DRAFT MEETING SUMMARY

10th Meeting of the Health Expert Advisory Committee (HEAC) for Permissible Exposure Limits for Airborne Contaminants in the Workplace California Code of Regulations, Title 8, Section 5155

September 10, 2009
Elihu Harris State Building
1515 Clay Street
Oakland, California

HEAC Members

Will Forest, Santa Cruz County Public Health Department
Linda Morse (retired from Kaiser Permanente Occupational Medicine)
Patrick Owens, Shell Oil Refinery, Martinez, CA
Julia Quint (retired from HESIS)
Mark Stelljes, SLR Environmental Consulting
James Unmack**,** Unmack Everett Environmental

Staff of Assisting Agencies

Joseph Brown, OEHHA
John Budroe, OEHHA
Sara Hoover, OEHHA
Lindsey Roth, OEHHA
Dennis Shusterman, HESIS

Public and Interested Parties

Michael Boyle, Bimbo Bakeries USA
Mike Easter, Ensight
Diana Graham, Keller & Heckman Law Firm
Wendy Holt, Alliance of Motion Picture and Television Producers
Ron Hutton, Allergan
Barbara Kanegsberg, BFK Solutions
Dan Leacox, Greenberg Traurig Law Firm
Anne LeHuray, Naphthalene Council
Paul Niemer, Sierra Pacific Industries
Ralph Parod, BASF Corporation and NMP Producers Group
Catherine Porter, California Healthy Nail Salon Collaborative
Olivera Radovanovic, Unmack Everett Environmental
Annette Rohr, Electric Power Research Institute
John Sacco, CalPASC, CCMCA, AGC of CA, MIA, CCNSIG
Virginia St. Jean, San Francisco Department of Public Health
Mike Smith, WorkSafe
Ray Trujillo, State Building and Construction Trades Council

DOSH

Len Welsh (meeting chair) Bob Barish (co-chair) Bob Nakamura Mike Horowitz

Opening Remarks and Discussion

Len Welsh called the meeting to order. He explained that he would have to leave at 10 a.m. to open the meeting of the Cal/OSHA Advisory Committee and would return as soon as he could. He noted with respect to the budget that Cal/OSHA funding in the future will be from fees on Workers Compensation premiums paid by employers. It is hoped this will provide a more stable source of funding for the agency. Budget change proposals for toxicology and medical staff for enforcement, PEL project, and related work did not pass in the Legislature but were generally well-received and will be submitted again next year. In the interim he said he is hoping to contract for toxicology staff assistance to the PEL project. Len Welsh acknowledged that the assistance provided to date by OEHHA had been very helpful and exceeded what had been specified in the contract through HESIS which was expiring at the end of the month. He said there were going to be management discussions in the next week on continued toxicology assistance for the PEL project. Dennis Shusterman noted that HESIS is advertising for a toxicologist position for their unit which might be able to provide assistance to the PEL project.

Bob Barish reviewed the handouts for the meeting including a revision by Julia Quint to the HEAC health assessment document for ethyl benzene adding review of evidence on ototoxicity noted by James Bus of Dow at the June 24 meeting, a letter to Len Welsh on naphthalene from Professor John Froines of the UCLA School of Public Health, and preliminary health assessment documents for arsine and wood dust/western red cedar that were received too close to the meeting to post on the website. There was also the assessment by OEHHA of the PBPK model submitted by the NMP Producers Group for n-methyl pyrrolidone and minutes for the Feasibility Advisory Committee (FAC) meeting of May 28, 2009.

Those attending the meeting introduced themselves and Bob Barish asked if there were any comments or questions on the minutes for the June 24, 2009 HEAC meeting.

Hydrogen chloride – status update

Julia Quint said she thought the minutes indicated that the discussion of hydrogen chloride had concluded at the last meeting but she sees it on the agenda for today's meeting. Len Welsh acknowledged that the discussion at the last meeting had been somewhat ambiguous on this point, although it was his recollection also that the discussion had concluded on this substance. Jim Unmack and Bob Barish noted issues remaining. Jim Unmack said that he had not yet provided Bob Barish with references he had asked for to support his assertion that the laryngeal hyperplasia seen in rats was not a significant effect on which the PEL should be based. Jim Unmack said also that he has information to support that the buffering capacity of ammonia in human breath removes all hydrogen chloride inhaled at levels below 3 ppm.

Bob Barish said he had discussed with Jim Unmack since the last meeting the suggestion there that it would not be appropriate, and could cause confusion, if the PEL for hydrogen chloride were to be set at 0.3 ppm as was being discussed based on laryngeal hyperplasia in rats, if the PEL for hydrogen fluoride is set at 0.4 ppm as has already been recommended by HEAC. Bob Barish noted that the concern was that given its severe effects when absorbed through the skin, and its much greater potential for damage when inhaled at higher levels, that hydrogen fluoride would be expected to have a lower PEL than hydrogen chloride. However he said after researching this point it appeared that at lower concentrations, especially below 1 ppm in air, that the health risk posed by hydrogen fluoride was not significantly greater than that of hydrogen chloride. Jim Unmack said he agreed with this assessment, and suggested that below about 3 ppm in air the irritant effects on the respiratory system of both hydrogen chloride and hydrogen fluoride were similar and he felt were subclinical in nature.

Before leaving to open the Cal/OSHA Advisory Committee meeting, Len Welsh concluded the discussion of hydrogen chloride by asking Jim Unmack to send Bob Barish the studies he thought could affect the decision on the PEL health-based recommendation. He said the Division would review these and decide if they should affect the level or range of levels to be considered in the FAC meeting that takes up hydrogen chloride.

HEAC 2010

Bob Barish opened a discussion on planning for the committee's activities in 2010 and beyond. He said there are concerns, as have been expressed in previous meetings, that the process for PEL updates and revisions is moving too slowly. He said

he had been thinking about how the process could be improved, with less work by committee members having to put together the health assessment documents, and also to facilitate more uniform documents. He asked for reaction to the idea that committee members' responsibilities for developing the documents are limited to identifying the key studies and references and then writing up a short summary as had been done by committees in previous rounds of PEL work. He said he could then take this material, and with help from the assigned committee member as needed, assemble it into a draft health assessment document. This approach would have the benefit of generating more uniform documents tailored to the needs of the rulemaking process. He said he hoped this approach could encourage committee members who have not yet contributed documents to the project to be able to do so.

Julia Quint asked Bob Barish if the HEAC member assigned or volunteering for each substance would still be expected to develop the assessment and initial PEL recommendation if they are not preparing the document itself. She said that she would find the work that she did, as well as the work of others, less meaningful as a committee if they were not the ones to do the assessment and come up with the initial PEL recommendation. She was concerned that the process Bob Barish described could reduce the use of the committee members' expertise in the risk assessment and PEL derivation. She said that given the pace of completions the last two years it was understandable that the Division is thinking about different approaches to the process, but she wanted to be sure that the committee's expert opinion was still central in the assessment. Mark Stelljes expressed agreement with this concern and said that for him the opportunity to develop the initial PEL recommendation was a big part of feeling ownership in the process. Julia Quint said it was important for the health assessment document, early on in the course of the discussion, to capture the scientific controversies and disagreements surrounding the effects of different substances and the basis for possible PELs. Bob Barish agreed, and said he hoped that if he were more involved with the documents from the beginning he could be more aware of such issues and so better manage their discussion in the meetings. Julia Quint said that as long as the health assessment document adequately summarizes the issues surrounding a substance it can be fairly short.

Sara Hoover suggested that the Division's toxicologist, and perhaps the HESIS toxicologist in the interim, could develop the document and then take comments from committee members. She said she thought it was a lot to ask, and not entirely realistic to expect, that volunteer committee members could develop the health assessment documents and initial PEL recommendation. Will Forest in agreement said that the usual form of scientific advisories is for the agency staff to prepare reports or assessments which the panel then reviews and comments on in developing a final recommendation.

Julia Quint suggested that one approach to advancing the committee's work in the interim until toxicology staff is obtained by the Division would be to try to choose the easier substances to work on, or at least avoid those likely to be the most controversial, especially where another government agency is in the process of addressing it. She gave perchloroethylene as an example. She said she is on the National Academy of Sciences committee currently looking at perchloroethylene. So given that process is underway, and it would be a big project for a committee member to undertake, it would probably make sense to wait until the National Academy issues its recommendation for perchloroethylene before trying to pursue. She suggested generally that the committee might stay away from substances with complicated toxicology, at least until the Division has a toxicologist. Bob Barish asked Julia Quint if this meant she was suggesting the committee avoid taking on carcinogens for the time being. Julia Quint responded that she would not necessarily go that far, but that until a toxicologist or toxicology assistance can be obtained, it would probably be best to focus on the less difficult substances. She said that in her comments on the list of substances to be worked on by the HEAC, she had made her comments on prioritization based in part on the degree of difficulty involved in researching the science and developing a PEL recommendation.

Bob Barish said he wanted to review health assessment documents that are currently being worked on. Will Forest said that he would move ahead with completing trichloroethylene since the technical issues involved were not that difficult. Patrick Owens said that in addition to working on arsine he would try to make progress on ethylene dichloride. Bob Barish said Michael Kleinman had taken on cobalt and acetaldehyde but he did not know how far along he was with those. He said also that Howard Spielman had volunteered for carbon tetrachloride and perchloroethylene but that he had not seen documents yet on these either. He said that Howard Spielman had noted that carbon tetrachloride might not have much use in California anymore, and that perchloroethylene was complex and perhaps should be postponed as Julia Quint had suggested until the NationalAcademy report is completed. Linda Morse said she had not taken on dodecyl mercaptan as Bob Barish had said he thought. She said she would move ahead with finishing on wood dust and western red cedar and then work on natural rubber latex. Bob Barish said a number of industry groups have contacted him regarding wood dust, and Paul Niemer of Sierra Pacific Industries identified himself as having been sent by a group of companies on the issue to observe today's discussion in preparation for future involvement with the committee. In summary for the December 8 HEAC meeting Bob Barish said he anticipated discussion of a more fully completed health assessment document on wood dust and western red cedar, arsine,

benzyl chloride which is already posted at the website, and phthalates depending on their level of completion at the time. **(NOTE: The December 8 meeting of the HEAC has been postponed and a meeting of the FAC will replace it on that day. A date will be set for the next HEAC meeting, probably in March 2010.)**

Len Welsh, returning from the Cal/OSHA Advisory Committee asked for a summary of the HEAC 2010 planning discussion. Will Forest said the committee had agreed to focus on the less complex substances on the priority list until a Division toxicologist or other resource is available to develop the health assessment documents. Julia Quint suggested that substances that already have a risk assessment completed by a government agency such as OEHHA or EPA are the ones that should be more practical for the committee and the Division to pursue.

N-Methyl-2-pyrrolidone

The discussion moved on to the OEHHA assessment of the PBPK model commissioned by the NMP Producers Group. Len Welsh said he appreciated the detailed memorandum that OEHHA had prepared on this and is posted at the PEL project website. He asked for OEHHA staff present to provide an overview. Joseph Brown of OEHHA said he had reviewed the human and rat PBPK models developed by Torka Poet and colleagues at the Battelle Northwest Foundation for the NMP Producers Group. He said it appeared that the rat model was reasonably sound, but that the human model is more difficult to develop in light of the 9-month gestation period. He said that OEHHA's conclusion overall was that while the rat model appeared to be valid it did not significantly affect the risk assessment or PEL derivation, while the human model was not ready for use in risk assessment. He said that OEHHA had shared their comments with Torka Poet at Battelle and that she had incorporated them into the draft they were submitting for publication. Joseph Brown continued that one specific concern of OEHHA was with validation of the human PBPK model. He said it wasn't clear from the Poet et al. report which studies were used for model calibration and validation, respectively. Apparently the Bader et al. 2007 and 2008 studies were used for calibration and the Xiaofei et al. (2000) for validation. If this is so, the later study of NMP blood data appear to be underestimated by the model even though the authors assume excessive coincident dermal exposure. Joseph Brown finished his comments by saying that the report lacks any significant sensitivity analysis particularly with respect to key parameters like alveolar ventilation.

Julia Quint recapped what had transpired with this substance since the health assessment document she developed was first discussed by HEAC in November 2007: She said her first PEL derivation of 1 ppm was based on NOAEL values for developmental toxicity from the Staples et al. study that OEHHA used in developing the Maximum Allowable Dose Level (MADL) for NMP. She said that the updated PELs derived in March 2009 based on the benchmark dose analyses subsequently completed by OEHHA and the NMP Producers Group was still around 1 ppm as shown in the PEL summary table in the current NMP document, so we are back where we started in 2007. At the last HEAC meeting the NMP Producers Group submitted the Battelle report on a PBPK model and said it supported a PEL well above 10 ppm although they still proposed 10 ppm for the PEL. OEHHA agreed to evaluate the PBPK model at the last HEAC meeting, and have now presented their review and evaluation in a written memo that will be discussed today.

Ralph Parod of the NMP Producers Group said that OEHHA assessments are widely recognized as being highly conservative. He said there is nothing wrong with being conservative when there is not much toxicological information available but with NMP there is a good deal of information, and this is what made the PBPK assessment possible and highly valid. OEHHA staff disputed the assertion that there was a lot of information to support the validity of the PBPK model for humans developed by Battelle. Len Welsh said that rather than talking about toxicological assessments being "conservative" or "liberal" assessments, it would be more useful to discuss specific scientific shortcomings.

Ralph Parod reviewed four slides he handed out responding to the OEHHA assessment of the PBPK model. The slides can be viewed here.

Ralph Parod expressed concern with precedent of not using the information available on NMP to develop the PBPK analysis. Len Welsh said yes should do it right so how long to submit written comments Ralph Parod said his group could provide comments by the end of September for this meeting's discussion and the OEHHA memo dated August 27, 2009. Julia Quint asked with the OEHHA contract to assist the Division ending at the end of September, who would look at the NMP Producers comments on the OEHHA PBPK assessment? Len Welsh said he hoped that given all they've done so far on NMP that OEHHA would still be willing to help with this. He said that in any event given how long the process has taken so

far, he planned to move ahead with bringing NMP to the FAC for feasibility and cost assessment of the range of possible PEL values that have been discussed so far.

Joseph Brown reiterated concern that there is not a lot of data to validate the human PBPK model. He said that if there was as Ralph Parod asserted then why isn't it in the Battelle report. He repeated his earlier assertion that the same study can't be used to both calibrate and validate the model. Ralph Parod said he would check but he did not think that's what Battelle had done. Len Welsh asked that he be sure to check that with them.

There was then discussion of the question of what benchmark response (BMR) is appropriate for analyzing the rat studies of fetal and pup body weight. Ralph Parod asserted that OEHHA's use of 5% relative deviation as the BMR is overly conservative. He said that EPA's assessment of a number of substances had used 1 standard deviation and that continues to be the NMP Producers Group recommendation. Sara Hoover said that she had spoken with EPA scientists who said they have used a BMR of 5% relative deviation for the fetal body weight endpoint. She noted that a BMR of 5% relative deviation is based on biological considerations and is not just a statistical benchmark. She said OEHHA continues to recommend a 5% relative deviation as the appropriate BMR for NMP. She referred to the OEHHA memorandum of June 19, 2009 for further discussion of this issue.

Ralph Parod said his group believes that the 5% relative deviation is not supportable but that the 6% suggested in the Sapphire Group comments is. He noted that the test animal pup weight was only reduced when there was exposure to mother's milk which would not be a factor in workplace exposures. He said further that the results of both the Staples and Saillenfait studies were highly conservative as reproductive effects were only seen at the saturated vapor concentration of about 120 ppm which would never occur in the workplace. At this concentration he said NMP exerts an irritant effect which can cause stress and possibly reproductive effects. He said that at 11% pup weight decrement no effect is seen on reproductive success and that the weight recovered with discontinuation of nursing. Responding to this, Julia Quint and Will Forest said that reproductive success was not the only outcome of concern. Sara Hoover said that low birth weight can have effects beyond reproductive success.

There was discussion of the use of the Staples study vs. the Saillenfait study. Sara Hoover said OEHHA continues to recommend use of the Staples study, while the NMP Producers Group advocates using Saillenfait. Sara Hoover noted that PELs based on the results from the two studies are similar as shown in the HEAC assessment document.

Sara Hoover responding to Ralph Parod's assertion that there is a rich database of information on NMP said there have been no human epidemiologic studies, which would be difficult given the effects of concern are with respect to reproduction. Given the lack of human studies she said it was important then to be conservative in applying uncertainty factors. Ralph Parod asserted that Saillenfait rather than Staples was the correct study on which to base a PEL. Sara Hoover responded that the results of the two studies are similar and the choice of which to use would not have a significant effect on the PEL value.

Len Welsh said this would be the end of the discussion of NMP in the HEAC. He said the Division would take the comments of the NMP Producers Group and OEHHA and decide how to proceed.

LUNCH BREAK

After the lunch break Len Welsh said that the Division would probably bring ranges of possible PEL values discussed in the HEAC meetings to the FAC to consider and receive comments on cost and feasibility. Len Welsh said that, with respect to what levels of uncertainty factors should be built into PELs, everyone should consider that in recommending a PEL to the Standards Board for a formal rulemaking proposal the Division will focus on health effects that are reasonably possible and not based solely on speculation.

Ethyl Benzene

Bob Barish reviewed the status of the discussion on ethyl benzene. He said at the last two meetings there had been discussion presented by James Bus of Dow Chemical and the American Chemistry Council Ethyl Benzene Panel that the PEL should be based on ototoxicity rather than cancer as had been suggested in the HEAC assessment document developed by Julia Quint. Bob Barish said since the last meeting he had looked further into the question of whether the finding of kidney tumors in rats could be relevant for humans which James Bus' presentations at the last two meetings, had questioned. He

said he believed that a number of remaining issues from the last meeting on OEHHA's cancer had been addressed in the response to comments on the OEHHA proposed No Significant Risk Level (NSRL) for ethyl benzene under Proposition 65. Therefore Bob Barish said he felt discussion of the issue with respect to the relevance of kidney tumors in rats to possible human cancer risk was concluded. Julia Quint in response said she would add references and links to the NSRL rulemaking to her assessment document. She said these had not been included originally as they were only finalized around the same time that she had been preparing the document.

Julia Quint noted that her assessment document had not addressed ototoxicity as a possible endpoint for the PEL. She said that James Bus and the Sapphire Group comments had suggested a study on this effect that she had not seen, so as she indicated at the last meeting she has assessed that study (Gagnaire et al. 2007) and derived possible PELs based on it and included these in a revised document. She said that based on ototoxicity and applying a PBPK model the Sapphire Group and James Bus had recommended a PEL range 7 to 28 ppm based on the findings of Gagnaire. She noted that OEHHA had indicated in the response to comments for the cancer unit risk factor that the PBPK analysis did not result in a significant change in the cancer risk assessment, but that she could not say if this would also be true for ototoxicity She said that based on the findings of the Gagnaire (2007)study with respect to otoxicity she took the LOAEL value of 200 ppm and applied uncertainty factors of 10 for LOAEL to NOAEL, 3 to account for it being a subchronic rather than chronic study, a factor of 6 for interspecies uncertainty per the latest OEHHA guidance for noncancer risk assessment, and an intraspecies uncertainty factor of three since there was no basis to say that use of PBPK modeling could provide information to reduce this uncertainty factor. This yielded a PEL value based on ototoxicity of 0.4 ppm, almost the same as the 0.5 ppm value she had calculated based on cancer. She noted the study of Vyskocil et al. (2008) supported that ethyl benzene is an ototoxin. She concluded that even though a similar PEL could be derived for ototoxicity and for cancer, her recommendation of a PEL of 0.5 ppm based on cancer had not changed as reflected in the revised, updated HEAC document.

Dan Leacox said he thought there was considerable difference of opinion on the human cancer risk from exposure to ethyl benzene. Julia Quint said that the NTP position is that the cancer seen in toxicology studies in animals is relevant to humans. Anne Lehuray said that the language of the NTP classification in fact doesn't take a position on relevance to human risk.

Len Welsh asked if there were any more questions on ethyl benzene and concluded the discussion.

Naphthalene

Bob Barish opened the discussion on naphthalene noting that HEAC member Mark Stelljes had developed the health assessment document and gave its initial presentation at the March HEAC meeting, with a recommended PEL of 0.75 ppm based on noncancer effects. He noted also that Julia Quint had submitted comments on naphthalene and derived a cancer based PEL of 0.04 ppm.

Mark Stelljes said the primary issue is whether the PEL should be based on cancer or effects other than cancer. He said he did not believe a low dose linear extrapolation model is appropriate for naphthalene. He said that about 8 years ago NTP found nasal neuroblastomas, a rare cancer in humans, in rats exposed to naphthalene. He said there is no question naphthalene can cause cancer in laboratory animals. He said the key questions were whether in humans the effect was linear into low doses, or if the animal data is relevant to human risk at all. He said based on the NTP study OEHHA developed a cancer potency value. He said that no other agency or recognized organization has concluded at this point that naphthalene should be treated as presenting a cancer risk to humans. He noted the letter sent to Len Welsh by John Froines of UCLA dated August 25, 2009. OEHHA also sent a letter on naphthalene dated March 16, 2009 that is posted at the PEL project website.

Mark Stelljes said the key question in looking at the data in rats is whether it is meaningfully relevant to cancer risk in humans. He presented a calculation suggesting that given ambient exposure levels to naphthalene many more nasal neuroblastomas should be seen in the United States than are annually reported. Julia Quint pointed out that underreporting may account for this apparent discrepancy. Mark Stelljes discussed the possible significance of naphthalene metabolism to the risk of cancer it may present. He said that naphthalene is activated through the cytochrome P-450 system and it is possibly the naphthoquinones formed from the metabolism of naphthalene that cause cancer in laboratory animals, as also suggested in the John Froines letter. He said further that the occurrence of cancer in the NTP study was at the maximally tolerated dose with the usual resultant nasal irritation and that since the tumors appear to have been secondary to resulting inflammation this suggests it is acting as a carcinogen with a threshold and this is consistent with the general findings of no genotoxicity

Julia Quint asked Mark Stelljes if he had included discussion of the issue of metabolism and activation in the assessment document he wrote. He said it is discussed in detail in the references of Buckpitt included in the document.

John Budroe of OEHHA said that naphthalene is unequivocally genotoxic based on findings of DNA adducts. He said that it can be particularly difficult for standard microbial tests of genotoxicity to detect oxidative gene damage. He said that the many negative genotoxicity tests for naphthalene cannot be viewed as invalidating or outweighing the few that have been positive. Will Forest echoed this point. Anne LeHuray said that the more reliable and relevant *in-vivo* tests for genotoxicity had all been negative. John Budroe also said the NTP dose at which cancer was elevated in rats was not the maximally tolerated dose as Mark Stelljes had suggested. He said if it had been the maximally tolerated dose NTP would have commented on that in their report. He said that the calculation of Mark Stelljes that there should be thousands of cases of nasal neuroblastomas if the OEHHA cancer risk assessment is correct assumes levels of exposure in the population that have not been proven. Sara Hoover said that nonconcordance of the animal cancer site with the sites of risk in humans has been proven for many substances. Will Forest said given likely interspecies differences in metabolism, noncordance of cancer sites between test animals and humans is likely. Anne Lehuray said that the question of the relevance of the animal test results to humans is being addressed in the Naphthalene Council's 5-year research program that is two years from completion.

There was discussion of a number of issues with respect to the significance of differences in metabolism of naphthalene between humans and rats and whether it could mean that findings of cancer in exposed rats could overstate the cancer risk for humans. John Budroe said that metabolic differences do not result in overestimation of the cancer risk for humans using the rat test results. Mark Stelljes said that they could.

Len Welsh thanked Mark Stelljes for his presentation and the work he had put into developing the naphthalene assessment.

Wood dust

Linda Morse briefly introduced the work she had done to date on the assessment for wood dust. She said that the results of the Glindmeyer study at Tulane University sponsored by a consortium of wood product manufacturers supported the ACGIH TLV of 1 mg/M^3 in finding no health effects with exposure at this level. She said that other studies were mostly at higher levels of exposure. Julia Quint asked if wood dust is classified by ACGIH as a sensitizer. Linda Morse said the TLV Documentation for wood dust discussed possible contribution to asthma but had not given wood dust the SEN designation as a recognized sensitizing substance. She said that western red cedar is designated by ACGIH as a sensitizing substance. Paul Niemer commented that the Tulane study suggested that particle size can be important in determining the level of hazard, that different workplaces can have very different particle size distributions, and that there are many other confounding substances associated with wood dust as is discussed in the Tulane study. Linda Morse acknowledged the issue of possibly confounding substances associated with exposure to wood dust.

Concluding Remarks

Len Welsh said that with the conclusion of the discussion on the substances above (excluding wood dust), the next step would be consideration of cost and feasibility issues by the Feasibility Advisory Committee. Julia Quint suggested that to do its job properly the FAC should be provided with rationale for the PELs, or range of PELs, it is considering or taking comments on. Len Welsh said the role of the FAC is to assess the lowest exposure that they believe should be feasible for employers to achieve.

Bob Barish said that for the next meeting December 8 documents are to be finished for first draft and discussion on wood dust, arsine, and trichloroethylene, for benzyl chloride the document has already been posted to the project website, and phthalates may be discussed if the assessment document is ready by then.

(NOTE: As stated earlier above, the December 8, 2009 meeting of the HEAC has been postponed and a meeting of the FAC will replace it on that day. A date will be set for the next HEAC meeting, probably in March 2010.)

END

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CHAIRPERSONS Len Welsh/Bob Barish **LOCATION** Room 1304 1515 Clay Street, Oakland

NEW ATTENDEES: PLEASE BE SURE TO WRITE YOUR NAME, AFFILIATION, AND E-MAIL ADDRESS CLEARLY

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