VIRGINIA INHALATION TOXICOLOGY ADVISORY GROUP

FINAL APPROVED MINUTES

FIFTH MEETING
July 30, 2009

TIME AND PLACE: 9:00AM – 12:50 PM
DEQ Central Office
629 E. Main Street
Richmond, VA 22469
2nd Floor Conference Room

PRESIDING: Patricia McMurray, DEQ Risk Assessor Program Manager

MEMBERS PRESENT:

Jim Gould, Sierra Club
Chris Bednar, Smurfit Stone
John Morris, Ph.D., University of Connecticut (SOT) – by phone
Debbie Mulrooney, DuPont (VMA) – by phone
Kevin Wallace, M. D., University of Virginia – by phone
Kimber White, Ph. D., Virginia Commonwealth University
Dwight Flammia, Ph.D., Virginia Department of Health

DEQ STAFF PRESENT:

Patty Buonviri, Air Toxics Coordinator (Recorder)
Sonal Iyer, Risk Assessor, Office of Waste Technical Support
Durwood Willis, Office of Remediation Programs Director

GUESTS PRESENT:

Thornton Newland, Virginia Coal Association

Net Connect was used to link those participating by telephone.

The meeting began with VINTAG members, DEQ staff, and guest introducing themselves.

After one correction, a motion was made and seconded to approve the minutes as revised. DEQ staff will post the minutes on the Virginia Town Hall within three days of approval. See http://www.townhall.state.va.us/L/meetings.cfm for the minutes from previous meetings.

ACTION DEQ: One member requested an updated abbreviation list be distributed to each member.

DEQ provided a handout with an updated list of acronyms. A copy of this handout is included as an attachment.

One member inquired about other actions items. DEQ said that the other action items will be discussed during the course of the meeting.

Members were asked to review supplemental information provided by DEQ via email on June 24, 2009 for six chemicals (1,3-Butadiene, Arsine, Chromium VI, Ethylene Dibromide, Hydrogen Sulfide, and n-Hexane) that had been missed during the previous chronic non-cancer review. A copy of the summary sheet for each pollutant is attached.

1,3-Butadiene

One member noted that this is a Class 2A or 2B carcinogen and not a known human carcinogen. One member thought that a calculated risk of 6 in 10,000 is too permissive when you consider it's a carcinogen. Another member states that it may not matter and perhaps we can defer to the cancer number. However, DEQ said that we would still need a chronic non-cancer value to use for the hazard index (HI) since similar effects are additive.

The group agreed to use the EPA number (2 ug/m^3) because it was a more recent review and is a more conservative number since we know it is a carcinogen.

Arsine

Because the difference between Cal EPA and EPA's numbers are less than 3 when considering conventional rounding rules, the process developed by the group for numbers differing by less than three should be applied. The group agreed that Cal EPA's number (0.015 ug/m^3) should be used because it was based on a more recent study and a more recent review.

Chromium VI

One member noted that both EPA and Cal EPA used the same studies for chrome plating workers. One member thought that because of the duration of the study (36 years of data) that a subchronic uncertainty factor of 10 was too large and that EPA's number of 3 seemed like a more reasonable number. However another member mentioned that it is also a carcinogen and may be the driving factor. The group decided that EPA's number makes sense considering the longevity of the study. The group reached consensus to use EPA's number (0.008 ug/m^3).

Ethylene Dibromide

One member noted that ethylene dibromide is an animal carcinogen and that should be considered in making a decision. One member acknowledged that EPA has legitimate concerns but the member would first need to read the study before reaching any conclusions. For instance it's not clear whether the dermal effect was due to contact or not. The member stated that a drop on the skin would result in an affect 10 times greater than if inhaled. The group decided that a copy of the NTP study and Schrader 1988 paper should be obtained and reviewed before a decision could be made.

NEW ACTION DEQ: Obtain studies and distribute to VINTAG members for review.

Hydrogen Sulfide

One member noted that hydrogen sulfide has a low odor threshold. DEQ noted that although hydrogen sulfide was on the original list of hazardous air pollutant under Section 112 of the Clean Air Act, EPA said its inclusion was a mistake and it was removed from the list. However, EPA has been petitioned by various groups to put hydrogen sulfide back on the list.

The group decided that if a number were needed, EPA's number (2 ug/m^3) should be used since their review and the peer-reviewed study used were more recent than Cal EPA's.

n-Hexane

One member pointed out that EPA and Cal EPA used different studies and that both groups used older studies. One member questioned the relevance of the biochemical effect from the 1989 study to humans.

The group decided that DEQ should acquire the studies and make available to the group for review and that the group could discuss in more detail at the next meeting. One member noted that n-hexane is not a carcinogen. Another member suggested considering going to ASTDR to see what value they are using.

NEW ACTION DEQ: Obtain studies and distribute to VINTAG members for review.

One member inquired about hydrogen sulfide since it is not a listed HAP. DEQ stated that they will leave hydrogen sulfide on the list and whether or not it will remain on the list will be addressed during the regulatory process.

15 minute break

Acute/short term values: Irritants v non irritants

Action DEQ: DEQ will request funding for ACGIH documents based on group's recommendation.

DEQ acquired and reviewed ACGIH documents and created a spreadsheet which compares acute values for Cal EPA, Virginia's SAAC, and the ACGHI threshold limit values for the group to review. The spreadsheet also contained a separate page with short term values from Texas, and a page with some new additional acronyms. A copy of the spreadsheet is attached.

DEQ noted that the total number of pollutants contained on the spreadsheet is 326 even though there are only 187 listed hazardous air pollutants under Section 112 of the Clean Air Act. However, some of the named pollutants such as glycol ethers or metal compounds are a group or family of chemicals that could contain hundreds of different chemicals. The spreadsheet contains short-term values for 251 chemicals. Of the 251 values, Cal EPA has values for 51 chemicals and from the ACGIH, 158 have time-weighted averages (TWA), 32 have a short-term exposure level (STEL), and 10 have a ceiling.

DEQ looked at how Cal EPA values compared to the TLVs from the ACGIH. For the 51 chemicals with Cal EPA values, a ratio was calculated (TWA/Cal EPA value or STEL/Cal EPA value or ceiling/Cal EPA value). The average ratios were about 40:1 for TWA, 68:1 for STEL, and 35:1 for ceiling values when compared to the Cal EPA numbers.

DEQ told the group that the DEQ SAAC values are based on ACGIH ceiling or STEL values divided by 40 and the TWA is divided by 20. DEQ also stated that the TWA values are chronic (occupational receptor but long term). The value is intended to establish a safety threshold for a working life and would not be directly applicable for setting short term values. DEQ noted that the STEL and ceiling values would be more appropriate for setting short term values.

DEQ also included on the spreadsheet the basis for the TLV, whether or not the chemical was an irritant, the critical effect (for example, eye irritant or other effect). DEQ pointed out that some chemicals also have a skin reference if skin is the significant exposure route.

One member thought that by looking closely at Cal EPA's values that a methodology may be able to be developed to derive values for DEQ. DEQ noted that ACGIH does not have documentation on how the values were derived even though their review and write up were good, quantitatively it is not as detailed as we would prefer to have.

DEQ also reviewed the derivation of the TLV to see if there was a standard safety or uncertainty factor. DEQ found that there was not and that they varied quite a bit. For

example, many of the chemicals are 1 if a LOAEL was used, for acrylic acid, it was between 2 and 2.5, for chloroform it was 5 times, and for epichlorohydrin 10 times.

One member thought that grouping chemicals by whether or not it is an irritant may help us to derive a value. However, in calculating ratios no difference was seen if the chemical was an irritant or not an irritant. The member also noted that calculating standard deviation doesn't seem to provide any consistency either.

One member suggested that we could just stay with current formula for SAAC unless an analysis has been done.

Currently DEQ derives their values as follows:

TWA/20 (since the TWA is chronic not acute)

STEL and Ceiling/40 for acute.

One member thought that for the chemicals that have a Cal EPA number, we could adopt those because a chemical specific value would be more appropriate where there is one. One member suggested comparing the Cal EPA values with the STEL or ceiling divided by 40 to see how close they are. From the calculations one member did, chloroform seems to be the real outlier. The Cal EPA number is 300 times lower than the TWA value. Also, hydrogen sulfide was another outlier. However, one member thought that might be due the physiologic response to odor which would be a quality of life issue rather than a toxicological effect.

One member suggested taking a geometric mean or a median rather than throwing out the outliers. The median is not influenced by outliers. The member calculated the median to be 17 (for TWA/CalEPA) which is fairly close to the 20 which is currently used by DEQ. This approach may lead us to stay where we are for short term values.

DEQ referred the group to the page of the spreadsheet that contained some short term values from Texas. DEQ did a cursory review of the write ups for the acutes and thought they looked good. Because Texas has some short term values for chemicals that Cal EPA doesn't have, DEQ asked the group whether or not these values should be considered. One member stated that there are other states with some short term values also. After some discussion, the group decided that only values from California should be considered. Another member thought that because this would provide values for only 4 additional chemicals that it would not be worthwhile. The member also noted that Cal EPA and EPA have a transparent method and that we should stick with Cal EPA and EPA to be consistent with the approach taken for the chronic values.

One member proposed using Cal EPA values when available and when not, look at the TLV. The comparison of the TLVs to the CalEPA values show that DEQ's current method provides adequate uncertainty factors for applying an occupational value to the general population.

One member thought that using the STEL/40 seemed like a reasonable approach if a Cal EPA number was not available. The group agreed that the most recent ACGIH values should be used for calculating values and that during the review every four years, if additional Cal EPA numbers are available, the new numbers would be added.

All members agreed to the following process for determining short term values: Use Cal EPA number if one is available. If there is no CAL EPA number, chemicals with either a STEL or ceiling should be divided by 40. If there is no STEL or ceiling, chemicals with a TWA should be divided by 20.

New California Cancer Guidance

DEQ informed the group that in May of 2009 California introduced new cancer guidance. A link to the guidance was provided to VINTAG members. http://www.oehha.ca.gov/air/hot_spots/tsd052909.html The new guidance does not change the unit risk factors but provides a methodology for accounting for susceptibility to carcinogens in early life stages.

EPA also came out with guidance in 2005 which applies an age dependent adjustment factor. EPA's guidance only applies to carcinogens with a mutagenic mode of action. CalEPA applies adjustment factors to all carcinogens. DEQ notes that the Waste Division has been applying a factor for carcinogens with a mutagenic mode of action at risk assessment stage. One member thought we should incorporate the methodology if we want to be consistent with Cal EPA and EPA procedures.

One member stated that unless specific data is available on a particular chemical that we should take the more conservative approach. DEQ states that the unit risk factor will stay the same but the factor would be applied when doing a risk assessment or calculating the SAAC.

One member thought that Cal EPA's approach should be used and the factor applied to all carcinogens. The member noted that the young are always more sensitive. The group reviewed CalEPA's rationale for applying the adjustment to all carcinogens. The group reached consensus to adopt Cal EPA's methodology.

Review of Overall Process and Status

DEQ provided members with a copy of a draft report titled "The Virginia Inhalation Toxicology Advisory Group (VINTAG) Process and Recommendations." DEQ reviewed the report with the members and members provided several suggestions. A copy of the draft report is attached.

For the next and probably final meeting, DEQ stated that the group would review the remaining 2 non-cancer chemicals that were not resolved today and finalize any other outstanding issues.

The next meeting was scheduled for Wednesday, September 9 at 10:00 am.

NEW ACTION DEQ: One member requested the acronym list be updated to include STEL.

Meeting adjourned at 12:50 p.m.