



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

ADVISORY COUNCIL REGULAR MEETING

MONDAY
OCTOBER 28, 2019
9:00 A.M.

1ST FLOOR BOARD ROOM
375 BEALE STREET
SAN FRANCISCO, CA 94105

AGENDA

1. **CALL TO ORDER - ROLL CALL**
PLEDGE OF ALLEGIANCE

The Council Chair shall call the meeting to order and the Clerk of the Boards shall take roll of the Council members. The Council Chair shall lead the Pledge of Allegiance.

Staff/Phone (415) 749-

2. **APPROVAL OF THE MINUTES OF JULY 29, 2019**

Clerk of the Boards/5073

The Advisory Council will consider approving the draft minutes of the Advisory Council Regular Meeting of July 29, 2019.

3. **PUBLIC COMMENT ON AGENDA MATTERS**

Pursuant to Government Code Section 54954.3, the public has the opportunity to speak on any agenda item. All agendas for Council meetings are posted at the Air District, 375 Beale Street, San Francisco, California 94105 at least 72 hours before a meeting.

This meeting will be webcast. To see the webcast, please visit www.baaqmd.gov/ADVagendas at the time of the meeting. Closed captioning may contain error and omissions, and are not certified for their content or form.

4. **PARTICULATE MATTER (PM) SYMPOSIUM**

J. McKay/4629
jmckay@baaqmd.gov

The Council will hold the first of the Particulate Matter (PM) Symposia series.

5. **CHAIRPERSON'S REPORT**

The Chairperson will provide the Advisory Council with a report of recent and upcoming activities.

6. **REPORT OF THE EXECUTIVE OFFICER/APCO**

7. **PUBLIC COMMENT ON NON-AGENDA MATTERS**

Pursuant to Government Code Section 54954.3, an opportunity is provided for the public to speak on any subject within the Council's purview. Speakers are typically limited to three minutes each.

8. **COUNCIL MEMBER COMMENTS / OTHER BUSINESS**

Council members may make a brief announcement, provide a reference to staff about factual information, or ask questions about subsequent meetings.

9. **TIME AND PLACE OF NEXT MEETING**

Monday, December 9, 2019, at 375 Beale Street, San Francisco, CA 94105 at 9:00 a.m.

10. **ADJOURNMENT**

The Council meeting shall be adjourned by the Chair.

CONTACT:

MANAGER, EXECUTIVE OPERATIONS
375 BEALE STREET, SAN FRANCISCO, CA 94105
vjohnson@baaqmd.gov

(415) 749-4941
FAX: (415) 928-8560
BAAQMD homepage:
www.baaqmd.gov

- To submit written comments on an agenda item in advance of the meeting. Please note that all correspondence must be addressed to the “Advisory Council” and received at least 24 hours prior, excluding weekends and holidays, in order to be presented at that Council meeting. Any correspondence received after that time will be presented to the Council at the following meeting.
- To request, in advance of the meeting, to be placed on the list to testify on an agenda item.
- Any writing relating to an open session item on this Agenda that is distributed to all, or a majority of all, members of the body to which this Agenda relates shall be made available at the District’s offices at 375 Beale Street, Suite 600, San Francisco, CA 94105, at the time such writing is made available to all, or a majority of all, members of that body.

Accessibility and Non-Discrimination Policy

The Bay Area Air Quality Management District (Air District) does not discriminate on the basis of race, national origin, ethnic group identification, ancestry, religion, age, sex, sexual orientation, gender identity, gender expression, color, genetic information, medical condition, or mental or physical disability, or any other attribute or belief protected by law.

It is the Air District’s policy to provide fair and equal access to the benefits of a program or activity administered by Air District. The Air District will not tolerate discrimination against any person(s) seeking to participate in, or receive the benefits of, any program or activity offered or conducted by the Air District. Members of the public who believe they or others were unlawfully denied full and equal access to an Air District program or activity may file a discrimination complaint under this policy. This non-discrimination policy also applies to other people or entities affiliated with Air District, including contractors or grantees that the Air District utilizes to provide benefits and services to members of the public.

Auxiliary aids and services including, for example, qualified interpreters and/or listening devices, to individuals who are deaf or hard of hearing, and to other individuals as necessary to ensure effective communication or an equal opportunity to participate fully in the benefits, activities, programs and services will be provided by the Air District in a timely manner and in such a way as to protect the privacy and independence of the individual. Please contact the Non-Discrimination Coordinator identified below at least three days in advance of a meeting so that arrangements can be made accordingly.

If you believe discrimination has occurred with respect to an Air District program or activity, you may contact the Non-Discrimination Coordinator identified below or visit our website at www.baaqmd.gov/accessibility to learn how and where to file a complaint of discrimination.

Questions regarding this Policy should be directed to the Air District’s Non-Discrimination Coordinator, Rex Sanders, at (415) 749-4951 or by email at rsanders@baaqmd.gov.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

375 BEALE STREET, SAN FRANCISCO, CA 94105

FOR QUESTIONS PLEASE CALL (415) 749-4941

EXECUTIVE OFFICE:

MONTHLY CALENDAR OF AIR DISTRICT ANTICIPATED MEETINGS

OCTOBER 2019

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Board of Directors Budget & Finance Committee - CANCELLED	Wednesday	23	9:30 a.m.	1 st Floor, Yerba Buena Room #109
Board of Directors Mobile Source Committee	Thursday	24	9:30 a.m.	1 st Floor Board Room
Advisory Council Meeting	Monday	28	9:00 a.m.	1 st Floor Board Room
Board of Directors Community & Public Health Committee	Wednesday	30	9:30 a.m.	1 st Floor Board Room

NOVEMBER 2019

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Board of Directors Legislative Committee - CANCELLED AND RESCHEDULED TO MONDAY, NOVEMBER 25, 2019	Monday	4	9:30 a.m.	1 st Floor Board Room
Board of Directors Nominating Committee - CANCELLED AND RESCHEDULED TO WEDNESDAY, NOVEMBER 20, 2019	Wednesday	6	9:00 a.m.	1 st Floor Board Room
Board of Directors Regular Meeting - CANCELLED	Wednesday	6	9:30 a.m.	1 st Floor Board Room
Board of Directors Executive Committee	Wednesday	6	9:30 a.m.	1 st Floor Board Room
Board of Directors Stationary Source Committee – CANCELLED AND RESCHEDULED TO MONDAY, DECEMBER 16, 2019	Monday	18	9:30 a.m.	1 st Floor Board Room
Board of Directors Nominating Committee	Wednesday	20	9:00 a.m.	1 st Floor Board Room
Board of Directors Regular Meeting	Wednesday	20	9:30 a.m.	1 st Floor Board Room

NOVEMBER 2019

Board of Directors Climate Protection Committee - CANCELLED	Thursday	21	9:30 a.m.	1st Floor Board Room
Board of Directors Community & Public Health Committee	Thursday	21	9:30 a.m.	1st Floor Board Room
Board of Directors Budget & Finance Committee	Monday	25	9:30 a.m.	1st Floor Board Room
Board of Directors Legislative Committee	Monday	25	10:45 a.m.	1st Floor Board Room
Board of Directors Mobile Source Committee - CANCELLED	Thursday	28	9:30 a.m.	1st Floor Board Room

DECEMBER 2019

Board of Directors Climate Protection Committee	Monday	2	9:30 a.m.	1st Floor Board Room
Board of Directors Regular Meeting	Wednesday	4	9:30 a.m.	1st Floor Board Room
Advisory Council Meeting	Monday	9	10:00 a.m.	1st Floor Board Room
Board of Directors Stationary Source Committee	Monday	16	9:30 a.m.	1st Floor Board Room
Board of Directors Executive Committee - CANCELLED	Wednesday	18	9:30 a.m.	1st Floor Board Room
Board of Directors Mobile Source Committee	Wednesday	18	9:30 a.m.	1st Floor Board Room
Board of Directors Budget & Finance Committee - CANCELLED	Wednesday	25	9:30 a.m.	1st Floor Board Room
Board of Directors Mobile Source Committee – CANCELLED AND RESCHEDULED TO WEDNESDAY, DECEMBER 18, 2019	Thursday	26	9:30 a.m.	1st Floor Board Room

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson Stan Hayes and Members
of the Advisory Council

From: Jack P. Broadbent
Executive Officer/APCO

Date: October 22, 2019

Re: Approval of the Minutes of July 29, 2019

RECOMMENDED ACTION

Approve the attached draft minutes of the Advisory Council meeting of July 29, 2019.

DISCUSSION

Attached for your review and approval are the draft minutes of the Advisory Council meeting of July 29, 2019.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Marcy Hiratzka
Reviewed by: Vanessa Johnson

Attachment 2A: Draft Minutes of the Advisory Council Meeting of July 29, 2019

Draft Minutes – Advisory Council Regular Meeting of July 29, 2019

Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105
(415) 749-5073

DRAFT MINUTES

Advisory Council Regular Meeting
Monday, July 29, 2019

An audio recording of the meeting is available on the website of the Bay Area Air Quality Management District at
<http://www.baaqmd.gov/about-the-air-district/advisory-council/agendasreports>

1. CALL TO ORDER

Advisory Council (Council) Chair, Stan Hayes, called the meeting to order at 10:05 a.m. Chair Hayes acknowledged the public's previous request of providing additional opportunities for public comment on agenda items, and said that during this meeting, the public would be able to comment during each item, following staff presentations, rather than save all comments on agenda matters for a single opportunity during the meeting.

Roll Call:

Present: Council Chair Stan Hayes; Vice Chair Dr. Michael Kleinman; and Members Prof. Severin Borenstein, and Dr. Linda Rudolph, and Dr. Gina Solomon.

Absent: Members Drs. Tim Lipman and Jane Long.

Also Present: Ex-Officio Advisory Council Member, Rod Sinks, Board of Directors (Board) Liaison.

2. APPROVAL OF THE MINUTES OF MARCH 11, 2019

Council Comments

Chair Hayes requested that the following revision (underlined) be made to the Draft March 11, 2019 Minutes:

Item 8 – CHAIRPERSON'S REPORT

He will be giving a report on the Council's activities to the Air District's Board of Directors' Executive Committee meeting on March 20, 2019, and the full Board meeting on April 3, 2019.

Council Action

Professor Borenstein made a motion, seconded by Dr. Solomon, to **approve** the Minutes of March 11, 2019 as amended; and the motion carried by the following vote of the Council:

AYES: Borenstein, Hayes, Rudolph, Solomon.
NOES: None.
ABSTAIN: None.
ABSENT: Lipman, Long, Kleinman.

3. **PUBLIC COMMENT ON AGENDA MATTERS**

Public comments were given by Greg Karras, Communities for a Better Environment.

Council Comments

The Council and staff discussed whether there is evidence that pollution trading has moved Particulate Matter (PM) from higher-income, or less-densely populated areas, to lower-income, disadvantaged communities; whether records of trades of particulate emissions credits are publicly-accessible; and the status of the trading program.

NOTED PRESENT: Vice Chair Kleinman was noted present at 10:20 a.m.

4. **DISCUSSION ON ELECTION OF OFFICERS**

Chair Hayes reiterated his desire to see a variety of Councilmembers serve as Officers (Chair and Vice Chair) on the Council and stated that he had requested that Air District staff propose options for a formal Council Officers selection process and term limits.

At this point, Dr. Jeff McKay, Chief Financial Officer, gave the staff presentation *Discussion on Election of Officers*, containing a proposed policy for the Council to adopt.

Council Comments

The Council and staff discussed potential responsibilities of the Chair and Vice Chair; the need for a more frequent Council presence at Air District Board meetings, and who should represent the Council when presenting to the Board; the desire for gender equity among Council Officers; length of term limits and potential challenges regarding re-appointments; the possibility of the Council Officers having annual term limits, despite the term limits for general Councilmembers; and the request that no vote be taken until all Councilmembers meet at a future Council meeting.

Council Action

The consensus of the Council was to have an annual election of Council Officers with a three-year term limit (per Officer position). Chair Hayes said that this item will be continued until all seven voting Councilmembers are present.

5. PRESENTATION ON COMMUNITY-SCALE ASSESSMENTS OF AIR POLLUTION IMPACTS TO SUPPORT ASSEMBLY BILL (AB) 617

Dr. McKay introduced Dr. Phil Martien, Director of Assessment, Inventory, and Modeling, who gave the staff presentation *Community-Scale Assessments of Air Pollution Impacts to Support Assembly Bill) 617*, including: overview; Bay Area PM_{2.5} trending down; AB 617 communities; why West Oakland; modeling-based technical assessment; West Oakland detailed emissions inventory; community-scale emissions inventory; PM_{2.5} regional modeling - primary and secondary contributions; how much is local (PM_{2.5} and cancer risk); impact zones; plan goals – remove air quality disparities; cancer risk; local impacts; PM_{2.5} source apportionments; risk assessment approach for PM_{2.5} and draft test cases; assessing impacts for large stationary sources; and next steps.

Public Comments

Public comments were made by Jed Holtzman, 350 Bay Area.

Council Comments

The Council and staff discussed uncertainties in the Air District’s community-scale emissions inventory’s estimations; whether sources that are not currently included in the inventory will be included in the future; the amount of Diesel PM (DPM) emissions that are sourced from construction activity; anticipated federal assessments of the toxicity of formaldehyde; contributing factors to the generation of road dust and which types of vehicles produce the most road dust; the largest sources of on-road vehicle tailpipe PM_{2.5} emissions; *Federal Research Action Plan on Recycled Tire Crumb Used on Playing Fields and Playgrounds* by the US Environmental Protection Agency (EPA) and the study of synthetic turf’s impact on human health by the Office of Environmental Health Hazard Assessment; the effectiveness and feasibility of particular dust mitigation strategies; anticipated results from the West Oakland Community Action Plan (emission reduction targets of individual neighborhoods); how the Environmental Benefits Mapping and Analysis Program (BenMAP) considers census block population characteristics and the fact that mortality rates vary among different segments of a given population; and the request for a future presentation on the history of emissions trading.

Council Action

None; receive and file.

6. UPDATE ON WILDFIRE RESPONSE EFFORTS

Dr. McKay introduced Tracy Lee, Compliance and Enforcement Manager, Alan Abbs, Legislative Officer, Lisa Fasano, Communications Officer, and Judy Cutino, Health Officer, who gave the joint staff presentation *Update on Wildfire Response Efforts*, including: overview; local and regional PM from wildfires; 2017 North Bay Fires; 2018 Camp Fire; Wildfire Air Quality Response program; rule development; legislative initiatives; grants and incentives; partnership goals with the American Red Cross; regional partnerships; community information and resources; and health effects of PM and wildfire smoke.

Public Comments

Public comments were given by Charles Davidson, Sunflower Alliance.

Council Comments

The Council and staff discussed the months during which the Winter Spare the Air program is currently in effect; the proposed 2019 rule amendment-adoption schedule for burning regulations (Rules 5 and 6-3); the need for improvements to/retrofitting of existing hospital ventilation systems; eligible facilities included in AB 836, and whether State funding alone could cover the estimated cost of this bill's implementation; the feasibility of deploying portable filtration units during wildfire smoke impacts to the region; the efficacy of N95 respirators during wildfires; the Air District's opinion of low-cost air quality monitors; the concern that some people may not want to go to shelters during wildfires, especially individuals who may be undocumented; an anticipated increase of backup generator purchases due to Pacific Gas & Electric's power shut downs during wildfire incidents; the suggestion to circulate wildfire education, messaging, and guidance to residents on a continual, year-round basis (as opposed to only during wildfire incidents), especially in vulnerable populations; and the collaboration of air districts, the State, and the Federal government regarding the development of criteria for curtailing outdoor school and university activities.

Council Action

None; receive and file.

The Council recessed at 12:35 p.m., and resumed at 1:15 p.m.

7. DISCUSSION REGARDING PARTICULATE MATTER SYMPOSIUM

Chair Hayes gave a presentation that he presented to the Air District's Board of Directors on April 3, 2019, focusing on the need for public health-focused attainment guidelines more stringent than those that currently exist. Then, Dr. McKay gave the staff presentation *Discussion Regarding Particulate Matter Symposia*, including: goals; meetings; October 2019; December 2019; February 2020; and April 2020.

Council Comments

The Council and staff discussed how the original concept of a one-day symposium transitioned into a series of four symposia, spread out over eight months, whether this new format may present a challenge for stakeholders who wish to attend, whether the new schedule should be compressed, and which content should be discussed/activities completed on which days; the efficacy of having keynote speakers at the symposia; the request for an overview at each of the four meetings within the symposia, including: data from the EPA's Integrated Science Assessment for PM; targets the Air District would like to set; ways to achieve those goals; gaps in current Air District regulation; how to reduce risk of wildfire exposure; and a framework of what the Air District is currently doing and what else it could be doing; which party (Air District staff or the Council) would be developing PM recommendations at the symposia; the benefits of having a "California PM Standard" and how air districts can encourage the California EPA and California Air Resources Board to design and establish such air quality guidelines; the request

for speakers who can address the benefits of lower standards and how that can be done without imposing burdens on other communities; how the World Health Organization could emphasize the importance of PM beyond just the Bay Area; whether the Air District has an explicit date by which it expects new standards to be set; the importance of quantifying health benefits that may result from reductions in air pollution; the suggestion that the Advisory Council prepares a Statement of Principles on health effects of PM at low levels to be voted on in October; suggestions for speakers, including: Dr. Henry Christopher Frey, former Chairperson of the EPA's recently-disbanded Clean Air Scientific Advisory Committee, Dr. Julian Marshall, University of Minnesota, Dr. Maria Neira, World Health Organization Director, Dr. John Balmes, University of California at San Francisco, Janet Currie, Princeton, and Dr. Reed Walker and Wolfram Schlenker, University of California at Berkeley; the significance of PM_{2.5} having been officially designated by the EPA as a causal agent for cardiovascular disease; how the Council members, as an ad-hoc committee, may correspond with one another between Council meetings, without violating the Ralph M. Brown Act; and the request to advance both the Council's actions and Air District regulation development in tandem so that the Board may be as equipped and efficient as possible when considering new or amended regulations.

Council Action

None; receive and file.

8. CHAIRPERSON'S REPORT

Chair Hayes and Vice Chair Kleinman reported on their experience at the Air and Waste Management Conference Association's 112th Annual Conference in Quebec City, Canada, and said that as the 2020 conference will take place in San Francisco, the Council will host a PM discussion there, based on its findings.

9. REPORT OF THE EXECUTIVE OFFICER/AIR POLLUTION CONTROL OFFICER

Jack P. Broadbent, Executive Officer/Air Pollution Control Officer, reported the following:

- During this Summer Spare the Air season, seven Spare the alerts were issued.
- Upcoming Air District rulemakings will target reductions in methane and PM emissions.
- One of the Air District's current priorities is to implement Assembly Bill 617 (Community Air Protection Program), to help eliminate health disparities.
- The Air District has also prioritized the mitigation of the impacts of wildfires.
- The Air District has also prioritized its Climate Protection Planning Program.
- The Air District's Proposed Fiscal Year Ending 2020 Budget was adopted (on June 5, 2019.)

10. PUBLIC COMMENT ON NON-AGENDA MATTERS

No requests received.

11. COUNCIL MEMBER COMMENTS / OTHER BUSINESS

None.

12. TIME AND PLACE OF NEXT MEETING

Monday, October 28, 2019, at 375 Beale Street, San Francisco, CA 94105 at 9:30 a.m.

13. ADJOURNMENT

The meeting adjourned at 2:57 p.m.

Marcy Hiratzka
Clerk of the Boards

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson Stan Hayes and Members
of the Advisory Council

From: Jack P. Broadbent
Executive Officer/APCO

Date: October 22, 2019

Re: Particulate Matter (PM) Symposium

RECOMMENDED ACTION

None; receive and file.

DISCUSSION

Increasing evidence shows health impacts from particulate matter (PM) can occur well below the current national ambient air quality standards. Therefore, it is important that we reassess the health effects of PM in our communities.

This year, the Air District's Advisory Council will be convening a four-part conference series on PM. This series will facilitate discussion among nationally recognized scientists, stakeholders, and the Air District, identifying the most effective measures to further protect public health. The symposia will shine a spotlight on this public health challenge and share information and tools to inform future policy decisions.

The first symposium will take place on October 28, 2019, from 9:00 a.m. to 4:30 pm., at the Bay Area Metro Center, 375 Beale Street, San Francisco, California 94105.

Topics during the first symposium will include:

- PM Health Effects:
 - Observed health effects from PM exposure
 - Affected biological systems
 - Knowledge about the mechanisms
 - Population groups most at risk
 - Most relevant sensitivities and uncertainties

- PM Exposure and Risk:
 - PM emissions and sources
 - PM levels in the air
 - Community exposure
 - Current understanding of PM health risks
 - Economic and other costs

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Jeff McKay

Attachment 4A: October 28, 2019 Particulate Matter Symposium Guest Speaker Biographies



Particulate Matter: Spotlight on Health Protection



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Guest Speaker *Biographies*

Jason D. Sacks, M.P.H.



Jason Sacks is a Senior Epidemiologist in the Center for Public Health & Environmental Assessment within U.S. EPA's Office of Research and Development. He is the assessment lead for the Particulate Matter Integrated Science Assessment and plays key leadership roles in synthesizing the health effects evidence of air pollution for various National Ambient Air Quality Standards reviews. He has expertise in examining the relationship between short-term exposures to air pollution and mortality, respiratory-related hospital admissions and emergency department visits, and long-term exposure and cancer, with a focus on identifying those populations at greatest risk. Additionally, Sacks collaborates with the Office of Air Quality

Planning and Standards within U.S. EPA's Office of Air and Radiation in conducting both national and international training on U.S. EPA's Environmental Benefits Mapping and Analysis Program – Community Edition and in communicating the health risks of exposure to PM and wildfire smoke. He received a B.A. from Rutgers University in 1999 and an M.P.H. from Johns Hopkins University in 2003.

Michael T. Kleinman, Ph.D.



Michael T. Kleinman is UC Irvine Professor of Environmental Toxicology and Co-Director of the Air Pollution Health Effects Laboratory in the Department of Community and Environmental Medicine, Adjunct Professor in College of Medicine. He received a Ph.D. in Environmental Health Sciences from New York University. Dr. Kleinman brings expertise on the health effects of air pollution on animals and humans, as well as the development of analytical techniques for assessing biological and physiological responses to exposure to environmental contaminants and for determining concentrations of important chemical species in air. His current studies involve the inhalation exposures to manufactured and

combustion-generated nanomaterials fine and coarse particles using state-of-the-art field exposure systems and real-time physiological monitoring methods. Biological mechanisms related to oxidative stress have been identified after particulate matter exposure, and Dr. Kleinman's team is also pursuing how these mechanisms affect pathological and physiological changes in the heart and lungs. He currently serves on the Air District Advisory Council.



Dr. John Balmes



Dr. Balmes is Professor of Medicine at UC San Francisco where he is on the faculty of the Divisions of Occupational and Environmental Medicine and Pulmonary Critical Care Medicine. He is also Professor of Environmental Health Sciences in the School of Public Health at UC Berkeley. Dr. Balmes is the Director of the Northern California Center for Occupational and Environmental Health. He leads an active research program and is author of over 300 papers on occupational and environmental health-related topics with many of these dealing with the potential health effects of ambient air pollution. Dr. Balmes expertise in the health effects of ambient air pollutants has been recognized by multiple awards. He was appointed the Physician

Member of the California Air Resources Board in 2008.

H. Christopher Frey, Ph.D., F. A&WMA, F. SRA



Dr. H. Christopher Frey is the Glenn E. Futrell Distinguished University Professor of Environmental Engineering in the Department of Civil, Construction, and Environmental Engineering at North Carolina State University. Dr. Frey's research includes quantification of uncertainty in engineering process technologies and emission factors, probabilistic methods for exposure assessment, measurement and modeling of human exposure to air pollution, and measurement and modeling of vehicle emissions. Dr. Frey also is an adjunct professor in the Division of the Environment and Sustainability at the Hong Kong University of Science and Technology, where he is part of a large team developing an exposure model for Hong Kong.

Dr. Frey is a Fellow of the Air & Waste Management Association and of the Society for Risk Analysis. He has a B.S. in mechanical engineering from the University of Virginia, a Master of Engineering in mechanical engineering from Carnegie Mellon University, and Ph.D. in engineering and public policy from Carnegie Mellon.



Particulate Matter: Spotlight on Health Protection



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Lauren Zeise, Ph.D.



Lauren Zeise, Ph.D., was appointed by Gov. Brown as Director of the California Office of Environmental Health Hazard Assessment in December 2016 and has been with OEHHA since its inception in 1991. Prior to OEHHA's creation, she was chief of the cancer unit at the California Department of Health Services and spent several years at the California Public Health Foundation and the U.S. EPA. She played a leading role in OEHHA's development of CalEnviroScreen, the nation's first comprehensive statewide environmental health screening tool, which is used to identify the California communities most burdened by pollution from multiple sources and most vulnerable to its effects. She also co-led the team that developed the hazard trait regulation for California's Safer Consumer Products program, and she has conducted hundreds of health risk assessments. Dr. Zeise earned her doctorate from Harvard University. She is a member, fellow, former editor, and former councilor of the Society for Risk Analysis and was the 2008 recipient of the Society's Outstanding Risk Practitioner Award.

Julian Marshall, Ph.D.



Julian Marshall is the Kiely Endowed Professor of Environmental Engineering at University of Washington with a focus on air quality management. Dr. Marshall founded and runs the Grand Challenges Impact Lab, a UW study abroad program in Bangalore, India. He is also Associate Editor for Environmental Health Perspectives and Development Engineering. Dr. Marshall studies exposure to air pollution, including air pollution health impacts of transportation and electricity, disparities in exposure, and air pollution measurements in low-income countries. He earned a B.S.E. with High Honors in Chemical Engineering from Princeton, an M.S. and Ph.D. in Energy and Resources from UC Berkeley, and has published over 100 peer-reviewed journal articles.



Particulate Matter: Spotlight on Health Protection



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Scott Jenkins, Ph.D.



Dr. Scott Jenkins is a senior environmental health scientist in EPA's Office of Air Quality Planning and Standards (OAQPS). He is currently leading EPA's review of the National Ambient Air Quality Standards (NAAQS) for Particulate Matter (PM). Over the past 15 years, he has also worked on reviews of the NAAQS for other criteria pollutants, including ozone and nitrogen dioxide, and on standards for air toxics. Dr. Jenkins came to OAQPS from the EPA's Office of Research and Development. Prior to EPA, Dr. Jenkins was a Howard Hughes Postdoctoral Research Fellow in the Department of Cell Biology at Duke University. His PhD is in Behavioral Neuroscience from the University of Alabama at Birmingham and his bachelor's degree is in Psychology from Furman University.

Phil Martien, Ph.D.



Phil Martien is the Director of the Assessment, Inventory, & Modeling Division at the Bay Area Air Quality Management District. He and his team are focused on compiling and evaluating emissions of air pollutants and greenhouse gases, conducting modeling-based studies to estimate air pollution exposures and impacts, and supporting the Air District's development of prioritized mitigation measures. He led the Air District's Community Air Risk Evaluation Program, which informed California's AB 617 in beginning to unite community organizations, agencies, and businesses to address areas of concentrated air pollution and related health effects in disadvantaged communities. He received his M.S. and Ph.D. degrees from UC

Berkeley.



Keynote Speaker *Biography*

Gina McCarthy



One of the nation's most respected voices on the environment and public health, former EPA Administrator Gina McCarthy is now a Harvard professor leading strategies and actions at the Harvard T.H. Chan School of Public Health, the Harvard Kennedy School of Government and in the corporate and non-profit sectors. At Harvard TH Chan, she is Professor of the Practice of Public Health in the Department of Environmental Health and the Director of the Center for Health and the Global Environment (C-CHANGE). In this capacity, McCarthy leads the development of the school's strategy to turn climate and health science into actions that promote a more sustainable and just world. At the Kennedy School, she engages climate science leaders across the university and beyond. McCarthy also serves as a Member of the Board of Directors of the Energy Foundation and Ceres. McCarthy is a former operating advisor at Pegasus Capital.