle of Kosovo without benefit of training in this area and much of, much of what we've encouraged here so far is just re-arguing, re-arguing issues we've heard and considered before.

In my written testimony, I'll summarize it, let me make two or three main points and then talk about improvement of the process. First of all, classification of a substance as known or reasonably anticipated is a necessary hazard identification step which triggers the rest of the risk assessment process, and it's simply necessary to do this in a concerted way and NTP has been picked as the agency to do it. It needs to be done. It triggers, it triggers the rest of the analysis that deals with the more complex questions of exposure response which have been raised here.

A second point is that the present criteria for concluding that laboratory studies, from laboratory studies that a substance is reasonably

anticipated to be a human carcinogen are both valid and simple, generally recognized. This conclusion can be done, reached fairly quickly. The fact is, to try and put this in simple language, any chemical which behaves in the laboratory system in the same way as tobacco smoke or asbestos or soot or benzidine dyes, all things well established to be human carcinogens, some since the 18th century. Any chemical that behaves in the way these do in the laboratory system is reasonably anticipated to be a human carcinogen, and what this means to me, and the way I explain it to our members, is that there is some dose of this chemical by some route which will cause cancer in humans, and the other steps of the risk assessment process follow by, follow into what the actual risks of current exposures are, and what we're arguing about here regarding this thing is whether we're going to start the process of public health evaluation or not.

Third point is that the Report on Carcinogens has an important scientific function which should not be distorted by the regulatory controversy, that the correlation between laboratory testing and the effects in humans is an active subject of scientific investigation and it should be

done on purely scientific criteria, and just for an example, the evolving discussion of particle carcinogenesis, the effects of soot. You know, when I was growing up in this field, we used to speculate on how is it that asbestos is carcinogenic and silica is not carcinogenic in people and many careers were built around those two questions and we now know that, in fact, the opposite is true. Silica is carcinogenic.

So let me now address quickly questions of process. First of all, I believe that the Scientific Counselors' review, which seems to have drawn most of the fire here is sufficiently elaborate and extensive to meet, to meet the needs. You have to remember that the Scientific Counselors' review is, I believe, the third or fourth step along the process and there are three or four steps after, after the review by which the process goes. The documents that we have, in my opinion, are sufficient to make that review. We get the IARC, the full text of the IARC review, if there has been one. We get the additional information provided by NTP, and we get the key scientific papers upon which those things are based. We read them and take them into account, and I certainly think it's sufficient.

**DR. FREDERICK:** Plus the external comments.

**DR. MIRER:** Well, we get the external comments at the point which they're available to us, and they have been mailed fairly early in the process in many cases, and for those who've been at these meetings, what we are attempting to do is have an on the record discussion amongst the BSC members who have to take the vote. We have to have an on the record discussion amongst ourselves as to what our opinions are, and sometimes those are spirited, and sometimes they're straightforward, but that's what we are trying to get to in the meeting.

Finally, some pieces that would improve it. I think while the decision rules for including reasonably anticipated from animal data alone are fairly straightforward, I think that the process is weak in the areas of epidemiology and human health, human exposure assessment, and those two are parts of each other. If we're going to be reinterpreting epidemiology, we have to interpret both the effect and the exposure as we're doing it, and I think the process would be strengthened by having more people involved in that. Others have

commented on that.

Unpublished health data are really not appropriate to the, to the review. Actually there hasn't been that much unpublished data. There's been some re-analysis, but not that much unpublished data.

The third point is that involvement of potentially affected industry should remain as it is now. There's plenty of input and plenty of papers supplied to us. I believe it's adequate to make the review. I think peer review has to encompass a range of scientific views, not be encumbered by conflict of interest and that stakeholder involvement is a whole other process having to do with risk management rather than risk assessment.

Just some other brief points, I believe that the Levels of Evidence developed by NTP for analyzing its own bioassay data should be carried forward into these, into these background documents. I think that they were very helpful in the process of evaluating bioassay data and an NTP staff or expert in this area should apply them retroactively to non-NTP studies. I believe that similar levels of evidence should be developed for interpreting epidemiology data. That would give us

a much more consistent set of decision rules for epidemiology, which is actually where we end up in controversy most frequently. I think the role of mechanism in the background document should be more focused around what its relation is for listing criteria, and I believe we need to focus better what the role of genetic toxicology is in relation to the listing criteria, rather than just simply deciding this isn't on the documents. Thanks very much.

**DR. GOLDSTEIN:** Thank you, Frank. We've got, the next speaker I'm not sure is here, Rabbi Daniel Swartz. Is Rabbi Swartz here? Okay, Bob Musil of the Physicians for Social Responsibility.

**DR. MUSIL:** Thank you very much, Dr. Goldstein. I'm Dr. Robert Musil. I'm executive director and CEO of Physicians for Social Responsibility, which has 15,000 members nationwide. I want to thank you for the opportunity, Dr. Olden, to present our views here today and to the panelists who are here. We want to comment briefly and I don't have slides and overheads, so you can relax, on the procedures for reviewing nominations for report listing and delisting and the current listing criteria.

I want to make just a few brief main points. The first is the Physicians for Social Responsibility believes that the Report on Carcinogens serves an essential function of identifying substances, mixtures, and chemicals in situations that might cause cancer, to which significant numbers of persons in the U.S. are exposed. We have found the reports to be informational, scientific review documents that help educate the public, help professionals and other agencies. We consider them essential, and that's because Physicians for Social Responsibility also believes that there is a fundamental public right to know which substances or exposure circumstances are known to be or reasonably could be anticipated to be carcinogenic. We believe that is why Congress has mandated, and properly so, the NIEHS to issue the RoC report under the Public Health Service Act so that public and health professionals will be informed and educated about the risk of exposure to carcinogens, available cancer data, and the regulations promulgated by federal agencies to limit exposures.

It seems to us, and I should say directly, that Physicians for Social Responsibility is

frequently engaged in legislative and regulatory activity and quite familiar with the lobbying process, but in this case, it seems to us it is not a good idea to question the Congressional mandate that has put this vital process under NIEHS and the National Toxicology Program. We believe that the current review process should be carried out mostly as it has been occurring, with some improvements. We believe that there is the expertise to staff the work, that there is an excellent scientific support staff, and that the process is generally insulated from the political process and from the influence of powerful corporate interests who understandably have financial incentives to use scientific opinion in support of individual chemicals. That, in our view, is the problem to be avoided, and therefore, Physicians for Social Responsibility also believes that the RoC report process should not be moved to the National Academy of Sciences or any other agency that may prove to be slower, more costly, or that would include direct corporate science and review committees and consider non-peer reviewed science. It would not serve the public interest to remove the RoC report from the purview of NIEHS, a respected agency. We also think as Physicians

for Social Responsibility that it's important to remember that the public interest is best served by the release of balanced and timely reports. For a majority of agents and substances the scientific conclusion as to carcinogenicity is clear and can be reached fairly quickly, so long as outside financial interests are not given the opportunity to endlessly delay the process under the guise of full and fair debate as appears to be happening with the current report. This newest report should be released immediately so that appropriate steps can be taken to protect the public health. Therefore, we believe that the scientific process and procedures currently used in the National Toxicology Program, though not perfect, generally result in good and balanced outcomes. As long as the procedure remains fair and all sides receive an equal chance to present their data and views, the scientific deliberations will be mainly trustworthy. The sort of decisions to be made in the RoC report are scientific decisions and thus they should be made only by a panel of scientists who are shielded from strong lobbying and special interest pressures. This is not and should not be a political process. Dr. Olden and members of the panel, it is your job to ensure

that the process used by the NTP remains fair and based upon reliable science, including a good balance of experts and an excellent review process. PSR urges you to continue your efforts to improve the process by making it more open, by looking at all the science, and for holding meetings like this today. Now that you have developed the process, Physicians for Social Responsibility encourages you to stick with it and to let it work to protect the public health. Thank you very much.

**DR. GOLDSTEIN:** Thank you, Dr. Musil. Our next speaker is Kerry Lane of the Delray Medical Center, Dr. Lane.

**DR. LANE:** Good morning. My name is Dr. Kerry Lane. I'm a medical doctor. I have a long interest in cancer. I've seen a lot of it over the years. I'm a practicing anesthesiologist in Florida, and if you're asking yourself why I'm here, generally I'm supposed to address the process of NTP's evaluation of carcinogens, and historically this has been geared towards industrial chemicals. I had an interest in occupational medicine some years ago, but apparently I took a wrong turn. The reason I'm here mostly is because I feel that aflatoxin is a major carcinogen associated with the

use of tobacco products. Aflatoxin is the most potent carcinogen known, causes cancer in every animal model studied and causes p53 mutations and ras mutations which is found in the majority of most human cancers. This is significant to the NTP in an examination of primary and secondary smoke as carcinogens, but I think that aflatoxin contamination of our public spaces from tobacco smoke is a confounding variable with respect to a lot of these other carcinogens that NTP is trying to regulate. Ultraviolet light is one carcinogen that comes to light. Melanoma shows p53 mutations which can be caused by aflatoxin, so I think that aflatoxin is certainly a confounding variable here. Another example would be asbestos, where asbestos exposure alone without tobacco smoke shows a fairly low incidence of cancer, but when you add tobacco smoke to it, the cancer rate goes up significantly. Something similar is also seen with Hepatitis C. Aflatoxin combined with Hepatitis C, the instance of hepatoma, liver cancer goes up 20 times. I suspect there's also a confounding variable with aflatoxin and a very common carcinogen which is probably also in tobacco called xeroallonone (phonetic) which is an estrogenic

micro-toxin which likely causes breast cancer in conjunction with aflatoxin in smokers and people who are exposed to second-hand and primary smoke. Much of this evidence is from p53 indications where p53 is a biomarker. Unfortunately for we human beings, we have been the test subjects. What I'm suggesting is NTP and other federal governments, other federal organizations, including CDC, FDA, NIOSH, NCI, and whoever else feels up to the task should assess this concept and provide a micro-toxins surveillance network on tobacco products and provide a regulatory framework to remediate this problem. It seems to me that technological fixes are probably available to even prevent this contamination. This is significant because obviously the aflatoxin and other p53 mutation chemicals that are involved in tobacco smoke are involved in the majority of cancers, human cancers. If we can remove these chemicals, we'd go a long way towards preventing human cancers. I've been instructed by the attendees this morning, there were a lot of corporations and particular chemicals feel that they're being put upon by NTP, and I think that the, this secondhand smoke and primary smoke

issue with aflatoxin should be seriously addressed because I do think it's a confounding variable in many of these cancer-causing agents. The p53 tumor-suppressor gene is the final arbiter whether or not a cell dies or not once it becomes carcinogenic, and if a p53 tumor-suppressor gene is mutated by aflatoxin from cigarette smoke, you know, you're pretty much done for. Thank you much, thank you for your time.

**DR. GOLDSTEIN:** Thank you, and again, I'd like to thank the speakers for keeping within the time, giving us, actually an interesting scheduling issue. We have, I hope Dennis Falgout's here. Is he here, speaker for the Metal Finishing Association of Southern California? Okay, well, basically we're well ahead of ourselves. We've got two, in a sense, competing issues here. One is that we can keep to schedule, take our break now, extend the break, and try to get ourselves back into the schedule with the speakers later. That has the advantage of allowing people who might have wanted to come for a specific presentation to be here or keeping it with the schedules. The other approach is to allow the individual speakers who might be scheduled for later this afternoon, who

would just as soon speak this morning and don't care if they miss some of the audience, to speak now. I'm tempted to allow the latter, and basically to say, if there is anyone who was scheduled for speaking this afternoon and who would like to present now, the floor is yours. First come, first serve, until we run out of time. Anybody like to take me up on that offer? Well, hearing none, let's, we'll, there is somebody, okay.

**MS. NABORS:** Thank you. I'm Lyn Nabors, executive vice president of the Calorie Control Council. Like many others before me and yesterday, I'm going to use a specific substance to illustrate my remarks. The Calorie Control Council is an international association of manufacturers of low-calorie and reduced fat foods and beverages; companies that make or use saccharin in their product are among the Council's members. The Calorie Control Council petitioned the National Toxicology Program to delist saccharin from its Report on Carcinogens on the basis of NTP's new criteria incorporating the use of mechanistic data. This was NTP's first request, I believe, to delist on this basis. The Council appreciates this opportunity to comment on the process of delisting and listing

and recognizes the massive task that NTP undertakes to compile accurate information on all substances under review. Since consideration of mechanistic data and possible delisting are essentially new to the process, we would like to share our experiences in hopes that they will help in future reviews.

Our comments, like many others that you have heard in the last couple of days, specifically relate to the proceedings of the Board of Scientific Counselors and as an aside, I have to say, I'm not sure Michael Jacobson and I attended the same meeting.

In petitioning for the delisting of saccharin, the Council provided a wealth of information, including results of numerous mechanistic studies conducted over the past few decades. These studies demonstrate clearly that the bladder tumors observed in male rats that had high doses of sodium saccharin are not hazardous to man. There is overwhelming evidence from animal studies, human epidemiology and basic mechanistic research, that rat bladder tumors are a high dose phenomenon with no relevance to humans. This is the foundation of Calorie Control

Council's request that saccharin be delisted from the Report on Carcinogens. Information provided by the Council was evaluated by NTP internally and two internal committees voted to delist. NTP then prepared the saccharin report and submitted it with the Board of Scientific Counselors prior to their October 1997 consideration of saccharin. There were a few inaccuracies in the NTP report which the Calorie Control Council addressed in its October 1997 comments before the Board. The overall conclusions of the NTP saccharin report, however, appeared to support the conclusions of the two NTP internal committees, which had clearly indicated that saccharin should be delisted.

Based on the Board's proceedings, we'd offer the following important points on how future Board reviews might be improved. Point number one, the Council believes that the Board of Scientific Counselors should be provided with a balanced presentation from NTP as one indicator of their main decisions to date, with their vote and the rationale for those decisions. Unfortunately, the verbal NTP presentation on saccharin to the Board of Counselors was not balanced and gave little indication that two NTP committees had

already voted to delist. In point of fact, the presentation gave misinformation and incorrect calculations on saccharin consumption and differed from NTP's written document on saccharin. Mechanistic data, the basis of the Council's proposed delisting of saccharin, was almost entirely overlooked by the NTP presenter. Not surprisingly, the majority of the Board of Scientific Counselors largely ignored this mechanistic data as well.

Point number two, and this one has been mentioned by a number of others. Sufficient time should be allowed to discuss issues raised, including time for petitioners to provide data to place other presentations in perspective. For example, questions arose at the Board's meeting concerning private consumption of saccharin. It was noted by one of the panels that there were individuals in the audience who could probably answer those questions, yet they were never allowed to do so. Decisions should not be made on incorrect assumptions.

Point number three, assigning a consultant or group of consultants knowledgeable about the substance under discussion should be available to the Board of Scientific Counselors. Numerous

substances are considered at a single meeting and the Board members have a substantial amount of information on each substance which is provided about 30 days before that meeting. With the volume of information provided, it is doubtful that Board members can review adequately and digest all the data. The scientific community of the substance in question can easily facilitate deliberations, provide insight, and answer questions.

Point four, members of the Board are selected from a variety of disciplines and areas of expertise. It is important, therefore, that all members participate in the deliberations. The Council suggests that procedure be set up for perhaps audio and video conferencing in order that all Board members might participate if they cannot physically be there. I would have to say that at the time of the review that we were involved in, there were only seven members at that meeting, and I realize that that number has doubled, so that comes, I'm pleased in that context. We're able to reach a sufficiently larger group of people.

In conclusion, it is important to note that although NTP's Board of Scientific Counselors voted four to three against delisting saccharin, a third

NTP committee, the Executive Committee, subsequently also voted to delist. The fact that three NTP committees voted to delist and that two working groups of the International Agency for Research on Cancer, after reviewing saccharin's mechanistic data, unanimously agreed that there is strong evidence that the mechanism of carcinogenicity in experimental animals does not operate in humans brings into question the process by which the NTP Board reached its conclusion and suggests the need to bolster the scientific information made available to the Board. Thank you very much.

**DR. GOLDSTEIN:** Thank you. Again, let me make that offer for anyone else who is scheduled to speak this afternoon. Dr. Waddell, would you like to?

**DR. WADDELL:** If the slides work, I'll be happy to do mine.

**DR. GOLDSTEIN:** Okay, slides work, we have some, and I must take the time of thanking the folks here who have been working with us. It's been very effective. I'm usually accustomed to having something break down, and so far, great job.

**SPEAKER:** Maybe you ought to knock on wood.

**DR. GOLDSTEIN:** Dr. Waddell.

**DR. WADDELL:** The first slide you can see, can we dim the lights? Thank you for the opportunity to express our opinion on the process of preparation of the Report on Carcinogens from NTP. For several years now, I have noted with increasing concern that the reports have not kept pace with the advancing knowledge of the nature of these so-called carcinogens. In my opinion, it is time for a drastic revision in the process of preparing the reports. Next slide.

First of all, let me show you where it is clearly stipulated in the statute that created the RoC for the reports to provide a statement identifying the extent to which standards decrease the risk, and those are clearly expressed in the statute, decrease the risk to public health from exposure to such substances. The reports have failed to provide this information.

The introduction section of the 8th Edition of the Report acknowledges this deficit and offers several paragraphs to explain the omission of this risk reduction evaluation. This defense takes the

position that any reduction in exposure will result in a reduction of risk. This mere extrapolation to zero is reminiscent of the Delaney clause. It is not congruent with the current thinking of many toxicologists. The RoC has evolved into a document that is no longer useful and actually is confusing and contradictory to a reader depending solely on it for carcinogenicity information. The reason for this dilemma is essentially because the reports do not contain any appropriate quantitative information regarding dose or mechanism of action.

I should like to give a few examples illustrating why this linear extrapolation creates a problem. Arsenic, chromium, and nickel are listed in the RoC currently as either known or reasonably anticipated to be human carcinogens, but all are essential nutrients in the human diet. Furthermore, all three are ubiquitous in foods. Chromium and nickel are even added to vitamin and mineral supplements such as One-A-Day, Centrum, Centrum Silver, and many others. Users of these preparations must surely be confused by the listing in the RoC that these minerals are carcinogens. Estradiol-17 Man, Estrone, Progesterone, and conjugated estrogens are listed in the 8$^{th}$ Edition as

either known or reasonably anticipated to be human carcinogens, but as even most laymen know, these substances are also naturally occurring hormones in women and are prescribed by physicians for treatment of menopause, osteoporosis, and other purposes. What could be more confusing to a woman who has been prescribed by her physician a substance and then learns that it is listed by the NTP as a carcinogen? If women were to accept the proposal in the introduction to the reports that any reduction in exposure reduces the risk, they would then be confronted with the choice of having their ovaries removed to reduce their exposure to this carcinogen or to maintain their normal hormonal status as a woman.

Benzene and vinyl chloride are, of course, listed in the RoC as known human carcinogens. The specific neoplasms these substances produce at high concentrations are well known to the scientific medical community. However, OSHA, another federal agency, has evaluated exposures to these substances and concluded that exposure to one part per million of either of these chemicals is not a risk to workers. The NTP RoC made no statement evaluating how much these statements reduce risk.

Time does not permit a recitation of the epidemiological data supporting the OSHA decision for one ppm of benzene being safe for a worker's lifetime; however, it should be noted that benzene is ubiquitous in the atmosphere and that most of it is naturally produced from decaying biomass and is not produced by man's activities. The volatile organic chemical, or VOC, data base contains levels of benzene in the ambient air in the United States. It may come as a surprise to some people that even in the most remote pristine locations individuals are breathing seven quadrillion molecules of benzene per day. Certainly a quantitative evaluation on the effect of dose is appropriate for benzene.

Vinyl chloride at high doses can cause angiosarcoma of the liver, no question. However, health surveillance databases of workers around the world in industries using vinyl chloride reveal that not a single case of angiosarcoma has appeared in these workers hired since 1974 and exposed to one ppm when this standard was set.

Finally, alcohol, a substance consumed by more than a hundred million Americans is under consideration for listing in the 9$^{th}$ RoC as a known human carcinogen. Yet many reports have

consistently and convincingly shown that moderate consumption is beneficial to the cardiovascular system. Studies also reveal that moderate consumption is associated with a reduced risk of dying, regardless of other factors. A thorough analysis of all this data concluding that there is an association of alcohol drinking with cancer reveals that all these studies are confounded by other factors that may be causing it, such as an alcoholic lifestyle, cigarette smoking, poor diet, poor oral hygiene, potential viral infection and many others.

In conclusion, the current process does not fill, fulfill the mandate from Congress to provide quantitative statements concerning the reduction of risk from reductions in exposure. Secondly, dose response and mechanism of action data are available and should be used, I would say, must be used. We get into a dilemma if we do not use quantitative data. Review panels that include scientists with detailed knowledge of dose response and mechanism of a specific substance should allow, should allow for quantitative evaluations. Other agencies provide at least as much qualitative information as the RoC and some even provide quantitative evaluations. The RoC should certainly

contain quantitative information to assist the reader with evaluating any potential reduction of risk from a reduction in exposure. Perhaps Congress...if this cannot be done, the reports will continue to be redundant and of little or no value. Perhaps Congress in that case should even consider termination of the reports. Thank you.

**DR. GOLDSTEIN:** Thank you, Dr. Waddell. I understand that Mr. Falgout's here, please, sir, from the Metal Finishing Association of Southern California.

**MR. FALGOUT:** Here, I was two hours earlier. I thought I had plenty of time. You guys have been whistling through this.

My name is Dennis Falgout. I'm a registered professional engineer. I work for a consulting engineering firm, Pacific Environmental Services, Inc. in Herndon, Virginia. PES has worked with the Metal Finishing Association of Southern California for the past twelve years to help its member-companies reduce toxic emissions, emissions of toxic compounds in the environment. We've measured emissions to the atmosphere and exposure to workers of toxic compounds. We've also carried out some joint research projects with

the California Air Resources Board and the South Coast Air Quality Management District to evaluate and develop Best Available Control Technology for hexavalent chromium. The current Chairman of the Board of Directors of Metal Finishing Association, Ms. Carol McCracken and the Chairman of the Air Quality Committee, Mr. Randy Solganik. Neither could be here today, so I am appearing here to speak for the Metal Finishing Association of Southern California.

The Association believes that in addition, that the addition of nickel and all nickel compounds to the list of known human carcinogens was policy driven and not scientifically supported. This action will adversely affect our industry. Our comments today are not based on the interpretation of the toxicology or epidemiology data but instead on the review procedures and listing criteria used in the Report on Carcinogens.

NIEHS should base its positions on carcinogenicity totally on its own independent review of scientific literature. NIEHS should not, as a reading of the RoC reveals, base its positions on the conclusions of other committees or regulatory agencies. Furthermore, it appears that

NIEHS cites IARC and other committee views only when those views support the NIEHS position.

The Association joined with the USEPA and Health Canada support a Toxicological Review of Soluble Nickel Salts. The study was completed in March of this year, of '99, by Toxicology Excellence for Risk Assessment, TERA, in Cincinnati, Ohio. This study included procedures for independent peer review, records of comments and recommendations from peer review meeting, and managing potential conflicts of interest. TERA also employed an effective process for resolution of differences in viewpoint, which led to compromise and development of consensus. NIEHS should emulate the procedures used, followed by TERA during the development of its RoC rather than the current procedures.

In Section 34(b)(4) of the PHS Act, Congress identified that, specified that NIEHS should publish a list of carcinogens, known to be a human carcinogen and two, to which a significant number of persons are exposed. The law also states that NIEHS should provide, should provide information on the nature of exposures, the number of persons exposed, and the extent to which

regulation will decrease public risk. The Association sees no evidence that NIEHS has done more than publish a list of carcinogens.

Your agency's position on the carcinogenicity of compounds carries enormous weight with the regulatory agencies at all levels of government. Therefore, NIEHS should publish information that would allow other agencies to interpret the relative risks of various compounds. Our specific suggestions regarding the NIEHS criteria for listing compounds are as follows: The criterion for designating a known human carcinogen should require the highest level of scientific certainty. Also, it should require that human and animal studies be consistent and supportive. The criterion for designating a compound reasonably anticipated to be a human carcinogen should be based on a secondary level of certainty. Animal studies should exclude potential carcinogens if they are inconsistent or not supportive. Three, NIEHS should speciate compounds and recognize significant differences between species as compared to blanketing an entire class of compounds. And number four, NIEHS should clarify the standard required, standards required to achieve a listing of

a known human carcinogen. The current standards are too subjective and seem to be based on policy rather than science.

Our specific comments on the review procedure for listing compounds in the RoC follow: One, require more than a simple majority of the panel members at each level to add a compound to the list of known human carcinogens. Two, RoC should identify the key facts, studies, that supported each panel's decisions and recommendations. Number three, broaden and extend the time of the peer review process for extra-agency opinions to agency proposals and publish both comments and responses. Number four, RoC review committees should not depend on IARC or other agency conclusions alone but should independently base its findings and designations on the research reports published in the literature. And number five, NIEHS should expand the RoC report to include information on the nature and prevalence of public exposures and the extent to which Federal regulations could protect public health. And that's the full extent. Any comments, questions?

**DR. GOLDSTEIN:** Well, we'll have a

chance to discuss later. We have a different format. Thank you. Actually we have one speaker who I don't think is here, but just to be sure, is Rabbi Daniel Swartz here from the, or anyone else from the National Religious Partnership for the Environment? Okay. If not, let me suggest that we take a break. We will get back on schedule, return at 11:15 and we'll have a discussion then from 11:15 to noon. 11:15 as it's scheduled.

(**WHEREUPON**, a brief break was taken.)

**DR. GOLDSTEIN:** I'd first ask the National Toxicology Program folks if there's anything they'd like to respond to specifically in the way of clarification. Dr. Lucier...

**DR. LUCIER:** Let me, if you don't mind, Bernie, just briefly go over the entire process for the report on carcinogens, since some of the people weren't here yesterday when Bill Jameson presented that. I think it's been alluded to many times that this is a multi step process that begins when we do a Federal Register announcement calling for information relevant to an agent that we're considering or considering for listing. This usually happens, you know, in the probably eight or nine months before we have our Board of Scientific

Counselors meeting. Then using this information and deliberations of the NIEHS we prepare an actual document that's made available to everyone, it has been in the past, 30 days prior to a Board of Scientific Counselors meeting and prior to the Board of Scientific Counselors meeting there's two government meetings both with votes on whether or not something should be listed or delisted, the RG1 and RG2. So the Board of Scientific Counselors is the third step in the review process, one in which rightfully so many of the discussion points were directed at, because that's the open external peer review part of the process.

After that there's another call for public comments, a review by our, the Executive Committee. All this information in its totality is considered by Dr. Olden and the recommendation that he makes to Dr. Shalala and ultimately the report then is submitted to Congress.

**DR. GOLDSTEIN:** Thank you. Now what we'll do is we'll turn this over to Lynn Goldman and Clay Frederick to discuss themes, make responses. For those who weren't here before, these are two members of the Board of Scientific Counselors. Lynn...

**DR. GOLDMAN:** Yeah, I'll go ahead and lead off. I thought that there were some very interesting and new ideas that came out from the comments this morning. The idea that there might be a workshop, a technical scientific workshop earlier on in the process, say at the RG2 phase, I thought was a very interesting idea, and I thought it would be interesting to think in terms of whether that might be an efficient way to bring in more input versus more time for presentations between the Board, in front of the Board of Scientific Counselors, which has also been mentioned or even both of those ought to be considered in terms of improving the process and having more of an opportunity for discussion and input on the scientific issues.

The other thing that I thought was an interesting point from Dr. Jacobson, the idea of perhaps streamlining the RG2 in the Executive Committee process and I wanted to say a little bit about that, as somebody who did Chair the Executive Committee for awhile when I was in the government and I really think that that's a very different process than the scientific process that happens with the RG2. I think it's an important

process, even if the quote, unquote, votes don't appear to change. What's happening there is that the results of the deliberations are being brought to the attention of the policy level in agencies in government that are responsible for actually regulating some of the substances that might be up for listing. I think it's extremely important that the policy level has to focus on this issue and that it's an important role that the NTP process plays within the government, and, you know, regardless of whether the votes change or not, I don't think that's where the focus ought to be. I think it's just something different going on there and I think it's pretty critical. I'll say from my personal experience there were times when I wouldn't have known, leadership in EPA wouldn't have known that some of these issues were under consideration or not for that process, simply because perhaps at the scientific level there was less awareness of the policy relevancy importance at the policy level of some of those issues. So, I think it just needs to be looked at in a slightly different light.

There were a number of comments about the need to make sure that the trade organizations and other organizations are aware, and I was glad

that Dr. Lucier went through the process again, because it seems to me that there are opportunities for that. You know, what I'm concerned about there is that how that is done is through the Federal Register, by and large. I think that actually trade organizations are pretty good at keeping track of what's in the Federal Register, but that scientists don't read that journal. You know, that perhaps there could be more aggressive outreach to the scientific community, to make sure that the scientific community is aware of what's happening and Dr. Lucier, you may be able to clarify. There may be efforts along those lines that I'm not aware of. But it seemed to me that in the discussion section here, that what might make sense to talk about would be have some further discussion about again process issues around not only the peer review itself, but also the RG1 and RG2 processes and the ability to perhaps alter those processes so that there is more opportunity for scientific exchange and give and take. Also to somehow increase the transparency of how people's scientific comments are being taken into account in the process and not necessarily would there have to be something like notice and comment, which from my

comments yesterday people probably realized I really would not like to see that happen to this process. So that at least it's clearer to people who put arguments forward that are rejected, that those arguments have been heard and that the folks rejecting them, they may not agree with the reasons that they're rejecting them, but they're consciously rejecting them or that perhaps as, Dr. Goldstein, as you mentioned yesterday, that they may agree with the argument, but still agree with the definite call about the listing, because that's what is at issue and that the argument simply doesn't overturn a definite call. So, I would like to see that because it seems to me that this issue of transparency is the most consistent one that people are raising today.

**DR. GOLDSTEIN:** Dr. Frederick.

**DR. FREDERICK:** Well, I like Lynn was struck by Phil Leber's proposal with regard to the possibility of a workshop early in the process. You know, just thinking about it, I don't know how feasible it would be logistically and this and that, but I would look at that, if we were to do something like that very early in the process. The background documents are prepared by an external

contractor and they're continually modified in the course of the process and are refined through RG1 and RG2 proceedings. But I can see where for example that a background document could be prepared by the contractor and made available to interested parties and then a workshop could be held very early on prior to or immediately following the RG1 meeting with a focus on being sure that all the technical issues are on the table for discussion. I could see that as a possibility. I'm not sure how practical that would be, but it at least conceptually has some level of appeal for me. I'm not particularly enthralled with the idea of having a continual ongoing debate in the course of this process. I think that would just bog everything down forever. But I think a well-defined event early on, to be sure that all of the relevant information was on the table early in the process, could be enriching for the process.

If I could now move forward with, I appreciate the supportive comments from a variety of groups here. I'd like to say that I'm an industry guy and there's something of a mixed, this could be viewed as kind of a mixed issue by some with regard to my participation in the process.

However, I feel that the fundamental principles endorsed by CMA with regard to the responsible care program, good product stewardship, are basically the same principles embodied by the NTP evaluation process and I see no fundamental conflict in the alignment of those principles. Now when you get into specifics of how data is evaluated on a specific case, inevitably given a group of scientists, there will be some level of disagreement on specific technical issues. Philosophically I see very strong alignment between those programs.

As we look through the various comments, I mentioned Phil Leber's proposal on the workshop and his concern for lack of dialogue in the process, and he and another presenter later on, Donald Smith, made me think that maybe I'd left the wrong impression. I either misspoke or spoke and left the wrong impression yesterday with regard to verbal testimony. I'd like to be clear on this. It's very, it's my opinion that the most effective way to be involved in this process is to present a comprehensive technical document early in the process that fully presents all the technical issues on the area of concern early in the process. Then

later on, at the actual public meeting, the verbal testimony at that point just highlights the particular issues of concern, with regard to the advocate on the point, as well as might highlight any other issues that may have developed in the course of the intervening time. But I did, I have felt at certain times in the past there's been an inappropriate emphasis on the verbal testimony at the meeting, relative to the early presentation of a comprehensive technical document and that was what I was trying to present yesterday and I may not have expressed that very well.

**DR. GOLDMAN:** So, you liked those presentations?

**DR. FREDERICK:** I actually have to say, I love intellectual debate and I actually enjoy the verbal presentations. My concern is that they may have gotten inappropriate weighting with regard to effectiveness. So, that's basically what I was trying to point out. Jim Hathaway's comments, his comments with regard to lack of feedback, with regard to input in the process and lack of discussion of key points is a matter of concern. I acknowledge that, and I think I would encourage NTP staff to find ways to acknowledge the receipt

of input and I think we as a board will look for ways to more consciously highlight the fact that we have evaluated external information. I said yesterday I personally am very conscientious about reading every word, every page of every submitted comment, but I think there's some things we can do to highlight the fact that this has been evaluated and is a part of the discussion.

Michael Jacobson's comments with regard to the saccharin experience, his interest in providing funds for public interest groups to explore some of the issues on the table, I have to admit is interesting. I don't know if there's a vehicle to actually make that happen, but I am very well aware of the fact that public interest groups are often sorely strapped for resources and I acknowledge that as an interesting problem.

The issues about lack of consideration of the most recent publications is a continuing problem in the sciences, you know, as science continues to develop. I don't, if there is a substantive technical issue that has changed the landscape in a substantive way, I would suggest that a delisting petition be submitted at the earliest opportunity, using cited technical information as a

basis for that proposal.

The issue of reaching out to various groups that Joseph Levy brought up with regard to notification is a problem. I realize not everybody follows the Federal Register. These notices are up on the NTP website, but not everybody checks the website from time to time and I think it's worth highlighting that maybe a little more aggressive program, trying to reach out to interested parties, both public interest groups as well as trade groups, that sort of thing, using e-mail and cost effective options would be something worth exploring.

Moving on to Kerry Lane's comments with regard to aflatoxin and tobacco smoke, it sounds like this is a worthwhile and a confounding variable in various toxicity findings. This looks like it's certainly something to be explored from the research point of view and I know NTP has an active exposure evaluation program. They just held a recent workshop in that area and I think in the course of NTP research this is something that could be considered for further evaluation, in terms of its effects.

Finally Dr. Waddell, there's a variety of concerns to be raised. What I think I would like to

suggest for Dr. Waddell, during the discussion period, that he provide a suggestion with regard to the nature of the listing for alcoholic beverages. As we discussed yesterday, Dr. Rubin's presentation, it was the opinion of the Board that high levels of exposure are associated with risk and that was discussed somewhat yesterday in Dr. Rubin's presentation. I particularly noted the increased risk of esophageal cancer that had been noted in Dr. Rubin's publications and in his verbal testimony. There are other aspects that can be considered, but that's one that has a reasonably strong association from my perspective. But if Dr. Waddell would be interested in suggesting some language for the listing, I for one would be very interested in hearing what those suggestions might be.

So, let me stop with that and I thought it was a very fruitful discussion this morning, the presentations I felt were very good and I commend the speakers.

**DR. GOLDSTEIN:** Dr. Lucier.

**DR. LUCIER:** Let me react quickly to a couple of things. One, we obviously receive a lot of letters on the Report on Carcinogens, hundreds and hundreds of them, and we do try to

respond to them all. I don't know if we respond to each and every one, but clearly we try to respond to all of them. We don't necessarily do a point by point discussion of each of the issues that were raised, but we respond to people and we indicate that we're looking at this material, to see how it may impact upon the listing or delisting for a substance.

The second point is that all the background document summarizes the literature up to that point in time. We also look at any other substantive publications that are important to the listing or delisting of a substance, right up to the time that Dr. Olden submits the report to Secretary Shalala. So, even though the background document isn't necessarily updated, each and every publication that's important or pieces of information that we receive through our public comment procedure after the Board of Scientific Counselors' review is considered in Dr. Olden's recommendation to Secretary Shalala.

**DR. FREDERICK:** Yeah, I think that's a good point. I said it several times yesterday, but some of you are new here today. I'm very well aware of the fact that all these inputs

are advisory with regard to Dr. Olden and his responsibilities. Ultimately even if new breaking scientific information were to become available subsequent to all of the recommendations, RG1, RG2, RG3, I would hope that NTP staff would provide that information to Dr. Olden and he would take the appropriate decision relative to providing the information necessary for the public.

**DR. GOLDSTEIN:** We have, we'll first hear from Dr. Mirer next and then Dr. Waddell and...

**MR. TORSEN:** Mark Torsen from NIOSH. I have four comments that I'd like to make. Before I say that, I want to put my views in perspective. I didn't know what the Report on Carcinogens was three years ago. Now I'm serving on the RG2. First of all, I want to second Lynn's proposal or suggestion on the RG2 and the Executive Committee. They really do serve two different purposes and for NIOSH they make us look at the issue from two perspectives and often those perspectives collide, which in turn makes the whole community more ripe for dialogue. I think it's a very useful addition to the whole process.

First of all, I'd like to talk about the

quality of the documents. I think the documents are of high quality generally and it's a package that we're looking at, not just a single document. In regard to quality, I think they are peer review quality. In addition to that, the RG1 and the RG2 serve as sort of the peer review process and I know people have called for transparency, but we all know the peer review process is not transparent. The final document gets published and we don't know what that looked like initially. I'm not saying that's the best, but we accept those documents and there should be some acceptance for the documents provided by NTP. I say this because I want to make sure the process is expedited because I want to avoid process, I mean analysis...the paralysis by analysis. I say this because in working at NIOSH, I've seen line by line review of documents, where a whole page it takes a day just to go over it. Those documents go out and then they're bombarded with criticisms. My wife is a writer and an editor and she said, show me a document and I'll show you what's wrong with it.

Next I want to address the frustrations. I empathize with all those people that are frustrated with not being heard. But there's another

frustration that I think occurs in the process and that's the frustration of having remarks heard again, again and again, contrary remarks to the document. Many of the things I've heard in the last few days, I've heard before, and repeatedly, and I won't go into that any further. But I do realize there's a perception that people are not being heard, so whether it's reality or just perception I think there's a need that NTP address this view that people are not being heard. So, something has to be done so people are heard.

The last thing I want to talk about is the expertise in the Board of Scientific Counselors. There was one comment, I think it was yesterday, that there should be chemical specific experts at, participating in the meetings. I would say that the experts have been heard from in the peer review document. I think these experts often bring a bias. They think I'm an expert in a certain area and I try to state my expert opinion, and I don't think that's an NTP issue. I think in terms of the expertise on the Board of Scientific Counselors, one comment was made regarding the lack of individuals associated with the chronic bioassay. From my experience at these meetings, there's more

knowledge in regard to chronic bioassay in this room than you'll find in any room, at the Board of Scientific Counselors meeting than you'll find anywhere in the world. They may not be specifically on the panel, but the expertise is in the room. On the other hand, there has been a policy of background in epidemiology and I think the NTP has realized that and are addressing that and are attempting to improve it.

**DR. GOLDSTEIN:** Good. Dr. Mirer's next.

**DR. MIRER:** First, a small point with regard to the comments on sulfuric acid. Again, we did see the original papers and we did read them and the response to the, it was taken into account the comments of the CMA acid boretate input panel. I will say that from the perspective of being on the review committee, there is a knee jerk negation of every nomination that has a industry group behind it and nevertheless we listen to them objectively and see whether issues have been raised that are significant.

Second point, with regard to peer review and transparency, in traditional peer review, if it's a journal article, the peer reviewer is always

anonymous to the person who submits the article and sometimes the author is anonymous to the peer reviewer. So, traditionally there's zero transparency for peer review and so in the study section, all the notes are destroyed afterwards and nobody can find out who said what. So needless to say, the process we've got is quite alien from what traditional peer review is, to some extent.

Third point, regarding transparency and any kind of sitting expert committee. Dr. Frederick has mentioned it, and it's certainly true, people bring a lot to this committee that isn't, like the rule breaker that's in their experiences and analytical methods that inherently in this is a lack of transparency in a sitting committee. This is sort of contrary to the kind of Congressional legislation. Nevertheless we have written comments, and there's a written transcript of what we've said and all the comments here, including silly things that I've said and the record is there.

Finally on this question of responding to submissions. One, the notion of the preparation of the background document and the review is that that is limited to reviewed information, from reviews and original papers. By its nature, by the

very nature of those comments we've received are unreviewed, unreviewed reviews of the information. They're not peer reviewed, they're personal opinion, unsupported by the peer review process and usually by interested parties, so that there's a contradiction clearly between using those comments as a substantial basis for reaching their decision and limiting their review to peer reviewed documents and it creates a asymmetrical situation between the background document and what goes on in committee. I'm not actually prepared, I'm not prepared to say that we, we're almost barred from listening to those comments, but certainly they have to be directed towards evidence that is in the peer reviewed literature that we can respond to or work from.

Finally we need more expertise in epidemiology, because all the fine questions that we've had have turned on epidemiologic interpretations, including the saccharin question, which turns on epidemiology.

**DR. GOLDSTEIN:** Dr. Waddell.

**DR. WADDELL:** Bill Waddell, University of Louisville. I'm pleased to respond to your request about how I would list alcohol; I

would not list it. The reason I would not list it is that there's no clear evidence that it is a carcinogen at all. All the evidence that's been pointed to and that was pointed to in the background document was based on epidemiological evidence, all of which is confounded by one factor. A lot of that was not known at the time of the Allrach (phonetic) decision in 1987. I was there; I know. Only information on viral hepatitis B and C; there was no information on, about controls. The information on smoking in the epidemiological studies is not properly adjusted. When I say that, I mean that the studies that were done, most of them were done with concurrent smoking and other things. They're done with multiple linear regression, to just try to separate the two factors, it's complementary. The only way to really separate that is to take a non-smoking drinker and a non-drinking smoker, and I summarized in the information that I submitted early on those studies in which there were non-smoking drinkers and there's only...

**DR. GOLDSTEIN:** Well, Dr. Waddell, that's very interesting and very appropriate, but could we get to the process...to

point out the process is very important, and I don't want you to lose that.

**DR. WADDELL:** Okay, the process, well, you asked me to comment, I'm sorry. The process does not involve proper evaluation of the information. I was particularly distressed during the five minutes that I had in the presentation, when the committee kept talking about the studies of control for cigarette smoking. There's no way to control for it, and I wanted very much to clarify that, that I had submitted the studies that had no smokers, but I was not permitted to say anything on it. So, the process is flawed.

Another point that I could make, you asked yesterday about Dr. Rubin's comment about esophageal, the explanation. There's no information on that. That merely is a theory of Dr. Rubin's. As a matter of fact, there is good epidemiological information, so that is not true. What I would like to do, I hope I've answered that, but the thing I wanted to do while I'm here for just a minute, is to emphasize what I see as the major flaw. The major flaw is that a substance is taken at any dose, in any condition and then labeled a carcinogen, and chromium is a good example of that. It's only

hexavalent chromium that is a carcinogen, being inhaled as such. As a matter of fact, if chromium comes in contact with any organic matter, it's immediately reduced to tri-metal. Tri-metal, and all the information says that chromium metal and tri-metal chromium is not a carcinogen. But your listing says chromium and certain compounds of chromium. If you read the profile, it does not clarify that chromium itself is not a carcinogen, yet it is listed as such. My plea is to when you prepare these, be specific and then you will satisfy everybody. In other words, if you say chromium under these conditions is a carcinogen. We have no other information or the information is insufficient, lay it on the line, say it, and then you don't hear anybody come and say, well, why did you do this and why did you do that. Now that's my feeling on the process.

**DR. GOLDSTEIN:** Okay. We have somebody else who's speaking and then...Dr. Goldman, do you have a specific...

**DR. GOLDMAN:** If I could, I want to ask him just a follow up question on that and using chromium as an example, which is actually the place where I actually agree with most of what

you've said, which is not true for most of what you said. But in the case of chromium, where, you know, you clearly have hexavalent chromium that is a great concern for carcinogenicity and you have other forms of chromium that are nutrients, micronutrients and you would want to enrich the listing in terms of explaining that. But you also want the listing to address that there were other forms that are nutrients.

**DR. WADDELL:**What I would say is that hexavalent chromium is a carcinogen, in the human, because that's the argument that you have and I don't think anybody can contest that. Then you could list in there in your description in the paragraph, you should say low doses of chromium includes etc. and supplements are not carcinogenic. Go ahead and say it, that's stuff the public wants to know.

**DR. GOLDMAN:** But then what you've specified, you're not talking about low levels of hexavalent chromium in food as harmless, hopefully you would then specify that those are other forms. That's what I'm trying to elicit.

**DR. WADDELL:** I think the profile should discuss this and clarify. They do not

clarify, they actually confuse it. By listing chromium as a carcinogen in the listing and then to say in the profile chromium is not a carcinogen is contradictory.

**DR. FREDERICK:** Bernie, let me just say something. I think the point is well taken, that there be appropriate explanatory language on the issues. I have to say, I have not read the chromium listing...

**DR. WADDELL:** I have a copy here.

**DR. FREDERICK:** ...recently. I thought it was appropriately directed toward the dangers of hexavalent, but I haven't read recently, so I can't say that. But I think if you feel that there's an inappropriate listing in this regard, I think you or anyone else, I think an appropriate submission to NTP, with the appropriate documentation would be the relevant thing to do.

**DR. WADDELL:** Most of them tend to make contents or whatever of one specific circumstance and extrapolate it into all dosages and that's the problem.

**DR. GOLDSTEIN:** Let me just point out that we've got three different kinds of enrichment, I like that term, proposals that we've

heard. One is to, if you will, amplify and enrich based upon public health benefit. So that there is public health benefit to Tamoxifen, there may be public health benefit to alcohol; that should be stated. Another is that we should enrich this description of listing by pointing out about the differences in chromium, species, or nickel alloy. A third proposal is that we take into account dose, in essence the crystal and silica argument, the sulfuric acid mist argument, that in fact at low doses there may be no risk and therefore they should be specified somehow. I just want to make that clear that we've got, there's been a fair amount of discussion of this, but they're coming from three different directions, but all three seem to be aiming at expanding what is said in a simple declaration of carcinogenicity.

**DR. WADDELL:** Clarification of the facts and not extrapolating from...

**DR. GOLDMAN:** Could you list those three again and then there was the fourth one that Dr. Waddell was...

**DR. GOLDSTEIN:** The three I have are basically that there is some public health benefit and that ought to be stated. The Tamoxifen

kind of situation, perhaps alcohol, that there are different forms and therefore you just say chromium where we're losing the fact that we do know that trivalent chromium is not a carcinogen, it's a nutrient, etc. Dose is a third, the argument has been made that for certain of these chemicals, certain of these species, the sand I have here, that perhaps there is no risk at lower doses. The same thing would be true, IARC I know specifies for sulfuric acid mist, not to worry about low levels less than mist levels. So, those are the three I've got.

**DR. GOLDMAN:** And well, in Dr. Waddell's fourth one...

**DR. WADDELL:** The fourth one...

**DR. GOLDMAN:** Which is a completely different point.

**DR. WADDELL:**What you're saying is be complete. In other words, if you have information that hexavalent chromium is a carcinogen, so say that, and the others are not. If you say that you inject nickel into the muscle of a rat and you get a sarcoma, that's the evidence. There's no evidence that nickel is a carcinogen orally. So, I mean, say these things and make it

clear to the public. I agree that the profiles are very...

**DR. GOLDSTEIN:** So, you're going to a different level, which is a level not just of saying we know that such and such is carcinogenic, that does not necessarily apply to its valence form, you would like it to be specified that this has been found in three rat species, done intramuscularly and subcutaneously but not by mouth.

**DR. WADDELL:** Dose, mechanism of action. Be specific, and then you won't get in any trouble.

**DR. GOLDSTEIN:** Well, I've got to apologize to Bill and give him a chance to take...

**DR. FREDERICK:** But Bernie, let John, I think he's got some relevant information on the issues raised by Dr. Waddell and then if you could let Jim do his thing. Would that be okay, please?

**MR. BUCHER:** John Bucher, NTP. I'd just like to clarify what we attempt to put in the summary statements. We put into the summary statements a description of the specific studies, the types of studies that form the basis for the call, either known or reasonably anticipated. We try to

state that if it's a...the epidemiology findings support a known level of evidence comes from exposures is X,Y,Z occupational settings. So that while we do not state specifically that we rule out the possibility of carcinogenicity under exposures under other circumstances, we do try to give a sense of where the basis, the kinds of studies that are used to provide the basis for this.

**DR. FREDERICK:** Thanks, Bernie. I just...

**DR. GOLDSTEIN:** Okay. We are running over and we've got a bunch of people waiting. So, I'd like to get at least the folks standing in line here.

**MR. KELLY:** Bill Kelly with Federal Focus. I do have a comment on the second one. I think it is possible to expand the listings themselves to address really multiple aspects and still keep them relatively brief. It think it's important, particularly with regard to knowing, saying that you know that something is a carcinogen. One could actually go and look at the literature , what you're really saying is we know for sure this causes cancer, perhaps under certain circumstances, at high occupational levels for

people that work in a certain industry for a certain number of years and it causes it in a particular site. So, the actual listing would say, this is known to cause lung cancer in workers who have been exposed to high occupational levels for at least 20 years or something like that. It would still be quite brief and then you would couple that, I think it's important here and I think we're looking for some concrete suggestions at this point in the discussion. Couple that with really a strong statement about some of the listings that people need to go back to the profiles and look to see what more, what the listings really mean, because they can't just be taken as blanket statements. Then be sure to put sufficient information in the profiles themselves, that addresses these enrichment issues that you talk about.

The other point I wanted to talk about originally has to do with Dr. Goldman's point about how to introduce more transparency, I guess at the RG1 and RG2 levels and that Phil Leber raised about front ending of the process. Because I think one of the fundamental concerns that's come out here in the last few days, is that industry feels, well, not just industry, but a lot of people feel that

by the time a background document or an issue gets to the RoC subcommittee, there are data flaws, there are analytical flaws that become embedded in the process and they don't, you don't know whether they've been handled and then they get carried before the Executive Committee and the directors and secretaries level. What I'd like to suggest, and I'm not sure how this interacts with the workshop idea, I think it could though, is that if a petition is sent in from the outside, there's a very specific nomination process. There's a document that has to be prepared. Actually don't know whether those are made publicly available, but those get submitted to the RG1. Now my impression about how RG1 works when there's an internal nomination is that it's quite different. Perhaps this could be clarified by NTP. My impression is simply that RG1 meets and somewhere in the course of the meeting somebody makes a nomination, says I think this should be listed as no reasonably anticipated and perhaps a few words on it, desire a closer look or whatever, and then a vote is taken. What I would like to see is that a nomination is made somewhere along the line, whether internally or externally, an initial nomination document is prepared, which has

a provisional, an initial rationale in that document, in terms of primary data that's the basis for the nomination. Then that is made available along with the initial call for public comments. So people actually have something to comment on at that point. Then you take that document and it goes, it's looked at by RG1, it's looked at by RG2 and then before it goes to the RoC subcommittee, you've got the comments, you've got the RG1 and RG2 deliberations on it. You revise it at that point as appropriate. You call it something different, perhaps you call it the review document at that point. Then you submit that to the RoC subcommittee and further public scrutiny. I think that could provide a lot of complexion from these concerns about carrying forward data flaws and data analysis flaws. I don't think it will require a lot more work. I think that work is already done. It was done at different points in the process. What you'd be doing is moving it, it's called front ending, but moving it farther forward in the process and giving people a more focused opportunity to comment, which in the end might save a lot of effort. Because right now I think a lot of people who comment on the first stage of the process have

to take a scattered gun approach to the issues, rather than say okay, here's what we see the thinking is on this and we can say, yes, we agree with that or no, there's a real error here and we need to focus on that and correct it.

**DR. GOLDSTEIN:** Thanks. Time is running low. I'm going to restrict ourselves to the folks who are standing now.

**MR. BAYARD:** Thank you, Dr. Goldstein. I'm Steve Bayard from OSHA. I'll only take about a minute and a half. I wanted to thank you first, and the NTP and the Board of Scientific Counselors for focusing on the process. Also in the midst of defining U.S. Regulatory Agency effectiveness in classifying carcinogens, especially the NTP listing remains an oasis and it's vital in my estimation that it not be slowed down to any extent at all. In that vein, I would like to try to dismiss the idea that the NTP should be doing a quantitative assessment of dose and potency of carcinogens. I think it's very difficult to do, even under the best of circumstances and it's best left to the regulatory agencies that have those provisions required. Also, and Dr. Mirer's comments, we wholly second his speech. I also think the NTP

should not be in the business of elucidating the benefits of chemicals, whether it's an essential element or whether it's good for vitamins. I just don't think that should be the business of the listing. On the other hand I do think that the NTP in listing carcinogens should have a responsibility to list by exposure, we have in the qualitative differences in focusing by exposure. I think the example that Dr. Waddell made of nickel is a prime example that I could think of. It's a homeostasis mechanism in the GI tract for nickel is not much if it gets into the system. On the other hand, it's quite good if it's a sterile nickel compound, then it's a known carcinogen, and maybe even a nasal carcinogen.

So, I think we have these obvious differences that efforts should be made to list chemicals by exposure. When I was with EPA I made that recommendation and I didn't get far with it.

Also with respect to exposure, there are certain chemicals that I think the NTP should even consider sensitive subgroups. For example, the bioassay that causes lung tumors don't have the benefit of having smokers with compromised

systems and affected lungs. So, to answer Dr. Waddell's claim that there's a confounding of alcohol by smoking and smoking by alcohol, well, just consider that this is a human that we're trying to predict on and to identify either of these subpopulations is a difficult task.

Finally, I didn't mean to focus on Dr. Waddell, but he had the same issues that I did. But Dr. Waddell said that OSHA had called benzine safe at one part per million, and I would like to disavow him of that information. OSHA has other provisions in its statutes which limit the levels that states set. The benzine level was not set based on the actual statement. Thank you.

**MR. LEBER:** Phil Leber from Goodyear. First of all I hear that we're pretty much in agreement and consensus that this should be a scientific process and I was happy to hear the words of encouragement from our Board of Scientific Counselors representatives and perhaps we do need a forum such as a workshop early on to sort of bang out the differences and to try to reach the consensus, the truth, the scientific truth with regard to the data and the classifications. I just want to make a couple comments to support that

concept.

One is that there are no shortcuts. If the public is going to be served, there is no benefit in calling a chemical a carcinogen, if the data don't support that. There's no value in calling a chemical a known human carcinogen if it is strictly an animal carcinogen and the evidence is not there for the human effects. I think that the scientific process takes a lot of poring over data, deliberation, scientific judgment to come to that, quote, correct decision. I was, I don't think that the comments that we ought to shorten the time, we ought to use less input, expertise, to move the process along, because if we come up with the incorrect decisions, nobody is served.

Just a quick comment on the issue of bias. I'm going to use a paraphrase here to say that people are not biased, opinions are. So, if somebody comes into the room and we're talking about carcinogenesis, it doesn't matter whether you're from an environmental group or industry, government or what party, it's the ideas that have bias or do not have bias. So, I would suggest that if somebody comes in to a forum and says I have information, I can talk about animal carcinogenesis,

or epidemiology, they should be heard.

Then finally the 9th report, I know that's on the fence right now, perhaps that's not quite the right word, but I think that if the comments and the opinions expressed here the last couple of days have validity, and I think they do, I think that Dr. Olden and the NTP staff ought to give consideration as to whether these 22, 24 chemicals should go ahead, be listed in the 9th report, given some of the concerns that have been expressed. Thank you.

**DR. GOLDSTEIN:** Just one quick comment from the Chair, just to make it clear. I quite agree with a lot of the things you said about what people have been saying here, but this has not been set up as a consensus gathering meeting, this is a meeting to get opinions forward. I don't think it would be fair to ever say that we've arrived at some consensus here.

**DR. FREDERICK:** Absolutely, and I want to say that I think where Lynn and I were with regard to an early workshop, was not a consensus building workshop, it was input with regard to the technical issues on the table. I just want to be clear about that.

**MR. LEBER:** I just meant that the

consensus was that science is important, that's all.

**DR. GOLDMAN:** I think that the issue is that it's a very different thing to do, to have a workshop where the science is brought forward versus have a consensus conference, which is a very formal kind of a workshop that is very difficult to do. I think it would be more, I would never even recommend thinking about that for every single chemical for the RoC, because that would be biting off something that just, I think is just not digestible for the NIEHS. So, but you know, but otherwise you did reflect it accurately and the other thing that you said, I think that there really are, I think you're right, there are two separate issues here and one is, process improvements for the future in the whole process of doing the RoC and the second one is the 9th report, which obviously many of the comments, and I haven't responded to those as we've gone along, because I felt that we're on the first thing, but it is clearly something that's being brought forward by many of you and that is asking the NIEHS to consider that and it's just something that I don't think that Clay and I have felt was really, you know, the subject of why we were brought here.

**DR. GOLDSTEIN:** Jim Hathaway and Jackie Warren...

**MR. HATHAWAY:** Jim Hathaway, I represent CMA Inorganic Acid Mists Panel. I just want to offer a contrary comment to what the gentleman from NIOSH said on quality of background documents. While I was going through my presentation on sulfuric acid in North Carolina, I read through about a half a dozen of other chemical background documents. These were all ones where epidemiology studies were a primary factor and I felt that none of these were scholarly documents. In fact I thought that every one of them was very poorly written and I think that the NTP can and should expect a much better work product from their consultant.

**MS. WARREN:** Thank you. Jackie Warren. I've worked in this field for 25 years and I have to say that as a dissenting voice on the proposal to move what is becoming increasingly an adversarial exercise even further into the NTP's process on this. I think it's something that could potentially destroy the integrity of the process. I don't think that the NTP really, I think they should be thinking about ways to insulate their process

from further pressures of the kind that are being brought now, demands to respond. The Agency has no obligation to respond to every comment that everybody makes. The right that they are extending to people to be aware of the process going on and have an opportunity to submit comments and to testify, they have a right to ask that those things be considered. They don't have the right to demand a response to every single one. I think to the extent that you put scientists on the spot on these panels, making them realize that if they have to write down every single justification, it's the antithesis of the kind of peer review that Frank Mirer described in an earlier comment and that it's going to change and distort the nature of the process in such a way that it won't really be peer review anymore.

I wanted to read from the wonderful report, as it was characterized yesterday, the President's Commission On Regulatory Decision Making & Risk Management. In Chapter Six there's a statement that says, and I quote, potential peer reviewers with financial conflicts should be disqualified from service on peer review panels that could specifically influence regulatory decisions related to

the products or interests of their organizations. We can't emphasize that too much. To the extent that you go with further workshops and you bring in industry scientists and consultants and put them effectively into the process of making the decisions on characterization, I think you will so corrupt this process that the NTP's annual report will not be the last bastion of a place to look for government scientists' best judgment on what substance is a carcinogen. I mean for 25 years industry's initial knee jerk reaction has been, this doesn't cause cancer, nothing, nothing has ever been introduced as a possible carcinogen that received an agreeable response from industry, and they're entitled to their opinion on that. But just in terms of protecting public health and following the mandate of Congress and what this report is supposed to do, I think you should think about insulating a little bit. Because no matter how many times you open the process more, it will never be enough. I mean you can see now, people have had an opportunity they never had before and all they've done is come in with a thousand different criticisms of why it's too short, it doesn't give enough response, doesn't have a written document, they want these other things that

they can have a further chance to throw rocks at and possibly take to court. I think it's a very slippery slope, with a very bad ending for the whole process.

**DR. GOLDSTEIN:** We'll stop here. We had a lively discussion. I thank everybody who was involved in it. I'm not sure if Charlotte Brody is here, so we will start again at 1:00 o'clock.

(**WHEREUPON**, a luncheon recess was taken.)

**DR. GOLDSTEIN:** First, let me ask if there was anyone on the schedule this morning who is here now? Okay. We actually have, let's see, of the first five speakers, four canceled, and one has spoken. So, we're already into the speaker, the sixth speaker, and you have the numbered listing, speaker #44 and even that gentleman is not here.

**DR. GOLDMAN:** Who is that?

**DR. GOLDSTEIN:** It's listed as David Weinberg, but Ed Ferguson will speak for Dave Weinberg. But just to be sure, Charlotte Brody, Joseph Suchecki, we've heard from Lyn Nabors, Sylvia Johnson and Scott Schneider. Well,...

**SPEAKER:** There's a couple of

people at lunch.

**DR. GOLDMAN:** Yeah.

**DR. GOLDSTEIN:** Well, if they do come and they are speakers, I'll certainly let them back onto the schedule. So, why don't we start with Ed Ferguson?

**MR. FERGUSON:** Do we go right here?

**DR. GOLDSTEIN:** Right up there. You've got 10 minutes and if you need help with slides or anything, we'll get it for you.

**MR. FERGUSON:** Good afternoon. My name is Edward Ferguson. I'm testifying on behalf of Chroma Corporation. We appreciate the opportunity to appear here before you today to offer our views on the RoC review process. As we supplied the panel with a copy of our statement, I'll be brief in my remarks this afternoon. Chroma recommends that the NTP revise its RoC review and evaluation process, to more accurately recognize differences in the potential carcinogenicity of various forms of compounds that incorporate the same metallic element. We understand that this is the current practice in the immediate system for classification under the existing substantive

program.

Before proceeding further, let me briefly explain who Chroma is and why we care about this. Chroma is engaged in the custom formulation and compounding of colorants used in plastic products. It is located in McHenry, Illinois. The colorants Chroma compounds are used in a wide variety of plastic products, including packaging, appliances, automobiles, durable goods and industrial products. The cadmium pigments used in this process are extremely insoluble compounds of cadmium sulfide and salamite. They produce bright strong colors and have excellent heat stability, light fastness and chemical resistance. These pigments do not migrate from the plastic in which they are incorporated, this is because they are in a highly insoluble fire hexagonal inter crystalline form, with very little extractable cadmium. But encapsulated in plastic, it's virtually impossible to extract the cadmium ionic species, even after long periods of environmental exposure.

As I stated earlier, Chroma believes the NTP should amend it's RoC review and evaluation procedures to assure that it consistently takes into account differences in potential carcinogenicity

between compounds. This has been done in numerous instances in the past by the NTP. For example, lead acetate and lead phosphate have been listed by the NTP with no other known compounds. Likewise certain nickel compounds are listed by the NTP as probable human carcinogens. Selenium sulfite is listed, but not all selenium compounds. As to cadmium, however, all compounds are listed by the NTP as known human carcinogens, yet we're aware of no rational scientific basis to assert that all forms of cadmium should be listed as known human carcinogens. To the contrary, there is no human epidemiological study that would support the designation of cadmium sulfide and selide as known human carcinogens. Despite this lack of evidence, the NTP's designation of all cadmium compounds as known human carcinogens includes both cadmium sulfide and selide. This over broad designation poses severe consequences for Chroma and other manufacturers using insoluble cadmium pigments, whose products may now be targeted by regulatory authorities for further control and possible prohibition. Moreover, we know that currently there's great uncertainty that even soluble forms of cadmium should be listed as known human

carcinogens by the NTP. This is because all the past epidemiological studies that reported an increased incidence of lung cancer in workers employed in cadmium production facilities had failed to account for worker exposure to other confounding variables, namely arsenic. While follow up studies have attempted to compensate for arsenic exposure, they were unable to fully discount potential influence of exposure to arsenic. Given the current state of science, we believe there is no justification for NTP to continue to designate all forms of cadmium as known human carcinogens. To address this issue we believe the NTP should revise its RoC review process to account for differences in the potential carcinogenicity between forms of compounds as is done under the EEU system for classification under the existing chemicals program. Under that program, for example, each cadmium compound is considered and listed separately for a thorough and complete evaluation of all of the scientific evidence. The explicit recognition that differences exist between the potential carcinogenicity in different forms of compounds will ensure that the NTP's evaluation review process is scientifically fair and accurate. Since the

designation of a substance as a known human carcinogen can have enormous impacts on consumer and market perceptions, it should only be made after NTP has conducted a complete study of all the scientific evidence relating to each compound. Only forms of compounds for which there is unequivocal evidence from epidemiological studies should receive the known human carcinogen designation. Thank you.

**DR. GOLDSTEIN:** Thank you, Mr. Ferguson. Our next speaker is Michael McCann of The Center To Protect Worker Rights.

**DR. McCANN:** Thank you for this opportunity to speak. My name is Dr. Michael McCann. I'm Director of Ergonomics & Safety at The Center To Protect Workers Rights, which is the research arm of the Building & Construction Trades Department of the AFL-CIO. I'm actually presenting, these remarks were prepared by Dr. James Platner, who's Director of Research & Pathology at CPWR, but could not be here today.

The Center To Protect Workers Rights strongly supports NIEHS's efforts in publishing a Report on Carcinogens to the U.S. Congress by the National Toxicology Program in response to Section

301B4 of the Public Health Services Act as amended. Here are our comments from the September 15 meeting, on sustaining and improving NTP's process for updating this document's listing.

We support the listing of all agents subject to exposure circumstances, which are either known or reasonably anticipated to cause cancer in humans and to which a significant number of children, women and men in our country are exposed. We believe NTP's listing process for the reporting of carcinogens has been objective and fair and we insist that it remain so for the public good. If anything, the current process risks becoming so complicated that listings may be unnecessarily delayed over small details that are largely independent of the scientific health data. While the report is entirely informational and has no regulatory role, it is the basis for informing the public of carcinogens and suspected carcinogens in the workplace and environment. Listing serves a useful purpose of informing citizens about a potential concern, so they may assess their own situation, while hopefully stimulating additional resolves to answer unresolved questions. The Report on Carcinogens serves as an essential public

health tool for protecting children and workers and communities, even as technical issues about a listed carcinogen or suspected carcinogen are being recalled. For example, this credible report is an important source of information for OSHA's Hazard Communications rule and for the Proposition 65 in the State of California's Drinking Water Enforcement Act of 1986. The credibility of the Report on Carcinogens is based in large part on NTP's unbiased assessment of peer reviewed data. This process must be entirely open. A proposal appears to be that NTP consider non-peer reviewed data confidentially provided by parties with economic interest in the carcinogenic data, substance or exposure circumstance. We strongly disagree. The very nature of this report is that it is conducted in accordance with the highest standards of open scientific scrutiny, which demands open access to data sets for potential reevaluation and peer review of data, methodology and analysis. There are other opportunities to introduce such anecdotal data, including data on economic impact and data on feasibility of technological controls in appropriate settings such as the regulatory process of OSHA and EPA. We agree with the comment that reviews

for the reporting carcinogens should be done in Washington, D.C., to provide easier access to the interested public. In summary, we support the process for NTP's Report on Carcinogens. We urge you to place public health first in timely publication of important public health information. The long term interest of workers and the public lies in the performance of scientifically valid evaluations. Proposals that restrict public access to deliberations, delay the listing process, or introduce into the debate confidential data sets which have not been subject to peer review and cannot be challenged, clearly do not improve the process and are strongly opposed. Those are written comments, and I have a couple personal comments.

Before I went to work at CPWR for about 20 years I was involved in writing, researching hazards of art materials and ran the Center For Safety In The Arts. This is much, artists, like much of the public, are very concerned about cancer causing chemicals and I constantly would get phone calls about they saw this in the paper, that in the paper, is it carcinogenic. There are many cancer causing chemicals in art, but we don't need to say they all are. One of the sources I did rely on is

the NTP Report On Carcinogens. In fact, we placed that and updated it on our website, because people were interested in a credible source. If we allow the use of data that is not peer reviewed, then I think that affects the credibility. I think a comparable situation is what has happened in some instances with the threshold limit values, where you'll see in the documentation so and so from such and such company says that this level has not found any problem. That type of statement in documentation really affected I think the credibility of a lot of TLBs. I would not like to see that happen here. Thank you.

**DR. GOLDSTEIN:** Thank you. We have two more speakers on the schedule. I'd like to just point out that I'm going to diverge a little bit at the end of these two speakers, instead of going directly into the kind of discussion thing, I note that there's some people in the audience who sat here attentively for two days now, without saying a word. So, I'm going to, you know, just think about it, if anyone would like to make a presentation, who hasn't presented yet, at the end of the next two speakers, the microphone is yours, for whatever you'd like to say, within 10 minutes of

course. Al Collins...I'm sorry, we actually have three speakers listed. Michael Sprinker of the International Chemical Workers Union. Is Michael here? Perhaps not back from lunch.

**MR. SPRINKER:** Since I can't write on paper anymore it seems, I can't read my own writing, I think I inherited that from my father, a veterinarian.

Anyway, I'm Michael Sprinker, the Director of Health & Safety for the International Chemical Workers Union Council of the United Food Commercial Workers International Union. I'm also a certified industrial hygienist and have spent somewhere in the range of about 10 years working for the State OSHA program in Oregon on the enforcement side as an industrial hygienist. I'd like to thank you very much for the opportunity to speak on this issue, which is of critical importance to our members. I'm sorry I couldn't be here earlier, I had originally planned on coming in either yesterday or for all day today, but I was in Florida investigating a fatal electrocution of one of our members. It's sometimes, as we talk about carcinogens and all, I know we all still consider those other hazards out there too, which

unfortunately are a little bit quicker at taking lives.

The International Chemical Workers Union Council represent workers in organic and inorganic chemicals, pharmaceuticals, as far as the mining industry, zinc, sulfur, phosphate mining and processing, paints and coatings, additives, natural gas, non-nuclear, nuclear weapons, manufacturing and I guess demanufacturing too, waste processing, as well as a few folks in nursing homes and other industries. They've been exposed, many of our members have been exposed and retired members been exposed to previously controversial, if I can use that term, carcinogens and processes, such as asbestos, benzine, betadine, various pharmaceuticals, formaldehyde, carbon disulfide, beta methallamine, strong acid reduction and so on and so on. At least they were told that was controversial at the time, or years past. They currently remain exposed through manufacturing, processing or other activities, to a number of those carcinogens and also to other so-called new controversial carcinogens, such as methylene chloride, ethylene oxide, chrysotile asbestos, fiberglass, refractory surrounding fibers. When I use the term controversial, it doesn't mean I'm

disagreeing with that. I mean I'm sorry, that I'm agreeing that they're controversial. They are also regularly exposed to the newest controversial products, such as diesel exhaust particulates, silica and a number of others. In fact oftentimes our members are among the first who are exposed to those new carcinogens, because they oftentimes manufacture them.

From the first list I gave, you can see ICWU members and their families, like workers and their families throughout this country and throughout the world are familiar with the controversy over carcinogens. In fact if I could go back in time, it was, I actually forget his name, one of the first discussions in public at a general meeting of non-scientists about the possible nature, that workplace chemicals could be carcinogenic. Dr. Huber, I believe, was at an ICWUC convention back in the early '50s. Our members at sites which processed the miracle fiber, asbestos, in Southern California and elsewhere, were told for so long that their lung problems and early deaths from cancer were not due to that miracle fiber and certainly not due to the safe form of that fiber. Those folks went on strike for their health and safety and that

of their friends, families, and neighbors. When they were told by the company that their actions could cause the plant to close, they said, that was better that it close, than they had people continuing to die. That's a pretty hard stance to take, even in the '60s and '70s, as some deindustrialization was occurring in this country. But they just watched too many people die. Remember, too, that this was in the days before OSHA's adoption of the Hazard Communications Standard, a standard that requires the review of NTP and other lists, preparing material safety data sheets. Remember too, there are those who said that workers could never understand the information on MSDS sheets or the hazardous chemicals. The past 15 years have shown that to be one of the more inaccurate predictions. The rise in worker knowledge in health and safety hazards, as well as the reduction of exposures among our members, among workers who have participated in real training is a result of the openness required about the identity of chemical products, their health and safety hazards, exposure control measures and precautions. The requirement that positive carcinogenic tests and listings of IARC and NTP

status be specifically noted in MSDS's has greatly increased the ability of workers, who have few resources, certainly in comparison to those that industry and others possess, to protect themselves through taking action. The Report on Carcinogens, as we've heard, is mandated by the Public Health Services Act, now has to be biennial, and it's supposed to be listing all substances known to be carcinogens to humans or reasonably anticipated. Also includes information about the nature of the exposure, how many people, and a description...and we do, we rely as labor, as workers, as do many people in organizations, on a process which reviews credible evidence and studies, and which has a large degree of independence or influences which may be seen as looking at issues not directly related to public health. I know truthfully there are times we wish there were some things listed that aren't in labor. I have members that I don't want to say wished, but when they find they have cancer, wish it was from something, wish they knew what it was from in the workplace, so then that's knowing or not knowing. But at least we have a place we can look to and see that someone has independently made a determination based on what

knowledge is out there about a particular compound, group of compounds or processes. We believe NTP does that to a very large extent. One only has to look at the perceptions of many towards OSHA standards for the influences which delayed standards for many years, as well as the controversy over the ACJ TLP process, to see that there needs to be an agency that can operate independently of those influences, to the degree possible. The independence of NTP in its ultimate determination of listing a chemical process, mixture or substance, is critical to the scientific value of its work. It's also truthfully pretty critical to whether or not people have faith in that work or in the determination of whether or not something is or is likely to be a human carcinogen. We've already seen over time that there's unfortunately been a shift from publishing a list every year to every two years. Now probably, I think back in the old days, when it was every year, it was being a little, Congress was perhaps being a little, maybe didn't quite understand some of the difficulties in trying to put something like that together every year and review all the data. But we don't need more delays, where such delays are not scientifically

indicated. My training was as a scientist, and unfortunately one of the things that we find in science is that there's sometimes something we believed for years may not be accurate and then, you know, then you admit it's wrong, you found more information and go on from there. Unfortunately with chemical carcinogens, a lot of times the wrong data was that oh, this stuff is harmless, this stuff can't hurt you, there were these studies and so on and it shows it in rats, but you're not a rat.

**DR. GOLDSTEIN:** One minute.

**MR. SPRINKER:** Okay. So, let me just finish up here then and you know, we do support NTP. We do support the idea of, to some degree of having, maybe having a public meeting early on in the process, but again, not one to try and come to consensus of all of us whether something is a carcinogen or not. We're going to continue to rely on NTP to be able to do that. We do hope too that, and I do like this process now of some of NTP being published on the web, that does help us, does help our members. It clearly helps us at being able to address some concerns of our members.

One of the things I did hear earlier and there was such a long line, I didn't have a chance to mention, we did hear that the idea of dose should be noted in discussions of NTP, when NTP talks about why something is listed. But I believe at this point, as a general belief, there may be some specifics that are different, but given the multitude of exposures which most studied workers have had, and the latency period of cancers to initial exposures, I really don't believe NTP could accurately state or imply that exposure to low dose levels, the levels that maybe workers have had in the past, some of which were very high, are safe. Certainly as a certified industrial hygienist, I've monitored a lot of exposures and I've reviewed a lot of monitoring data in workplaces. I'm continually amazed at the very poor quality of much exposure monitoring that's out there. Whether airborne, dermal, which is almost nonexistent in monitoring and other routes, and I think NTP would need to look very carefully before putting too many caveats on, too many qualifications on the carcinogenicity of a given compound. Thank you.

**DR. GOLDSTEIN:** Thank you, Mr. Sprinker. Our next speaker is Al Collins from The

National Association of Metal Finishers and Metal Finishing Suppliers' Association and the Association of Electroplating and Surface Finishing. Mr. Collins.

**MR. COLLINS:** Thank you. My comments are going to be brief. I'm pinch-hitting for some colleagues that came down for the original meeting in Southern California and couldn't make it back. I'm also not very comfortable speaking this way. I live in a little town in Virginia and my experience has been being in front of our City Council, and I'm part of a neighborhood association, and listen to people scream about wanting to serve beer at their outdoor restaurant or whatever.

**DR. GOLDSTEIN:** They won't raise your taxes though.

**MR. COLLINS:** I can speak to that. My name is Al Collins. I'm Vice President of Regulatory Affairs for The National Association of Metal Finishers. I'm here today to present the comments on their behalf. I want to thank everyone for the opportunity to be able to do that in this forum. NAMF recognizes our responsibility to the public to conduct our operations in a safe and environmentally responsible manner. In fact for

the past six years we've been working with EPA closely and created a partnership that's resulted in a metal finishing goals program. Under this program the metal finishing industry is committed to reduce water use and energy use by 50 percent and would cover 98 percent of the metals that we use. We hope to reach this goal by the year 2002. EPA has used the metal finishing goals program as a model for other industries and we're very proud of the accomplishments that we've made here, because they demonstrate our commitment to the environment and to worker health and safety.

So with that said, I would like to address the addition of soluble nickel compounds to the list. We believe that this action would adversely affect our industry and would provide little or no additional protection to human health and the environment. The metal finishing industry, along with EPA's Office of Water & Health Canada sponsored a toxicological review of soluble nickel compounds. The study was completed in March of this year and it was submitted to NTP. It was completed by Toxicology Excellence For Risk Assessment or TERA in Cincinnati, Ohio. The study included procedures for independent peer review,

records of comments, recommendations for the peer review meetings and ways to manage potential conflicts. TERA also employed an effective process for resolution of differences, which led to consensus. We believe this is a good model to use. The process also provided an opportunity for interested parties to observe the proceedings and participate. We encourage you to consider the findings in this report as you finalize the RoC.

As you know, the RoC carries enormous weight with regulatory agencies like EPA, who use these findings to develop standards and limitations. Therefore, we believe that NIEHS should publish complete background information on their decisions and offer an opportunity to comment on the development process. In fact we believe the development of the RoC should be held to the same standards as a regulation and we suggest the Administrative Procedures Act as a good model to follow, because it offers a formal comment period and requires development of a formal response to comment document as part of the record. We believe this would go very far to improve this process.

Our comments today are not based on the

interpretation of the toxic...toxicology or epidemiology data, but instead on the review procedures and listing criteria used in RoC. Our specific suggestions regarding the criteria for listing compounds in the RoC are as follows: 1. The criteria for designating compound as a non-human carcinogen, should require the highest level of scientific certainty and also it should require that human and animal studies be consistent and supportive. 2. The criteria for designating a compound as reasonably anticipated to be a human carcinogen should be used as a secondary level of certainty. Animal studies should be, should exclude potential carcinogens, if they are inconsistent or not supportive. 3. NIEHS should speciate compounds and recognize the significant difference between species. 4. NIEHS should clarify the standards required to achieve a listing of a known human carcinogen. Right now we believe that they would be improved if they were more objective.

Specific compounds and the review procedures for listing compounds in the RoC are as follows: 1. Require more than a simple majority of the panel members at each level to add a compound to the list of known human carcinogens.

2. The RoC should identify the key studies that support each of the panel's decisions. 3. NIEHS should broaden and extend the time for peer review and publish both comments and response to comments. 4. RoC Review Committee should not depend on IARC or other agency conclusions alone, but should independently base its findings and designations on published reports. Lastly, NIEHS should expand the RoC report to include information on the nature and prevalence of public exposure, and to the extent that which regulations could prevent that.

Again, I thank you very much for providing this forum and for considering our comments.

**DR. GOLDSTEIN:** Thank you very much. Is Michael Groger here? U.S. Environmental Protection Agency?

**SPEAKER:** I haven't seen him today.

**SPEAKER:** He was here yesterday.

**DR. GOLDSTEIN:** That's an official part of the record now. Okay. Let me again, anyone can speak any time during the discussion of course, but I just thought that since sometimes our discussions get moving in certain directions, that

we ought to give an opportunity for anyone who's been here, who hasn't spoken yet, who'd like to have the microphone, to come up here for 10 minutes, by all means do so. Any takers? Okay.

So, let me again ask our folks from NTP and NIEHS whether there's any clarifying comments you'd like to make or would like to summarize anything from what we've heard? Let me turn this over again to Drs. Goldman and Frederick.

**DR. GOLDMAN:** Clay and I always ...let's get this going in the right direction. Clay and I always have something to say. One of the things that actually I wanted to bring up as a possible point of discussion is a discussion that we had at lunch actually, and it hasn't really been brought up very much in this session, but again going back toward that issue of attempting to find ways to increase the transparency and opportunities for input into this process. A suggestion was made this morning that one possible way of doing this would be to hold some kind of a working conference early on in the process. But another idea that we were discussing, and I think it would be worth hearing some additional reactions to, is that perhaps there could be some kind of a process

that the NTP would carry through, where rather than simply announcing which compounds are scheduled to go through the review, that perhaps at the time of that announcement, that there might be some specific questions that are asked that have to do with the scientific issues that become apparent fairly early in a process like this actually, for the individual compounds. So for example, if it's immediately apparent at the beginning of a process that the basis for a listing decision might largely have to do with say epidemiology studies, where there are specific questions about exposure, that that could be actually indicated in that initial announcement that that's an area where the NTP particularly is interested in getting information. Not exclusively, because of course any information might be relevant, but to kind of signal early on in the process, not only both that the listing consideration is going to occur, but also what at the earliest stages the scientific issues are that are likely to be the most difficult, the most contentious, the most interesting, most important, to try to get that information in writing at a very, very early stage.

**DR. FREDERICK:** I agree that

could be quite useful. Inasmuch as what we've done here has been kind of a healthy discussion of issues at hand, I'd like for you to think of this as kind of like being a Board of Scientific Counselors meeting; the emphasis is on counselors, with regard to providing advice, with regard to process and that sort of thing. We discussed a wide range of issues from a wide range of perspectives, but at the end of the day it's all advice to the caretakers of this program, who have been placed in that role by Congress, and it's obviously something that I'm very aware of, even as we meet as a panel with some formalized structure, we're in this advisory role and trying to bring, help provide the best information.

This morning we talked about a workshop as one possibility to help get information on the table. I don't know if that's a good idea or not. It's something that is worth considering and would go into the advice category for consideration. But I think, I do sound like a broken record on this, but I'd like to really kind of close my comments here today by saying and emphasizing once again, the most important thing a person can do, from any group that wants to have input in this process, is to prepare a good strong technical document and

submit that as early as possible in this process. I, as a member of this group, will do everything I can to acknowledge the points raised in the document. That does not necessarily mean that I will agree with every argument presented, but I will do what I can to acknowledge the points that have been raised from the outside. I'm very appreciative of the input that's been provided here.

**DR. GOLDSTEIN:** Any comments from anyone? I've got a couple of areas we could go, but first let me just turn this open for comment. Again, please identify yourself.

**MR. DUSTIN:** Dave Dustin, Rutgers University. There have been a couple of speakers who have mentioned the possibility of requiring greater than a simple majority of the panels or each of the panels to be the baseline for recommending a listing. This is one area where political science has something actually foundational in political science to say about the role of majorities. Among, there are two principles of majority rule that are relevant here. Among people who have a similar probability of being right, a majority rule is actually the rule that best has the opportunity of being right. So, if you believe that

everybody on the committee has an equal probability of being right, then a majority rule on a given vote is most likely to get the right answer out of that group. The second thing is, majority rule is roughly symmetrical compared to other rules. That is, if you have an opportunity for different kinds of decisions, majority rule is the one that's most likely to be fair and most likely to operate the same way, going in different directions. We've already heard commentary from some speakers who believe that delisting is a higher burden than listing is. If you believe that that may be the case, then you certainly don't want to raise the burden for listing, because you're going to push the burden for delisting even higher above that. So, sort of based on these relatively foundational principles of majority rule, I think suggesting that a higher than majority, higher than majority be required for listing is a bad idea.

**DR. FREDERICK:** Let me respond to that, David, because I've actually felt that the mixed opinions are the most interesting opinions we deal with. I said this before here today, that it's not so important exactly how the vote goes, so much as the fact that when we have a mixed

opinion we provide that information. Because I think it probably reflects, I would like to think that sampling of the board is representative of sampling of consensus in the broader arena of science. Providing that input to him, that there's a mixed opinion on the issue at hand, I think is very valuable input. What he chooses to do with that, is his burden to carry. In part I think informed by the group that meets after us, the Executive Board, which I feel carries a certain level of advice, responsibility on advice, with regard to policy and philosophical issues that kind of run a little higher than science, but once again advisory, it is his burden.

**MS. CLAASSEN:** Hi, I'm Ann Claassen. I'm with Latham and Watkins, Counsel to the CMA Elements Panel. Again, as many have said, thank you very much for holding this meeting. I wanted to respond to Dr. Goldman's question about the idea of publishing questions right at the start of the process. I think that indeed would be very helpful and I thought Mr. Kelly had a very good suggestion right at the start of the process, function, what actually was the main issue of the petition and those two could actually be combined,

before you even start writing the background document. Put out the notice, these chemicals have been nominated, these are the reasons they gave for the nomination, and here are some additional questions that have been asked about them. I think that would be very helpful. I don't know that that would be to the exclusion of also having a workshop on chemicals for which you've had a petition. I think with a process like that you would find that people were indeed very interested in getting this problem documented along the process, if they know at the beginning of the process it was started.

I also wanted to address a question that was more from the last session, but it's come up a lot during the last couple of days, and that is, the idea that all peer review studies should be part of the process. I haven't heard anyone say differently. I haven't heard any people say that they shouldn't be part of the document. But there's two things that I think that you need to consider and grapple with. One is the difficulty in publishing a negative study. Journals like to publish positive studies, because those are the ones that give us a handle on understanding the mechanisms of toxicity and

carcinogenicity. So, a positive study gets published. A negative study we have great difficulty getting published. It doesn't mean that we don't try to publish them and some of them do get, but I think you need to grapple with what to do with the knowledge that there are negative studies out there, but there may be, you know, assume that they are out there and couldn't make it into the journal process. The other thing is that if you know that there is a study in the pipeline that would address important issues for, for whether or not a chemical is carcinogenic, you know, if you know that somebody is about to publish a study on a potential confounder or about to publish a, yet another epidemiology study or if there's about to be some large symposium on a specific chemical, new research in it, then that may be a reason to push that chemical to the next meeting of the subcommittee, rather than to do it right now. Thank you.

**DR. GOLDSTEIN:** Thanks. Comments.

**DR. GOLDMAN:** Just a point of information, it is possible to have unpublished yet peer reviewed studies. People can set up,

especially I've seen, and these two groups actually do this, they can set up peer review processes and I've seen those undergo the same kind of consideration as published peer reviewed reports. Of course it is also possible to publish something in a peer reviewed journal that's completely garbage science too. So, there are ways to do that and take those unpublished studies and put them through a peer review process.

**MS. CLAASSEN:** That's good, if NTP was clear that that was something that was happening.

**MS. TROXEN:** I'm Elizabeth S. Troxen, I'm with the Manufacturer's Association. I do want to thank Dr. Goldman and the rest of the NTP staff for being very good listeners for the last couple of days and giving us the opportunity to air our views. I do want to pick up on this idea of delisting. Some folks in particular have kept reminding us that there is a delisting process and procedure. I think I did take some, Dr. Dustin's idea about the idea about quorum, if it's raised higher for in fact the listing products than it is for delisting. But I think the idea of in other scientific assessments that I've worked with, and I've worked

with a number of them, one of the benefits of that process was that there was a periodic opportunity for review of the science. Since these reports come out every year or two years, that in fact there is a periodicity of this that if in fact the delisting process works well, there should be, as information developed, perhaps moving into, facilitating that delisting process, so that in fact as we get information, our knowledge can be included. So, I just wanted to make that suggestion.

I did want to just make some general comments, just that I think in my experience, because even if I work for industry, I'm also a citizen, I'm also interested in good public policy. In the past I've worked with many people in this room, including Jackie Warren and others on other issues, where we have in fact met on common ground, to I think improve process and to get on with making government work and focusing on priority issues. Just that good process to me is the start of good science and good science is the basis for understanding, and good understanding should be the basis for good public policy and I think we all benefit. Thank you.

**MR. HATHAWAY:** Jim Hathaway

with Rhodia. I think most people when they talk about non-peer reviewed studies, they're thinking that industry has some studies that they did that they would like to, you know, put on the table. But with sulfuric acid there's a very interesting thing we came up against and there have been three lifetime animal studies. One sponsored by the EPA and two by the NIEHS, none of which even had a formal report prepared. These studies were very high dose, with a large number of animals, three different species and there were no respiratory tract tumors whatsoever found in any of these. But according to the protocols, these could not be used, because these were not published. We're in the process of trying to see if we can't get NYU that did the EPA study to go back to their 25 year old data and actually write a journal article on it. We'd like to have them tell us something that maybe the NIEHS could have done, drag out their data on the two that they had sponsored and actually finalize published reports, so that these could be available for use. I think that if that information on three negative lifetime animal studies had been available to IARC or to maybe even the NTP various review groups, they might've

used some of our criticisms of these epidemiology studies that they're provided.

**DR. GOLDSTEIN:** Other questions, comments?

**DR. LUCIER:** If I could make one clarification regarding the issue on the height of the bar for listing or delisting. It's the same height for listing or delisting and we use the same process for listing and delisting. So, we really don't ask that different criteria be applied for delisting as listing. It's the same criteria and the same process.

**DR. GOLDSTEIN:** I'd like to make a couple of quick points of things I want to be sure people have a chance to react and not pass by. One is a, early on there was a call for having the known carcinogens based purely on epidemiology. At other times there were discussions of mechanistic information and its role; can mechanistic information only raise things up, can it only lower things down. Raising up makes it a higher, more room to be carcinogenic level, lowering it down can it take something out of the known to reasonably anticipated or vice versa, or should mechanistic information be available for both

decisions or for neither decision. Anybody want to pursue this any further? We'll just leave it with these little bit of indirect discussions as to what we should be doing with mechanistic information.

**DR. WADDELL:** It ought to be used for both.

**DR. GOLDSTEIN:** Okay, Dr. Waddell...

**DR. WADDELL:** Why exclude it from one or the other? I mean it's part of the decision.

**DR. FREDERICK:** Let me say that I firmly agree with Bill on that and I think that's right in line with where NTP staff is and the scientists who participated in the revision of the process. That we know enough we feel about the mechanisms of carcinogenicity to incorporate that information in all of these decisions, all this decision making. That said, immediately when you get into a situation where epidemiology is not at the 95th percentile of certainty and a relative risk of two, three, four, these sorts of numbers, if that value is lower, then immediately you get into some problematic issues. But what I think it's fair to say was we, as a group who revised the process, felt

that we wanted, we wanted to bring in the full body of information and there's a certain issue here of caution and protectiveness of society and please don't quote me on that, but to a certain extent it relates to how high you run the body count, before you call it a done deal. We as a group of scientists felt like we ought to take the full body of information together and we didn't. We didn't want too many people part of the remote question.

**DR. GOLDSTEIN:** Other comments? Dr. Olden...

**DR. OLDEN:** Well, let me say that I have only myself to thank that we've been here for the past two days it seems, because when I came on in '91 and went around and talked to you for about a year, year and a half, I listened, and one of the things you told me you wanted was peer review. Now the first seven reports on carcinogens were in fact prepared by government scientists, NTP scientists, and they were published to the Secretary and forwarded to the Congress, without the peer review process that we ultimately put in place. So, for the past two days, I think without exception, all the comments have focused on the peer review process, which we indeed put in place. But I guess

we were in hopes that most of the comments about process would've come forward with the agency report on carcinogens. I don't quite understand why they did not. So, this is not indeed the first report that we published, but we didn't hear anything about process, I don't believe. But I need to go back, but certainly not to the extent that we've heard now. They are in relationship to specific chemicals. So, we will go back and take a look, because ultimately I've had a conversation with my boss, the Secretary, and see if we did get and certainly I'm pretty sure we did not, because we would've responded. So, clearly the process involves transparency, public input and peer review. So, that's why we instituted so clearly, we value public input, quality peer review and scientific rigor. So, we will digest the comments that we've heard here today and the NTP Executive Committee and Board of Advisors, the first advisory boards, will prepare a response and let you know what, if any, changes in process, and I guess I started off by, yesterday by saying, I know of no entity, no organization, no company, no process that can't be improved and certainly I've heard some things here that I thought were quite good, good suggestions

and I hope others in the NTP and the NTP Executive Committee and the Board of Scientific Advisors will agree that they are good and we will respond and institute those things. But when I reported to the Secretary to get these changes, the peer review incorporated, I pointed out to her something that I think many of you don't probably think we appreciate, that our first mission obviously is to protect the health of the American public, period. But above and beyond that, I said to the secretary, I think it's important to have peer review, because that clearly this report not only could have significant impact on human health, but it could also have significant impact on the economy. So, we do appreciate that in the department. It is something that we're obliged to consider in our evaluations, human health. But clearly that is why we want to have additional input, which means we've brought in The Board of Scientific Counselors to give us advice, because we, government scientists are not empowered, but we could make a mistake. So, before we publish a report that could have either, in other words, sometimes maybe we've made a mistake the other way; in other words, it is a hazard to human health, but we've decided not to

list it, whereas certainly having a diverse group of scientists who certainly represent not only the public, but certainly give us advice. We are very much concerned about making sure that the product that we send forward to Congress and ultimately to the American people is right, as much as it can be based on the data that's available on that date. But you understand that people call me up, I guess to the last hour with something that they've just submitted to press and at some point I have to send the Secretary a report. As someone said yesterday, it's the law. That in two years, and I'm trying to get us to stick to the two years and in fact it was I who petitioned to get it changed from one year to two years, because that was more in line with reality. These guys who worked very hard over here who have to prepare a report and get it ready in one year. So, I didn't want to always be behind schedule.

I think we can and have an obligation to prepare and submit a report every two years. There are consequences in not doing that. So, I want to be responsible to all American people, not only mothers and dads and industry, but everybody and so I think I have an obligation to get a report

in that's timely and timely to me means roughly every 24 months. So, I thank you for your input and it's been very valuable and I think you will hopefully most of you will be pleased with the response of the National Toxicology Program. Thank you.

(Round of applause.)

**DR. GOLDSTEIN:** It falls upon me to very nicely be thanking Sadie Lange and her staff for the superb job, despite hurricanes. We really do appreciate how smoothly you've run this conference and we thank the two members of the Board of Scientific Counselors who've sat here for two days and were so responsive to all the comments.

(Round of applause.)

(**WHEREUPON**, the Public Meeting was concluded at 2:15 p.m.)

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**C A P T I O N**

The Public Meeting in the matter, on the date, and at the time and place set out on the title page hereof.

It was requested that the Meeting be taken by the reporter and that same be reduced to typewritten form.

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