

Secretaries' Science Advisory Board

MEETING SUMMARY

Archdale Building, Ground Floor Hearing Room, Raleigh, NC

Monday, June 18, 2018

10:00 AM-4:30 PM

The Department of Environmental Quality (DEQ) and the Department of Health and Human Services (DHHS) Secretaries' Science Advisory Board (SAB) met on Monday, June 18, 2018 at the Ground Floor Hearing Room of the Archdale Building in Raleigh, NC. SAB members in attendance were: Jamie Bartram, PhD (Chair), Viney Aneja, PhD, David Dorman, DVM, PhD, Gina Kimble, PhD, Betsy Tilson, MD, MPH, Richard T. Di Giulio, PhD, Tom Augspurger, PhD, Jaqueline MacDonald Gibson, PhD, Elaina Kenyon, PhD, Detlef Knappe, PhD., John Vandenberg, PhD., Michael Stoskopf, DVM, PhD., Thomas Starr, PhD. Woodhall Stopford, MD, MSPH and Greg Cope, PhD were present via telephone, as was Mr. Phillip Tarte, MPH. Also in attendance were DEQ Assistant Secretary Sheila Holman Sandy Mort, PhD, DHHS Zack Moore, MD, MPH, Beth Dittman, MS, Mina Shehee, PhD, DEQ and DHHS support staff, Karen Beck, DVM, PhD from Department of Agriculture.

I. Call to Order (Chairman Jamie Bartram)

Chairman Bartram called the meeting to order at 10:00 am.

II. Ethics Statement

Chairman Bartram read the ethics statement and reminded the members that if anyone had any conflict of interest to indicate so. No one identified conflicts. Some members had brought to the Chairman's attention concern that they might, in some circumstances, have an 'institutional conflict'. This is a non-financial conflict in which a person on the committee has an employer with a position on an issue which creates a perceived conflict between the Board member's ability to provide independent science-informed advice and the defined position of their employer. Chairman Bartram sought feedback on the acceptability to Board members that in such circumstances a member should recuse themselves from participation in affected parts of the agenda, but that Board members should minimize the extent of recusal to that necessary (i.e. to those aspects in which there is reasonable potential for a perception of an institutional conflict) in order that the Board benefits maximally from the proper participation of its members. That was agreed to unanimously.

III. Approval of Meeting Minutes for April 30th

The meeting minutes were circulated to all members, including all changes. Chairman Bartram asked if everyone had any additional comments on the minutes; there were none, so the April minutes were approved and adopted unanimously.

IV. GenX

Presentation by Beth Dittman, MS, Public Health Assessor, NC DHHS re: GenX

Benchmark Dose Modeling Report



DHHS Slides for
BMD Model Report .

Beth Dittman serves as a Public Health Assessor for NC DHHS, and presented an informative and thorough examination of the DHHS' GenX Benchmark Dose (BMD) Modeling (see attachment). The Board commended Ms. Dittman and the DHHS for the BMD modeling effort and their presentation. There was discussion regarding BMD modeling selection of points of departure (POD) for BMD modeling. Ms. Dittman stated that EPA continues to work toward a recommendation of BMD modeled RfD for GenX and other PFAS.

V. PFAS Study of Manmade Lakes

Presentation by Dr. Sandy Mort, Environmental Toxicologist, DEQ



ManMade Lake
Prelim Study slides_j

Dr. Mort presented results of a PFAS study of a privately-owned manmade lake (see attached) located approximately 0.7 miles N/NE of the Chemours-Fayetteville facility. The preliminary study included collections of the lake surface water, sediment and 3 species of fish, as well as a surface spring that flows into the lake. GenX was detected in the waters, sediment and one species of fish. Other PFAS were also detected in the study samples. Mr. Mike Abraczinskas, Director of DAQ confirmed that GenX has been detected in rainwater as far as 20-miles from the Chemours facility and is a major transport mechanism of GenX. Dr. Mort confirmed that the air pathway is likely a major component of the PFAS contamination of this lake. Dr. Mort indicated

that this particular study was not adequate to supply information to evaluate the need for a fish consumption advisory. Dr. Mort stated that future studies are being considered to evaluate the uptake of PFAS in aquatic habits, including potentially fish in the Cape Fear River. Mr. Michael Scott affirmed that local communities have requested the DEQ investigate fish, and the department is considering further studies, especially on the Cape Fear River. Air sampling was discussed in the March 19 SAB meeting, and Mr. Abraczinskas confirmed that emissions testing at the plant has continued, with higher levels of GenX reported in the emissions than had originally been reported to DEQ by Chemours. He also confirmed that air dispersion modeling is ongoing. Further questions from the board on the study were suspended as the scheduled time for the USEPA presentation by EPA Washington DC staff had been reached. As the time available for questions regarding the man-made lake PFAS study was limited, the Board may have additional questions at the next meeting.

VI. Update on USEPA's Development of Toxicity Values for GenX

Elizabeth (Betsy) Behl, PhD, Director, Health and Ecological Criteria Division, Office of Science and Technology, Office of Water (OST, OW), USEPA, Washington, D.C. introduced Brittany Jacobs, PhD of the USEPA Health and Ecological Criteria Division, OST, OW, Wash. DC who presented the slides.



NCSSAB GENX
PRESENTATION 6.18.

Jamie Strong, Greg Miller and Chris Brinkerhoff also joined the report, given via WebEx (see attached). The EPA staff indicated that they expect their reference dose (RfD) for GenX to be released for public comment before September. The Board thanked the group for their thorough and informative presentation.

The Board took a break for lunch.

VII. Trichoroethylene (TCE) Vapor Intrusion and Inhalation Action Levels

Presented by James Bateson, Superfund Section Chief, Division of Waste Management (DWM, DEQ) and Sandy Mort, PhD, Environmental Toxicologist, NC DEQ



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Mr. Bateson's presentation provided an overview of vapor intrusion and impacts to indoor air contaminant levels, as well as providing the board perspective on the prominence of the TCE VI issues in NC. Dr. Mort continued the presentation with an explanation of the toxicity value changes in the IRIS 2011 TCE Update (see attached). Dr. Mort also provided an overview of the toxicity of TCE as it relates to the sensitive sub-population of concern for the fetal cardiac endpoint, the toxicity values presented in the 2011 IRIS update for TCE, as well as a review of the TCE indoor air actions levels adopted by USEPA Region 4, NC DHHS and NC DEQ for the exposure populations of concern for the fetal cardiac effect.

VIII. Hexavalent Chromium

Update on the IRIS Hexavalent Chromium Review by Catherine Gibbons, PhD, Biologist, IRIS Program USEPA Office of Research and Development (ORF), National Center for Environmental Assessment (NCEA)

Dr. Gibbons, Alan Sasso, PhD and Kris Thayer, PhD were all present via WebEx, and gave an apology for not having slides available to augment their presentation. Dr. Gibbons provided an update of the IRIS Program's review of hexavalent chromium. IRIS is reviewing human and animal data for the derivation of toxicity values that can be used to develop regulatory values for hexavalent chromium. They expect the release of a draft IRIS review in early 2020 that will provide draft toxicity values. To date, there have been two IRIS hexavalent chromium documents released for public comment; IRIS will release their systematic review protocol for hexavalent chromium to the public this summer. It will include only a discussion of the review methodology and a list of the studies being reviewed, and will not contain any study interpretations or recommended toxicity values.

Chairman Bartram thanked the Washington, D.C. EPA representatives for their information. A Board member asked what state the hexavalent chromium was in in the evaluated inhalation studies; EPA staff replied they believe that it was as an aerosol, but that other forms would also

be evaluated. Dr. Sasso confirmed that studies evaluating both cancer and non-cancer endpoints were included in the EPA review.

NJ DEP's Hexavalent Chromium Cancer Slope Factor

Presentation by Alan Stern, Dr. PH, DABT, Chief, Bureau for Risk Analysis, Division of Science, Research and Environmental Health, NJ Department of Environmental Protection



Discussion of the Derivation of Oral C

Dr. Stern presented the finding of the NJ DEP (PowerPoint presentation attached), that led to the agency's conclusion that hexavalent chromium is a human mutagenic carcinogen by the oral route based on the NTP 2008 2-year mouse studies finding increased incidence of tumors of the small intestine. The NJ DEP adjusted the mouse data using allometric (body weight) scaling and calculated a hexavalent chromium oral cancer slope factor (CSF) = $0.5 \text{ (mg/kg-d)}^{-1}$. Dr. Stern noted that currently NJ has not incorporated the CSF into regulation and is waiting on the USEPA's review of hexavalent chromium to be released. Chairman Bartram thanked Dr. Stern for his thoughtful and thorough presentation. Dr. Vandenberg asked if there is an interim value for the cancer slope factor. Dr. Stern said historically there has been significant chromium waste issues in northern New Jersey for which NJDEP had to execute cleanup, and which was the impetus for New Jersey to develop a cancer slope for hexavalent chromium, but since that particular concern, there has been limited issues related to hexavalent chromium in the state.

Texas CEQ's Hexavalent Chromium RfD, presented by Joseph Haney, MS, Toxicologist, Toxicology Division, Texas Commission on Environmental Quality



Joseph Haney - NC
DEQ Presentation or

Mr. Joseph Haney presented on the development of the Texas Commission on Environmental Quality (CEQ)'s cancer-based RfD for hexavalent chromium (see attached). Mr. Haney stated that Texas CEQ judged that the weight-of-evidence for the carcinogenic mechanism for hexavalent chromium supported a threshold effect for a cytotoxicity-induced regenerative

hyperplasia mechanism. Mr. Haney said the Texas derivations were available on the web (<https://www.tceq.texas.gov/toxicology/dsd/final.html>) and noted that Health Canada recently released their concurrence with a cytotoxic mechanism leading to cancer. Chairman Bartram thanked Mr. Haney for the informative presentation.

The Board had several comments and questions for Mr. Haney. Mr. Haney said Texas is determined to generate robust data, to replace a general approach with a data-informed approach. There was discussion of a mutagenic MOA; there was an inquiry if the mode of action for rat was non-mutagenic. Mr. Haney said it was considered, however he could not recall specifics, and the responses are posted on their website (oral tumors in rats), which he urged both the Board and the public to peruse. Chairman Bartram then opened the discussion to comments from the floor. DHHS informed the Board that the ATSDR is to provide interim guidance to the Cooperative Agreement programs in the states in July on guidance for application of a cancer slope factor for hexavalent chromium in the interim until the USEPA releases their hexavalent chromium review. Sheila Holman then thanked both the Board and Mr. Haney for their work on hexavalent chromium. She said DEQ is requesting the Board review the current groundwater standard for chromium of 10 µg/L that was set in 2010 using studies available through 1998 that assumed that it was protective for hexavalent chromium, and further requested that the board provide recommendations for potential revisions to the chromium toxicity values to insure the continued protection of groundwater as a resource for drinking water. She further stated that one of the current core issues is the mutagenic/non-mutagenic debate for hexavalent chromium. Chairman Bartram said that Health Canada and California OEHHA have been contacted to present their findings on hexavalent chromium during the August 20th, 2018 meeting.

TCE background has been given; the two-part charge to the Board is (1) to examine action levels and (2) to review the implementation protocols that follow that. TCE materials are to be recirculated to the Board members. Chairman Bartram thanked the Board for their participation.

IX. Next Meetings

Action Items:

- SAB to present their draft report on GenX
- Presentations by Health Canada, WHO and California on hexavalent chromium

- Follow-up on TCE implementation protocols, action levels and response

Future meeting dates:

- (i) August 20, 2018
- (ii) September 24, 2018
- (iii) October 22, 2018

All meetings to be held in the Ground Floor Hearing Room of the Archdale Building.

X. Public Forum

The public comment period began at 3:30 pm. Chairman Bartram opened by thanking everyone for attending and opened the floor.

Mr. Michael Waters, homeowner near the Chemours Plant in Fayetteville, was in attendance and provided an update regarding his testing of water on his property. He previously attended the March and April meetings to give the SAB members an update of what he has been doing to test plants, crops and potable water. He has a rainwater monitoring station on his property, as well as the well water monitoring that DEQ, Chemours and his lawyers are collecting. He noted that over time, as more water is drawn from his well the concentrations of PFAS are increasing. He is testing his water for GenX as well as other PFAS and is evaluating how the GAC filtered water impacts his vegetable garden. He also said he wants the PQL (the practical limit) set by DEQ to be the basis of who gets a GAC system, not the GenX 140 ng/L value. He said that he has observed birds and baby rabbits and squirrels back in the area that have not been there previously, since Chemours has implemented a 40% reduction in air emissions, as well as improvement in the health of his plants and trees.

Mr. Waters expressed some frustration at the slow response of Chemours and DEQ to providing him with copies of the requested laboratory reports for his well water analysis. However, Mr. Waters thanked everyone for the work they have been doing and looks forward to continuing to help where he can. Chairman Bartram thanked Mr. Waters for his attendance, his diligence in his own research, and his report to the Board.

There being no further questions or comments from the public, Chairman Bartram ended the Public forum at 3:50 pm and adjourned the meeting.

Respectfully submitted,

Louise G. Hughes
Executive Assistant to Assistant Secretary Sheila Holman, DEQ