DRAFT MEETING SUMMARY

Fifth 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

June 17, 2008
Elihu Harris State Building
1515 Clay Street
Oakland, California

HEAC Members in attendance

Mike Cooper, Exponent
Will Forest, Santa Cruz County Public Health Department
Bob Ku, SafeBridge Consultants
Patrick Owens, Shell Oil Martinez Refinery
Patty Quinlan, UCSF Occupational Health
Julia Quint, Independent
Howard Spielman, CIHC
Mark Stelljes, SLR International
James Unmack, Unmack Corporation

Staff of Assisting Agencies
Sara Hoover, OEHHA
Dennis Shusterman, HESIS

Public and Interested Party attendees

Steve Derman, MediShare
Barbara Kanegsberg, BFK Solutions
Artie Lawyer, Technology Sciences Group
Dan Leacox, Greenberg Traurig law firm
Tina Ling, Asian Law Caucus
Bryan Little, California Farm Bureau Federation
Paul Michalko, State Compensation Insurance Fund
Jane Murphy, Phylmar Regulatory Roundtable
J. M. Nave, no affiliation provided
John Sacco, CalPASC, CCMCA, AGC of CA, MIA, CCNSIG
Michael Smith, WorkSafe
Kevin Thompson, Cal-OSHA Reporter

Cal/OSHA Staff

DOSH Research & Standards Unit: Steve Smith (meeting chair), Bob Nakamura, Mike Horowitz

Administrative Discussion Items

A number of comments were made that were generally favorable of the level of detail included in the minutes for the April 29 meeting, which were the first to be produced with the more summary approach agreed to at that meeting.

There was also discussion on circulation of e-mail comments and letters, particularly regarding n-methyl pyrrolidone.

Dennis Shusterman discussed his work on a system for organizing reference citations, and also the potential for establishing a password-protected work area for HEAC members where comments, discussion, and references could be posted. The second item may take some time to establish.

Status of revised priority list of substances for PEL work

Steve Smith presented a revised priority list in Excel form of substances for PEL work. Additions to the Excel spreadsheet included a column showing the status of substances in the HEAC and FAC, a number of substances from the OEHHA report on PELs of December 2007, and an indication of the HEAC member working on the substance. A number of substances and their priority included in the draft list released at the August 2007 meeting were also changed. There was discussion of further modifications to the priorities of several substances including moving wood dust up to Priority 1 from 2, and moving the glycol ethers in the table to priority 3 or 4 in light of current low usage.

Discussion of Specific Substances

Carbon disulfide

HEAC member Patrick Owens described revisions he made to the draft health assessment document based upon comments made at the April 29 meeting, including the basis for the OEHHA and EPA-IRIS assessments and the NIOSH STEL (short term exposure limit). He said the basis for the NIOSH STEL was unclear. Mike Cooper said it was good to have a STEL in order to keep operations with exposures within a reasonable level of control. It was suggested that with the committee basing PEL recommendations on health risk assessments, STELs should only be recommended based on such an assessment rather than only on the basis of operational control. However there was general agreement with a suggestion by Mike Cooper that, in the interest of encouraging operational control, it would be reasonable for the committee to recommend retention of existing STEL values unless something was found to refute them. There was general agreement with this suggestion.

Patrick Owens said that in response to the discussion he would do the following and prepare a revised draft document:

1. Review the literature regarding anoxia and other issues that could pertain to the STEL.
2. Review with Sara Hoover the EPA-IRIS assessment and calculation of uncertainty factors used.

Toluene

The discussion of toluene started with Tina Ling of Asian Law Caucus discussing health effects of toluene in nail salons. She said that her organization had received reports of health problems such as headaches, dizziness, and irritation in individual workers in nail salons where toluene was used. She noted availability of, and subsequently provided for distribution three studies of toluene exposure levels in nail salons showing exposures well below the current PEL. She said that the reports of illness combined with the reports of low exposure levels suggested that the PEL is not adequately protective of worker health. There was discussion among members about toluene in nail salons. Julia Quint said that the reported symptoms among nail salon workers that Tina described are consistent with the known effects of solvent

overexposure on the nervous system. Patty Quinlan said that one of the problems with control of chemical exposures in nail salons is that they are often in rented spaces, which can make installation of local exhaust ventilation systems difficult. Susan Ripple said that education of nail salon workers may be useful in reducing exposures to toluene and other solvents since she has observed bottles of nail polish and remover sitting uncapped in nail salons.

Julia Quint presented her draft health assessment document for toluene. She stated that toluene can be found in a wide range of products with workplace applications, and that in California it has been used increasingly as a substitute for chlorinated solvents in a number of products. She said that her proposed PEL recommendation of 11 ppm for toluene is based on neurotoxicity and is consistent with the conclusions reached by EPA in the EPA 2005 Toluene Toxicological Review. Based on her search of the literature and independent review of the information available on toluene toxicity, she agreed with EPA that neurologic effects (observed in 10 occupational studies) were the most sensitive health endpoints of toluene exposure. The toluene-induced neurologic effects in the 10 studies include impaired color vision, impaired hearing, decreased performance in neurobehavioral analysis, changes in motor and sensory nerve conduction velocity, headache, and dizziness. She stated that she also agreed with EPA's conclusion that no single study stood out as the best study, so a mean NOAEL of 34 ppm obtained from the 10 studies was used to derive the recommended PEL. She said that she applied an intraspecies uncertainty factor of 3 to the NOAEL based on published studies which show the presence of a defective gene for metabolizing toluene in some populations, and the effects of age and diabetes on color vision impairment. There was discussion of the subclinical changes in color vision induced by toluene and whether they constituted a significant toxic effect upon which a PEL should be based. Steve Smith pointed out that the discussion may not be relevant since the recommended PEL was based on several other neurotoxic endpoints in addition to color vision changes as previously stated and as described on page 8 of the document.

Julia Quint said that page 12 of her draft document showed a calculated PEL of 3 ppm based on a study which found an increase in spontaneous abortions among toluene-exposed women. She pointed out that the PEL based on this endpoint was lower than the recommended PEL of 11 based on neurotoxicity. She said that she did not base the recommended PEL on protecting against spontaneous abortion since this effect of toluene had been reported in only one study. In addition, the authors of the study pointed out that multiple spontaneous abortions among one of the toluene-exposed women could have confounded the study results. She noted the difficulties associated with studying the effects of chemical exposures on spontaneous abortion and said this may explain the lack of additional published studies. She explained that the ACGIH TLV of 20 ppm was based on protecting against toluene-induced spontaneous abortions in addition to color vision changes. However, it was unclear how the TLV of 20 ppm was derived from the studies cited for these endpoints in the TLV Documentation.

Mark Stelljes said that if the studies on which the HEAC PEL recommendation is based are in humans he questioned if uncertainty factors still needed to be applied as was done in the draft health assessment document. Michael Cooper also questioned the application of intraspecies uncertainty factors to NOAELs in occupational studies, and stated that he did not think they were warranted. Julia Quint and Dennis Shusterman responded that the application of an intraspecies uncertainty factor to the human data was appropriate to cover the range of health status and genetic variation found in the working population. Will Forest said that given the relatively small number of individuals in the human studies the statistical power is very low, and so application of an uncertainty factor is appropriate.

Julia Quint said there was an obvious difference of opinion among HEAC members about the application of intraspecies uncertainty factors to NOAELs obtained from occupational studies. She said she would follow-up with research on the issue. She also suggested that HEAC members with questions about it research and provide additional information / justification to support their opinions and to help resolve the issue.

Trichloroethylene

HEAC member Susan Ripple began the discussion by disclosing that her employer, Dow Chemical Company, is a manufacturer of trichloroethylene.

Will Forest discussed additions and revisions to the draft health assessment document for trichloroethylene, a partially completed version of which was discussed briefly at the April 29 meeting. He said he planned additional work to complete the list of references and study discussions. Will noted that the Halogenated Solvents Industry Alliance, Inc. (HSIA) had

submitted comments on the version discussed April 29 (Note: The Dow Chemical Company logo appears along with those of three other companies on the Internet homepage of the HSIA www.hsia.org)

There was discussion of health assessments made by US EPA and OEHHA and of some of the individual occupational epidemiologic studies on TCE and cancer risk. Will said, as shown in the draft document, that using the OEHHA Proposition 65 No Significant Risk Level (NSRL) he had calculated an occupational exposure value for a 1/1000 risk of cancer of 0.38 ppm 8-hr TWA.

Will noted that, as shown in the draft document, using the OEHHA Unit Risk Factor he'd calculated a value of 0.475 ppm for an occupational exposure limit, while the OEHHA Chronic REL of 600 µg/m3 (100 ppb) based on neurological effects (drowsiness, fatigue, headache) and eye irritation) yielded a PEL of about 3.1 ppm as an 8-hour TWA.

Items from the discussion to be worked on for the next revision of the draft health assessment document:

1. Determine whether the 2001 U.S. EPA risk assessment cited in the draft health assessment document is EPA's most current TCE risk assessment (it was verified after the meeting that the 2001 risk assessment is EPA's most recent TCE risk assessment)
2. Obtain and review the original OEHHA risk assessment document that provided the basis for the NSRL.
3. Obtain and review the actual exposure data for the Hansen study
4. Obtain and review the cohort size for the study on which the chronic REL was based (so as to determine whether or not an intra-species uncertainty factor should be applied)
5. Determine if human data was used in the quantitative risk assessment that provided the basis for the NSRL.
6. Correct a typographical error in the chronic REL listing on the first page of the draft health assessment document (0.1 ppm equals 0.537 mg/M^3, not 0.6 micrograms/M^3).

Conclusion

The meeting concluded with discussion of substances to be presented and discussed at the next meeting on Friday September 5, 2008. A copy of the draft sensitizer proposal that had its last meeting in 2005 was handed out and comments were requested by July. HEAC members were also reminded to look over the draft list of priority substances and to provide comments, along with volunteering for the remaining priority 1 substances by July.

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