

## **MEETING SUMMARY**

### **3<sup>rd</sup> Meeting of the Feasibility Advisory Committee (FAC) for Permissible Exposure Limits for Airborne Contaminants in the Workplace California Code of Regulations, Title 8, Section 5155**

**October 6, 2010  
Elihu Harris State Building  
1515 Clay Street  
Oakland, California**

#### **FAC Members**

Steve Derman, MediShare  
Ron Hutton, Pacific Health and Safety, Inc.  
Virginia St. Jean, San Francisco Department of Public Health  
Patrice Sutton, UCSF Program on Reproductive Health and the Environment

#### **HEAC Members**

Linda Morse, Occupational Medicine Physician  
Patrick Owens, Shell Oil Martinez Refinery  
Jim Unmack, Unmack Corporation

#### **Public and Interested Parties**

Steve Brink, California Forestry Association  
Frank Cereghini, Weyerhaeuser for American Forest and Paper Association and American Wood Council  
Rupali Das, California Department of Public Health  
Silvio Ferrari, California Building Industry Alliance  
Lora Jo Foo, WorkSafe  
Wendy Holt, Alliance of Motion Picture & Television Producers - Contract Services Administration Fund  
Barbara Kanegsberg, BFK Solutions  
Ed Kanegsberg, BFK Solutions  
Dan Leacox, Greenberg Traurig Law Firm  
Paul Niemer, Sierra Pacific Industries  
Olivera Radovanovic, Unmack Corporation  
Tim Roberts, Lawrence Berkeley National Laboratory  
Kate Smiley, Associated General Contractors of California  
Steve West, California Highway Patrol

#### **DOSH**

Bob Barish (meeting chair)    Steve Smith (co-chair)    Bob Nakamura    Mike Horowitz

#### **Meeting Outcome Summary**

**Wood dust and western red cedar:** Two FAC members felt that the PEL proposal should be at the level of the HEAC recommendation of 1 mg/M<sup>3</sup> total particulate for all wood dust other than western red cedar. Two other FAC members felt that based on data presented by a representative of the wood products industry that a PEL of 1 mg/M<sup>3</sup> could be unreasonably costly and recommended a PEL proposal of 2 mg/M<sup>3</sup>. There was discussion but no recommendation on the existing PEL-STEL of 10 mg/M<sup>3</sup>. On western red cedar there was discussion that the PEL should be one-half whatever the PEL is for other wood dusts, but this was not a consensus recommendation. Two FAC members felt the HEAC recommendation of 0.5 mg/M<sup>3</sup> total particulate for western red cedar was appropriate for proposal as a PEL.

**Trichloroethylene:** There was a presentation and discussion on vapor degreaser technologies in relation to TCE exposure and the HEAC recommended PEL of 0.4 ppm (8-hr TWA). There was a consensus among FAC members that the PEL should not be higher than 5 ppm (8-hr TWA), with retention or possibly reduction of the current PEL-STEL value of 100 ppm dependent in part on the TWA value chosen for the PEL proposal. Two FAC members felt there was enough information to support feasibility of the HEAC recommended PEL of 0.4 ppm while two other FAC members said they felt additional information on costs would be needed for a proposal below 5 ppm.

**Benzyl chloride:** The HEAC recommendation of 0.03 ppm (8-hr TWA) was accepted by the FAC.

**1,1,2,2-Tetrabromoethane:** There was discussion of whether aerosol, along with vapor, needed to be collected in air sampling. It was noted that the NIOSH air sampling method, also used by OSHA, has a limit of detection that is below the TLV of 0.1 ppm, but above the HEAC recommendation of 0.03 ppm. There was not consensus that this by itself meant that the PEL proposal should be at the TLV, but it was recommended that DOSH contact NIOSH about modifying as necessary and validating their method to obtain a limit of detection that would be below the HEAC recommended PEL value.

### **Meeting opening**

Bob Barish welcomed committee members and meeting attendees and briefly reviewed the handouts and procedures for the meeting. He reviewed the purpose of the meeting to receive and have discussion of comments by FAC members and interested parties on potential feasibility and cost issues associated with PEL recommendations of the HEAC, also to identify commenters and others not previously known to have an interest in the substance who may have or wish to provide relevant information.

He said that of the substances to be discussed, interested parties had identified themselves and submitted written comment letters on wood dust and on trichloroethylene which had been distributed to FAC members before the meeting. Bob Barish said that there would be a presentation by a representative of the wood dust interested party group and asked if there was anyone to present the comments that had been submitted on trichloroethylene (TCE) by the Halogenated Solvents Industry Alliance (HSIA). There was no one to present the HSIA comments but Barbara Kanegsberg indicated that she had prepared a brief presentation on vapor degreasers that could have relevance to considering the feasibility of the PEL for TCE. In light of the additional time for this presentation on degreasers, Bob Barish proposed deviating from the agenda and having the wood dust discussion before that for TCE. No objections were voiced to this.

### **Wood dust and western red cedar**

Bob Barish said the consideration of a revised PEL for wood dust was initiated by the change of the ACGIH TLV in 2005 to a value of 1 mg/M<sup>3</sup> inhalable particulate as an 8-hour TWA. The HEAC discussion started briefly at the September 2009 meeting, continued in March 2010, and concluded at the June 23 meeting with a recommendation of 1 mg/M<sup>3</sup> total particulate. Although it was acknowledged that an inhalable standard of the same value would be 2 to 3 times as stringent as one based on total particulate, HEAC members felt that since the studies of health effects were done mostly with measurement of total particulate that the standard should be based on this and would be adequately protective of worker health. Bob Barish noted that the prior TLV, and the current Cal/OSHA PEL, includes a 15-minute STEL value of 10 mg/M<sup>3</sup>, and that it may be warranted to retain this value to prevent excessively high short term exposures especially in light of the TWA value being in terms of total particulate and therefore higher than the TLV inhalable value.

Bob Barish said the primary commenter on the HEAC discussion had been a group of wood and wood products industry associations organized by the American Forest and Paper Association (AFPA). Bob Barish asked Steve Brink if his group, the California Forestry Association, had been participating with this group and Steve Brink said it had. Bob Barish said that AFPA had sent several letters to the HEAC on the health aspects of the wood dust PEL, and had sent a letter to the FAC. He noted that the AFPA had sent Frank Cereghini of Weyerhaeuser to summarize the points of the letter and be available for discussion.

Frank Cereghini introduced himself as a Certified Industrial Hygienist (CIH) with both health and safety experience in the wood products industry, including work collecting air samples for wood dust. He noted that he had copies available to pass out of the AFPA letter sent to the FAC as well as four slides he would present summarizing the letter. He said also that Weyerhaeuser operates at several locations in California.

**NOTE:** The slides presented by Frank Cereghini can be viewed by clicking on the icons below (allow several seconds for the icon to appear):



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Summarizing the conclusion of his presentation Frank Cereghini said the data in the slides showed that a PEL of 1 mg/M<sup>3</sup> is not readily achieved or feasible in some wood operations.

He noted the three sets of data cited in his slide presentation and the AFPA letter to the FAC: air sampling findings in OSHA inspections, data from the Inter-Industry Wood Dust Coordinating Committee study conducted at Tulane University (Glindmeyer et al., 2008), and data from the study of Kauppinen et al. (2006) in the European Union. He said the OSHA inspection data, taken for the years 2003 to 2009, consisted of 119 air samples at 49 manufacturing worksites. He said the AFPA assessment of the OSHA air sampling data omitted short term sample results and results less than the detection limit. He said the results showed greater than 1 mg/M<sup>3</sup> in 77% of the samples. He said the findings of the Teschke et al. (1999) study submitted with AFPA's letter had indicated that OSHA IMIS sampling data for wood dust did not appear to be biased to high results by the type of inspection being conducted as might otherwise be expected. He called attention to the difference noted in the chart of OSHA results between the geometric mean for the data of 2.3 mg/M<sup>3</sup> and the arithmetic mean of 4.5 mg/M<sup>3</sup>, indicating that there could be some very high exposures, for example associated with cleaning using compressed air.

Frank Cereghini said he had been involved with the Tulane study which was sponsored by a consortium of wood industry associations. He noted that the Respicon particulate sampler used in the study was not something that industry would normally use in its air sampling assessments but did provide results in terms of inhalable particulate. He said that using a conversion factor of 2.5 for inhalable to total particulate as referenced in the ACGIH TLV Document as noted in his handout, and in the AFPA letter to the FAC, that the Tulane study had found that in the ten facilities studied (1 sawmill-planing-plywood, 1 plywood, 1 milling, 3 cabinet and 4 furniture facilities) 28% percent of the air sampling results exceeded the 1 mg/M<sup>3</sup> value recommended by the HEAC.

Frank Cereghini said that in the European study (Kauppinen) using a conversion factor of 2 for inhalable to total particulate from 35,760 air samples, the results were estimated to indicate that, on average, 41% of workers in all industries had exposures at, or above, the HEAC recommendation of 1 mg/M<sup>3</sup>.

With regard to the PEL for wood dust, Frank Cereghini noted that besides the cost and effectiveness of engineering controls another concern of AFPA with lowering the PEL to 1 mg/M<sup>3</sup> is that much of the respirator use in the industry, especially during cleaning, can operate with the current PEL of 5 mg/M<sup>3</sup> under the reduced set of rules applicable to voluntary use of filtering facepieces. But that with a PEL of 1 as recommended by HEAC use of respirators would more often require the full respiratory protection program. He said that his company Weyerhaeuser estimates the annual cost per employee of the full respirator program being in the range of \$200.

Frank Cereghini described the process in highly automated lumbers mills where within seconds a computer scans each log and sets multiple blades for the most efficient cut. He said this type of operation is very large and difficult to enclose to capture dust. He said a lot of energy is needed for the local exhaust ventilation to move dust collected, and would be increased if the PEL were lowered, especially to 1 mg/M<sup>3</sup>. He said also that the more dust is moved and collected the more potential there is for combustion and explosion from that source. He said that circular saws in mills present similar problems. He said that makeup air for ventilation systems can also be costly to provide. He noted that several years ago British Columbia chose 2.5 mg/M<sup>3</sup> total dust for its PEL.

FAC members asked Frank Cereghini about his presentation. Ron Hutton asked about the air sampling data from the OSHA IMIS system. He thought that being from OSHA workplace inspections the results might be higher than that for the general population of workplaces with wood dust exposures. Frank Cereghini responded that AFPA's review of the OSHA data found that complaint inspections had the lowest air sampling results while follow-up inspections had the highest. Patrice Sutton suggested that removing the non-detect results from the OSHA data would tend to skew the results higher. Frank Cereghini said there were very few non-detect results that were deleted from the data. Steve Derman asked about the PEL adoption process in Canada. Frank Cereghini replied that in Canada unlike the United States the governmental OSH programs are mostly centered in the provinces. He said that similar to some state OSHA programs in the U.S., some provincial OSH programs adopt the TLVs while others will differ.

Bob Barish asked Frank Cereghini his impression of industry's experience with the British Columbia PEL of 2.5 mg/M<sup>3</sup>. He responded that most can comply with that level. Steve Smith asked if the British Columbia PEL is based on total or inhalable particulate. Frank Cereghini said it is based on total particulate.

Ron Hutton said he had concerns about the age of the data used by HEAC to reach its recommendation. He noted that some of it goes back to the 1970s. He noted that while the OSHA sample results in AFPA's analysis showed 78% of the air samples exceeding the 1 mg/M<sup>3</sup> level, the Tulane study showed only 28% exceeding this level. Frank Cereghini said he could not explain this difference but suspected

that the Tulane results were probably more representative of current conditions in the wood and wood products industry.

Patrick Owens was interested to know if other government exposure limits were higher for softwoods than for hardwoods as ACGIH had before the 2005 TLV uniform for both at 1 mg/M<sup>3</sup> inhalable. Frank Cereghini said that complying with the TLV during clean-up of hardwood dust can be especially challenging. He noted that clean-up operations especially in large operations may be outsourced to another employer. He said that hardwood particularly when specially dried, for example kiln dried product as often used in furniture, can be especially dusty. He said that control of dust in planing of hardwoods can also be especially difficult.

Virginia St. Jean asked Frank Cereghini about the use of vacuuming rather than blowing with compressed air to reduce exposures during cleaning. He responded that vacuuming can and often is used but some areas especially high above the floor can be difficult to capture dust with a vacuum, that it's best to catch at the source if possible to avoid this situation.

Virginia St. Jean asked if employee isolation was used for dust exposure control. Frank Cereghini said that approach can be taken where it will be effective.

Ron Hutton asked if the data presented on exposure levels represented use of the latest control technologies. He said the Kauppinen study had cited data indicating that exposures have been decreasing over time. Frank Cereghini agreed that exposures are tending to go down over time and he acknowledged that regulations can sometimes force installation of more effective control technologies. He reiterated that he felt the exposure data in the Tulane study reflected the use of current exposure control technologies.

Patrick Owens asked if there was data on exposures in construction. Frank Cereghini said yes that once an area is enclosed the work done there, e.g. sawing of boards, could generate significant exposures. He said the day-long exposure level would likely depend on whether an individual was assigned to cutting wood for extended periods of time in a single day, or if it was conducted for just short periods of time by different workers.

There was brief discussion of a point brought up by Ron Hutton in the March 2010 HEAC meeting that data from the Tulane study presented by Professor Roy Rando of Tulane had seemed to suggest that higher exposures to wood dust were seen with local exhaust ventilation. Frank Cereghini suggested that this counterintuitive finding probably reflected the fact that the operations with local exhaust ventilation were more dusty to begin with, for example work with dried hardwoods. Whereas the operations without controls with lower exposure levels may have been green raw wood which generates less dust.

Patrice Sutton noted that the data presented by AFPA and Frank Cereghini had suggested that exposures to wood dust were declining over time, and that in the Tulane study only a minority of the exposures measured, 28%, exceeded the value recommended by the HEAC which may not even be fully health protective, including for cancer, as it is a value higher than the TLV since it is based on total rather than inhalable particulate.

Patrice Sutton also said that where engineering controls are insufficient to control exposures below the PEL that respirators can be used. She suggested that the cancer potential for wood dust warranted a PEL no higher than HEAC had suggested.

Frank Cereghini responded that respirator use is not feasible in all situations and is not the control of choice for carcinogens. Patrice Sutton reiterated her concern that the PEL not exceed the HEAC

recommendation in the interest of worker health and her view that it should be feasible for industry to achieve given what it has already done as reflected in the levels detailed in the Tulane study. She said she knew that a PEL of 1 could impose costs to achieve but she was not convinced that all of the industry was making as great an effort as it could currently to control the exposures. She said the results of the Tulane study indicate only where industry was at the time of the study, not what the potential was for improvement.

Bob Barish asked Frank Cereghini to provide information about the operations in which respirators would be needed with a PEL of 1 mg/M<sup>3</sup> total particulate as recommended by the HEAC. Frank Cereghini reiterated the concern that in situations where currently a filtering facepiece is allowed with minimal regulation under section 5144 to control to a PEL of 1 mg/M<sup>3</sup> formal respirator programs could be needed for thousands of additional California workers.

Bob Barish asked Frank Cereghini about his suggestion that capturing and moving more dust to achieve a lower PEL could increase the risk of fire or explosion. Bob Barish said that if the dust is not captured and falls onto the floor or other surfaces that also increases the fire and explosion risk.

Patrice Sutton asked Frank Cereghini if what he was saying was that lowering the PEL could directly increase the risk of fire and explosion. Frank Cereghini said that there was not a direct correlation but that explosions occur in the enclosures where dust is captured and with a lower PEL more dust would have to be collected.

Bob Barish asked Frank Cereghini, if industry concern on feasibility was primarily with the PEL TWA being lowered to 1 mg/M<sup>3</sup> as he'd indicated earlier, but also as he'd said that the highest absolute levels of exposure were with intermittent cleaning and can be very high, if with that there might not be some potential for tradeoff in considering the PEL between allowing for a TWA slightly higher than the HEAC recommendation but requiring a lower 15-min STEL than the current 10 mg/M<sup>3</sup>. Frank Cereghini responded that with the current Cal/OSHA PEL of 5 mg/M<sup>3</sup> (8-hr TWA) and the general ACGIH recommendation for TLVs to control exposures to not more than 3 times the full-shift level, that the current PEL STEL of 10 seems reasonable. He said such high exposures as can occur during cleaning can probably overwhelm the respiratory system and have a significant potential for harm.

Steve Smith said that Frank Cereghini had suggested that with a PEL of 1 mg/M<sup>3</sup> total particulate tens of thousands of workers would have to go into formal respirator programs. Steve Smith asked if there were particular industries in which this was most likely to occur and the basis for his estimate of the number of employees potentially affected. Frank Cereghini responded that as suggested by the Tulane study, furniture manufacturing where the wood is well-dried was probably generally more dusty and would have a more difficult time complying with a PEL of 1 than would sawmill operations where the wood is not as well dried, as would many continuous operations in enclosed areas. Paul Niemer noted that his employer, Sierra Pacific Industries, has over 3,500 California employees in various sawmill and finished product manufacturing operations.

Steve Derman asked if larger size particles of wood dust can skew an air sample to give a much higher result than might be expected. Frank Cereghini said the primary concern with this would be if the PEL were to be based on the inhalable fraction like the TLV but the HEAC recommended a PEL based on total particulate not inhalable.

Steve Smith asked if there were any comments on the HEAC recommendation of 0.5 mg/M<sup>3</sup> for western red cedar (total particulate). Bob Barish said there had been no comment letters received on western red cedar. He said he had contacted the Western Red Cedar Lumber Association in Vancouver, British Columbia but had received no reply back. Frank Cereghini said that the letter sent by the industry

consortium to the FAC had not addressed western red cedar and it was his impression that they did not have a comment on it.

Bob Barish asked FAC members where they stood on the HEAC recommended PELs for wood dust and western red cedar. He noted that Len Welsh in previous meetings had said that PELs should generally be set at the lowest level that is reasonably feasible to achieve. Patrice Sutton said that the HEAC recommendations being based on total rather than inhalable particulate are above the TLV and what is clearly health protective. Ron Hutton said he had concerns about feasibility, noting that if a conversion factor of 2, instead of 2.5, had been applied to the Tulane inhalable particulate data then 37% of the measured exposures in that study would have exceeded the HEAC recommended value of 1 mg/M<sup>3</sup> rather than the 28% value noted in the AFPA letter.

Patrice Sutton said she strongly supports the PEL recommended by the HEAC. She said the Tulane study findings do not show what is possible to achieve in terms of exposure control but only what existed at the time the study was conducted. She said a PEL at the level of the HEAC recommendation can act as an incentive to reduce exposures. She said the HEAC recommendation would be a reasonable compromise between health protectiveness and feasibility of compliance.

Virginia St. Jean said she supports the HEAC recommendation of 1 mg/M<sup>3</sup>. She said she was concerned about the cancer risk presented by wood dust, even if it is relatively rare and was not the central basis for the HEAC recommendation. She hoped that a lower PEL would lead to workplace improvements in ventilation control measures and to more research and use of vacuum systems for cleaning.

Steve Derman said he found himself in partial agreement with Patrice Sutton and Virginia St. Jean, but was concerned that there may be issues to resolve with respect to measuring inhalable versus total particulate. He said he hoped that as additional data becomes available it might add clarity on both health effects and feasibility. He said it sounded like a PEL of 1 mg/M<sup>3</sup> as recommended by the HEAC could lead to a lot of new use of respirators which in itself was not desirable. He said that at this point in the discussion he would be more comfortable with a PEL of 2 rather than 1 mg/M<sup>3</sup> total particulate.

Bob Barish thanked the HEAC members for their assessment and attempt to come up with a consensus recommendation.

Steve Smith then asked FAC members about the current 15-minute PEL-STEL value of 10 mg/M<sup>3</sup> (total particulate) and if they had any thoughts about western red cedar. Steve Derman said the STEL should not be changed from its current value. He also said he thought western red cedar should be dealt with separately and that he was not prepared to comment on it at this meeting. Ron Hutton said a STEL of 10 could be reasonable for a TWA of 1 or 2. He said the TLV and PEL for western red cedar has consistently been one-half the value for wood dust generally. He supported continuing that approach, so if the proposal for wood dust was to be 2 as he suggested then for western red cedar it would be 1 mg/M<sup>3</sup> total particulate. Patrice Sutton disagreed saying the PEL for western red cedar based on its allergenic potential should be 0.5 mg/M<sup>3</sup> regardless of the PEL proposed for wood dust generally. Virginia St. Jean agreed with this.

Bob Barish asked Frank Cereghini if he had anything to say on western red cedar from his own experience. He said the feasibility of the PEL, as with other woods, depends on the particular industry. He said that in some cases it can be another case of highly dried wood generating a fine hard to control dust when worked. Linda Morse noted that there are not stands of western red cedar in California from which it is cut and processed but rather comes from out-of-state sources.

Bob Barish said he had found this to be a very helpful discussion and thanked Frank Cereghini for his active participation and for providing the benefit of his knowledge of the industry.

Virginia St. Jean asked Frank Cereghini his impression of the direction of control technology in the wood products industry and the potential for implementation of additional control measures if needed to achieve a lower PEL. He responded that there are probably some operations where workers could be located further from the point of dust generation, but that some require immediate proximity. He said he did not see at the moment technological breakthroughs that might help with control, just installation of additional existing technology and control approaches.

Frank Cereghini said that the number of sawmills in California has been declining. Linda Morse suggested that most exposure to wood dust in California is probably in furniture and cabinet work and in some aspects of construction.

Paul Niemer said it is very difficult to retrofit exposure controls in older sawmills. Bob Barish asked him if he thought newer mills were likely to be able to achieve the HEAC recommendation of  $1 \text{ mg/M}^3$  with engineering controls and he thought many probably could or already do. Frank Cereghini said that a PEL of  $1 \text{ mg/M}^3$  total particulate would probably be difficult for many operations to meet with engineering controls alone but that most could probably comply with a PEL of  $2 \text{ mg/M}^3$  without having to resort to extensive use of respirators. He said he would work with AFPA to provide responses to questions posed in the discussion and also additional information on feasibility, especially for a PEL of 1 versus  $2 \text{ mg/M}^3$ .



**ATTENDANCE ROSTER**

**MEETING NAME** Feasibility Advisory Committee (FAC) for PELs

**DATE** Wednesday October 6, 2010

**CHAIRPERSONS** Bob Barish Steve Smith

**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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present but didn't sign in (by Bob Barish): Ron Hutton - FAC member Virginia St. Jean - FAC member			



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