

U.S. Environmental Protection Agency Board of Scientific Counselors

Consultation on Equity and Environmental Justice

Executive Committee

Virtual Meeting Minutes

July 6, 2021

Date and Time: July 6, 2021, 12:00 to 5:00 p.m. Eastern Time

Location: Virtual

Meeting Minutes

Provided below is a list of the presentations and discussions that took place during the meeting with hyperlinked page numbers. The minutes follow. The agenda is provided in Appendix A, the participants are listed in Appendix B, and the charge questions are provided in Appendix C.

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The meeting generally followed the issues and timing as presented in the agenda provided in Appendix A of this meeting summary.

Convene Meeting

Tom Tracy, Designated Federal Officer, Office of Science Advisor, Policy, and Engagement

The meeting convened at approximately 12:00 p.m. Eastern Time.

Welcome

Tom Tracy, Designated Federal Officer, Office of Science Advisor, Policy, and Engagement

Jennifer Orme-Zavaleta, Principal Deputy Assistant Administrator for Science, Office of Research and Development

Chris Frey, Deputy Assistant Administrator, Office of Research and Development

Mr. Tom Tracy introduced the meeting topic of environmental justice (EJ) and welcomed Dr. Jennifer Orme-Zavaleta, the Principal Deputy Assistant Administrator for Science for the Office of Research and Development (ORD).

Dr. Orme-Zavaleta announced her retirement at the end of July. She expressed appreciation for the committee's work and praised Dr. Paul Gilman and Dr. Lucinda Johnson for challenging the Board of Scientific Counselors (BOSC) with the meeting task. She emphasized that the topic of EJ is an important priority for the Agency.

Dr. Chris Frey congratulated Dr. Orme-Zavaleta for her years of public service at EPA. He acknowledged the attendance of the public and public service officers. Having served for several years on EPA advisory committees, he appreciated BOSC's commitment to advise the Agency.

Dr. Frey joined EPA under the Biden administration, after three decades in academia. He emphasized the Biden administration's commitment to public health protection in the environment and signed Executive Order (EO) 13985 into law in January 2021. The goal of EO 13985 is to advance racial equities and support for underserved communities with regard to environmental issues. EO 13985 seeks to improve the equitable distribution of Federal goods and services to disadvantaged communities, notably people of color and other underserved groups. These include religious minorities, LGBTQ persons, persons with disabilities, people in rural areas, and those in persistent poverty. Agencies are to review programs and policies to assess whether underserved communities and their members face systemic barriers in accessing benefits and opportunities available pursuant to those policies and programs.

Dr. Frey noted that EO 14008 highlights the need to address adverse human health outcomes and climate-related issues in disadvantaged communities and echoed the Biden Administration's challenge to consider EJ in its work.

Dr. Frey emphasized EPA's role to consult with tribal nations and acknowledge traditional ecological knowledge (TEK). In 2014, the National Environmental Justice Advisory Council (NEJAC) provided recommendations on how to incorporate EJ into EPA research. EPA is currently assessing its progress, identifying key barriers to achieving equity and EJ in research, and creating a Strategic Research Action Plan (StRAP). He highlighted ORD's commitment to

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underserved communities and the need to apply an EJ lens to its work. Dr. Frey reiterated ORD's science-based approach to identify and characterize key problems, as well as target interventions to solve problems. He explained how ORD aims to use bias-for-action science so that the science informs decisions that eventually lead to action.

Introduction of Board of Scientific Counselors Executive Committee and Subcommittee members advancing racial equity for underrepresented communities

The EC members introduced themselves with name and affiliation. Dr. Paul Gilman reviewed the meeting agenda.

Review Meeting Agenda and Process

Paul Gilman, BOSC Executive Committee Chair

Dr. Gilman reviewed the meeting agenda and purpose.

Introduction to Executive Order on Advancing Racial Equity and Support for Underserved Communities through the Federal Government: Barriers to Equity in Research and Community Science

Bruce Rodan, Associate Director for Science, Office of Research and Development

Andrew Geller, ORD Executive Lead for EJ Research, Office of Research and Development

Dr. Bruce Rodan highlighted the Agency's efforts to identify barriers to equity in research and community science and concern regarding environmental justice issues and advancing racial equity to support underserved communities. Dr. Rodan noted that the federal government should provide benefits and services to those most in need, rather than those most able to access the benefits.

Dr. Rodan explained that ORD's applied research program seeks to anticipate and solve environmental problems where they occur, such as childhood exposure to lead, polluted rivers, exposure to air toxics, and impacts of climate change. These issues disproportionately affect minorities, the poor, and disadvantaged communities. He discussed how ORD aims to apply an equity lens across its research portfolio to help those most in need. Dr. Rodan discussed seven points relevant to the meeting's discussion:

1. **Barriers:** The purpose of this meeting was to solicit input about barriers to equity in research and community science.
2. **Research and community science:** These are two related but separate terms. Research is subject to EPA data standards and quality control because the Agency supports research activity. On the other hand, community science involves a third party generating science independent of EPA, so it is not beholden to EPA data standards.
3. **Appreciation:** Dr. Rodan thanked the BOSC for hosting the meeting.
4. **Distributed expertise:** Dr. Rodan noted that some BOSC members had expressed concern about their lack of expertise on equity and environmental justice issues. Therefore, BOSC subcommittees would provide additional expertise to the EC. Dr. Rodan also emphasized public commentary and input as a central aspect of the meeting

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and highlighted advice provided by the NEJAC and White House Environmental Justice Advisory Committee (WHEJAC).

5. **Timing:** EPA appreciated BOSC for expediting the meeting and to the public for their flexibility. The meeting was timely in helping EPA meet internal deadlines.
6. **Different perspectives:** Dr. Rodan highlighted the importance of understanding the different perspectives of stakeholders, industry experts, community members, and government agencies in determining barriers to research and solving environmental problems.
7. **Cumulative risk and impact:** Inadequate methods to measure cumulative risk and impact constitute a barrier to environmental research. Researchers have identified chemical risks in the past but only on a chemical-by-chemical basis. Dr. Rodan discussed a paradigm shift under consideration, specifically the need for a more holistic approach in which EPA would assess cumulative risks in already overburdened communities suffering from social, economic, and environmental stressors.

Dr. Andrew Geller provided background information and context for the meeting and shared input received from EPA expert advisory councils, such as NEJAC and WHEJAC. He reviewed definitions and recommendations about EJ issues. Dr. Geller noted ORD routinely conducts equity-relevant research but now aims to also perform equity-ready research.

Dr. Geller explained that EO 13985 (Advancing Racial Equity and Support for Underserved Communities through the Federal Government) directed federal agencies to pursue a comprehensive approach to advancing equity for all, including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality. Dr. Geller added that EO 14008 (Tackling the Climate Crisis at Home and Abroad) emphasized the importance of scientific integrity and directed agencies to focus on achieving EJ and address disproportionately high and adverse human health, environmental, and climate impacts on disadvantaged communities. Each federal agency, including EPA, must conduct an equity assessment of its programs and policies to determine if underserved communities and their members face systemic barriers in accessing benefits and opportunities available and then develop a plan to mitigate these barriers.

Dr. Geller noted that research is a benefit and service that should serve all. EJ is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulation, and policies. Dr. Geller explained that EPA's goal is for everyone to enjoy the same degree of protection from environmental health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work.

Dr. Geller discussed EO 12898, which asked agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. He noted that scientific research demonstrates that disparities in environmental health and conditions exist in overburdened and underserved communities. In many places, communities of color, tribes, and economically depressed communities disproportionately shoulder environmental risks. For example, hazardous

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waste storage facilities are more likely to be in underserved communities and pollutants from these sites can spread during flooding events.

Dr. Geller highlighted ORD's mission to integrate an equity lens into its environmental research programs. He noted that solving environmental problems is based on outcomes, not solely on identifying problems. Dr. Geller outlined the equity barrier analysis process, which involves reviewing literature, hosting intra-agency workgroup discussions, distinguishing and addressing specific barriers to research and community science, seeking public comments and peer consultations, and evaluating different perspectives to identifying barriers by addressing input from disadvantaged communities, EPA researchers and program offices, local and state government agencies, and industry representatives.

Dr. Geller presented NEJAC and WHEJAC's recommendations for overcoming barriers to research on equity and environmental justice. He emphasized the importance of community engagement for setting research goals. NEJAC recommended that EPA engage stakeholders early in the research planning process, prioritize an EJ research agenda informed by engagement and dialogue with vulnerable communities, and use its influence to encourage collaborations among different stakeholders. WHEJAC added that federal agencies provide communities of color, tribal and indigenous communities, low-income communities, and people with disabilities the opportunity for meaningful participation in the development and design of research strategies, recognizing that cultural practices are connected to health outcomes and can be disrupted by environmental effects, outcomes, and hazards.

WHEJAC recommended EPA should improve its data collection and sharing process to better assess health disparities and other burdens of pollution "on the ground" and allow for comparisons in vulnerable communities over time. WHEJAC also recommended that federal agencies improve their research and data collection efforts by increasing their use of community-based science. Agencies should recognize the importance of tribal ecological knowledge, climate change, and the inequitable distribution of burdens and benefits of the management and use of natural resources. Dr. Geller suggested that potential discussion questions could focus on barriers to incorporating tribal and community ecological knowledge in scientific approaches and assessments, barriers to community and tribal trust in EPA, and barriers to prioritizing research on environmental health burdens and risks.

WHEJAC recommended each federal agency prioritize achieving EJ so the public can enjoy improved health and environmental outcomes in their communities. Dr. Geller echoed the importance of prioritizing community-scale outcomes. He noted that there are barriers to accounting for social vulnerabilities in EPA's scientific methods, barriers to aligning EPA's research agenda with the needs of diverse communities, and barriers to research and data generation that support both national and local mandates.

Regarding program implementation capacity and partnerships, NEJAC recommended that EPA supplement its staff with sociologists and social and behavioral scientists to address the complexities of EJ. EPA should provide trainings to research scientists about how to conduct community-engaged research. NEJAC and WHEJAC also highlighted the importance of translating and disseminating research so it is accessible to the public. Another recommendation

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was for EPA to support funds for community-engaged research in EJ, specifically university and partnership funding that targets minority-serving institutions.

Dr. Geller discussed barriers to community science and emphasized that citizen science should be a core tenet of environmental protection. He noted that community science can be an asset to communities, EPA regional program offices, and state and local governments. The National Advisory Council for Environmental Policy and Technology (NACEPT) and WHEJAC both recommended that EPA collaborate with external organizations to create community science goals. WHEJAC also recommended that each federal agency actively encourage and solicit community-based science and tribal ecological knowledge, and provide communities of color, tribal and indigenous communities, low-income communities, and people with disabilities the opportunity for meaningful participation in the development and design of research strategies, recognizing that cultural practices are connected to health outcomes and can be disrupted by environmental hazards. Dr. Geller suggested that potential discussion questions could focus on barriers to the creation of an agency-wide strategic approach, as well as barriers to aligning community science work with the priorities and capacities of local, state, and federal governments.

Dr. Geller pointed out that EPA has used citizen science, but that it is not widely recognized as an effective and critical tool. In Kansas City, EPA conducted an air monitoring study using hand-held air monitors distributed at local libraries and collected 3 million data points to address diesel emissions in overburdened communities. EPA also created the SmokeSense app, which is a citizen science project to address wildfires.

NACEPT and WHEJAC recommended that EPA support science education efforts. WHEJAC specifically suggested creating a leadership pipeline of youth working in their communities on identified citizen science projects with grassroots EJ groups. Investment in frontline communities could address underserved youth and under-resourced grassroots groups on the frontlines of fighting for environmental and climate justice. The youth could develop a career path, compensation, education awards, and job skills while living in their own communities. Dr. Geller noted that the BOSC subcommittee should discuss resource barriers to community science engagement. He also provided a list of important EJ related definitions.

Public Comment and Question Period

Tom Tracy, Designated Federal Officer, Office of Science Advisor, Policy, and Engagement

- **Gina Solomon:** NEJAC and other committees made these recommendations to EPA some time ago. Is there a way to track what the Agency has done in response to these recommendations to monitor the Agency's progress?
 - **Andrew Geller:** EPA received recommendations from NEJAC in 2014 and made an EJ Road Map, which provided a snapshot of EPA and ORD's research inventory and included a section on research gaps. This was reviewed by BOSC and quietly maintained on an EJ page of EPA's website. However, when administrations changed from 2016 to 2017, the structure for implementing more rigorous tracking of EPA's progress fell by the wayside. Moving forward, EPA

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will take full inventory of the work that has already been done and what will be included in future research plans.

- **Omega Wilson, West End Revitalization Association (WERA):** Citizen science and community science are different. Citizen science has historically involved the birds, bees, and butterflies and excluded human beings. Community science models focus on human beings. The National Citizen Science Association is white and academic and needs more diverse representation. Community science emphasizes corrective action and addressing adverse environmental exposures to human beings, not just nature.
- **Tracy Corley, Director of Research and Partnerships at Conservation Law Foundation:** It is important to distinguish between community science and citizen science. It is also important to understand the four paradigms used in rigorous scientific research: constructivist research, transformative research, participatory-action research and community-based participatory research. These are all rigorous research methods. Transformative and constructivist research involves people's lived experiences and how they view the world. Citizen science is known to be quantitative and causal, but community science is still rigorous, too, whether the sources of info are experiential, cultural, or academic. It is important to recognize that we can have community science and citizen science in all four research method areas.
- **Sacoby Wilson, Maryland Institute for Applied Environmental Health:** As Tracy said, a lot of traditional citizen science has been top-down and academic, not grassroots or community-based. EJ is focused on solutions and actions. Local communities want EPA to conduct applied, action-oriented science. EPA needs to shift how funding is distributed and ensure funding gets to front-line communities and minority-serving institutions.
- **Omega Wilson:** We want to share information regarding the Right to Basic Public Health Amenities for Black, Indigenous, Latinx, and POC Communities. The following is a list of identified problems: A) First-time drinking water and sewer connections. EPA only discusses repairing old infrastructure but not creating new systems or addressing people without infrastructure. B) Local governments plan, zone, and displace historic communities out of existence. This is a major issue. C) There is a lack of federal and state oversight and regulation for waste and pollution that disproportionately impacts POC communities. D) Federal programs fund educational institutions to study suffering POCs like they are guinea pigs. Education institutions use this information for profit, publication, advanced degrees, and tenure, not for legal compliance and public health enforcement. The exploitation of POCs in academic research needs to be addressed. E) Funding should not be limited to data collection. Funding should prioritize community science approaches that address ground truthing for compliance and enforcement of civil right over citizen science that just studies people and collects data for academic rewards. F) Funding needs to support climate, EJ, and clean energy initiatives for front line communities affected by pollution, mega-industrial park expansion, and mega-highway corridor construction. We need to address not only legacy environmental pollution, but also current and new environmental issues. However, this is not just an issue of toxins and pollution. Cities are physically eliminating Black and indigenous communities.

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- **Andrew Geller:** I want to acknowledge WERA, and their expertise and years of dedication.
- **Canden Byrd:** Aradhna Tripani, Center for Diverse Leadership in Service, commented that there are systemic barriers associated with navigating higher education.
- **Cissy Ma, U.S. Environmental Protection Agency:** A rural community in southwest Wisconsin faces issues with nutrient compliance requirements and flood risks due to climate change. People are looking for ways to address all these issues together. Agricultural partners need to be included in this conversation.
- **Canden Byrd:** John G. Andrade of Old Bedford Village Development, Inc. said that Public Health Real Engagement Real Planning is a place at the table with Equal Opportunity to have input in what impacts EJ underserved neighborhood, climate, food, and economic justices. Arnold Wendroff, Mercury Poisoning Project, commented that EPA and allied agencies have failed to assess and address the domestic mercury vapor exposures resulting from ritualistic mercury use in Caribbean and Latinx communities.
- **Sacoby Wilson:** I am a member of NEJAC, on the board of the Citizen Science Association, and the NAS Board of Environmental Studies and Toxicology (BEST). I appreciate the discussion on equity. EPA must focus on science that serves people. One topic of concern is how the Agency provides funding. We should use tools such as EPScreen to micro-target communities with EJ concerns to work with and institutions to fund. Between 2015 and 2017, black colleges received less than 3% of federal research dollars. Has EPA assessed how funding is used to support majority Black and Hispanic colleges? Forty percent of the investments should be going to these minority-serving institutions and frontline communities. As a member of NEJAC, I have critiqued EPA for how its funding is allocated. Descendants of enslaved Africans live in the Deep South and Gulf Coast but EPA did not fund a single center in the south in 2015. I discussed and emphasized the need for cumulative risk assessment about 12 years ago, but nothing has been done. We have the reports and recommendations, but there is no action. We are not protecting communities. People dealing with toxic trauma, cumulative exposure, and structural violence are overlooked. There needs to be hyper-local monitoring when it comes to decisions about regulations and permitting. Cumulative risk assessment must be a core component to all assessments. Community science data should be used for decision making.
 - **Bruce Rodan:** I want to clarify that I did not mean to say that community science is fundamentally different from other EPA science, but that community science has a lot of opportunities because it is not beholden to EPA research guidelines.
- **Monica Schoch-Spana:** The issue of workforce development has multiple layers. Public health decision makers should mirror the communities they serve. In state and public workforce divisions, managers are typically non-Hispanic whites which is out of sync with the composition of the American population. Scientific researchers are also more likely to be non-Hispanic whites. Apart from the demographic composition of the research workforce, it is important to consider what proportion of researchers are proficient in social and community issues as opposed to just focused on the physical and biological science.

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- **Louie Rivers:** I want to follow up on this workforce discussion. Have we considered changing the composition of the BOSC? Sometimes we are dealing with EJ issues but do not even realize it. Can we make structural changes to the BOSC to ensure that we always have relevant EJ expertise, even with our technical discussion?
- **Paul Gilman:** I think that is a worthy point in the discussion about the barriers to equity in the science and research.
- **Lucinda Johnson:** I am happy Louie raised the issue. In terms of workforce development, I recently participated in a promotion panel for ORD scientists. Amongst the criteria for promotion, working with disadvantaged communities was not a criterion. We should think about how to integrate criteria to enhance participation in community science and consider EJ issues as part of our day-to-day scientific obligations.
- **Leslie Rubin:** I want to go to the small point Andrew mentioned in his presentation about lived experiences. Could you elaborate on this?
 - **Andrew Geller:** As we incorporate EJ and equity into EPA's work, we have partnered with tribal colleagues using TEK, but we are behind in using historical community knowledge. Lived experiences are important, and we must acknowledge that racism has caused health disparities. We need to understand lived experiences and incorporate them into our cumulative assessment metrics, whether they are risk or impact assessments.
- **Gina Solomon:** I was in a workshop about environmental and mental health. There are biological indicators of pollutants and stressors impacting health. ORD could contribute to and advance this work so we can think about how to measure cumulative impacts scientifically and quantitatively.
 - **Andrew Geller:** EPA has looked at the impact of nature amenities on allostatic load and at the distribution of tree canopy and who benefits from it. The challenge is getting the word out. We have discussed including mental health outcomes. There is a notice of intent in our Remedial Action Framework (RAF) to look at the intersection of environmental and mental health outcomes.
- **Paul Gilman:** EPA has made tools to communicate data, but it can be challenging for the average person to understand how the tool is used. It is a burden for the researchers who create the tools to also explain how to use them. How can we help people use the tools?
 - **Andrew Geller:** The team is developing a curriculum for K-12 students. We are also working on capacity building. But as Bruce mentioned, we cannot work with hundreds and thousands of communities across of America. We may need to increase our budget to get the word out.
 - **Bruce Rodan:** There are millions of communities and one research office. One barrier is the number of people to provide research for.
 - **Andrew Geller:** EPA did a project in Prospect Creek, Atlanta. Its headwaters are covered in 100 acres of a parking lot and have a lot of runoff. The community viewed this as a water quality issue, but they have other problems too and asked for a broader partnership. EPA helped with a Health Impact Assessment (HIA)

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which addressed health equity goals and built a network of connections for the community. The community led most of the work. This is an ideal example of how the Agency can play a role in helping communities by making connections but not being the main contributor.

- **Paul Gilman:** It would be helpful to have a way for people to access the good outcome for others to replicate.
- **Leslie Rubin:** Gina spoke about cumulative impact and mental health, and I will mention cumulative vulnerability. For example, COVID struck certain communities more harshly. Mental health issues generate stress hormones, which adversely impact the immune system and cardiovascular system. Environmental issues relate to molecular issues. Andrew's example at Prospect Creek demonstrates that EPA can be a catalyst in creating a network of community connections, such as businesses that go into a community and revitalize it. This is a good model to observe.
 - **Andrew Geller:** We have an environmental quality index with indicators for built, chemical, and social environments and their corresponding associations with adverse health outcomes. For example, we measure allostatic load as a biological marker of cumulative stress. We need to collaborate with states that are enacting EJ legislation, like New Jersey, Minnesota, and California, to figure out how to do an impact analysis well and in a timely, fit-for-purpose way. We need to determine what data metrics are most critical in impact assessments.
 - **Paul Gilman:** New Jersey is developing approaches for implementing new EJ laws. This could be a good opportunity for ORD to gain hands-on experience with communities as they give input on new projects.
- **Omega Wilson:** I want to reiterate Dr. Rubin's comments about vulnerabilities. One of the biggest issues that fails to be addressed concerns civil rights. Civil rights are the foundation of addressing EJ. One of EPA's top priorities should be protecting vulnerable communities in the south that are being eliminated. When zoning and planning occur at the local level, small towns with little oversight exercise power over the federal government. Many communities have complained for decades about pollution and air quality issues, but these communities are often the ones being planned out of existence through zoning. EPA and other agencies have turned a blind eye to these civil rights issues. We cannot address pollution and environmental health issues if we no longer have a place to live. We must address zoning and planning issues as well.

Break and reconvene at 2:55pm Eastern Time.

Charge Question Discussion and BOSC Deliberation

Paul Gilman, BOSC EC Chair

Paul Gilman introduced Charge Questions 1 and 2. He opened the floor for discussion.

Charge Question 1a: Equity in Research

With regard to the identification, prioritization, funding, and conduct of intramural and extramural research by EPA, what barriers exist to the equitable distribution of the benefits and services of EPA's research to people of color and underserved communities?

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- **Louie Rivers:** How do we ensure that our efforts withstand administrative changes?
 - **Paul Gilman:** One of the ways the BOSC provides input is through the research planning process and secondarily through implementation. We should institutionalize the planning process and participation to create a foundation.
 - **Bruce Rodan:** There are multiple ways. We can make things more permanent by writing guidance documents, creating standard practices, and hiring people into that field.
- **Paul Olsiewski:** My observation is that people of color in underserved communities do not have a voice in the identification, prioritization, funding, and conduct of research done by EPA. We have spent a lot of time discussing the need for partner engagements, but it seems as if there is some type of barrier to engaging people of color in underserved communities.
 - **Paul Gilman:** The first step is to identify the barriers and then take them down.
- **Lucinda Johnson:** Research is a social engagement. The collaboration that occurs within our teams and across the Agency is both a barrier and an opportunity. If we add others to our team, we automatically bring their communities along. Currently, there are multiple organizations and programs repeatedly trying to access the same groups of people. We do not acknowledge the pressures they face. When I work with tribal colleagues, they ask what the benefit is to them and their tribe. We ask for their knowledge, resources, and time without compensating them. There is lack of underrepresented individuals in the research community itself and there are pressures on these communities to keep giving without receiving benefits. We must prioritize respectful engagement.
 - **Paula Olsiewski:** My group did not get to present on this, but we had a similar conclusion.
- **Gina Solomon:** Researchers tend to come from different communities than the people who we ask to partner with in the research. Those conducting research should better reflect the communities in need of the research. This may help address some barriers around trust. I also have encountered what Lucinda described. It is unfair to ask communities to participate in research without compensating them. Finally, communities sometimes express interests that do not align with what the researcher wants to do. How can we give communities more of a voice and decision-making power?
 - **Barrett Ristroph:** There are many regulations against funding research participants. They should be compensated for their time with cash, babysitting services, door prizes, etc. The grant application process is challenging to navigate. Many tribes are not able to submit applications because there are barriers such as application fees. People in these communities need easier and more accessible ways to apply for grants. EPA should restructure how they evaluate applications to ensure that the people who are most in need get funding, not necessarily those with the most polished application.
 - **Monica Schoch-Spana:** Regarding the Homeland Security program within ORD, we need to expand the type of association-level partners we interact with in order to identify priority issues. There are associations of groups, in addition to community members themselves, that could share their perspective on the needs

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of underserved populations and provide a systems level analysis. We should encourage new and innovative partnerships with intermediary groups at state and local association levels. Barrett's point about the grant process is very important. The current grant-making processes are a deterrent to the type of research we are interested in. We need to adapt the processes so that funding goes to communities most in need.

- **Courtney Flint:** We have not yet discussed the intersectionality of identities and issues amongst underserved communities which creates different degrees of vulnerabilities. We need to be more cognizant of how shared, complex identities influence environmental justice issues because the assumption of homogeneity is a perpetual problem. Also, how do we reconcile geospatial data with these vulnerabilities? I think ORD can help with data management and analysis capacities to improve resolution for mapping and assessing capabilities of communities. I put in the chat an article called "Metropolitan Reclassification and the Urbanization of Rural America." We have an assumption of what rural means and that can be harmful. Lastly, there are barriers to achieving fair data principles and data transparency. This is a problem within science, but it is worse outside the scientific community. ORD could address sovereignty of data.
 - **Louie Rivers:** Going back to the issue of funding, we should consider involving communities when making calls for grants. Communities could help decide what domains we explore. Then there would be unique calls that meet the unique needs of a region.
- **Katrina Waters:** One thing to keep in mind is the barrier of trust. If we only identify issues but do not fix them, we are going to further erode trust. We must implement changes to address disparities. EPA and the federal government need to be held accountable and provide outcomes that have a tangible benefit to communities.
 - **Leslie Rubin:** I am touched by what Katrina said. There is a barrier of trust between the scientific community and underserved populations. We are done with research and need to act. I think having this public forum is very helpful. We should invite communities to the table and work with them on a level playing field rather than us making decisions for them.
 - **Paul Gilman:** We must keep in mind that the engagement can become a barrier and burden as well.

Charge Question 1b: Equity in Research

Based on familiarity with ORD's research programs and workforce expertise, which structural, cultural, and/or other barriers must be overcome to optimize the organization's capacity to conduct research of most relevance and utility to people of color and communities most in need?

- **Louie Rivers:** EPA career pathways into ORD are not accessible to different communities and different types of scientists. The internship programs are also confusing.
- **Lucinda Johnson:** The promotion process needs to incentivize community-engaged research. We could rebuild STAR (Science To Achieve Results), a competitive grants

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program from EPA that used to be a large, well-funded program. Re-expanding the STAR program would help diversify the way that EPA does its work.

- **Paul Gilman:** I do not think this would contribute to what we are trying to do.
- **Lucinda Johnson:** I agree but I also think the STAR program should not be resurrected in its old form because it was too academically centered before. We could incorporate the suggestions we have received into a new iteration of the program.
- **Courtney Flint:** I still think ORD treats social science as a big black box. There are complex problems that need to be understood. The social sciences are useful and need to be integrated with the science to really understand what is relevant and useful for communities most in need. The prioritization and elevation of scientific knowledge means we miss out on things. We should look for ways to incorporate different types of knowledge into our research efforts.
 - **Leslie Rubin:** I was going to comment on the social science issue that Courtney mentioned. I remember when social science was first introduced in the BOSC conversation it was questioned but eventually accepted. We are dealing with a new generation of science and different challenges. We must be creative and use new tools to develop strategies for addressing these barriers.
- **Paula Olsiewski:** My comments follow what Courtney and Lucinda have said. The discipline that has not been incorporated into scientific research is the views and experiences of POCs and underserved communities. Getting laboratory scientists to truly collaborate with communities is still a barrier.
 - **Paul Gilman:** Scientists are asked to go from their private laboratories to communicating with other people who think differently from them. It is difficult.
- **Sandy Smith:** Going back to what Lucinda brought up, there is a need to incentivize EPA staff. We should not sell short the contributions that they make. We need to broaden our thinking about incentivizing beyond promotional criteria.
 - **Paul Gilman:** It should be more about annual performance rather than promotional.
 - **Leslie Rubin:** Sandy mentioned the tremendous talent in the whole EPA ORD and faculty and staff. It is a rich and talented set of resources. Just want to put your mind at ease, we are not going to make you do anything crazy.

Charge Question 2: Community Science

What scientific, cultural, structural, and other barriers need to be addressed to facilitate the use of community science to advance equity goals in decision making, including barriers to equitable access of community voices and use of community data (qualitative and quantitative) at different levels of governance, from local, to state and Federal. What barriers need to be overcome to increase the receptivity of government organizations to considering community science in their decision-making processes?

- **Lucinda Johnson:** Engagement requires time and patience, and long-standing relationships. It is hard for individuals within a very large agency to establish those kinds of relationships that can percolate through the organization to make the organization

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more effective. The barrier in and of itself is that we lack the patience to establish those long-term relationships. I am not sure how to solve that, but the barrier is that these relationships are delicate, and they take time. It is hard to know exactly where the key contact needs to take place within the communities themselves. I do not know what the answer is but that is a barrier.

- **Paul Gilman:** We only need to identify the barriers in this meeting.
- **Louie Rivers:** It is a skill EPA does not want to pay for, but it is a tangible skill that EPA needs to invest in. Partnership is often the last thought in a project rather than the first. Also, the principles of community science need to be better integrated with other aspects of science.
 - **Paula Olsiewski:** How is community science integrated in ORD's work? The other point goes back to Andrew's presentation about different standards for data collection and reporting. How do we reconcile EPA data versus community science data? Community science should not be marginalized. Community science seems to be an unrecognized area of science, but it should be an equal partner in EPA's research.
 - **Gina Solomon:** ORD is good at developing usable tools, such as database tools that anybody can access to provide information about existing data and tools that provide exposure relevant information through monitoring (i.e., park benches to see air quality measurements). A lot of progress has been made but there is still a need for better monitoring. ORD could help develop more tools, such as rapid monitoring tools for air and water quality issues, for community members.
 - **Katrina Waters:** Agencies often have a research side and a policy side. One barrier is understanding which part of an organization owns which regulatory authorities for decision making. Another barrier is getting federal organizations to work together to make decisions and policies. There is often confusion about responsibilities and overstepping between research activities and policies. We need more clarity and cooperation with federal organizations about who owns what regulatory authorities.
 - **Barrett Ristroph:** We might take lessons from the American Geophysical Union (AGU) Thriving Earth Initiative to further community science engagement. AGU set up a match-making system between communities in need and volunteer scientists. Perhaps EPA could set up a similar system. AGU also recognized that political and legal problems are intertwined. They refer people with legal issues to someone that can help rather than deflecting them. AGU also has project coordinators on staff to ensure projects are progressing and meeting community needs.
 - **Louie Rivers:** We do community science all the time. This idea of community science is not new. Science is a constructed process that has only benefited certain people in society. We need to seriously think about how we construct mainstream technical science because many people have been left out for so long.
 - **Monica Schoch-Spana:** We need more instances of community science being used well in high impact decisions. We do not have enough examples of this so

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that it can be replicated at different levels of government. There is a lack of best practices and models between agencies. This is a barrier that the EPA could work to overcome.

- **Paul Gilman:** What are the barriers to governments being receptive to it?
- **Monica Schoch-Spana:** As Louise mentioned, science has been constructed in a certain manner. If scientific institutions were diverse, inclusive, and driven by equity principles, we would not be talking about siloed groups.
- **Leslie Rubin:** Andrew's example of Proctor Creek is an excellent example of how EPA is involved catalytically to engage local and regional partners in communities. We must also consider that politics play a large role in these issues and decisions.
- **Bruce Rodan:** There are different lenses and perspectives. EPA is not adequately engaging communities in the research planning process. How do we address that issue? As Louie mentioned, we cannot address communities one by one because they are so different and diverse, but we can address communities with similar issues. We cannot do transactional research. We must build trust, promote healing, and compensate communities for their time and effort. How the government funds and supports these communities can be a barrier. Another issue to consider is where the data goes. I would be interested to hear different perspectives about the barriers to doing community science with regard to who generates data and who receives data.
 - **Paul Gilman:** When ORD was looking for input to its research agenda from states, it was simple going to state organizations. But when you want input from individual communities, there is not a league of communities.
 - **Bruce Rodan:** Where do we go for that community level input?
 - **Paula Olsiewski:** EJ organizations might provide a wholesale approach.
 - **Louie:** There are numerous EJ groups in each of the EPA regions. Groups have done this work since the Christchurch report.
 - **Paula Olsiewski:** Are there no annual EJ meetings?
 - **Louie Rivers:** No, there are many meetings.
 - **Paula Olsiewski:** It is a long-term serious problem. We cannot go to every single group because there are too many. How can we do things as effectively and swiftly as possible?
 - **Louie Rivers:** We need to give ORD opportunities to attend EJ meetings, meet with organizations, and learn the vocabulary.
 - **Andrew Geller:** There are groups, such as WE ACT for Environmental Justice in New York. They are a point of contact for 54 different organizations across the country. There are HCBU connections and consortium contacts, but they are not usually at the table when we have these discussions.
- **Monica Schoch-Spana:** Community health systems focus on social determinants of health from an advocacy perspective. Apart from EJ groups, EPA could also work with these community health systems given that many health care workers are employed by community-based organizations.

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- **Bruce Rodan:** We must be careful about which local organizations we work with because they might not represent the community consensus.
- **Andrew Geller:** We have discussed the challenges of getting grants and need to streamline that process. The EPA Brownfield Program has centers called Technical Assistance to Brownfields (TAB) that assist communities in getting grants for underserved populations.
 - **Paul Gilman:** Does anyone have experience with the Brownfield Program?
 - **Matthew Naud:** TABs is a good model for bringing resources to local communities. The program is a great opportunity federally regulated sites, but many EJ issues are at state-led sites not monitored by the federal government. Could the federal government support community organizations even if they are not in a contamination or exposure area monitored by the federal government?
 - **Andrew Geller:** That is a tough question. Brownfields are defined locally.
 - **Courtney Flint:** My concern with community science is that there is a tendency to work with communities that have the highest capacity to participate and self-mobilize. I worry that the most disadvantaged communities will be left out because they do not have the capacity or agency to seek help. There are also systematic barriers regarding data. There is a lack of common meta data, data standards, and management systems. We need more systematic approaches for how communities can contribute data for cross-comparative analysis and research.
 - **Leslie Rubin:** It would be a mistake to just think about one model. We need to consider multiple approaches. A good way to establish community-based science is to develop relationships between communities in need and nonprofits, NGOs, or academic centers. We need to explore different models and find ways in which those can be expanded.

Closing Remarks

Bruce Rodan, Associate Director for Science, Office of Research and Development

Andrew Geller, Executive Lead for EJ Research, Office of Research and Development

Paul Gilman, BOSC EC Chair

Dr. Rodan highlighted the importance of finding community needs to inform research, identifying relevant decision makers, consistently supporting and funding communities, and committing to healing from the past. BOSC members were asked to submit additional comments.

Dr. Rodan expressed his appreciation for the conversation. He recognized the long-term process required to address the EO and enhance ORD's EJ research. He announced Dr. Geller's promotion to Executive Lead for Environmental Justice Research in ORD.

Dr. Geller emphasized the importance of community engagement for creating structural change. He noted that ORD performs research all the time, but that science is not serving everyone. He explained that ORD is involved in EJ *relevant* research but must prioritize EJ *focused* research. Dr. Geller shared his anticipation of the solutions generated.

Dr. Gilman thanked the BOSC members and participants.

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Adjourn

The meeting adjourned at 4:30 p.m. Eastern Time.

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Appendix A: Agenda

**United States Environmental Protection Agency
Board of Scientific Counselors (BOSC)
Executive Committee (EC)**
Meeting Agenda
July 6, 2021
Virtual

Tuesday, July 6, 2021, Eastern Daylight Time

Time	Topic	Speaker
12:00 pm	Convene Meeting	Tom Tracy , Designated Federal Officer (DFO)
12:05 pm	Welcome	Chris Frey , Deputy Assistant Administrator, Office of Research and Development
12:15 pm	Introduction of BOSC EC and Subcommittee Members	Paul Gilman , BOSC EC Chair
12:30 pm	Review Meeting Agenda and Process	Paul Gilman , BOSC EC Chair
12:45 pm	Introduction to: Executive Order on Advancing Racial Equity and Support for Underserved Communities through the Federal Government: Barriers to Equity in Research and Community Science	Bruce Rodan , Associate Director for Science Andrew Geller , ORD Executive Lead for EJ Research, Office of Research and Development
1:30 pm	Charge Question Discussion	Paul Gilman , BOSC EC Chair
1:45 pm	BOSC Deliberation	Paul Gilman , BOSC EC Chair
2:45 pm	Break	
3:00 pm	Public Comment	Tom Tracy , DFO
3:45 pm	BOSC Deliberation	Paul Gilman , BOSC EC Chair
4:45 pm	Concluding Comments	Bruce Rodan , Associate Director for Science Paul Gilman , BOSC EC Chair
5:00 pm	Adjourn Meeting	Tom Tracy , DFO

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Appendix B: Participants

BOSC Executive Committee Members:

Viney Aneja
Courtney Flint
Paul Gilman, Chair
Lucinda Johnson, Vice Chair
Matthew Naud
Paul Olsiewski
Joseph Rodricks
Leslie Rubin
Sandra Smith
Katrina Waters

BOSC Subcommittee Members:

Barrett Ristroph, SHC
Louie Rivers III, A-E
Monica Schoch-Spana, HS
Gina Solomon, CSS/HERA

EPA Designated Federal Officer (DFO): *Tom Tracy, Office of Science Advisor, Policy, and Engagement*

Presenters:

Chris Frey, Deputy Assistant Administrator, Office of Research and Development
Bruce Rodan, Associate Director for Science, Office of Research and Development
Andrew Geller, ORD Executive Lead for EJ Research, Office of Research and Development
Jennifer Orme-Zavaleta, Principal Deputy Assistant Administrator for Science, Office of Research and Development

Other EPA Attendees:

Melissa Anley-Mills	Charlotte Coleman	Brittany Kiessling
Nikki Bass	Bayou Demeke	David Lattier
David Beddick	Paelina DeStephano	Sang Don Lee
Doris Betancourt	Kathie Dionisio	Danelle Lobdell
Heidi Bethel	Rachelle Duvall	Cissy Ma
Pradnya Bhandari	Laura Erban	Keely Maxwell
Eletha Brady-Roberts	Jessica Frank	Beth Owens
Conner Burke	Susan Glassmeyer	Sean Paul
David Bussard	Cheryl Hawkins	Mary Ross
Jennifer Cashdollar	Bryan Hubbell	Ian Rumsey
Anna Champlin	Barbara Klieforth	Ramona Sherman

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Darcie Smith
Greg Susanke

Emily Trentacoste
Michael Troyer

Scarlett VanDyke
Eric Villegas

Other Attendees:

Troy Abel
Rebecca Adler
Miserendino
Cherilyn Ashmead
Sandra Baird
Marcella Bondie Keenan
Jennifer Branyan
Margaret Bushko
Nuria Casquero
Daren Caughron
Jayajit Chakraborty
Tracy Corley
Kelly Crawford
Grace Edelen
Michael Egnor
Neeraja Erraguntla
Brett Feldman
Francisco Javier
Soria Galindo
Katie Godding
Ximena Guillen

Aliyyah Hamid
Ariel Hampton
Sabrina Hardenbergh
Tonyisha Harris
Alane Herr
Mary Karius
Mui Koltunov
Tanya Latortue
Heather Lauer
Maddie Lee
Cheryl Little
Carlos Martin
Brendan Mascarenhas
Mary McCarron
Olivia Morgan
Elizabeth Moses
Terrence Mosley
John Mueller
Jonathan Munro-
Hernandez
Jessica Murray

Makeda Okolo
David Padgett
Christine Paul
Karen Pierce
Jennifer Reyher
Marvin Robinson, II
Zach Schiller
La Shella Sims
Kristen Sportiello
Deborah Stewart Anderson
Alice Sung
Hasan Tahat
Lucas Thornton
Chad Whiteman
Brenda Wilson
Linda Wilson
Omega Wilson
Sacoby Wilson
Harry Zhang

Contractor Support:

Canden Byrd
Leah West

Appendix C: Charge Questions

**U.S. EPA Office of Research and Development (ORD)
Board of Scientific Counselors (BOSC) Executive Committee
(Supplemented) Virtual Meeting: July 6, 2021**

Charge Questions: Barriers to Advancing Racial Equity and Support for Underserved Communities

On January 20, 2021, President Biden issued [Executive Order 13985: Advancing Racial Equity and Support for Underserved Communities Through the Federal Government](#). The Executive Order seeks to improve the equitable distribution of Federal goods and services to hitherto disadvantaged communities, notably people of color and other underserved groups. These include religious minorities, LGBTQ persons, persons with disabilities, people in rural areas, and those in persistent poverty. Agencies are to review programs and policies to assess whether underserved communities and their members face systemic barriers in accessing benefits and opportunities available pursuant to those policies and programs. EPA considers “Research and Community Science” to be a federal service and benefit for evaluation under this Executive Order. Other EPA benefits and services under evaluation include rulemaking and permitting, data collection, stakeholder engagement and communication, grants and financing, and contracts.

The “Research and Community Science” barriers-evaluation workgroup has adopted and clarified definitions for this activity, and undertaken an initial evaluation of barriers based on the perspectives of different stakeholders relevant to the research. We seek to refine this initial evaluation with your input. Importantly, as reflected in the following charge questions, “research” in this context relates to activities conducted or sponsored by EPA, and subject to relevant EPA science policies and quality and peer review standards, etc. “Community science” is defined here as research and science conducted by the community and/or a third party on their behalf to inform decision making, and not necessarily beholden to EPA policies and standards.

The initial evaluation of barriers to equity will serve as a prelude to required Agency plans, within one year, to address identified barriers to full and equal participation in “Research and Community Science.” Hence, this initial charge to the BOSC is limited to the barriers aspect of the Executive Order. EPA will be initiating additional rounds of consultation as we move to address the identified barriers and plan relevant research activities later this year. These implementation activities are likely to include, *inter alia*, expansion of equity/environmental justice consideration across ORD’s research portfolios, improved methods for community engagement, and cumulative risk methods.

Charge Question 1: Equity in Research

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Q.1a: With regard to the identification, prioritization, funding, and conduct of intramural and extramural research by EPA, what barriers exist to the equitable distribution of the benefits and services of EPA's research to people of color and underserved communities?

Q.1b: Based on familiarity with ORD's research programs and workforce expertise, which structural, cultural, and/or other barriers must be overcome to optimize the organization's capacity to conduct research of most relevance and utility to people of color and communities most in need?

Charge Question 2: Community Science

Q.2: What scientific, cultural, structural, and other barriers need to be addressed to facilitate the use of community science to advance equity goals in decision making, including barriers to equitable access of community voices and use of community data (qualitative and quantitative) at different levels of governance, from local, to state and Federal. What barriers need to be overcome to increase the receptivity of government organizations to considering community science in their decision-making processes?