



Roy Cooper, Governor

Michael S. Regan, Secretary
N.C. Department of Environmental Quality

Mandy K. Cohen, Secretary
N.C. Department of Health and Human Services

Secretaries' Science Advisory Board

MEETING SUMMARY October 23, 2017 Archdale Building-Ground Floor Hearing Room 3:00 PM - 5:00 PM

The Department of Environmental Quality (DEQ) and Department of Health and Human Services (DHHS) Secretaries' Science Advisory Board (SAB) met on October 23, 2017, in the Ground Floor Hearing Room of the Archdale Building. SAB members in attendance were as follows: Dr. Jamie Bartram (Chair), Dr. Tom Augspurger, Dr. W. Greg Cope (via telephone), Dr. Richard T. Di Giulio, Dr. David Dorman, Dr. Elaina Kenyon (via telephone), Dr. Thomas Starr, Dr. Woodhall Stopford, Dr. Michael Stoskopf (via telephone), Dr. John Vandenburg, Dr. Betsey Tilson, Mr. Phillip Tarte (via telephone), Dr. Viney Aneja, Dr. Jaqueline MacDonald Gibson, Dr. Detlef Knappe, Dr. Gina Kimble. Also in attendance were DEQ Secretary Michael Regan, DHHS Secretary Mandy Cohen (via telephone), DEQ and DHHS support staff, and the general public.

I. CALL TO ORDER (Chairman Jamie Bartram)

Chairman Bartram provided a summary of his credentials and expressed gratitude for the opportunity to serve North Carolina's citizens. Next, he outlined three expectations for the first meeting; 1) develop a clear understanding of the mandate and visions of success, 2) each board member introduces themselves and develops an understanding of various rules, requirements, and ways of working together, and 3) the board hears specific issues and begins to organize an effective and efficient plan of work.

II. INTRODUCTORY REMARKS

Secretary Michael Regan (DEQ)

Secretary Regan expressed his gratitude for board members' dedication, expertise, and service to the state. He noted that the SAB's scope of scientific knowledge will be utilized to address the most compelling environmental concerns. Secretary Regan provided additional remarks regarding the history of the SAB, the role of the SAB in the coming years, and environmental challenges facing the state as follows. The SAB formerly existed as the Science Advisory Board on Toxic Air Pollution. As directed by Governor Cooper, the board's scope was expanded from toxic air pollutants to include the impacts of emerging chemicals. The SAB will examine and address a broad range of issues that challenge the DEQ and DHHS mandate to protect human health and the environment, chief among them is the role of emerging contaminants. There are thousands of chemical compounds being produced. The United States Environmental Protection Agency's (USEPA) Toxic Substances Control Act (TSCA) lists approximately 85,000 chemical substances in its inventory. Of those, North Carolina and federal air quality rules regulate approximately 200 compounds. That's a very small slice of a very complex pie. There's a vast scope and challenge for developing or acquiring reliable data when learning of new sources or risks of contamination. In some cases, such as the release of GenX and other chemicals into the Cape Fear River,

research is being conducted on the methodology of collecting samples, quantifying contaminant concentrations, and conclusively stating risks for the environment and human health. The board's wise counsel along with collaborations with federal and state partners, local industry, and engaged citizens will allow for significant developments in researching the impacts of environmental concerns. This will include the impacts of hexavalent chromium associated with coal ash and by setting standards to protect our state for years to come.

Secretary Mandy Cohen (DHHS)

Secretary Cohen called in by phone and introduced DHHS staff present at the meeting. She expressed sincere regret for not being able to physically attend the meeting. She also commended the SAB for their commitment and dedication to North Carolina, the United States, and beyond. Secretary Cohen noted that there is a strong need to understand the science behind these issues, go through a large volume of information, and that the SAB's work needs to be thoughtfully prioritized for an appropriate approach. Governor Cooper asked the DEQ and DHHS Secretaries' to emphasize approaching the issues as if their own families were affected. The issues are personal to many families. She looks forward to working with the SAB and making significant progress.

Chairman Jamie Bartram (SAB)

Chairman Bartram stated that the SAB's mission is to provide advice to the two departments represented by their Secretaries. The advice should contain best available evidence and consensus of the board on the best practices for protecting the environment and human health. The SAB's duties include recommending reviews of contaminants released into the environment, consulting DEQ for determining contaminant regulations, assisting DEQ and DHHS identify contaminants of emerging concern, determining whether further study is needed for the identified contaminants of concern, assisting the Secretaries by providing expertise in environmental and human impacts from exposure to hazardous contaminants, and providing inputs to DHHS as it establishes health goals for emerging contaminants. Some of the issues the SAB will work on have substantive scientific evidence available, while others are backed by little relevant science. Establishing best practices for health goals is essential because of the limited scientific material available for many emerging issues. The SAB's work will be founded on available, impartial epidemiological and toxicological evidence. Many of the issues that will be addressed can be sensitive since the affected individuals believe they've been wronged. Decisions made in the past may be unclear to the SAB since the evidence and information used may not be available or be limited. The role of the SAB is not to judge history, but rather provide scientific evidence for informing state leaders towards establishing and sustaining a safe and healthy environment. The SAB's mandate is to use the best available information to construct well informed recommendations in areas where evidence may be scarce. Future meetings will be held in affected communities to listen to their questions and concerns. Chairman Bartram appealed to board members to physically attend future meetings as often as they are available, and attend remotely when it is not feasible. Chairman Bartram cited a recent report on the far-reaching impact of pollution on health, environment and the economy. He concluded that it's a privilege and responsibility to serve on the SAB.

III. SELF-INTRODUCTIONS OF MEMBERS

John Vandenberg, Ph.D., is the Director of the Research Triangle Park Division of the U.S. EPA's National Center for Environmental Assessment. He leads the EPA's Integrated Science Assessments for the criteria air pollutants and the Integrated Risk Information System for high priority hazardous air pollutants. He also is an adjunct professor in the Division of Environmental Sciences and Policy at Duke's Nicholas School of the Environment.

Viney Aneja, Ph.D., is a professor in N.C. State University's Department of Marine, Earth and Atmospheric Sciences. Dr. Aneja is an air contamination scientist and a highly-regarded expert with a long history of public service at the federal and state level.

Jaqueline MacDonald Gibson, Ph.D., is an associate professor at UNC's Department of Environmental Sciences and Engineering with a multidisciplinary background in math, science and engineering. She has devoted much of her research to predicting population health impacts of alternative environmental policy decisions. Before joining academia, Dr. Gibson worked for the U.S. National Research Council to inform federal decisions that interface between science and policy.

Detlef Knappe, Ph.D., is a professor of Civil, Construction, and Environmental Engineering at N.C. State University. He joined the N.C. State faculty in 1996. His research interests are in drinking water treatment. In November 2016, Dr. Knappe and co-authors at the Environmental Protection Agency and UNC-Charlotte published research showing elevated levels of GenX in drinking water at a plant near Wilmington.

Betsey Tilson, M.D., MHP, is a pediatrician and preventive medicine physician serving as state health director and chief medical officer for DHHS. She has focused on public health and prevention and cross-department initiatives, including clinical quality standards. She was the 2016 recipient of the American College of Preventive Medicine Distinguished Service Award. She looks forward to working with each board member.

David Dorman, DVM, Ph.D., DABVT, DABT, is an N.C. State University professor of Toxicology in the Department of Molecular Biosciences and a former associate dean for Research and Graduate Studies at N.C. State's College of Veterinary Medicine. He has chaired or served on numerous National Research Council or committees. Dr. Dorman also advised the National Toxicology Program, the Department of Defense, and the National Academy of Sciences. He previously served on the Science Advisory Board and looks forward to serving the state for another term.

Thomas Starr, Ph.D., is an independent consultant and expert in quantitative assessment of health and environmental risks from exposure to toxic substances and has published extensively on exposure assessment. His first eight years of work were with the Chemical Industry Institute of Toxicology (CIIT). He holds an academic appointment to the UNC Gillings School of Global Public Health's Department of Environmental Science and Engineering. He served on the former Science Advisory Board since 1990, including eight years as chairman. Dr. Starr is happy to serve North Carolina.

Tom Augspurger, Ph.D., is an ecologist/environmental contaminants specialist at the U.S. Fish and Wildlife Service in Raleigh, an adjunct associate professor in the Toxicology Program at N.C. State University, and president of the Society of Environmental Toxicology and Chemistry (North America). He is serving in his own capacity and is widely published on the topics of fish and wildlife toxicology.

Richard T. Di Giulio, Ph.D., is the Kleberg Professor of Environmental Toxicology at the Nicholas School of the Environment at Duke University. He serves as the Director of its Superfund Research Center and Integrated Toxicology and Environmental Health Program. His research encompasses aquatic pollution and aquatic toxicology.

Michael Stoskopf, DVM, Ph.D., DACZM, called into the meeting and stated that he is a professor of Wildlife and Aquatic Health at the N.C. State's School of Veterinary Medicine, with appointments to Forestry, Biomedical Engineering and Toxicology. He also is the Director of NCSU's Environmental

Medicine Consortium. His research focuses on population, ecosystem and landscape approaches to health management of wildlife species.

Elaina Kenyon, Ph.D., DABT, called into the meeting and stated that she's a principal investigator and toxicologist at the U.S. EPANHEERL laboratory in Research Triangle Park. Her work focuses on development and application of pharmacokinetic models to predict the behavior and fate of synthetic or natural chemical substances in humans and animal species. Dr. Kenyon is board certified in general toxicology. She has been an advisor to the World Health Organization International Programme on Chemical Safety and serves on the toxicology advisory board for the Art and Creative Materials Institute. She served on the former Science Advisory Board and is currently serving in her own capacity as an expert in pharmacokinetics and PBPK modeling.

Woodhall Stopford, MD, MSPH, called into the meeting and stated that he's a physician at Duke University Medical Center and past director of the Occupational and Environmental Medicine Toxicology Program at Duke. Dr. Stopford is the author of more than 80 articles on occupational toxicology and risk assessment of contaminants in consumer products. He serves on several national committees that assess risks to human health. He served on former Science Advisory Board since 1986.

Phillip Tarte, MPH, called into the meeting and stated that he's the Public Health director of New Hanover County. He previously served as Union County Public Health director. He is a member of the board of the N.C. Institute of Medicine.

Gina Kimble, Ph.D., called into the meeting and stated that she's a laboratory supervisor at Charlotte Water and Catawba Water Management Group team lead for the Water Supply Master Plan Phase 3 project. She has participated in Water Research Foundation projects related to water quality and analytical method development, and serves as the Charlotte Water representative for the N.C. Urban Water Consortium.

IV. NORTH CAROLINA'S ETHICS AND PUBLIC RECORDS LAWS

Bill Lane, DEQ General Counsel

Mr. Lane welcomed the members thanking them for their service to the state and provided a synopsis of the ethics and public records issues related to the SAB. He noted that the State Government Ethics Act, which applies to most appointed and elected officials in state government in North Carolina, does not explicitly apply to advisory boards like the SAB. Nonetheless, the DEQ and DHHS are seeking for the Board to operate in a manner that maintains the public's confidence and have provided the members with information about how to adopt some of the core ethical standards and requirements specified in the Ethics Act, in particular those dealing with avoiding conflicts of interest and the appearance of conflicts. Mr. Lane provided examples of types of conflicts including conflicts related to obtaining financial benefit, which apply not only to members of the Board but also to those connected to members, and relationship conflicts that are more in the area of doing a favor for someone whether you realize it or not. The issue is to consider is whether there is some reasonably foreseeable conflict or benefit that would flow from one party or another. The purpose is to try and identify conflicts as they arise, ideally before meetings begin or if one arises during a meeting to raise it at that point. The agencies want the public's confidence in the Board's conduct to be at a high level. Identification of a conflict or appearance of conflict would lead to recusal in the form of participating in a vote, or participating in a discussion of a particular issue, or even receiving information on a particular matter. He noted items that can constitute conflict or appearance of conflict are laid out in detail in the information shared with the Board members. Mr. Lane also noted he would be glad to help members with related questions now and in future.

Mr. Lane then discussed the North Carolina Public Records Act which is a state law that does apply to the Board and the individual members. Public records are documentary materials that are made or received by a state body such as the Board. Mr. Lane provided examples of what is and what is not a public record, and must be retained. He also noted that two exceptions of significance to the public records law as adopted by the North Carolina legislature are confidential business information (CBI) and attorney-client privilege information. Mr. Lane said that the Board members are to collect and retain their records and recommended keeping them segregated from other documents they own or produce. He encouraged Board members to make use of email accounts offered by the Department for Board business. Segregation of the documents assists in facilitating a response in the event of a public records request. Mr. Lane noted that if a public records request is received regarding the SAB, it would likely come through the Department. If an individual member receives such request directly, he requested that the member let the Department know. He noted that DEQ generally reviews documents collected for public records requests to ensure that the documents being provided are indeed public records prior to fulfilling the request and he could also provide that service for the Board. Mr. Lane encouraged the Board members to contact DEQ for his assistance if they had any related questions or concerns. He further noted that media inquiries are generally not a public record request if it's just a verbal conversation or request for comment. He stated Board members should use their discretion in responding in terms of making comment on any issue the Board is currently considering, but if asked to provide documents he requested the member notify DEQ and he can help determine whether it's something that should be put in the public domain per the public records law.

Dr. Vandenburg of EPA asked for clarification as to whether items such as emails from the Department arranging meetings should be kept and Mr. Lane said yes.

Dr. Aneja asked for clarification regarding whether a phone request to a fellow board member in order to obtain a report to consider or simply for discussion for which there are no notes made is not a public record to which Mr. Lane agreed. Dr. Aneja followed up noting it would be a public record if he made notes on the conversation or on the report in his file. Mr. Lane said that if he distilled that to a tangible form that would be a public record as it would be a documentation of the conversation.

Chairman Bartram asked what the retention timeframe for the records is. Mr. Lane noted that the topic of records retention is something he has been working on with the Department of Natural and Cultural Resources and he will follow up and report back to the Board on that question. Generally, there is a lifespan for various state agencies, and we will get back with you.

Chairman Bartram thanked Mr. Lane and summarized the discussion noting two things DEQ does that should help the Board a great deal are: 1) DEQ provide email accounts for members' use for their work on the Board and 2) DEQ provide a public website that will house key documents of the Board.

V. REVIEW OF THE SAB CHARTER

Sheila Holman, DEQ Assistant Secretary for Environment

Assistant Secretary Holman expressed gratitude to members of the SAB and provided her welcoming statements. She and DHHS Deputy Secretary Mark Benton will be liaisons for the SAB. All questions, concerns, or issues may be directed towards Ms. Holman or Mr. Benton. Members of the SAB may also contact Timothy Webster if she's not readily available.

Mark Benton, DHHS Deputy Secretary for Health Services

Deputy Secretary Benton expressed gratitude to members of the SAB and provided his welcoming statements. The DHHS is eager for the SAB's input for developing additional health goals and assessing the impacts of emerging compounds.

Chairman Bartram asked for questions for Ms. Holman or Mr. Benton. No questions were identified.

VI. DEQ AND DHHS PRIORITY AREAS

Division of Public Health (Dr. Betsey Tilson, DHHS)

Director Tilson provided a brief history of the cooperation between DEQ and DHHS for the proceedings. She also acknowledged and introduced DHHS staff that will be working with the SAB. DHHS and DEQ welcomes the collaborative partnership and input of the SAB. She noted that North Carolina is rich in many resources; one of the biggest is the brain power and strength of the university system and private sector and being able to work in a collaborative public private partnership. The DHHS is eager for the SAB's input for developing additional health goals and potential health impacts of emerging compounds. Once the health goals are established, DEQ will be able to initiate the regulatory goals. The broad family of perfluorinated alkyl substances (PFASs) contains many emerging compounds. There are also legacy compounds, PFOA and PFOS within the family that have regulatory standards; however, many emerging compounds like GenX do not. The DHHS is looking forward to the Board's input on the provisional health goals for GenX. Provisional health goals will be subject to change after there's access to more information. A second area of interest is consideration of whether a standardized mechanism for approaching health data for other emerging perfluorinated alkyl substances could be put in place. Other issues are those of emerging technology in toxicity studies. For example, there are many questions and concerns regarding in vitro vs. in vivo studies. Next, the DHHS looks forward to the SAB researching available health data on hexavalent chromium associated with coal ash.

There was discussion as to whether the provisional goal for hexavalent chromium was a matter of public record now. It was concluded that it is and the goal set in 2016 is 0.07µg/l.

Chairman Bartram asked if there were any other questions for Director Tilson. No questions were identified.

Division of Water Resources (DWR) (Linda Culpepper, DEQ)

Deputy Director Culpepper introduced staff, outlined their talents, and expressed her appreciation of the SAB's expertise supporting human health and the environment. The DWR acknowledges that the SAB has helped review health studies and recommend conclusions regarding no adverse effect levels when available, bioaccumulation, and cancer slope factors in the past. DWR staff has utilized the recommendations to draft the state's surface and groundwater standards including the PFOA groundwater standard. In the past, the SAB thoughtfully discontinued duplicative work alongside USEPA's arsenic study and moved to other state priorities. This process showcased their willingness to make the best use of North Carolina's resources. The DWR appreciates the expertise and support the SAB will provide in health research that will help DWR focus its resources and program areas appropriately.

Chairman Bartram asked for questions for Deputy Director Culpepper. No questions were identified.

Division of Waste Management (DWM) (Michael Scott, DEQ)

Director Scott thanked the SAB for their willingness to serve North Carolina's citizens. He provided a summary and introduction of the DWM's Sections, Regional Offices, and staff. One area of DWM's broadening scope of work includes the topic of vapor intrusion. Contaminated groundwater or soil can

compromise an indoor air environment in residential or commercial settings. The DWM plans to bring trichloroethylene (TCE) before the SAB. The vapor intrusion component of TCE is addressed at all of their dry-cleaning solvent sites, at 25% of brownfield sites and 20% of inactive hazardous sites. The DWM has worked with stakeholders, the USEPA, and other states in the region regarding trichloroethylene acute risks. The Division has developed action levels regarding short-term inhalation risks in residential and commercial settings for TCE; specifically, $2.1 \mu\text{g}/\text{m}^3$ and $8.8 \mu\text{g}/\text{m}^3$. These short-term inhalation risks will be presented before the SAB for further evaluation. The DWM looks forward to working with the SAB on these important subjects.

There was discussion as to whether the DWM was including irrigation and drinking water wells in its discussion. The values discussed during the presentation relate to indoor air concentrations. This applies to any contaminated groundwater source that could lead to compromising acute indoor air quality. Other discussion outlined whether the DWM is evaluating tetrachloroethylene. It was concluded that the DWM is currently focusing on TCE. The discussion continued to the topics of modeling and monitoring. It was concluded that the DWM will utilize monitoring via screening levels. Specific indoor measurements are determined through summa canister sampling. The next discussion outlined whether the DWM would be interested in long-term risks. It was concluded that the DWM is also interested in long-term risks.

Chairman Bartram asked if there were any other questions for Director Michael Scott. No questions were identified.

Division of Air Quality (DAQ) (Michael Abraczinskas, DEQ)

Director Abraczinskas expressed gratitude to members of the SAB, introduced staff, and provided his welcoming statements. The DAQ's mission is to protect and improve ambient air quality. This is accomplished by monitoring ambient air quality, developing and implementing plans to meet standards and initiatives, ensuring compliance with air quality rules, and by educating the public. Developing and implementing plans requires establishing acceptable ambient levels that compliment federal technology-based standards for toxic air emissions. The prior SAB provided technical expertise in toxicology and risk assessment for achieving those acceptable ambient levels. Their duties included issuing recommendations on acceptable ambient levels for chemicals with the potential to cause adverse health effects. Those recommendations would later be designated as a draft and would go through a public process. The public process focused on their scientific rationale and methods for developing each recommendation. Afterwards, their recommendations would be formally submitted to the DAQ for rulemaking processes through the Environmental Management Commission. The DAQ has kept the prior SAB's website active so the new members may obtain background information. Director Abraczinskas will email the website link to Timothy to distribute to all members of the current SAB. The DAQ's current priorities include researching the inhalation risks and potential acceptable ambient levels for GenX and other emerging contaminants. The DAQ is also open for reevaluating acceptable TCE and hexavalent chromium ambient levels.

There was a question as to whether the department adopts guidelines or policy choices developed by other states or the federal government, and whether the department is looking for the Board to examine emerging contaminants when such values are not available. Mr. Abraczinskas stated that the DAQ adopts federal standards for criteria pollutants; however, for hazardous air pollutants, the USEPA creates technology-based standards with a follow-up risk review. The state's air toxics program had established risk-based acceptable ambient levels to compliment federal technology-based standards. The DAQ also follows what other states are doing, but the SAB has brought forward appropriate recommendations in the past that considered all available information including other states' levels. The EMC also often asks what other states' levels are as the recommendations move through the regulatory process.

Chairman Bartram asked if there were any other questions for Director Abraczinskas. No questions were identified.

VII. SAB Principles and Practices (Chairman Jamie Bartram)

Chairman Bartram stated that three documents were circulated among SAB members: 1) SAB Risk Assessment Guidelines, 2) SAB Practices and Policies, and 3) an ethics acknowledgement form. It's suggested that each member reflect on the first two documents and provide comments during the next meeting.

VIII. Public Forum

Emily Donathan, (Brunswick County)

Ms. Donathan stated that she's a mother, faith leader, and an advocate for toxic-free water. She represents the citizens of Brunswick, Bladen, Cumberland, New Hanover, and Pender Counties affected by a facility discharging per- and polyfluoroalkyl substances (PFAS) into the Cape Fear River. The public is aware of this issue and are concerned. They also feel powerless and marginally ignored regarding the status of their drinking water in southeastern North Carolina. The USEPA released the sampling results of the following byproducts on August 31, 2017: PFO3OA and PFO2HxA. It's been over seven weeks since the public has heard anything about these compounds. What are the health goals for them? The public is hearing that the water is safe to drink, which is great if it's true, but they want health goals for PFAS in drinking water. There are over 50,000 public school students enrolled in Brunswick, Pender, and New Hanover Counties. Ms. Donathan stated that her son forgot his water bottle when he went to school and knows not to drink the tap water. Ms. Donathan wonders if he's thirsty at school because he can't drink the water. No one should have to bring a water bottle from home to have clean water. What lasting health effects do these endocrine disrupting chemicals have for her children later in life? She's begging the SAB to not make the public wait 5, 10, 15, or 20 years to determine the individual impact for each chemical. Ms. Donthan stated that there are technologies that capture 100 percent of these compounds, and demanded that 100 percent of these compounds be captured by chemical companies producing PFAS in North Carolina. The public wants a health goal that combines all the PFAS compounds. Their counties are detecting at least 20 different PFAS in the water. DHHS deems the water safe to drink; not because they know, but because they choose to only focus on known toxic compounds in the water. Please have the courage to provoke the precautionary principle for the health and safety of human life.

Chairman Bartram stated that the presentation was clear and the SAB hears her concerns.

Jimmy Dixon (NC House District 4)

Representative Dixon commended the SAB for their efforts. He wanted the SAB to know that the General Assembly is interested in the work that they will be accomplishing. He is a member of the Select House Committee on North Carolina River Quality and a co-chair of the Environmental Review Commission. On behalf of the General Assembly and his colleagues, he wants to express appreciation for their willingness to serve.

IX. Upcoming Meetings (Chairman Jamie Bartram)

December 4, 2017

It's recommended to spend time with stakeholders of affected communities in Wilmington, NC. It's suggested to look at relevant experiences in the Netherlands to receive outreach and an overview. The preliminary topics of interest for the agenda are GenX and chromium.

January 29, 2018

It's recommended to move the meeting to western North Carolina to receive input from affected communities for the chromium issue. Chairman Bartram is aware that the World Health Organization (WHO) has partially reviewed their guidelines on hexavalent chromium. The SAB will ask the WHO for an update. The SAB will also conduct email correspondence with each other to find an appropriate speaker to discuss the toxicities of chromium species with differing valency [states](#).

March 19, 2018

More information will be provided as the date approaches.

There was discussion regarding the priority areas and potential work products for the December 4th meeting. It was concluded efficiency would increase if the SAB set work product goals.

Chairman Bartram asked for additional questions or comments, and upon hearing none, noted that the next meeting of the SAB would be December 4, 2017. Chairman Bartram adjourned the meeting.