# WHITE HOUSE ENVIRONMENTAL JUSTICE ADVISORY COUNCIL (WHEJAC)

# MARCH 2022 MEETING SUMMARY

# VIRTUAL PUBLIC MEETING
# March 30-31, 2022

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## PREFACE

The White House Environmental Justice Advisory Council is established by Executive Order 14008, titled "Tackling the Climate Crisis at Home and Abroad" (issued on January 27, 2021). As such, this is a non-discretionary committee and operates under the provisions of the Federal Advisory Committee Act (FACA), 5 U.S.C. App. 2.

The WHEJAC will provide independent advice and recommendations to the Chair of the Council on Environmental Quality (CEQ) and to the White House Interagency Council on Environmental Justice (Interagency Council), on how to increase the Federal Government's efforts to address current and historic environmental injustice, including recommendations for updating Executive Order 12898. The WHEJAC will provide advice and recommendations about broad cross-cutting issues related, but not limited to, issues of environmental justice and pollution reduction, energy, climate change mitigation and resiliency, environmental health and racial inequity. The WHEJAC's efforts will include a broad range of strategic scientific, technological, regulatory, community engagement, and economic issues related to environmental justice.

The duties of the WHEJAC are to provide advice and recommendations to the Interagency Council and the Chair of CEQ on a whole-of-government approach to environmental justice, including but not limited to environmental justice in the following areas:

- Climate change mitigation, resilience, and disaster management.
- Toxics, pesticides, and pollution reduction in overburdened communities.
- Equitable conservation and public lands use.
- Tribal and Indigenous issues.
- Clean energy transition.
- Sustainable infrastructure, including clean water, transportation, and the built environment.
- National Environmental Policy Act (NEPA) enforcement and civil rights.
- Increasing the Federal Government's efforts to address current and historic environmental injustice.

EPA's Office of Environmental Justice (OEJ) maintains summary reports of all WHEJAC meetings, which are available on the WHEJAC website at: https://www.epa.gov/environmentaljustice/white-house-environmental-justice-advisory-council. Copies of materials distributed during WHEJAC meetings are also available to the public upon request. Comments or questions can be directed via e-mail to whejac@epa.gov

**Committee Members in Attendance**

- Richard Moore, Co-Chair, Los Jardines Institute
- Peggy Shepard, Co-Chair, WE ACT for Environmental Justice
- Carletta Tilousi, Vice-Chair, Havasupai Tribal
- Catherine Coleman Flowers, Vice-Chair, Center for Rural Enterprise and Environmental Justice
- Angelo Logan, Moving Forward Network

- Viola Waghiyi, Alaska Community Action on Toxins
- Miya Yoshitani, Asian Pacific Environmental Network
- Jade Begay, NDN Collective
- Kim Havey, City of Minneapolis
- Kyle Whyte, PhD, University of Michigan
- Tom Cormons, Appalachian Voices
- LaTricea Adams, Black Millennials for Flint
- Harold Mitchell, ReGenesis
- Beverly Wright, PhD, Deep South Center for Environmental Justice
- Susana Almanza, People Organized in Defense of Earth and Her Resources
- Robert Bullard, PhD, Texas Southern University
- Juan Parras, Texas Environmental Justice Advocacy Services
- Maria Belen-Power, GreenRoots
- Maria Lopez-Nunez, Ironbound Community Corporation
- Michele Roberts, Environmental Justice and Health Alliance for Chemical Policy Reform
- Nicky Sheats, PhD, Kean University
- Ruth Santiago, Latino Climate Action Network

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**MEETING SUMMARY**

The White House Environmental Justice Advisory Council (WHEJAC) convened via Zoom meeting on Wednesday, March 30, 2022, and Thursday, March 31, 2022. This synopsis covers WHEJAC members' deliberations during the two-day meeting. It also summarizes the issues raised during the public comment period.

## 1.0 WHEJAC Meeting

This section summarizes WHEJAC members' deliberations during the two-day meeting, including action items, requests, and recommendations.

### 1.1 Welcome & Introductions & Opening Remarks

**Karen Martin**, the Designated Federal Officer (DFO), U.S. EPA, welcomed attendees and gave a few announcements before getting started. Since it is a virtual meeting, everyone is in listen and view mode only, and the Q&A feature or the Raise Your Hand feature will be turned off. Public commenters are invited to speak later that afternoon. Spanish translation and closed captioning are available. The announcements were then read in Spanish. She then turned the meeting over to Richard Moore, the WHEJAC Co-Chair, for the opening remarks.

**Richard Moore** thanked everyone for joining the public virtual meeting of the WHEJAC. We know for all that it's been very interesting times, not only in this country but throughout the world. He thanked the staff of CEQ and our other staff members and everyone involved for the tremendous work and effort that's been put into a very important piece of work. He reminded everyone of the work that's been done by many throughout the years in terms of environmental and economic justice issues that most impact communities of color, native indigenous, and other communities.

**Peggy Shepard** thanked everybody for attending the meeting and thanked CEQ Chair Brenda Mallory and Kimberlyn Leary of the Domestic Policy Council for bringing such inspired words today.

**Catherine Coleman Flowers** thanked everyone for attending the meeting. She stated that they are at a very important crossroads, and this morning she had an opportunity to be part of an international gathering where the discussion was on environmental justice. She thanked her colleagues and those that have joined these meetings to make sure that this is at the center of everything they do as it relates to trying to address the inequities in this country.

**Carletta Tilousi** stated that she looked forward to hearing all the communities' comments on some of the draft work that has been produced.

**DFO Martin** invited the Council members to briefly introduce themselves and state their

affiliations. Afterward, she informed the Council that the quorum was met.

### 1.2 Opening Remarks

**Co-Chair Moore** invited Brenda Mallory to give her opening remarks.

### 1.2.1 Brenda Mallory, Chair – The Council on Environmental Quality

**Brenda Mallory** thanked everyone for inviting her. She also stated that she wanted to start the meeting with reflection and gratitude. This week marks one year since the creation of the White House Environmental Justice Advisory Council. Thank you for one year of service, your time, and your dedication to developing recommendations for delivering environmental justice to communities across the country. She recognized the countless hours that go into the WHEJAC recommendations themselves, but also the working groups, the public meetings, and then the time that goes unseen. She also thanked her colleagues across the federal family who have joined and presented at various WHEJAC meetings, at work group sessions, and to those who are joining us today. Finally, just a huge thank you to anyone who has ever joined a WHEJAC meeting and to those who will be participating in the public meeting throughout the next couple of days.

As they mark this historic milestone, she wanted to take a quick look back at what was accomplished together since the WHEJAC was established. She focused on three things where the WHEJAC has played a critical role in the unprecedented environmental justice policy initiatives the Biden/Harris administration launched over the last year.

First, just bringing community voices to the table. On the campaign trail, President Biden met with environmental justice leaders to listen, learn, and create a plan of action. One resounding message that he took away from these conversations was the need to bring community voices into the policy-making process from the beginning. That was really why the WHEJAC was created and was one of the first actions that he took when he came into office. To help implement President Biden's unprecedented environmental justice commitments, it was critical to establish a formal body made up of experts, researchers, and long-time activists to provide council and guidance as we pursue our whole-of-government approach to environmental justice.

For the first time in our nation's history, an administration has brought the perspectives and expertise of the environmental justice communities into a formal advisory role at the white house. Throughout the course of the last year, they have intentionally sought out community voices in other ways as well whether that's been through the president himself or his cabinet members traveling to visit folks on the ground so that we all could have the benefit of hearing and learning about the lived experiences of people and of the conditions that people are enduring. She added that they have also used formal sessions like round tables and consultations and in other ways to attempt to expand our engagement in order to facilitate community input. And all of these efforts are designed to ensure that we're centering the voices we need to hear.

Second, the WHEJAC has provided invaluable recommendations to guide our policy choices. Two examples which we've talked about in these meetings, the Justice40 initiative and the Climate and Economic Justice Screening Tool, have been keyways in which we have integrated

the recommendations of this body. In July of 2021, the Biden/Harris administration issued interim guidance to federal agencies on how to transform eligible programs to deliver 40 percent of their overall benefits to disadvantaged communities. This direction relied heavily on recommendations provided by environmental justice leaders and experts, including those who serve on the WHEJAC. The guidance identified examples of the benefits of covered investments that agencies could consider as part of their Justice40 strategies. And more than 90 percent of these example benefits were informed by the WHEJAC recommendations issued in May of 2021.

The guidance also identified 21 covered programs to be included in the Justice40 pilot. And the 21 programs took steps to implement the Justice40 initiative at an expedited pace with the goal of providing lessons and best practices that could be applied across the whole of the government. Out of the 21 programs selected to be a Justice40 pilot, 85 percent of those were informed by what we've heard from the WHEJAC recommendations in May of 2021. So, these are really good examples of how we tried to embrace the recommendations.

Turning quickly to the Climate and Economic Justice Screening Tool. In February, CEQ launched the beta version or draft version of this first-of-its-kind tool. And again, they relied heavily on the recommendations that the WHEJAC submitted for creating a tool to help identify disadvantaged communities. They intentionally made it a draft version so that they could spend an additional 60 days gathering more input from researchers, academics, practitioners, state and local leaders, and the public. And taking this approach was guided by our conversations with many environmental justice experts along the way.

The Justice40 initiative and the screening tool are among the most impactful actions the Biden/Harris administration took in our first year to set up a systematic whole of government approach to address environmental injustice. Both of these landmark policies were important examples of our WHEJAC coordination. And then finally, the WHEJAC has pushed us to deliver on our whole-of-government approach. Agency after agency from the Environmental Protection Agency to the Department of Agriculture to the General Service Administration has launched and strengthened environmental equity offices, task forces, and strategies.

The president directed us to reduce the pollution burdens and climate change threats that communities are facing. And the president himself really helped deliver on this promise by getting the bipartisan infrastructure logged on and securing historic investments to clean up superfund sites and brownfields, replace lead pipes, deal with abandoned mines and oil wells, and much more. And as the administration more broadly, we made big strides in the past year to reduce the burdens and confront the injustices that many communities are facing from cracking down on PFAS and other toxic chemicals, to cutting vehicle pollution, reforming FEMA's disaster programs, lowering energy burdens, helping tribal nations bolster climate resilience, electrifying ports, confronting housing segregation and unequal housing opportunities, and stepping up the environmental enforcement inspection.

So, we meet today on the one-year anniversary of the creation of the WHEJAC recognizing how far we've come and understanding how far we still have to go. When we meet next year, we will have made more progress on the ground thanks to the Justice40 program. We will have released the first-ever environmental justice scorecard to hold ourselves accountable to our historic

commitments. We will have that improved version of the climate and economic justice screening tool, and we will have had more meetings with community leaders, the WHEJAC, activists, and the public so that we are ensuring that the lived experience of communities is reflected in the policy choices that we make.

So, turning now to what's happening today, on Monday, the president released his budget which will help us achieve our goals by providing historic support for overburdened and underserved communities. The budget represents President Biden's vision for the administration's strategic and sustained investments needed to address the environmental injustice. Importantly, it will help to advance the Justice40 initiative.

Just a few highlights, it creates new programs across more than five agencies to invest in disadvantaged communities, including a new program to decrease costs for the Low-Income Home Energy Assistance Program or the LIHEA recipients. It invests $1.45 billion across the Environmental Protection Agency to bolster environmental justice efforts, including $100 million for a new community air quality monitoring program, $150 million for the Department of Housing and Urban Development to prioritize resilience and energy efficiency activities in affordable housing and housing-related projects for tribal communities, $40 million for a new community capacity building initiative to support historically underserved communities around cleanup sites, and $1.4 million for the Department of Justice to establish an Office of Environmental Justice.

And just yesterday, the Department of Energy announced the inaugural communities that have been selected as part of the community's Local Energy Action Program. This is a new initiative to help overburdened communities benefit from the transition to clean energy. These communities will receive support from the Department of Energy to create action plans, to reduce air pollution, lower energy costs, and become more resilient.

She reiterated that they know they have a lot of work ahead of us and looking forward to what we can do together over the course of this year. The WHEJAC plays a critical role in our policy development, and she's looking forward to receiving your final recommendations on the scorecard and for our work in the months ahead.

She closed by providing just three quick updates in response to the letter that was sent to her on March 8th, and she'll follow up in writing to the WHEJAC, and it can be made public at that time. The first is on staffing and resources. She's thrilled to announce two hires at CEQ who will support our ongoing work to implement many of our environmental justice goals and initiatives. Amanda Aguirre has joined them as a senior advisor to her on environmental justice. And Jessica Ennis will be starting shortly as our director of public engagement working with a wide range of stakeholders, including environmental justice stakeholders, to ensure all voices are heard.

Amanda and Jessica both bring a wealth of knowledge to CEQ and share our deep commitment to listen, learn, and work alongside communities in our policy development and our shared desire to continue to build the strength of our environmental justice team at CEQ and across the federal government. On that note, she's pleased that administrator Regan recently made an exciting hire on his staff by bringing Robin Morris Collin on as his senior advisor on

environmental justice, and she'll be joining the WHEJAC public meeting tomorrow.

My second update is on the timelines. Over the last year, they have asked, and they will continue to ask, for your input on brand new initiatives that will fundamentally transform the federal government. And it's critical for them that they're able to hear from you on the front end of these developments, as we did with the Justice40 initiative and the climate and economic justice screening tool. There is a desire on the part of WHEJAC to have a better sense of our timelines for completing actions. They are committed to giving updates on their progress as they're working on these initiatives and as the timelines evolve. And they will try to be as transparent as they can about delays that are encountered on the way.

Finally, the third update is on the engagement with the White House Environmental Justice Interagency Council. Like the WHEJAC, the interagency council was established by President Biden in Executive Order 14008 -- the WHEJAC as an external body and the interagency council as an internal body. While several members of the interagency council have joined the WHEJAC work group and public meetings, additional coordination between the councils would be valuable. So, they are actively working to stand up a formal meeting between the two bodies ahead of the next WHEJAC public meeting.

### 1.3 Domestic Policy Council Update

Chair Mallory introduced the next speaker, Dr. Kimberlyn Leary, a senior policy advisor at the White House Domestic Policy Council. At the White House, Dr. Leary works with the racial and economic justice team to implement President Biden's equity agenda.

#### 1.3.1 Kimberlyn Leary, Senior Policy Advisor, Racial and Economic Justice Team – Domestic Policy Council

**Kimberlyn Leary** thanked the WHEJAC for their leadership and efficacy. She appreciates that the history of environmental justice in the United States is intertwined with that of the Civil Rights Movement. The 1968 Memphis Sanitation Strike advocated for fair pay and better working conditions for Memphis garbage workers. It was also the first time that African Americans mobilized a national broad-based group to oppose environmental injustices.

President Biden, as you know, has signed at least ten executive orders that address equity in one way or another in very significant ways. Within his first month in office, the president signed Executive Order 14008 tackling the climate crisis at home and abroad which created the foundation for the most ambitious environmental justice agenda ever undertaken by an administration, including the creation of this body, the White House Environmental Justice Advisory Council.

**Dr. Leary** talked about another of these foundational executive orders -- 13985, Advancing Racial Equity and Support for Underserved Communities Through the Federal Government. She had the honor of being part of two teams in order to help implement this executive order. She joined OMB as a senior equity fellow last summer, and now she's the senior policy advisor at the Domestic Policy Council. She is also an IPA, meaning she's on loan to the federal government from the Urban Institute where she's a senior vice president at Harvard University where she

teaches.

So, within hours of taking office, President Biden charged the whole of the federal government with putting racial justice and equity at the very center of our collective work. This EO, which they colloquially refer to as the Equity EO 13985, affirms that it is the duty and the responsibility of the federal government to serve the public effectively and equitably.

Now, the executive order required three main things. The first was, as part of a whole-of-government approach, agencies were required to engage in equity assessments. That is to evaluate whether the key agency programs under that agency's domain create or exacerbate barriers to equal participation from underserved communities and to shine a spotlight on the specific barriers, gaps, and instructions that burden key communities. Among them are communities of color, LGBTQI+ people, people with disabilities, those who are in rural communities, and those who are part of communities that are facing persistent poverty and inequality.

She mentioned, as someone whose academic area of study is change management in organizations, that what agencies were actually asked to do is rather challenging -- to look for the problems within your agency. It's difficult work to say that they've been working for years and decades to try to achieve outcomes that they believe in, and this executive order has asked agencies to identify where they miss the mark and where barriers to equity exist, at least to evaluate whether they were present or not. So, agencies recognize that it's difficult work to identify the challenges their agency is facing.

The second thing agencies were asked to do was to identify actions for addressing any barriers that they did find. Then once they identified actions, they have to create an action plan for how they would address those barriers to equity and include in that plan relevant metrics and accountability systems to ensure that the agencies could, over time, deliver equitable outcomes to communities.

The third dimension of the executive order that was critical is that it established the Equitable Data Working Group, which was charged with looking across the whole of government to identify what are some of the challenges in our federal data systems, especially where many of those systems, for various reasons, do not allow the collection or analysis of data in disaggregated ways. That equitable data group was charged with producing a report of its findings. They've recently completed that work, and they will be sharing their findings as soon as they're able to.

The equitable data working group is relevant to both the charge of evaluating barriers to equity and equity assessments, and it's also critical to being able to deliver equitable outcomes to communities. Without data to understand who is or isn't receiving services that they are entitled to receive, it's not possible to do a full equity assessment. Likewise, to know whether or not you've been successful in addressing the barriers to equity, one needs to have the kind of data systems that enable you in a granular way to know which barriers to equity have been closed by which actions and which interventions. So, these three dimensions of the executive order are interdependent and interrelated in many, many ways.

If we zoom out a bit and think about why this executive order and what are some of its fundamental assumptions, they are that systematic forms of injustice are often anchored within systems. And in those systems, there may be exclusionary regulations or legacy rules that are simply baked into everyday administrative procedures and protocols. Policymaking always can result in unintended consequences, but systemic injustices can also reflect intentional human choices to use policies or regulations to discount or harm others.

Executive Order 13985 also recognizes that systemic inequities, including those across the federal government, can flourish really in practices that appear to be neutral on the surface. So, research has shown, for example, that programs that provide services for underserved communities may be weighted by higher levels of administrative burden. Namely, they carry with them complex, confusing, or repetitive requirements to apply or otherwise track whether or not you're on the right pathway to being able to receive those benefits than services that are more likely to receive universal use.

These administrative burdens particularly impact people that may have limited English proficiency or who are experiencing poverty or who are first-generation Americans. Here's the important point with this; often we don't see these barriers because they're so deeply embedded in systems that they are nearly invisible. But by making these barriers more visible through equity assessments, including engaging with stakeholder communities, and then by designing mitigating actions, as called providing order, the federal government, because of its scale and scope, is uniquely positioned to scale change.

So on one hand, there is a system where unintended or even intentional actions can be embedded in everyday protocols. And then there is the capacity of the system, because of its size and scale, to be a way of driving affirmative change. That's what's happened over this last year. Agencies mobilized very swiftly to meet the executive order's mandate to root out inequalities and federal policies and programs. They did so by creating agency equity teams, and those teams were designed to include a chief data or evaluation officer. Guidance was given that they should include front-line staff who deal directly with the public as well as senior leaders. Agencies were also directed to engage with underserved communities and with advocates, and they did so by running requests for information, listening sessions, and various challenge competitions among other ways of connecting communities.

Then, they had to stand up emissions-specific assessment process to examine how the agency's policies, programs, and services may perpetuate barriers for underserved communities. Now, because this is a whole-of-government approach, agencies also have the opportunity to learn from one another and share their best practices and reshape their organizational cultures to realize the goal to become a core component of agency decision-making.

What they've recognized over this past year with this work is that success has required both technical knowledge, policy acumen, and also the ability to recognize that a change-management process was often required. Now, change management inevitably involves challenge. Agency teams working on the EO inevitably discovered that they had different ideas about the direction that their work should take, and no doubt that happened in WHEJAC as they think about the initiatives that are put forward. It's a routine part of driving change.

It's possible that the stakes may be higher in the context to focus on equity. For example, when an analysis suggests that multiple options are possible, the choice that is presumed to be the right one may well be different for different people depending on their lived experience. And so, teams will still have to make trade-offs even when they have the very best of data if the best of data says that there's more than one way to move forward.

Now, there's a wide body of organizational research that suggests that diverse teams consistently yield innovative solutions. This is only the case when teams have internalized the skills to navigate tensions that so often interrupt problem solving. So, to support the agency teams in doing this work included a change management dimension, OMB with whom DPC partnered in the implementation of the executive order, hosted weekly office hours creating a platform to encourage peer-based cross-agency problem solving.

OMB also facilitated an equity learning community for federal officials, which has now delivered over 20 executive education modules on topics ranging from leading for equity to reducing administrative burden. To convey the change management that was undergirding the implementation of this executive order, they, consistently across DPC and OMB, framed the work as involving the metaphor of a sprint to meet the exacting deadlines of the EO, and also as a marathon to accomplish long-term goals. They also describe the capacity building that was required as building muscles for equity to be flexed as agencies implement their plans.

On January 20th, they reached a major milestone. After conducting the equity assessments over the course of 2021, over 90 federal agencies submitted equity strategic action plans to the White House to address the barriers they previously identified during their equity assessments. Collectively among the CFO act agencies -- the largest 24 agencies -- that group of agencies has identified over 300 actions that agencies will take to advance equity across their mission areas.

So, this executive order is the first time a president has directed all agencies to identify, address, and begin to reckon with systemic inequalities that remain otherwise hardwired across federal policies, programs, and services. A presidential directive like this reflects a transformational opportunity to correct historical wrongs against underserved communities, redirect federal programs and policies, and invest in improving the lives of all Americans. She shared a few examples of how the administration's actions, including the Equity EO, are changing how the executive grants and its agencies are conducting business.

The administration has prioritized equitable spending in the American Rescue Plan and other pandemic relief efforts to ensure that federal help is getting to those who need it the most. A couple of examples of that include nearly three million Americans have health insurance, and, with subsidies provided by the American Rescue Plan, approximately 66 percent of black uninsured adults now have access to a zero-premium plan and 76 percent can find a low premium plan. Among Hispanic and Latino uninsured adults, 69 percent may now have access to a zero-premium plan, and 80 percent may now be able to find a low premium plan. The American Rescue Plan has also lowered or eliminated health insurance premiums for millions of families who are now able to enroll in health insurance marketplaces.

The expansion of the child tax credit has kept 3.6 million children from poverty, and that program cut the poverty rate among black children by 22 percent, Hispanic children by 28

percent, and AAPI children by 23 percent.

The President has also recognized that advancing equity requires the federal government to become a more diverse and inclusive employer. And so, an additional executive order on diversity, equity, inclusion, and accessibility in the federal workforce establishes an ambitious whole-of-government initiative to take a systematic approach to embedding DEIA in federal hiring and employment practices. That EO recognizes the barriers that job seekers can face in accessing federal employment and in being represented at the highest levels of government.

Now, these achievements and presidential commitments are the beginning, not the end, of our work to deliver equity and racial justice. Indeed, the one-year anniversary of EO 13985 really positions the federal government to drive towards equity for the years to come. What's been crucial to their efforts is recognizing that rooting out systemic inequality isn't a one-year project; it's a sustained commitment. And our ambition is to embed equitable policy making in ways that will long outlast this administration. That's why it's been so important during the first year in office to build the capacity within government for equity work and to create these muscles for agencies to identify and respond where their policies and programs perpetuate unfair outcomes.

Secondly, having built up those muscles, in the second year, they're now able to flex them in new ways. She mentioned two platforms where that flexing is currently occurring. Certainly, the Justice40 initiative has a goal of delivering 40 percent of the overall benefits of relevant justice investments to disadvantaged communities, and the screening tool that Chair Mallory mentioned is so critical to informing equitable decision-making across the federal government. The newly released budget provides historic support for underserved communities and advances the Justice40 commitment and makes sure that clean energy will also reach disadvantaged communities.

The second way in which equitable policy making -- flexing those muscles -- is occurring, is through the implementation of the Bipartisan Infrastructure Law, which is a once-in-a-generation investment in our infrastructure and economic competitiveness. And it's also an unprecedented opportunity to embed equity in how those dollars are spent and to ensure federal dollars address the harms of discriminatory development and divestment in communities of color in the past.

Routinely aware of how high the stakes are for communities around the country as they implement this new funding, so many families are still reeling today from the consequences of the inevitable infrastructure of the past. So, for example, you think about the erosion of intergenerational wealth for families of color, whose homes were taken by eminent domain to make way for the federal highway system. You think about the burden of asthma and pollution in low-income communities -- in black and brown neighborhoods -- that have had superfund sites built in their backyards and the economic isolation that too many rural and tribal communities face because of infrastructure divestment. So, they have a historic opportunity through this spending to flex those equity muscles and try to right these wrongs. And if the Bipartisan Infrastructure Law is implemented to its full potential, it is positioned to narrow the racial and gender wealth gap, secure goods for communities that face persistently high unemployment, address discrimination and structural barriers that have held women and people of color back in the workplace, advance climate justice, build rural and tribal prosperity, and

build a more resilient and equitable future for millions of people in every state and territory.

Now, to meet these goals, the White House has been intensively developing strategies for equitable infrastructure implementation. She gave a few examples of what these include. Equitable implementation includes encouraging and, where it's possible, requiring the grantees that receive federal infrastructure funding to develop local planning processes; stakeholder engagement to ensure that underserved communities have input and influence in planning decisions that impact their communities and their neighborhoods; going back to the equitable data working group, collecting performance data on equity and developing data tracking tools and reporting requirements that help to monitor equitable impacts; and advancing equity through discretionary grants. They have an enormous opportunity to apply requirements in federal grants that can help affirmatively advance equity. And also, it's so clearly important to reduce administrative burden and to produce and provide technical assistance to ensure underserved communities can access relevant federal funding.

So, when you think about advancing equity and you think about this portfolio of executive orders, they're also using this work across the whole of government, including to inform work implementing the American Rescue Plan and the Bipartisan Infrastructure Law. It speaks to what it really means to do a whole-of-government initiative. It builds on itself and enables capacity building in one part of an agency to enhance what it can do in another part of an agency, and it allows agencies to work together to collectively share their learning. As they engage with communities and stakeholders, they can make sure that that information and that sensibility and those ambitions are reflected in the work that we do across the whole of government.

**Co-Chair Moore** thanked Dr. Leary for her comments. He gave the procedures for the member comment section and opened the floor to short comments. He started with systemic racism is an issue, and environmental and economic justice is the goal. The other is that from their experiences one finger many times in government does not work with the other finger. Communications from an interagency council standpoint and the other federal agencies are very, very, very crucial to WHEJAC.

**Dr. Robert Bullard** stated that his question was regarding the approach and the theory of change and the overarching frame with the executive orders that deal with environmental climate justice and the EOs that deal with racial justice. It seems that three buckets were put in terms of a public administration approach to barriers. One was first generation. The second was limited English, and that's language barriers. And the third one was poverty. There is a fourth one that is called systemic racism that would not necessarily be tied to the three but would also be impacting another population that would not be first generation, limited English speaking, or poor.

The other part was in terms of the analogy that was given -- flexing muscle. And in order to flex muscle, that means you have to have some building blocks and sustenance that can create strength and muscle. My question is, where are the teeth that can either deny, enforce, or somehow mandate -- not encourage -- mandate resources going to where it needs to go in terms of Justice40 and the Bipartisan Infrastructure Act? Particularly with monies that go states, statutorily that's the way it goes, and if you're going to encourage states to do the right thing,

that's almost like saying, we want you to do the right thing. So, my thing is, where are the teeth? And if there are no teeth, then you don't get the right kind of nutrition to build muscle.

The last thing is enforcement tools in terms of laws that are currently on the books. He did not hear the use of civil rights overlay in terms of the U.S. Justice Department and the civil rights enforcement offices that are within the various agencies in terms of Title VI of the Civil Rights Act, enforcing non-discriminatory actions by those who receive federal funds. In other words, the recipients of federal funds. To what extent will the federal government in the Biden administration take a vigorous and more aggressive stance in enforcing Title VI at non-discrimination?

Without some rigorous changing of the paradigm in terms of taking an aggressive stand and putting upfront and not running away from racial justice and systemic racism for the fear that you're going to get sued, they will not be transformative in any way. It'll just maintain the institutional cultural memory muscle in those agencies that have done great harm to people of color, whether it's USDA and black farmers or the U.S. or DOT that have mowed through black and brown neighborhoods and destroyed our neighborhoods or FEMA that has not given the disaster recovery dollars. There are memories in those organizations/institutions that if you don't root it out, then you'll have the same thing happening; it'll just be on a lower level.

**Dr. Beverly Wright** added that there seems to be a really strange virus going through the government, and that virus is connected to the word "race" where no one can say it, and it's very disturbing. She thought that Dr. Leary's presentation was well-prepared, well-received, and clear and would like to get a copy of it, especially on the research that was presented in the very beginning because to some extent, it showed just the kind of complaint that African Americans in particular have.

It talked a lot about who was most affected, and it wasn't African Americans mentioned in that particular response, but race was used to evaluate programs as to whether or not they were effective. So it was able to say how many black people, brown, Latinos, and so on. But if race is not included, there's a whole class of African Americans who will be left out and who should be included. It's almost as if, if you are African American and are successful, you are then punished for being so.

Well, she can tell you from personal experience in most middle-class African Americans what happens is tremendous, and they will not end up in those categories where their neighborhoods are destroyed and where all the worst stuff is then put where they live. Although your income may be higher, there are all kinds of things. If you are African and speak a second language, you surely will be represented in a lot of these scales. But if you're African American and successful -- and I can bring you to a place like New Orleans where we have middle-class and upper-middle-class black communities that are being destroyed based on policies that exist -- we fall through the cracks because we're not, quote, poor.

She stated that she is amazed and does understand all of this is about assigning money by race. At some point, this needs to be challenged. In the end, the reason that we're having to do all of this is because of race, but it can't be said aloud. It can only be used in evaluation after the fact to show whether or not black people or Latinos or whatever have benefitted from it.

So once again, the race of people in this country who are legally enslaved by this government happens to be the group who cannot be reached in ways that others are because we can't say race. Race is the number one factor for everything bad that happens to African Americans in this country. As a researcher in sociology, she finds that it is just appalling that black people are trying to find another way around to make certain that they're included. Even in the research that was presented, it basically showed what she thought: here they go again; they're left out. Some people say, if you're successful and black, you're punished for it even though you're catching the same hell that poor people are catching. Going back to what she calls a "virus", if you say race, oh boy. Everything that drives what's wrong with this country is because of race.

**Dr. Leary** thanked them for some tough questions and for raising some very, very critical critiques. She mentioned a couple of corrections to Professor Bullard. When she was talking about the first generation, limited English proficiency, and those who suffer from persistent poverty, that was specifically research that was about administrative burdens. The executive order, in its very title -- and this is also to Dr. Wright -- addresses racial equity. It's speaking specifically to racial equity but also looking at equity across a range of other communities as well. As part of their equity assessments, agencies were also asked to look at the resources of their civil rights offices or other entities within agencies that were addressing civil rights so that they were in a position to identify where those offices may need additional resources or where those offices might need additional personnel, just the state of that office as part of their equity assessments.

By taking a framework around assessment, this particular executive order was operationalized in three to five main programs with one of the programs being that on procurement because procurement is still critical to wealth-building and has such a capacity to narrow the wealth gap because of the size and scale of the federal marketplace.

But by looking at procurement systems, looking at the assessment of civil rights capacity, and then inviting agencies to identify their core programs and their high-impact programs and services, the idea there was to build that muscle to give them enough teeth and education and support so that they could, in fact, develop the muscles to begin to identify what was not what they had expected in their agencies, and then, to begin to use some of those tools to design a path forward to address them.

This executive order, which concluded with the submission of action plans, is not the end of its work. This is really about a platform to create a capacity to ask tough questions like the ones that were asked of agencies and for them to have the tools and capacities to begin to use the data at hand, new data tools, new assessment tools, new design tools, and more involvement with communities to begin to put forth solutioning.

They're all very mindful as we do this work of the particular histories that African American communities have experienced in this country and others as well of course. That's not outside of our work at all. It's very much something that is a part of it. As they think, though, about the whole of government, they're also thinking about the whole of the country and looking to identify where they can make a difference and that will result in equitable outcomes in core communities that they know have been underserved by the federal government.

**Ruth Santiago** stated that with respect to Chair Mallory, she mentioned the interim guidance for the Justice40 initiative. But as the name indicates, it's interim, and they're working on recommendations to that and have mentioned in a few meetings that there are some glaring problems with the interim guidance, especially concerning the constant references to clean energy as opposed to renewable and not defining clean energy. So that could go against one of the recommendations that we made in May about promoting renewable energy projects to tackle precisely the climate crisis and do no further harm to environmental justice communities. They know that that reference to the interim guidance to just clean energy could mean lots of things to different people, and in some cases, they're seeing that it's a reference to, for example, methane gas infrastructure. So the first is, how are they going to move along on this interim guidance to be able to hopefully adopt the recommendations that the WHEJAC made in May?

Here in Puerto Rico, that's especially problematic and leads into the second part of her question. This is similar to what Dr. Bullard and Dr. Wright have mentioned. What do we do with state and territorial governments, like the government of Puerto Rico, that want to use these funds -- the Justice40 Initiative funds and disaster recovery funds -- to build back business as usual infrastructure like not only fossil plants but also centralized transmission and distribution systems that enable those centralized plants and not do distributed renewables and empower local communities and provide life-saving resilience?

With the experience of Hurricane Maria, people who survived were people who had localized energy and got energy back quicker. And that's not available to low- and middle-income people in Puerto Rico. How do we get FEMA to implement environmental justice in Puerto Rico with this historic amount of disaster recovery funds?

**Tom Cormons** stated that he appreciates so much of Dr. Leary's service in the administration because her expertise as an expert on organizational change and as a psychologist really gets to an issue that the Justice40 Workgroup of WHEJAC and the WHEJAC have been trying to address. We understand that Justice40 is only going to be as good as its implementation, the screening tool's only going to be as good as its application, and that transformation of the way that agencies operate and do business is going to be necessary for the kind of transformative justice that we want to see affected by the program and by the screening tool.

They would all benefit from her input and thought partnership on the answer to, at a mental level, what are the best ways to ensure that the incentives -- both carrots and sticks -- are there for actors within agencies, individual agency teams, even entire agencies to truly prioritize and devote resources to transformative community engagement, to ensure that the way funds are deployed don't merely perpetuate or recreate existing inequities with more dollars behind them but work to reverse those? They are putting together another set of Justice40 recommendations as a WHEJAC as has already been mentioned. They're going to be discussing those as a full group tomorrow. One key complement of those is around incentive structures.

The final thing is ensuring that the right set of structures is there for federal agencies and actors within them, but then also those federal agencies impose the right incentive structures on other entities deploying these funds, state agencies, localities, et cetera, to keep that train on the tracks as we are heading towards transformative justice.

**Maria Lopez-Nunez** stated that she heard some things that were the beginnings of things that were discussed a lot in the workgroup, especially when it comes to Justice40 implementation, such as the requirement of asking agencies to reflect. It's something they talk about a lot. We need a humbler government. It's like not a secret that a lot of people have been disillusioned by the government since the beginning of this country because of racism and unequal treatment. And so this is a profound exercise for agencies to undergo of actually taking stock, taking account of what have they done wrong, where do they harm, what are programs they continue to fund that harm communities, particularly black communities and indigenous communities.

They need to get those numbers of where the money is going to, like quantities of community members who are receiving money or not. She would like to see the tracking happen upfront of agencies before they release the money. One thing she doesn't want to see is a financial autopsy of Justice40 ten years from now that said it failed.

Community members need to have real-time numbers where they see Justice40 being implemented and who's it going to? They need to count black folks, brown folks, and white folks, then the communities will do what they've always had to do which is hold the government accountable and petition to the government. That's incremental change. This is not a radical thought that we're asking for more transparency from agencies and not waiting these long timelines. They're all feeling political pressure of final drafts being unclear.

All of us want to do what's best for our communities, but it has been slow just being transparent about having that progress bar. She echoed Ms. Santiago's points about the do no harm that they discuss in our first set of recommendations because she is really worried about the perversion of Justice40 to fund green hydrogen, to fund clean energy that's really being twisted, and it's things that harm us. Then we're being presented with diversity plans that say, well, you can get a job doing something that hurts your community.

Getting a job in an industry that continues to hurt black and brown folks is not justice, and that's not what they mean when they say equity. They don't mean, okay, now I get to participate in my own oppression. She's worried about the lack of guard rails for Justice40. So, she wants to know about those guard rails and where is the direct accountability to community members. Certain things are a no goal, and they should not even be talked about or thought about as Justice40. They should actually count against agencies and against that whole attempt to bring equity. If they're engaging in things that harm communities, that should never count towards the ultimate goal of equity.

**Co-Chair Moore** added that the federal government, in some cases for years, has retracted data. What we need are the barriers removed to that data and that research that's being done.

**Dr. Leary** responded that this work really is unprecedented in many ways, and she reflects on this every day. For the executive order, to have 90 agencies contemporaneously doing equity assessments in their agencies looking for barriers to equity and then to be working at the same time to identify actions to mitigate the barriers that they identified is really what we mean by something that's whole of government.

In actual practice that is quite challenging work, but it is the work that people are undertaking with a great deal of skill, expertise, and passion. She hears the passion in their voices too as they talk about Justice40, and they wouldn't be part of this WHEJAC without that. They've raised some really critical questions. In change, there is something to be said about the bully pulpit and the vision that inspires people. It's critical, but it's not enough. A vision has to be complemented with expertise and with tools.

Data is a crucial tool. Without data, again, you can't do excellent assessments, and you can't assess how far along you are. But the data systems aren't yet where they need them to be. So, they are trying to use the best data that we have available, to use the best data science out there and a few techniques to be able to make our existing data better, and then to unlock the potential of data going forward. The bully pulpit is really important to engaging communities. But it is true that states have certain flexibilities and certain autonomies and trying to shape those is important.

But where there are tools that allow discretionary grants to be integrated with equitable outcomes and equity impacts, that's another opportunity that can be used simultaneously. They also know and have been very humble about trying to learn from colleagues at the state and local levels who have been doing equity assessments and equity action planning before the federal government picked up on this effort. They are indebted to those researchers, those advocates, and those communities for the place that they've gotten to right now.

About the work of change management, what justice means to different communities is not always the same. Making room for the range of perspectives -- the historical perspective as well -- of being in a place and on a platform where people can compare and contrast ideas and where they can do so with a particular goal in mind, which is delivering equitable outcomes to communities, that's what they have stressed throughout the work with the equity EO.

The thing about at-scale work is that any one initiative may not deliver the full outcome, but the collective impact of multiple initiatives, especially when they're contemporaneous, can do so. A dimension of flexing one's equity muscles is an acute awareness that policies can have on intended consequences. But we can all get a little bit better about trying to forecast what those might be and try to catch our remediation, if you will, earlier in the process than later.

That's what agencies have been engaged with doing with 13985 through an important reflective process of asking questions, coming up with answers, and asking questions again just as you are in this body.

**Co-Chair Moore** stated that there were several comments made in the chat and asked DFO Martin that Dr. Leary receive those. **DFO Martin** agreed.

**Viola Waghiyi** stressed that the agencies really need to listen to what the people have to say. People are suffering from economic violence; cancer; and high rates of other social ills, like alcoholism, drug abuse, and homelessness. These are just on top of everything else that nobody talks about that is very real in our communities.

**Co-Chair Moore** thanked Dr. Leary and made a request and a closing comment. One, this isn't

the first time or the last time that they will be dialoguing, particularly with the Domestic Policy Council. So, the request is that they continue this dialogue and listen to the sense of urgency that they'll hear during the public comment period. We're dealing with life and death situations. That's not rhetoric; that's reality. Some things can't wait another 500 years or whatever to come to solutions.

He turned the meeting over to Vice-Chair Tilousi to introduce the next panel.

### 1.4 Environmental Justice and the President's Bipartisan Infrastructure Law

**Vice-Chair Tilousi** introduced the next panel members on Environmental Justice and the President's Bipartisan Infrastructure Law.

#### 1.4.1 Candace Vahlsing, Associate Director for Office of Climate, Energy, Environment, and Science - Office of Budget and Management; Radhika Fox, Assistant Administrator, Office of Water – U.S. Environmental Protection Agency; Stephen Tryon, Director, Office of Environmental Policy and Compliance – U.S. Department of Interior; Christopher Coes, Principal Deputy Assistant Secretary for Transportation Policy – U.S. Department of Transportation

**Candance Vahlsing** stated that the president is committed to implementing Justice40 through every lever, and that's exactly what the Bipartisan Infrastructure Law does. The Bipartisan Infrastructure Law helps to deliver on the president's commitment in working with the agencies to implement bill investments, programs, projects, and activities in accordance with the Justice40 initiative.

They will soon be releasing additional guidance on the Bipartisan Infrastructure Law, but we're not waiting. Agencies are already taking steps to include Justice40 initiative considerations into their funding opportunity announcements in line with the law. So, they have a great group of people today who will provide very robust examples of some of the efforts that are already underway. She summarized some of the other investments in addition to the agencies that will present today.

So, just yesterday, the army corps announced nearly $3 billion in investments in the water infrastructure across the country for more than 300 projects. A number of those projects were in disadvantaged communities that were identified in the economic environmental justice screening tool. A few of them include southwest coastal Louisiana hurricane protection; a project in Pajero, California in the town of Watsonville; a project in Espanola Valley in New Mexico; and many more.

In addition, FEMA just last week announced around $60 million of swift grants, which as part of the Bipartisan Infrastructure Law investments allow contributing 90 percent of the federal cost-share for properties that are within the CDC's Social Vulnerability Index. At USDA, NRCS has made recent announcements on 108 infrastructure projects, and many of those are located in disadvantaged communities. Radhika Fox will talk about the robust EPA water guidance that was put out.

And then there are also recent investments at DOE that have taken into account Justice40 considerations in implementing a presence commitment. So, for example, DOE issued a notice of intent under the building better grid, and that includes and requires stakeholder consultation with tribes, environmental justice communities, and other stakeholders. And we're also looking at existing sources of funding across the government to help provide technical assistance so that communities can access bill investments to fully leverage the Justice40 commitment and its intersection with bill investment funding.

**Radhika Fox** stated that she will talk about how they're working to advance equity and environmental justice in the context of the $50 billion that the Environmental Protection Agency is stewarding for investments in drinking water, wastewater, and stormwater infrastructure.

The $50 billion that the Environmental Protection Agency's responsible for investing as part of the Bipartisan Infrastructure Law falls into a few key buckets of money. About 85 percent of the funds are flowing through the state revolving loan fund dollars, meaning that EPA sends that money to states by a formula for a broad range of drinking water, wastewater, and stormwater projects.

There's about $5 billion that will be going out for PFOS and emerging contaminants in communities that will also be going out by formula to states, but EPA has a bit more of an ability to shape the criteria for those projects, and that will be coming out later in the summer. And then finally, there's about $2 billion for our geographic programs and our national estuary programs. So, these are water bodies like the Everglades, the Puget Sound, and the Chesapeake Bay, and those investments are focused on climate resilience and restoring these very historic and important water bodies.

She focused primarily on the $43 billion, or 85 percent of the funding that's going through the SRF. A couple of weeks ago she issued an implementation memo to all of the state SRF managers providing both directions on their obligations and how to utilize these funds as well as expectations around how to achieve a wide range of goals with a huge focus on equity and environmental justice. She will touch on some of that, how they did that in the context of that implementation memo, and then what's coming off of that from the perspective of the technical assistance and other mechanisms to work with states to hold them accountable for investing in communities that haven't before.

So, in the implementation memo, they basically talk about how the number one priority for these funds is to increase investment in disadvantaged communities. She pointed to several things that they want to make sure that the WHEJAC knows about because these are things they really want to be advocating for. So, one of the things that Congress did with the water money is that they require that about 49 percent of the money must go out as grants and principal forgiveness loans to communities, and they have to be invested in disadvantaged communities.

So, they worked with Congress on that, and then they have sent very clear direction to states that as they make their decisions, those resources have to be invested in those communities. Now, this is really, really important in the context of water because this is certainly the case in New York; we know lower-income communities and communities of color often can't compete for the SRF loan funds because they don't have the right base to do that. And so, we really feel that

states must make sure that 49 percent gets to these communities.

One of the dynamics that are in play around the equitable implementation of these dollars is that EPA does not have the authority to set the definition of disadvantaged communities. Congress gives that authority to states to set that definition based on their needs. And what we have seen is that some states have great definitions that are reaching the communities who need it the most, and other states have deficient definitions around disadvantaged communities. So, in our implementation directive to the state, they've been very, very clear that you need to look at your definition of disadvantaged communities against the purposes of the Safe Drinking Water Act and the Clean Water Act. They've sent a very strong signal, which they've never done before, that they're going to be looking at the definition that states are using and working with them to get to better definitions. So, this is a huge opportunity for advocacy at the state level.

The other thing that they did, which they had never done before in the context of SRF programs is that they gave in the guidance preferred factors that states need to consider and should utilize in their definition of disadvantaged communities, and they also talked about those factors that are not good. So, for example, some of the states that have deficient definitions only use population as the definition of disadvantaged, which obviously is not going to always get to the communities that need it the most.

They also, in that implementation memo, highlighted and foreshadowed to the states how we're going to be reviewing their intended use plans against that definition. They encouraged them to really look at their priority ranking for projects to make sure it's consistent with this mandate, et cetera. So, there's a lot in that implementation directive to the states that, one, is both setting expectations on the front and for this bill investment; two, letting them know how EPA's going to continue to engage with them; and then, three, for those who are doing local advocacy in organizing, there are a lot of hooks and handles that are in this implementation memo. So that's a big thing that we have been focused on.

There are a lot of other things in that implementation memo around the $15 billion for lead service line replacement. Historic investment, not only because of the sheer number -- they've never had $15 billion, and they really have to thank President Biden for his vision and leadership on this -- but also this is the first time ever that the full lead service line has to be replaced for this project to happen.

So, one of the things that they know is that there's a huge equity issue when it comes to lead service line replacement because what often happens is that the local water utility will replace the public side of the line, and the private side only gets replaced, frankly, where there's has a higher income homeowner who could afford to replace that line. They know that lower-income communities simply can't do that. You can look all around the country from Providence, Rhode Island to Flint, Michigan to know that that is the case.

And so, what is different about this? That $15 billion can only be utilized to fully replace the public and the private sector line. So, it's taking away that cost barrier for families. And so, I will just also implore that through that we really have a huge education effort that they need to undertake about this opportunity for lower-income homeowners and communities around the country.

There's also a lot of discussion in the SRF implementation memo around support strongly for standards and encouragement of things like the use of project labor agreements, community benefit agreements because they know that these are going to be some of the largest investments in many communities around the country for water that they've ever seen.

So those are some of the highlights from the memo and happy to dig in on any of them as they get into the discussion. The other key part of the strategy is they definitely want to send a strong direction around meeting the goals of the Justice40 climate resilience as these resources are invested, but they also know that that enough isn't going to get us there. We actually have to invest in building the capacity and the agency of low-income communities and communities of color to be able to access and compete for these funds.

So, what the EPA's also developing is a technical assistance approach that will, hopefully, go alongside these infrastructure investments. This year they're going to be putting $50 million into the technical assistance effort, and they hope to increase that in future years. And so, the idea is that they will support strike teams -- teams of folks in different communities and regions around the country who can engage with disadvantaged communities, help them translate their drinking water and wastewater-related challenge into a specific project, provide them with the engineering support, the planning and assessment support so that they really can get their projects, get their communities on these IUPs -- that means intended use plans -- for the SRF. So that's going to be rolling out this summer.

She added that they hope to reach hundreds of communities over time. They welcome the opportunity to engage with WHEJAC on this effort. She spotlighted one of the projects they've built out with the WHEJAC Vice-Chair Flowers. It's a specific project focused on how they close the wastewater access gap in communities like Lowndes County and other rural areas. The hope is that this year help ten communities that don't have centralized wastewater infrastructure. They'll do the wastewater assessments, develop community solutions plans, and then work collaboratively with frontline leaders in these communities to really help these communities access funding that will be coming through the Environmental Protection Agency but also USDA.

She closed with this is a historic moment with these investments. But they're going through the same programs that they've had in place for a long time that has worked for some communities but haven't worked for a whole other host of communities. And so, the challenge right now is how do they redesign? How would you program delivery so that we're getting to different outcomes? And so that's what the next five years are really going to focus on at EPA.

**Stephen Tryon** stated that for the Department of the Interior, the Bipartisan Infrastructure Law has 40 sections where DOI is the lead agency covering nearly $31 billion in investments and various kinds of infrastructure ranging from water projects to wildland fire to legacy pollution, which is what he's going to dive a little bit deeper on today.

Legacy pollution shows up in Section 40601, which addresses orphaned oil and gas wells on federal, state, private, and tribal land. And there are Sections 40701 through 40704 that address abandoned mines. These are both abandoned coal mines and non-coal mines. And finally,

Section 40804 is a section on restoration, but it does include some language about restoration being viable on previously mined sites. So, taking collectively, they look at these as the Energy Community Revitalization Program, also spoken of as legacy pollution, and what we will do about that.

He highlighted some of the differences in statute between how the feds are treated and how the states are treated because it makes a little bit of a balancing act for their organization on how heavy they can go on environmental justice between the two. He will conclude with where they are currently at in utilizing screening tools, and, in the event that they're not utilizing screening tools, how are they being active on environmental justice and provisions of the bill? All of the section leaders for the Department of Interior are very conscious of the fact that they have to build environmental justice into project selection.

So, looking at one of the provisions of the law, this is Section 40601, and it's on orphaned oil and gas wells. These are wells that have been left behind, sometimes for more than 100 years, where there's no operator of record. They are not in producing status, and there's no opportunity to go for previously responsible parties. The funding is broken down as follows: there is a federal program totaling $250 million. That very much gave consideration to environmental justice in the ranking of projects at the bureau level before it came to the department, and, if there's time to talk about it, there's a scoring mechanism to allow that to be considered.

The far and away largest part of this provision is state grants, and they come in three forms. So, this is 91 percent of the funding out of $4.7 billion. Then there's a tribal program, which they're standing up right now, covering $150 million of work. He guaranteed that there's more than $150 million in need in Indian country. And so, one of the things that they're looking at there -- and this would be basically Justice100 work -- is making sure that every single tribe that has ever had oil and gas activities on their properties has a property reckoning and a proper inventory and not just the well-resourced tribes that are ready to roll with well plugging right now. There are provisions in here for our partnerships with the Department of Energy and also the Interstate Oil and Gas Compact Commission.

States may use funds for plugging wells, inventory, remediation, restoration, public information, tracking methene, tracking water contamination, identifying disproportionate impacts, administrative costs up to ten percent, and ranking wells based on public health and safety, environmental harm, and other land-use priorities. The only one of those bullets that are actually mandated in the law is the last one, that ranking wells should be based on some combination of public health and safety, environmental harm, and other land-use priorities.

He contrasted with the other statute that the law "requires the federal program shall identify and address any disproportionate burden of adverse human health or environmental effects of orphaned wells on communities of color, low-income communities, and tribal and indigenous communities." So, notice the language in the statute is not paralleling the language in Executive Order 14008, which goes to the disadvantaged and begat the screening tool that was going to identify disadvantaged communities. The language in this statute sounds a little bit more like EO 12898, emphasizing minority and low income.

And then again, they have initial grants that are getting ready to go out in the next few months,

formula grants that were coming right behind those, and then performance grants where they have a little more latitude in what they can require of the states based on their regulatory structure.

In the next couple of months, they are going to go through an application opening with an application deadline of 30 days for the Department of the Interior to act and then an obligation deadline whereas they read the statute, "the states will have 90 days from when they draw down from the U.S. Treasury System that makes the grant available to obligate the entire amount", meaning most of it's going to go on contracts that will then be expended the one year following that. So, this is the first of three waves what's called initial state grants, and that's going to keep us very busy this summer.

The initial grant guidance has fewer requirements and previews future application requirements, but it has an awful lot of encouragement in it that suggests that states really need to start paying attention to tracking methane and valuing the priority of work on communities of color, low-income communities, and tribal and indigenous communities. The future grant guidance gives a little more oomph to make these requirements of the process.

The deadline of May 13th for the up to $25 million grants. There is no deadline for some capacity-building grants of up to $5 million that are also called initial grants. There are a series of standard forms and OMB forms that will be required, and then they have a whole bunch of information in the detailed budget proposals and justifications. Applications will be posted on our website. It's more than an innovation; it's a requirement -- that we want states to be aware that they want your application to be in ship shape enough that you don't mind sharing it with the public. They're going to put it on our website. Our guidance provides definitions of some key terms, including communities of color, low-income communities, and tribal and indigenous communities. It lays out eligibility and also requirements.

Then, in these recommended elements, it asks these questions. What is your prioritization process? How have you identified and addressed disproportionate burdens? What is your methane measurement methodology? What is your water contamination methodology? Site remediation? Have you met with local officials and the public in the development of your priorities? Are you providing for training programs -- for instance, to move people out of areas where they're unemployed or underemployed -- into these higher-paying jobs? Do you have third-party partnerships, and how did you coordinate with tribes and feds?

The federal government is getting ready to publish some methane measurement methodologies that would be shared with states. States may have some of their own, and then data standards are going to be a huge deal with this. So, a risk-based database management system was developed by the Groundwater Protection Council and is used by most oil and gas producing states that each have their own modules which we're expecting will be where performance information is captured and then ported over to us at the end of the period of performance.

They have invited comments to this email address, orphanwells@ios.doi.gov. It actually closes at midnight tonight, and they've been getting plenty of comments along the way.

He suggested to the group that there is some tension between "shall" and "must", where the

federal government must do these things and the states may, which I think will probably be ironed out over a period of years, not months or days. And then, they have spent a lot of time looking at screening tools and how best to apply them. The first tranche of funding for federal oil and gas wells is likely to go out in the next month or two. And the way environmental justice is considered in developing those proposals was through a ranking process used at our bureau level which then rolls up to the headquarters level.

He is not convinced that the proponents of those projects actually used a screening tool in developing them. They use professional judgment about the proximity of the well site to the environmental justice community and to whether you get a benefit of one, three, or five on your scoring criteria. In the future, they will be using screening tools. They are considering whether to recommend those CGIST and EJSCREEN because, as I mentioned to you, the language of this statue, communities of color, low-income communities, and tribal and indigenous sounds a little more like 12898, which is going to be more EJ screen.

But in either event, it's fairly nuanced. He gave an example. Imagine that there was an abandoned non-coal mine. Imagine that it's one mile from a community that would rank as disadvantaged using CGIST or that would rank as whatever the companion word is under EJSCREEN. That one mile away abandoned mine might not be giving off any gas, might only have a few holes in the ground that could be a danger to kids playing around it, but might have no circle of violations involving the water table, surface, or groundwater.

He could find, maybe, another mine that was 20 miles away from that same community, but it was uphill, it was at the headwaters of a water source, and it was leaching arsenic into the water source that affected the community 20 miles away. One of the challenges that we have in training people on how to use screening tools is that both of those might be examples of a project that was near enough to that community to say that it was an EJ affecting project. One of them was one mile away, and one of them was 20 miles away. So that's the kind of nuance that is new to our staff at the field level that his office is going to help lead to have a better application of screening tools when we do this again in 2023.

**Christopher Coes** stated that it is very important for us to recognize the role that infrastructure investments, particularly in the past, have often failed to meet the standard that this group holds. Too often, it has created greater inequities and, in many cases, has even made them worse. Because of the physical infrastructure endured for decades in families and communities, they recognize that as an administration and as a department, they have made a commitment to doing the right thing for our shared future by addressing these inequities, building a better and more equitable transportation system. And they believe they can do that as part of the Bipartisan Infrastructure Law.

But before the Bipartisan Infrastructure Law, they started really laying the groundwork. First, they convened a department-wide equity task force which included over 160 career staff in 30 senior agencies who have been literally working in earnest. Throughout this work, U.S. DOT has assessed whether and to what extent many of our programs and policies continue to perpetrate systematic barriers to opportunities and benefits for people of color and underserved communities. These assessments are right now helping us better equip our staff and also working with our grant recipients to better develop better policies and programs to deliver the resources

more equitably.

Also, on Monday, they prioritized equity as being a department-wide strategic goal for the first time in their strategic plan that was released this week. The various stages they are pursuing are to embed equity and environmental justice in the very fabric of this department, including expanding access for underserved communities and empowering communities in our transportation planning processes.

But they also recognize that they can't do this alone, and as part of our recent FY23 budget, they recognize that they need to increase the level of capacity and what they are calling for over $200 million both as part of our thriving communities and civil rights technical assistance programs to help support local organizations and local communities to meet their civil rights and environmental justice goals.

As part of the Bipartisan Infrastructure Law, they are immensely excited about the opportunity that we have to take this Bipartisan Infrastructure Law and create the opportunity to deliver true to our equity and environmental justice commitments. The Bipartisan Infrastructure Law, based on the reasons that they'll be receiving, will spur the creation of over 500,000 electric vehicle chargers by 2030. They know with these investments that they will be able to support a number of reconnecting community projects by removing existing interstates, redesigning rural main streets, and repurposing former rail lines that have divided and caused harm. They know, through these resources, that they will try to increase the number of communities that have strategies to reduce traffic fatalities as well as interventions that reduce death or serious injuries.

They, with these resources, can replace over 10,000 fossil fuel-powered transit vehicles to make the neighborhoods that they serve have cleaner air. They recognize that providing greater transit access to opportunity is key, and that they'd be able to improve their transit funding which is the largest investment in the history of transit funding. But they recognize that, in order to take these investments that they have gotten from the American people, they must do this in a way that drives better outcomes.

And to do that, they believe they can not only address the backlogs of roads and bridges and busses, but this has to be done in a partnership. And they believe that, as a federal government, there are three areas they think can play a huge role in driving these outcomes in partnership with our state and local partners: first, by leveraging our civil rights and equity and environmental justice authorities; two, enhancing and promoting our Justice40 initiative; and of course, last but not least, creating better planning and capacity processes to support community-based organizations in underserved communities to actually take greater ownership of their future.

He started with civil rights and their enforcement. Civil rights, as a department, has not necessarily over the last years received the resources that are needed to assure that they had widespread compliance. They are actively working to strengthen our current civil rights office by making a historic investment in hiring, as well as providing additional technical assistance to grant recipients.

Last June, they also put in place a new Title VI order that requires a Title VI assessment from

each federal grant recipient so that they have to be more proactive than reactive in terms of other Title VI and civil rights compliance. This is a huge opportunity for state and local advocacy and organizing efforts to ensure our federal investments are aligned to community needs and that they can, working in partnership with community organizations and local governments, identify the locations and projects that need special attention.

They are in active discussions with philanthropy to figure out how they can accelerate greater capacity building to support many of your local efforts. As part of that, Justice40 is our second approach. They know from history that our federal funding has not often been accessible to underserved communities. The Justice40 initiative is a whole-of-government effort to ensure that all federal agencies, including the Department of Transportation, work with state and local governments to make good on the president's promise to deliver that at least 40 percent of the overall benefits from our investments and climate and clean energy go to disadvantaged communities.

They're making Justice40 central to our bipartisan infrastructure law implementation to ensure this once-in-a-generation investment and good-paying jobs and green transportation are going to underserved communities. As part of this, they're not just tracking where the funding is going; they're also tracking where the benefits were going. They will be releasing and updating their current mapping to track that. As a department, they have identified over 40 programs representing $206 billion in U.S. DOT funding as Justice40 cover programs.

These programs will receive a prioritized program at a programmatic level of stakeholder engagement, direct technical assistance to communities who are looking to apply, and support on the backend for grant administration. They are incorporating Justice40 now in many of the programs that have already been released. For example, they rolled out earlier this year, our $5 billion national EV infrastructure program for states to begin to build out our nationwide EV charging network.

As part of the Justice40 initiative, they issued guidance to states on explicitly how to address their priorities around equity and Justice40, particularly around stakeholder engagement, workforce development, and the benefit of the EV funding formula. This included working with their sister agency -- the Department of Energy -- on creating a new disadvantaged community's map to advise states on where to prioritize those activities. They will, over the next several months, be evaluating state plans based on their level of stakeholder engagement, workforce, and economic development, and they'll be also working with states to ensure that those plans truly ensure equitable distribution of benefits from those investments. In addition, they will be implementing our $2.5 billion community discretionary grant program to support local EV efforts, and they will continue to establish guidelines to support that as well. But they are not just stopping with our EV charging investments. They're looking at our low and no fuss facility program. They're looking at how they can reduce air pollution around ports as part of their new port discretionary grant program to do the same.

But also, in addition to some of the traditional programs, there are a few key environmental justice programs that were included in the Bipartisan Infrastructure Law that they will need help to ensure that they get it right. For example, they will be announcing a new Safe Streets for All discretionary grant program. This program is in recognition that many people are dying from

railways and disproportionately are coming from communities that are black, indigenous, people of color who are generally suffering the highest rates of death compared to their white counterparts. A death is enough. They need help to ensure that these investments in how they design the grant program are done in such a way that they are able to address these disparities. Again, this is a $6 billion first of its kind that's supporting planning efforts specifically for local and tribal governments only.

The second program is something that many have been working on for a long time. From the inception of the interstate, millions of households, mostly in low-income and minority communities, were forced out due to the construction of the railroad or highway system. Their new Reconnecting Communities Program will focus specifically on legacy highway and rail construction through these communities and think about equitable ways they can not only remove or repurpose these infrastructure barriers by actually creating new thriving communities. They are in active discussions with philanthropy and other federal agencies to provide technical assistance directly to community-based organizations and local governments so they can ensure that they can get this right.

The last program is our healthy streets program. In recent studies, U.S. cities and neighborhoods that were redlined in the 1930s have higher surface temperature profiles in comparison to some of their suburban communities. This new $500 million program will provide grants directly to mitigate urban heat islands, improve air quality, and reduce the stormwater runoff that is seen in many of these communities. Now, they recognize that using our civil rights lever, maximizing the work around Justice40, and some of the key environmental justice programs that were a part of the Bipartisan Infrastructure Law is just a step in the right direction. But they recognize that they also have to support better planning and capacity building to grant recipients.

What is going to be essential to achieving their overall goal around environmental justice is to ensure that underserved communities have the ability to gain and move their agenda forward. And one of the ways we're doing that will be, one, as part of our FY22, we will be rolling out about $20 million to community-based organizations to provide capacity building and to support disadvantaged communities who are interested in applying to our Bipartisan Infrastructure Law grant programs to achieve equitable and climate-friendly infrastructure projects.

In addition, they are working with the Department of Housing and Urban Development on strategies to ensure that their investments and working with their grant recipients do not lead to displacement or relocation. Third, we are working with a number of state and local partners on how to improve their transportation and planning processes so that they can ensure future investments that are coming down the pipeline are creating greater affordable housing options and greater access to jobs.

Again, this is just the beginning of many of the efforts that they've started last year, but they know they can't do this alone. They look forward to continuing the partnership that they've had thus far.

**Vice-Chair Tilousi** opened the floor for questions and comments from Council members.

**Angelo Logan** stated that he's interested in hearing a bit more about the future work that DOT is

planning to get into in terms of setting up guardrails and protections to help to protect communities that will have negative impacts from the infrastructure projects like road widening, freeway widening, dredging of ports, increased capacity of freight facilities that is outsized by the funds that will be going to cleaning up the freight sector and other heavy-duty transportation.

What lots of communities that are impacted by freight are looking for is helping to make sure that we don't take one step forward and two steps backward. So, they know that there's going to be an increase in freight traffic, heavy-duty trucks, locomotives, trains, and ships, and it's going to be on the increase. The amount of money that's going to reduce the amount of pollution through electrification or otherwise is a drop in the bucket. So how do they get to a point where they're not taking one step forward and two or three steps backward? How might they ensure that they don't increase the negative impacts by widening roads, expanding ports, and perpetuating the injustices that come from that transportation sector?

He asked if they have thought about that, and then how might they participate in developing or co-creating those protections to ensure that they're making real advancements in environmental justice for these communities?

**Mr. Coes** replied that where they see in terms of the guard rails is really around the work that their civil rights team really kicked off at the end of last year as their update of our Title VI and civil rights. That really is a great tool and process for everyone from those who have dealt with Title VI issues before. Generally, those have come after the project has been decided or been designed.

One of the things that they're trying to do now is actually instead of being on the reactive side, they want to be proactive. Again, they recognize that many of our grantees need greater capacity and greater handholding. But this is a wonderful opportunity for advocates to begin to engage those grant recipients to ensure that three things are happening.

Number one, there is a robust public engagement that's actually happening. Each grant recipient, as part of our Title VI, must have an updated public engagement participation strategy that's been signed off by the Department of Transportation. Two, as part of Title VI, there is a degree of discussion around disparate impact. What they are looking for is working with local governments, grant recipients, and philanthropy so they can get that information before the actual investment comes. And then, third, there is then the traditional remediation on the NEPA side, which they will be announcing very soon some new enhancements as part of our NEPA process. They'll be able to support a little bit more about that in the near term. He welcomes anyone who's interested in learning more about our new Title VI order as well as our upcoming NEPA. Please, send him an email offline, and we can definitely have a follow-up conversation.

In addition to that, they do recognize that there are many ports and many freight corridors that need significant resources to not only electrify but also reduce pollution. One of the things that they believe part of the Justice40 initiative is going to help us do is to actually prioritize. They do recognize that this is a five-year infrastructure bill. But this is going to take more than a five-year infrastructure bill to fix the problems in communities across the country.

And so, as part of that, they are looking for guidance as they have rolled out their Justice40

mapping tool; they want to make sure they are prioritizing who should be in line by who has the greatest harm first. They recognize that this is going to take multiple years and multiple high levels of degree of investment, but they believe if they can get it done right now that when they come back to Congress and the American taxpayers, they can continue to get the investments to make sure that no community is left behind.

But also, with that, he honors the request to be in partnership with the department as they do some community designs, particularly around some of the freight programs. As was mentioned earlier, they have new investments in terms of how we reduce air pollution. They definitely welcome the opportunity to do program design, not only just on the guardrails but how they make sure they set these programs right so that they can get the advancements where they're needed.

**Ms. Santiago** stated that there was a reference to the funding in the bipartisan budget bill for the Army Corps of Engineers projects, a substantial amount. Some of them are in Puerto Rico. One of those projects is of great concern. There's about $45 million for the Army Corps to dredge the navigation channel in San Juan Harbor to allow for larger liquified natural gas carriers, and they're not seeing the stakeholder engagement that is needed here. Requests for meetings are pending with the Army Corps, and there's no response.

Then that contrasts a lot with a huge issue they're having in Puerto Rico right now with the devastation of mangrove forests and wetlands that are under the jurisdiction of the Army Corps. If you look at any news having to do with Puerto Rico in the past week, it is the Jobos Bay National Estuarian Research reserve here in Salinas, Puerto Rico that has been devastated, and the army corps is just missing in action there. They're wondering whether there's funding for enforcement by the Army Corps because many, many cases and different coastal areas where there's been devastation of wetlands and mangrove forests. That is mostly directed to Ms. Vahlsing.

The other concern was for Mr. Tryon. It's about the efforts to clean up the military bombing sites on the offshore island of the Vieques. In our recommendations in May, they included the community requests for closed detonation chambers for military ordinance. One was provided but it's a very small one; that's a ten-inch munition. We're wondering whether in this new funding there will be detonation chambers for the 500- to 2,000-pound bombs that are on Vieques?

**Ms. Vahlsing** replied that generally, the Army Corps is working aggressively to increase its stakeholder engagement. They should do a follow-up conversation with them because they're making a lot of progress. The budget that the president released yesterday included to your exact point about increasing stakeholder engagement. It included funding to put an environmental justice staff person at each district office for all of the Army Corps across the country so that they can really address what you're saying and make sure there is more stakeholder engagement.

But in the meantime, there was Bipartisan Infrastructure Law funding for a pilot program. She thought it was about $100 million for the Army Corps to particularly focus on environmental justice. She will connect her through that door to the right people at the Army Corps, and let's talk more about how to make sure that funding is fully leveraged and including her thoughts.

**Mr. Tryon** replied with regard to the Vieques and the unexploded ordinance, there may be some possibility that the restoration provision might be able to be put to use on this long and vexing problem. The Department of the Interior's Central Hazardous Materials Fund has helped with some projects at Vieques, as has the National Resource Damage Assessment Program. It's possible they talked about that at a meeting three or four months ago. Did I commit to getting you some information on that? Did I follow through? **Ms. Santiago** replied yes, she hopes that can happen. **Mr. Tryon** replied that he will be sure to follow through on that.

**Co-Chair Moore** commented that part of what he's been seeing and they've been hearing testimony about many times is that, when positive initiatives are moved forward, rural communities and counties get the diesel buses dumped on them.

In regard to the Department of the Interior, they've also heard testimony and comments in regard to what's taking place in the world around uranium and the potential for uranium mining. So, part of what they're doing then is they're dealing with legacy issues, so let's not reinvent the wheel. Let's move forward and not backward.

Many times, what they see in all government agencies is getting bogged down in terms of the amount of paperwork that's necessary. So, when they're hearing presentations sometimes, what happens is it sounds good, but communities get hung up in the paperwork shuffle. So, it sounds good on the outside, but then the practice on the inside is not the same.

**Mr. Tryon** responded to the uranium issue. It is a big deal. It is certainly a legacy deal because this was the United States demanding uranium for various war efforts going back to the 1940s that resulted in the abandoned mines that are being discussed now. Section 40701 of the bill authorized $3 billion for abandoned mine work, non-coal, and that would've been a real shot in the arm for some of these tribal issues. It, unfortunately, did not have an appropriation, and so they got a fairly small appropriation for this in 2022, but the president's budget that was announced this past Monday does have a notable increase for abandoned mines including on tribal lands.

**Dr. Nicky Sheats** wanted to address his comments to all the speakers and maybe future speakers tomorrow from the government and just follow up on comments made by several colleagues. Others have said that they worry that there will be projects in the name of EJ that the EJ community feels are actually detrimental to our communities. He noted that the speakers have talked a lot about public participation and having community voices heard. And so, he wanted to point out that, yes, public participation is necessary, but it's not sufficient because oftentimes what happens is that there's a public participation process and the communities say, well don't do the project and the project's done anyway. So, there's public participation, but the voice of the community doesn't actually affect the final decision. And in this case, that would really be harmful if there are projects either on the Justice40 or just projects from some of the agencies that they think will move EJ forward, and the state/local EJ communities were saying no.

He urged that in this case where we're talking about projects that are supposed to have EJ benefits and the local EJ communities make it clear they're against a project, they should not go forward. You should find some other projects where there is an agreement between local EJ

communities -- and that can be on the state level and even on a neighborhood level -- and the government that these projects will benefit the communities. None of us want to be in the position where the government is funding projects that are supposed to be for EJ, and the local EJ communities are protesting those projects.

In New Jersey, they're very worried about that and they're ready to fight projects -- particularly around energy -- that they're worried about false solutions, and that just won't be a good position to put any of us in. There's a lot of justification, especially under these circumstances, that without the approval of the local EJ communities, then some other project should be looked for.

**Juan Parras** stated that his question concerns the water quality in West Texas. There's a lot of fracking that's taking place, and it's impacting the communities in the Permian basin to the point that a lot of them are having to resort to buying bottled water because of the regular water. When they open up the facets, it tastes horrible, and you can smell the gasses. The other issue with water quality is of course all the colonias that they have in the border towns in Texas, and they need infrastructure to at least get clean water and have clean sanitation.

**Co-Chair Shepard** directed her question to Radhika Fox with the EPA. She certainly mentioned that there would be environmental justice folks in every regional office, but of course, that's been happening for decades. And in some cases, those environmental justice folks have not been the most effective or given priority at the regional level for their work. And so, when she hears that, yes, they're going to be more EJ people again in the regional offices, what are you going to do differently so that they are effective and do the appropriate engagement?

They're very happy that there have been some really great people appointed to the regional offices, but they also understand that the regional offices often have either been terrible or, in some cases, you even forgot they were there because they were so irrelevant to what was going on in the environmental sphere in that city or locality or state. What are you going to do to ensure that those staff are really experienced and engaged? **DFO Martin** explained that Ms. Fox had to leave the meeting, but they will follow up with her and get that response.

**Ms. Waghiyi** stated that it's great to hear that there will be increased stakeholder engagement because her tribe was not party to the record of decision with Northeast Cape, and our state basically rubberstamped the Army Corps of Engineers and let the polluter off the hook in the case -- the two former use defense sites on Saint Lawrence Island. Is she willing to let tribes be party to the record of decisions? Her community-based participatory research project recently continued to find PCBs, and now we identify mercury at the Suqitughneq River at Northeast Cape. They need to be party to the record of decision.

Regarding water and sewer in Alaska, every sitting governor has promised to get rid of the honey bucket. And yet, how are they going to ensure that states will follow through with the recommendations when they have over 30 communities with no water and sewer. Another comment is of false solutions regarding micronuclear reactors. It is known that a single microreactor core could contain about ten nuclear weapons worth of nuclear and radioactive material, and stakeholders are not consulted. These could be adjacent to our communities in hunting/food gather locations that are proposed in Alaska. **Ms. Vahlsing** informed Ms. Waghiyi

that she's not with the Army Corps but with OMB. She is happy to follow up with them about the question about the RAS.

**Vice-Chair Tilousi** thanked the Council for their questions and the panelists for their presentations regarding funding opportunities for water and transportation and willingness to work with NGOs, tribes, and states, and also for providing us with technical assistance.

**Co-Chair Moore** asked if the questions and comments that were brought up in the chat be included in the summary for the meeting notes? **DFO Martin** responded that she will make a note to the meeting summary of those comments that were made since Dr. Bullard had to leave. She reminded the members that the comments in the chat should be spoken in the meeting so they can be part of the record. She then notified everyone that it was time for a break.

### 1.5 Public Comment Period

On March 30, 2022, the WHEJAC held a public comment period to allow members of the public to discuss environmental justice concerns in their communities. A total of 19 individuals submitted verbal public comments to the WHEJAC. An additional 39 individuals had signed up to speak but were not in attendance. Each speaker was allotted three minutes.

**Co-Chair Moore** reminded everyone that they will be hearing from the diverse populations and the voices from across the country. They are very crucial to the WHEJAC Council and the process as a Federal Advisory Council. Additionally, it's important to provide advice and recommendations to the Council on Environmental Quality and the Interagency Council. Some of the agencies are listening to the meeting as it occurs.

He also explained that they prioritized hearing from people that have not been heard before as a public speaker, so they are at the top of the list. If more than one person registers to speak from the same organization, the first one that registered will be heard first and then the others as time allows.

#### 1.5.1 Graham Hamilton - Break Free from Plastic (Washington)

**Graham Hamilton** stated that when it comes to metrics which measure environmental injustice, it's important to understand the historical burdens of pollution, as well as identify nascent burdens from being leveled at underserved communities in the future. The Climate and Economic Justice Screening Tool is a valuable asset that will improve with input from impacted communities, just as its original version CalEnviroScreen has been shaped and molded as new information and metrics have become available at the census block level.

However, he wanted to point out that ensuring a whole-of-government approach that addresses current and historical environmental injustices will require that the whole of the federal government is pointed in the same direction, and unfortunately this doesn't appear that this is the case. Earlier this year, the Department of Energy announced a $13.4 million investment in so-called chemical and advanced recycling technologies. And these are just energy terms that essentially green wash the incineration of plastic waste. This is concerning because it suggests that the administration is supporting industry sponsored schemes that directly contradict the

purpose of the Justice40 initiative, and that once again the historic practice of putting incinerators in EJ communities will continue with the backing of the White House.

For over two decades, industry has consistently failed to prove the environmental benefit or economic viability of so-called chemical recycling schemes which primarily use pyrolysis and gasification to treat mixed plastic waste. For decades these facilities have been cited in the same marginalized communities that WHEJAC is committed protecting. And there is significant evidence that the emissions from these plastic burning facilities pose as much of a threat to public health, if not more, than traditional incinerators. Industry today is doing everything it can to deregulate these toxic, unproven technologies and spur the proliferation of so-called advanced chemical recycling operations across the U.S. The EPA is currently considering whether pyrolysis and gasification units should retain their classification as incinerators under Section 129 of the Clean Air Act.

There are at least half a dozen companies in the U.S. right now who are working to break ground on new plastic incineration plants, all of them in communities that have been identified by the screening tool as marginalized and overburdened. The Climate and Economic Justice Screening Tool can be a powerful asset, and the folks in these communities need this tool to work. But it will only do so if the whole of government approach is consistent and that the administration and heads of the federal agencies stop buying into false solutions from the very industries that got us here in the first place.

### 1.5.2 Marcia Briggins - Re-Right the Culture (Uniontown, Alabama)

**Marcia Briggins** stated that Uniontown has the second largest landfill in the nation receiving 33 states' trash in a low-poverty black area. The air and water quality are poor, and the soil is full of toxins. Currently, ADEM cannot provide an answer how to measure what's being received amongst the 33 states of trash and toxic waste, and so they continue to get toxins. This is currently putting us in a position where they're now receiving a new wastewater system that is increasing the citizen's bills an additional $100 a month. And this came about with the misappropriation of funds, where the city received $4.5 million and unfortunately was not accounted for.  And now have a $31 million bill for the Infrastructure and Jobs Act.

Now, unfortunately, the wastewater system has to go 20 miles to another city causing the citizens to be heavily impacted while the black community areas in low-poverty housing as well are suffering from the lack of jobs as well. This bill was specific for financial gain for the white multi-million-dollar industries there and not for the disadvantaged African Americans that are there. So, she asked, how can they ensure ADEM is being held accountable? Because none of their citizens are being able to be made aware of what's currently going on while continuing to ingest such harsh air quality, water quality, and having to be in small government assistant homes, receiving $80 to $100 in a regular monthly bill.

We're paying a higher increase due to the misappropriation of funds. Her congressman has even voluntarily stated that yes, they were aware of that. How can they be assured that this area is not being wiped off, but they're being heard, and our health is actually taken into account?

### 1.5.3 Cynthia Vanderpool Garcia - Alianza Nacional de Campesinas, Inc. (Maryland)

**Cynthia Vanderpool Garcia** deferred her time to others in her group.

### 1.5.4 Dave Shukla - Long Beach Alliance for Clean Energy (Long Beach, California)

**Dave Shukla** shared his background from Paduka, Kentucky and Long Beach growing up across the street from a power plant and oil drilling.

The question that he asked is, as someone who for 24 years has been watching his city and some of the companies involved -- Edison, AES, some others -- profit off of the destruction of his present and his future, how it is if we don't completely decarbonize electricity and completely de-privatize it from these entities? These entities are the problem. How is this country going to ensure a future for him let alone for the many children that his mother has birthed in the town of Long Beach? And finally, to underscore Angelo Logan's point, from a climate science perspective, how do you ensure that we make one step forward actually be a step forward and not two steps back?

### 1.5.5 Karen Spencer (Gloucester, Massachusetts)

**Karen Spencer** stated that she is speaking today as a private citizen with a deep and abiding interest in environmental health and justice. She's cognizant that this body has the express duty to provide advice and recommendations to the White House Environmental Justice Interagency Council for the purpose of reducing pollution; promoting sustainable infrastructure, including clean water; and addressing current and historic environmental injustice. To that end, she suggests that the screening tool tracks the fluoride concentrations in drinking water in all communities, tagging those communities that are adding fluoridation additives to their municipal water supplies.

This is important criteria for the screening tool because hundreds of laboratory studies and scores of human studies, including many sponsored by the NIH in just the past five years, have validated that exposure to fluoride, even in low concentrations found in optimally fluoridated municipal water supplies, harm bodies, bones, and brains from womb to tomb. Specifically, when the young mother consumes fluoridated water while pregnant or prepares infant formula with fluoridate water, her child is more likely to have learning disabilities or a lower IQ. Those afflicted children are also likely to have at least two teeth damaged by dental fluorosis, the visible evidence of poisoning while young.

When a person consumes fluoridated water for decades, he or she is more likely to suffer from osteoarthritis and skeletal fragility. When a community is fluoridated, it has higher rates of low thyroid disease and more gastrointestinal disease. When diabetics and kidney patients drink more water than the typical person, they receive doses far in excess of the current and misguided safety threshold, which in turn further damages their kidneys and interferes with glucose metabolism. A vicious cycle that also puts consumers at higher risk of other illnesses, a few of which I just mentioned.

When fluoridation chemicals are added to municipal water, more buffering chemicals are required in a futile attempt to prevent infrastructure corrosion. Caustic fluoridation chemicals,

which are harvested from the pollution control systems of industry, are also contaminated with lead, arsenic, barium, aluminum, cadmium, et cetera. About one percent of the fluoride and associated chemicals in metal are consumed by people, the rest being destinated for the environment where it damages flora and fauna. When the consumer is part of an environmental justice community, avoiding the poison on tap is very costly and next to impossible because, when fluoride is in water, it is in everything prepared with that water.

Counselors, the myth about fluoridation being a magic potion has been busted, but those in positions of power are often the last to know the truth. She ended with this one truth: WHEJAC has a duty under Justice40 and clean water initiatives to, one, track fluoride in water; two, prohibit using national resources to expand fluoridation; and three, take affirmative action to end fluoridation programs because fluoridation is an environmental injustice in public policy. I have uploaded this oral comment as well as close to 100 scientific citations substantiating my statements.

### 1.5.6 Brett Johnson - NYSACC, Gorham Conservation Board (Gorham, New York)

**Brett Johnson** stated that he has no comments. Everyone gave him a lot to reason and think about.

### 1.5.7 Robin Forman - Environmental Advocate (Maryland)

**Robin Forman** stated that listening to everybody has given her a great deal to think about. And she has a lot of concerns that she will just send via email. It would be much more concise that way. She will forward that after this conference.

### 1.5.8 Jamie Banks - Quiet Communities (Massachusetts)

**Jamie Banks** stated that EJSCREEN 2.0 is intended to protect public health and the environment, yet it does not include noise as an indicator, putting EJ communities at risk from noise related health and environmental harms. Noise was first recognized as a public health hazard in 1968. The need to address it is described in the Clean Air Act of 1970. The Noise Control Act of 1972 states, "It is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health or welfare." Noise causes hearing loss and tinnitus, contributes to various health problems, and impairs children’s learning and work productivity. It comes from transportation, industry, construction, mining, blasting, and so forth.

There’s a nexus between noise and fossil fuels. Chronic noise, even at low levels, can cause annoyance, sleep issues, and stress that in turn contribute to cardiovascular and cerebrovascular disease, metabolic disturbances, worsening psychological disorders, and early death. It threatens the health of more than 100 million Americans with children among the most vulnerable and environmental justice communities affected disproportionately. Measures can be taken. For example, installing sound insulation and relocating noise sources have been shown to reduce noise and reverse its adverse impacts on learning and cardiovascular health. Quieter equipment are available.

In its recent policy statement called "Noise as a Public Health Hazard," the American Public

Health Association calls on the federal government to ensure that the reduction of noise exposures is part of all environmental health efforts, acknowledge the disparate impacts of noise on communities of color and low income communities, and implement programs and policies across all federal agencies, including the EPA, Departments of Labor, Transportation, Defense, Health and Human Services, Education, and Housing and Urban Development, and the Federal Aviation Administration, National Institute of Standards and Technology, and the Consumer Product Safety Commission. The Bipartisan Infrastructure Law will allocate funds to build safer and more sustainable airports, highways, and transportation infrastructure.

Including noise as an indicator in EJSCREEN 2.0 will help reduce the impacts of noise and related air pollution from these projects on the health and well-being of EJ communities. Failure to include it exposes those communities to potential harms to health, learning, and well-being.

### 1.5.9 Sinthya Hernandez - Lideres Campesinas (Oxnard, California)

**Sinthya Hernandez** (through an interpreter) stated that she is a farmworker. She is also a limited English speaker. Unfortunately, they have a very big problem. On the fields, they work under very high temperatures -- 95 to 98 degrees. They do not stop working, and they have suffered by fainting, getting dehydrated, and they suffer with pesticides that they spray on the fields. They are not given a good attitude when someone complains or when someone says something about what happens on the field. Nobody supports them. They do not get help with any of that. They know that they should work a little bit more in order to have somebody pay attention to us. They need to work with open doors, and they need to see how they can get help to have a law so the temperature can be a little bit lower, that they should stop working when the temperatures are so high. They don't have good drinking water. They are given drinking water that tastes bad and it is dirty and they have to work like that. She would like somebody to take into account what happens with them.

### 1.5.10 Kari Fulton - Climate Justice Alliance and the United Frontline Table (Maryland)

**Kari Fulton** stated that she is not only representing the Climate Justice Alliance but also the United Frontline Table. The United Frontline Table is a national network of black, indigenous, Asian, Pacific Islander, Latinx, Latino, and working-class led organizations representing hundreds of organizations and communities across the United States. Their membership collectively represents hundreds of thousands of people in frontline communities around the country facing the brunt of historic racism, poverty, pollution, climate change, and other inequities. But they're working together towards a regenerative future that repairs historic harms and inequality and invests in the resilience of the most impacted communities. They look forward to a robust Justice40 program and offer the following comments to strengthen it and achieve the full breadth of its envisioned impact.

Number one, meaningful access and impact. They ensure that the program application process does not inhibit access. For example, consider creating application processes where eligible entities, including community-based organizations, small businesses, and local governments, where applicable, can apply for multiple grants from across federal departments through one application. Such a process can facilitate communities with limited capacity and the greatest need to participate fairly and meaningfully. Devote a portion of Justice40 resources to technical

assistance from agencies on proposal development, application process, implementation and long-term governments, especially for those communities with greatest EJ burdens to facilitate maximum access to programs by eligible entities and lasting impact from Justice40 investments.

Three, ensure maximum dollar amounts in funded Justice40 projects are contracted with local, PLC, and worker-owned businesses. PLC means black, indigenous, and other people of color and marginalized communities. Or, if they lack capacity to take on Justice40 projects at scale, require that winning contractors subcontract with otherwise eligible BIPOC and worker-owned contractors and allow them to shadow the lead contractor on site to develop experience and skill.

Four, require all implementing agencies to undertake robust stakeholder and community engagement at every stage of project development and implementation, including via direct outreach to frontline and environmental justice communities, hearings, or listening sessions in targeted geographies, field liaisons, attention to language justice, et cetera

Five, develop a transparent auditing framework to track progress toward and beyond the 40 percent of funding to be invested in disadvantaged frontline communities. Do no harm.

Six, ensure that all federal climate investments have clear requirements to explicitly prohibit increases of harmful burdens on disadvantaged communities. Require agencies to conduct and publicly report impact assessments that project potential harms of investments -- programs, rules, et cetera before issuing any projects or program funds. Justice40 funding should not be allocated to any projects, programs, or investments that will harm any frontline constituency. For Justice40 to keep its promises, funding decisions much be required to respect and balance the interests of all frontline constituencies rather than forcing them into competition.

They also want a comprehensive approach. Develop funding criteria that require investments to support development and investment in collective community ownership of essential assets such as affordable housing, microgrids, worker-owned businesses, community land trusts, community development finance corporations, in order to build the resilience of frontline communities over the long-term.

Create separate programs and funding mechanisms responsive to the specific needs of the Gulf South, Native American tribes and communities, and U.S. territories including Puerto Rico, the Northern Mariana Islands, American Samoa, and Guam. Undertake comprehensive outreach across communities in these areas with the attention to appropriate language access to ensure awareness and equitable uptake of justice. In general, OMB should exercise oversight of agencies in the designation of Justice40 covered programs beyond those named in the pilot program. Seeking, really first, with a focus on formally designated as a part of Justice40 specific relevant programs and any relevant provisions from Build Back Better that pass into law and more broadly speaking to expand the scope of Justice40 into additional specific areas including in public health, education, immigration, open space, land conservation, ecosystems, protection and restoration, and other areas with clear climate impacts.

All implicated agencies should be responsible for developing plans and detailing how each of their covered programs will be tailored to achieve Justice40 investment goals. Agencies should issue rules or policies to accompany formula funding in all Justice40 policy areas, instructing a

broad range of recipients including states, counties, and tribal governments about their obligations to adhere to Justice40. Require that competitive grant programs that fall within Justice40 utilize the climate and an economic justice screening tool in rating proposals. Proposals benefitting the most vulnerable communities should receive higher consideration. Also ensure that the greatest extent possible that Justice40 efforts are embedded in the long-term guidance rules and policy of implementing agencies so progress to achieve Justice40 targets continues regardless of political changes in the administration.

The administration should work with members of Congress to advance legislation that codifies the Justice40 initiative, ensure that agencies -- the CDQ and the OMB -- have adequate levels of funding and staffing for long-term implementation, give guidance for agencies to develop clear multi-year targets and time tables, and to the greatest extent possible, ensure uniform uptake of the Justice40 initiative across agencies leveraging the advisory role of the WHEJAC and the interagency efforts of the WHEJAC. We strongly recommend that any further Justice40 guidance from the Biden administration to implementing entities include direction that conforms to the above recommendations.

### 1.5.11 Dan Solitz (Oregon)

**Dan Solitz** stated that he's calling in response to the president's 2023 budget on environmental management, cutting back the cleanup in Cold War legacy sites and shifting that money to more weapons and nuclear weapons production. If recent events haven't taught us anything, it's that this isn't really the way to go. They need to clean up those sites and figure out a way to clean up the cloud that may be hanging over us.

### 1.5.12 Charlotte Keys - JPAP/MTAC (Columbia, Mississippi)

**Charlotte Keys** stated that, coming from a faith-based community, there are so many different things to address. She is more concerned about making sure that the Justice40 program is set up to help ensure more community engagement and participation with the funding. Listening to different ones talking about the water, the public transportation, and all of the different aspects, it is so important to understand that they are still dealing with similar issues of racism as it relates to public participation with a seat at the table and dealing with health, housing, clean drinking water, job creation, job development, enforcement, and a lot of the different aspects of collaborative problem solving because she felt strongly that if anything is to be addressed and any problems to be solved, it's going to take a collaborative effort.

Without the grassroots environmental justice communities at the table with the states or the local city fathers that have a lot of political will, people will still be disconnected from being able to access resources and have a seat at the table. It has to be some type of task force, advisory council, or something set up for more grassroots participation in an equitable manner as it relates to the funding for Justice40.

### 1.5.13 John Mueller (Oklahoma)

**John Mueller** stated that he's an environmental activist with 13 years of studying the practice of artificial water fluoridation, studying again in my public service career as a water civil engineer

and water treatment professional. Recognizing that today's public comment should be relevant to the beta version of the Climate and Economic Justice Screening Tool, he emphasized -- again in addition to last month's meeting and in previous comments -- the need for the screening tool to include a data set of all drinking water utilities which participate in the CDC's community water fluoridation program for which the CDC has a readily accessible database.

So why must the screening tool include that dataset? Simply because Administrator Regan has the unprecedented opportunity under the Biden/Harris administration to end the EPA's policy of allowing the addition of contaminated industrial pollutants to public water supplies, especially in light of the most current high-quality scientific studies, a number of which have been funded by NIH and which policy is revealed in the quotation, "In regard to the use of fluorosilicic acid as a source of fluoride for fluoridation, this agency regards such use as an ideal environmental solution to a long-standing problem by recovering a byproduct fluorosilicic acid from fertilizer manufacturing, water and air pollution are minimized, and water utilities have a low-cost source of fluoride available to them." And that is from a letter dated March 30th, 1983, 39 years ago today from the EPA Office of Water to a dentist in Newtonville, Massachusetts, which has endured to this day.

What is most striking and compelling about that statement and its underlying philosophy is their obsolescence while continuing to fly in the face of today's increased environmental awareness and awareness of toxic contaminants posing risks to public health like PFAS, for example, and lead, which we've known about for decades but we don't deliberately add it to the water. The greatly misunderstood practice of fluoridation needs to be terminated in favor of more effective programs to improve our nation's embarrassing oral health conditions among the disenfranchised and vulnerable subpopulations.

Programs at schools for periodic dental checkups and oral health education are proven effective programs. If replacing lead pipes is a high priority, then EPA must also prohibit the deliberate addition of toxic pollutants that flow through those pipes, old and new. He will be submitting additional materials pertaining to the mentioned opportunities for Administrator Regan.

### 1.5.14 Hormis Bedolla - Alianza Nacional de Campesinas (Wolcott, New York)

**Hormis Bedolla** (through an interpreter) stated that she is a farmworker. She has worked for about 19 years in agriculture, specifically in the industry of apples. Her state is second in production after Washington. She has had direct contact for those 19 years with pesticides. She has applied pesticides and herbicides at many levels of toxicity, some of them with reentry of 72 hours because of its level of toxicity. She had been indirectly and directly affected because of that. She has three children. Her eldest was born before her exposure to pesticides. The other two were born after her contact. Her second child was born with learning disabilities. He's in a group of special education. Her third child was born with renal problems. He only has one kidney, and the only one that is working has been affected. All this is due to pesticides.

The county where she lives is a disadvantaged community. Not only has her family been affected but many farmworkers because they are in direct contact with contaminated water and air. This is a rural area. Many people come here to work in the fields. She is talking about hundreds of thousands of people, so they have been affected directly because of the use of pesticides.

She is asking to have more regulations regarding pesticides. There should be important people that come to the sites because they are violated. All the regulations are violated, and that's why the farmworkers are exposed directly to all these pesticides. They're very harmful to our health, not just to their health, but to the water, the air, and the environment. She is asking for more attention.

### 1.5.15 Alicyn Gitlin - Sierra Club - Grand Canyon Chapter (Flagstaff, Arizona)

**Alycyn Gitlin** stated that she was speaking on behalf of the Grand Canyon region, the ancestral and current homeland of at least 14 tribal nations. In recent weeks, the federal government has seemed eager to rush our nation back into a frenzy of nuclear development despite never having cleaned up from the previous boom-bust cycle. Once again, we see wealthy, and often foreign-owned companies ready to profit off of our outdated mining laws and weak environmental protections. Much of the extraction, milling, and spent fuel storage continues to occur in places where the weight of the risks is on the backs of indigenous peoples. These boom-bust cycles continue, but the contamination is forever as we fail to clean up uranium-contaminated water supplies. In my region, the so-called reclaimed uranium mine sites can exhibit greater levels of soil contamination than active mines.

The EJSCREEN tool is an important one. However, the full contents of the WHEJAC final recommendations need to be encoded in regulation and policy. It might be useful to even have a second tool to assess whether proposals fit within the WHEJAC recommendations prior to even thinking about their placement. The Justice40 initiative pledges 40 percent of overall benefits from federal investments in climate and clean energy to disadvantaged communities, yet she is hearing energy rhetoric from DC that seems to have a crisis of creativity. She's hearing of oil, gas, and nuclear. She's hearing of mining for uranium and other minerals that will harm native communities.

In contrast, the WHEJAC's final recommendations list the procurement of nuclear power as an example of the types of projects that will not benefit a community, and that is being ignored. We need strong policy statements that are responsive to the Advisory Council and set our nation up for a healthy and prosperous future. We shouldn't be able to ignore the WHEJAC recommendations and develop extractive policies that echo tragedies abroad with new harms at home. Yet she's watching in my region as the owners of the Pinyon Plain Uranium Mine and the White Mesa Mill use war and tragedy as an excuse to create new nuclear landscapes. Are these the intentions of people who care about life and who care about the health and well-being of people? No.

She fears that in my region where a quarter of Navaho women have high levels of uranium in their bodies, and the Pinyon Plain Mine pumps millions of gallons of uranium and arsenic-contaminated water from its shaft every year that we are about to repeat terrible injustices of the past. With Justice40, we should invest in a new way, not waste more time and more lives. We should be elevating indigenous and affected communities as leaders in creating solutions. Thank you, so much, for your time and for all the important work that you do.

### 1.5.16 Audelia Martinez - Lideres Campesinas (California)

**Audelia Martinez** (through an interpreter) stated that she is a farmworker, and she has worked for more than 20 years in the field, same as all her acquaintances and family. With heat, the climate, and the pesticides, they change so much that here in the community where we live in Monterey, we need to continue working in order to make it. When she arrived at that place, she was living with her husband. All the time, we worked with lettuce, grape, and broccoli. Right now, she has asthma and psoriasis. Her husband passed away from lung cancer.

Here in her community, there are many children that are autistic. It is windy every afternoon, and there's a lot of dirt because they are around fields. On a daily basis, they have pesticides on the field. There are many elderly people dying of cancer and asthma attacks, and that is why she believes that it is good to fight and try to find alternatives to get rid of all the pesticides. Mostly everything has to do with climate change because they see that that is affecting most people with disabilities or people with illnesses. Yes, they are asking EPA to notify us at least 72 hours or 48 hours before putting some type of pesticides in the community. Like some people said, everything that has to do with climate change has to do with pesticides as well. So yes, they are asking for this huge favor. Think about our families, our children, and our elderly. Here in the community, we have schools and we are surrounded by all types of fields where they are harvesting and putting that type of pesticide.

### 1.5.17 Carlos Garcia (New York)

**Carlos Garcia** stated that his public comment is hoping that the Council is understanding and prioritizing a just transition and understanding where the trends of the energy market and policies are really moving towards, and how they can address a lot of the current EJ issues such as fugitive and criteria air pollutants due to the energy infrastructure and how they can kind of combine the prioritization of decreasing criteria and fugitive methane emissions, and criteria air pollutants, along with galvanizing the energy markets and companies to address those concerns.

And so, one of the things that they are proposing as flume energy is to be able to have waste energy, methane, and criteria air pollutant captures at wastewater treatment facilities, turning that into clean energy through non-combustion fuel cells and then galvanizing how EV adoption of EJ communities through EV charging ports, whether that’s light to medium or heavy-duty charging ports, in EJ communities being fueled by the gasses that are being captured from wastewater treatment facilities. They understand the concern of the EJ communities about perverse or negative externalities due to waste energy products. They feel that in wastewater treatment facilities there is no perverse incentive that could really be used except the only added benefit of capturing fugitive emissions, methane and criteria air pollutants, that come from wastewater treatment facilities and being able to galvanize developments in the name of a just transition for environmental justice communities.

He'll be reaching out to a few of the Council members to understand their proposal and hopefully garner some support. But he also again just wanted to echo everyone’s comments before me that we really appreciate all the time and work and late hours that are put into helping this Justice40 initiative. For those who have worked in New York EJ policy and energy markets and the EJ fight, they really appreciate and are very proud that the White House and the federal government are now taking the mantle and trying to continue the good effort that New York is spearheading.

### 1.5.18 Brandi Crawford-Johnson (Kalamazoo, Michigan)

**Brandi Crawford-Johnson** stated that she's tired. She's tired of having high blood pressure, tired of heart palpitations, panic attacks, for fighting for people to stop being poisoned in my community in Kalamazoo, Michigan. Yesterday, she got an email from the state health department saying that their health investigation is being delayed for the third time, and it was very depressing. She's just done everything she possibly can. She heard Dr. Bullard talking about civil rights, and she has a civil rights complaint against EGLE with Michigan. She's talked to ECRCO about her civil rights complaint, which is an informal resolution right now, and she's asked them to take funding away from EGLE. They're doing the same stuff they've done since the Flint water crisis. Nothing has changed. They're still giving permits to polluters that are out of compliance to continue expansions and to continue poisoning fenceline communities. And it's just got to stop.

She likes that the administration is putting more funding towards environmental justice, but she just doesn't see any action happening fast enough. She's said this before, we have FEMA, and FEMA brings in help for tornado victims and hurricane victims, but nobody is bringing help to these fenceline communities that are being poisoned to death. Graphic Packaging started up their expansion three weeks ago and increased pollution by about 200 percent -- greenhouse gasses, hydrogen sulfide, sulfur dioxide, mercury, lead, you name it. And they've had two 20-year-olds die from asthma in the three weeks since they started their expansion, and one person had a heart attack during an asthma attack that is on life support and in a coma. He's 31-years-old.

And this is still not serious enough for our state health department, the EPA, or EGLE to come in and bring help to this community. They have had two reports since 2020, one from a toxicologist saying the severe health risks to employees at both plants -- the wastewater plant next door to Graphic Packaging and Graphic Packaging -- and to the residents living in this valley neighborhood where all these gasses are trapped and poisoning everyone to death. There is a 14-year death gap in this neighborhood. There are 14-to-15-year death gaps in all fenceline communities across the United States. We've got to start treating this as the emergency that it is. These people are being poisoned to death. Pollution is poison, and it's got to stop now. We cannot wait any longer. We have to treat this as an emergency. These people are dying.

### 1.5.19 Dulce Salgado - Alianza Nacional de Campesinas (Oregon)

**Dulce Salgado** (through an interpreter) stated that she is a farmworker and is a wife of a farmworker. She's been a farmworker for six years. She has experienced a diversity from beautiful spring to the freezing winter. In the last years in the field, they have felt very strong heat waves in the summer. For instance, last year in 2021, they experienced the hottest days they have ever had. Temperatures rose to 113 degrees. The heat was so intense that many of the harvesters were affected, and the harvesting was not as abundant as in previous years. Personally, she's been able to feel such intense heat, and it has been so hard to work. She has also seen many of her friends suffer dehydration. The heat is so suffocating that sometimes it's even hard to breathe in this hot air and many faint. Some farmworkers have died because of the heat waves.

In the fields, they have to wear hats to cover their faces and protect themselves from the sun, and even then, that's not enough. They end up each day with a red face burned by the sun and our arms and our neck the same. According to some experts, over time, this exposure to UV rays can cause skin cancer, not to mention the damage from pesticides. Heat is very dangerous, and if we don't drink enough water, we can be dehydrated or even worse get urinary infections. The work in the fields has become dangerous in periods of heat. Most of the time, they don't have fresh drinking water or shade where they can refuge from the heat during their breaks.

Many of them don't even imagine the precarious ways in which they are working, but they're essential workers. Their work is important. They must do it because not only are they taking food to their homes, but they also bring food to all the tables in this area. They know the recognition of the work in the economy of the country, but also in the implementation of laws to have a safe environment for their children. They are requesting reforms that will permit the conservation of the environment. This is in everyone's hands and for the future of the next generation. That is what she's asking.

**1.6 Closing Remarks - Announcements & Adjourn**

**Co-Chair Moore** understands that it's a long haul for those that have testified previously and for those that testify repeatedly. The Advisory Council has traveled all over this country. They've seen and visited many of the communities, and they can assure everyone that their comments and recommendations are not only listened to but are understood. **Co-Chair Shepard** thanked everyone for their presentations and the public comments. **Vice-Chair Tilousi** stated that she hears what everyone is saying and that remedies are not moving fast enough.

**Vice-Chair Flowers** stated that, as they look at how to bring equity to these areas that have suffered for so long, there is a process underway in some states, and they are taking away home rule from local communities from being engaged. How can that impact the implementation of Justice40 in communities where community engagement is being taken away from the communities themselves? This is actually taking place in the statehouse where they are partnering with a lot of these entities that have created the problems that we're talking about.

**Ms. Santiago** stated that the comments that they have heard are important and deserve a response from the different agencies that have the responsibility to address them. They sent a letter to CDQ to have more staffing and other agencies that can actually implement the Justice40 initiative. They need to make sure that that implementation happens so that these comments that they hear meeting after meeting get addressed.

**Mr. Parras** stated that since 1994, they have been working on environmental justice. He thought progress has been extremely slow but hopes that meetings like this will continue to at least speed up the progress because they should not have to address environmental justice concern issues much longer. Unfortunately, we will.

**Michele Roberts** stated that she hears the anxiety of, how long is long? But then equally, they need to make sure that they get it right. The reason is that we've lost so many people and are losing so many people. She believes that together they can indeed push to make sure that in this political will of the moment that they make the words of the president manifest themselves into

making sure they do receive and provide for those communities. Together, they can indeed push this administration and our Congress to have the exceptional right political and moral courage and will to make sure that they leave no one and no community behind.

**DFO Martin** adjourned the meeting for the day.

**2.0 Welcome, Introductions & Recap**

On Thursday, March 31, **DFO Martin** welcomed everyone to the second day of the meeting. She gave a few instructions and then handed the meeting over to Ms. Shepard. **Co-Chair Shepard** recapped the prior day's meeting and set the stage for the day's meeting.
The chairs and vice-chairs introduced themselves, and **DFO Martin** proceeded with the roll call and informed everyone that the quorum was met.

**2.1 Opening Remarks**

**Co-Chair Shepard** introduced the next speaker.

**2.1.1 Robin Morris Collin, Senior Advisor for Environmental Justice - U.S. EPA**

**Robin Morris Collin** congratulated the WHEJAC on their first anniversary. She apologized that Administrator Michael Regan was on international travel and couldn't attend.

EPA is honored to support this historically important work. They have supported the operation and the work of the WHEJAC with our redoubtable DFO, Karen Martin, and other staff members. What promise they have in this moment. As they look at the moment that they have right now, she looked back at the faces of some of her long-time friends and thought about 30 years ago where they were. They were having a hard time just finding sofa-change-kind of money to get around and talk to each other. This past week, they got $100 million to do environmental justice work. She savored the moment. They have come a long way, and they have a long way to go. She knows that, but it is thanks to the people around this table, the WHEJAC, and all of the many community members who have struggled and some people who didn't make it to today. Thank you to all of them because we're here now.

They are blessed to have the support of a president of the United States and a vice president of the United States who have made environmental justice their priority. And, for the first time, they've given us historically meaningful funding, money to back up a promise and a commitment that they have made. She joined EPA only a month ago, and this is her first opportunity to address them as the senior advisor to Mr. Regan on environmental justice. It is an honor to work for Mr. Regan, and she is honored to be the one chosen to do this work.

Their mission in leading EPA forward is to protect human health and the environment. All communities are guaranteed the protection of environmental law. Some communities have been left out for not just decades but hundreds of years. What it feels like to be left outside the protection of the law is to live exposed to the worst, most harmful, most dangerous elements and impacts that our industrial society has. That is an atrocity. They've addressed that in the EJ movement. They have asked for human rights. They have demanded our human rights. Now,

they are in a position to demand that the equal protection guarantees that all communities should be protected by environmental justice, must be ensured, must be delivered upon. It is her honor to work with an administrator and other leaders inside the EPA who are committed to that work as well.

Environmental justice is the way a democracy ensures that promise. That means that all communities are ensured that they get the protection that they deserve. This is a historic moment. However briefly they have to savor it, they should, and they should celebrate it. In addition, it gives her hope and pride to look at the opportunities that they have to achieve a vision of environmental protection that includes all communities.

To end briefly here, she will be back. She will return with a more complete account that WHEJAC has asked them to provide with respect to the activities of EPA. In this brief moment that they have together in the start of their relationship, she wanted to share her sense of what her role is in this position at this moment. What they can do together is to focus the power and the resources on places that have been unfairly and harmfully impacted in multiple cumulative synergistic ways. They as an agency must change the response to those communities from what they cannot do to what they can and will do. That is her commitment, and she is again deeply honored to be in their presence.

**Co-Chair Shepard** turned the meeting over to Vice-Chair Flowers to open up a discussion on the beta version of the Climate and Economic Justice Screening Tool.

### 2.2 WHEJAC Climate and Economic Justice Screening Tool Workgroup Update & Discussion

**Vice-Chair Flowers** introduced Dr. Lucas Merrill Brown who will give a demo of the beta version of the Climate and Economic Justice Screening Tool. She stated that after the demo WHEJAC members will have the opportunity to provide comments and recommendations about the tool to help the workgroup in developing recommendations for a final vote during a future meeting.

#### 2.2.1 Dr. Lucas Merrill Brown, Senior Advisor for Justice40 - CEQ

**Dr. Lucas Merrill Brown** stated that he is grateful to be presenting this tool that many members of the WHEJAC, himself, and many other members of the Council on Environmental Quality and the U.S. Digital Service have been working on for a long time. It became a labor of love.

He stated that the presentation will walk through the background of the Climate and Economic Justice Screening Tool and do a brief demo of the tool, which is currently live at screeningtool.geoplatform.gov. It also comes up if you google Climate and Economic Justice Screening Tool. He encouraged everyone to multitask and take a look at that while he talked. Then, finally, he will emphasize and reemphasize all the different ways that they are soliciting their feedback on this tool. They are looking to hear from everyone about the communities, about data, about environmental issues that are not currently represented in the tool, and for everyone to give us recommendations on how to improve this tool overall and make sure it matches the lived experiences and the environmental justice issues affecting communities across this country.

The requirement for The Climate and Economic Justice Screening Tool comes from the executive order on addressing the climate crisis at home and abroad. It asks the Council on Environmental Quality to create this geospatial tool with interactive maps highlighting disadvantaged communities that are marginalized, underserved, and overburdened by pollution. In practice, agencies will be using this tool in order to implement the Justice40 Initiative. The Justice40 Initiative directs 40 percent of the overall benefit of certain federal investments to disadvantaged communities. These are 40 percent of the benefits from programs that touch on any of seven issue areas, so any programs touching on climate, clean energy and energy efficiency, clean transit, affordable and sustainable housing, training and workforce development, clean water and wastewater infrastructure, and the remediation of legacy pollution. This tool is used to identify the communities that will be prioritized to receive those 40 percent of the benefits.

They've had several goals that they've kept close to their heart as we are developing this tool. One is to provide this data-informed methodology for identifying disadvantaged communities. They want this definition to be clear and consistent as well. Further, it's helpful to one consistent definition across the federal government of how agencies implement the Justice40 Initiative to provide consistency in outreach and stakeholder engagement with communities that are prioritized, as well as making sure communities know that they are prioritized across the hundreds of different programs covered by Justice40. This tool will be continually updated and improved as feedback comes in from people and as new data becomes available over time. This tool should reflect the realities on the ground and the lived experiences of people across the country. And they want it to be easy to understand and use. Now, they can dive into the tool.

This is the landing page that will be seen when you go to the tool. Again, it's screeningtool.geoplatform.gov, or you can just search the name Climate and Economic Justice Screening Tool. It notes everywhere that this is a beta site; it is in progress. It is doing this public beta period right now where they've published a draft definition of disadvantaged communities in order to get more in-depth feedback from the public and advisory bodies on the definition of disadvantaged communities and the tool overall. So far, that feedback had been extremely helpful, and they are updating the tool in response. They will also be making this entire site available in Spanish as soon as possible.

This gives you some context on the background of the Screening Tool and Justice40 that he just went through on the slides. These are the calls to action. So if you are a federal program manager or if you're a federal staff that is using this tool in order to help prioritize benefits from your program, here's a good place to start by going into the Methodology & Data page. If you're a community member who wants to explore data about communities across the U.S. including your own and provide feedback, here's a good place to start with Exploring the Tool.

Again, their very favorite word, sending feedback. We have a number of different mechanisms to solicit feedback from the public, including the simplest one, just send an email to this email address: Screeningtool-Support@omb.eop.gov. It also has a survey that's available on every page of the site. This asks you about who you are and how you might be using the tool as well as it offers the opportunity to suggest and recommend specific datasets, so why you think this dataset should be included, maybe a URL if it's already a public dataset. This is really helpful for us as

well.

He also wanted to call attention to the fact that this community is entirely available as an open-source project, meaning that all of the code used to produce the analysis, used to crunch the numbers, used to create the formula of which communities are designated as disadvantaged, the visualizations, the map. It is all fully public and accessible. You can explore and see details about how all this works. If you have a little bit of programming knowledge, you can copy this and use it for your own purposes, for your own screening tools. Or you can suggest bug fixes and updates and modifications. They have had a number of contributions from the open-source community that have been very helpful as well. This offers some information about the codebase. That information is also translated into Spanish so that Spanish-language speakers can get involved equally.

If you are interested in getting involved in the open-source community, you could learn more and join. There are regular gatherings of the open-source community that you can join, and there's information on that down here. They also provide a lot of information if you would like to see the data directly. For instance, many people ask for the Shapefiles in order to use this data in ArcGIS or the GeoJSON data. Those are available on this Datasets page.

On the Methodology & Data page, it provided more information about the formula that is used to determine disadvantaged communities, the methodology. Communities are highlighted as disadvantaged if they exceed a threshold for one or more environmental and climate indicators and meet the threshold of the socioeconomic indicators. These are explained in detail on this page. This is kind of the description of how the methodology works. If you have any interest in a particular indicator and you'd like to learn more about, well, what does that data element really mean, you can simply click into the name of that dataset and learn a lot more about it as well as where the data originally comes from and when it was last updated. Again, if you have questions, feedback, or suggestions on any of this, please submit your feedback. They're very eager to hear from you. On this page, you can also download all of the data so that you can use it for your own purposes in Excel and CSV.

Coming over here to the Explore the Tool map, it has a little bit of information about the tool, including the definition of census tracts. These are the units that they use to identify communities. A census tract is a geographic boundary that comes from the U.S. census. It represents usually about 4,000 people. One thing he always cautions people about is that when you're zoomed out at this bird's eye view of the United States, the census tracts that you're seeing from this distance are often extremely large rural tracts. For instance, in South Dakota, there might be a single tract that stretches over tens of miles in order to included 4,000 people. Whereas, when you zoom into a city like Chicago, you can start to see the hundreds of census tracts and communities that are getting highlighted as disadvantaged communities by the tool. The reason he brought this up is not to use visual cues from the zoomed-out map to infer anything about the distribution of disadvantaged communities across the country because you're mostly seeing the rural tracts when you're that zoomed out.

Zooming in, if you click on any of the tracts that are highlighted in this greyish blue as disadvantaged, you can get more information about that community. This community is identified as disadvantaged. It has about a thousand people living there. It's disadvantaged in five

of the seven categories that we have for our metrics, and it's at or above 11 of those thresholds. You also have some indication of the number of different environmental and climate burden thresholds being exceeded by this.

Our very favorite word, feedback. If you have some information about this specific community that you would like to communicate or you think that it should not be highlighted as a disadvantaged community and it is; or you think that it should be highlighted as a disadvantaged community and it's not; or you believe that the data is not fully capturing the lived experience in this community, just go ahead and click and send feedback there, and that will give us kind of precise, targeted feedback about this specific census tract.

One way in which they are actively taking your feedback is that a number of commenters at some of our public training and engagement sessions or members of the WHEJAC have provided feedback that the sidebar here was a little bit confusing in the initial form. So they have now rolled out a new design that they hope, based on testing, seems to be a better way to explain what is happening with the methodology. But, please, send them more feedback if it's not working for you. You can see that one of the reasons that this community is highlighted in the clean transit category is that it has a very high level of diesel particulate matter exposure, 98th percentile. The percentile means that it has more diesel particulate exposure than 98 percent of the census tracts across the entire United States. It has a 99 percentile of traffic proximity and volume, which is not too surprising being close to 90-94 here. It is also an extremely low-income community with the 99th percentile of a population of low-income residents, with a high rate of people who are not currently enrolled in higher-educational institutions.

You can open up the categories as well. This is very close to risk management plan facilities. It has very high levels of toxic concentrations in local streams, has extremely high rates in all four of these health categories, more than 99 percent of the country, high rates of asthma, diabetes, heart disease, and low life expectancy. Finally, it has high rates of low median income, unemployment, and poverty. So you can really see a number of dimensions that are being tracked in the screening tool, and they look forward to tracking more based on recommendations during this public beta. It has handy helpful buttons here on the side that allow you to zoom into different areas, like Alaska, Hawaii, Puerto Rico, American Samoa, or the Mariana Islands, some of those areas that are a little further off the map. Based on feedback from the WHEJAC, they have also been working to make sure that the visual experience of the map works well in rural America as well as urban America and have been working to improve that as well. By the way, you can also click on any community on the map, even if it's not identified as disadvantaged, and learn about the characteristics and statistics of that community.

Once again, there's another way to download the current list of communities and datasets used. There are a couple of notes on territories and tribal nations. And one of those other ways of soliciting feedback is through a request for information on the federal register. The request for information is a little bit of a more formal process for soliciting public comments, and it has some questions here that ask and solicit your input. It also has this Public Engagement page that lists upcoming training and public meetings related to the Climate and Economic Justice Screening Tool. They do have a public listening session focused just on this tool coming up on April 15th, and the registration link is here.

If you do download the data onto your computer through any one of those links, you'll be able to see all the information that is available in the tool and do what you want with it. These are all 73,000 census tracts in the country, all of the data about them, about their expected rate of agricultural losses due to climate risks, their currently experienced PM2.5, their rate of traffic proximity and volume. If you did want to learn some information about a particular area, you can type in these filters and use these to select places you're looking for, like in Lowndes County, Alabama, you can see that all four census tracts here are identified as disadvantaged communities.

Again, they would really love to hear from you, not only from you, but if you do have the capacity to collect and solicit responses from other members of your community or communities you're connected to. There have been a number of groups and organizations who've kind of been organizing their communities to submit comments on this tool. They would love to hear from them. Send an email. You can respond to the request for information. You can complete the survey. You can join the open-source community on Github. You can attend an upcoming listening session. The links for all of these things are available on the site. As shown before, they do have this upcoming listening session on Friday, April 15th.

**Vice-Chair Flowers** stated that it's amazing to see how it came from being a concept to being a reality. She thanked him for the work that was put into that. She notified everyone that there were questions on the screen to guide the comments and questions on the tool from the members.

She began the discussion with the race question. Can they get to race? As they look at all of these different communities that have been identified, are these showing up as being particular communities or greater number of communities that are either marginalized or communities that consist of people of color or indigenous? Did that show up at all? **Dr. Brown** replied that they certainly hear and understand and acknowledge the long history and deep importance of race and racism in environmental justice issues. There have been countless studies and just simply lived experiences that indicate the importance of that in environmental justice history. They are very much here to listen to recommendations and solicit feedback, and so they welcome explicit recommendations to include race in the tool. At this time, he's mostly there to listen and learn.

**Ms. Santiago** appreciated that this tool is attempting to identify the most overburdened communities in terms of pollution. With the limited experience she's had with the tool, in the case of the communities that are most overburdened with pollution in Puerto Rico, the tool does not seem to be reflecting that. They know that there's some data limitations as to the territories in Puerto Rico as the notes indicate. There are only four criteria or indicators. What she found is that, of those limited four, only two were found in an area that has the most polluting power plants. That's one question; how did that happen?

Second, for example, they do know that territories and poorer jurisdictions sometimes have a hard time collecting data. But in this case, as to emissions safe from power plants in Puerto Rico, there is data from the EPA, so you don't need to rely exclusively on the monitoring from the local environmental quality board or agencies. That's the second part of the question; was that data taken into account in determining if indeed these sources of pollution were considered in the tool? Do you understand my questions?

**Dr. Brown** responded that his understanding is that in this session they'll be soliciting comments and recommendations and providing feedback on the tool itself. The suggestion of looking at those additional datasets from the EPA in Puerto Rico is a great one, but they would love to hear the recommendations and questions from the whole group.

**DFO Martin** clarified that the questions and comments should be in response to the questions that the workgroup has posed, not necessarily for Lucas about the tool. All those questions that are for Lucas need to be discussed as a body in the group so they can develop recommendations for what we're going to put forward later this year.

**Mr. Cormons** thanked Dr. Brown, CQ, and USDS for taking something that was a bold concept and turning it into an emerging and developing reality in the form of the tool. It's wonderful that it's open sourced, that the data and the protocols for analysis are publicly available, can be scrutinized, can be used to whatever ends advocates and members of the public see fit. That's a really healthy approach.

A few things related to the first question about additional information -- this is the point at which the tool is being GroundTruthed, and we're able to see where it has blind spots, where there are communities that are disadvantaged, that are subject to EJ impacts and the tool isn't showing that. So he's really interested in our collective-best thinking on what other data sources can be added to help eliminate those blind spots as much as possible and recognize that a lot of the data out there are not perfect. He thinks that data that can help us to avoid these false negatives or blind spots and improve the accuracy of the tool -- even if those data aren't always perfect -- should really consider including those layers and using them in the disadvantaged determination. Additionally, there may be layers that can be added that don't necessarily go toward the determination of disadvantaged or not disadvantaged but can be really useful as the public, as advocates, as agencies are wrapping their heads around the problem and the best ways to address the problem.

Finally, he put one more question out there for this discussion which is, to what degree do we envision this screening tool in addition to helping agencies to determine and providing the answer for agencies, which communities are disadvantaged and therefore eligible for Justice40 funding? They're also hoping that additional data layers in the tool and the confluence of factors can see cumulative impacts for certain communities, et cetera, that can inform agencies' decisions about tough choices about prioritization of certain funds.

**Dr. Wright** stated that she has two pet peeves about the questions: the first is the cumulative and the race one, and the last one would be the accountably measure. They've all talked about something when it came to accountability. They were recommending that we have these state committees put in place or some kind of committee that's put in place within each state where the EJ lens would be then applied as to where program monies were being allocated and that they met the Justice40 lens. That was one recommendation.

On the question of race, she thinks race should be included. Not to get dramatic but Ahmaud Arbery is dead today. He was jogging through a white neighborhood. That might be one factor that other people do. No matter how many factors you add to that case, the end result is that he is dead, and he's dead because he was black. So, when you remove that he was black, you don't

have the reason for his being murdered.

The same kind of thinking happened with the Screening Tool. There are some things that happen to us just because we are black. Blacks are the only group that was legally enslaved by this country, and there are things that go to us that don't go to anybody else, as is true, also, of Native Americans. Things happened to them because they are Native American. You can add every other thing that happens to every minority group, but there are things that happened to Native Americans because of their situation in this country, that we stole their land from them. The Screening Tool will miss the mark completely if it doesn't have race because, living in this skin that she's in, there are things that happen to me just because of my race. She's seen what's happened to my family because of their race. She's really and truly frightened about not including race, looking at all of the things that everybody else is saying.

Her recommendation would be that race is included. She doesn't know if the whole group would agree with that because of the fear, but there needs to be some mechanism that deals with race, like with Natives, with black people, and with immigrants. Some of those things are covered for people who are immigrants and the language barriers, but what do you do with people who speak English? They're not immigrants. This was home for Natives. Blacks were dragged here, but this is all they know. There are some special considerations for African Americans in particular and Native Americans that are different from all of the immigrants to this country.

She feels that this is a huge problem because this is what they've been fighting for all this time. What she wants to hear are, what recommendations they can make to respond to the questions that they have about the Screening Tool? It's like having a disease, and they diagnose it. And they get everything right, but the one thing they get wrong is what kills you. So the operation is a success, but the patient is dead. Some of them will definitely be left out. The same thing is the situation for Puerto Rico, in particular. There are some things that are just a problem for Puerto Rico. They have all the other things that we all have. Then they have their problem. She is concerned that, when there is a specific issue for certain groups because of their relationship with this country and their history within this country, that will be overlooked. And the result will be great, great, too, but a whole bunch of us have been left out or missed because we didn't include race in particular. She would really like to know what their recommendation should be whether they accept it or not. I think that they should stand up. It should be a righteous statement. They weren't brought here to be timid. They were brought here to tell the truth.

So how the administration then decides to deal with it is on them. But it should not be on us to compromise. That compromise comes from them, not from us. They're asked to be the voice of the underserved, of the overburdened. That's what we were charged with. If they decide, well, we agree with you, but we think politically it's not the right time. That's for them to do, not for us to do. That's kind of where she stands, and she'd like to hear from other people as well.

She's an academician. She knows how to debate. Her feelings don't get hurt. If you disagree with it, feel free to say it. She's fine with that because she doesn't want to come across like a bully because she's not. But she feels strongly about this, and she's anxious to hear what other people have to say.

**Ms. Waghiyi** stated that English is her second language, so it takes her more time to process

things. She agreed with Dr. Wright. Regarding the third bullet, she totally agreed to use race as an indicator. Here we are in the 21st century. As a brown woman, it has failed us up to today, March 31, 2022. It has failed her people. It has failed her. All the systems in place have failed them: black, brown, people of color, and even low-income white people. But when we don't include race, it's our dignity as well. We have been bringing this up every decade. It needs to be incorporated. She's open to hearing other suggestions before she contributes more, but she totally agrees; it should be in the screen tool.

As far as the fourth bullet, she joined this conversation this morning. She didn't get a chance to read what was sent to the workgroup members by being four hours behind from the east coast. She had recommended that they take out, are there lessons we can learn for other screening tools that have and have not used race? They should take out "attempt to address." They should not be attempting; they should be addressing. Currently, the screening tool does not address cumulative impacts in any way and should prioritize them among disadvantaged communities. "Do you think the screening tool should attempt.." Take out "should attempt to." They need to address cumulative impacts.

Then, the scorecard, "What mechanisms for accountability should be in place for states and localities..." Her state has been failing us. Here they are, one of the newer states in the nation. Thank you for acknowledging that they are all on stolen lands. Her state does not recognize the tribes, and most tribes in her state are against development because they're in close proximity to our homes, hunting, and food gathering locations. Her state is heavy fossil fuel industry, and now they're looking at false solutions. But there should be a scorecard for these states and localities. If they do not pass, then we need to give them time to remedy the shortcomings to ensure that meaningful changes are implemented to ensure the goal of Justice40. Even the 60 percent of the rest of the resources and investment still need to be accountable and need to be in place for states and localities for the implementation of the Justice40.

**Susana Almanza** stated that she would like to have added on there the heat island because a lot of communities of color live in the heat island effect, and that needs to be added to the screening tool. The other one is flooding because most communities live downstream from water and discharge and so forth. They should also add flooding to the map. Then, she agrees with adding race because race has been used to redline the whole United States. Race was used to segregate in the whole United States, and race was used to make many of the laws to favor the white establishment. So race has been used in the whole history of the United States. And now that people of color want to use race, all of a sudden, it probably wouldn't pass in the Supreme Court, and it will be challenged. So be it. They know that we have a right-wing Supreme Court, but that doesn't mean they don't challenge the status quo and give the reasoning that white people have always used race when it came to making all kinds of laws and segregating.

**Ms. Lopez-Nunez** stated that these are their recommendations, so she's confused as to why they wouldn't recommend that race be a factor for every reason that Susana said. Also, she doesn't see how this can be a tool that calls itself climate and economic justice without including race. Environmental justice does not exist without race. She's disturbed that this trend of people thinking environmental justice is justice for the environment because it's not; it's justice for black and brown, indigenous and everyone of color, non-white folks, who have been left out. Obviously, race should be included.

She is really concerned about cumulative impacts. They should be part of our recommendations -- those cumulative impacts get included because I'm disturbed that some dwell on which community has the most percentile. It's about the magnifying effect. For example, she lives next to the water, but when the waters come in, it's toxic waters because it's going to pass by the sewage plant. It's going to pass by the power plants, by everything, and it's toxic water that'll go into our basement and have that impact. These things compound on each other, and she's disturbed that a screening tool would exclude that altogether. She doesn't think they need to be that beta, that version 1.0.

In terms of accountability, when you click on the screening tool, if it's going to be the one-stop shop, it should also show how much federal money from the different agencies has flown to the different zip codes because I think that that'll actually get us accountability. They'll be able to see. Wow, look. These are all the disadvantaged communities, and wow, they've gotten zero dollars or a small percentage, just like they could see the other datasets for communities that are not Justice40 designated, then we should be able to see where the money's flowing. That should be kind of incorporated into the Screening Tool, and that'll be a way to ensure accountability. It should not just be demographic things about stigma but also something that reflects back to the government -- how it's doing and where it's spending its money.

**LaTricea Adams** stated that not including race in this tool makes it not a tool. If we are not going to be serious about environmental racism and white supremacy, then this was all done in vain. It is very clear that as a collective, as an advisory, we're all on the same page as it relates to race. But it really requires the administration, all the powers that be, to shake some stuff up. Regardless of if it gets shut down, it is disrespectful and a slap in the face to every black and brown person that has been advocating and fighting for decades for us to get to this point where, literally, they tell black and brown people that we don't matter. If you don't include this in this tool, that's what's being communicated.

In addition to that, how could we hold any state accountable to environmental justice when we're not really getting to the core of justice because we're not including race? So she wants to go on the record to say that it is not time to be cowardly. It is really important right now more than ever for us to stand up against white supremacy and really focus on the injustice and the complete disgust that has happened to black and brown people for centuries.

**Co-Chair Shepard** wanted to make a couple of comments. She's from New York, and New York State has a Climate Leadership Community Protection Act which some people say Justice40 was modeled on in terms of New York saying that a minimum of 35 percent of benefits of investments should go to frontline communities. What they have done is to include race in their tool. Again, this has been accepted by the state Department of Environmental Conservation. One of the working groups is also looking to define benefits as dollars. There's no reason that a benefit is not a dollar. So New York is looking to also define benefits as dollars.

She also mentioned that New York is using redlining again as another criterion or metric. Initially, the tech person or tech company thought it was very complex to do, but they were able to do it. Redlining is another key metric that can be used. Then, back in May, the workgroup talked about the screening tool being able to track where the benefits went, where the money

went. She hopes they haven't lost thinking about that metric, but it's very important that the screening tool also be a tracker for where the benefits and the money have gone so that we can easily click and see that. Again, given the amount of time the screening tool has taken and the amount of attention, it certainly needs to be able to track benefits and investment.

**Vice-Chair Tilousi** stated that as far as the website is concerned, it was mentioned earlier that the data was going to be collected through census data. A map was displayed earlier to show what areas were identified. In their communities, specifically in Arizona, a lot of their communities are very remote, so the census people that go out into our reservations don't get the proper data. As she saw at another presentation a month ago, her part of the village in Arizona was not highlighted. The latest census was not accurate. They counted 34 people on her reservation. So she cautioned about utilizing that particular census data for some of our tribal communities, especially the Hopi reservation and the Navajo reservation because it's very hard to get proper census data.

She's a little disappointed as far as race not being included in the screening tool. She echoed the concerns of her fellow WHEJAC members. If that is not included, she sees the tool as being flawed.

Going on to the third comment as far as how states will be held accountable, what mechanisms should be in place for states? She doesn't know how that's going to be working as far as accountability because, in the state of Arizona, they have the Arizona Department of Environmental Quality approving environmental aquifer permits as we speak, air quality permits without any proper consideration of tribes or communities that are going to be directly affected. How do they let the state departments know, and how will they be enforced? How will the screening tool be able to enforce these in our state, in particular, Arizona and the southwest?

She didn't see anything regarding uranium or nuclear cleanup. There's a lot of toxics here in Arizona, abandoned mines in Arizona, that people live next to. And they're still not being cleaned by EPA or the state. Nobody's being held accountable. If they do, they do just a partial job, and they leave. So how do we make sure this tool is going to be enforceable? They really need to do cleanup of the uranium and make sure that they're not coming into their states and continuing to do uranium mining with no enforcement or no clean-up enforcement as well.

**Mr. Logan** added some quick comments and recommendations. He supported the consensus of the WHEJAC in including race in the screening tool. In terms of the tool itself, he's trying to figure out where the gaps are. It's going to take a little bit of time generally. He hoped that they have more time to also give more feedback. When he was looking at the neighborhood in which he is from and grew up and where his mother and family live, there's a discrepancy when it comes to a tool like CalEnviroScreen, which puts our community at the 99th percentile, which is in the highest percentile for environmental injustice or disadvantaged community. When he looked at the tool here, it actually puts the community as a non-disadvantaged community, meaning that it's not disadvantaged. So there's definitely some gaps in terms of the data and information.

One of the things that are important to include or consider is the way in which the modeling is put together around the PM2.5. There may be a source category for one individual facility, but

for facilities that are mobile sourced in nature, we need to look at every source category within that facility. As it relates to diesel particulate matter, diesel particulate matter should be considered to be higher weighted because of its toxicity, so it's just looking at the weight of the DPM.

When it comes to traffic proximity, there are modeling and counts for traffic generally. They should also add, as a higher or more heavily weighted factor, heavy-duty transportation, like heavy-duty trucks for instance, not just trucks are added as just another mobile source or traffic exposure but have it more heavily weighted. Then, also, we should include other mobile sources, such as rail yards, intermodal facilities, warehouses from the nature, also ports, for instance. When we're looking at the proximity to the traffic, are we looking at, also, proximity to traffic along riverways, waterways, seaports, and the like, so exposure to marine vessels and oceangoing vessels and other off-road vehicles?

In terms of lead paint, when we're looking at the lead paint as a factor, it should also include other exposures to lead. So a lot of our communities are exposed to lead via drinking water. In his community, there's exposure to ambient lead due to battery and lead smelters so include ambient lead exposure into that as a factor as well.

Within the National Priority List, it shouldn't just include superfund sites but also brownfields, as well, as a factor. Then, lastly, he wanted to put into the discussion around educational enrollment as a factor. Educational enrollment is a good indicator. But really, at the end of the day, it comes down to educational achievement. I know many people that are enrolled in higher education, and they're on the ten-year track or 20-year track or never finish. That that's a factor in terms of the achievement, where they get to, or if they accomplish their goals in education as a factor for this particular tool.

**Miya Yoshitani** wanted to underscore the key things that have already been said, the consensus around including race. To add from experience in California, they were prohibited from adding race into the CalEnviroScreen, and the notable inaccuracies because of that and that there is limitations to the screening tool without race, even though there are some ways that you can, quote/unquote, approximate, but you can never actually attain what you would be able to attain with including race. Everyone has spoken as to how important that is.

On the inaccuracies of census data in particular and repairs that can be made to that, she wanted to talk about the cumulative impacts piece and how important it is to include ways to calculate cumulative impacts on a mapping tool and why that is definitely showing up some inaccuracies and some major gaps in this tool. The side of that needs to include not just cumulative impacts of point source pollution or industrial pollution, also lifting up the mobile sources, but also, the cumulative impacts when combined with climate vulnerability impacts. It's important to include temporary events that, over the average of a year, maybe won't light up on a screen because they're so significant. Examples include things like flaring at refineries or wildfires and smoke contamination or exposure especially to vulnerable communities who are either working or living outside or more exposed to the outdoors. It's not capturing the way that climate is exacerbating the existing overburden of pollution in these communities.

The last point she made is that it needs the cumulative impact score so that you're also able to use

the tool as a preventative tool preventing further pollution and permitting in these places that are already overburdened. So it's not just about the investments, but it's about protecting communities that are currently already facing an undue burden from further pollution, whether climate or otherwise.

**Co-Chair Moore** stated that he totally agrees with the comments that have been made. It would be no surprise to anyone that they talk about systemic racism in all categories, policy and otherwise. It's the responsibility of the WHEJAC Council and this workgroup and everyone to make recommendations to this administration. That's what's being spoken to.

He also realizes, in his capacity not only as a Co-Chair but as a WHEJAC Member, that he's not here representing my organization. He remembered some years back when there was a report that was done by industry particularly talking about where they should locate their facilities. Based upon that, they identified several key factors in the siting of facilities. One was in uneducated communities. Once was in politically disempowered communities. And then the interesting one in that report said primarily Catholic communities. He then made a comment in New Mexico; who are primarily Catholic communities? It's very clear that they were talking about primarily Latino, Hispanic, Mexicano, Chicano, and other communities. Very clearly, it's his opinion that race should be added into this. It's the responsibility of the WHEJAC Council to listen to public comments, to keep those public commenters and the issues that they're speaking about in mind as the Council makes recommendations. The Council can see, hear, visit; they can do whatever to a large extent, and many of those communities will testify.

When we're talking about point four, the mechanisms for accountability, the other thing that has consistently come up here is not only accountability but responsibility. Responsibility is also additionally crucial to the word accountability. They have been talking about, in terms of this screening tool and the scorecard, what if some measures are put out, but in the case of states or other localities, they don't match that up with the scorecard or so on? Then, either the money should be taken from them or, in fact, should've never been given to them in the first place if that's the case.

His last comment was they have to be extremely cautious as a WHEJAC Council that they don't unintentionally set up structures as various ethnic groups are not pitting against each other in the process of moving forward with these recommendations. He's very clear of what his color of skin is. He's very clear of his ethnic background. So we can go on and on at the end of the day and talk about who has been repressed or oppressed or whatever more than others. But their responsibility is to provide the clearest proof-given recommendations to this administration.

**Maria Belen Power** wanted to make three quick comments. One is just echoing everyone's concern around race not being included and wanted to echo the urgency to do that, to include race as a criterion. The other piece is echoing that cumulative impact. In Massachusetts right now, they are developing how to do those analyses after the roadmap bill that was just passed and included environmental justice. So the process of developing those tools to do cumulative impact analysis needs to be public and transparent so that they are accurate and reflect what's happening on the ground.

Then, just a third comment around census and data. It's been mentioned before, and she wanted

to highlight the concern around immigrants not being counted, especially in census data in particular in 2020 during an administration that inflicted a lot of fear and pain into immigrant communities, and not just undocumented immigrants but perhaps mixed-status families where some folks may be documented, and others may not. So there's a huge population not being counted or included, especially undocumented folks that are fleeing war and violence that has been inflicted by this very government and country in Latin America and everywhere else abroad.

**Dr. Sheats** stated that he's on the Screening Tool workgroup. He asked that if anyone has more comments or questions, just keep sending them in. The workgroup asked the question so that other people could hear what the Council wanted. In their initial document, if you go back and look, they actually recommended the use of everything you're talking about. But I think it's important that everybody hear it comes from the entire Council also.

They have to write it the right way. By not using race, what they were worried about is that black and other off-color middle-class communities will be left out. They see that when people have done the analysis. They are seeing that in certain cases. They want the tool to be broader so it doesn't miss these communities, but at the same time, they want to prioritize other communities that have a high level of cumulative impacts. They wanted to achieve those at the same time. One thing that occurred to him that, frankly, they forgot to ask the question on is also where those cutoffs came from. Like it has to be above the 90th percentile or 60th, 50th percentile? Just how those were actually developed because that can give you very different results also. He thanked everybody for the suggestions, and they'll try to incorporate them all and give them something back.

**Vice-Chair Flowers** wanted to make a suggestion as well. She's more concerned about the accountability of states than she is about race. She's very concerned about the people that are living with raw sewage on the ground, and she's also concerned about those communities that are suffering from climate and environmental justice. And she's not willing to down a mountain of race to have the unintended consequences of these people not getting any help at all. She would like to go on the record to say that she would rather focus on accountability because she lives in a state where even if race was used and it was able to get by, the people that need to get the help will not get it. She thanked everybody for their positions and opinions. She felt that it was very important to be honest and to state hers as well.

**Co-Chair Shepard** thanked the whole team for a really good conversation that is really going to enrich their recommendations. She turned the meeting over to the brand new Climate Resilience Workgroup that's just gotten a mandate from the White House CEQ.

### 2.3 WHEJAC Climate Resilience Workgroup Update & Discussion

**Ms. Lopez-Nunez** stated that they're going to be dealing with similar issues. Clearly, in the screening tool, there isn't overlay of what happens with climate vulnerabilities. But they know that climate vulnerabilities affect especially black and brown communities and low-income communities across the country. There's this myth out there that climate change is affecting us all, but it's affecting some of us much, much worse. How do they make sure that they're capturing the vulnerabilities, the weaknesses, in our disaster response right now? They are not

doing a good job. That has been long evident.

They've had more than a decade since Katrina, and she's not sure that the federal government has learned its lessons when it comes to disaster and disaster preparedness. They've seen it here in New Jersey just now with Ida and for most of the country. Ida started in the south and made all its way into the northeast and still had enough force to kill people in basement apartments because a lot of people live in basement apartments and got flooded out, and there was nowhere to go. FEMA doesn't often cover renters. There are so many overlapping issues that they're going to get a chance to deal with on the Climate Resiliency Workgroup.

She also asked for more people to officially join and show up to their meeting so that they can have robust discussions. They're going to deal with FEMA, with housing, and some other issues. They have a little bit of a long charge, but let's get started on the questions because they want the WHEJAC's input from the beginning. And luckily, they have a good runway so that everyone can talk now as it's drafted. Obviously, they'll come forth with the first set of recommendations in a couple of months.

**Ms. Yoshitani** acknowledged the communities that were impacted by tornados and the storms that hit the south just yesterday. Every time they get on these calls, there's going to be another one of these events to acknowledge. That gets at the heart of what they're needing to do and make recommendations with this working group. She thanked her co-chair for being her partner in crime with this new workgroup, the WHEJAC co-chairs, and the whole Council for making time to actually begin this process of getting recommendations that are based on the experience of this body and the communities that they represent and the public. Yesterday, they heard so many important public comments that could also be applied to some of our recommendations for this workgroup.

Their work so far has focused a lot on the historic pollution and the inequities of environmental justice, like the poisoning of our air, water, land, and our bodies. It's been a lot about equity and racial justice in the ways that they also mitigate or prevent future climate change. One of the reasons that the recommendations for this workgroup -- for this area of disaster relief or just recovery, as it should be known, and of community resilience -- is so important is because it allows us to make recommendations on the way that we want our communities to be supported, to prepare for the inevitable, the built-in, the growing future impacts of climate change, not just the historic damage but to prepare for what's to come what's already built in because of climate change. Really importantly, it gives them an opportunity to be able to design, build, and pay for the resilient, healthy, thriving communities that we all deserve.

She wanted to encourage WHEJAC recommendations and questions that they're going to start looking at. They want to hear from the public -- when we have a chance to hear from public comment -- to share stories from their communities of how they have experienced the impacts not just of climate disasters, like the hurricanes, the wildfires, the droughts, the floods, the heatwaves, the tornados, but how they've experienced the unfair and unequal treatment of government agencies meant to protect and support us but instead have caused entire communities to be permanently displaced to experience even more industrial pollution or to languish in toxic cones and neighborhoods that have lost value because of the damage and at the same time to have to pay even higher prices for transportation, for energy, for food, for water, for housing.

Communities have been redlined, as was mentioned before, for decades by government policy to these same neighborhoods and regions.

Though, we should all be sharing these experiences and also sharing the real grave and critical concerns that recovery efforts and funding perpetuates existing pollution and inequitable systems and housing, energy, transporting, and all kinds of infrastructure, that disaster capitalism is allowed to profit from the climate catastrophe that EJ communities are already dealing with. So we should be sharing all these things. She encouraged people to share both experience and concerns. She also wanted them to be able to, at the same time or in addition, share their vision for what it could look like if our families were just not better protected from future disasters through equitable, climate-resilient infrastructure that we want to be built. Also, if we had a fair and just transition for workers and environmental justice communities to resilient thriving communities and local economies that thrive and are healthy, they could be more intact, stronger and sustainable, more democratic, more healthy, and more liberated than they were before. It's in that spirit that she hoped they'd be able to bring these questions in front of everyone from the workgroup and start a discussion that is pointing them not just in the direction of the mistakes that were made in the past. That's obviously the place to start so we don't repeat the inequities of the past but also to really chart, through the recommendations, what it could look like if we were building the resilient communities that we needed.

With that spirit, she opened up the discussion time to the Council for everyone to weigh in on the questions that are in front of the workgroup. She reminded people that these questions shouldn't be a barrier or an impediment to giving any recommendations that people want to offer. Not that anyone has in the past but don't feel too penned in by the questions themselves. They really want to get the wisdom.

She read the questions. What type of support is needed for disadvantaged communities to participate in federal disaster preparedness or relief programs? How can federal disaster relief and aid programs better serve disadvantaged communities that have historically received fewer federal benefits? What process steps and information will help eliminate these disparities? What steps can federal agencies and the White House take to reduce disparities in climate change impacts for communities, including but not limited to risks from extreme heat, flood, wildfire, drought, and coastal challenges?

**Dr. Wright** made a suggestion. She appreciated the presentation by Dr. Leary yesterday, which was full admission that the government has acted for centuries in a racist manner and that many of the people who work for the government see the world in a racist way. The results of that have been policies that have been race-neutral that have then yielded results that didn't benefit disadvantaged communities. One of the things that they can do is put some guidelines in place and have a screening tool of their own. First of all, it should dictate where benefits should be going and another tool to determine whether or not those benefits went in those places. They need to colorize their offices. In the deep south, it needs to be colorized. She used the word colorized because she liked that better than other words. It's prettier than some of the other things you could say. You could have a great tool, but if you put it in that same dirty body, you're going to get the same thing.

After Katrina, everybody could see for themselves who was left behind. Even the experiences

that she had trying to get things from the Red Cross, and the Red Cross was in the white neighborhoods. They were in no place where black people hung out. She accidentally found one by going to a clinic. Nobody was there, but there was a Red Cross, and there were thousands of people in line where black people were. So the problem is not that the government doesn't know what the needs are. It's not even that they don't know where it should go; it's the process that they're using to get it there and they're utilizing people who are racist and agencies who practice discrimination and all of the things that we don't like. That autopsy that Dr. Leary was talking about is very much needed. We've been saying this before.

She wants people to stop asking people of color how to solve a white problem. She can't tell them how to do that. They need to figure it out, ask the questions among themselves, and put it in place. They need some kind of system that, first of all, deals with diversifying the organization, diversifying FEMA, and giving sensitivity training but then having a way to track and monitor what comes out of those offices. If that were the case, we'd just be dealing with, oh, does the government not know that they should do this or that for people who have been affected by disasters?

They know what to do; it's that it's not getting to us. The reason is not even complicated, but it is pretty deep because it deals with the human spirit and how we value or devalue human beings. That's not an answer, but this is really what we're dealing with. She would love to talk about the things that those of us who've been through these horrible disasters did not get and who was left behind and what she thinks should happen so that doesn't happen again.

**Dr. Bullard** stated that this is not complicated. The fact that, when Dr. Leary presented her three areas, there was one major area that was left out. We have laws that cover discrimination by agencies and by recipients of federal funds. One way that a just and equitable recovery happens is to address sending funds to areas that are climate sensitive and rigorously applying the Civil Rights Act of 1964 Title VI. You don't need a screening tool. Title VI is a screening tool. If an agency like a state is receiving monies to deal with disasters and if that money is being proposed to be spent in a way that is discriminatory, FEMA, HUD, DOT, EPA, all the agencies have discretion to not send the money.

Case number one, Hurricane Harvey devasted Houston, Harris County, and parts of Texas. Houston and Harris County got the greatest hit. When the money from HUD, not FEMA, was sent down, Community Development Block got money to fix houses and make families whole. The State of Texas' General Land Office, which is a state agency that handles recovery, allocated zero dollars to Houston and Harris County. Houston is 75 percent people of color; Harris County is 69 percent. The two cities and counties that got the greatest hit was supposed to get zero.

Marcia Fudge at HUD, a former congresswoman from Cleveland who has extensive experience in Congress in dealing with discrimination in housing, et cetera, she basically kicked back the State of Texas an allocation for Harris County and said, "No, this is discriminatory. You don't get a dime." They had to go back and regroup. When they regrouped, Harris County's getting something like $550-, $600 million. That's not perfect, but it's greater than zero. Houston right now is still fighting to get a dime of that money. When it gets kicked back to HUD for them to relook at it, she has the right to say no. The way she's saying no is looking at federal funds being used to discriminate by the State of Texas. We don't need a new law right now. We have one.

We don't need a new screening tool. We have one.

Here's another one. When the Stafford Act kicks in and the president declares a disaster area, FEMA basically looks at it and declares how much money it's going to send. The state itself decides how it's going to spend the money. And by law, the Stafford Act uses cost-benefit analysis, but it's not limited to that. Because of this WHEJAC and because of pressure from EJ groups and the Justice40 Administration, FEMA is now using one of its programs, the Social Vulnerability Index. SVI was developed by CDC, the Center for Disease Control. If they use the cost-benefit analysis, because they can't throw that out because that's the Stafford Act but use the Social Vulnerability Index in addition to what was mandated, you're more likely to get more vulnerable, hard-hit communities that would not pass that test. The cost-benefit analysis test would award the money to the $800,000 homes on the west side, and the $80,000 homes on the east side don't get jack. Having adaptations and having already developed metrics need to be applied to existing metrics to deliver more just and equitable kinds of outcomes. That's going on right now, but those are baby steps.

Those are just two examples where, right now, FEMA's own 2020 report shows that the money's not reaching the most vulnerable and the hardest hit. So it has to do something, and that's one way to adjust. It's an adjustment. It's not a total overhaul. He will volunteer to be on the committee if they have room. **Ms. Yoshitani** stated that they definitely have room and would be happy to have him.

**Ms. Santiago** commented that what changes need to be made has a lot to do with what they've talked a lot before about states taking the money and doing whatever. The example that Dr. Bullard just gave about HUD and telling the State of Texas that what it submitted did not comply with what was required to really provide disaster assistance is the key because federal agencies have to implement federal law and policies and executive orders. We're not seeing that, especially with FEMA. She brought up the case of Puerto Rico where FEMA is actually telling us that whatever the government of Puerto Rico, the current governor elected with 32 percent of the vote, what he submits to them, FEMA is going to approve that and write a blank check essentially for the largest allocation of funds in FEMA's history. That is not the case. FEMA has ministerial duties here. FEMA has to make sure that it has done a proper NEPA analysis that includes an EJ analysis and otherwise implements this administration's Executive Orders 14008 and 12898.

They're not seeing the federal government, especially FEMA, implementing its own policies and laws. This passive approach of sort of delegating everything to the states just doesn't work because jurisdictions that really don't have environmental justice on their list of priorities are not implementing it not surprisingly. It really requires the federal government to implement those regulations and the laws and the executive orders.

If you go to many places nowadays -- and let's say Puerto Rico in particular -- and you consult with local communities and say how would you prefer that this historic amount, the largest amount of FEMA funds ever allocated for the electric system, how do you prefer that to be spent? On the one hand, rebuild the centralized grid, or on the other hand provide onsite rooftop or distributed renewables and battery-energy storage systems, energy efficiency programs, demand response, the whole set of alternatives to centralized, fossil-fired, import-dependent,

undemocratic electric system that we have? If FEMA and HUD and other agencies could require that kind of consultation, that would be another way of really delivering disaster relief to communities. They need that local consultation, actually direct consultation to communities.

**Mr. Logan** had a comment or question on the first question regarding how might this program provide more support for our communities in federal disaster preparedness and relief programs? By no means is he suggesting that we let the federal government or FEMA or other agencies off the hook. They should definitely do their job by protecting communities and their residents that they're responsible for. Saying that, we know that the federal government has fallen short when it comes to disasters. At the end of the day, communities and community organizations are the safety net for our community. Community leaders step up and help to support the local communities and folks in need. We're kind of left to our own to fend for ourselves. So it's important to recognize that. It's important for the federal government to recognize that they're falling short, and they need to step up. But they also need to support that safety net that we've created for ourselves. Saying that, there should be programs that support financially community-based organizations and community groups with general support so that they can build up their capacity so that, in the case of disaster, they have the bandwidth, they have the ability to be that safety net that they have been and they've stepped up, and so that they can determine for themselves what those programs are, what the approaches are.

It may be completely different for one community versus another community. One community may want to set up hard brick-and-mortar types of systems, like having Zodiac boats and having secure relief facilities and having emergency medication and supply sources and so forth. Others may have other types of mental health support units kind of at the ready. So it's important for them to advocate for the federal government to support communities with general financial support and let the organizations and groups determine for themselves what they need to kind of step up in the case of a disaster. That should be a large amount of money and resources to be determined by that local community on their own terms.

**Ms. Waghiyi** stated that there are 229 tribes in Alaska, and there are 573 in the nation. That's a lot of tribes in our state. They have communities falling into the Bering Sea due to erosion, violent storms. There's no ice, so there's erosion. The ice is melting because of the warming of the planet. The Arctic is warming three times faster than the rest of the planet. They have been the canary in the coal mine for decades. Our elders recognize the importance of protecting our Bering Sea, which they called their farm. Ninety percent of our homes eat only traditional foods, majority of them marine mammals. And yet Shishmaref and other communities are falling into the Bering Sea because the funding that they received decades ago had to be matched.

These tribes are poor. And yet, this should not be happening. They are going to continue. They have high rates of death, ten times more cancer than our state of Alaska. Ten times more cancer because of the military toxics. Here they are, yet, at another war with Russia. There's legacy Cold War-era toxics on her island that are still harming the health of their people. They have a cancer crisis, and now a climate crisis, including bird die-off, seal die-off, fish die-off, and whale die-offs. These are burdens they didn't create. Like the woman we heard yesterday, she is tired. They've been testifying, speaking in these rooms for decades. She has to go home and recover, pouring my heart out. And I'm being honest.

This is what she does to help her people, to deaf ears and broken promises. She has been chosen to be a voice for Alaska and arctic-indigenous people because of the crisis of our food. The Arctic Ocean has the most microplastics, so these marine mammals are eating plastic because the surface of the ocean is warming. So the food they depend on has to go deeper. That's why we're seeing all these die-offs. When they can't eat, they're going to die off as a race. Yet here they are pleading again, over and over.

Regarding communities that need to relocate, there's an urgency. Help these people, the first people of this nation whose lands were stolen, and they're not getting any assistance from our state or federal government. They need housing adequate for the arctic. By the time the homes that are sent here arrive, they're million-dollar homes because of the shipping, the HUD homes, the pre-fad homes that are not made for the arctic. There's no insulation on the floors. There are no adequate vents. Because our homes are closed in longer during the winter. They're getting mold.

Overcrowding, 20 people in one home. Her state congresspeople came to Alaska and talk about the housing crisis a year ago. They've never seen any assistance. It's a photo-op opportunity for them. And now the crash of our traditional foods in the oceans, we have people going hungry when there's a crash in the fisheries. Bristol Bay has one of the largest fisheries on the planet. When there's a crash in the commercial fishery, they get monetary aid. Their food sources are crashing. They're not getting any aid. Her people are going hungry.

They have military toxics. In the previous discussion in the screening tool, they're called superfund sites. But the military is the largest polluter on the planet. It should be labeled as military toxics. They have persistent organic pollutants. We now know the arctic is a hemispheric sink. Because of the warming, they are seeing changes in the ozone layer, life-threatening changes to arctic indigenous people. The other arctic nations in the European Union have better policies and laws protecting their people. However, here we are in the United States of America, and our people are forgotten. They're never at the table when decisions are being made for us miles and miles away. These are some of the things she would like to bring up.

**Ms. Almanza** stated that some of her recommendations are more prevention control, but we need to control the amount of impervious coverage on properties because covering the earth with cement increases the flooding. There are no strict regulations on what's happening across the United States. The other one is the infrastructure to relieve flooding. So you'll find that, in a lot of grassroots or communities of color and poor communities, the infrastructure, the sewer system, it's so antiquated, and it's old. So it doesn't address the heavy flows of the rains that we're now getting through climate change, so that sewer system has to be funding appropriated. Of course, we have to address the erosion controls that are happening because of all the development that's going on, the cementing of our earth.

The other one is that we need to provide solar energy for low-income and people of color because, during these hard times and these heatwaves, the people who are dying and suffering are those that do not have that solar energy and access to it. Also, we need to address the digital divide when it comes to disasters and crises because everything's on the internet -- the warning -- as if everybody is hooked up, and they're not. Even to get resources, you have to have that internet access. Then, of course, provide the resources for neighborhood planning at the

neighborhood planning area by and for the neighborhood.

**Ms. Yoshitani** reminded everyone that these were the questions that were part of the charge. The working group didn't make up these questions. These were the questions that came to them. So that's part of why she wanted to encourage people to not be limited by their recommendations just to these questions because they're going to try to be a little more expansive with the recommendations coming from the workgroup.

**Kim Havey** shared concepts around resiliency that he's been working on with a group of city officials across the country and also within his area in the Twin Cities. One of the things they're looking at is creating community-based community centers that are acting as resilience hubs that provide access to a lot of the different types of emergency services in times of need but also act as a regular community resource for education, for community events, for food distribution, for community gardening, for elderly care, what have you. So looking at the concept of resilience hubs would be really interesting because it's something the federal government can do and has, actually, with different funds to sort of harden buildings and things, really has looked at but hasn't done in any significant way.

There are also really good opportunities, as Ruth mentioned earlier before, to utilize new technologies around renewable energy, battery backup systems, and microgrids. Minneapolis just received some federal technical assistance through the DOE LEAP grant program to really work on a microgrid system in north Minneapolis. It's going to connect three buildings of the Minneapolis Public School Systems, one of which is their main nutrition center or kitchen for the school system. They have about 25,000 students or so in the school system. So they know how to make a lot of food.

Basically, the solar rays along with the technology and battery backup would be able to allow the nutrition center to run a nearly full operation on a continuous basis. So there are really, really some unique opportunities when they have disasters that knock out power or create access, again, to the internet or create just safe shelter if it's very cold or extreme heat. They've been seeing that a lot more in Minneapolis now. They're not really a city that's built for a lot of heat, but we've been seeing it gets so much hotter for so many longer days. By 2050, they say that they will be going from, right now, about 13 days over 90 to 65 days over 90 over the summer. That'll be an extremely different experience than it currently is here in Minneapolis, and they're not really set up for that kind of heat. Not everyone has air conditioning.

Looking at how they utilize the infrastructure around the resilience hub and also around, really, the whole idea of weatherization improvements on buildings is great. The resilience of our buildings is all in the same kind of thing whether they have insulation, whether there's the ability to seal doors and cracks and things. He was actually in Galveston during last year's February deep freeze. It was not surprising why it was so challenging to keep the buildings heated because there was zero insulation in any of the buildings anywhere. You could see right through the floor almost. They don't fund that in a lot of those areas because it's not something that's been used.

Again, resilience-wise, make stronger structures, be able to handle higher heat extremes without power. They don't need all of this, everything being cooled and heated all the time. So they have to create this into the design and weatherization of our buildings. That's another way that they

really need to look at resiliency. To leverage the energy reductions is also a resiliency strategy.

Ultimately, for a community to be resilient, it has to be a healthy community, really being able to integrate with health indicators. They have a lot of data on asthma, and they talked about redlines earlier today. You can literally see the redlining area that, from 1940, is basically similar to where we have also currently highest asthma rates and highest cumulative pollution. Talking about resiliency and health and that cumulative pollution, cumulative pollution is probably the most impactful in regard to the indicator of whether communities have long-term health issues. It's not rocket science to make that connection. That's why it's so important to have these metrics that look at cumulative pollution and long-term exposure. Much lower quality of health is very tied to that. Resilience in a community has to mean that we also have to figure out how we're measuring the health of that community as well too.

**Dr. Wright** stated that she has three suggestions based on actual experience. The first is that federal contracts that are given out to respond to disasters need to be revisited. What happens is that, when there are disasters, you have these huge companies with federal contracts. They come from all over; rarely are they local. So they literally put local businesses out of business because the job of redoing roofs and all of that goes away.

The same thing is true with feeding people. New Orleans, some of the best chefs in the world, ready to feed people who were left behind, and they could not. They would send army rations in, all kinds of terrible food, which costs a lot more than a pot of red beans and rice, which they would've enjoyed much more. Just dealing with federal contracts and how that really impacts people on the ground, is it really helping people to recover if you're destroying the economic engine of a community with large outside contracts?

Also, revisiting the Stafford Act which guides so much of this stuff. After Katrina, the communities that were able to get funding to raise their homes were based on a formula that made no sense. In order for you to get hazard mitigation funds from FEMA, you have to have had at least two other incidences with flooding. Well, the places that flooded because of the hurricane were not the places that naturally flooded in the city. So the hazardous mitigation money went to the very elite, very expensive houses. They got 500,000 to raise a house. New Orleans East, where mostly black and poor people live, got nothing because they have not had repeat flooding. That's really an unbelievable mistake based on the way the law was written.

The other thing is to look at city emergency management plans. Now that we know what will be coming, the emergency management plan that the city of New Orleans had was totally ineffective, where large numbers of buses went underwater in a city where the majority of the people had low-paying, tourist jobs. Then, they don't get paid until Monday. They do that so people will come to work on the weekend. And the hurricane came on Sunday. So a lot of people who didn't leave could not leave because they live from week to week. So those emergency management plans need to be put in place and reflect, basically, what the possibilities are. We were planning for hurricanes, and now all of a sudden, we have tornados. She doesn't know what to do with a tornado. She's an expert on hurricanes, but not tornadoes. A lot of things need to be revisited.

The way the Army Corps of Engineers actually deal with large projects -- she called them the

dirt movers because that's what they do. After Katrina, they had the wealthiest communities that got the least amount of damage got the highest amount of levy protection. So they already had more levy protection than anybody else. As it turns out, their projects were already in the hopper. So when the money came, all of that money went to the projects that were in the hopper rather than have them respond to the disaster that was on the ground and the need. So there are things that need to be revisited and examined to make it look more like what's happening on the ground and that it does not end up, really, causing more pain and harm to people who have been affected by these disastrous storms.

**Jade Begay** stated that in Noatak, Alaska, FEMA did not show up for Noatak during a relocation effort. This is a Yupik community in Alaska, and they are currently in the process of having to relocate from this village to a new village. They have received very little support from the federal government in this relocation process to the point that outside organizations and contractors are having to come in to assist with this entire relocation. As you can imagine, putting the burden on this community that has contributed the least to climate change is wrong in so many different ways. She wanted to flag that this is a situation that is happening right now as we speak that could be studied.

If people from various groups in the EPA or other departments and agencies engage with this community, there could be lots of lessons learned as to what didn't work. At what point did this community need support? At what point could there have been helpful intervention from the federal government, federal aid, and different parts of the federal government? It seemed like an important one to study and learn from and respond to right now as the community is still needing lots of funding in their relocation efforts.

**Ms. Yoshitani** suggested that more folks need to join the Committee. Last time, the workgroup members were outnumbered by agency staff, so they'd love to have more company. **Mr. Logan** asked for a bit of clarity on what the commitment is if they were to consider joining the workgroup, what the time commitment is. **Ms. Yoshitani** replied that they meet every other week on Wednesdays. They have an hour-and-a-half long meeting once every other week so far. **DFO Martin** added that they're meeting on the second Wednesday and the fourth Tuesday.

**Ms. Lopez-Nunez** thanked those who made comments and expressed an interest in joining the workgroup. She hopes that they start talking more about climate justice and the way that environmental justice is climate justice. There's no separation. Storms are not going to surprise us. We know that they're going to keep coming, and they're going to keep coming with a lot of frequency. So, with that frequency, we need to be prepared. And we need to make sure our people are prepared so that our people survive and that our people build back much, much better, that we change the way the system's been working, not just reacting to all the bad things, but that we have vision about the next life we're going to live because it's just going to be true that sea levels are going to rise and things are going to get hotter and worse for a lot of us. There's a lot of gravity to the charge that this workgroup has, and she hopes they can rise to that gravity and help protect the people. **DFO Martin** announced that it was time for a break.

**2.4 WHEJAC Justice40 Workgroup Update & Discussion**

**Co-Chair Shepard** stated that they will be discussing the Justice40 implementation workgroup's

recommendations. They have developed a draft. It's the Phase 1 recommendations to the White House. They hope to vote on and improve them at the next meeting. The WHEJAC did submit recommendations back in May on eligible projects, but now, these are recommendations about how the administration should actually implement Justice40.

Also, the workgroup has really spent the last few weeks populating a Google Doc, and they are about to send that draft to an editor to get it formatted and to just ensure that it's accessible and reads well. They are concerned that they would like to have more discussion and more recommendations from the entire FACA. So, they're going to present how the report is formatted and what the categories are so that they could begin to have a discussion.

**Dr. Wright** reminded everyone that they should be addressing both the federal government and the state's accountability. Their job here is to make certain that the voice of the underserved and overburdened is represented in the implementation of Justice40. For her, this is the hardest job and she thanked everyone for the support she's received.

**Co-Chair Shepard** explained how they have formatted the report. They are looking at cross-cutting agency recommendations. What do they mean by that? Well, for instance, what's a cross-cutting agency recommendation? Maybe prohibiting the use of all agency funds for fossil fuel generation and infrastructure. That might be an example of a cross-cutting recommendation.

Another one could be that Justice40 investment shouldn't reproduce existing inequities by providing technical assistance or identifying barriers that less well-resourced entities have in securing competitive grants, looking at a number of recommendations that apply to all agencies. They look at the theme of public participation. They're talking about things like agencies should be mandated to translate and interpret all outreach materials in a variety of languages and talk about ways that they can ensure that communities that don't have access or expertise to understand complex environmental impact statements get that kind of access.

There are a number of recommendations that they're making under public participation. When they think of transformative practices, they're talking about doing business in a different way, not business as usual, and really talking about how they benefit those who have not had access to the system instead of the usual suspects. They also have a theme of grants and funding. Again, making recommendations about how a grant should cover and approve and direct cost rates. They should not be based on reimbursement, how reporting can be simplified.

When they talk about proposed infrastructure projects, they get a little more specific in talking about how feedback should come from overburdened communities and how that feedback should be incorporated into program or project design, that infrastructure projects funded by the federal government should prioritize fair labor standards and use of MWBEs. Again, talking about workforce development programs and those kinds of projects in regard to infrastructure.

Accountability incentive structures recommendations, for instance, one recommendation might be that every agency should develop an annual report on their implementation of Justice40 that's disseminated publicly. Again, how do they ensure that that accountability happens? Develop a remedy or a penalty for states or agencies that don't comply with the intent of Justice40 investments. Again, that accountability theme is going to how they ensure compliance with the

federal intention.

Then they had a category of specific agency recommendations. They've listed a number of agencies where we have very specific recommendations for how they should implement Justice40.

So, that's really how they're formatting the report. It'd be great if there are observations or comments on the formatting. Have we left something out? Is there a better way to do this? Certainly, they want to hear your recommendations about these categories and the kinds of recommendations that you would want to see made. They have sent the draft out several times to the entire FACA, and hopefully, they've had a chance to take a look at some of the recommendations from the workgroup. She opened the floor to questions and comments.

**Dr. Wright** stated that over all of these months that they've been having discussions and making recommendations through our discussion, is there any other way that they could be certain that they captured what they've all said through these few months? For instance, they made mentioned a lot of ideas throughout the discussions, but she didn't see them in the document. She wanted to make sure the ideas were captured as recommendations. **Co-Chair Shepard** reminded everyone that if someone is making a recommendation, they need to write it down so that it can go in the Google Doc. If someone does not have access or for some reason cannot use the Google Doc, they can email it to DFO Martin.

**Ms. Waghiyi** recommended that tribes are allowed to attend government-to-government meetings to get recommendations from tribes. A lot of times, when they meet with the government, the decision-makers are never there or there's unfinished business. An example is an Indian Affairs Committee had a hearing on our island a year ago. They did not get to the military toxics issue that was on the agenda because there was a pending storm coming, and they didn't want to get stormbound on the island. This is not government-to-government consultation. They need to meet with tribes.

**Mr. Logan** stated that he had a recommendation on number one specifically -- prohibit the use of all agency funds for fossil fuel generation and infrastructure across the government. He would like to expand that to other areas that can increase impacts on our communities. Specifically, they should recommend a prohibition of funds used to expand highways and freeways, adding lanes, adding traffic, adding diesel trucks to the road, making the kind of impacts on local communities that much more harmful. That should also apply to the expansion of other freight facilities, like logistic centers, rail yards, and ports.

The expansion of these facilities adds more throughput, traffic, diesel exhaust, and other toxic pollutants to communities. By including that, there's a potential of opening up like a can of worms in terms of who can expand it to add all kinds of different toxic and/or polluting sources. He wanted to just broach that and figure out the best way to approach it to include some of these other types of investments that can add more harm to communities. He understands there's a Google Doc and that they can add to that, but he thought that there is some need to have a conversation about, where do we draw the line in terms of what we're asking for the prohibition on expenditures of the federal government. **Co-Chair Shepard** asked if the conversation should be now or in the working group? **Mr. Logan** replied that they can probably have a more

productive conversation in the working group.

**Vice-Chair Tilousi** stated that she'd like to understand the process better. She wanted to submit written recommendations but didn't understand where and how her recommendations were to be implemented. **DFO Martin** replied that she does go through the summaries and pull out the recommendations and send them to the workgroups. The process works like this. The workgroup gets the charge. They come up with preliminary recommendations. They get sent out to the full WHEJAC and the public for input, comments, and additional recommendations. The workgroup synthesizes those comments and gives another version to look at. More comments are given, and the final document is sent.

**Ms. Waghiyi** ask if the recommendations in number one (Cross Cutting Agency Recommendations), are they for the number two agencies that are listed? **Co-Chair Shepard** replied that the recommendations in number one are for all agencies in those particular categories. **Ms. Waghiyi** asked if the recommendations from Justice40 will go to the agencies listed in two? **Co-Chair Shepard** replied that they go all to CEQ. **DFO Martin** confirmed that all the recommendations will be shared with CEQ. They had quite a few recommendations that were just general federal government wide; that's the first group. The second group includes recommendations specific to individual agencies. Anyone can add something missing in a section or add a missing agency.

**Ms. Waghiyi** suggested adding the Department of Defense and the Army Corps of Engineers for the toxic substances' disease registry. The recommendation for the Department of Defense is to do congressional investigations in all the formerly used defense sites. Some that are on the superfund list that ranked high enough but were never placed on it. They have never had adequate site characterization, or they closed prematurely. The stakeholder's data and stakeholders' recommendations or tribes were not a party to these records of decisions. **Dr. Wright** and **Co-Chair Shepard** clarified that it has to be submitted in writing by April 8, not only said in the meeting, to be included in the document.

**Dr. Sheats** stated that looking at general recommendation number one, prohibit the use of all agency funds for fossil fuel generation and infrastructure across the government, he assumed that it will also include prohibiting the use of funds for CCS there. He wondered if they should spell that out and not leave it to chance. He will send that recommendation in writing.

**Ms. Power** liked Dr. Sheats' comment about carbon culture around fossil fuel. She will send that recommendation to the fall solutions. **Ms. Waghiyi** suggested adding solar energy to prevent mining for lithium Indian country. That's creating more harm, and they need to clearly look at harm to environment and people in these solutions.

**Mr. Cormons** pulled out and highlighted one piece that relates to part of the conversation yesterday after Dr. Leary spoke to the group. He underscored the major shifts in agency functioning that they need to see to truly realize the spirit and the letter of Justice40. Transformative practices were mentioned earlier, and they're not in a position where they can settle for anything less than transformation right now. That includes transformation in the way agencies approach their work. Having experts in the administration, like Dr. Leary, who are psychologists who focus on how to make change within organizations and applying that kind of

knowledge to federal agencies is of paramount importance right now.

The aspect of the direct recommendations that he wants to lean into is the section on incentive structures because it's really critical if they want to see a change to be sure that from the individual level to the team level to the full agency level that there are clear incentive structures, clear carets, clear sticks in place that look at how agencies are fulfilling Justice40 recommendations, how well they're doing at appropriate stakeholder engagement, et cetera, and frankly, that things like pay in bonuses and evaluations are tied to those metrics to really create that HR infrastructure in agencies to ensure that the things that needed to be prioritized for change in transformation are. So, that's something that he hopes that as a workgroup, they can continue to study and look into to inform the recommendations. **Co-chair Shepard** asked if he's talking about the accountability of agency staff and advancing environmental justice and Justice40? **Mr. Cormons** agreed -- building the structures within agencies to ensure that accountability.

**Dr. Wright** wanted to clarify that there are no recommendations to EPA in this group. The only agencies they have recommendations for are the ones that are listed in number two. That's it? **Co-Chair Shepard** replied that it's in the middle of the list. **Dr. Wright** apologized for not seeing it.

**Co-Chair Shepard** asked when the next Justice40 workgroup meeting is? **DFO Martin** replied that is April 20th.

**Mr. Logan** wanted to know how to consult with the working group about his recommendations before the dates given. **DFO Martin** replied that he can still do both, submit it in writing and join the meeting as long as they're not over quorum because this is the largest workgroup. **Co-Chair Shepard** added that, for the most part, there's usually a space or two empty, so just let them know if he's attending or not.

**Ms. Santiago** thought they were supposed to meet on Wednesday, April 6th. **DFO Martin** replied that she had sent a cancelation notice for all meetings that week because she will be out of the office on leave.

**Ms. Lopez-Nunez** asked when the final guidance is supposed to be issued to the White House. **Corey Solow,** Deputy Director for Environmental Justice - CEQ, replied that they understand and deeply appreciate the need for timelines and for transparency in the work that they're doing, and they're doing their best to keep them all updated. She doesn't have a date at this time to be able to share, but their recommendations on the Justice40 initiative from last May were instrumental and continue to be in the development of the July guidance that was issued. They will keep the WHEJAC updated as they continue to move forward with their processes on the White House side.

**Co-Chair Shepard** stated that they were transitioning into the business portion of the meeting.

**2.5 WHEJAC Business Meeting Reflection & Conversation**

**Co-Chair Shepard** stated this is time to reflect on the meeting, the public comment period, any

other workgroup updates from the workgroups that have already been presented. There are no action items today. This is a space to have that kind of catch-all discussion.

She heard some very compelling public testimony and some 10- and 20-point plans that sound much like some of the recommendations. She opened the floor for discussion.

**Ms. Santiago** wanted to go back to the climate and economic justice screening tool discussion a little bit because she wanted to add something. It was mostly said that the tool is not as easy and that the methodology and the indicators need to be expanded and that surprises were found when they looked at certain areas that they're familiar with, like Puerto Rico, one of the places with the largest Afro Puerto Rican populations and among the highest poverty rates and very polluted is two of the four indicators.

She also wanted to go into the aspect of race as an indicator or race as criteria for allotment allocation of the benefits under Justice40. She agreed with what a lot of people said, but she wanted to add that the concern is that including race as one of the criteria would open up the possibility of an attack on the whole tool. She thinks that this position that they're seeing would imperil the whole program, the whole possibility of the allocation funds. There's an attempt to provide a lot of other criteria, especially poverty, that aligns a lot traditionally with race in a way to get those benefits to the overburdened, disadvantaged, or the environmental justice communities.

She wondered whether this is possible, whether someone has or can provide them with a document that lays out that risk about including race and having a possible attack where the courts would apply the strict scrutiny standard to the tool and the initiative and find that it was inappropriate to do? As surprising as that may be to all because of race, as most people have said, racism is what brought them to where we are in terms of the overburdening of communities of color and poor communities.

She asked if there is a memo, or can they have access to a memo that lays out what this risk is and what this danger is? She's seen a little bit about the discussion of certain supreme court cases where they rule out the use of race for certain benefits. It would be helpful to know if there is a memo saying, this is the risk we see, this is the case law, or these are the decisions that could lead them to the problems with this tool but have a fair analysis about other situations where that has not been the case, where race has been used successfully to determine benefits.

**Co-Chair Shepard** asked if she wants Ms. Solow to go back to CEQ and provide a legal opinion on why they do not want to focus on race? **Ms. Santiago** replied that legal opinion is right, but not why they don't want to focus on race. Is there a balanced approach to see what the reasons are for not considering race but also consideration of situations where race has been used to allocate benefits so that they see the whole picture of the legal analysis that's gone into this? **Co-Chair Shepard** asked if they can just make that request, or do they have to put that in a letter? **DFO Martin** replied that it doesn't have to go in a letter. If they want to vote to move that forward, they can do that and document it and forward it to CEQ.

**Co-Chair Shepard** informed everyone that they have exactly the number of members they need right now for a quorum to vote, but if anyone is to leave, they will not have a quorum. Anything

that anyone thinks they might have to vote on, let's kind of hear it soon so that they don't lose anyone. **Dr. Wright** reminded her that there should be a discussion before the vote. **Co-Chair Shepard** thanked her for the reminder.

**Dr. Wright** stated that from what she can tell, there are two legal opinions. There's one group who believes that it shouldn't be a problem and there's another group that does. If you get one, the one they'll get is the one that the agency supports. That's one thing. She feels that this is not a decision that they make. Their charge is clear. If it becomes a political decision, a strategy, then that's on the Biden administration, and they'll have to live with whatever they bring back to them. She doesn't want to feel compelled because they feel it's a high risk to not move forward.

The Council's opinion needs to be based on principle and that the politicians do what they do. We're not politicians. It would be at our disadvantage if we did that because she's not going to change her mind about what she believes is a principal kind of thing. Then when we ask that question, they'll come and say, well, we gave them all this information. We told them what the risk was. They still wanted to go ahead, so the Council ends up creating a situation of us against them unnecessarily because, in the end, it is their decision, but this is ours in terms of what our recommendation is.

It wouldn't be the first time that no one's listened to their recommendations. She always thinks about they have to be strategic, but sometimes, by not putting pressure on people to do it is the right thing to do, the right thing never happens. In the end, it's going to be the Biden administration's decision regardless of what we do. She would not like to get into a situation where they're saying, these are the facts for us. She wouldn't like the republicans to hear the Council talking about it so much because then they'll start working on it very quickly if we put it in. We're making a case for it and here we go.

She's kind of against sending an official letter asking for that. If we could get something from the insiders, if you know what I mean, we could be inside outside as we call them. We get a lot of stuff that comes anonymously. She would certainly maybe like to see that, but she's heard from two sides of this situation already, and she thinks it wouldn't be a wise thing to do at this point because it's so political.

**Mr. Logan** stated that he thinks that there's a risk of asking for a legal opinion on this issue because, if the opinion comes back that we don't like, it's going to help to aid the opposition in kind advocating for what they want and what we don't want. It kind of puts us in, I think, a risk-averse position. He is not completely opposed to it, but he does think that it's probably a decision that we shouldn't make today. We should take some time to think through it just a bit.

**Ms. Waghiyi** stated that she heard from public commenter Dan Solitz that the president will be moving Cold War legacy site budget to make more weapons of mass destruction already on their lands. There's more legacy military toxics harming the health and well-being of people globally now than the cost of the current war. This is not right, and it's alarming to hear that they're doing this. There's already harm being done to communities throughout the globe from military toxics.

Taking that funding away when these sites have never been properly characterized or remediated is wrong. She doesn't like to say clean up because they will never be cleaned. This is very

alarming to her, and we've been fighting to hold the military accountable since they left her island. They were a very important strategic location during the Cold War, and yet, to hear they're moving funding from Cold War legacy funding sites to make more weapons is unethical to her.

She heard a public commenter say that she was tired of coming to these rooms to share her story over and over. That's why it's so important that we have these agencies come to listen to these public meetings because she's been in the same boat for 19 years to share their story over and over and not see results.

**Vice-Chair Flowers** said she wanted to second what Ms. Santiago said. It's important to make informed decisions, and one reason why is one of the things that Brian Stevenson has been very successful at is being strategic and making sure that he chose cases that could benefit not just one person, but a lot of people. Likewise, it relates to the criminal justice system. They must talk about environmental justice and communities that have been suffering.

There's a balanced way to present this. They could see cases for and against and see exactly how many cases have actually upheld race being used as an indicator when federal funds are dispersed. She would like to see an example of that and what the political climate is and whether or not it's happened. Her concern is not to throw out the whole program on this issue because the communities that she represents have been suffering for years.

When she flushes her toilet, she doesn't see it, and most people that are on this call don't see it either. Some people have been seeing this for years and folks have been passing by and going to Selma and going to Montgomery and have not stopped to see it or to offer any help. She is very passionate about seeing that issue be addressed.

Last night, she was up because, in Lowndes County, there was a tornado on the ground. The first thing they say is, if you're in a trailer, leave. Most of those people are living in mobile homes, and they have nowhere to go. These storms are getting worse, and they're getting them every week. The same thing is happening in New Orleans because she's exchanged text messages with Dr. Wright about what is happening there as well. She wanted to go on the record that she wants to be against using anything that will keep people from getting help.

**Ms. Lopez-Nunez** stated that this conversation is making her get nervous, but she does support them in making informed decisions. But she doesn't feel comfortable with laying out a roadmap for people that hate the use of race in any programs because, if the administration has decided not to use race, they've done some research. As Dr. Wright said, it's their decision in the end, and they've been informed by something.

She wonders if there is a compromise here. They might be able to hear rationales in like a business meeting or a workgroup meeting because she wouldn't want them writing a detailed memo. She's not sure that they would comply. Legally thinking, it's all strategy in the end. If the administration is being asked to put out their strategy, she doesn't think that that is strategic of us to do. Race doesn't just affect us here on this program, but race is used in other programs. In the light of thinking strategically, she does want to know why they made their decision, but she doesn't want that spelled out on paper because there are so many people that hate folks of color

in this country. She would love a document like that to be able to launch fair defenses. So far, they've been ahead of us and have been able to cut down our rights significantly.

She wouldn't want to make it easier for those that would try to hurt us, but she does think that the members of the WHEJAC should be aware of what the thinking was as much detail as we can be provided as we're provided with other briefs and rationales. She definitely does not support getting it in writing and laid out for everybody to see including those that would harm us. That makes her very uncomfortable.

**Co-Chair Moore** recommended that they don't move forward with sending a letter. He thinks they may have taken care of that already. He also agreed with the other comments. He wanted to reiterate that there are things that they do as WHEJAC, and then there are things that they don't do as WHEJAC as our individual organizations, institutions, or whatever. They just need to be extremely cautious about how they move forward on this issue.

**Dr. Wright** said she's not against getting information and having an informed decision, but she doesn't think that that should be done officially through this body. That's her point. There are cases and different groups that have made decisions to move forward with the race and others who made decisions to move without race, like California versus New York.

She wanted to reiterate that the political decision is a Biden administration's one, and they will make it. But the political decision is not our decision. One of being strategic is saying that race should remain in this decision so that the Biden administration can begin to think more innovatively of how to get things through making certain that not including race doesn't harm people, and she thinks it does. It's a huge topic. It's not one that started today about whether or not race should be included in the years of fights we've had, affirmative action, for example.

The same thing happened with that issue as the conservative republicans move and take charge. It becomes a political decision for them. She's saying no official letter should go from this body asking the administration to respond to it. However else you want to get information, that's fine. She thinks that that would be toxic, and it could hurt all of us in the end including the Biden administration, whether you use our letter to say the WHEJAC recommended this and you did something else.

She wanted to bring forward the situation that's happening, Dr. Sheats, with the Environmental Justice Leadership Forum where they have environmental organizations who don't agree with us on everything. They grew to agree with nuclear. They agree with these other things that we don't. Their platform moves forward with standing where they are, and our platform moves forward standing on the principles that we have. There are two different entities here, and she doesn't want to be confused as being involved in the political decisions but dealing with the moral issues and being strategic. There's a strategy to hold into race. It forces them to push a little harder to get something done in another way.

Otherwise, we're just in the boat with them moving very slowly towards reaching the point where we want to be. It's an outsider agitator approach that has gotten us what we have. We went back and forth on slavery how many times on segregation and integration. The NAACP had to push forward on a principle, and they did lose often, but they finally won. That's her point. She

sees that as being who we are, not the political side that will make that strategic decision.

**Ms. Power** asked if it's possible to have a verbal briefing, like a conversation, with the administration so that they hear from the WHEJAC. So we don't send a letter in writing, and they don't respond in writing. But is it possible to have the administration join the WHEJAC during a meeting to have this conversation and to be able to ask questions and go back and forth? **Co-Chair Shepard** replied that they could make that request and she would imagine that they come before them. Is there a consensus that we want to do that? **Dr. Sheats** replied that caution is in order here, and, if we did want information, you might want to also have another source, like the NAACP legal defense and education fund in addition if you wanted to do that at all.

**Dr. Bullard** wanted to clarify that, when you say the administration come and speak, well, that's Brenda Mallory. That's CEQ. That's the White House Council Environmental Quality. So, the administration's position is clear. The CEQ and CEJST data are clear. It's obvious when they present this stuff when they get to the race thing, they wax eloquently when they're talking about their bottles and their whatever. When they get to the race, they start stumbling and stuttering back and forth or pulling off a Forest Gump. You have to realize that they do not want to touch what they see as a third rail. **Co-Chair Shepard** transitioned to a new topic.

**Mr. Logan** wanted to raise the issue of the third recommendation. He wanted to know where they are and get an update on their recommendation for the executive order. He looked on the website, and the recommendations are no longer on the website. Where are they on this? Can they elevate this to a level to get some action? Even if it's a response rejection, they deserve to know what that response is. **Vice-Chair Tilousi** said that she's been asking WHEJAC members that same question because it bothers her as they proceed forward. The executive order is the basic foundation of what we're trying to do here. We were last told that it was due to lack of staffing, and we have not heard anything back from CEQ.

**Ms. Solow** appreciated Vice-Chair Tilousi and Mr. Logan's questions about revisions and updates to Executive Order 12898. As Chair Mallory has said at numerous meetings, they greatly appreciate all the time and energy and effort that went into the recommendations that were produced last spring, including ways to reinvigorate this outstanding executive order. They are continuing to do that work within the White House and, as Chair Mallory noted yesterday, look forward to being able to provide you with updates as soon as they become available. They greatly appreciate the Council's work and patience with them. They take very seriously the responsibility of moving forward with an environmental justice-related executive order.

**Mr. Logan** suggested that they add this topic to the agenda for the next meeting so that they make sure that they're following up with it with enough time that it deserves to have a full discussion? **Co-Chair Moore** suggested that they draft up a very short letter around this particular item with the executive order and that they agree as an advisory council to move that forward. **Dr. Wright** expressed her frustration with the lack of response to questions asked during the meeting.

**Co-Chair Moore** replied that part of the reason why he said that is because we requested this before. In some cases, some of the staff may not be able to answer the question. **Dr. Wright** responded that if staff cannot provide a response or do not know the answer just say so.

**Co-Chair Shepard** asked if all questions will be responded to in two weeks; is that correct? **DFO Martin** responded that the two weeks is not part of the time limit. CEQ gives agencies two weeks to review because they have to go through a review process. Those questions that are submitted may go public, so they have to be vetted before CEQ can get the answers back to the members. What they have committed to is to start rolling these out on a weekly or biweekly basi to the questions that CEQ has received responses to. The Council just got a batch of them in that they'll be sharing over the next week, but for every question that has been asked, they have been tracking and working with CEQ to get responses from the agencies.

**DFO Martin** then added that all of the reports are on the WHEJAC web page. The one from last year is there. She has to see why the scorecard one is not there. It was there, but she dropped the links in the chat. The reports are out there. The cover letter is first, and then the next document is the actual report. **Mr. Logan** apologized that he's having a hard time following that. He only sees the cover letter. If he's having a hard time finding it, he assumes that other folks are as well. **DFO Martin** said she'll check them.

**Mr. Logan** recommended again that they have a very specific agendized item for the next meeting on this topic with some very clear requests from CEQ and other folks on the response. **Co-Chair Shepard** agreed that that will be put on the agenda. She stated that they were out of time and stated that there was no consensus to go forward on asking the administration to come and talk to us or write to us about their decision on race.

**Mr. Havey** agreed that they shouldn't make a formal request to sort of justify why race is not included. He wanted to make a recommendation that they do want to have race included. They do have that coming strongly forward. The Council should be stating what they believe in and make the recommendation, and ultimately, it's the Biden administration that will make a final decision on it. But the Council should be on the record with making a vote and a recommendation that race is included in that justice screening tool.

**Co-Chair Shepard** reminded him that there's already a recommendation in the Justice40 implementation that race is used. They have not voted on that suite of recommendations yet at this meeting. She didn't know if that recommendation had been made for the screening tool. **Vice-Chair Flowers** responded that she thought they were discussing whether or not they were going to wait and find out whether or not there's a verbal discussion to determine what that means when they take those positions. She would like to go back and offer an alternate position, which is, why don't they wait until they get the verbal requests to explain this, whether it's from the administration and the Legal Defense Fund or a counter position so that we can answer these questions and then people won't have doubt whenever they make these decisions. She thinks they need a little bit more information, then they should have a vote. But if people want to do that without having that information, they can move forward. **Co-Chair Shepard** asked for clarification.

**Vice-Chair Flowers** replied that she thought the consensus was that they weren't going to ask for them to write an opinion, that we would instead ask for them to give a verbal opinion. Dr. Sheats said that they should also have another opinion from maybe the NAACP Legal Defense Fund as well when that is presented to them. That would give us more information to make an

informed decision about this because, right now, one argument said they should do it based on principle. She wants to do it based on principle, but her principle is to make sure that we don't do something that could stop the program ultimately. In terms of the way the rest of the WHEJAC feels about it, that's what's being discussed now.

**Dr. Wright** stated that this is where they kind of disagree. She doesn't believe that their principal decision will affect the administration's political decision, and they've already made their point. They said it over and over again that they're not including race. What the Council feels isn't being considered at all at this point. It's not considered. The administration has decided race is not included, and the only thing she's saying is that that's not the position they should take. She doesn't think it is. WHEJAC should take the principal opinion, and let them do the political stuff, which they will do.

The administration is not going to do anything that they think would stop this program. The only reason that she's saying they shouldn't send an official letter is because it gets official, and it looks like a struggle between us and the administration. She's not against people getting information, but she suggested that they kind of do that privately, like she has done and listened to both sides. Dr. Seats would be a really good person to talk to, to show you the different sides and what people are saying and a few other committees that are around. She doesn't think that it would be politically strategic for them to do that inside of the WHEJAC. She thinks that this particular setting officially is not the same. That's all.

**Co-Chair Shepard** stated that they're not going to decide this tonight, and the vote on the recommendations for the screening tool is not until the June meeting. They have other times they can discuss this and make this a key agenda item. **Dr. Sheats** wanted to clarify with if they wanted the information, then they should also have someone else. To him, it's a big if about whether they should ask for that information, especially in a public setting.

**Amanda Aguirre**, Senior Advisor in the Office of Environmental Justice - CEQ, clarified to Mr. Logan and Dr. Wright that Ms. Solow answered the question to the best of her knowledge in where they're at. She said that she's not comfortable answering that question about the response time because part of the reason is it's not a CEQ sole response. It would have to go through other offices such as OMB and U.S. Digital Services and other entities depending on the question. They're going to go back and figure out what that response is and what that time is. Know that it is being worked on, and that the reason she's not giving a response right now is that she's not going to give one that she can't hold to knowing that she can't control all of the departments here at the agency and she's still getting my footing. She's also happy to talk offline and figure out a more expeditious way they can move this moving forward.

**Co-Chair Shepard** stated that the business part of the meeting is closed. They're going to take the issue of race up at another working group meeting. Those recommendations are not due until the vote in June. So, they do have time to further discuss this issue.

**2.6 Closing Remarks & Adjourn**

**Ms. Solow** stated that they desire to be able to provide thoughtful, thorough, and correct responses to all the questions that are posed by the WHEJAC members. She does take very

seriously the responsibility and the opportunity to provide that information because they know how important it is to the development of your recommendations.

As was mentioned numerous times during today's meeting and yesterday's meeting, this week marks one year since the creation of this historic body and the WHEJAC has been working incredibly hard at every public meeting, which they've now had three just this year. She thanked them again for their hard work.

She also thanked her colleague Dr. Lucas Brown for the presentation that he did on the current version of the screening tool. He has been leading public technical trainings on the current version of the tool, and it was important to be able to provide today's briefing as well. There is a public comment period on the tool, and they are very eager to receive people's recommendations on how they can further update and refine the tool moving forward.

She also thanked the members of the public who joined this two-day meeting and stayed late into the evenings. Their participation and active engagement are critical to the work for all of us across the federal government and also for the development of the WHEJAC recommendations.

**Co-Chair Shepard** stated that she was hearing the frustration that there is absolutely no understanding that after six months, they cannot get a response, whether it's we're working on it, we're not working on it, we don't have people to work on it, or some response. But there can't be zero response after six months of asking. That just cannot continue. Chair Mallory needs to know it cannot continue.

**Co-Chair Moore** reiterated about writing the letter on responsibility and accountability. If people expect the WHEJAC to be responsible and accountable, then at the same time, the agencies need to be responsible and accountable. This isn't the first time the staff has heard about the executive order or many of the other issues that they're talking about. As a Council, it's their responsibility at times to go above the staff, not disrespect the existing staff but to the person that needs to respond to this.

**Vice-Chair Flowers** stated that she learned a lot, but they feel their frustration and would like to see something happen. She understands that the government moves slowly. That's why she's not in government, but this is an opportunity that they've never had before. Now, hopefully, they'll see some success. Although they disagree with each other, they're all committed to making sure that justice is brought to the communities that have been overburdened and left behind.

**Vice-Chair Tilousi** thanked the public for their frustrations and stories and their comments on the screening tool. The Council needs to move as fast as they can because lives are in their hands.

**DFO Martin** thanked everyone and adjourned the meeting.

**[THE MEETING WAS ADJOURNED]**

# AGENDA

**THE COUNCIL ON ENVIRONMENTAL QUALITY**
**WHITE HOUSE ENVIRONMENTAL JUSTICE ADVISORY COUNCIL**
**VIRTUAL PUBLIC MEETING**

| AGENDA | MARCH 30, 2022 | 3:00 P.M. – 8:00 P.M. ET |
|---|---|---|
| 3:00 p.m. - 3:15 p.m. | **INTRODUCTIONS & OPENING REMARKS**<br>○ **Karen L. Martin, *Designated Federal Officer*** – *U.S. Environmental Protection Agency*<br>○ **Richard Moore, *White House Environmental Justice Council Co-Chair*** – *Los Jardines Institute*<br>○ **Peggy Shepard, *White House Environmental Justice Council Co-Chair*** – *WE ACT for Environmental Justice*<br>○ **Catherine Coleman Flowers, *White House Environmental Justice Council* Vice Chair** – *Center for Rural Enterprise and Environmental Justice*<br>○ **Carletta Tilousi, *White House Environmental Justice Council Vice Chair*** – *Havasupai Tribe* | |
| 3:15 p.m. - 3:30 p.m. | **OPENING REMARKS**<br>○ **Brenda Mallory, Chair** – *The Council on Environmental Quality* | |
| 3:30 p.m. - 4:30 p.m. | **DOMESTIC POLICY COUNCIL UPDATE**<br>○ **Kimberlyn Leary, Senior Policy Advisor, Racial and Economic Justice Team** – *Domestic Policy Council* | |
| 4:30 p.m. - 5:30 p.m. | **ENVIRONMENTAL JUSTICE AND THE PRESIDENT'S BIPARTISAN INFRASTRUCTURE LAW**<br>○ **Radhika Fox, Assistant Administrator, Office of Water** – *U.S. Environmental Protection Agency*<br>○ **Stephen Tryon, Director, Office of Environmental Policy and Compliance** – *U.S. Department of Interior*<br>○ **Christopher Coes, Principal Deputy Assistant Secretary for Transportation Policy** – *U.S. Department of Transportation* | |
| 5:30 p.m. – 5:45 p.m. | **BREAK** | |
| 5:45 p.m. – 7:45 p.m. | **PUBLIC COMMENT PERIOD**<br>***Members of the public will be given three (3) minutes to present comments relevant to the beta version of the Climate and Economic Justice Screening Tool and federal government agencies' implementation of the Justice40 Initiative.*** | |
| 7:45 p.m. - 8:00 p.m. | **CLOSING REMARKS – ANNOUCEMENTS & ADJOURN**<br>○ **Richard Moore, *White House Environmental Justice Council Co-Chair*** – *Los Jardines Institute*<br>○ **Peggy Shepard, *White House Environmental Justice Council Co-Chair*** – *WE ACT for Environmental Justice*<br>○ **Karen L. Martin, Designated Federal Officer** – U.S. Environmental Protection Agency | |

| AGENDA | MARCH 31, 2022 | 3:00 P.M. – 7:30 P.M. ET |
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| 3:00 p.m. - 3:15 p.m. | **WELCOME, INTRODUCTONS & RECAP**<br><br>○ **Karen L. Martin, *Designated Federal Officer*** – *U.S. Environmental Protection Agency*<br>○ **Peggy Shepard, *White House Environmental Justice Council Co-Chair*** – *WE ACT for Environmental Justice*<br>○ **Richard Moore, *White House Environmental Justice Council Co-Chair*** – *Los Jardines Institute*<br>○ **Catherine Coleman Flowers, *White House Environmental Justice Council* Vice Chair** – *Center for Rural Enterprise and Environmental Justice*<br>○ **Carletta Tilousi, *White House Environmental Justice Council Vice Chair*** – *Havasupai Tribe* | |
| 3:15 p.m. - 3:30 p.m. | **OPENING REMARKS**<br><br>○ **Robin Morris Collin, Senior Advisor for Environmental Justice** – *U.S. Environmental Protection Agency* | |
| 3:30 p.m. – 4:30 p.m. | **WHEJAC CLIMATE AND ECONOMIC JUSTICE SCREENING TOOL WORKGROUP UPDATE & DISCUSSION**<br><br>○ **Catherine Coleman Flowers, Workgroup Chair** – *Center for Rural Enterprise and Environmental Justice* | |
| 4:30 p.m. – 5:30 p.m. | **WHEJAC CLIMATE RESILIENCE WORKGROUP UPDATE & DISCUSSION**<br><br>○ **Maria López-Núñez, Workgroup Co-Chair** – *Ironbound Community Corporation*<br>○ **Miya Yoshitani, Workgroup Co-Chair** – *Asian Pacific Environmental Network* | |
| 5:30 p.m. – 5:45 p.m. | **BREAK** | |
| 5:45 p.m. – 6:45 p.m. | **WHEJAC JUSTICE40 WORKGROUP UPDATE & DISCUSSION**<br><br>○ **Peggy Shepard, Workgroup Co-Chair** – *WE ACT for Environmental Justice*<br>○ **Beverly Wright, PhD, Workgroup Co-Chair** – *Deep South Center for Environmental Justice* | |
| 6:45 p.m. – 7:15 p.m. | **WHEJAC BUSINESS MEETING REFLECTION & CONVERSATION**<br><br>**The WHEJAC will use this time to reflect on the meeting proceedings and public comment period; provide workgroup updates; discuss action items and finalize next steps.**<br><br>○ **Karen L. Martin, Designated Federal Officer** – U.S. Environmental Protection Agency<br>○ **Richard Moore, *White House Environmental Justice Council Co-Chair*** – *Los Jardines Institute*<br>○ **Peggy Shepard, *White House Environmental Justice Council Co-Chair*** – *WE ACT for Environmental Justice*<br>○ **Catherine Coleman Flowers, *White House Environmental Justice Council* Vice Chair** – *Center for Rural Enterprise and Environmental Justice*<br>○ **Carletta Tilousi, *White House Environmental Justice Council Vice Chair*** – *Havasupai Tribe* | |
| 7:15 p.m. – 7:30 p.m. | **CLOSING REMARKS & ADJOURN**<br><br>○ **Corey Solow, Deputy Director for Environmental Justice** – *The Council on Environmental Quality*<br>○ **Richard Moore, *White House Environmental Justice Council Co-Chair*** – *Los Jardines Institute*<br>○ **Peggy Shepard, *White House Environmental Justice Council Co-Chair*** – *WE ACT for Environmental Justice*<br>○ **Catherine Coleman Flowers, *White House Environmental Justice Council* Vice Chair** – *Center for Rural Enterprise and Environmental Justice*<br>○ **Carletta Tilousi, *White House Environmental Justice Council Vice Chair*** – *Havasupai Tribe*<br>○ **Karen L. Martin, Designated Federal Officer** – U.S. Environmental Protection Agency | |

# ONLINE SUBMITTED WRITTEN PUBLIC COMMENTS

## Northeast -1
## Maine, Massachusetts, Rhode Island, Connecticut, New Hampshire, Vermont, New York, Pennsylvania, New Jersey, Delaware, Maryland, DC

**Full Name (First and Last):** Khali Maddox-Abdegeo
**Name of Organization or Community**: UMASS CHAN/Baystate Hospital Community Faculty
**City and State:** Springfield, Massachusetts
**Brief description about the concern**: Concerned about the effects in populations in Springfield, Massachusetts/New England of mid-western manufacturing/ industrial pollution and toxic nuclear waste pollution in rain and north Atlantic Ocean effects on seafood and humans? In addition, how soon will corroded at-risk outdated urban and rural water pipe and sewage systems be replaced in the majority of USA population centers?

**What do you want the WHEJAC to advise the White House Council on Environmental Quality to do**?:
I believe that it is a matter of dire national emergency that the U.S. Congress and the heavy manufacturing industries including mining and the drug and timber industries a create a budget within 60 days that will be fully funded immediately upon ratification signing by the President of the United States. We have funds for war pollution. Divert those funds to civil needs and stop being blind for profits!

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## Southeast -2
## West Virginia, Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Arkansas, Louisiana, Florida

Hello, I just want to give you a brief summary on what is going on with this company. My mom has lived at 523 Midway Ln, Louisa, VA 23093 for 60 years. I have been trying to get help, but it was difficult due to COVID. I have included photos and videos of the emissions, smoke, ash and dust coming from the plant. You also see how close they are to us. They are currently operating off a temporary permit and try to get a permanent permit. I apologize for the difference format. The letter below is what I sent to DEQ: I have recently learned that a permit application is pending regarding the Boxley Zion-Crossroads asphalt plant in Louisa. I would like to request a formal public notice and an opportunity for public comment on the pending permit application. Given the plant's proximity to my property and home (just 50 feet away), a public comment opportunity would allow me, my family, and neighbors to voice our concerns. Some of the harms I plan to share, experienced as a direct result of the Boxley Zion-Crossroads asphalt plant, are: ODOR: The plant emits an odor that not only smells like tar and chemicals, but also threatens my own and my family's health. The plant's fumes have caused my mother to suffer headaches and caused me to experience a burning sensation in my nose and throat. When I sought medical advice about these ailments, my nurse informed me that the plant's emissions are hazardous, and recommended that my mother and I double mask, limit time outdoors, and change clothes after being outdoors. NOISE: When the plant operates, it generates a loud, persistent hum, audible from inside my home. The trucks entering and exiting the plant also produce excessive noise by beeping when backing up, using air brakes, and slamming their tailgates. DUST: The plant's

operations generate a considerable about of dust that comes onto my property, caking the ground, our cars, and everything else in a layer of dust. The odor, noise, and dust created by the plant are prohibiting me and my family from able to enjoy our property. We are no longer unable to work from home and cannot host cookouts or invite family over. Thank you for your consideration. Please reply to this email so I can be sure that DEQ has received it. I can also forward the permit, it has not been approved by DEQ, let me know if you need it. Your assistance will be greatly appreciated. Thank you, Theresa Coffey

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Rivian - The "CLIMATE agenda destruction" spreads to Rutledge Georgia. While "certain" landowners are purchased by the State of Georgia ( https://www.ajc.com/news/local-official-siblings-stand-to-profit-from-rivian-factory-land-deal/7OIJWBMTXRCN7OQ5LEWWFZL3A4/ ) Other, poorer (unconnected to public officials) - landowners are ignored.

The ENVIRONMENTAL INJUSTICE happening in Rutledge Georgia is a tragedy occurring as we speak. Georgia Governor Brian Kemp has budgeted (and passed) $125 million to purchase land for a select "connected" few people for a proposed massive Rivian electric vehicle project …. While the other renters and low income landowners will live with the harmful effects of a massive 20,000,000 square foot automobile and battery manufacturing facility at their backdoor. Environment Justice 38 page report. History indicates we should ALL be protected from heavy industrial manufacturing encroaching on ANY residents. It appears the State of Georgia finds itself at the forefront of INJUSTICE all in the name of "climate agenda destruction" for electric vehicles. As the "State of Georgia" brings numerous Georgia EPD employees on to "committees" to promote the Rivian plant and local "Walton County" (as the construction permitting County) hires the former Georgia EPD Director as a lobbyist, the environmental destruction will be ignored. Environmental enforcement will fall to the wayside of climate change alarmists and their environmental construction destruction.

**3. Site Design and Environmental**
**Mission Statement**: To have subject matter experts provide feedback to ensure that Rivian's site and operation meets requisite State, Federal, and local ordinances to protect the environment and communities. To provide feedback on site design such that design and operation maximize positive impacts on the community and minimize any negative impacts.

**Staff lead:** John Eunice, Deputy Director, Environmental Protection Division, Georgia Department of Natural Resources
**Assistant:** Charna Parker, Director, Walton County Planning and Development

**Members:**
James Boylan, Assistant Branch Chief, Air Protection Branch, Georgia Environmental Protection Division
Ed Hutter, Vice President, Hutter & Associates LLC
Chuck Jarrell, Director, Morgan County Planning Department
Betty Jean Jordan, PE, Owner, Polyscape, LLC
Barbara Schlageter, Planning and Zoning Administrator, City of Social Circle
Anna Truszczynski, Branch Chief, Watershed Protection Branch, Georgia Environmental Protection Division
Randy Vinson, President, Live/Work Building Co. LLC

**4. Quality of Life**

The climate change agenda is claiming entire communities as the sacrificial lambs. Rutledge Georgia residents are fighting to avoid the hostile takeover and protect their air, water and skies. I hope you consider the environmental destruction as you promote "climate" agenda initiatives and policy. Even the local Regional planning agency has huge reservations on the local impact. NORTH EAST GEORGIA REGIONAL COUNCIL final report:

https://negrc.org/uploads/sites/4/2022/01/DRI3560.ProjectAdventure.MorganCounty.FinalReport.pdf The State of GEORGIA should never be able to BYPASS the Federal #cleanwaterrules or the Morgan County environmental regulations for Groundwater protection. Our WATER protection matters! https://www.morganga.org/DocumentCenter/View/319/Article-14---Env-Regs Morgan County Comprehensive Plan - natural resources protection! https://www.morgancountyga.gov/DocumentCenter/View/57/4---Comp-Plan-Chapter-3?bidId= OUR COMMUNITY and our residents should not be the sacrificial lambs for the "Green New Deal" agenda. The "climate agenda" environmental destruction must be stopped. Thank you for your consideration. Tonya Bechtler, Rutledge, Morgan County Georgia

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To whom it may concern, and I hope it does concern you, I am writing to ask what can be done for the communities surrounding the proposed Rivian EV/battery plant in Rutledge GA. To date Rivian hasn't applied for any permits and the official plans haven't been submitted to the government yet we've heard that they will break ground by the end of the month. This is a deeply rooted agricultural community with a rich history and *none of us* were told about this "megasite" or the plant until the Governor announced it in the news in December. Since then we've been asking questions and getting very few answers. There are a number of factors surrounding this particular plant that are alarming. The NEGRC DRI report mentions this on **page 2:** https://www.stantonsprings.com/uploads/7/5/0/2/75024267/dri3560.projectadventure.morgancounty.finalreport.pdf " A plant of this size would negatively impact the groundwater recharge area by converting millions of square feet into impervious surfaces. In addition, the DRI submittal noted that the plant is expected to generate "some hazardous waste, such as: paints, solvents, adhesives, batteries, […] that are typical of such manufacturing facilities." These types of waste could be particularly harmful to the local groundwater recharge area as well. No mitigation proposal was provided; the applicant indicated that mitigation and disposal plans are currently being developed." You can read more about the local impact in these links: https://www.lakeoconeenews.us/article/rivian-impact-part-two? https://www.covnews.com/opinion/chas-moore-not-so-fast-says-opponent-rivian/? This 20 million square foot facility would sit upon one of the largest aquifers in the Southeast. If this was solely an EV assembly plant then I wouldn't be as concerned, however, the problem is the battery production side of the plant which uses highly toxic chemicals and requires an exorbitant amount of water which we really cannot handle given the groundwater recharge area. There are many of us on wells and we're concerned about the amount of water being used, not to mention being poisoned from the toxic waste they will produce which will ultimately leak into our groundwater. Rivian still hasn't provided a complete plan as to how they will handle this and our repeated requests for answers have been ignored. https://www.stantonsprings.com/uploads/7/5/0/2/75024267/plan_for_groundwater_recharge_by_t_h_2.10.22.pdf At that same meeting one of the JDA board members actually said "yes" when asked about his private wells and whether he would sell us his water after this project runs ours dry. There are many conflicts of interest and "those in the know" stand to gain while this whole area will lose its beautiful agricultural way of life that **we are taking a stand for!** Look who the head of the JDA was for 20 + years and the land in question happens to be his family farm which has been in the business of making hay for over 100 years. https://www.ajc.com/news/local-official-siblings-stand-to-profit-from-rivian-factory-land-deal/7OIJWBMTXRCN7OQ5LEWWFZL3A4/ It is located at 5100 David Academy Road in Rutledge GA 30663. https://www.stantonsprings.com/uploads/7/5/0/2/75024267/site_plan.pdf This is a huge environmental disaster that we can avoid and I am hoping you can help us by looking into the matter further as our emails and questions to the State of GA as well as Rivian

have all but been ignored. Sincerely, Julie Cooper

Please do not allow the construction and implementation of the Rivian plant in Rutledge, Georgia. It is harmful to our water sources and our rural way of life. Please consider how you would feel if this mega plant was put in your backyard. We were not given any voice or choice in this matter. Please halt the planning and construction of this harmful site. Please consider moving it to a site that already has industrial use in place. Thank you for your consideration.

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## Midwest -3
## Ohio, Indiana, Michigan, Illinois, Missouri, Wisconsin, Minnesota, Iowa, Kansas, Nebraska, South Dakota, North Dakota

**None-**

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## Southwest -4
## Texas, Oklahoma, New Mexico, Arizona

**Full Name (First and Last):** Garcia Erika
**Name of Organization or Community**: Noise pollution Free America
**City and State**: Spring Tx
**Brief description about the concern:** c) For purposes of this section: (1) an act is deemed to occur in a public place or near a private residence if it produces its offensive or proscribed consequences in the public place or near a private residence; and (2) a noise is presumed to be unreasonable if the noise exceeds a decibel level of 85 after the person making the noise receives notice from a magistrate or peace officer that the noise is a public nuisance. (d) An offense under this section is a Class C misdemeanor unless committed under Subsection (a)(7) or (a)(8), in which event it is a Class B misdemeanor. (e) It is a defense to prosecution for an offense under Subsection (a)(7) or (9) that the person who discharged the firearm had a reasonable fear of bodily injury to the person or to another by a dangerous wild animal as defined by Section 822.101, Health and Safety Code.

**What do you want the WHEJAC to advise the White House Council on Environmental Quality to do?:** Pass Noise Act. Noise is environmental pollution and affects the mental health of the public when exposed to long term unnecessary noise whether it's from an amplifier or machinery.

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## West -5
## Colorado, Wyoming, Montana, Idaho, Washington, Oregon, Utah, Nevada, California, Alaska, Hawaii

**Full Name (First and Last):** Kailea Frederick
**Name of Organization or Community**: NDN Collective
**City and State:** Petaluma, California
**Brief description about the concern:** Dear CEQ and the WHEJAC Council, My name is Kailea Frederick and I am a part of the Climate Justice Team with NDN Collective. NDN Collective is an Indigenous led organization whose mission is to build Indigenous power. For the last year, our campaign has been working with a team of engineering experts to produce a report that details how the infrastructure of the Dakota Access Pipeline is faulty and unsafe and why the entirety of the DAPL process has lacked integrity through due process. This report is the first that: Lays out a full and factual timeline of the DAPL

process Shows the depth and details of co-conspiring between the Army Corps of Engineers and the owners of DAPL Illuminates the level of recklessness both parties are willing to take in the name of profit. It is important that this report is read and circulated as we await the draft EIS being released from the Army Corps of Engineers. Last year on April 9th the Biden Administration decided to allow oil to continue flowing through the Dakota Access Pipeline despite the fact that it is operating illegally and violates not only NEPA but treaty rights of the Standing Rock Sioux Tribe. A year later, we have published this factual report so that the Biden Administration, specifically the EPA and CEQ are aware of the transgressions that the tribes whose drinking water, Traditional Knowledge and sacred sites are at risk, have experienced. It is critical that the Biden Administration step in and hold the ACOE accountable, as the Dakota Access Pipeline sets a dangerous precedent for the quality of future infrastructure and the way that relationships with tribes are handled. The Biden Administration touts itself for being the administration ready to tackle the climate crisis, as well as honoring racial equity and the nation-to-nation relationship with tribes. In the case of this pipeline these goals are in violation of the public facing stance that the White House is seeking to hold itself accountable to. This report aids to both remind the Biden Administration of its goals and that there is immense work to be done to strengthen NEPA and FPIC within the CEQ and EPA. Thank you for your time.

**What do you want the WHEJAC to advise the White House Council on Environmental Quality to do?**: We want the WHEJAC to share this report with the appropriate agencies and urge these agencies to be in dialogue with NDN Collective and the Tribes on this matter. Additionally, we also call for the EPA and CEQ to pressure President Biden to stop the flow of oil while the pipeline operates illegally.

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**Full Name (First and Last):** Danny Garza
**Name of Organization or Community**: Plata Arroyo N.A.
**City and State**: San Jose
**Brief description about the concern:** Help fond official descriptions that will inform Community about how to address Pollution on Possible Development

**What do you want the WHEJAC to advise the White House Council on Environmental Quality to do**?: Please provide written information

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**Full Name (First and Last**): Charlene Hopey
**Name of Organization or Community**: Topanga, CA/Los Angeles County
**Brief description about the concern**: Edison, our electric provider has upped the number of volts in our power lines because that is what has a protective carrier in our fire prone area. But we are a very small mountain community and to not need that amount of power to keep us up and running. Some are saying this is to supply energy to Wireless Cell Sites that use a significant amount of energy that takes it away from regular homes and businesses and contributes significantly to Global Warming. The problem is, after these lines were installed, people were having adverse physical reaction - maybe electrical hot spots or hot lines, leaking energy. But our Board of Supervisors will not pay attention to what people are saying. Two people have moved to another part of the county and are no longer having the physical reactions. What can we do?

**What do you want the WHEJAC to advise the White House Council on Environmental Quality to do?:** Advise us on this issue of electrical leaks or electrical hot spots and advise on action we can take to get our County and Edison to listen. Two of the people had an electrical reading of their homes that showed high levels of this electricity in their homes.

# APPENDIX A:
# ADDITIONAL SUBMITTED WRITTEN PUBLIC COMMENTS

**TABLE OF CONTENTS**

**TABLE OF CONTENTS**

**I. Title:** The Overlooked Public Health Crisis of Healthcare Waste: A Call for Oversight, Protections, & Tracking


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**III. Sponsorship/co-sponsorship:** This proposed policy statement is submitted on behalf of the APHA Environment Section.

**IV. Collaborating Units:** N/A

**V. Endorsement:** The following sections have been *invited* to endorse this statement:

1. Occupational Health & Safety
2. Ethics
3. Law
4. Pharmacy
5. Medical Care
6. Community Health Planning & Policy Development

**VI. Summary:**

Healthcare waste adversely impacts society in ways that have been overlooked for decades, an issue that the COVID-19 pandemic has accelerated significantly. This policy statement addresses the human impacts that occur as healthcare waste is processed, transported, landfilled, or incinerated. With limited federal tracking and lack of regulation, patterns of environmental racism persist. Communities of color and those who are low wealth most often experience the greatest occupational and environmental health burdens through their work and disposal of waste in their communities. Many communities have called for action for decades, as our massive healthcare industry contributes greatly to these harms. Centering these communities, public health professionals must advocate for: 1) lawmakers to increase federal tracking and oversight of the healthcare and waste industries' processing of healthcare waste , 2) federal agencies, particularly the US Environmental Protection Agency and Occupational Safety and Health Administration, to support communities and the related workforce with appropriate rules, enforcement, guidance, and funding for increased protections, and 3) the healthcare industry to reconsider sustainability initiatives in ways that address environmental justice issues with respect to waste generation, management, transport, processing, and siting. Some public health experts also anticipate that we may be entering a 'pandemic age,' which suggests that without intervention, intersecting issues of infectious disease, climate change, waste, and environmental and occupational health and justice will remain and reoccur.

**VII. Relationship to existing APHA policy statements:**

- 202116: Ensuring Equity in Transportation and Land Use Decisions to Promote Health and Well-Being in Metropolitan Areas
- 20218: Health Inequities in the US Coronavirus Disease 2019 Pandemic and Response
- LB20-04: Structural Racism is a Public Health Crisis: Impact on the Black Community
- 20197: Addressing Environmental Justice to Achieve Health Equity
- 20189: Achieving Health Equity in the United States
- 202116: Public Health Opportunities to Address the Health Effects of Air Pollution

- 20158: Preventing Occupational Transmission of Globally Emerging Infectious Disease Threat
- 20078: Addressing the Urgent Threat of Global Climate Change to Public Health and the Environment
- 200412: Support for Community-Based Participatory Research in Public Health
- 20017: Research and Intervention on Racism as a Fundamental Cause of Ethnic Disparities in Health
- 8911: Resource and Solid Waste Management

**VIII. Rationale for Consideration:**

The APHA Joint Policy Commission and staff have not identified this topic as a policy statement gap for the current year. However, the last policy statement drafted to explicitly address waste as a public health issue was in 1986 (*8911: Resource and Solid Waste Management*). APHA recently approved policy statements related to structural racism (LB20-04) and environmental justice (EJ) (20197) that provide a foundation for this statement on healthcare waste as a public health issue. Further, recent statements related to COVID-19 are relevant (e.g., 20218), as the COVID-19 pandemic has illuminated the scale and implications of our healthcare waste stream. However, none of these policies combine the issues of EJ and equitable waste management with clear evidence and actionable steps needed to address this longtime overlooked major public health issue. This proposed policy statement is in response to EJ leaders calling on public health, occupational health, healthcare, and legal advocates to address this long-standing issue that continued to worsen during the COVID-19 pandemic. (See: https://drive.google.com/file/d/13i9SA4iMVvtyaxVPZebXExyz65LnG5Cj/view.)

**VIII. Problem Statement:**

For decades, environmental racism has underlain the management and siting of waste of all types in the US. In 1979, a group of Black homeowners in Houston, Texas formed the Northeast Community Action Group and used legal tactics to cease the placement of a sanitary landfill in their neighborhood. Even though their lawsuit, Bean v. Southwestern Waste Management, Inc., failed to stop development of the landfill, it raised awareness about the consequential health effects of waste. In 1982, protests further galvanized the Environmental Justice (EJ) movement when Warren County, North Carolina residents fought back against dumping 60,000 tons of PCB-contaminated soil in their community.[1] The United Church of Christ led a historic analysis in 1987 with a follow-up conducted in 2007.[2,3] These reports confirmed that race predicted hazardous waste siting in the US, above and beyond one's income. More recently, investigation of municipal solid waste incinerators found 79% are located in overburdened EJ communities.[4] In Michigan, for example, six of the state's eight hazardous waste facilities are located in Wayne County, a majority Black county in one of the most segregated regions in the nation, with nearly 70% of this waste coming from outside of the state.[5] Tait et al.'s recent systematic review concluded from 93 studies that adverse health effects could potentially occur in communities nearest sites where hazardous waste is dumped or processed, including but not limited to development of various cancers, congenital abnormalities, and asthma.[6] These experiences and data repeatedly highlight the burden of waste disproportionately placed on communities of color.

As EJ leaders and the World Health Organization (WHO) have documented, the COVID-19 pandemic accelerated these unaddressed inequities dramatically with increased healthcare waste from testing, biowaste, vaccinations, and single-use plastics.[7,8] Those affected by environmental racism have also experienced the greatest losses in their communities from SARS-CoV-2 with compounding physical and social environmental health inequities.[9] Whether healthcare waste is declared hazardous or managed as less-regulated municipal solid waste (MSW), it has been more likely to harm the health of communities of color in the US for generations.[6]

Public health experts also anticipate we may be entering a 'pandemic age',[10] and intersecting issues of infectious disease, waste, climate change, and environmental and occupational injustice require intervention. Incinerators and landfills, as the fate of much healthcare waste, are a major source of emissions, perpetuating climate change and its public health implications. The US

healthcare industry is responsible for one-fourth of global healthcare greenhouse emissions, more than any other country.[11] In 2018, this resulted in an estimated loss of 388,000 disability-adjusted life-years.[12] To align with its ethical commitment to doing no harm, the healthcare industry must reduce its carbon footprint and adverse impacts for communities frontline to its waste stream.

*Major Types of Healthcare Waste with Implications for Public Health*

The WHO defines healthcare waste as all waste related to medical procedures, including waste generated within healthcare facilities, laboratories, research centers, home healthcare, and other minor sources.[8] The public health implications of personal protective equipment (PPE), single-use and medical waste plastics, pharmaceuticals, and regulated medical waste (RMW) are briefly described below. In sum, the US healthcare industry generates an estimated 5-6 million tons of waste each year, which is often disposed of through incineration, landfilling, and chemical and thermal disinfection.[13] Approximately 85% of healthcare waste is non-hazardous, and 15% is infectious, toxic, or radioactive.[14] Waste from historically minor sources has accelerated dramatically during the COVID-19 pandemic also, complicating our waste streams. For instance, developed by major manufacturers like LabCorp, home and community antibody and diagnostic tests are a part of life for millions as SARS-CoV-2 becomes endemic in many nations.[15] Beyond these data, the human toll on those working with or living near this waste should remain front of mind for public health professionals.

PPE must be made available and is often mandated in healthcare settings, as it can protect individuals from contracting infections such as SARS-CoV-2. However, improper disposal of PPE can leave lasting environmental impacts. Every month, 129 billion face masks and 65 billion gloves are used to protect citizens worldwide and few healthcare facilities rely on reusable types of respiratory protection.[16] Discarded PPE and other plastic items litter streets, parks, beaches, and waterways adding various environmental impacts of improper disposal.[17,18]

The healthcare industry relies heavily on medical waste plastics (MWPs), and much medical equipment (e.g., tubing, blood sample tubes) is disposable and plastic.[16-19] Each day, 20-25% of healthcare waste can be attributed to plastic packaging and products.[20] Researchers found that 90% of IV bags can be recycled, for instance. Yet, the majority of IV bags, which make up 10% of total MWPs, unnecessarily undergo treatment and disposal as hazardous waste.[21] The use of

single-use plastics in healthcare grew exponentially with the onset of the COVID-19 pandemic. Multiple locations in the US paused recycling programs at various times with concerns of SARS-CoV-2 spread, causing the prioritization of incineration and landfilling to manage MWPs with increased water and air pollution.[16,22,23] With more plastic manufactured from fossil fuels, there are more carbon dioxide and methane emissions leading to further climate disruption.

Pharmaceuticals also contribute to medical waste, and toxicity of their chemical breakdown in wastewater is not well known. Unknown toxicity combined with a lack of monitoring and control measures, imposes a significant public health challenge.[24] Presence of pharmaceuticals in the environment is linked to antimicrobial resistance (AMR). Uncontrolled discharges from pharmaceutical manufacturing have devastating impacts on water systems, as well as people and animals in contact with resulting resistant microbes. Exposure to environmental sources of antimicrobial drugs places vulnerable populations, such as pregnant women from low-income backgrounds, at a higher risk for community-acquired AMR infections.[25] The threat of AMR compromises management of infectious diseases when pathogens causing resistant infections thrive in healthcare settings putting all patients at risk regardless of severity and type of illness.[26]

RMW is healthcare waste that poses a risk of infection from materials such as blood and other body fluids. This includes microbiological laboratory waste, pathological and anatomical waste, blood specimens and products, and other body-fluid specimens, as well as vaccine sharps and vials.[27,28,29] RMW is sometimes autoclaved (i.e., sterilized with steam), disinfected with chemicals, or incinerated. Incineration leads to emissions, including carcinogenic dioxins and furans, and should be avoided when unnecessary.[30] Large healthcare facilities treat infectious waste on-site, but most rely on other companies to take it off-site. By the end of 2021, RMW had also increased at unprecedented rates with more than 8 billion SARS-CoV-2 vaccine doses given globally, resulting in an additional 143 tons of RMW.[8] Again, we must recognize the humanity underlying RMW, which also entails bodily remains, including from lives lost to SARS-CoV-2. Between 2020 and 2022, our nation saw disaster morgues, mass graves, and air permit violations from sudden increases in cremation.[31,32]

RMW is generally handled by workers who disproportionately represent underserved and underrepresented populations—from the healthcare site to the end-point facilities.[33] These workers face occupational hazards due to the potentially infectious or hazardous nature of some

healthcare waste or emissions from their transport and processing. For instance, Black, Latinx, Native American, and Alaskan Native populations are more likely to work in essential jobs where they may be exposed to infectious agents.[34] These populations are likely to experience more work and life stressors than others in the healthcare workforce, with some lacking the option to take sick leave (paid or otherwise) or access quality healthcare themselves. There is an urgent need to better protect workers from adverse exposures associated with RMW through improved workplace policies that rely on the hierarchy of controls, reflect on-the-ground experiences of workers, and consider social determinants of health.

*Medical Waste Management & Regulations*

Given a patchwork of federal, state, and local regulations and privatization of medical waste handling by companies such as Stericycle, it is hard to understand and address the scale and impacts of RMW in the US. The Occupational Safety and Health Administration (OSHA) and Centers for Disease Control and Prevention (CDC) provide guidance for discarding RMW, and facilities that generate this type of waste are advised to have a medical waste management plan to prevent infection.[35,36,37] The Environmental Protection Agency (EPA) oversees waste management through the Resource Conservation and Recovery Act (RCRA), which gives a legal framework for management of hazardous and non-hazardous solid waste. If RMW is incinerated, EPA regulates its emissions through the Clean Air Act's Hospital Medical Infectious Waste Incinerator standards. OSHA has responsibilities over workplace safety for those managing waste. The CDC is responsible for infectious disease management of waste. With the CDC, OSHA, the Department of Agriculture, and the Federal Emergency Management Agency, the Department of Transportation enforces Hazardous Materials Regulations with requirements for transport of RMW, as workers and communities may be at risk if problems occur in transit.

Even with this guidance, there are no federal regulations for RMW tracking, making it hard to identify which communities are disproportionately burdened with associated environmental exposures. The Medical Waste Tracking Act (MWTA) of 1988 followed RCRA's "cradle-to-grave" approach to waste regulation where the EPA tracked RMW from generation to disposal, but this was only implemented in a handful of states and expired after two years. [38] Many states developed independent laws; some patterned after the MWTA, but state medical waste regulations vary in stringency. For example, some states require registration for medical waste

generators, but most states do not. Without federal regulation, there is no limit on transporting medical waste from a state with more stringent regulations to one with more lax regulations.

## IX. Evidence-Based Strategies to Address the Problem:

*Waste Reduction Strategies within the Healthcare System*

Professionals in the healthcare industry have advocated for the six Rs of waste reduction in healthcare settings—reevaluating, reusing, reprocessing, repurposing, recycling and refuse.[39] For instance, this means reconsidering operating room materials inventory, reusing sharps containers, and increasing recovery programs for medical support donations to prevent the creation of RMW, additional MSW, and pharmaceutical waste.

Adjustments in materials that healthcare facilities use may help reduce their waste and carbon footprint. Investments in reusable PPE have shown ecological and safety benefits, for instance. In a pilot study, the Ronald Reagan UCLA Medical Center switched to reusable surgical gowns. Over 3 years, 297 tons of waste were diverted from the landfill. The gowns were thicker, offering more protection than traditional single-use gowns.[40] Researchers have also identified instances that usability of medical supplies could safely extend beyond current expiration dates.

Healthcare facilities can also make more concerted efforts to separate and recycle plastic wastes that are not single-use or infectious.[21,41] Kaiser Permanente and Cleveland Clinic have developed hospital-led recycling programs to reduce the amount of waste they send to the landfill.[42] Segregating waste at point of generation prevents harm to those handling the waste down the line. Autoclaving contaminated waste improves the efficiency of recycling processes and reduces the amount of waste going to landfills and is an alternative to air polluting incineration.[43,44] Out-of-date incinerators likely cause adverse health effects, and newer models while safer are still quite harmful.[6] One technique, Sterilwave, for instance, treats SARS-CoV-2 waste on-site, avoiding community transmission during handling and enabling it to be handled as MSW, in addition to reducing waste weight.[42] Plastic wastes generated from hospital cafeterias in the US represent about 16 to 20% of total MWPs generated, products which could be recycled without decontamination.[21] Existing programs that return product packaging to vaccine companies for reuse and recycling are another example of waste reduction models. Essentially, healthcare waste

management plans can reduce transmission and spread of disease and increase the recyclability of materials, reducing medical facilities' contributions to landfill mass.[43]

*State or Federal Policy Strategies*

As with many nations, the U.S. has broad and imperfect policies related to healthcare waste, with limited data and implementation, and enforcement largely falling on individual states, provinces, or local municipalities. For instance, the North Carolina Department of Environmental Quality has identified potential areas to minimize their medical waste; estimates of waste prevention vary from 11,000 lbs/year to 230,000 lbs/year, depending on the changes made.[44] Such analyses with data on healthcare waste stream patterns and flow is necessary to ensure evidence-based strategies are effective at promoting public health and EJ at the state or federal level.

To improve its own poorly regulated system, the US can look to other nations for innovative practices and legislative strategies to minimize waste and reduce risk of disease transmission. In Canada, healthcare waste must be decontaminated with proof of treatment before entering a landfill, and policies and enforcement prevent exorbitant disposal fees and illegal dumping.[45] The European Union classifies healthcare waste as hazardous waste with strict restrictions on its incineration.[46] In Sweden, expired or unused pharmaceuticals must be returned to pharmacies.[45] In Australia, Queensland has stringent legislation that prioritizes waste management to achieve the best environmental outcome.[42] Jordan uses three primary principles for dealing with hazardous waste: reduction of unnecessary healthcare waste, isolation of regular waste from hazardous waste, and "proper treatment" to reduce risk to healthcare workers and society.[43] In India, Management and Handling Rules of 1998 call for waste segregation at point of generation, and "highly infectious" biomedical waste is autoclaved.[47] In Hubei, China, the government provides mobile incineration and autoclave systems and collects extensive data on healthcare waste.[43]

Based on lessons learned from other countries, clear data gaps within the U.S., and lack of federal guidance, US agencies and healthcare facilities must re-assess existing practices and develop an evidence-based waste management plan that fully considers occupational and environmental health and justice impacts. The Affordable Care Act (ACA) also presents a missed opportunity to address healthcare waste in the US. Spelled out by the ACA under tax code Section 501(r)(3)(A), tax-exempt hospital organizations are required to conduct a

community health needs assessment (CHNA) every three years and adopt an implementation strategy to meet community health needs identified through the CHNA. However, CHNAs do not require assessment or interventions to account for healthcare waste.[48] Overall, changes to state and federal policies and within the healthcare industry require shifts in knowledge, behaviors, and social norms as lack of proper information, fear of infection transmission, and a lack of accurate and consistent definitions leads to excess waste and environmental harm.[21]

**X. Opposing Arguments/Evidence:**

Three main points of contention arise related to this policy statement that can be disputed with evidence: (1) there is insufficient evidence to tie waste management practices directly to their implications for communities of color or low-wealth communities, (2) single-use plastics are critical to reduce infectious disease transmission, especially during pandemics, and (3) waste can generate energy and is an opportunity for increasing sustainability with net benefits.

First, opponents may suggest the association between hazardous waste exposure and health impacts in communities of color and low-wealth communities is inconclusive. As explained above, there is no accurate way of knowing how much healthcare waste is handled across the US. Yet, we know that communities surrounding landfills and incinerators experience adverse health effects.[11] Furthermore, the association between waste facility siting and surrounding communities' racial and ethnic composition [3,4,5] indicates that waste management processes disproportionately impact communities of color. It is imperative to implement protocols at the federal level to ensure overburdened populations are not further impacted by waste transport, processing, and siting.

Secondly, while single-use plastics reduce transmission of infectious disease, given the ecological impact of the production and use of fossil fuel-based products, single-use PPE is simply not a healthy, sustainable practice,[49] and alternatives are necessary. Disinfection and reuse may be possible on a large scale and is in preliminary stages of investigation by some hospitals as researchers work to ensure that degradation of the PPE material is not compromised from serving its primary function of protecting and reducing infectious disease transmission.[49]

A third opposing argument attempts to make the case for sustainability in using waste to generate electricity or produce other products, but good intentions may perpetuate disproportionate environmental health impacts. The focus on sustainability and 'green' technology ignores

consequent healthcare waste and its impacts. Healthcare waste may be used for energy production and pyrolysis may be used to produce "value added products" from waste,[43] such as the use of incinerator ash in cement. Autoclaving, microwaving, and steam treatment with internal mixing are alternatives to waste incineration, which releases carcinogens. Waste-to-energy innovations must assess health and justice implications and prioritize public health from start to finish.

**XI. Action Steps**

Healthcare waste is a matter of occupational and environmental health and justice. Beyond the scope of this policy statement, vital issues remain related to waste in home, veterinary, and community healthcare settings. APHA offers these recommendations:

1. Federal lawmakers must increase oversight of healthcare waste and delineate federal definitions of medical waste whereby current state-by-state policies perpetuate EJ issues. Congress must hold public hearings and call for a report by the Government Accountability Office to outline state-level challenges and opportunities for environmental protections with respect to healthcare waste. Once better informed, lawmakers should more clearly delegate responsibility for management, tracking, and protections of healthcare waste to the appropriate federal and local agencies.
2. As called for in the Medical Waste Tracking Act of 1988 (MWTA), the U.S. EPA should establish a tracking system for communities, scholars, and agencies to easily understand who is transporting healthcare waste within and across state lines, US territories, and Tribal lands, and out of the US. Information about Superfund, brownfields, landfill, and incinerator sites may be available, but less is known about waste flow patterns. Such data reporting should be required of states and private waste management companies for integration into state or federal databases, such as EJScreen.
3. State and local governments must consider implications of existing and future waste management infrastructure. Legislators could require health impact assessments or cumulative impact analyses to understand waste flow and who is most impacted by odors, noise, and air, water, or land pollution (and resulting health outcomes) associated with waste sites. Local governments should consider the legacy of past zoning decisions with regards to waste siting.
4. Non-profit hospital organizations must include healthcare waste in their Community Health Needs Assessment (CHNA). The CHNA should address how waste impacts the community working at and living near hospitals, as well as impacts in communities where waste is transported or sited.

5. State or federal lawmakers should propose policies that require the private sector (e.g., packaging and biopharmaceutical manufacturers) to pay the cost of waste. This may entail government incentives from take-back programs. Such programs must require manufacturers to have a sustainability plan for waste and be designed in ways that prevent industry loopholes that sometimes emerge with 'polluter pays' policies.
6. Sustainability experts in the healthcare industry must work with public health leaders to improve supply chain management and changes in materials, such as medical equipment that can be sanitized and reused. A life-cycle systems perspective from design and purchase decisions to safety training should involve workers, especially those representing underserved communities that are most likely to work with waste and at the highest risk.
7. Lawmakers should require OSHA to improve current required education and training for supervisors and workers to raise awareness and skills in protecting themselves from healthcare waste, including training on the past and present of the EJ movement. This should be designed with stakeholders of underrepresented communities most at risk of occupational hazards to ensure training is relevant, practical, and reflective of workers' experiences.
8. All healthcare facilities should form a dedicated committee to review waste management plans periodically. Workers must have effective input into all phases of their work from design to completion. Plans should follow industry and consensus environmental, safety, and health standards. Plans should also define roles and responsibilities of personnel clearly and comply with the hierarchy of controls for waste management (i.e., first engineering controls, then administrative controls, then PPE).
9. Although there are many opportunities to reduce healthcare waste, lawmakers, OSHA, and industry leaders must adopt policies to first and foremost ensure effective safety controls and adequate PPE for workers who regularly put their lives on the line to keep essential healthcare services operational and accessible for millions of Americans, including those who manage and process healthcare waste. This is essential to address racial inequities in the workplace and maintain a healthy workforce during pandemics, as well as during daily health care activities.

## XII. References


1. Bullard, RD. *Dumping in Dixie: race, class, and environmental quality.* Boulder, CO: Westview Press, 1994.
2. United Church of Christ. Commission for Racial Justice. *Toxic wastes and race in the United States: a national report on the racial and socio-economic characteristics of communities with hazardous waste sites.* 1987. Accessed February 2, 2022. http://uccfiles.com/pdf/ToxicWastes&Race.pdf.
3. Bullard, RD., Mohai P, Saha R, Wright B. Toxic wastes and race at twenty: why race still matters after all of these years. *Environ Law.* 2008;38(2), 371-411.
4. The New School: Tishman Environment and Design Center. U.S. Municipal Solid Waste Incinerators: An Industry in Decline. Static1.squarespace.com. Published May 2019. Accessed January 29, 2022. https://static1.squarespace.com/static/5d14dab43967cc000179f3d2/t/5d5c4bea0d59ad00012d220e/1566329840732/CR_GaiaReportFinal_05.21.pdf.
5. Great Lakes Environmental Law Center. Our Home is Not a Dumping Ground. Glec.org. Published August 2, 2020. Accessed January 29, 2022. https://www.glelc.org/news/2020/8/2/community-residents-environmental-justice-advocates-call-on-the-michigan-department-of-environment-great-lakes-and-energy-to-address-discrimination-in-location-of-hazardous-waste-facilities.
6. Tait PW, Brew J, Che A, et al. The health impacts of waste incineration: a systematic review. *Aust N Z J of Public Health*. 2020;44(1):40-48.
7. West End Revitalization Association. *Right to Basic Amenities*. Submitted to U.S. House Committee on Energy & Commerce, June 9, 2020.
8. WHO, 2014 World Health Organization. Global analysis of healthcare waste in the context of COVID-19: Status, impacts and recommendations. Geneva: World Health Organization. 2022. Accessed February 2, 2022. www.who.int/publications/i/item/9789240039612.
9. Powers M, Brown P, Poudrier G, et al. COVID-19 as Eco-Pandemic Injustice: Opportunities for Collective and Antiracist Approaches to Environmental Health. *Journal of Health and Social Behavior*. 2021;62(2):222-229. doi:10.1177/00221465211005704.
10. Morens DM & Fauci AS. Emerging pandemic diseases: How we got to COVID-19. *Cell.* 2020;182(5),1007-1092.
11. Health Care Without Harm. Health care's climate footprint: how the health sector contributes to the global climate crisis and opportunities for action. Noharm-global.org. Published September 2019. Accessed January 29, 2022. https://noharm-global.org/sites/default/files/documents-files/5961/HealthCaresClimateFootprint_092319.pdf.
12. Eckelman MJ, Huang K, Lagasse R, Senay E, Dubrow R, & Sherman JD. Health care pollution and public health damage in the United States: an update. *Health Affairs.* 2020;39(12),2071–2079. https://doi.org/10.1377/hlthaff.2020.01247.

13. Practice Greenhealth. Waste: Understand hospital waste streams, how to measure them, and how to reduce waste at your facility. Practicegreenhealth.org. Published 2019. Accessed January 29, 2022. https://practicegreenhealth.org/topics/waste.

14. World Health Organization. Health-care waste. WHO.int. Published February 8, 2018. Accessed January 29, 2022. https://www.who.int/news-room/fact-sheets/detail/health-care-waste.

15. Tran, NC, Albahra, S, Rashidi, H, May, L. Innovations in infectious disease testing: Leveraging COVID-19 pandemic technologies for the future. *Clinical Biochem.* 2022. doi.org/10.1016/j.clinbiochem.2021.12.011.

16. Prata JC, Silva, AL, Walker TR, Duarte AC, Rocha-Santos T. COVID-19 pandemic repercussions on the use and management of plastics. *Environ. Sci. Technol.* 2020; 54 (13), 7760– 7765. doi:10.1021/acs.est.0c02178.

17. Haddad MB, De-la-Torre GE, Abelouah MR, Hajji S, Alla AA. Personal protective equipment (PPE) pollution associated with the COVID-19 pandemic along the coastline of Agadir, Morocco. *Sci Total Environ*. 2021;798:149282. doi:10.1016/j.scitotenv.2021.149282.

18. Klemeš JJ., Yee VF, Tan RR, Jiang P. Minimizing the present and future plastic waste, energy and environmental footprints related to COVID-19 *Renew Sustain Energy Rev.* 2020;127.

19. Rizan C, Mortimer F, Stancliffe R, Bhutta MF. Plastics in healthcare: time for a re-evaluation. *J R Soc Med*. 2020;113(7):49-53. doi:10.1177/0141076819890554.

20. Healthcare Plastics Recycling Council. Solutions for Hospitals. Hprc.org. Published 2020. Accessed November 11, 2021. https://www.hprc.org/hospitals.

21. Lee B, Ellenbecker MJ, Moure-Eraso R. Analyses of the recycling potential of medical plastic wastes. *Waste Management*, 2002;22(5), 461-470. doi:https://doi.org/10.1016/S0956-053X(02)00006-5.

22. Blair J & Mataraarachchi S. A Review of Landfills, Waste and the Nearly Forgotten Nexus with Climate Change. *Environments*. 2021;8(8):73. https://doi.org/10.3390/environments8080073.

23. Christensen TH & Bisinella V. Climate change impacts of introducing carbon capture and utilisation (CCU) in waste incineration. *Waste Management*. 2021;126,754–770.

24. Nassiri Koopaei N & Abdollahi M. Health risks associated with the pharmaceuticals in wastewater. *Daru J of Pharm Sci*. 2017;25(1):9.

25. Suda K, & Tadrous M. (2021). Sum of the parts: Ensuring a resilient global drug supply chain. *Infection Control & Hospital Epidemiology*. 2021;42(5),598-599. doi:10.1017/ice.2021.138.

26. Maghear A, Milkowska M. The environmental impact of pharmaceutical manufacturing: How does industry address its own waste? No-harm-europe.org. *Healthcare Without Harm Europe*. Published December 2018. Accessed January 29, 2022. https://noharm-europe.org/sites/default/files/documents-files/5731/2018_PharmaceuticalIndustryReport_WEB.pdf.

27. Centers for Disease Control and Prevention. Infection Control. Guidelines for Environmental Infection Control in Health-Care Facilities. Cdc.gov. Published 2003, updated May 14, 2019. Accessed January 29, 2022. https://www.cdc.gov/infectioncontrol/guidelines/environmental/recommendations.html.

28. United States Environmental Protection Agency. Medical waste. EPA.gov. Published March 29, 2021. Accessed October 19, 2021 https://www.epa.gov/rcra/medical-waste.

29. US Department of Labor, Occupational Safety and Health Administration. Occupational Exposure to Bloodborne Pathogens: final rule (29 CFR 1910.1030). Federal Register 1991;56:64004–182. (n.d.). Osha.gov. Accessed January 29, 2022. https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1030.

30. US Centers for Disease Control and Promotion. *Guidelines for Environmental Infection Control in Health-Care Facilities.* 2003. Accessed February 2, 2022.https://www.cdc.gov/infectioncontrol/guidelines/environmental/background/medical-waste.html.

31. Behara, BC. Challenges in handling COVID-19 waste and its management mechanism: A review. *Environ Nanotechnol Monit Manag*. 2021; 15. doi.10.1016/J.ENMM.2021.100432

32. South Coast Air Quality Management District. Emergency Order for Crematoriums due to COVID-19. [Press release] Published January 17, 2021. Accessed February 8, 2022. http://www.aqmd.gov/docs/default-source/news-archive/2021/emergency-order-for-crematoriums-jan17-2021.pdf

33. Faghri PD, Dobson M, Landsbergis P, Schnall PL. COVID-19 Pandemic: What has work got to do with it? *J Occup Environ Med.* 2021;63(4).

34. Asfaw A. Racial Disparity in Potential Occupational Exposure to COVID-19. *J Racial Ethn Health Disparities*. 2021;1-14. doi:10.1007/s40615-021-01110-8.

35. US Department of Labor, Occupational Safety and Health Administration. Occupational Exposure to Bloodborne Pathogens: final rule (29 CFR 1910.1030). Federal Register 1991;56:64004–182. (n.d.). Osha.gov. Accessed January 29, 2022. https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1030.

36. US Centers for Disease Control and Promotion. *Guidelines for Environmental Infection Control in Health-Care Facilities.* 2003. Accessed February 2, 2022. https://www.cdc.gov/infectioncontrol/guidelines/environmental/background/medical-waste.html.

37. Garner JS, Hospital Infection Control Practices Advisory Committee. Guideline for isolation precautions in hospitals. *Infect Control Hosp Epidemiol.* 1996;17:53--80.

38. Singh, N, Ogunseitan, OA, Tang Y. Medical waste: Current challenges and future opportunities for sustainable management. Critical Rev in Environ Sci Tech. 2021. doi:10.1080/10643389.2021.1885325.

39. Practice Greenhealth. Greening the OR. In *Practice GreenHealth*. Accessed February 8, 2022. https://practicegreenhealth.org/topics/greening-operating-room/greening-or.

40. Practice Greenhealth. Case study: Reusable isolation gowns. In *Practice GreenHealth*. Accessed October 1, 2021. https://practicegreenhealth.org/sites/default/files/upload-files/case_studies/ucla_isolation_gown_case_study.pdf.

41. Padmanabhan KK & Barik D. Health hazards of medical waste and its disposal. *Energy from Toxic Organic Waste for Heat and Power Generation*. 2019;99-118. doi:10.1016/B978-0-08-102528-4.00008-0.

42. Wyssusek KH, Keys MT, van Zundert AJ. Operating room greening initiatives - the old, the new, and the way forward: a narrative review. *Waste Management & Research.* 2019;37(1),3-19. doi.org/10.1177/0734242X18793937.

43. Das KA, Islam N, Billah M & Sarker A. COVID-19 pandemic and healthcare solid waste management strategy – A mini-review. *Sci Total Environ.* 2021 ;778. doi.org/10.1016/j.scitotenv.2021.146220.

44. North Carolina Department of Environmental Quality. *Medical waste is part of a larger solid waste problem.* 2021. [presentation]

45. Windfeld ES, & Brooks MSL (2015). Medical waste management–A review. Journal of environmental management, 163, 98-108. doi.org/10.1016/j.jenvman.2015.08.013.

46. Rogowska J, Zimmerman A, Muszyńska A, Rantajczyk W & Wolska L. Pharmaceutical household waste practices: preliminary findings from a case study in Poland. *Environmental Management.* 2019;64(1), 97-106. doi.org/10.1007/s00267-019-01174-7.

47. Passupathi P, Sindhus S, Ponnusha BS & Ambika A. Biomedical waste management for the health care industry. *International Journal of Biological Waste & Medical Research.* 2011;2(1),472-486.

48. Franz B, Cronin CE & Singh S. Are nonprofit hospitals addressing the most critical community health needs that they identify in their community health needs assessments? *Journal of Public Health Management and Practice.* 2021;27(1),80-87. doi.org/10.1097/PHH.0000000000001034.

49. Singh N, Tang Y & Ogusteitan OA. Environmentally sustainable management of personal protective equipment. *Environmental Justice & Technology.* 2020;54(14),8500-8502. doi.org/10.1021/acs.est.0c03022.

**Letter of commitment to the Environmental Justice Community from CSA Leadership**
*31 January 2022*

For the last two years members of CSA Board and staff have been working alongside CSA Environmental Justice Practitioners Working Group (EJPWG) leaders to bridge the science-to-action gap in research, especially as it relates to equity in science and in community partnerships. The leadership of the EJPWG has provided an invaluable service to both CSA and the field of citizen science as a whole by engaging with us in open, honest, and transparent conversations about the state of the field.

In February 2020, the EJPWG leadership presented CSA with a Memorandum of Understanding (MOU) and Memorandum of Agreement (MOA) detailing a set of guiding principles and best practices for engaging with Environmental Justice (EJ) communities and organizations. That document has since served as the foundation for a formative shift in the operations, policies, and programs of CSA.

With this letter we formally acknowledge that science has caused historic, systemic, and ongoing harm to, and exploitation of, minoritized and marginalized communities, particularly Black, Indigenous, and other People of Color, as detailed in the MOU and MOA. We further acknowledge that such harms and exploitations have in many cases been perpetrated in the name and guise of participation in science and community engagement. CSA has a responsibility, as an Association with an interest in upholding integrity in public engagement in research, to attend to those harms. To this end, we affirm CSA's commitment to the objectives, principles, and practices outlined in those documents. This entails addressing, and growing capacity to address, specific work to:

- Maintain and foster a strong network of community based EJ practitioners;
- Create learning spaces and dialogue with EJ communities/leaders and research focused counterparts aiming to discuss equitable partnerships and opportunities for collaboration;
- Work to improve upon environmental justice participation and representation in the CSA and the conference planning;
- Offer representative categories for EJ/Indigenous practitioners for CSA membership and conference registration;
- Develop and uphold operating guidelines that protect the interests of grassroots EJ leaders and organizations when a) working directly with CSA, and b) when working in this field (e.g., with colleges/universities or other scientific institutions);
- Addressing fair inclusion and representation of Indigenous focused academic institutions, HBCUs (Historically Black College and Universities), and Hispanic, Latinx, and Tribal centered universities that number in the 100s;

- Elevating research models that support corrective solutions for adversely impacted EJ/Indigenous areas: such as WERA's COMR Model (community owned and managed research) that leverage legal compliance and enforcement;
- Funding EJ/Indigenous input, training of CSA members, and on-site participation in various state, regional, national, and international venues.

As a non-profit Association focused on the advancement of integrity in citizen and community science, we additionally recognize that there are larger systemic issues, harms, and opportunities that we can confront and address, as related to our purview and mission, such as:

- The scientific exploitation of people of color and indigenous areas by major academic universities without equitable funding and solutions-oriented use of research results;
- Operational and proactive support of existing and new/proposed federal law written specifically to protect the rights and improve quality of life of EJ/Indigenous communities where such proposals could or do reference the roles and rights of communities leading or leveraging science partnerships for change.

We commit - to the EJPWG and the CSA community - that we will continue to actively and increasingly support and pursue opportunities that address justice, equity, diversity, inclusion, and funding parity in community and citizen science. This commitment will be actioned throughout our strategic plan, mission, principles, governance, and programs/activities. We are mindful that this work requires long-term commitments, such that change (albeit too long delayed and never fast enough) can be not just incremental but sustained and with an eye to sustained and more systemic impacts.

As the leadership of this organization we can take action and take accountability. We also recognize that we can't make change on our own. Change will come from across this community, with many working together to move this commitment forward. We commit to being a long-term partner, ally, and leader in this work, and value the opportunity to work alongside the EJPWG and (increasingly) other individuals and partner organizations moving forward.

On behalf of the CSA Board and with their unanimous vote of support,

Jennifer L. Shirk
Director, CSA

- **White House Environmental Justice Interagency Council, Chair and Members** whejac@epa.gov,

Bill Osmunson DDS MPH
bill@teachingsmiles.com

March 17, 2022

" Sec. 219. Policy . . . turning disadvantaged communities . . . into healthy, thriving communities,"

A clinician causing harm to their patient can harm that patient and the patient can sue for damages. A public health policy causing harm to millions, can keep going on and on for generations causing harm to millions and harming the environment.

As a practicing dentist (1977) with master's degree in public health (1972), I promoted fluoridation (adding fluoride to public water) for about 25 years until I read the research for myself. The evidence for me caused a significant paradigm shift.

**WHY IS FLUORIDATION AN ENVIRONMENTAL JUSTICE ISSUE? (see more below)**

My understanding of environmental justice is "*equitable distribution of environmental benefits and burdens associated with economic production"* referred to here as "equity."

Like lead, arsenic, strychnine, and other toxins, even very small amounts of fluoride ingestion harms the developing brain lowering IQ. The research reports 5 to 20 IQ points lost. For you and me with 130 plus IQ, snipping a few IQ points may not be noticed. Cutting a person with 75 IQ points down can be life altering with increased costs and grief in special education, loss of happiness, loss of relationships, frustration, increased incarceration, lower income, increased divorce rate, increased homelessness, job insecurity, and significant costs to society. All caused by our governments.

**CALL TO ACTION: Equitable distribution of harm is not justice and WHEJAC is requested to call experts in toxicology, pharmacology, neurology, epidemiology, biochemistry, together and evaluate the current science on risk-benefit of water fluoridation.**

**Who has jurisdiction over fluoridation policy? (see more below)**

The short answer is "no one."

The FDA regulates drugs, but not public water and FDA says, "not us."

The EPA regulates public water, but not drugs and EPA says, "not us." For those who choose to add fluoride, the EPA provides guidance, which is essentially the same as approval and in violation of the SDWA.

The CDC Oral Health Division is a mirror of private industry, the American Dental Association who's members make many millions on fluoride. (My office about $160,000/year.) The CDC does not determine the safety of drugs, they promote policy.

The PHS does not determine the efficacy, dosage, or safety of any drug.

State Health Agencies rely on the Federal agencies.

Frequently the voters, cities and/or water districts attempt to do good by adding fluoride to water, over-riding the FDA.

**NO AUTHORITY DETERMINES SAFETY OF INGESTING FLUORIDE.** The EPA has been hauled into court over their Maximum Contaminant Level Goals of fluoride which is currently at 4.0 ppm and the National Research Council in 2006 determined was not protective.

For example, in a legal deposition, under oath, Principal Investigator Dr. Gary Slade, the best dental expert the EPA could hire for their defense, acknowledged that he was not an expert in any non-dental effects of fluoride and had never conducted any original research on any adverse effects, including neurotoxicity. He also acknowledged he had never done original research on dental effects of fluoride exposure during the first year of life. He also stated he was not an expert on risk-benefit assessment and would not undertake to assess the risk-benefit ratio between dental benefits and neurodevelopmental harms. In his deposition, Dr. Slade also acknowledges several reasons for the uncertainty of dental benefits from fluoridated water. He acknowledges that very few studies have ever been blinded, that none of his own studies of fluoride and dental caries have used blinding, that lack of blinding can introduce bias in the direction favored by the researchers, and that no RCT has ever been done with fluoridated water. Based on the information available to us, it appears Dr. Slade has neither attempted to assess the risk-benefit ratio of neurodevelopmental harm against reduced dental caries, nor attempted to acquire "a thorough knowledge of the scientific literature" on the risks, as required under the Declaration of Helsinki principles. His lack of expertise in non-dental effects of fluoride and his acknowledgement that he is not qualified to do risk-benefit assessments are not acceptable excuses for the apparent absence of one in his study proposal. And that testimony is an example of the best dentists have to offer in defense of fluoridation.

None of the organizations promoting fluoridation have published their risk-benefit evaluation. Dentists, physicians, public health professionals claim they are not responsible for a risk-benefit analysis.

State departments of health have responded to our request for evaluation of safety claiming they do not evaluate the safety and rely on others, and refuse to divulge those unnamed "others".

Several streams of evidence must be considered to make judgment, including but not limited to:

## Outline

## I. Background and Lack of Quality Studies on Fluoride Ingestion and Lack of Benefit.

The addition of fluoride to public water or bottled water, referred here to as fluoridation, has been called in the United States one of the 20th Century's greatest Public Health Achievements. In most developed countries fluoridation and fluoride supplements are not significantly practiced (if at all) for a number of reasons, outlined below.

Numerous studies have been published claiming fluoridation, fluoride ingestion, supplements (pills or liquid) have significant benefit; however, Leverett (1997) did a randomized clinical trial of the effect of prenatal fluoride supplements followed until age 5. The treatment group received 1 mg of fluoride/day, similar to fluoridated water and postnatal dietary fluoride supplements encouraged. Cavities measured at age 3 and 5. 92% of children remained caries free and only 26 subjects had very mild dental fluorosis. *"Overall, there were no statistically significant differences with respect to caries and fluorosis in deciduous teeth."*

No RCT's are reported for fluoride ingestion as supplements, fluoridated bottled water or fluoridation for infants, children or adults. Quality research is long overdue. The FDA denied approval of fluoride ingestion finding the evidence for efficacy, "incomplete."

Fluoride is not an essential mineral. No physiologic function requires fluoride. A lack of fluoride exposure does not cause dental caries. Sodium fluoride does not have an FDA NDA number when ingested with the intent to prevent dental caries and is listed as a drug in the US Pharmacopoeia. Sodium fluoride is not listed in the Orange Book of FDA approved drugs for use with the intent to prevent or mitigate dental caries. More below.

Many published studies on fluoride and dental caries regurgitate the highly marketed mantra of fluoride's benefit for reducing dental caries without reference to quality RCT studies because there none. Topical fluoride does have good evidence of benefit and is FDA approved, not systemic.

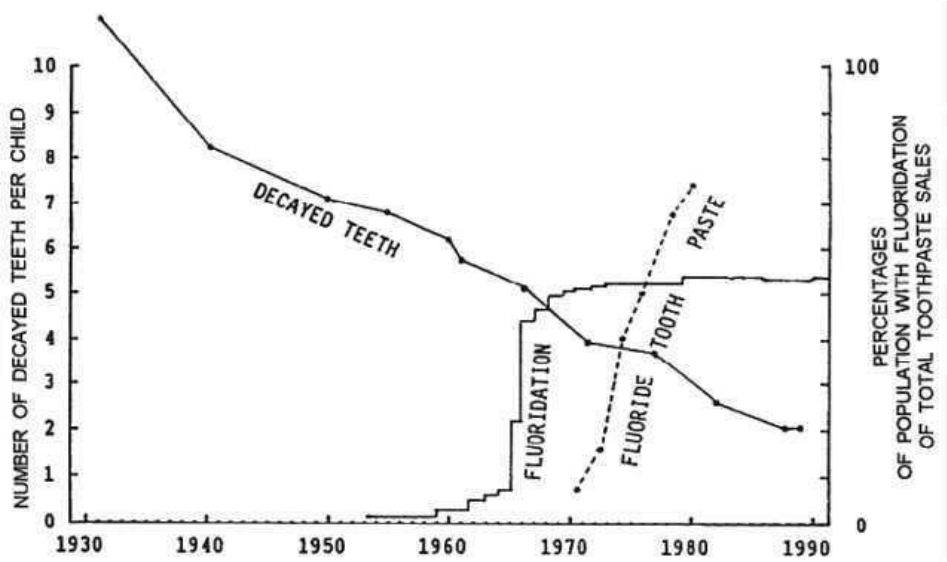
A careful evaluation of studies on systemic benefit finds numerous limitations often including but not limited to:

A. Not one Study corrects for Unknown Confounding Factors
B. Not one Prospective Randomized Controlled Trial
C. Socioeconomic status usually not controlled
D. Inadequate size
E. Difficulty in diagnosing decay
F. Delay in tooth eruption not controlled
G. Diet: Vitamin D, calcium, strontium, sugar, fresh and frozen year-round vegetables and fruit consumption not controlled.
H. Total exposure of Fluoride not determined
I. Oral hygiene not determined

J. Not evaluating Life-time benefit
K. Estimating or assuming subject actually drinks the water.
L. Dental treatment expenses not considered
M. Mother's F exposure, Breast fed (almost no fluoride) and infant formula with a high dose of fluoride
N. Fraud, gross errors, and bias not corrected.
O. Genetics not considered

All of those are limitations and significant, but not a single study on the ingestion of fluoride controls for the huge unknown(s) which reduced dental caries prior to fluoride use and reduction of caries in other countries never fluoridated (A above) and Limeback's graph next page.

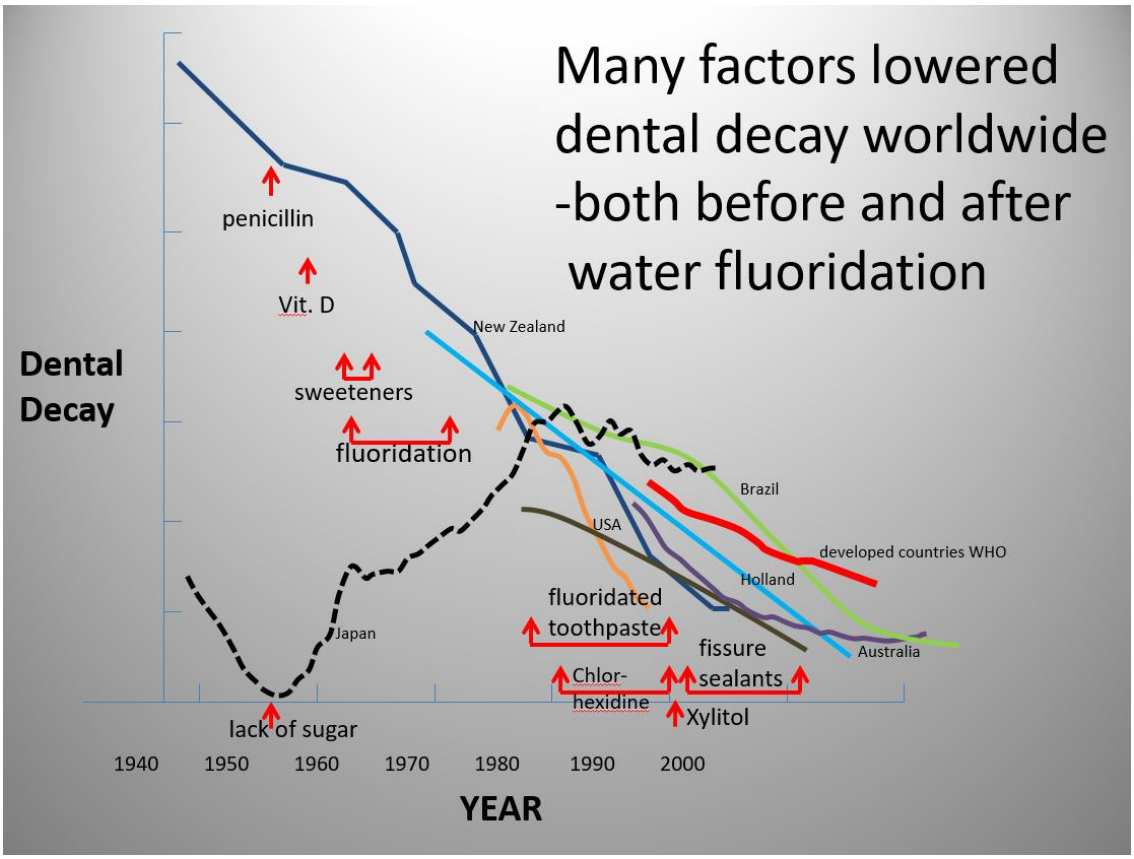
No study controls for the causes in decline from 12 cavities per 12 year old in the early 1920's to less than 6 cavities per 12 year old when fluoridation and fluoride toothpastes could have had a significant impact. The following graph by Colquhoun 1997 ISFR illustrates this point.




Credibility is stretched beyond reason to suggest fluoridation reduced caries before fluoridation started, or that the huge caries crushing unknowns prior to fluoridation stopped at the same rate as the benefits from fluoridation started.

My point should be clear, with over 70% of the USA fluoridated without their consent, randomized controlled trials should have been done and the US Food and Drug Administration approval with NDA should have been obtained. The need for this research could have a significant impact on public health.

Limeback H (unpublished) illustrated the complex fluoride/caries connection with the following.

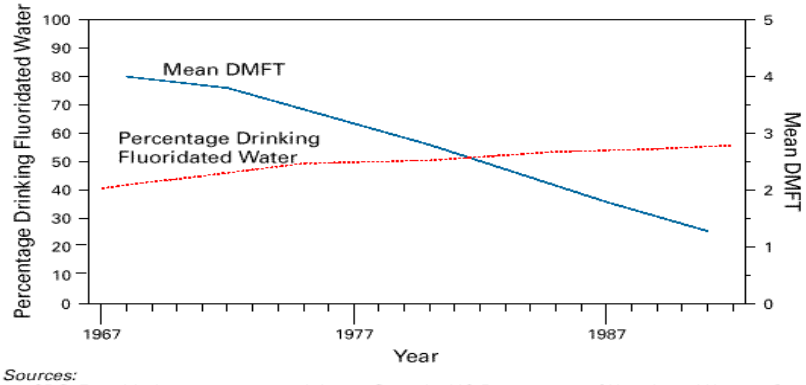



Some dentists suggest sugar reduction (diet) maybe a more important factor for caries prevention than fluoride and or oral hygiene in primary teeth. To give fluoride the credit for the significant caries reduction over the last, perhaps Century, is not based on the evidence.

At the same time the CDC was claiming fluoridation was one of public health's greatest achievements of the 20th Century, the CDC was reminding us that fluoridation had primarily topical benefit and rather than systemic benefit.

The CDC presents the following Figure 1 as evidence of fluoridation's efficacy.

**FIGURE 1. Percentage of population residing in areas with fluoridated community water systems and mean number of decayed, missing (because of caries), or filled permanent teeth (DMFT) among children aged 12 years — United States, 1967–1992**




*Sources:*

1. CDC. Fluoridation census 1992. Atlanta, Georgia: US Department of Health and Human Services, Public Health Service, CDC, National Center for Prevention Services, Division of Oral Health, 1993.
2. National Center for Health Statistics. Decayed, missing, and filled teeth among youth 12–17 years—United States. Rockville, Maryland: US Department of Health, Education, and Welfare, Public Health Service, Health Resources Administration, 1974. Vital and health statistics, vol 11, no. 144. DHEW publication no. (HRA)75-1626.
3. National Center for Health Statistics. Decayed, missing, and filled teeth among persons 1–74 years—United States. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, Office of Health Research, Statistics, and Technology, 1981. Vital and health statistics, vol 11, no. 223. DHHS publication no. (PHS)81-1673.
4. National Institute of Dental Research. Oral health of United States children: the National Survey of Dental Caries in U.S. School Children, 1986–1987. Bethesda, Maryland: US Department of Health and Human Services, Public Health Service, National Institutes of Health, 1989. NIH publication no. 89-2247.
5. CDC, unpublished data, third National Health and Nutrition Examination Survey, 1988–1994.

No one disputes the two events have happened. Just because two events happen does not prove their correlation.

Certainly, more communities received fluoridated water and individual DMFT decreased, nice but the relationship is not plausible. The CDC omitted the pre fluoridation trend of decreasing caries and suggests a 17% increase in the number of people fluoridated in random cities nation-wide, provided a huge 70% reduction in dental caries in the entire USA. To achieve those stunning results would not have been possible if the fluoride were targeted at specific high-risk individuals, let alone random cities.

Without FDA approval, the addition of an unapproved drug to public water must be considered an experiment without informed consent.

> NIH Guidelines for Informed Consent: "Potential participants should make their own decision about whether they want to participate or continue participating in research. This is done through a process of informed consent in which individuals (1) are accurately informed of the purpose, methods, risks, benefits, and alternatives to the research, (2) understand this information and how it relates to their own clinical situation or interests, and (3) make a voluntary decision about whether to participate."

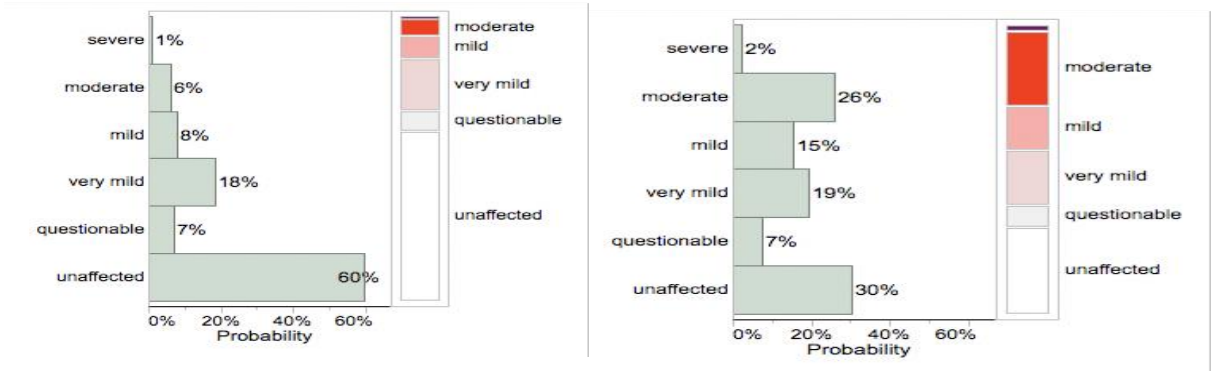
However, the fluoridation experiment is being done not only without individual consent or doctor's prescription, nor Institutional Review Board Approval, but no reasonable data is being collected to evaluate whether the experiment is safe and effective. The 75 year old public health policy is a runaway disaster of our own making. Knowledgeable public loses trust in government agencies when those agencies ignore the science.

## II. Total Exposure, Too Much Fluoride.

Fluoride exposure appears to be increasing and it makes no sense to give children more fluoride when they already ingest too much fluoride.

When fluoridation first started the public was assured perhaps 10% to 15% (Dean) of the public might show signs of very mild, hardly detectible, dental fluorosis. See Beltran-Aguilar 2002, reported 38%. In 2004 dental fluorosis increase to 41%. In 2019 Neurath et al published NHANES data finding 60%. Such huge increases were disputed and Neurath responded. Dong reported NHANES data from 2015-2016 at 70%. At what point are public health leaders willing to admit too many are ingesting too much fluoride?

Compare Neurath's data from 2004 to 2012, illustrated below, and the significant decrease in unaffected children from 60% to 30% and increase of moderate/severe from 7% to 28%.




Many foods, beverages, dental products and medications contain fluoride. 2-year old ingest a mean percentage of 65% of the toothpaste they use and 75% or more if not rinsing. "... some children probably get more than the recommended amount of fluoride from toothpaste alone. . . " p 42 The National Research Council in 2006 (NRC 2006).

Table 2-7 of the NRC (2006) Report estimated topical fluoride intake from toothpaste for infants 0.5 to 1 year at **0.1 mg**/kg/day and for children 1-2 years of age at **0.15** mg/kg/day. P. 42.

The US EPA has an RfD (Reference Dose) of **0.06** mg/kg/day, about half what the mean child is ingesting from toothpaste alone. Total fluoride exposure must include from toothpaste and fluoridation and foods and medications and all sources. It is no surprise dental fluorosis rates have increased far beyond EPA's RfD. EPA's RfD is based on an uncertainty factor 1:1 and margin of error of 1:1, yet EPA provides no evidence for why fluoride is a protected contaminant in water.

However, the infant on formula made with fluoridated water and NO toothpaste would also receive about 0.2 mg/kg/day, much higher than EPA's RfD of 0.06 mg/kg/day. See more details: The National Research Council in 2006.

The EPA Dose Response Analysis 2010, Figure 8-1, below, illustrates the percentage of children exceeding the RfD if the EPA increased the RfD to 0.08 mg/kg/day. In other words, doing the opposite of the NRC 2006 recommendation and "declaring" fluoride exposure safer, being less protective. Even with reduction of safety, too many children still ingest too much fluoride. (Percentage above the black line.)

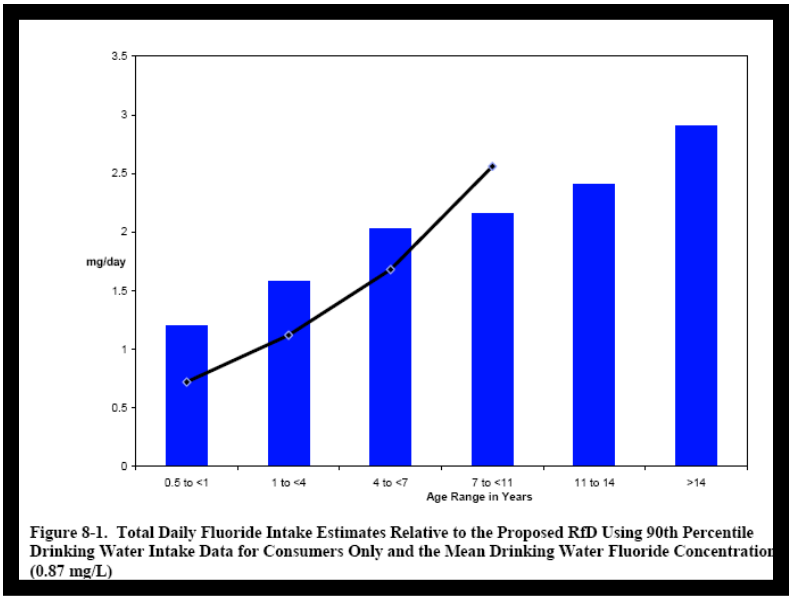



**Figure 8-1. Total Daily Fluoride Intake Estimates Relative to the Proposed RfD Using 90th Percentile Drinking Water Intake Data for Consumers Only and the Mean Drinking Water Fluoride Concentration (0.87 mg/L)**

Note, in their Figure 8-1 infants are not included, 10% of children and infants ingesting the most are not included, RfD increases by 33% and still a significant percentage of children are ingesting too much fluoride. Mothers of the unborn may have the greatest risk of excess fluoride exposure and not included.

However, normal fluoride urine and serum fluoride concentrations have not been established. The best evidence to date might be from developmental neurotoxic studies, suggesting 0.2 mg/L of urine to cause only 1 IQ loss. More on that later.

## III. Lack of known Mechanism for Systemic Fluoride Exposure on Caries Mitigation

The benefit of topical fluoride, such as fluoridated toothpaste has significant quality RCT support and known mechanism.

Surprisingly, no mechanism for fluoride's systemic benefit has been clearly stated. Fluoride does not migrate or move from the pulp chamber to the surface of the tooth where the dental caries start and/or are active.

Enamel and dentin demonstrate significant transport hindrance. The effective pore radii of the transport pathways in the enamel are approximately 0.7-0.9 nm. In other words, measured evidence of fluoride tooth concentrations at the different levels of the dentin and enamel demonstrate fluoride can't get from the blood through the calcified tooth to where the dental caries start. Except for the surface, fluoride concentrations are similar regardless of exposure.

A very small amount of ingested fluoride makes its way to saliva to provide some topical fluoride after tooth eruption, but this amount is 50 to 100 fold less than what is obtained from fluoride naturally occurring in food and beverages. Contact time on the teeth during drinking is minimal. And like ECC causing caries mostly to upper anterior teeth when milk/juice sits on the teeth of the infant while they sleep, if fluoride in water had significant topical benefit, we would see most protection to the upper teeth.

Dental fluorosis, a biomarker of excess exposure, happens prior to eruption; however, I have not found research demonstrating lower caries with higher fluoride concentrations on the outside of the tooth prior to eruption.

Until a mechanism for significant fluoride from ingestion to reach the surface of the tooth is elucidated, systemic fluoride's benefit is a questionable theory.

Fluoride is not a nutrient nor essential for any bodily function.

*"The prevalence of dental caries in a population is not inversely related to the concentration of fluoride in enamel, and a higher concentration of enamel fluoride is not necessarily more efficacious in preventing dental caries."*
SOURCE: CDC. 2001. Recommendations for using fluoride to prevent and control dental caries in the United States. *Mortality and Morbidity Weekly Review* 50(RR14):1-42.

*"Fluoride is not essential for human growth and development."*
*SOURCE: European Commission. 2011. Critical review of any new evidence on the hazard profile, health effects, and human exposure to fluoride and the fluoridating agents of drinking water*. Scientific Committee on Health and Environmental Risks (SCHER), page 4.

*"Fluoride is not in any natural human metabolic pathway."*
SOURCE: Cheng KK, et al. 2007. Adding fluoride to water supplies. British Medical Journal 335:699-702

## IV. Lack of Systemic Fluoride's Benefit

As a practicing dentist, I promoted fluoride ingestion including fluoridation for the first 25 years of practice. I was convinced from my Public Health Education, Continuing Education and what I could see in my patients mouths clear convincing evidence of benefit, I was mistaken.

My patients insisted I look again at both science and ethics. Several years of evaluating current research fluoride's benefit, I realized I was seeing the difference in socioeconomic effect rather than fluoride's effect. The wealthier are healthier and the healthier are wealthier. Whether ingested fluoride has benefit is difficult to detect without quality RCTs.

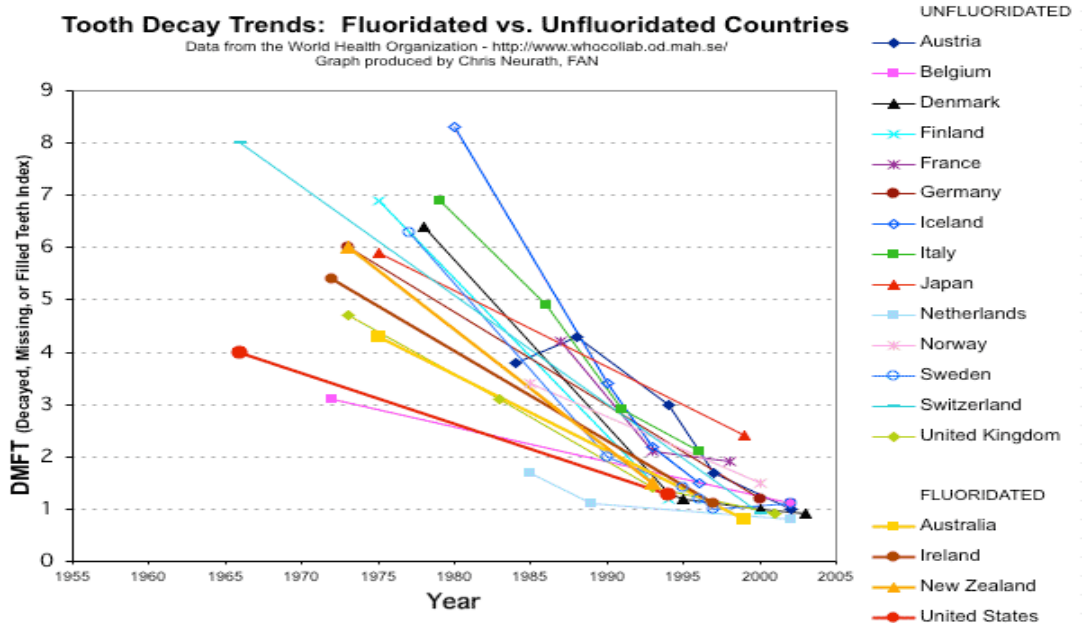
Although the 2015 Cochrane Review of fluoridation suggested benefit, the review did not include any RCTs and reported,

*"There was insufficient information available to find out whether the introduction of a water fluoridation program changed existing differences in tooth decay across socioeconomic groups."*

*"There was insufficient information available to understand the effect of stopping water fluoridation programs on tooth decay."*

*"No studies met the reviewer's inclusion criteria that investigated the effectiveness of water fluoridation for preventing tooth decay in adults, rather than children."*

Most developed countries have reduced dental caries to similar low levels regardless of fluoridation. Neurath (2006) Fluoride Research using WHO data.



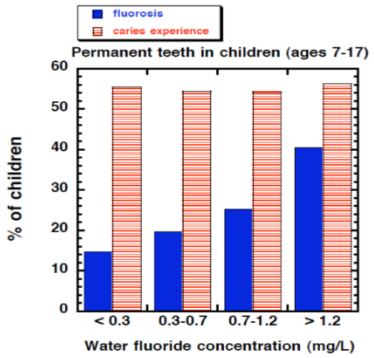
Chen (2007) BMJ included fluoridated salt and found the same result reporting no public health benefit from systemic fluoride exposure.

Most developed countries do not fluoridate their water and reduction in caries is similar to fluoridated countries.

Austria REJECTED: "toxic fluorides" NOT added
Belgium REJECTED: encourages self-determination – those who want fluoride should get it themselves.
Finland STOPPED: "...do not favor or recommend fluoridation of drinking water. There are better ways of providing the fluoride our teeth need." A recent study found ..."no indication of an increasing trend of caries...."
Germany STOPPED: A recent study found no evidence of an increasing trend of caries
Denmark REJECTED: "...toxic fluorides have never been added to the public water supplies in Denmark."
Norway REJECTED: "...drinking water should not be fluoridated"
Sweden BANNED: "not allowed". No safety data available!
Netherlands REJECTED: Inevitably, whenever there is a court decision against fluoridation, the dental lobby pushes to have the judgment overturned on a technicality or they try to get the laws changed to legalize it. Their tactics didn't work in the vast majority of Europe.
Hungary STOPPED: for technical reasons in the '60s. However, despite technological advances, Hungary remains unfluoridated.
Japan REJECTED: "...may cause health problems...." The 0.8 -1.5 mg regulated level is for calcium-fluoride, not the hazardous waste by-product which is added with artificial fluoridation.
Israel SUSPENDED mandatory fluoridation until the issue is reexamined from all aspects.: June 21, 2006 "The labor, welfare and health Knesset committee"
China BANNED: "not allowed" China exports fluoride to fluoridating countries.
France Was 50% of salt and now less than 30% of fluoridated Salt
Ireland 74% Fluoridated
UK 9% Fluoridated

Data from Iida et al graphed right and is consistent with most currently published studies reporting an increase in fluorosis with increased fluoride exposure and hardly detectible caries reduction and increase in caries with increased fluoride exposure.

Iida, H., and Kumar, J.V. 2009. The association between enamel fluorosis and dental caries in U.S. schoolchildren. JADA 140:855-862.



## V. Risks from Fluoride Exposure

EPA scientists speaking through their Union, noted:

"In summary, **we hold that fluoridation is an unreasonable risk**. That is, the toxicity of fluoride is so great and the purported benefits associated with it are so small - if there are any at all – **that requiring every man, woman and child in America to ingest it borders on criminal behavior on the part of governments."**

- ***Dr. J. William Hirzy, Senior Vice-President, Headquarters Union, US Environmental Protection Agency, March 26, 2001***

The National Research Council in 2006 (NRC 2006) listed areas of concern for harm and risks of fluoride ingestion, including:

1. **Tooth Damage**
2. **Rheumatoid and Osteoarthritic-like Pain and skeletal fluorosis**
3. **Bone Cancer**

4. **Bone Fractures**
5. **Thyroid Reduction Diabetes Obesity**
6. **Kidney damage**
7. **Reproductive problems**
8. **Lower IQ and increased Mental Retardation**
9. **Allergies (overactive immune system)**
10. **Gastrointestinal disorders**

Sixteen years after the NRC 2006 report, we have a great deal more research on each of these areas of risk. I will not go into a detailed review here. A search at www.pubmed.gov lists thousands.

Since 2017, 23 human studies report an association between fluoride exposure and reduced IQ. See more below.

A most significant question is dosage. How much fluoride does it take to cause harm for each person at each stage of life? Not everyone drinks the same amount of water: mean is about 1 liter/day, 90th percentile about 2 liters/day and some drink over 10 liters/day. Dosage is uncontrolled and individually DNA and general health unknown.

A serious question to be answered is what percentage of the population harmed is acceptable? As a dentist, I don't want any of my patients harmed. Thus, a margin of error, uncertainty factor must be included. The EPA uses 1:1 which is no protection. At least ten or a hundred should be used.

Research and informed consent for a RCT should limit, control and measure dosage and provide warnings that any or all of the above risks are possible or probable.

### 1. Dental Fluorosis and Teeth.

The following picture is of my patient raised on fluoridated bottled water, Nursery Water. His mother was careful to avoid fluoridated toothpaste and he was partially breast fed for 6 months and formula made with Nursery Water by DS Waters containing about 1 ppm fluoride. Why did my patient get severe dental fluorosis (diagnosed by three dentists) on what appears to be such low levels of fluoride exposure? Was he genetically predisposed? Did he have other habits of eating fluoride his mother did not know about? Were there other chemicals which made him more sensitive? We don't know.

His diagnosis of severe dental fluorosis has been made by three dentists and a careful differential diagnosis has ruled out other etiologies.

During discoveries for this patient, DS Waters provided a "Warning Letter" from the FDA certified mail to Mr. Stewart Allen and Mr. Dillon Schickli of DS Waters of America, Inc., June 8, 2009.

> *". . . we have found your product label has serious violations of the Federal Food, Drug and Cosmetic Act. . . Your product is misbranded . . . for infants or toddlers less than two years of age. . . . "*

No fluoride product for ingestion with intent to prevent disease has gone through the FDA approval process and approved, no NDA. However, Congress did provide an exemption for a health claim to be made for a product which a couple of other Federal Agencies claimed benefit. Fluoridated bottled water has not received an NDA and is not for infants and toddlers. Any health claim for ingested fluoride is NOT based on FDA scientific review.

I treat dental fluorosis when a patient requests. Various treatments are possible, the most extensive and best is with porcelain veneers. Veneers cost between $800 to $1,500 per tooth and last an average of about 15 years.

Fluoride can increase tooth and bone density which can have a positive and negative effect. A harder tooth surface can resist caries; however, the tooth can become more fracture prone. Only three studies on complete cusp fracture were found and the more fluoridated communities had triple the number of complete cusp fractures. More studies should be done because I make a living from treating.

And further, a hard tooth makes caries in the grooves more difficult to diagnose resulting a "Fluoride Bomb" where the enamel stays intact while the caries bombs out the tooth inside. "Softer" enamel fractures earlier and the diagnosis of caries is earlier, providing earlier more conservative treatment.

The photos below demonstrate the "Fluoride Bomb." Tooth enamel appears very strong and hard. My initial diagnosis was decalcification and sealants would be beneficial. The difficulty seeing in the back of the mouth did not at first indicate dental caries. A more careful look and I decided to clean the grooves well first. Top left picture before diagnosis. Top right photo I started to clean the grooves revealing more caries than expected. Bottom left the caries removed showed two bombed out teeth which would have been diagnosed sooner, treated sooner, more tooth structure saved, if the enamel were not so hard. The second molar now has a higher risk of complete cusp fracture and needing a crown.

Perhaps the "Fluoride Bomb" is one reason measured evidence of caries cost savings has not been published. Instead cost savings are often based on estimates of assumptions.

be s on d sys

as e) of wn ragi s,
often requiring or benefiting from a general anesthesia? ? which also has risks.

First, fluoridation would not prevent this damage and these children may have been on fluoridated water. Second, note only the top teeth have dental caries. The tongue protected the bottom teeth from the juice; however, the pictures are used to suggest fluoridation would have prevented the caries.

Mother's milk often has no detectible fluoride and Mean of 0.004 ppm (NRC 2006).

**2.** Rheumatoid and Osteoarthritic-like Pain. And skeletal fluorosis. See link for studies

Cohorts of research must be advised the study could lead to sore joints and muscle pain later in life. I am not a rheumatologist. Determining whether a person's joint and muscle pain was in part contributed by excess fluoride would not be easy.

Skeletal fluorosis is also a risk usually found with higher levels of exposure, renal insufficiency, or genetic predisposition.

**3.** Bone Cancer. See link for significant studies. A Epubmed search of "fluoride cancer" resulted in 3,509 studies. A search of "fluoride bone cancer" resulted in 596 studies. Labeled sodium fluoride is approved for diagnosis by the FDA and accounts for many studies.

Numerous authors find fluoride to be a "known carcinogen." Fluoride is sometimes used to cause cancer in animals so various cancer treatments can be tested on numerous animals with the same cancers.

OSTEOSARCOMA appears to be the most studied. Several human epidemiological studies have found an association between fluoride in drinking water and the occurrence of osteosarcoma (bone cancer) in young males. (Bassin 2006; Cohn 1992; Hoover 1991). These studies are consistent with the National Toxicology Program's (NTP) cancer bioassay which found that fluoride-treated male rats had a dose-dependent increase in osteosarcoma. (Bucher 1991). Although a number of studies have failed to detect an association between fluoride and osteosarcoma, none of these studies have measured the risk of fluoride at specific windows in time, which is the critical question with respect to fluoride and osteosarcoma.

As acknowledged by the NTP and most other observers, a fluoride/osteosarcoma connection is biologically plausible. The biological plausibility centers around three facts: 1) Bone is the principal site of fluoride accumulation, particularly during the growth spurts of childhood; 2) Fluoride is a mutagen when present at sufficient concentrations, and 3) Fluoride stimulates the proliferation of bone-forming cells (osteoblasts), which may "increase the risk for some of the dividing cells to become malignant." (NRC 2006).

A number of studies have failed to detect an association between fluoride and osteosarcoma. None of these studies, however, have looked at the risk of fluoride during specific ages in life. Age specific is important because, in 2001, an age-specific analysis of a national case-control study that previously reported no association between lifelong exposure to fluoridated water and osteosarcoma (Douglass 1995) found that boys consuming fluoridated water during their 6th, 7th, and 8th years of life (the mid childhood growth spurt) had a statistically significant, "remarkably robust," risk of developing osteosarcoma during their teenage years. (Bassin 2001). Initially published as a PhD dissertation at Harvard, the study was later published in Cancer Causes & Control.

Although a study in 2011 purported to refute the findings that fluoride causes osteosarcoma (Kim 2011), the study's methods — by the authors' own admission — were incapable of assessing the age-specific risk during the critical window period (ages 6 to 8) that Bassin identified as the critical risk period from fluoride exposure. And further, Kim's study compared concentrations in two forms of cancer rather than the much lower fluoride concentration in healthy bone. Comparing two bone cancers did not show a significant difference in fluoride bone concentration. Certainly not evidence of safety.

Many authors report fluoride is a known carcinogen, such as:

Known Carcinogen: Pal (2014): "*Fluoride, a well-established environmental carcinogen, has been found to cause various neurodegenerative diseases in human. Sub-acute exposure to fluoride at a dose of 20mg/kgb.w./day for 30 days caused significant alteration in pro-oxidant/anti-oxidant status of brain tissue as reflected by perturbation of reduced glutathione content, increased lipid peroxidation, protein carbonylation, nitric oxide and free hydroxyl radical production and decreased activities of antioxidant enzymes. Decreased proteolytic and transaminase enzymes' activities, protein and nucleic acid contents and associated DNA damage were observed in the brain of fluoride intoxicated rats. The neurotransmitters dopamine (DA), norepinephrine (NE) and serotonin level was also significantly altered after fluoride exposure. Protective effect of resveratrol on fluoride-induced metabolic and oxidative dysfunctions was evaluated. Resveratrol was found to inhibit changes in metabolic activities restoring antioxidant status, biogenic amine level and structural organization of the brain. Our findings indicated that resveratrol imparted antioxidative role in ameliorating fluoride-induced metabolic and oxidative stress in different regions of the brain."*[1]

**4.** Bone Fractures see link for studies. A Epubmed search on "fluoride bone fracture" resulted in 686 studies. Although not all studies report an increase in

[1] Pal S, Sarkar C, Protective effect of resveratrol on fluoride induced alteration in protein and nucleic acid metabolism, DNA damage 32 and biogenic amines in rat brain Environ Toxicol Pharmacol. 2014 Sep;38(2):684-99. doi: 10.1016/j.etap.2014.07.009. Epub 2014 Jul 23.

fractures, the preponderance of the evidence supports an increased risk of fracture later in life.

Fluoride has been used to increase mineral density. However, any RCT on fluoride's potential benefit must include the potential for bone fractures and tooth fractures later in life.

**5.** Thyroid Reduction see link for studies. An Epubmed search for "fluoride thyroid" resulted in over 400 studies. Effects of fluoride on the thyroid have been known for decades. Recently, studies are reporting harm with ever lower concentrations and low iodine seems to further increase the risk.

Any RCT on fluoride's potential benefit must include the potential for thyroid harm, endocrine harm, cellular harm, etc.

**6.** Kidney damage see link for studies and see summaries of studies. An Epubmed search for "fluoride kidney" resulted in over 1,600 studies.

About half of the fluoride absorbed into the blood is removed from the body by the kidneys. When they kidneys are harmed, other toxins may build up in the body.

**7.** Reproductive problems see link for studies. Animals studies. Human studies. A Epubmed search of "fluoride reproductive" resulted in over 1,200 studies.

**8. Lower IQ and ADHD**

Over the last decade the focus of fluoride research and human harm from fluoride has been on developmental neurotoxicity. First the mechanism:

**Mechanism of DNA Damage:** Zhang (2008) *"Some recent studies have suggested that DNA damage may be a potential neurotoxic mechanism of fluoride. The tail length, as measured by an ocular micrometer, is increased in fluoride-treated human embryonic hepatocytes in a previous study carried out to investigate the geneotic effect of fluoride (Wang et al., 2004). In the present study, we performed OTM and percentage of DNA in the tail as indices of DNA damage. OTM, multiplication of the tail length and percentage of DNA in the tail, objectively and sensitively reflects the effect of fluoride on DNA damage. Our findings showed that fluoride-induced DNA damageand OTM was more a sensitive measure than percentage of DNA in the tail. The correlation analysis showed a positive correlation between ROS formation and OTM level (r2=0.583, P < 0.05), which indicated that ROS might play an important role in the course of DNA damage."*[2]

[2] Zhang M, et al. (2008). Effects of fluoride on DNA damage, S-phase cell-cycle arrest and the expression of NF-kappaB in primary 27 cultured rat hippocampal neurons. Toxicology Letters 179(1):1-5.

Currently the National Toxicology Program (NTP), having spent seven years evaluating the developmental neurotoxicity of fluoride, has a draft review but not the final published which has been promised every few months. March 2022 is the latest expected publication. The conclusion so far is fluoride is a presumed neurotoxin.

However, the NTP has a cut-off date for research and may not include the latest studies. Of significance is Grandjean et al, 2001. "*A Benchmark Dose Analysis for Maternal Pregnancy Urine-Fluoride and IQ in Children*." Concluding, "Thus, the joint data show a BMCL in terms of the adjusted U-F concentrations in the pregnant women of approximately 0.2 mg/L." Urine fluoride concentrations run similar to water fluoride concentrations and mg/L are the same as ppm. Pregnant mothers should not drink fluoridated water which appears to reduce the IQ of their child by about 5 IQ points. Grandjean, Fig 1 illustrates about 5 IQ loss for urine fluoride concentration at 0.75 mg/L which concentration is similar to the water fluoride concentration a mother drinks.

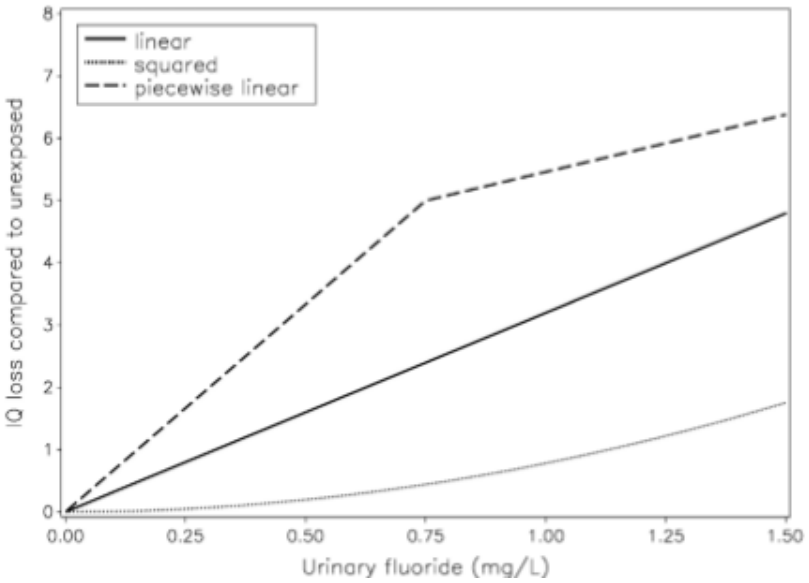
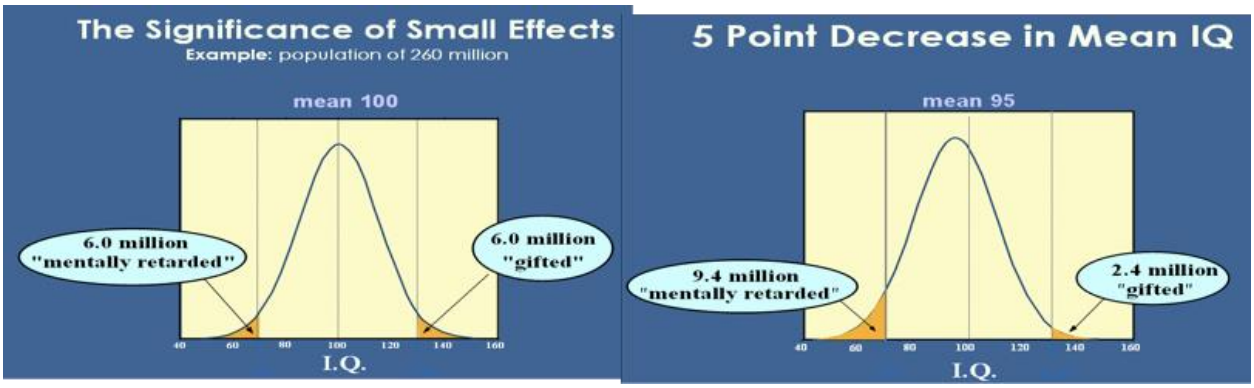



**Fig 1.** Association between creatinine-adjusted maternal urinary-fluoride (U-F) concentration in pregnancy and child IQ loss for the larger number of children (joint for GCI in ELEMENT and MIREC). Covariate-adjusted models are shown for the linear (solid), squared (dotted), and piecewise (dashed) linear curve with breakpoint 0.75 mg/L. The BMC is the U-F concentration that corresponds to an IQ loss of 1 (numbers shown in Tables 2 and 3).

The developing brain is critical for success in life. The two bell curves below illustrate the effect of 5 IQ loss for the population. Note more than half as many mentally retarded and less than half as many gifted. For those of us with high IQ, 5 points is not as serious for basic functions as a person with 70.




Lower IQ is linked to less happiness and shorter lifespans, higher risk of adult mental disorders, increased incarceration, increased divorce, increased educational expense with special education, decreased employment continuity and more grief.

Here are the 23 IQ studies reported in the last 4 years, which do not include reviews. The NTP references for their review is helpful. As research gets more refined and developmental neurotoxicity of fluoride, an ever increasing concern develops for fluoride's harm to the developing brain.

**#1. 2021 – Indonesia. 100 students, age 6-12 years old. Relationship between dental fluorosis and lower IQ.**

Yani SI, Seweng A, Mallongi A, Nur R, Abdullah MT, Salmah U, Sirajuddin S, Basir-Cyio M, Mahfudz, Anshary A. 2021. The influence of fluoride in drinking water on the incidence of fluorosis and intelligence of elementary school students in Palu City. *Gaceta Sanitaria* 35(Supplement 2):S159-S163.

**Conclusions:"…**

"The intelligence of children who suffered from fluorosis is lower than the intelligence of children who do not suffer from fluorosis."

"The level of intelligence of students who live in the high-fluorine area is lower than students who live in low fluorine area."

**#2. 2021 – China. 444 adults in Xuzhou City, Jiangsu Province.**

Ren C, Zhang P, Yao XY, Li HH, Chen R, Zhang CY, Geng DQ. 2021. The cognitive impairment and risk factors of the older people living in high fluorosis areas: DKK1 need attention. *BMC Public Health* 21:2237. December 9.

**Results:**

"The level of SOD of subjects in high fluorine drinking water was low compared with those in normal areas…

"The mRNA level of DKK1 and the level of cognitive function showed a positive correlation and DKK1 was one of five risk factors involved in cognitive impairment of older people living in high fluorosis areas."

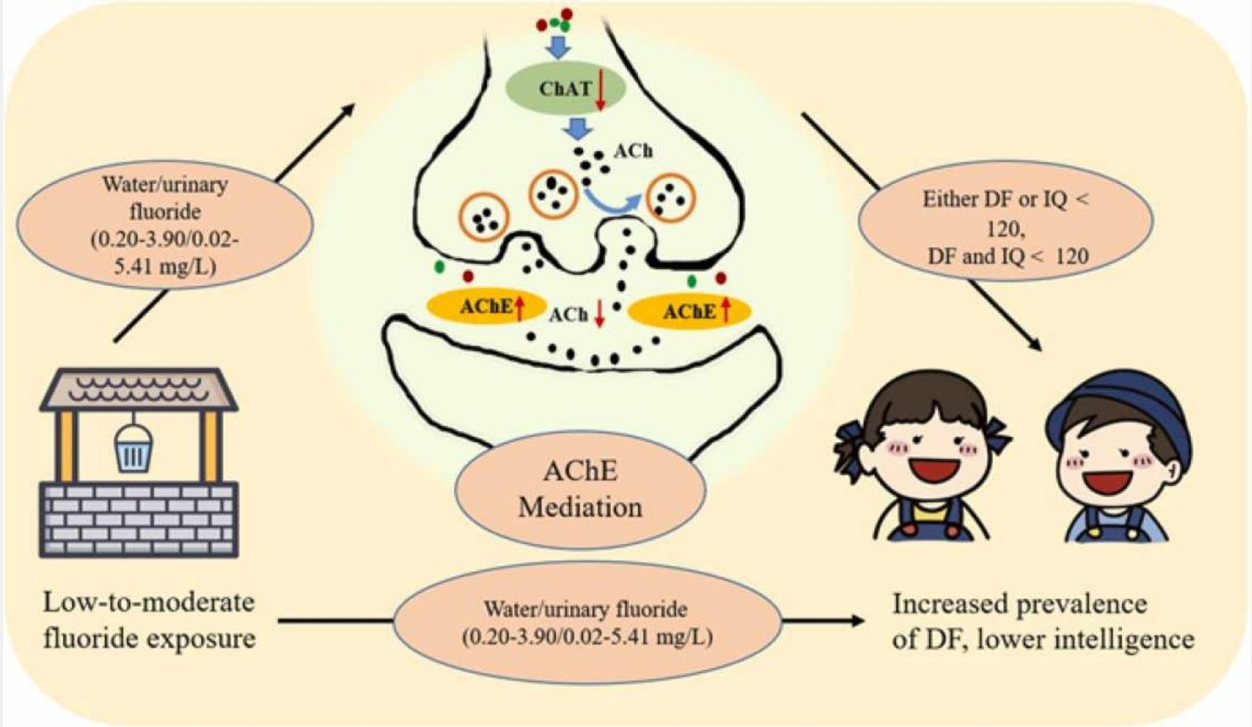
**# 3. 2021 – China. 709 children in Tianjin, age 6-13 years old. AChE may partly mediate the prevalence of dental fluorosis and lower IQ.**

Wang S, Zhao Q, Li G, Wang M, Liu H, Yu X, Chen J, Li P, Dong L, Zhou G, Cui Y, Wang M, Liu L, Wang A. 2021. The cholinergic system, intelligence, and dental fluorosis in school-aged children with low-to-moderate fluoride exposure. *Ecotoxicology and Environmental Safety*.

**Conclusions:**

"… Our findings suggest low-to-moderate fluoride exposure was associated with dysfunction of cholinergic system for children. AChE may partly mediate the prevalence of DF [dental fluorosis] and lower probability of having superior and above intelligence."

**Graphical abstract:**

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**#4. 2021 – Mexico. 103 Mother-Offspring pairs, tested at 12 months and 24 months. Funded by NIH & NIEHS.**

Cantoral A, Téllez-Rojo MM, Malin AJ, Schnaas L, Osorio-Valencia E, Mercado A, Martínez-Mier EA, Wright RO, Till C. 2021. Dietary fluoride intake during pregnancy and neurodevelopment in toddlers: A prospective study in the progress cohort. *NeuroToxicology.*

**Conclusions:**

"In this prospective cohort study, higher exposure to fluoride from food and beverage consumption in pregnancy was associated with reduced cognitive outcome, but not with language and motor outcome in male offspring over the first two years of life."

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**#5. 2021 – China. 952 resident children, age 7 to 13 years old.**

Yu X, Xia L, Zhang S, Zhou G, Li Y, Liu H, Hou C, Zhao Q, Dong L, Cui Y, Zeng Q, Wang A, Liu L. 2021. Dietary fluoride intake during pregnancy and neurodevelopment in toddlers: A prospective study in the progress

cohort. *Environment International* 155:106681.

**Conclusions:**

"Our study suggests that fluoride is inversely associated with intelligence. Moreover, the interactions of fluoride with mitochondrial function-related SNP-set, genes and pathways may also be involved in high intelligence loss."

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**#6. 2021 – China. 567 children, age 6–11 years old.**

Zhao L, Yu C, Lv J, Cui Y, Wang Y, Hou C, Yu J, Guo B, Liu H, Li L. 2021. Fluoride exposure, dopamine relative gene polymorphism and intelligence: A cross-sectional study in China**.** *Ecotoxicology and Environmental Safety* 209:111826. [Epub ahead of print].

**Conclusions:**

"Our study examined the association between excessive fluoride exposure in prenatal and childhood periods and the intelligence of school-age children. We found that prenatal excessive fluoride exposure could cause lower IQ scores, especially the decreased odds of developing excellent intelligence. Meanwhile, a negative association between fluoride exposure and children's IQ scores was observed in children without prenatal exposure.

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**#7. 2020 – India. 120 children, age 8-10 years old. Relationship between dental fluorosis and lower IQ.**

Prabhakar A, Abdulkhayarkutty K, Cheruvallil SV, Sudhakaran P. 2020. Effect of Endemic Fluorosis on Cognitive Function of School Children in Alappuzha District, Kerala: A Cross Sectional Study. *Annals of Indian Academy of Neurology*. 24(5):715-720. November 6.

**Conclusions:**

"[Dental] Fluorosis is associated with impaired cognition in children. There is a positive correlation between severity of dental fluorosis and the grade of cognitive impairment."

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**#8. 2020 – China. 99 children, age 8-12 years old. Relationship between dental fluorosis and lower IQ.**

Lou D, Luo Y, Liu J, Zheng D, Ma R, Chen F, Yu Y, Guan Z. 2020. Refinement Impairments of Verbal-Performance Intelligent Quotient in Children Exposed to Fluoride Produced by Coal Burning**.** *Biological Trace Element Research*.

**Conclusions:**

"In conclusion, we believe that reducing fluoride intake with the assistance of the government can reduce fluorosis as well as the severity of intellectual impairment caused by fluorosis. Fluorosis in children can cause IQ impairment, especially the VIQ that is represented by language learning and vocabulary comprehension."

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**#9. 2020 – Canada. 398 Mother-Offspring pairs. Fetus and Infants up to 3-4 year-olds. Funded by NIEHS.**

Till C, Green R, Flora D, Hornung R, Martinez-Miller EA, Blazer M, Farmus L, Ayotte P, Muckle G, Lanphear B. 2020**.** Fluoride exposure from infant formula and child IQ in a Canadian birth cohort. *Environment International* 134:105315. (Published in November 2019)

**Conclusions:**

"In summary, fluoride intake among infants younger than 6 months may exceed the tolerable upper limits if they are fed exclusively with formula reconstituted with fluoridated tap water. After adjusting for fetal exposure, we found that fluoride exposure during infancy predicts diminished non-verbal intelligence in children…"

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**#10. 2020 – China. 633 children, age 7-13 years old.**

Xu K, An N, Huang H, Duan L, Ma J, Ding J, He T, Zhu J, Li Z, Cheng X, Zhou G, Ba Y. 2020. **Fluoride exposure and intelligence in school-age children: evidence from different windows of exposure susceptibility.** *BMC Public Health* 20:1657. November 4.

**Conclusions:**

The authors "found that prenatal excessive fluoride exposure could cause lower IQ scores, especially the decreased odds of developing excellent intelligence. Meanwhile, a negative association between fluoride exposure and children's IQ scores was observed in children without prenatal exposure."

**#11. 2019 – China. 571 children, age 7-13 years old, from endemic and non-endemic fluorosis areas in Tianjin.**

Wang M, Liu L, Li H, LI Y, Liu H, Hou C, Zeng Q, Li P, Zhao Q, Dong L, Zhou G, Yu X, Liu L, Guan Q, Zhang S, Wang A. 2019. Thyroid function, intelligence, and low-moderate fluoride exposure among Chinese school-age children. *Environment International* 134:105229. [Epub ahead of print].

**Conclusions:**

The study suggests low-moderate fluoride exposure is associated with alterations in childhood thyroid function that may modify the association between fluoride and intelligence. In the current work, results demonstrated clearly that, across the full range of water and urinary fluoride concentrations and using a measure to focus on children's IQ scores, higher fluoride levels were associated with lower IQ scores."

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**#12. 2019 – Canada. 512 Mother-Offspring pairs between the ages 3 and 4 at testing. Funded by NIEHS.**

Green R, Lanphear B, Hornung R, Flora D, Martinez-Mier EA, Neufeld R, Ayotte P, Muckle G, Till C. 2019. Association Between Maternal Fluoride Exposure During Pregnancy and IQ Scores in Offspring in Canada. *JAMA Pediatrics*.

**Conclusions:**

"In this study, maternal exposure to higher levels of fluoride during pregnancy was associated with lower IQ scores in children aged 3 to 4 years. These findings indicate the possible need to reduce fluoride intake during pregnancy."

Listen to discussion of JAMA editors on their process to publish this study.

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**#13. 2018 – China. 323 children, age 7 – 12 years old. Urine fluoride levels and age-specific IQ scores.**

Cui Y, Zhang B, Ma J, Wang Y, Zhao L, Hou C, Yu J, Zhao Y, Zhang Z, Nie J, Gao T, Zhou G, Liu H. 2018. Dopamine receptor D2 gene polymorphism, urine fluoride, and intelligence impairment of children in China: A school-based cross-sectional study. *Ecotoxicology and Environmental Safety,* Sept 11;165:270-277.

**Conclusions:**

"Strengths of our study include using urine fluoride as an internal exposure index and thus minimizing the measurement error of exposure, adjusting up to 30 potential confounding covariates including child age and gene polymorphismin regressing IQ on urine fluoride in children, and careful modeling with applications of cross-validation, bootstrap techniques, and sensitivity analysis.

"In the overall participants, by LOWESS, the IQ decreased in a roughly linear manner as the log-urine fluoride increased (Fig. 1A).

"The authors also determined a safety threshold of urine fluoride on intelligence impairment in the subgroup TT as 1.73 mg/L urine fluoride with a 95% CI of (1.51 mg/L, 1.97 mg/L)."

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**#14. 2018 – Egypt. 1,000 children. age 4 – 11 years old.**

El Sehmawy AAEW, Hammouda SM, Ibrahim GE, Barghash SS, Elamir RY. 2018. Relationship between Drinking Water Fluoride and Intelligence Quotient in Egyptian School Children**.** *Occupational Medicine & Health Affairs,* Aug 13: 6:3.

**Conclusions:**

"In this study there's a highly significant decrease in average IQ level in group of children with high fluoride level more than 1.5 mg /dL than the group of children with low fluoride level less than 1.5 mg /dL with the mean IQ was (96.25 ± 19.63) and (103.11 ± 28.00) for both groups respectively with p value ($p<0.001$), the graphical representation of the observation is shown in Figure 2."

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**#15. 2018 – Kenya. 269 school children, age 13-15 years old.**

Induswe B, Opinya G, Khasakhala LI, Owino R. 2018. The Auditory Working Memory of 13-15-Year-Old Adolescents Using Water with Varying Fluoride Concentrations from Selected Public Primary Schools in North Kajiado Sub County. *American Journal of Medicine and Medical Sciences*, Jan; 8(0):274-290.

**Conclusions:**

"In conclusion, low fluoride in the water seemed to enhance the AWM (Auditory

Working Memory). However, the AWM declined with an increase in the fluoride concentration in water."

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**#16. 2018 – Sudan. 775 primary students, 315 boys and 460 girls from 27 schools.**

Mustafa DE, Younis UM, Elhag SA. (2018). The relationship between the fluoride levels in drinking water and the schooling performance of children in rural areas of Khartoum State, Sudan (pdf). *Fluoride* 51(2):102–113.

**Results:**

"Negative correlation coefficients were found for the average score for all the subjects and for the overall score, with the result being statistically significant in five out of the eight subjects and in the overall score (Tables 4 and 5). … significant correlations undoubtedly exit between the drinking water F level and the schooling performances in all the subjects except for one, technology, which might be due to the nature of the subject."

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**#17. 2018 – China. 268 children, age 8 -12 years old: 134 children each from endemic fluorosis area and non-endemic fluorosis areas.**

Pang H, Yu L, Lai X, Chen Q. 2018. Relation Between Intelligence and COMT Gene Polymorphism in Children Aged 8-12 in the Endemic Fluorosis Area and Non-Endemic Fluorosis Area**.** *Chinese Journal of Control of Endemic Diseases* 32(2):151-152. Study in Chinese translated into English.

**Conclusions:**

"This study found that there was a great difference in the level of intelligence between children in the endemic fluorosis area and those in the non-endemic fluorosis area and such difference was statistically significant ($P < 0.05$)." … "The rate of mental retardation (IQ < 69) in children in the endemic fluorosis area was significantly higher than that in the non-endemic fluorosis area, and the difference was statistically significant ($P < 0.05$)."

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**#18. 2018 – China. 2,886 resident children, age 7 to 13 years old. Relationship between dental fluorosis and lower IQ.**

Yu X, Chen J, Li Y, Liu H, et al. (2018). Threshold effects of moderately excessive fluoride exposure on children's health: A potential association between dental fluorosis and loss of excellent intelligence**.** *Environment International*, Jun 2; 118:116-124.

**Conclusions:**

"In conclusion, chronic exposure to excessive fluoride, even at a moderate level, was inversely associated with children's dental health and intelligence scores, especially excellent intelligence performance, with threshold and saturation effects observed in the dose-response relationships. Additionally, DF [dental fluorosis] severity is positively associated with the loss of high intelligence, and may be useful for the identification of individuals with the loss of excellent intelligence."

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**#19. 2017 – Mexico. 299 Mother–Offspring pairs. Tests at age 4 and 6–12 years. Funding from NIH, NIEHS, and EPA.**

Bashash M, Thomas D, Hu H, Martinez-Mier EA, Sanchez BN, Basu N, Peterson KE, Ettinger AS, Wright R, Zhang Z, Liu Y, Schnaas L, Mercado-García A, Téllez-Rojo MM, Hernández-Avila M. 2017. Prenatal Fluoride Exposure and Cognitive Outcomes in Children at 4 and 6–12 Years of Age in Mexico**.** *Environmental Health Perspectives*, Sept 19;125(9):097017.

**Conclusions:**

"In this study, higher prenatal fluoride exposure, in the general range of exposures reported for other general population samples of pregnant women and nonpregnant adults, was associated with lower scores on tests of cognitive function in the offspring at age 4 and 6–12 y."

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**#20. 2017 – Mexico. 65 Mother-Offspring pairs, aged 3–15 months, in an endemic hydrofuorosis area.**

Valdez Jiménez L, López Guzmán OD, Cervantes Flores M, Costilla-Salazar R, Calderón Hernández J, Alcaraz Contreras Y, Rocha-Amador DO. 2017. In utero exposure to fluoride and cognitive development delay in infants**.** *Neurotoxicology* Mar;59:65-70.

**Results:**

"In this study near to 60% of the children consumed contaminated water and the prevalence of children with IQ below 90 points was 25% in the control group (F urine 1.5 mg/g creatinine) in comparison with the 58% of children in the exposed group (F urine >5 mg/g creatinine) (OR = 4.1, CI 95% 1.3–13.2) (data unpublished). "Only 66.2% of the babies were at term. "We found higher levels of F in urine across trimester in premature compared with full term 2.4 vs 1.6 mg/l (1st); 2.3 vs 1.8 mg/l (2nd); and 4.1 vs 2.8 mg/l (3rd) (data not shown)."

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**#21. 2017 – China. 118 newborns, 68 newborns to 12 months of age, from coal-burning fluorosis areas.**

Chang A, Shi Y, Sun H, Zhang L. 2017. Analysis on the Effect of Coal-Burning Fluorosis on the Physical Development and Intelligence Development of Newborns Delivered by Pregnant Women with Coal-Burning Fluorosis. *Chinese Journal of Control of Endemic Diseases*, 32(8):872-87.

**Conclusions:**

"Comparison of the mental development index (MDI) and psychomotor development index (PDI) (assessed using the Standardized Scale for the Intelligence Development of Children formulated by the Children Development Center of China [CDCC]) of newborns in the two groups at 3, 6, 9 and 12 months after birth showed that both the MDI and the PDI in the observation group were significantly lower than those in the control group (P< 0.05), which suggests that maternal fluorosis have a significant impact on the intelligence development of newborns."

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**#22. 2017 – China. 284 children, age 8 – 12 years old: 167 were from coal burning-related endemic fluorosis areas and 117 were the control.**

Jin T, Wang Z, Wei Y, Wu Y, Han T, Zhang H. (2017). Investigation of Intelligence Levels of Children of 8 to 12 Years of Age in Coal Burning-Related Endemic Fluorosis Areas**.** *Journal of Environment and Health* 34(3):229-231.

**Conclusions:**

"The intelligence of the 12-year-old group in the endemic area was lower than that of the control area, with the difference having statistical significance (Z = 3.244, P = 0.001)."

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**#23. 2017 – India. 219 children, age 12-14 years old: 75 from low F area, 75 medium F area, and 69 from high F area.**

Razdan P, Patthi B, Kumar JK, Agnihotri N, Chaudhan P, Prasad M. (2017). Effect of fluoride concentration in drinking water on intelligence quotient of 12–14-year-old children in Mathura District: A cross-sectional study. *Journal of International Society of Preventive & Community Dentistry* 7(5):252-258.

**Conclusions:**

"Concentration of Fluoride in the ingested water was significantly associated with the IQ of children. Outcome measures revealed that exposure to higher levels of F determined by dental fluorosis status of child inferred higher IQ deficit."

Do we need more evidence before we tell our children and grandchildren to reduce fluoride exposure?

## Attention Deficit Disorder

For example, Riddell et. Al, 2019 "***Association of water fluoride and urinary fluoride concentrations with attention deficit hyperactivity disorder in Canadian youth***"

"*We found that Canadian youth exposed to higher tap water fluoride levels had a higher risk of receiving an ADHD diagnosis and reported more symptoms of hyperactivity and inattention. Specifically, an increase of 1.0?mg/L in water fluoride concentration was associated with a 6.1 times higher odds of an ADHD diagnosis after accounting for potential confounding variables, such as exposure to second-hand smoke, household income, and blood lead level. Likewise, water fluoride concentration was positively associated with hyperactive/inattentive symptoms, especially among older youth*."

## 9. Allergies (overactive immune system)

Physicians Desk Reference: "In hypersensitive individuals, fluorides occasionally cause skin eruptions such as atopic dermatitis, eczema or urticaria. Gastric distress,

headache and weakness have also been reported. These hypersensitivity reactions usually disappear promptly after discontinuation of the fluoride."

Some individuals are chemically sensitive to fluoride with various symptoms which make research more complex. One mother said her daughter develops a rash with fluoridated water. As a competitive athlete they would visit different towns. After a shower at a hotel this mother would check to see if her daughter had the rash. Then she would call the water district for that area and ask if the water was fluoridated. The rash was consistent with fluoridation.

Another mother I have worked with and know well has an autistic child, now an adult, and her comments here are significant.
Julie Simms https://www.youtube.com/watch?v=Js-2-aVnVE4

Audrey Adams https://www.youtube.com/watch?v=ORfyHwuohz4

"My 36 year old autistic son Kyle has severe chemical sensitivities, discovered in 1999 after a long and painful search for answers to his many ailments and bizarre symptoms that had eluded doctors for years. Then, after changing his diet and environment to eliminate chemicals, his medical conditions improved but he still had chronic pain and daily headaches. At the suggestion of another mom with two autistic teenagers, I finally eliminated all fluoridated water for drinking and cooking in 2000. The pain faded away in three days.

"As the years went by, Kyle's ability to detoxify decreased and his reactivity to chemicals increased. In 2008, he was experiencing severe headaches again, often migraines, but oddly they happened mostly in the mornings, after he got out of bed but before going to work. We tried every imaginable intervention without success.

"One day another mother of an autistic son told me about her son's reactions, and her own, to bathing in fluoridated water. I was dumbfounded that I hadn't even thought of transdermal exposure from my son's morning shower! We had a chlorine filter on the showerhead, but it didn't take the fluoride out. I switched his shower to the evening to test the theory---he had another headache pounding soon after.

"I've tested various waters, including chlorinated-only, and the common pain denominator, consistently, is fluoridated water. It took me 14 years to discover Kyle's reactivity to fluoride, plus another 9 to recognize the pain from fluoridated showers.

"Of all the chemicals that Kyle reacts to, fluoride in water is the hardest and most expensive to avoid.

"The common belief is that fluoridated water is safe for everyone. I know from my own experience that this is not true. Please don't pass any legislation or new

funding---as is included in SB-5693---that would multiply these health harms and suffering across our state.

**Audrey Adams**
14411 150th Ave SE
Renton WA 98059”

I have found no good evidence fluoride causes autism. However, parents of autistic kids have reported their child is chemically sensitive and finding fluoride is one of those chemicals.

## 10. Gastrointestinal disorders

GI disorders are a plausible result of fluoride ingestion. I have not recently looked again into the research on fluoride’s effects on the GI tract. See link attached.

## VI. Fluoride Toxicity and Regulatory Oversight.

Sodium fluoride is considered lethal at about 5 mg/Kg BW,[3] which is in contrast to the more stable calcium fluoride at about 5,000 mg/Kg BW found more commonly in hard water naturally containing fluoride.

Washington State Law RCW 69.38 defines a poison as: "Any other substance designated by the state board of pharmacy which, when introduced into the human body in quantities of sixty grains or less, causes violent sickness or death." Sixty grains is 3,889 mg. Sodium fluoride is defined by law as a poison, exempt when regulated under drug laws.

Oregon and Federal law defines a highly toxic substance (poison) as a substance which causes serious illness or death at 50 mg/Kg of body weight or less. The toxicity of fluoride at 5 mg/Kg BW is less than 50mg/Kg BW and therefore fluoridation compounds are poisons and are exempt from poison laws when regulated as approved drugs, but NOT exempt as foods.

Fluoride is highly toxic and considered a poison by state and Federal poison laws, exempt when regulated as a pesticide or drug. The Washington State Board of Pharmacy determined fluoride is a legend drug.

Drug Therapy (Digest) in 1975 reported the FDA sent letters to 35 manufacturers of fluoride supplements*: ". . .there is no substantial evidence of drug effectiveness as prescribed, recommended or suggested in its labeling. . . marketing is in violation of the new drug provisions of the Federal Food, Drug, and Cosmetic Act; they have, therefore, requested that marketing of these products be discontinued."*

In 2016 the FDA sent a letter to Kirkman Laboratories their fluoride drops and tablets were unapproved drugs, misbranded, and in violation.

The FDA has approved fluoridated toothpaste with the warning, "Do Not Swallow." Keep out of Reach of Children. Use a pea size amount and if more than used for brushing is swallowed, contact the poison control center. The amount of concern for the FDA is 0.25 mg, the same as a glass of fluoridated water.

[3] "It may be concluded that if a child ingests a fluoride dose in excess of 15 mg F/kg, then death is likely to occur. A dose as low as 5 mg F/kg may be fatal for some children. Therefore, the probably toxic dose (PTD), defined as the threshold dose that could cause serious or life-threatening systemic signs and symptoms and that should trigger immediate emergency treatment and hospitalization, is 5 mg F/kg." SOURCE: Whitford G. (1996). Fluoride Toxicology and Health Effects. In: Fejerskov O, Ekstrand J, Burt B, Eds. Fluoride in Dentistry, 2nd Edition. Munksgaard, Denmark. p 171."

SDWA: *"No national primary drinking water regulation may require the addition of any substance for preventive health care purposes unrelated to contamination of drinking water."* 42 USC 300g-1(b)(11):

*"The Safe Drinking Water Act prohibits the deliberate addition of any substance to drinking water for health-related purposes other than disinfection of the water."* FOI Response HQ-FOI-01418-10

In letters from the EPA and FDA, the EPA claims it does not determine the efficacy or safety of fluoride because the FDA has jurisdiction over drugs.

In turn, the FDA claims it does not have jurisdiction over water because the EPA does.

State Departments and Boards of Health, Centers for Disease Control, Surgeon General, American Dental Association all respond they rely on others to determine the efficacy, dosage and safety of ingested fluoride.

Ethics: An Epubmed search of "fluoridation ethics" resulted in 254 studies with mixed opinions. Fluoridated salt found the least ethical objections. Most studies assume fluoride ingestion reduces caries and has FDA approval.

When "FDA" was added to the search, only one of the three studies was applicable and considered fluoridation of water unethical. Caries is not a highly contagious lethal disease justifying supplementing without individual consent.

"My adult autistic son Kyle is severely hypersensitive to fluoride in all forms and cannot consume fluoridated water, or anything made with it, and cannot shower in it without suffering pain. Because of this and the extreme difficulty avoiding fluoridated water in caring for my son, I agreed to be a plaintiff on Kyle's behalf in a lawsuit against the EPA to force them to consider the latest science and toxicology on fluoride, not just the outdated science of 70 years ago that never even considered the effects of fluoride to the developing brain.

As Stuart Cooper of Fluoride Action Network explains about the lawsuit:

"There is now a large body of government-funded research indicating that fluoride is neurotoxic, and is associated with lowered IQ in children and a significant increase in ADHD diagnosis and related behaviors in children at doses experienced in fluoridated communities. Experts in toxicology have likened the size of the effect to that from lead, and the level of evidence that fluoride is neurotoxic now far exceeds the evidence that was in place when lead was banned from gasoline.

"The neurotoxicity concerns are so serious that the National Toxicology Program (NTP) has been conducting a review of the human studies on linking fluoride to cognitive impairment. In their recent draft systematic review , the NTP declared,

"fluoride is presumed to be a cognitive neurodevelopmental hazard to humans," i.e., causes brain damage to fetuses and infants, especially lowered IQs based on the large number, quality, and consistency of recent peer-reviewed studies. NTP identified 29 brain studies considered "high quality." Of those, 27 found significant adverse effects associated with low-level fluoride exposure, and of those, 10 at levels found in fluoridated water.

"Neurotoxicity concerns are also now being heard in federal court. (Click here to watch a 16-minute overview of the trial presented by the attorney for the plaintiffs) A coalition of environmental and public health groups has sued the EPA under Section 21 of the Toxic Substances Control Act (TSCA), seeking a ban on water fluoridation chemicals. The U.S. District Court for the Northern District of California has already held the first phase of the trial in the summer of 2020, and after Covid delays in 2021 the court is expected to have a decision on whether fluoridation is an unreasonable risk to health by the end of this year.

"A ruling that fluoridation is a risk would reasonably lead to an EPA prohibition on the use of fluoridation chemicals. Thus, it would be reckless for the legislature to pass a bill requiring municipalities spend large amounts of money assessing the implementation of fluoridation, and using tax dollars to facilitate and promote this outdated and dying practice while we await a final report from the NTP and a ruling from a federal judge on the neurotoxic hazard posed by fluoridation additives.

"The Judge in the case has already stated that he believes fluoride is in-fact a developmental hazard, but he is awaiting the NTP's review to ensure he is able to provide as comprehensive a judgment as possible." Audrey Adams

The journal *Nature* recently published an article that discusses the trial and the new science.

Federal Lawsuit Deposition Testimony from CDC and EPA (three short videos): Here are three very short clips of deposition testimony under oath from representatives of the CDC and EPA:

In the first video, Casey Hannan, the Director of the CDC's Oral Health Division, testifies that the CDC has no data establishing the safety of fluoride's effect on the brain, despite decades of touting the safety of fluoridation for all citizens, including children. https://www.youtube.com/watch?v=XkILustjf5A (1:14)

In the second video, Casey Hannan (of the CDC) admits there is no prenatal or early-life benefit from fluoride despite its known neurotoxicity to this same sub-population. https://www.youtube.com/watch?v=2yDMwhWsa4U (8:40)

In the third video, Joyce Donohue, PhD, a scientist from the EPA's Office of Water admits that the EPA's current fluoride risk assessment, and thus fluoridation regulations, are out of date and should be updated in response to the collection of

studies showing neurotoxicity published since 2017.
https://www.youtube.com/watch?v=rkMAJ_jtEOk (1:07)

Steven Gilbert, Toxicologist, University of Washington, wrote a downloadable book, "A Small Dose of Toxicology", including Chapter 15 on fluoride that helps a layperson (or legislator) put fluoride in perspective with other toxicants that pose risks to human health, especially children.
https://www.asmalldoseoftoxicology.org/download-in-english

**Genetics**

Jarquín-Yñezá L (2018)[4] "**Conclusions:** An association of rs 412777 polymorphism in the COL1A2 gene with dental fluorosis was found. Therefore, genetic variants represent a relevant risk factor to develop dental fluorosis, as it was proven in this study conducted in Mexican children."

Toxins affecting the DNA can have a multigenerational effect. In animal studies I have seen one that had a negative neurotoxic effect to the third generation.

Suzuki M (2015[5]) *"In this study, we demonstrate that fluoride exposure generates reactive oxygen species (ROS) and the resulting oxidative damage is counteracted by SIRT1/autophagy induction through c-Jun N-terminal kinase (JNK) signaling in ameloblasts. In the mouse-ameloblast-derived cell line LS8, fluoride induced ROS, mitochondrial damage including cytochrome-c release, up-regulation of UCP2, attenuation of ATP synthesis, and H2AX phosphorylation (γH2AX), which is a marker of DNA damage. We evaluated the effects of the ROS inhibitor N-acetylcysteine (NAC) and the JNK inhibitor SP600125 on fluoride-induced SIRT1/autophagy activation. NAC decreased fluoride-induced ROS generation and attenuated JNK and c-Jun phosphorylation. NAC decreased SIRT1 phosphorylation and formation of the autophagy marker LC3II, which resulted in an increase in the apoptosis mediators γH2AX and cleaved/activated caspase-3. SP600125 attenuated fluoride-induced SIRT1 phosphorylation, indicating that fluoride activates SIRT1/autophagy via the ROS-mediated JNK pathway. In enamel organs from rats*

[4] Jarquín-Yñezá L, Alegría-Torres JA, Castillo CG, de Jesús Mejía-Saavedra J. Dental fluorosis and a polymorphism in the COL1A2 gene in Mexican children. Arch Oral Biol. 2018 Dec;96:21-25. doi: 10.1016/j.archoralbio.2018.08.010. Epub 2018 Aug 23. PMID: 30172079.

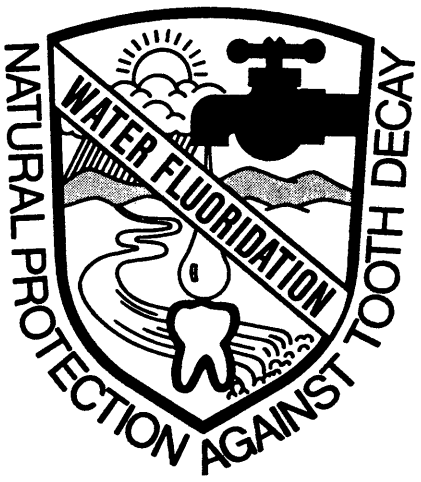
[5] Suzuki M, Bandoski C, Bartlett JD. Fluoride induces oxidative damage and SIRT1/autophagy through ROS-mediated JNK signaling. Free Radic Biol Med. 2015 Dec;89:369-78. doi: 10.1016/j.freeradbiomed.2015.08.015. Epub 2015 Sep 30. PMID: 26431905; PMCID: PMC4684823

*or mice treated with 50, 100, or 125 ppm fluoride for 6 weeks, cytochrome-c release and the DNA damage markers 8-oxoguanine, p-ATM, and γH2AX were increased compared to those in controls (0 ppm fluoride). These results suggest that fluoride-induced ROS generation causes mitochondrial damage and DNA damage, which may lead to impairment of ameloblast function. To counteract this impairment, SIRT1/autophagy is induced via JNK signaling to protect cells/ameloblasts from fluoride-induced oxidative damage that may cause dental fluorosis."*

For the protection of the most vulnerable, the FDA must correctly regulate fluoride ingestion, stop fluoridation of bottled water and regulate fluoride as an unapproved drug.

Sincerely,

Bill Osmunson DDS MPH




# FLUORIDATION CENSUS 1989– SUMMARY

**JULY – 1991**

**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES**
**Public Health Service**
Centers for Disease Control
National Center for Prevention Services
Dental Disease Prevention Activity
Atlanta, Georgia 30333

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## INTRODUCTION

The adjustment of the fluoride content of community water supplies to an optimal level to prevent tooth decay began on January 25, 1945, in Grand Rapids, Michigan. At the present time, over 128 million citizens in more than 8,081 communities throughout the Nation are receiving the benefits of optimally adjusted fluoridated water. An additional 9 million people in 1,869 communities are using water with naturally occurring fluoride at levels of 0.7 parts per million or higher. Therefore, 44 years after the first water system was fluoridated, more than 54 percent of the Nation's population has access to water with a dentally significant concentration of fluoride.

Adjusted fluoridation is the conscious maintenance of the optimal fluoride concentration in the water supply for reducing dental caries and minimizing the risk of dental fluorosis. The optimal concentration may be accomplished by adding fluoride chemicals to fluoride deficient water; by blending two or more sources of water naturally containing fluoride to achieve the optimal concentration; or partial defluoridation, that is, removing naturally occurring excessive fluorides to obtain the recommended level. Water systems are considered to have optimal level of natural fluoride if they contain naturally occurring fluoride at or above the minimum recommended control range. Water systems and communities with optimally adjusted fluoride and naturally occurring fluoride in water are listed in this publication. Adjusted water systems are fluoridated at the optimal level according to the average maximum daily air temperature in the community. (Recommended concentrations, according to National Interim Primary Drinking Water Regulations, 1975, are shown on Table A.) Although the term natural fluoridation has no particular scientific or official connotation, it has been used in this publication for the sake of simplification.

**TABLE A**

RECOMMENDED OPTIMAL FLUORIDE LEVEL

| Annual Average of Maximum Daily Air Temperatures[1] (°F) | Optimal Fluoride | | Recommended Control Range | | | |
|---|---|---|---|---|---|---|
| | | | Community Systems | | School Systems | |
| | Community (ppm) | School[2] (ppm) | 0.1 Below | 0.5 Above | 20% Low | 20% High |
| 40.0 - 53.7 | 1.2 | 5.4 | 1.1 | 1.7 | 4.3 | 6.5 |
| 53.8 - 58.3 | 1.1 | 5.0 | 1.0 | 1.6 | 4.0 | 6.0 |
| 58.4 - 63.8 | 1.0 | 4.5 | 0.9 | 1.5 | 3.6 | 5.4 |
| 63.9 - 70.6 | 0.9 | 4.1 | 0.8 | 1.4 | 3.3 | 4.9 |
| 70.7 - 79.2 | 0.8 | 3.6 | 0.7 | 1.3 | 2.9 | 4.3 |
| 79.3 - 90.5 | 0.7 | 3.2 | 0.6 | 1.2 | 2.6 | 3.8 |

1. Based on temperature data obtained for a minimum of five years.
2. Based on 4.5 times the optimum fluoride level for communities.

Source: Centers for Disease Control, National Center for Prevention Services, Dental Disease Prevention Activity.

## METHODOLOGY

A computer printout of the fluoridation status for each state as it was collected for the 1988 Fluoridation Census Summary was forwarded to every state health department as a guide to updating information for the Fluoridation Census 1989 Summary. They were requested to update, change, and verify the information presented and to include new fluoridation installations while deleting those that were inappropriate. A request was made to update the population figures to reflect 1989 census estimates. This information was then submitted for the Fluoridation Census 1989: States were asked to report each fluoridated water system and the communities each system served; the status of fluoridation, adjusted, consecutive, or natural; the system from which water was purchased, if consecutive; the population receiving fluoridated water; the date on which fluoridation started; and the chemical used for fluoridation, if adjusted.

The updated information was returned to CDC where a master file was created to incorporate the new format and to reflect changes made in the previous data provided by state health officials. The states were informed that unless they made specific changes in their state's printout, the data on the existing printout would be used in the publication of the Fluoridation Census 1989 Summary. In essence, this publication is a report of the status of fluoridation made by the states, and the data herewith reported have been provided by the individual states.

Previous Status Reports were:

Fluoridation Census, 1967, Division of Dental Health, National Institutes of Health, U.S. Department of Health, Education, and Welfare. U.S. Government Printing Office Publication #1968 0-310-023.

Fluoridation Census, 1969, Division of Dental Health, National Institutes of Health, U.S. Department of Health, Education, and Welfare. Natural Fluoride Content of Community Water Supplies, Division of Dental Health, NIH, DHEW. U.S Government Printing Office Publication #1970 0-380-791.

Fluoridation Census, 1975, Dental Disease Prevention Activity, Bureau of State Services, Center for Disease Control, Public Health Service, U.S. Department of Health, Education, and Welfare. U.S Government Printing Office Publication # 1977 - 740-116/3782, Region No. 4.

Fluoridation Census, 1980, Dental Disease Prevention Activity, Center for Prevention Services, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services. U.S. Government Printing Office Publication #1984 - 751-641, Region No. 4.

Fluoridation Census, 1985, Dental Disease Prevention Activity, Center for Prevention Services, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services. U.S. Government Printing Office Publication # 1988 - 535-439.

Fluoridation Census Summary, 1988, Dental Disease Prevention Activity, Center for Prevention Services, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services.


# SUMMARY OF FLUORIDATION STATISTICS

TABLE 1
POPULATION AND PERCENT SERVED WITH ADJUSTED AND NATURAL FLUORIDATED WATER BY REGION AND STATE AS OF DECEMBER 31, 1989

| | TOTAL POPULATION* | POPULATION BY PUBLIC WATER SUPPLY** | POPULATION FLUORIDATED WATER | % PUBLIC WATER SUPPLY POPULATION DRINKING FLUORIDATED WATER | RANK |
|---|---|---|---|---|---|
| **UNITED STATES** | **248,243,000** | **220,179,000** | **135,256,757** | **61.4** | |
| **REGION I** | **13,046,000** | **11,453,000** | **7,175,756** | **62.7** | |
| CONNECTICUT | 3,239,000 | 2,727,000 | 2,362,309 | 86.6 | 13 |
| MAINE | 1,222,000 | 819,000 | 438,041 | 53.5 | 36 |
| MASSACHUSETTS | 5,913,000 | 5,810,000 | 3,262,426 | 56.2 | 34 |
| NEW HAMPSHIRE | 1,107,000 | 734,000 | 147,367 | 20.1 | 46 |
| RHODE ISLAND | 998,000 | 942,000 | 732,986 | 77.8 | 21 |
| VERMONT | 567,000 | 421,000 | 232,627 | 55.3 | 35 |
| **REGION II** | **25,686,000** | **28,380,000** | **15,365,540** | **54.1** | |
| NEW JERSEY+ | 7,736,000 | 7,736,000 | 1,170,047 | 15.1 | 49 |
| NEW YORK | 17,950,000 | 16,612,000 | 11,674,181 | 70.3 | 26 |
| PUERTO RICO+ | 3,291,000 | 3,291,000 | 2,521,312 | 62.5 | 29 |
| **REGION III** | **25,966,000** | **21,830,000** | **14,748,622** | **67.6** | |
| DELAWARE | 673,000 | 625,000 | 439,871 | 70.4 | 25 |
| DISTRICT OF COLUMBIA | 604,000 | 604,000 | 604,000 | 100.0 | 1 |
| MARYLAND | 4,694,000 | 3,818,000 | 3,438,289 | 90.1 | 8 |
| PENNSYLVANIA | 12,040,000 | 10,154,000 | 5,153,056 | 50.7 | 38 |
| VIRGINIA | 6,098,000 | 4,950,000 | 3,927,673 | 79.3 | 19 |
| WEST VIRGINIA | 1,857,000 | 1,679,000 | 1,185,733 | 70.6 | 24 |
| **REGION IV** | **44,586,000** | **37,464,000** | **27,228,863** | **72.7** | |
| ALABAMA | 4,118,000 | 3,768,000 | 3,111,359 | 82.6 | 18 |
| FLORIDA | 12,671,000 | 10,966,000 | 6,625,372 | 56.4 | 33 |
| GEORGIA | 6,436,000 | 5,499,000 | 4,711,222 | 85.7 | 15 |
| KENTUCKY | 3,727,000 | 3,307,000 | 2,606,159 | 78.8 | 20 |
| MISSISSIPPI | 2,621,000 | 2,417,000 | 1,236,414 | 51.2 | 37 |
| NORTH CAROLINA | 6,571,000 | 4,634,000 | 3,329,736 | 71.9 | 22 |
| SOUTH CAROLINA | 3,512,000 | 2,779,000 | 2,423,325 | 84.2 | 16 |
| TENNESSEE | 4,940,000 | 4,094,000 | 3,557,276 | 86.9 | 12 |
| **REGION V** | **46,651,000** | **37,557,000** | **34,903,643** | **92.9** | |
| ILLINOIS | 11,658,000 | 10,605,000 | 10,605,000 | 100.0 | 1 |
| INDIANA | 5,593,000 | 3,761,000 | 3,759,967 | 99.9 | 3 |
| MICHIGAN | 9,273,000 | 6,863,000 | 6,187,361 | 90.2 | 7 |
| MINNESOTA | 4,353,000 | 3,688,000 | 3,079,917 | 83.5 | 17 |
| OHIO | 10,907,000 | 9,314,000 | 8,291,075 | 89.0 | 10 |
| WISCONSIN | 4,867,000 | 3,326,000 | 2,980,323 | 89.6 | 9 |

*Based on 1988 Bureau of Census estimates
**Federal Reporting Data Systems PWS service populations exceeded the Bureau of Census estimates for DC, HI, IL, NJ, NV, UT, TX & PR.
+Data for these States based on previous Fluoridation Censuses.

TABLE 1 (CONTINUED)
POPULATION AND PERCENT SERVED WITH ADJUSTED AND NATURAL FLUORIDATED WATER BY REGION AND STATE AS OF DECEMBER 31, 1989

| | TOTAL POPULATION* | POPULATION BY PUBLIC WATER SUPPLY** | POPULATION FLUORIDATED WATER | % PUBLIC WATER SUPPLY POPULATION DRINKING FLUORIDATED WATER | RANK |
|---|---|---|---|---|---|
| **UNITED STATES** | **248,243,000** | **220,179,000** | **135,256,757** | **61.4** | |
| **REGION VI** | **28,531,000** | **27,073,000** | **16,599,420** | **61.3** | |
| ARKANSAS | 2,406,000 | 1,963,000 | 1,179,731 | 60.1 | 31 |
| LOUISIANA | 4,382,000 | 4,091,000 | 1,978,703 | 48.4 | 39 |
| NEW MEXICO | 1,528,000 | 1,306,000 | 810,586 | 62.1 | 30 |
| OKLAHOMA | 3,224,000 | 2,722,000 | 1,617,232 | 59.4 | 32 |
| TEXAS | 16,991,000 | 16,991,000 | 11,013,168 | 64.8 | 28 |
| **REGION VII** | **12,123,000** | **10,552,000** | **6,947,743** | **65.8** | |
| IOWA | 2,840,000 | 2,361,000 | 2,037,802 | 86.3 | 14 |
| KANSAS | 2,513,000 | 2,469,000 | 992,375 | 40.2 | 42 |
| MISSOURI | 5,159,000 | 4,616,000 | 3,128,456 | 67.8 | 27 |
| NEBRASKA | 1,611,000 | 1,106,000 | 789,110 | 71.3 | 23 |
| **REGION VIII** | **7,680,000** | **7,015,000** | **4,321,663** | **61.6** | |
| COLORADO | 3,317,000 | 2,270,000 | 2,961,682 | 90.6 | 6 |
| MONTANA+ | 806,000 | 580,000 | 169,085 | 29.2 | 44 |
| NORTH DAKOTA | 660,000 | 513,000 | 475,074 | 92.6 | 5 |
| SOUTH DAKOTA | 715,000 | 555,000 | 546,177 | 98.4 | 4 |
| UTAH | 1,707,000 | 1,707,000 | 42,733 | 2.5 | 51 |
| WYOMING | 475,000 | 390,000 | 126,912 | 32.5 | 43 |
| **REGION IX** | **34,842,000** | **31,743,000** | **5,052,270** | **15.9** | |
| ARIZONA | 3,556,000 | 3,091,000 | 617,749 | 20.0 | 47 |
| CALIFORNIA | 29,063,000 | 26,428,000 | 4,268,060 | 16.2 | 48 |
| HAWAII | 1,112,000 | 1,112,000 | 142,570 | 12.8 | 50 |
| NEVADA+ | 1,111,000 | 1,111,000 | 23,891 | 2.2 | 52 |
| **REGION X** | **9,122,000** | **7,112,000** | **2,913,237** | **41.0** | |
| ALASKA | 527,000 | 363,000 | 321,321 | 88.5 | 11 |
| IDAHO | 1,014,000 | 700,000 | 300,027 | 42.9 | 41 |
| OREGON | 2,820,000 | 2,188,000 | 506,920 | 23.2 | 45 |
| WASHINGTON | 4,761,000 | 3,861,000 | 1,784,969 | 46.2 | 40 |

*Based on 1989 Bureau of Census estimates
**Federal Reporting Data System PWS service populations exceeded the Bureau of Census estimates for DC, HI, IL, NJ, NV, UT, TX & PR.
+Data for these States based on previous Fluoridation Censuses.

TABLE II
NUMBER OF PUBLIC WATER SYSTEMS, COMMUNITIES, AND POPULATIONS USING ADJUSTED AND NATURAL FLUORIDATION BY REGION AS OF DECEMBER 31, 1989

| | USING ADJUSTED | | | USING NATURAL | | |
|---|---|---|---|---|---|---|
| | SYSTEMS* | COMMUNITIES | POPULATION | SYSTEMS* | COMMUNITIES | POPULATION |
| **UNITED STATES** | **9,411** | **8,081** | **128,457,294** | **3,463** | **1,869** | **9,315,642** |
| **REGION I** | **259** | **347** | **7,163,529** | **71** | **3** | **12,227** |
| CONNECTICUT | 36 | 88 | 2,361,279 | 4 | 1 | 1,030 |
| MAINE | 62 | 90 | 438,041 | 0 | 0 | 0 |
| MASSACHUSETTS | 73 | 110 | 3,262,029 | 3 | 0 | 397 |
| NEW HAMPSHIRE | 11 | 9 | 136,567 | 64 | 2 | 10,800 |
| RHODE ISLAND | 18 | 20 | 732,986 | 0 | 0 | 0 |
| VERMONT | 59 | 30 | 232,627 | 0 | 0 | 0 |
| **REGION II** | **720** | **700** | **15,250,259** | **19** | **23** | **115,281** |
| NEW JERSEY | 28 | 66 | 1,056,302 | 15 | 20 | 113,745 |
| NEW YORK | 653 | 592 | 11,672,645 | 4 | 3 | 1,536 |
| PUERTO RICO | 39 | 42 | 2,521,312 | 0 | 0 | 0 |
| **REGION III** | **505** | **950** | **14,760,398** | **268** | **87** | **268,224** |
| DELAWARE | 9 | 11 | 432,700 | 5 | 3 | 7,171 |
| DISTRICT OF COLUMBIA | 2 | 1 | 604,000 | 0 | 0 | 0 |
| MARYLAND | 100 | 74 | 3,389,676 | 54 | 34 | 48,613 |
| PENNSYLVANIA | 135 | 545 | 5,153,056 | 0 | 0 | 0 |
| VIRGINIA | 122 | 175 | 3,715,892 | 208 | 50 | 211,781 |
| WEST VIRGINIA | 138 | 144 | 1,185,074 | 1 | 0 | 659 |
| **REGION IV** | **1,812** | **1,268** | **25,778,797** | **292** | **90** | **1,450,066** |
| ALABAMA | 252 | 173 | 3,047,360 | 28 | 19 | 63,999 |
| FLORIDA | 101 | 131 | 5,371,616 | 27 | 30 | 881,756 |
| GEORGIA | 283 | 239 | 4,694,957 | 5 | 4 | 16,265 |
| KENTUCKY | 293 | 212 | 2,606,159 | 0 | 0 | 0 |
| MISSISSPPI | 216 | 127 | 1,140,324 | 69 | 12 | 96,090 |
| NORTH CAROLINA | 237 | 148 | 3,248,435 | 29 | 23 | 81,301 |
| SOUTH CAROLINA | 170 | 42 | 2,112,670 | 134 | 2 | 310,655 |
| TENNESSEE | 260 | 196 | 3,557,276 | 0 | 0 | 0 |
| **REGION V** | **3,526** | **2,810** | **35,555,915** | **869** | **529** | **1,582,407** |
| ILLINOIS | 1,342 | 979 | 9,964,403 | 206 | 147 | 641,021 |
| INDIANA | 434 | 305 | 3,496,527 | 93 | 79 | 263,440 |
| MICHIGAN | 362 | 240 | 6,068,551 | 94 | 52 | 118,810 |
| MINNESOTA | 667 | 650 | 3,075,805 | 14 | 12 | 4,112 |
| OHIO | 395 | 367 | 8,047,628 | 310 | 115 | 243,447 |
| WISCONSIN | 326 | 269 | 2,803,780 | 152 | 124 | 176,543 |

*Note: Systems refers to fluoridating systems plus consecutive systems.

TABLE II (CONTINUED)
NUMBER OF PUBLIC WATER SYSTEMS, COMMUNITIES, AND POPULATIONS USING
ADJUSTED AND NATURAL FLUORIDATION BY REGION AS OF DECEMBER 31, 1989

| | USING ADJUSTED | | | USING NATURAL | | |
|---|---|---|---|---|---|---|
| | SYSTEMS* | COMMUNITIES | POPULATION | SYSTEMS* | COMMUNITIES | POPULATION |
| **UNITED STATES** | **9,411** | **8,081** | **128,457,294** | **3,463** | **1,869** | **9,315,642** |
| **REGION VI** | **750** | **487** | **13,138,025** | **778** | **401** | **2,462,895** |
| ARKANSAS | 164 | 115 | 1,168,376 | 14 | 7 | 12,855 |
| LOUISIANA | 51 | 73 | 1,744,824 | 95 | 33 | 233,879 |
| NEW MEXICO | 70 | 18 | 564,973 | 86 | 41 | 245,613 |
| OKLAHOMA | 173 | 102 | 1,508,080 | 55 | 36 | 109,152 |
| TEXAS | 292 | 179 | 8,151,772 | 528 | 284 | 2,861,396 |
| **REGION VII** | **721** | **738** | **6,295,549** | **434** | **350** | **652,194** |
| IOWA | 345 | 343 | 1,724,723 | 226 | 174 | 313,079 |
| KANSAS | 105 | 129 | 838,100 | 83 | 77 | 154,275 |
| MISSOURI | 216 | 209 | 2,975,665 | 82 | 64 | 152,791 |
| NEBRASKA | 55 | 57 | 757,061 | 43 | 35 | 32,049 |
| **REGION VIII** | **595** | **465** | **3,323,399** | **536** | **273** | **998,264** |
| COLORADO | 150 | 60 | 2,161,000 | 298 | 106 | 800,682 |
| MONTANA | 32 | 9 | 65,296 | 64 | 28 | 103,789 |
| NORTH DAKOTA | 133 | 132 | 448,039 | 78 | 60 | 27,035 |
| SOUTH DAKOTA | 261 | 251 | 506,931 | 69 | 61 | 39,246 |
| UTAH | 11 | 4 | 36,709 | 15 | 7 | 6,024 |
| WYOMING | 8 | 9 | 105,424 | 12 | 11 | 21,488 |
| **REGION IX** | **166** | **95** | **4,625,525** | **120** | **47** | **426,745** |
| ARIZONA | 71 | 7 | 212,586 | 103 | 43 | 405,163 |
| CALIFORNIA | 74 | 82 | 4,267,960 | 1 | 0 | 100 |
| HAWAII | 10 | 3 | 142,570 | 0 | 0 | 0 |
| NEVADA | 11 | 3 | 2,409 | 16 | 4 | 21,482 |
| **REGION X** | **357** | **221** | **2,565,898** | **76** | **66** | **347,339** |
| ALASKA | 197 | 135 | 321,321 | 0 | 0 | 0 |
| IDAHO | 14 | 6 | 54,687 | 40 | 34 | 245,340 |
| OREGON | 37 | 30 | 465,220 | 20 | 20 | 41,700 |
| WASHINGTON | 109 | 50 | 1,724,670 | 16 | 12 | 60,299 |

*Note: Systems refers to fluoridating systems plus consecutive systems.

TABLE III
SCHOOL POPULATION AND NUMBER OF SCHOOLS USING ADJUSTED
AND NATURAL FLUORIDATION BY REGION AND STATE AS OF DECEMBER 31, 1989

| | USING ADJUSTED* | | USING NATURAL* | |
|---|---|---|---|---|
| | POPULATION | NUMBER OF SCHOOLS | POPULATION | NUMBER OF SCHOOLS |
| **UNITED STATES** | **122,458** | **351** | **8,824** | **12** |
| **REGION I** | **5,630** | **23** | **0** | **0** |
| VERMONT | 5,630 | 23 | 0 | 0 |
| **REGION III** | **3,020** | **5** | **0** | **0** |
| VIRGINIA | 3,020 | 5 | 0 | 0 |
| **REGION IV** | **67,041** | **182** | **0** | **0** |
| KENTUCKY | 24,933 | 78 | 0 | 0 |
| NORTH CAROLINA | 41,658 | 103 | 0 | 0 |
| SOUTH CAROLINA | 450 | 1 | 0 | 0 |
| **REGION V** | **44,703** | **133** | **6,719** | **2** |
| INDIANA | 35,899 | 85 | 0 | 0 |
| MINNESOTA | 1,543 | 5 | 0 | 0 |
| WISCONSIN | 7,261 | 43 | 6,719 | 2 |
| **REGION VI** | **1,410** | **2** | **1,045** | **6** |
| NEW MEXICO | 1,410 | 2 | 1,045 | 0 |
| **REGION VII** | **0** | **0** | **400** | **0** |
| MISSOURI | 0 | 0 | 400 | 0 |
| **REGION IX** | **170** | **1** | **660** | **3** |
| ARIZONA | 170 | 1 | 660 | 3 |
| **REGION X** | **484** | **5** | **0** | **0** |
| ALASKA | 484 | 5 | 0 | 0 |

*Schools are fluoridated at 4.5 times the recommended optimal level for communities.
Note: Schools include all American Indian and Alaskan Native Reservation Schools

TABLE IV

POPULATION, NUMBER OF AMERICAN INDIAN AND ALASKAN NATIVE RESERVATIONS USING ADJUSTED AND NATURAL FLUORIDATION, BY REGION AND STATE AS OF DECEMBER 31, 1989

| | SYSTEMS | | | |
|---|---|---|---|---|
| | ADJUSTED | | NATURAL | |
| | POPULATION | NUMBER OF SYSTEMS | POPULATION | NUMBER OF SYSTEMS |
| **UNITED STATES** | **255,030** | **458** | **17,348** | **58** |
| **REGION I** | **1,225** | **2** | **0** | **0** |
| MAINE | 1,225 | 2 | 0 | 0 |
| **REGION IV** | **4,139** | **10** | **0** | **1** |
| FLORIDA | N/R | 2 | 0 | 0 |
| MISSISSIPPI | 2,378 | 3 | 0 | 0 |
| NORTH CAROLINA | 1,761 | 5 | N/R | 1 |
| **REGION V** | **8,137** | **11** | **0** | **0** |
| WISCONSIN | 8,137 | 11 | 0 | 0 |
| **REGION VI** | **52,060** | **48** | **8,978** | **30** |
| NEW MEXICO | 51,520 | 46 | 8,978 | 30 |
| OKLAHOMA | 540 | 2 | 0 | 0 |
| **REGION VII** | **7,296** | **5** | **0** | **0** |
| IOWA | 286 | 1 | 0 | 0 |
| MISSOURI | 4,080 | 1 | 0 | 0 |
| NEBRASKA | 2,930 | 3 | 0 | 0 |
| **REGION VIII** | **48,192** | **109** | **1,143** | **7** |
| COLORADO | 1,400 | 1 | 0 | 0 |
| MONTANA | 5,877 | 19 | 419 | 3 |
| NORTH DAKOTA | 10,189 | 16 | 465 | 1 |
| SOUTH KAKOTA | 23,949 | 65 | 84 | 1 |
| UTAH | 5,109 | 7 | 175 | 2 |
| WYOMING | 1,668 | 1 | 0 | 0 |
| **REGION IX** | **69,253** | **98** | **6,777** | **19** |
| ARIZONA | 60,816 | 67 | 6,070 | 15 |
| CALIFORNIA | 6,053 | 21 | 100 | 1 |
| NEVADA | 2,384 | 10 | 607 | 3 |
| **REGION X** | **64,728** | **175** | **450** | **1** |
| ALASKA | 50,428 | 140 | 0 | 0 |
| IDAHO | 1,295 | 4 | 0 | 0 |
| OREGON | 3,480 | 5 | 0 | 0 |
| WASHINGTON | 9,525 | 26 | 450 | 1 |

TABLE IV (CONTINUED)
POPULATION, NUMBER OF AMERICAN INDIAN AND ALASKAN NATIVE RESERVATIONS USING ADJUSTED AND NATURAL FLUORIDATION, BY REGION AND STATE AS OF DECEMBER 31, 1989

| | SCHOOLS* | | | |
|---|---|---|---|---|
| | ADJUSTED | | NATURAL | |
| | POPULATION | NUMBER OF SYSTEMS | POPULATION | NUMBER OF SCHOOLS |
| **UNITED STATES** | **2,064** | **8** | **8,824** | **12** |
| **REGION V** | **0** | **0** | **6,719** | **2** |
| WISCONSIN | 0 | 0 | 6,719 | 2 |
| **REGION VI** | **1,410** | **2** | **1,045** | **6** |
| NEW MEXICO | 1,410 | 2 | 1,045 | 6 |
| **REGION VII** | **0** | **0** | **400** | **1** |
| MISSOURI | 0 | 0 | 400 | 1 |
| **REGION IX** | **170** | **1** | **660** | **3** |
| ARIZONA | 170 | 1 | 660 | 3 |
| **REGION X** | **484** | **5** | **0** | **0** |
| ALASKA | 484 | 5 | 0 | 0 |

*Schools are fluoridated at 4.5 times the recommended optimal level for communities.

TABLE V
RESIDENT POPULATION, NUMBER OF MILITARY INSTALLATIONS USING
ADJUSTED AND NATURAL FLUORIDATION, BY REGION AND STATE, AS OF DECEMBER 31, 1989

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | RESIDENT POPULATION USING ADJUSTED | INSTALLATIONS ADJUSTED | RESIDENT POPULATION USING ADJUSTED | INSTALLATIONS NATURAL |
| **UNITED STATES** | **1,252,436** | **131** | **51,454** | **18** |
| **REGION I** | **18,225** | **5** | **0** | **0** |
| MAINE | 10,200 | 2 | 0 | 0 |
| MASSACHUSETTS | 8,000 | 2 | 0 | 0 |
| NEW HAMPSHIRE | 25 | 1 | 0 | 0 |
| **REGION II** | **45,552** | **6** | **0** | **0** |
| NEW JERSEY | 35,952 | 3 | 0 | 0 |
| NEW YORK | 9,600 | 3 | 0 | 0 |
| **REGION III** | **70,117** | **11** | **2,027** | **2** |
| DELAWARE | 6,400 | 2 | 0 | 0 |
| MARYLAND | 52,003 | 7 | 2,027 | 2 |
| VIRGINIA | 11,714 | 2 | 0 | 0 |
| **REGION IV** | **512,599** | **45** | **8,276** | **2** |
| ALABAMA | 31,763 | 4 | 0 | 0 |
| FLORIDA | 109,127 | 12 | 5,100 | 1 |
| GEORGIA | 89,900 | 6 | 0 | 0 |
| KENTUCKY | 23,400 | 1 | 0 | 0 |
| MISSISSIPPI | 32,497 | 3 | 0 | 0 |
| NORTH CAROLINA | 120,200 | 10 | 0 | 0 |
| SOUTH CAROLINA | 44,593 | 6 | 3,176 | 1 |
| TENNESSEE | 61,119 | 3 | 0 | 0 |
| **REGION V** | **82,995** | **9** | **1,639** | **2** |
| ILLINOIS | 61,795 | 5 | 139 | 1 |
| INDIANA | 1,500 | 1 | 0 | 0 |
| MICHIGAN | 19,700 | 3 | 0 | 0 |
| OHIO | 0 | 0 | 1,500 | 1 |

TABLE V (CONTINUED)
RESIDENT POPULATION, NUMBER OF MILITARY INSTALLATIONS USING
ADJUSTED AND NATURAL FLUORIDATION, BY REGION AND STATE, AS OF DECEMBER 31, 1989

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | RESIDENT POPULATION USING ADJUSTED | INSTALLATIONS ADJUSTED | RESIDENT POPULATION USING ADJUSTED | INSTALLATION NATURAL |
| **UNITED STATES** | **1,252,436** | **131** | **51,454** | **18** |
| **REGION VI** | **169,421** | **22** | **7,200** | **3** |
| ARKANSAS | 14,170 | 2 | 0 | 0 |
| LOUISIANA | 22,100 | 3 | 1,700 | 1 |
| OKLAHOMA | 16,224 | 5 | 0 | 0 |
| TEXAS | 116,927 | 12 | 5,500 | 2 |
| **REGION VII** | **64,287** | **5** | **4,000** | **1** |
| KANSAS | 33,000 | 3 | 0 | 0 |
| MISSOURI | 22,500 | 1 | 4,000 | 1 |
| NEBRASKA | 8,787 | 1 | 0 | 0 |
| **REGION VIII** | **47,418** | **5** | **7,602** | **2** |
| MONTANA | 3,000 | 1 | 7,602 | 2 |
| NORTH DAKOTA | 29,518 | 2 | 0 | 0 |
| SOUTH DAKOTA | 5,000 | 1 | 0 | 0 |
| UTAH | 9,900 | 1 | 0 | 0 |
| **REGION IX** | **142,570** | **10** | **20,710** | **6** |
| ARIZONA | 0 | 0 | 19,200 | 5 |
| HAWAII | 142,570 | 10 | 0 | 0 |
| NEVADA | 0 | 0 | 1,510 | 1 |
| **REGION X** | **99,252** | **13** | **0** | **0** |
| ALASKA | 35,543 | 9 | 0 | 0 |
| IDAHO | 6,000 | 1 | 0 | 0 |
| WASHINTON | 57,709 | 3 | 0 | 0 |

TABLE VI
NUMBER OF PUBLIC WATER SUPPLY SYSTEMS AND POPULATION SERVED BY EACH OF THE MAJOR CHEMICALS BY REGION AS OF DECEMBER 31, 1989

| | HYDROFLUOSILICIC ACID | | SODIUM SILICOFLUORIDE | | SODIUM FLUORIDE | |
|---|---|---|---|---|---|---|
| | POPULATION | #SYSTEMS | POPULATION | #SYSTEMS | POPULATION | #SYSTEMS |
| **UNITED STATES** | **75,295,924** | **5,187** | **35,050,494** | **1,432** | **11,474,400** | **2,431** |
| **REGION I** | **4,165,319** | **103** | **1,592,467** | **28** | **950,443** | **126** |
| CONNECTICUT | 1,668,039 | 24 | 559,500 | 5 | 133,740 | 7 |
| MAINE | 283,601 | 35 | 72,500 | 2 | 81,940 | 25 |
| MASSACHUSETTS | 2,373,338 | 22 | 270,980 | 5 | 617,711 | 46 |
| NEW HAMPSHIRE | 87,942 | 5 | 0 | 0 | 48,625 | 6 |
| RHODE ISLAND | 88,199 | 1 | 639,487 | 15 | 0 | 0 |
| VERMONT | 114,200 | 16 | 50,000 | 1 | 68,427 | 42 |
| **REGION II** | **4,289,766** | **556** | **8,001,726** | **67** | **2,756,369** | **83** |
| NEW JERSEY | 645,005 | 18 | 317,600 | 3 | 80,697 | 6 |
| NEW YORK | 3,644,761 | 538 | 7,684,126 | 64 | 154,360 | 38 |
| PUERTO RICO | 0 | 0 | 0 | 0 | 2,521,312 | 39 |
| **REGION III** | **9,127,881** | **207** | **2,019,624** | **81** | **1,545,948** | **174** |
| DELAWARE | 0 | 0 | 140,000 | 1 | 43,400 | 5 |
| DISTRICT OF COLUMBIA | 604,000 | 1 | 0 | 0 | 0 | 0 |
| MARYLAND | 2,065,870 | 56 | 130,353 | 7 | 38,350 | 12 |
| PENNSYLVANIA | 3,746,844 | 71 | 513,269 | 28 | 245,742 | 23 |
| VIRGINIA | 1,913,821 | 54 | 885,770 | 29 | 900,960 | 37 |
| WEST VIRGINIA | 517,346 | 25 | 350,232 | 16 | 317,496 | 97 |
| **REGION IV** | **13,414,146** | **674** | **8,470,948** | **373** | **2,712,369** | **672** |
| ALABAMA | 2,984,903 | 241 | 53,852 | 8 | 0 | 0 |
| FLORIDA | 2,709,456 | 66 | 2,382,120 | 10 | 9,412 | 5 |
| GEORGIA | 2,335,346 | 106 | 863,150 | 38 | 995,111 | 120 |
| KENTUCKY | 1,704,706 | 91 | 649,679 | 51 | 222,097 | 143 |
| MISSISSIPPI | 20,665 | 7 | 372,740 | 11 | 746,541 | 196 |
| NORTH CAROLINA | 1,156,172 | 58 | 1,378,260 | 13 | 343,607 | 126 |
| SOUTH CAROLINA | 986,652 | 59 | 918,879 | 85 | 206,839 | 25 |
| TENNESSEE | 1,516,246 | 46 | 1,852,268 | 157 | 188,762 | 57 |
| **REGION V** | **27,628,710** | **2,527** | **6,470,647** | **304** | **1,322,492** | **662** |
| ILLINOIS | 9,042,175 | 991 | 546,203 | 86 | 371,004 | 261 |
| INDIANA | 1,513,878 | 110 | 1,278,753 | 44 | 702,375 | 278 |
| MICHIGAN | 5,328,349 | 290 | 609,621 | 46 | 38,239 | 10 |
| MINNESOTA | 2,832,691 | 614 | 201,461 | 17 | 39,267 | 32 |
| OHIO | 4,811,100 | 277 | 3,148,770 | 85 | 56,933 | 28 |
| WISCONSIN | 2,195,156 | 245 | 570,744 | 26 | 36,496 | 53 |

Note: Chemical used was not indicated for all systems, so these data are not consistent with other summary tables.

TABLE VI (CONTINUED)
NUMBER OF PUBLIC WATER SUPPLY SYSTEMS AND POPULATION SERVED BY EACH
OF THE MAJOR CHEMICALS BY REGION AS OF DECEMBER 31, 1989

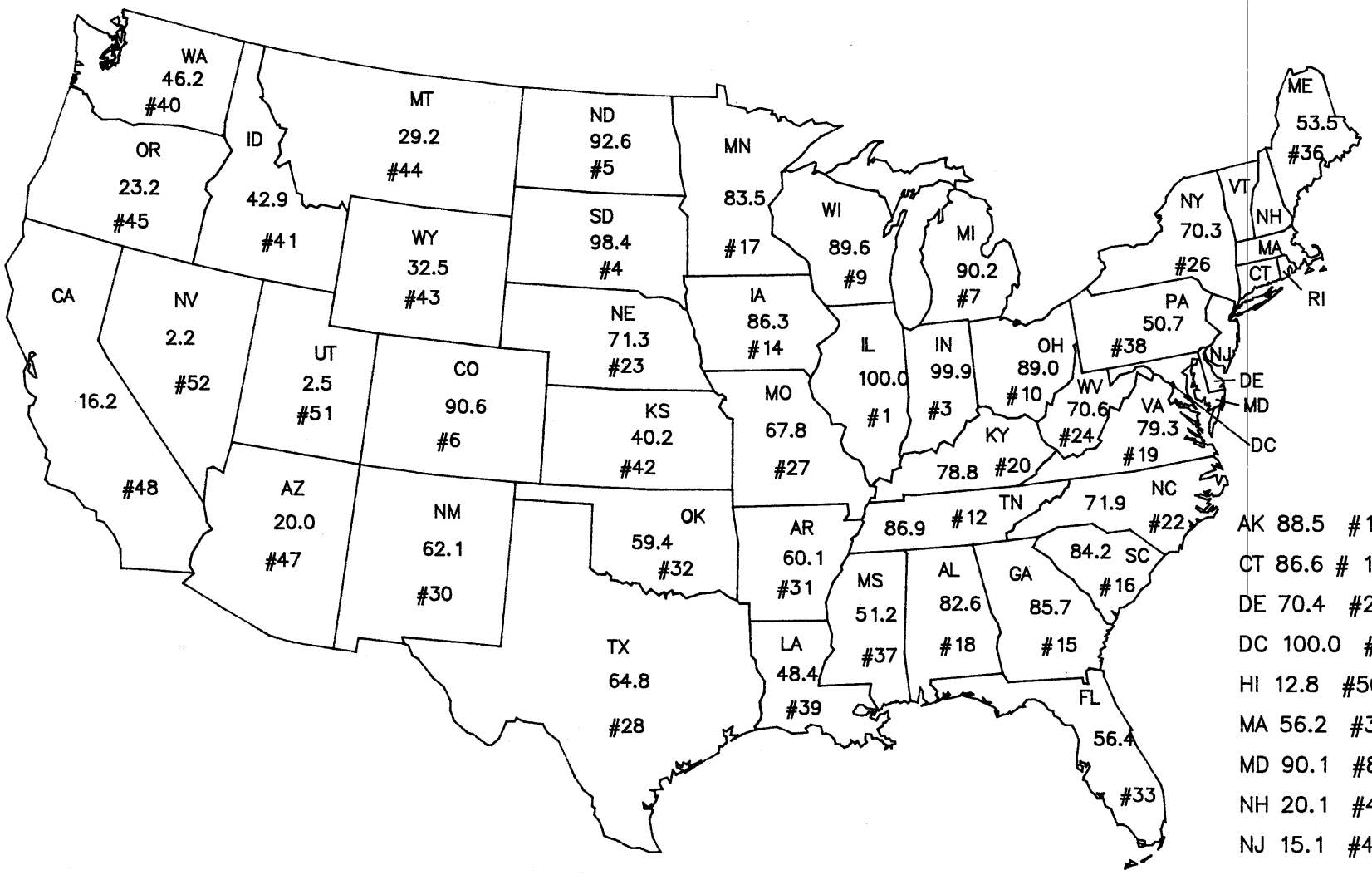
| | HYDROFLUOSILICIC ACID | | SODIUM SILICOFLUORIDE | | SODIUM FLUORIDE | |
|---|---|---|---|---|---|---|
| | POPULATION | # SYSTEMS | POPULATION | # SYSTEMS | POPULATION | # SYSTEMS |
| **UNITED STATES** | **75,295,924** | **5,187** | **35,050,494** | **1,432** | **11,474,400** | **2,431** |
| **REGION VI** | **8,490,225** | **360** | **3,888,665** | **260** | **746,450** | **130** |
| ARKANSAS | 677,248 | 69 | 481,729 | 89 | 7,514 | 6 |
| LOUISIANA | 1,747,024 | 52 | 0 | 0 | 0 | 0 |
| NEW MEXICO | 399,250 | 4 | 10,000 | 1 | 155,723 | 65 |
| OKLAHOMA | 188,642 | 34 | 1,099,206 | 118 | 220,232 | 21 |
| TEXAS | 5,478,061 | 201 | 2,297,730 | 52 | 362,981 | 38 |
| **REGION VII** | **4,983,675** | **464** | **1,175,103** | **102** | **321,427** | **141** |
| IOWA | 1,350,754 | 318 | 354,458 | 14 | 18,747 | 10 |
| KANSAS | 389,565 | 30 | 615,321 | 64 | 30,273 | 4 |
| MISSOURI | 2,538,719 | 73 | 168,618 | 18 | 268,328 | 125 |
| NEBRASKA | 704,637 | 43 | 36,706 | 6 | 4,079 | 2 |
| **REGION VIII** | **464,728** | **239** | **2,557,728** | **164** | **262,149** | **154** |
| COLORADO | 82,500 | 3 | 1,983,240 | 115 | 83,260 | 27 |
| MONTANA | 0 | 0 | 40,100 | 4 | 25,196 | 28 |
| NORTH DAKOTA | 156,131 | 92 | 256,628 | 15 | 35,280 | 26 |
| SOUTH DAKOTA | 210,250 | 141 | 168,551 | 23 | 106,436 | 68 |
| UTAH | 4,300 | 2 | 17,000 | 1 | 10,309 | 4 |
| WYOMING | 11,547 | 1 | 92,209 | 6 | 1,668 | 1 |
| **REGION IX** | **1,178,919** | **14** | **135,000** | **1** | **207,963** | **101** |
| ARIZONA | 12,000 | 1 | 135,000 | 1 | 56,386 | 61 |
| CALIFORNIA | 1,166,919 | 13 | 0 | 0 | 6,598 | 19 |
| HAWAII | 0 | 0 | 0 | 0 | 142,570 | 0 |
| NEVADA | 0 | 0 | 0 | 0 | 2,409 | 11 |
| **REGION X** | **1,102,555** | **43** | **738,586** | **52** | **648,790** | **188** |
| ALASKA | 0 | 0 | 0 | 0 | 257,639 | 125 |
| IDAHO | 0 | 0 | 48,842 | 8 | 5,845 | 6 |
| OREGON | 22,800 | 2 | 426,090 | 26 | 16,330 | 9 |
| WASHINGTON | 1,079,755 | 41 | 263,654 | 18 | 368,976 | 48 |

Note: Chemical used was not indicated for all systems, so these data are not consistent with other summary tables.


# FLUORIDATION STATISTICS CHARTS

# Chart 1

## PERCENT OF PUBLIC WATER SUPPLY POPULATION USING FLUORIDATED WATER AND STATE RANK




AK 88.5 #11
CT 86.6 # 13
DE 70.4 #25
DC 100.0 #1
HI 12.8 #50
MA 56.2 #34
MD 90.1 #8
NH 20.1 #46
NJ 15.1 #49
PR 62.5 #29
RI 77.8 #21
VT 55.3 #35

CDC/CPS/DDPA

Chart 2

# U.S. FLUORIDATION STATUS
## DECEMBER 31, 1989

| | UNITED STATES POPULATION | PUBLIC WATER SYSTEM POPULATION | FLUORIDATED POPULATION | PERCENT P.W.S. POP. FLUORIDATED | PERCENT U.S. POP. FLUORIDATED |
|---|---|---|---|---|---|
| DECEMBER 31, 1989 | 248,243,000 | 220,179,000 | 135,256,757 | 61.4 | 54.5 |
| DECEMBER 31, 1985 | 243,195,000 | 211,730,873 | 130,172,334 | 61 | 54 |

CDC/CPS/DDPA

Chart 3

# U.S. FLUORIDATION STATUS

## BY DHHS REGION

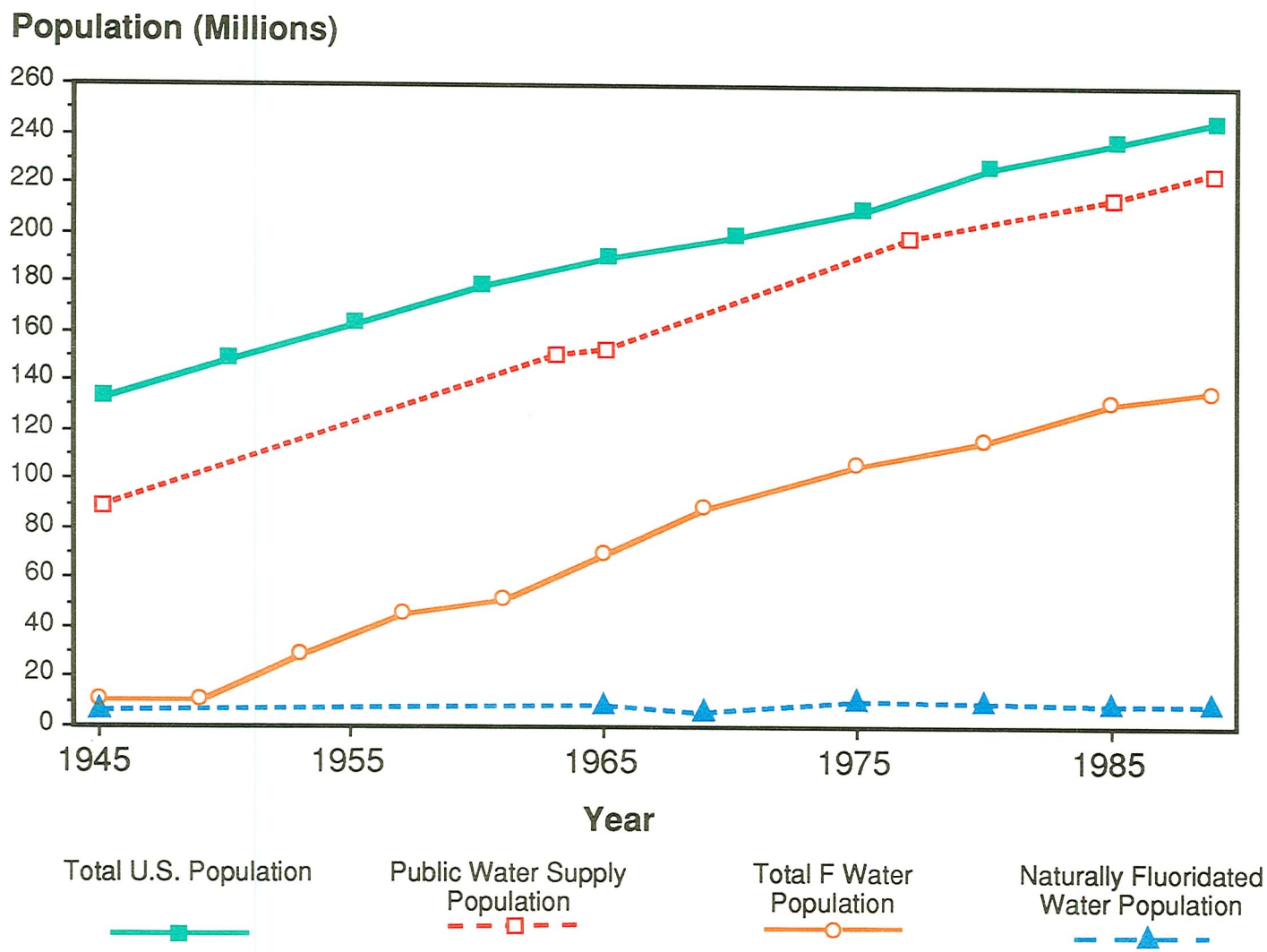
## DECEMBER 31, 1989

| | TOTAL POPULATION | P.W. SYSTEM POPULATION | FLUORIDATED POPULATION | PERCENT P.W.S. FLUORIDATED | PERCENT TOTAL FLUORIDATED |
|---|---|---|---|---|---|
| TOTAL U.S. | 248,243,000 | 220,179,000 | 135,256,757 | 61.4 | 54.5 |
| REGION I | 13,046,000 | 11,453,000 | 7,175,756 | 62.7 | 55.0 |
| REGION II | 25,686,000 | 28,380,000 | 15,365,540 | 54.1 | 59.8 |
| REGION III | 25,966,000 | 21,830,000 | 14,748,622 | 67.6 | 56.8 |
| REGION IV | 44,496,000 | 37,464,000 | 27,228,863 | 72.7 | 61.2 |
| REGION V | 46,651,000 | 37,557,000 | 34,903,643 | 92.9 | 74.8 |
| REGION VI | 28,531,000 | 27,073,000 | 16,599,420 | 61.3 | 58.2 |
| REGION VII | 12,123,000 | 10,552,000 | 6,947,743 | 65.8 | 57.3 |
| REGION VIII | 7,680,000 | 7,015,000 | 4,321,663 | 61.6 | 56.3 |
| REGION IX | 34,842,000 | 31,743,000 | 5,052,270 | 15.9 | 14.5 |
| REGION X | 9,122,000 | 7,112,000 | 2,913,237 | 41.0 | 31.9 |

CDC/CPS/DDPA

# Fluoridation Growth, by Population, United States, 1945 – 1989

Chart 4

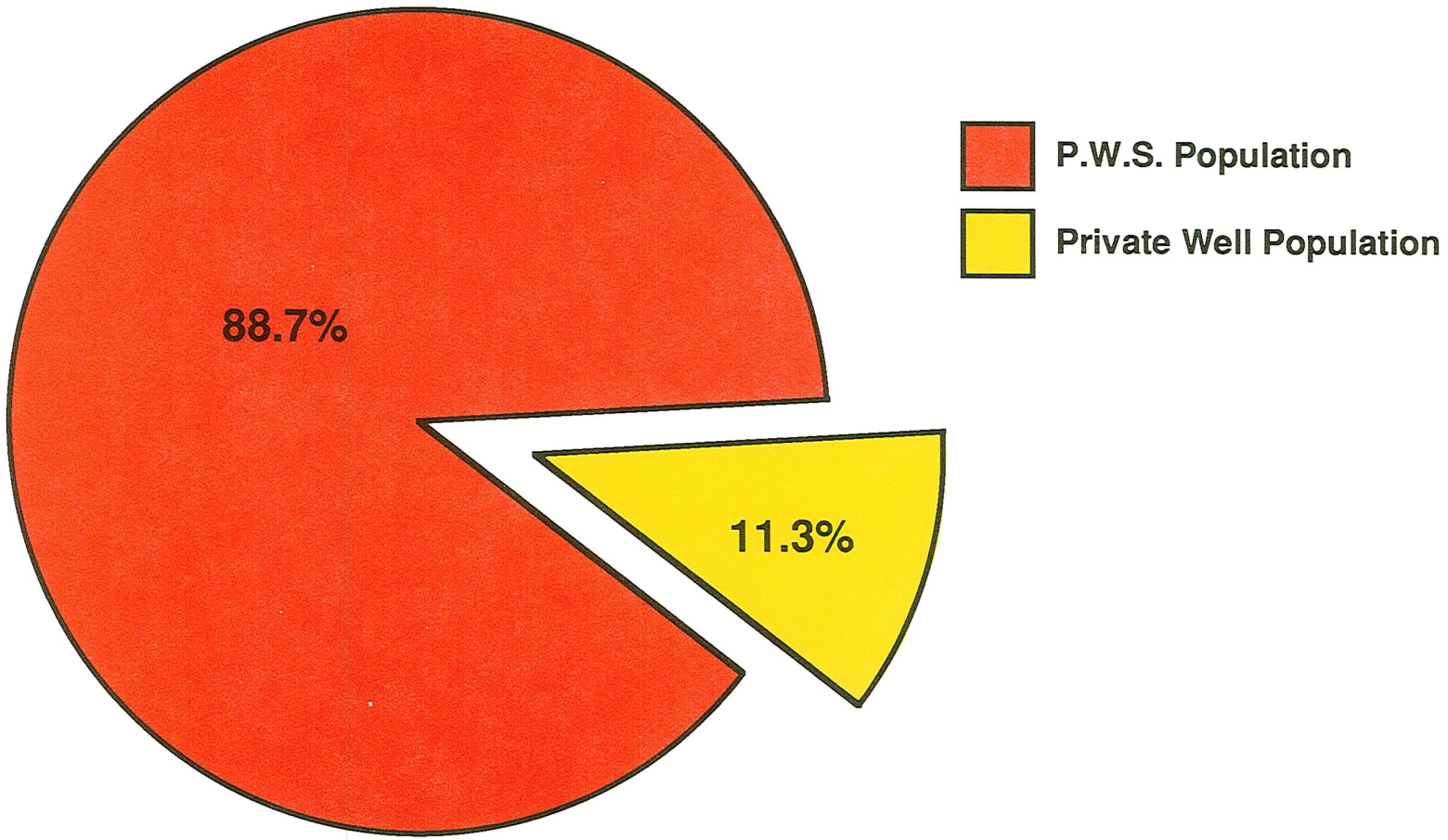



CDC/CPS/DDPA

# U.S. Population on Public Water Systems

Chart 5

## YEAR 1989

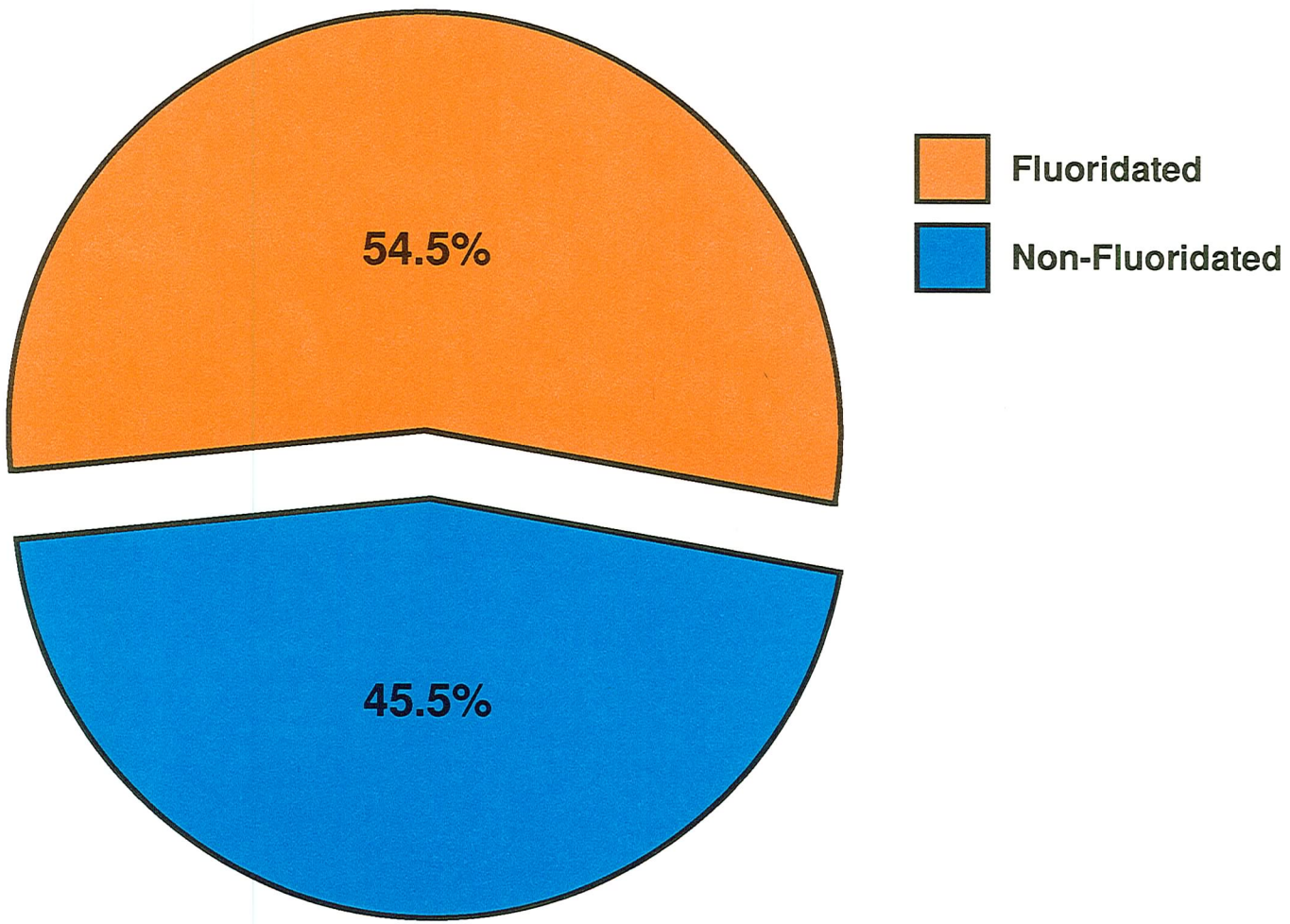



U.S. Population = 248,243,000

CDC/CPS/DDPA

# Total U.S. Population
## YEAR 1989

Chart 6

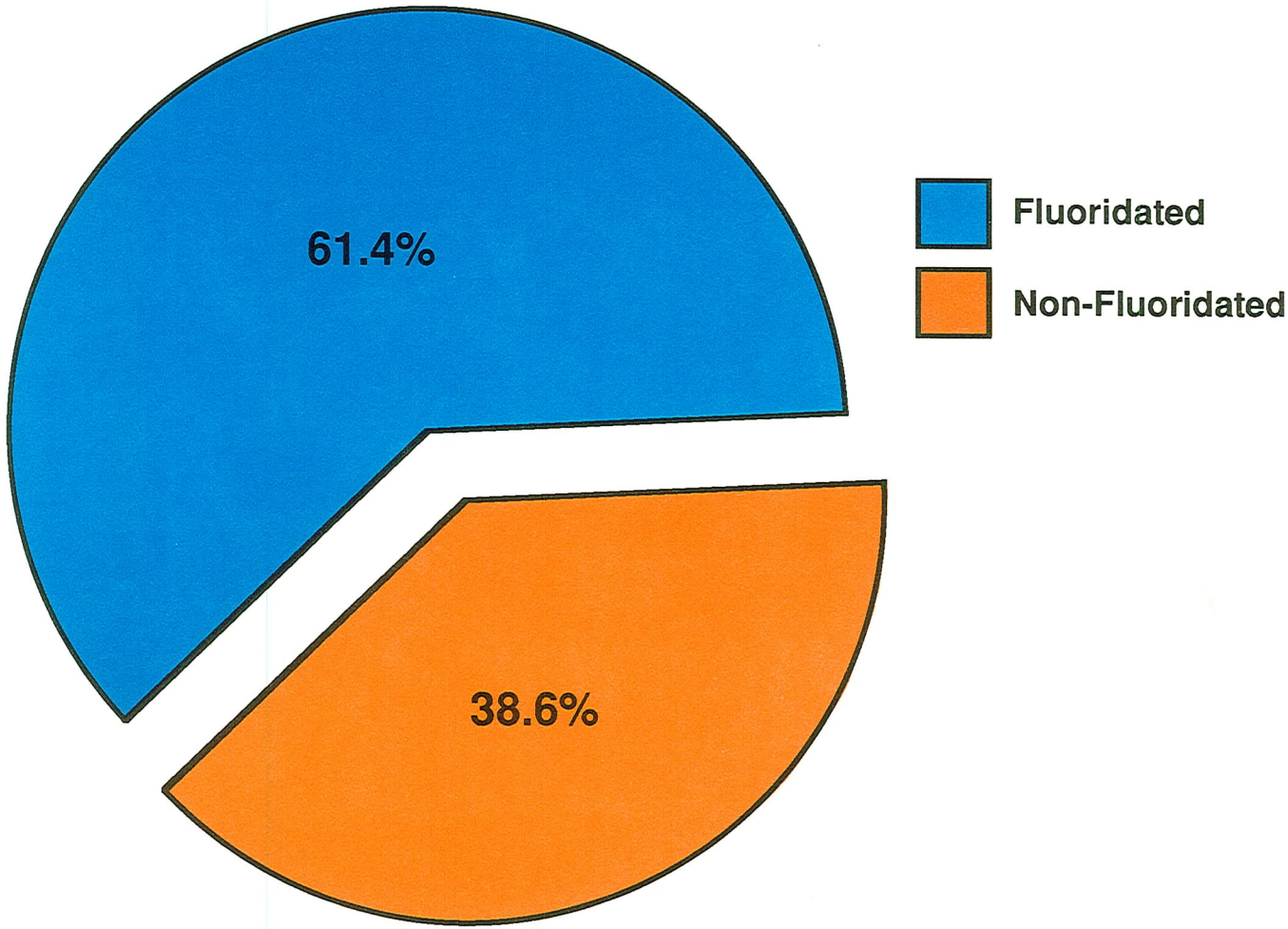



U.S. Population = 248,243,000

CDC/CPS/DDPA

# Total Public Water Supply Population
## YEAR 1989

Chart 7



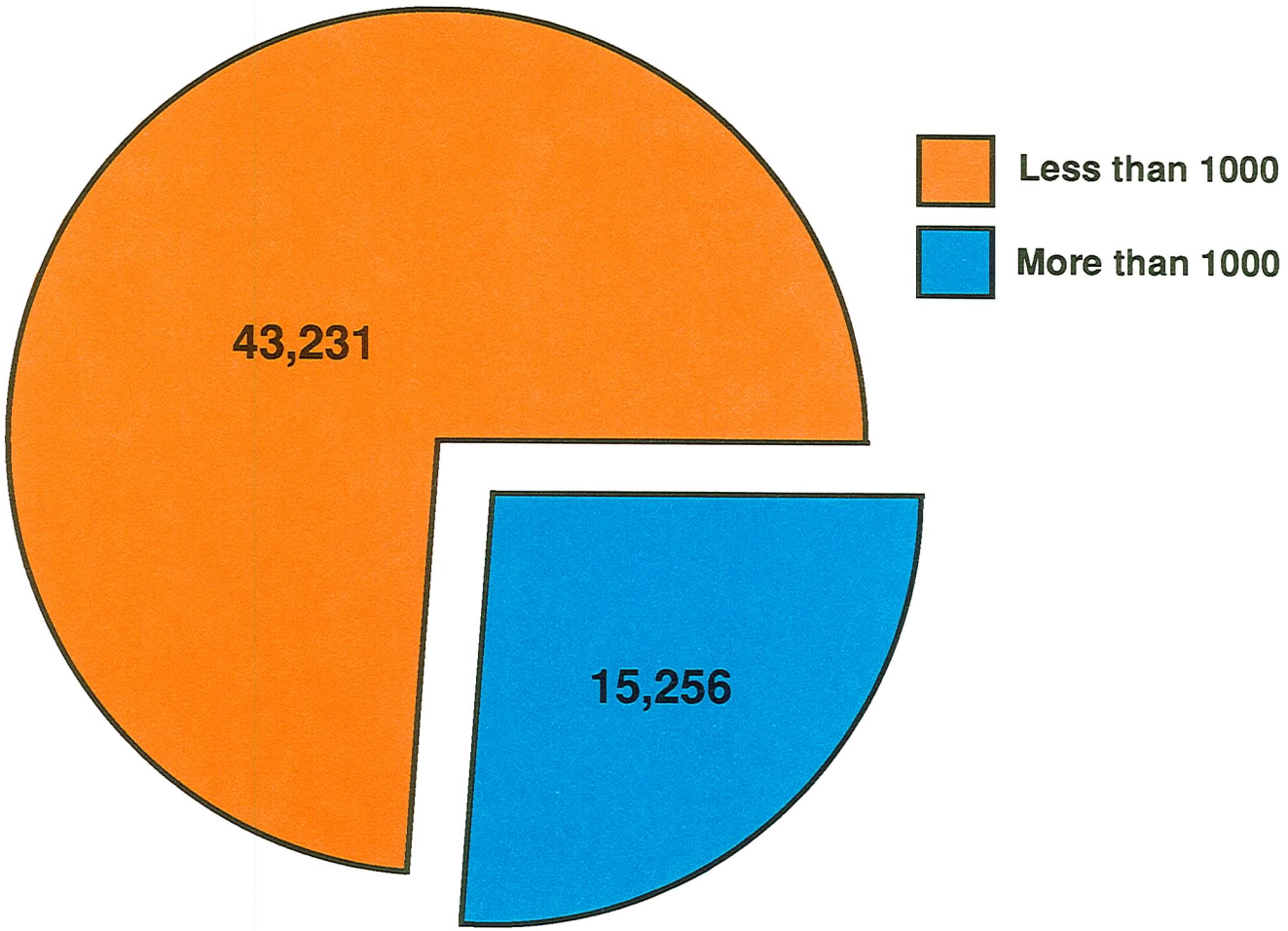

**Public Water Supply Population = 220,179,000**

CDC/CPS/DDPA

# Number of Public Water Systems

Chart 8

## EPA DATA 1989




Total P.W. Systems = 58,487

CDC/CPS/DDPA

# NUMBER OF FLUORIDATED P.W.S.
# FLUORIDATION CENSUS 1989 - SUMMARY



**FLUORIDATING SYSTEMS 6,584**

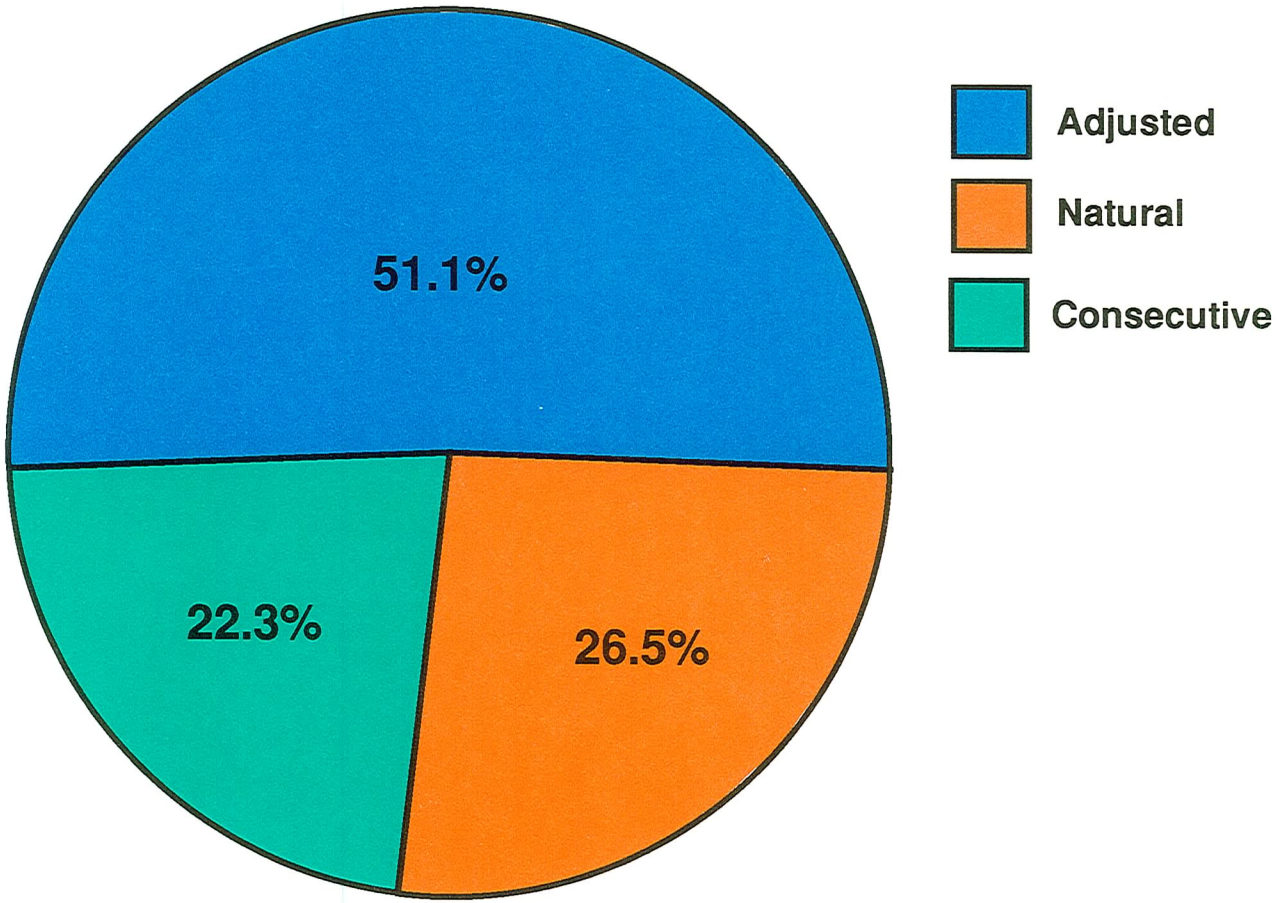
**CONSECUTIVE SYSTEMS 2,875**

**NATURAL SYSTEMS 3,414**

**TOTAL FLUORIDATED SYSTEMS 12,874**

# Type of P.W.S. Fluoridating
## YEAR 1989

Chart 10



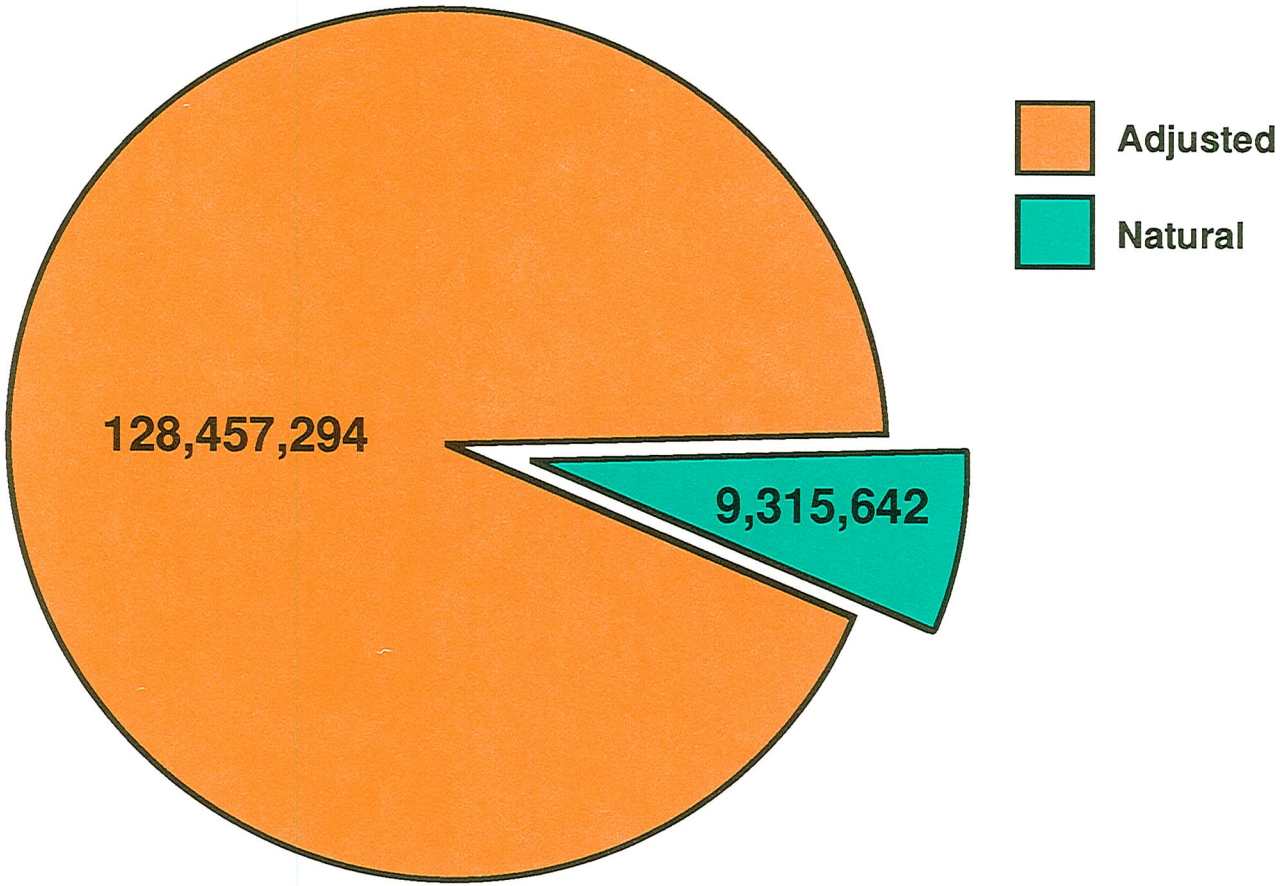

Fluoridating Systems = 12,874

CDC/CPS/DDPA

# Fluoridation Adjusted and Natural

## Fluoridation Census 1989 – Summary

Chart 11




**Fluoridated Population = 135,179,757**

CDC/CPS/DDPA


# FLUORIDATION STATISTICS STATE SUMMARIES

# STATE SUMMARY DATA AS OF 12/31/89

# ALABAMA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 56 | 30,905 | 261 | 121,000 |
| 1,001-5,000 | 114 | 275,989 | 265 | 648,000 |
| 5,001-10,000 | 52 | 382,539 | 71 | 526,000 |
| 10,001-50,000 | 49 | 939,402 | 53 | 995,000 |
| 50,001-100,000 | 5 | 352,470 | 5 | 352,000 |
| >100,000 | 4 | 1,130,000 | 4 | 1,125,000 |
| TOTAL | 280 | 3,111,359 | 659 | 3,768,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 105 | 2,454,172 | 78.9 |
| CONSECUTIVE | 154 | 598,933 | 19.2 |
| NATURAL | 21 | 58,254 | 1.8 |
| TOTAL | 280 | 3,111,359 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 4 | 31,763 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 0 | 0 |
| SODIUM SILICOFLUORIDE | 8 | 53,852 |
| HYDROFLUOSILICIC ACID | 241 | 2,984,903 |

# STATE SUMMARY DATA AS OF 12/31/89

# ALASKA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 177 | 43,323 | 469 | 85,000 |
| 1,001-5,000 | 11 | 29,193 | 24 | 58,000 |
| 5,001-10,000 | 6 | 45,805 | 8 | 64,000 |
| 10,001-50,000 | 2 | 43,000 | 2 | 43,000 |
| 50,001-100,000 | 0 | 0 | 0 | 0 |
| >100,000 | 1 | 160,000 | 1 | 113,000 |
| TOTAL | 197 | 321,321 | 504 | 363,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 197 | 321,321 | 100.0 |
| CONSECUTIVE | 0 | 0 | 0 |
| NATURAL | 0 | 0 | 0 |
| TOTAL | 197 | 321,321 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 140 | 50,428 | 0 | 0 |
| INDIAN SCHOOLS | 5 | 484 | 0 | 0 |
| MILITARY SYSTEMS | 9 | 35,543 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 125 | 257,639 |
| SODIUM SILICOFLUORIDE | 0 | 0 |
| HYDROFLUOSILICIC ACID | 0 | 0 |

# STATE SUMMARY DATA AS OF 12/31/89

# ARIZONA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 112 | 34,750 | 624 | 150,000 |
| 1,001-5,000 | 36 | 85,237 | 95 | 231,000 |
| 5,001-10,000 | 13 | 91,845 | 22 | 164,000 |
| 10,001-50,000 | 11 | 162,917 | 24 | 468,000 |
| 50,001-100,000 | 0 | 0 | 3 | 203,000 |
| >100,000 | 2 | 243,000 | 5 | 1,875,000 |
| TOTAL | 174 | 617,749 | 773 | 3,092,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 71 | 212,586 | 34.4 |
| CONSECUTIVE | 0 | 0 | 0.0 |
| NATURAL | 103 | 405,163 | 65.6 |
| TOTAL | 174 | 617,749 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 67 | 60,816 | 15 | 6,070 |
| INDIAN SCHOOLS | 1 | 170 | 3 | 660 |
| MILITARY SYSTEMS | 0 | 0 | 5 | 19,200 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 61 | 56,386 |
| SODIUM SILICOFLUORIDE | 1 | 135,000 |
| HYDROFLUOSILICIC ACID | 1 | 12,000 |

# STATE SUMMARY DATA AS OF 12/31/89

# ARKANSAS

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 59 | 31,555 | 411 | 179,000 |
| 1,001-5,000 | 71 | 170,019 | 240 | 558,000 |
| 5,001-10,000 | 24 | 178,335 | 37 | 266,000 |
| 10,001-50,000 | 20 | 411,550 | 26 | 526,000 |
| 50,001-100,000 | 1 | 64,000 | 3 | 240,000 |
| >100,000 | 2 | 324,272 | 1 | 195,000 |
| TOTAL | 177 | 1,179,731 | 718 | 1,963,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 67 | 874,255 | 74.1 |
| CONSECUTIVE | 97 | 292,951 | 24.8 |
| NATURAL | 13 | 12,555 | 1.1 |
| TOTAL | 177 | 1,179,731 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 2 | 14,170 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 6 | 7,514 |
| SODIUM SILICOFLUORIDE | 89 | 481,729 |
| HYDROFLUOSILICIC ACID | 69 | 677,248 |

# STATE SUMMARY DATA AS OF 12/31/89

# CALIFORNIA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 23 | 5,027 | 2,736 | 510,000 |
| 1,001-5,000 | 9 | 18,761 | 415 | 1,025,000 |
| 5,001-10,000 | 2 | 14,000 | 149 | 1,059,000 |
| 10,001-50,000 | 26 | 708,756 | 248 | 6,198,000 |
| 50,001-100,000 | 7 | 487,816 | 70 | 4,890,000 |
| >100,000 | 8 | 3,033,700 | 42 | 12,746,000 |
| TOTAL | 75 | 4,268,060 | 3,660 | 26,428,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 63 | 3,842,017 | 90.0 |
| CONSECUTIVE | 11 | 425,943 | 10.0 |
| NATURAL | 1 | 100 | 0.0 |
| TOTAL | 75 | 4,268,060 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 21 | 6,053 | 1 | 100 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 19 | 6,598 |
| SODIUM SILICOFLUORIDE | 0 | 0 |
| HYDROFLUOSILICIC ACID | 13 | 1,166,919 |

# STATE SUMMARY DATA AS OF 12/31/89

# COLORADO

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 285 | 71,079 | 557 | 133,000 |
| 1,001-5,000 | 100 | 228,089 | 117 | 258,000 |
| 5,001-10,000 | 22 | 163,718 | 29 | 228,000 |
| 10,001-50,000 | 31 | 678,422 | 24 | 559,000 |
| 50,001-100,000 | 5 | 348,000 | 6 | 463,000 |
| >100,000 | 5 | 1,472,404 | 4 | 1,630,000 |
| TOTAL | 448 | 2,961,682 | 737 | 3,270,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 57 | 1,809,959 | 61.1 |
| CONSECUTIVE | 95 | 360,841 | 12.2 |
| NATURAL | 296 | 790,882 | 26.7 |
| TOTAL | 448 | 2,961,682 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 1 | 1,400 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 27 | 83,260 |
| SODIUM SILICOFLUORIDE | 115 | 1,983,240 |
| HYDROFLUOSILICIC ACID | 3 | 82,500 |

# STATE SUMMARY DATA AS OF 12/31/89

# CONNECTICUT

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 4 | 1,030 | 546 | 84,000 |
| 1,001-5,000 | 3 | 6,428 | 39 | 95,000 |
| 5,001-10,000 | 1 | 6,000 | 12 | 92,000 |
| 10,001-50,000 | 20 | 592,504 | 28 | 696,000 |
| 50,001-100,000 | 7 | 429,549 | 5 | 281,000 |
| >100,000 | 5 | 1,326,798 | 6 | 1,479,000 |
| TOTAL | 40 | 2,362,309 | 636 | 2,727,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 35 | 2,358,779 | 99.9 |
| CONSECUTIVE | 1 | 2,500 | 0.1 |
| NATURAL | 4 | 1,030 | 0.0 |
| TOTAL | 40 | 2,362,309 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 7 | 133,740 |
| SODIUM SILICOFLUORIDE | 5 | 559,500 |
| HYDROFLUOSILICIC ACID | 24 | 1,668,039 |

# STATE SUMMARY DATA AS OF 12/31/89

# DELAWARE

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 3 | 1,065 | 195 | 44,000 |
| 1,001-5,000 | 5 | 11,206 | 30 | 70,000 |
| 5,001-10,000 | 2 | 11,800 | 6 | 40,000 |
| 10,001-50,000 | 1 | 32,800 | 3 | 98,000 |
| 50,001-100,000 | 1 | 93,000 | 1 | 93,000 |
| >100,000 | 2 | 290,000 | 2 | 280,000 |
| TOTAL | 14 | 439,871 | 237 | 625,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 9 | 432,700 | 98.4 |
| CONSECUTIVE | 0 | 0 | 0.0 |
| NATURAL | 5 | 7,171 | 1.6 |
| TOTAL | 14 | 439,871 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 2 | 6,400 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 5 | 43,400 |
| SODIUM SILICOFLUORIDE | 1 | 140,000 |
| HYDROFLUOSILICIC ACID | 0 | 0 |

# STATE SUMMARY DATA AS OF 12/31/89

# DISTRICT OF COLUMBIA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 0 | 0 | 0 | 0 |
| 1,001-5,000 | 0 | 0 | 0 | 0 |
| 5,001-10,000 | 0 | 0 | 0 | 0 |
| 10,001-50,000 | 0 | 0 | 0 | 0 |
| 50,001-100,000 | 0 | 0 | 0 | 0 |
| >100,000 | 2 | 604,000 | 2 | 604,000 |
| TOTAL | 2 | 604,000 | 2 | 604,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 1 | 884,000 | 100.0 |
| CONSECUTIVE | 0 | 0 | 0.0 |
| NATURAL | 0 | 0 | 0.0 |
| TOTAL | 1 | 884,000 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 0 | 0 |
| SODIUM SILICOFLUORIDE | 0 | 0 |
| HYDROFLUOSILICIC ACID | 1 | 884,000 |

# STATE SUMMARY DATA AS OF 12/31/89

# FLORIDA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 8 | 1,752 | 1,377 | 329,000 |
| 1,001-5,000 | 29 | 93,262 | 293 | 682,000 |
| 5,001-10,000 | 24 | 174,109 | 81 | 583,000 |
| 10,001-50,000 | 43 | 1,088,386 | 132 | 2,994,000 |
| 50,001-100,000 | 13 | 849,164 | 26 | 1,858,000 |
| >100,000 | 11 | 4,046,699 | 18 | 4,522,000 |
| TOTAL | 128 | 6,253,699 | 1,927 | 10,966,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 98 | 5,381,616 | 85.9 |
| CONSECUTIVE | 3 | 0 | 0.0 |
| NATURAL | 27 | 881,756 | 14.1 |
| TOTAL | 128 | 6,253,372 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 2 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 12 | 109,127 | 1 | 1,072 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 5 | 9,412 |
| SODIUM SILICOFLUORIDE | 10 | 2,382,120 |
| HYDROFLUOSILICIC ACID | 66 | 2,709,456 |

# STATE SUMMARY DATA AS OF 12/31/89

# GEORGIA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 38 | 20,373 | 1,289 | 261,000 |
| 1,001-5,000 | 127 | 349,023 | 204 | 507,000 |
| 5,001-10,000 | 54 | 383,386 | 54 | 379,000 |
| 10,001-50,000 | 51 | 1,111,540 | 55 | 1,183,000 |
| 50,001-100,000 | 9 | 611,400 | 8 | 553,000 |
| >100,000 | 9 | 2,235,500 | 9 | 2,616,000 |
| TOTAL | 288 | 4,711,222 | 1,619 | 5,499,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 238 | 3,970,851 | 84.3 |
| CONSECUTIVE | 45 | 724,106 | 15.4 |
| NATURAL | 5 | 16,265 | 0.3 |
| TOTAL | 288 | 4,711,222 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 6 | 89,900 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 120 | 995,111 |
| SODIUM SILICOFLUORIDE | 38 | 863,150 |
| HYDROFLUOSILICIC ACID | 106 | 2,335,346 |

# STATE SUMMARY DATA AS OF 12/31/89

## HAWAII

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 1 | 970 | 72 | 24,924 |
| 1,001-5,000 | 4 | 13,200 | 37 | 87,234 |
| 5,001-10,000 | 1 | 5,700 | 7 | 48,890 |
| 10,001-50,000 | 3 | 58,800 | 11 | 217,606 |
| 50,001-100,000 | 1 | 63,900 | 2 | 141,875 |
| >100,000 | 0 | 0 | 1 | 592,243 |
| TOTAL | 10 | 142,570 | 130 | 1,112,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 7 | 121,470 | 85.2 |
| CONSECUTIVE | 3 | 21,100 | 14.8 |
| NATURAL | 0 | 0 | 0.0 |
| TOTAL | 10 | 142,570 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 10 | 142,570 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 10 | 142,570 |
| SODIUM SILICOFLUORIDE | 0 | 0 |
| HYDROFLUOSILICIC ACID | 0 | 0 |

# STATE SUMMARY DATA AS OF 12/31/89

# IDAHO

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 27 | 8,400 | 729 | 123,000 |
| 1,001-5,000 | 17 | 42,533 | 62 | 158,000 |
| 5,001-10,000 | 3 | 19,016 | 11 | 80,000 |
| 10,001-50,000 | 6 | 125,078 | 11 | 235,000 |
| 50,001-100,000 | 0 | 0 | 0 | 0 |
| >100,000 | 1 | 105,000 | 1 | 105,000 |
| TOTAL | 54 | 300,027 | 814 | 700,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 12 | 53,937 | 18.0 |
| CONSECUTIVE | 2 | 750 | 0.2 |
| NATURAL | 40 | 245,340 | 81.8 |
| TOTAL | 54 | 300,027 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 4 | 1,295 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 1 | 6,000 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 6 | 5,845 |
| SODIUM SILICOFLUORIDE | 8 | 48,842 |
| HYDROFLUOSILICIC ACID | 0 | 0 |

# STATE SUMMARY DATA AS OF 12/31/89

# ILLINOIS

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 764 | 269,726 | 1,134 | 395,000 |
| 1,001-5,000 | 475 | 867,665 | 494 | 1,096,000 |
| 5,001-10,000 | 111 | 659,656 | 115 | 822,000 |
| 10,001-50,000 | 172 | 3,062,453 | 165 | 3,475,000 |
| 50,001-100,000 | 19 | 1,057,214 | 16 | 1,034,000 |
| >100,000 | 7 | 4,688,285 | 6 | 3,782,000 |
| TOTAL | 1,548 | 10,605,000 | 1,930 | 10,605,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 948 | 7,440,835 | 58.0 |
| CONSECUTIVE | 401 | 4,626,518 | 36.0 |
| NATURAL | 199 | 772,326 | 6.0 |
| TOTAL | 1,548 | 12,839,679 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 5 | 61,795 | 1 | 139 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 261 | 449,182 |
| SODIUM SILICOFLUORIDE | 86 | 661,298 |
| HYDROFLUOSILICIC ACID | 991 | 10,947,536 |

# STATE SUMMARY DATA AS OF 12/31/89

## INDIANA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 220 | 121,605 | 543 | 173,000 |
| 1,001-5,000 | 196 | 472,744 | 241 | 535,000 |
| 5,001-10,000 | 54 | 384,737 | 56 | 383,000 |
| 10,001-50,000 | 46 | 1,005,637 | 48 | 997,000 |
| 50,001-100,000 | 5 | 337,695 | 5 | 349,000 |
| >100,000 | 6 | 1,437,549 | 5 | 1,326,000 |
| TOTAL | 527 | 3,759,967 | 898 | 3,761,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 330 | 3,287,718 | 87.4 |
| CONSECUTIVE | 105 | 209,629 | 5.6 |
| NATURAL | 92 | 262,620 | 7.0 |
| TOTAL | 527 | 3,759,967 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 85 | 35,899 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 1 | 1,500 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 278 | 702,375 |
| SODIUM SILICOFLUORIDE | 44 | 1,278,753 |
| HYDROFLUOSILICIC ACID | 110 | 1,513,878 |

# STATE SUMMARY DATA AS OF 12/31/89

## IOWA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 323 | 143,524 | 1,003 | 294,000 |
| 1,001-5,000 | 182 | 394,345 | 242 | 500,000 |
| 5,001-10,000 | 37 | 268,294 | 41 | 299,000 |
| 10,001-50,000 | 21 | 471,420 | 22 | 504,000 |
| 50,001-100,000 | 5 | 328,335 | 5 | 325,000 |
| >100,000 | 3 | 431,884 | 3 | 440,000 |
| TOTAL | 571 | 2,037,802 | 1,316 | 2,361,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 259 | 1,627,189 | 79.9 |
| CONSECUTIVE | 92 | 100,683 | 4.9 |
| NATURAL | 220 | 309,930 | 15.2 |
| TOTAL | 571 | 2,037,802 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 1 | 286 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 1 | 250 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 10 | 18,747 |
| SODIUM SILICOFLUORIDE | 14 | 354,458 |
| HYDROFLUOSILICIC ACID | 318 | 1,350,754 |

# STATE SUMMARY DATA AS OF 12/31/89

# KANSAS

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 101 | 40,195 | 624 | 215,000 |
| 1,001-5,000 | 55 | 123,194 | 221 | 469,000 |
| 5,001-10,000 | 8 | 51,847 | 19 | 138,000 |
| 10,001-50,000 | 21 | 419,105 | 38 | 816,000 |
| 50,001-100,000 | 1 | 54,013 | 0 | 0 |
| >100,000 | 2 | 304,021 | 4 | 830,000 |
| TOTAL | 188 | 992,375 | 906 | 2,469,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 48 | 802,387 | 80.9 |
| CONSECUTIVE | 58 | 36,381 | 3.7 |
| NATURAL | 82 | 153,607 | 15.5 |
| TOTAL | 188 | 992,375 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 3 | 33,000 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 4 | 30,273 |
| SODIUM SILICOFLUORIDE | 64 | 615,321 |
| HYDROFLUOSILICIC ACID | 30 | 389,565 |

# STATE SUMMARY DATA AS OF 12/31/89

# KENTUCKY

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 95 | 37,070 | 202 | 67,000 |
| 1,001-5,000 | 111 | 289,360 | 231 | 559,000 |
| 5,001-10,000 | 39 | 279,399 | 69 | 483,000 |
| 10,001-50,000 | 43 | 776,380 | 50 | 921,000 |
| 50,001-100,000 | 2 | 121,450 | 3 | 174,000 |
| >100,000 | 3 | 1,102,500 | 3 | 1,103,000 |
| TOTAL | 293 | 2,606,159 | 558 | 3,307,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 278 | 2,573,841 | 98.8 |
| CONSECUTIVE | 15 | 32,318 | 1.2 |
| NATURAL | 0 | 0 | 0.0 |
| TOTAL | 293 | 2,606,159 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 78 | 24,933 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 1 | 23,400 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 143 | 222,097 |
| SODIUM SILICOFLUORIDE | 51 | 649,679 |
| HYDROFLUOSILICIC ACID | 91 | 1,704,706 |

# STATE SUMMARY DATA AS OF 12/31/89

# LOUISIANA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 67 | 26,477 | 1,043 | 258,000 |
| 1,001-5,000 | 41 | 93,965 | 275 | 600,000 |
| 5,001-10,000 | 14 | 101,131 | 43 | 303,000 |
| 10,001-50,000 | 14 | 264,906 | 45 | 822,000 |
| 50,001-100,000 | 7 | 461,860 | 8 | 494,000 |
| >100,000 | 3 | 1,030,364 | 6 | 1,613,000 |
| TOTAL | 146 | 1,978,703 | 1,420 | 4,091,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 49 | 1,733,824 | 87.6 |
| CONSECUTIVE | 3 | 13,200 | 0.7 |
| NATURAL | 94 | 231,679 | 11.7 |
| TOTAL | 146 | 1,978,703 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 3 | 22,100 | 1 | 1,700 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 0 | 0 |
| SODIUM SILICOFLUORIDE | 0 | 0 |
| HYDROFLUOSILICIC ACID | 52 | 1,747,024 |

# STATE SUMMARY DATA AS OF 12/31/89

# MAINE

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 5 | 2,882 | 312 | 53,000 |
| 1,001-5,000 | 36 | 87,128 | 71 | 162,000 |
| 5,001-10,000 | 9 | 65,580 | 15 | 109,000 |
| 10,001-50,000 | 12 | 282,451 | 15 | 337,000 |
| 50,001-100,000 | 0 | 0 | 0 | 0 |
| >100,000 | 0 | 0 | 1 | 158,000 |
| TOTAL | 62 | 438,041 | 414 | 819,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 60 | 415,765 | 94.9 |
| CONSECUTIVE | 2 | 22,276 | 5.1 |
| NATURAL | 0 | 0 | 0.0 |
| TOTAL | 62 | 438,041 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 2 | 1,225 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 2 | 10,200 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 25 | 81,940 |
| SODIUM SILICOFLUORIDE | 2 | 72,500 |
| HYDROFLUOSILICIC ACID | 35 | 283,601 |

# STATE SUMMARY DATA AS OF 12/31/89

## MARYLAND

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 82 | 14,018 | 403 | 96,000 |
| 1,001-5,000 | 41 | 123,601 | 104 | 287,000 |
| 5,001-10,000 | 4 | 34,800 | 12 | 97,000 |
| 10,001-50,000 | 21 | 470,870 | 21 | 512,000 |
| 50,001-100,000 | 3 | 195,000 | 2 | 130,000 |
| >100,000 | 3 | 2,600,000 | 4 | 2,697,000 |
| TOTAL | 154 | 3,438,289 | 546 | 3,818,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 87 | 1,289,676 | 35.9 |
| CONSECUTIVE | 13 | 2,100,000 | 61.1 |
| NATURAL | 54 | 48,613 | 1.4 |
| TOTAL | 154 | 3,438,289 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 7 | 52,003 | 2 | 2,027 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 12 | 38,350 |
| SODIUM SILICOFLUORIDE | 7 | 130,353 |
| HYDROFLUOSILICIC ACID | 56 | 2,065,870 |

# STATE SUMMARY DATA AS OF 12/31/89

# MASSACHUSETTS

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 4 | 1,147 | 217 | 40,000 |
| 1,001-5,000 | 6 | 23,457 | 83 | 249,000 |
| 5,001-10,000 | 11 | 73,319 | 56 | 395,000 |
| 10,001-50,000 | 47 | 1,041,738 | 124 | 2,765,000 |
| 50,001-100,000 | 6 | 448,213 | 17 | 1,215,000 |
| >100,000 | 2 | 1,674,534 | 4 | 1,146,000 |
| TOTAL | 76 | 3,262,426 | 501 | 5,810,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 73 | 3,262,029 | 100.0 |
| CONSECUTIVE | 0 | 0 | 0.0 |
| NATURAL | 3 | 397 | 0.0 |
| TOTAL | 76 | 3,262,426 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 2 | 8,000 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 46 | 617,711 |
| SODIUM SILICOFLUORIDE | 5 | 270,980 |
| HYDROFLUOSILICIC ACID | 22 | 2,373,338 |

# STATE SUMMARY DATA AS OF 12/31/89

# MICHIGAN

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 120 | 51,368 | 1,022 | 267,000 |
| 1,001-5,000 | 167 | 437,441 | 295 | 676,000 |
| 5,001-10,000 | 61 | 441,468 | 75 | 537,000 |
| 10,001-50,000 | 85 | 1,945,369 | 89 | 2,029,000 |
| 50,001-100,000 | 15 | 1,102,954 | 16 | 1,147,000 |
| >100,000 | 8 | 2,208,761 | 8 | 2,209,000 |
| TOTAL | 456 | 6,187,361 | 1,505 | 6,863,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 133 | 2,960,305 | 47.8 |
| CONSECUTIVE | 229 | 3,108,246 | 50.2 |
| NATURAL | 94 | 118,810 | 1.9 |
| TOTAL | 456 | 6,187,361 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 3 | 19,700 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 10 | 38,239 |
| SODIUM SILICOFLUORIDE | 46 | 609,621 |
| HYDROFLUOSILICIC ACID | 290 | 5,328,349 |

# STATE SUMMARY DATA AS OF 12/31/89

# MINNESOTA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 383 | 170,554 | 713 | 219,000 |
| 1,001-5,000 | 198 | 448,352 | 209 | 473,000 |
| 5,001-10,000 | 38 | 276,518 | 32 | 239,000 |
| 10,001-50,000 | 57 | 1,249,453 | 53 | 1,136,000 |
| 50,001-100,000 | 3 | 232,548 | 2 | 151,000 |
| >100,000 | 2 | 702,492 | 4 | 1,469,000 |
| TOTAL | 681 | 3,079,917 | 1,013 | 3,688,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 635 | 2,910,362 | 94.5 |
| CONSECUTIVE | 32 | 165,443 | 5.4 |
| NATURAL | 14 | 4,112 | 0.1 |
| TOTAL | 681 | 3,079,917 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 5 | 1,543 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 32 | 39,267 |
| SODIUM SILICOFLUORIDE | 17 | 201,461 |
| HYDROFLUOSILICIC ACID | 614 | 2,832,691 |

# STATE SUMMARY DATA AS OF 12/31/89

# MISSISSIPPI

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 126 | 49,794 | 898 | 368,000 |
| 1,001-5,000 | 108 | 250,985 | 404 | 844,000 |
| 5,001-10,000 | 28 | 195,553 | 41 | 274,000 |
| 10,001-50,000 | 21 | 463,055 | 34 | 681,000 |
| 50,001-100,000 | 1 | 57,000 | 1 | 57,000 |
| >100,000 | 1 | 220,027 | 1 | 194,000 |
| TOTAL | 285 | 1,236,414 | 1,379 | 2,417,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 147 | 1,091,768 | 88.3 |
| CONSECUTIVE | 69 | 48,556 | 3.9 |
| NATURAL | 69 | 96,090 | 7.8 |
| TOTAL | 285 | 1,236,414 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 3 | 2,378 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 3 | 32,497 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 196 | 746,541 |
| SODIUM SILICOFLUORIDE | 11 | 372,740 |
| HYDROFLUOSILICIC ACID | 7 | 20,665 |

# STATE SUMMARY DATA AS OF 12/31/89

# MISSOURI

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 108 | 47,734 | 707 | 185,000 |
| 1,001-5,000 | 133 | 315,076 | 169 | 347,000 |
| 5,001-10,000 | 27 | 191,556 | 22 | 151,000 |
| 10,001-50,000 | 25 | 489,590 | 16 | 406,000 |
| 50,001-100,000 | 1 | 64,000 | 0 | 0 |
| >100,000 | 4 | 2,020,500 | 3 | 1,581,000 |
| TOTAL | 298 | 3,128,456 | 917 | 2,669,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 152 | 2,812,024 | 89.9 |
| CONSECUTIVE | 71 | 169,597 | 5.4 |
| NATURAL | 75 | 146,835 | 4.7 |
| TOTAL | 298 | 3,128,456 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 1 | 4,080 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 1 | 400 |
| MILITARY SYSTEMS | 1 | 22,500 | 1 | 4,000 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 125 | 268,328 |
| SODIUM SILICOFLUORIDE | 18 | 168,618 |
| HYDROFLUOSILICIC ACID | 73 | 2,538,719 |

# STATE SUMMARY DATA AS OF 12/31/89

# MONTANA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 76 | 20,022 | 714 | 101,000 |
| 1,001-5,000 | 14 | 27,158 | 48 | 101,000 |
| 5,001-10,000 | 4 | 27,905 | 13 | 87,000 |
| 10,001-50,000 | 1 | 22,000 | 6 | 150,000 |
| 50,001-100,000 | 1 | 72,000 | 2 | 142,000 |
| >100,000 | 0 | 0 | 0 | 0 |
| TOTAL | 96 | 169,085 | 783 | 580,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 30 | 64,894 | 38.4 |
| CONSECUTIVE | 3 | 566 | 0.3 |
| NATURAL | 63 | 103,625 | 61.3 |
| TOTAL | 96 | 169,085 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 19 | 5,877 | 3 | 419 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 1 | 3,000 | 2 | 7,602 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 28 | 25,196 |
| SODIUM SILICOFLUORIDE | 4 | 40,100 |
| HYDROFLUOSILICIC ACID | 0 | 0 |

# STATE SUMMARY DATA AS OF 12/31/89

# NEBRASKA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 50 | 22,067 | 563 | 145,000 |
| 1,001-5,000 | 34 | 60,958 | 96 | 173,000 |
| 5,001-10,000 | 9 | 66,489 | 17 | 107,000 |
| 10,001-50,000 | 3 | 71,959 | 9 | 159,000 |
| 50,001-100,000 | 0 | 0 | 0 | 0 |
| >100,000 | 2 | 567,637 | 2 | 522,000 |
| TOTAL | 98 | 789,110 | 687 | 1,106,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 51 | 750,591 | 95.1 |
| CONSECUTIVE | 4 | 6,470 | 0.8 |
| NATURAL | 43 | 32,049 | 4.1 |
| TOTAL | 98 | 789,110 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 3 | 2,930 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 1 | 8,787 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 2 | 4,079 |
| SODIUM SILICOFLUORIDE | 6 | 36,706 |
| HYDROFLUOSILICIC ACID | 43 | 704,637 |

# STATE SUMMARY DATA AS OF 12/31/89

# NEVADA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 21 | 5,681 | 267 | 43,000 |
| 1,001-5,000 | 5 | 9,510 | 45 | 97,000 |
| 5,001-10,000 | 1 | 8,700 | 3 | 26,000 |
| 10,001-50,000 | 0 | 0 | 4 | 70,000 |
| 50,001-100,000 | 0 | 0 | 1 | 50,000 |
| >100,000 | 0 | 0 | 3 | 824,000 |
| TOTAL | 27 | 23,891 | 323 | 1,111,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 11 | 2,409 | 10.1 |
| CONSECUTIVE | 0 | 0 | 0.0 |
| NATURAL | 16 | 21,482 | 89.9 |
| TOTAL | 27 | 23,891 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 10 | 2,384 | 3 | 607 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 1 | 1,510 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 11 | 2,409 |
| SODIUM SILICOFLUORIDE | 0 | 0 |
| HYDROFLUOSILICIC ACID | 0 | 0 |

# STATE SUMMARY DATA AS OF 12/31/89

# NEW HAMPSHIRE

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 66 | 2,125 | 696 | 82,000 |
| 1,001-5,000 | 1 | 2,025 | 48 | 106,000 |
| 5,001-10,000 | 4 | 36,000 | 15 | 119,000 |
| 10,001-50,000 | 4 | 107,217 | 13 | 256,000 |
| 50,001-100,000 | 0 | 0 | 1 | 65,000 |
| >100,000 | 0 | 0 | 1 | 105,000 |
| TOTAL | 75 | 147,367 | 774 | 734,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 9 | 135,267 | 91.8 |
| CONSECUTIVE | 2 | 1,300 | 0.9 |
| NATURAL | 64 | 10,800 | 7.3 |
| TOTAL | 75 | 147,367 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 1 | 25 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 6 | 48,625 |
| SODIUM SILICOFLUORIDE | 0 | 0 |
| HYDROFLUOSILICIC ACID | 5 | 87,942 |

# STATE SUMMARY DATA AS OF 12/31/89

# NEW JERSEY

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 2 | 1,650 | 408 | 102,000 |
| 1,001-5,000 | 13 | 32,406 | 134 | 339,000 |
| 5,001-10,000 | 6 | 41,939 | 62 | 438,000 |
| 10,001-50,000 | 18 | 388,524 | 116 | 2,368,000 |
| 50,001-100,000 | 1 | 100,000 | 11 | 692,000 |
| >100,000 | 3 | 605,528 | 12 | 3,796,000 |
| TOTAL | 43 | 1,170,047 | 743 | 7,736,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 28 | 1,056,302 | 90.3 |
| CONSECUTIVE | 0 | 0 | 0.0 |
| NATURAL | 15 | 113,745 | 9.7 |
| TOTAL | 43 | 1,170,047 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 3 | 35,952 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 6 | 80,697 |
| SODIUM SILICOFLUORIDE | 3 | 317,600 |
| HYDROFLUOSILICIC ACID | 18 | 645,005 |

# STATE SUMMARY DATA AS OF 12/31/89

# NEW MEXICO

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 107 | 35,787 | 563 | 124,000 |
| 1,001-5,000 | 28 | 60,458 | 60 | 136,000 |
| 5,001-10,000 | 7 | 57,680 | 17 | 130,000 |
| 10,001-50,000 | 13 | 314,661 | 18 | 455,000 |
| 50,001-100,000 | 0 | 0 | 2 | 112,000 |
| >100,000 | 1 | 342,000 | 1 | 351,000 |
| TOTAL | 156 | 810,586 | 661 | 1,306,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 69 | 562,723 | 69.4 |
| CONSECUTIVE | 1 | 2,250 | 0.3 |
| NATURAL | 86 | 245,613 | 30.3 |
| TOTAL | 156 | 810,586 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 46 | 51,520 | 30 | 8,978 |
| INDIAN SCHOOLS | 2 | 1,410 | 6 | 1,045 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 65 | 155,723 |
| SODIUM SILICOFLUORIDE | 1 | 10,000 |
| HYDROFLUOSILICIC ACID | 4 | 399,250 |

# STATE SUMMARY DATA AS OF 12/31/89

# NEW YORK

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 374 | 141,461 | 2,742 | 575,000 |
| 1,001-5,000 | 159 | 410,992 | 434 | 1,015,000 |
| 5,001-10,000 | 48 | 356,326 | 98 | 723,000 |
| 10,001-50,000 | 58 | 1,336,931 | 119 | 2,760,000 |
| 50,001-100,000 | 8 | 510,466 | 13 | 854,000 |
| >100,000 | 10 | 8,918,005 | 16 | 10,686,000 |
| TOTAL | 658 | 11,674,181 | 3,422 | 16,612,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 152 | 9,800,170 | 83.9 |
| CONSECUTIVE | 502 | 1,872,795 | 16.0 |
| NATURAL | 3 | 1,216 | 0.0 |
| TOTAL | 657 | 11,672,181 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 3 | 9,600 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 39 | 156,160 |
| SODIUM SILICOFLUORIDE | 64 | 7,684,126 |
| HYDROFLUOSILICIC ACID | 538 | 3,644,761 |

# STATE SUMMARY DATA AS OF 12/31/89

# NORTH CAROLINA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 124 | 50,633 | 2,542 | 457,000 |
| 1,001-5,000 | 61 | 171,476 | 279 | 678,000 |
| 5,001-10,000 | 28 | 205,496 | 67 | 486,000 |
| 10,001-50,000 | 41 | 913,231 | 59 | 1,176,000 |
| 50,001-100,000 | 5 | 370,000 | 9 | 603,000 |
| >100,000 | 7 | 1,618,900 | 6 | 1,232,000 |
| TOTAL | 266 | 3,329,736 | 2,962 | 4,634,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 237 | 3,248,435 | 97.6 |
| CONSECUTIVE | 0 | 0 | 0.0 |
| NATURAL | 29 | 81,301 | 2.4 |
| TOTAL | 266 | 3,329,736 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 103 | 41,658 | 2 | 585 |
| INDIAN SYSTEMS | 5 | 1,761 | 1 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 10 | 120,200 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 126 | 343,607 |
| SODIUM SILICOFLUORIDE | 13 | 1,378,260 |
| HYDROFLUOSILICIC ACID | 58 | 1,156,172 |

# STATE SUMMARY DATA AS OF 12/31/89

# NORTH DAKOTA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 139 | 44,582 | 284 | 75,000 |
| 1,001-5,000 | 58 | 104,414 | 58 | 103,000 |
| 5,001-10,000 | 6 | 43,088 | 7 | 52,000 |
| 10,001-50,000 | 10 | 221,709 | 8 | 162,000 |
| 50,001-100,000 | 1 | 61,281 | 2 | 121,000 |
| >100,000 | 0 | 0 | 0 | 0 |
| TOTAL | 211 | 475,074 | 359 | 513,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 106 | 407,111 | 85.7 |
| CONSECUTIVE | 28 | 41,393 | 8.7 |
| NATURAL | 77 | 26,570 | 5.6 |
| TOTAL | 211 | 475,074 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 16 | 10,189 | 1 | 465 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 2 | 29,518 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 26 | 35,280 |
| SODIUM SILICOFLUORIDE | 15 | 256,628 |
| HYDROFLUOSILICIC ACID | 92 | 156,131 |

# STATE SUMMARY DATA AS OF 12/31/89

# OHIO

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 333 | 116,648 | 1,040 | 296,000 |
| 1,001-5,000 | 175 | 437,857 | 335 | 770,000 |
| 5,001-10,000 | 74 | 544,644 | 82 | 603,000 |
| 10,001-50,000 | 95 | 1,970,872 | 111 | 2,213,000 |
| 50,001-100,000 | 16 | 1,081,210 | 17 | 1,141,000 |
| >100,000 | 12 | 4,139,844 | 10 | 4,293,000 |
| TOTAL | 705 | 8,291,075 | 1,595 | 9,314,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 229 | 7,050,752 | 85.0 |
| CONSECUTIVE | 168 | 997,504 | 12.0 |
| NATURAL | 308 | 242,819 | 2.9 |
| TOTAL | 705 | 8,291,075 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 1 | 1,500 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 28 | 56,933 |
| SODIUM SILICOFLUORIDE | 85 | 3,148,770 |
| HYDROFLUOSILICIC ACID | 277 | 4,811,100 |

# STATE SUMMARY DATA AS OF 12/31/89

# OKLAHOMA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 98 | 38,699 | 975 | 266,000 |
| 1,001-5,000 | 82 | 197,284 | 282 | 594,000 |
| 5,001-10,000 | 21 | 156,009 | 36 | 259,000 |
| 10,001-50,000 | 22 | 582,440 | 34 | 847,000 |
| 50,001-100,000 | 1 | 60,000 | 2 | 115,000 |
| >100,000 | 4 | 588,800 | 4 | 641,000 |
| TOTAL | 228 | 1,617,232 | 1,333 | 2,722,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 78 | 1,362,484 | 84.2 |
| CONSECUTIVE | 95 | 145,586 | 9.0 |
| NATURAL | 55 | 109,152 | 6.7 |
| TOTAL | 228 | 1,617,232 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 2 | 540 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 5 | 16,224 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 21 | 220,232 |
| SODIUM SILICOFLUORIDE | 119 | 1,099,206 |
| HYDROFLUOSILICIC ACID | 34 | 188,642 |

# STATE SUMMARY DATA AS OF 12/31/89

## OREGON

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 21 | 9,635 | 833 | 159,000 |
| 1,001-5,000 | 17 | 45,660 | 128 | 294,000 |
| 5,001-10,000 | 8 | 60,825 | 28 | 209,000 |
| 10,001-50,000 | 9 | 184,800 | 39 | 805,000 |
| 50,001-100,000 | 1 | 90,000 | 1 | 68,000 |
| >100,000 | 1 | 116,000 | 3 | 653,000 |
| TOTAL | 57 | 506,920 | 1,032 | 2,188,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 28 | 446,415 | 88.1 |
| CONSECUTIVE | 9 | 18,805 | 3.7 |
| NATURAL | 20 | 41,700 | 8.2 |
| TOTAL | 57 | 506,920 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 5 | 3,480 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 9 | 16,330 |
| SODIUM SILICOFLUORIDE | 26 | 426,090 |
| HYDROFLUOSILICIC ACID | 2 | 22,800 |

# STATE SUMMARY DATA AS OF 12/31/89

# PENNSYLVANIA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 13 | 8,161 | 1,821 | 429,000 |
| 1,001-5,000 | 36 | 115,336 | 362 | 866,000 |
| 5,001-10,000 | 30 | 226,777 | 93 | 690,000 |
| 10,001-50,000 | 40 | 926,016 | 120 | 2,570,000 |
| 50,001-100,000 | 9 | 657,999 | 16 | 1,096,000 |
| >100,000 | 7 | 3,218,767 | 16 | 4,504,000 |
| TOTAL | 135 | 5,153,056 | 2,428 | 10,154,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 94 | 4,953,894 | 96.1 |
| CONSECUTIVE | 41 | 199,162 | 3.9 |
| NATURAL | 0 | 0 | 0.0 |
| TOTAL | 135 | 5,153,056 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 23 | 245,742 |
| SODIUM SILICOFLUORIDE | 28 | 513,269 |
| HYDROFLUOSILICIC ACID | 71 | 3,746,844 |

# STATE SUMMARY DATA AS OF 12/31/89

# PUERTO RICO

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 2 | 1,404 | 301 | 92,000 |
| 1,001-5,000 | 5 | 10,368 | 116 | 265,000 |
| 5,001-10,000 | 3 | 24,791 | 26 | 179,000 |
| 10,001-50,000 | 22 | 533,441 | 48 | 1,083,000 |
| 50,001-100,000 | 3 | 202,572 | 4 | 302,000 |
| >100,000 | 4 | 1,748,736 | 5 | 2,113,000 |
| TOTAL | 39 | 2,521,312 | 500 | 4,032,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 39 | 2,521,312 | 100.0 |
| CONSECUTIVE | 0 | 0 | 0.0 |
| NATURAL | 0 | 0 | 0.0 |
| TOTAL | 39 | 2,521,312 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 39 | 2,521,312 |
| SODIUM SILICOFLUORIDE | 0 | 0 |
| HYDROFLUOSILICIC ACID | 0 | 0 |

# STATE SUMMARY DATA AS OF 12/31/89

# RHODE ISLAND

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 1 | 350 | 59 | 10,000 |
| 1,001-5,000 | 2 | 5,300 | 9 | 25,000 |
| 5,001-10,000 | 3 | 22,900 | 7 | 46,000 |
| 10,001-50,000 | 8 | 200,243 | 10 | 259,000 |
| 50,001-100,000 | 3 | 226,302 | 3 | 215,000 |
| >100,000 | 1 | 277,891 | 2 | 388,000 |
| TOTAL | 18 | 732,986 | 90 | 942,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 8 | 510,357 | 69.6 |
| CONSECUTIVE | 10 | 222,629 | 30.4 |
| NATURAL | 0 | 0 | 0.0 |
| TOTAL | 18 | 732,986 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 0 | 0 |
| SODIUM SILICOFLUORIDE | 15 | 639,487 |
| HYDROFLUOSILICIC ACID | 1 | 88,199 |

# STATE SUMMARY DATA AS OF 12/31/89

# SOUTH CAROLINA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 128 | 45,526 | 677 | 127,000 |
| 1,001-5,000 | 85 | 233,769 | 143 | 359,000 |
| 5,001-10,000 | 39 | 261,222 | 49 | 345,000 |
| 10,001-50,000 | 46 | 1,007,371 | 47 | 960,000 |
| 50,001-100,000 | 3 | 212,912 | 5 | 324,000 |
| >100,000 | 3 | 664,525 | 3 | 664,000 |
| TOTAL | 304 | 2,423,325 | 924 | 2,779,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 75 | 1,703,627 | 70.3 |
| CONSECUTIVE | 102 | 416,444 | 17.2 |
| NATURAL | 127 | 303,254 | 12.5 |
| TOTAL | 304 | 2,423,325 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 1 | 450 | 34 | 11,318 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 6 | 44,593 | 1 | 3,176 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 25 | 206,839 |
| SODIUM SILICOFLUORIDE | 85 | 918,879 |
| HYDROFLUOSILICIC ACID | 59 | 986,652 |

# STATE SUMMARY DATA AS OF 12/31/89

## SOUTH DAKOTA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 234 | 82,245 | 338 | 94,000 |
| 1,001-5,000 | 78 | 171,312 | 77 | 167,000 |
| 5,001-10,000 | 8 | 50,035 | 8 | 48,000 |
| 10,001-50,000 | 9 | 161,353 | 9 | 164,000 |
| 50,001-100,000 | 1 | 81,232 | 1 | 81,000 |
| >100,000 | 0 | 0 | 0 | 0 |
| TOTAL | 330 | 546,177 | 433 | 555,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 152 | 449,900 | 82.4 |
| CONSECUTIVE | 111 | 58,179 | 10.7 |
| NATURAL | 67 | 38,098 | 7.0 |
| TOTAL | 330 | 546,177 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 65 | 23,949 | 1 | 84 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 1 | 5,000 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 68 | 106,436 |
| SODIUM SILICOFLUORIDE | 23 | 168,551 |
| HYDROFLUOSILICIC ACID | 141 | 210,250 |

# STATE SUMMARY DATA AS OF 12/31/89

# TENNESSEE

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 19 | 13,121 | 182 | 70,000 |
| 1,001-5,000 | 113 | 297,386 | 224 | 531,000 |
| 5,001-10,000 | 60 | 435,565 | 80 | 562,000 |
| 10,001-50,000 | 60 | 1,273,228 | 66 | 1,408,000 |
| 50,001-100,000 | 4 | 266,495 | 4 | 265,000 |
| >100,000 | 4 | 1,271,481 | 4 | 1,257,000 |
| TOTAL | 260 | 3,557,276 | 560 | 4,094,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 209 | 3,376,209 | 94.9 |
| CONSECUTIVE | 51 | 181,067 | 5.1 |
| NATURAL | 0 | 0 | 0.0 |
| TOTAL | 263 | 3,557,276 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 3 | 61,119 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 57 | 188,762 |
| SODIUM SILICOFLUORIDE | 157 | 1,852,268 |
| HYDROFLUOSILICIC ACID | 46 | 1,516,246 |

# STATE SUMMARY DATA AS OF 12/31/89

# TEXAS

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 195 | 125,372 | 3,162 | 783,000 |
| 1,001-5,000 | 392 | 951,251 | 1,081 | 2,426,000 |
| 5,001-10,000 | 88 | 614,301 | 199 | 1,146,000 |
| 10,001-50,000 | 109 | 2,115,366 | 181 | 3,506,000 |
| 50,001-100,000 | 18 | 1,301,471 | 23 | 1,588,000 |
| >100,000 | 18 | 5,905,407 | 22 | 7,373,000 |
| TOTAL | 820 | 11,013,168 | 4,668 | 16,991,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 149 | 5,986,357 | 54.4 |
| CONSECUTIVE | 144 | 2,166,015 | 19.7 |
| NATURAL | 527 | 2,860,796 | 26.0 |
| TOTAL | 820 | 11,013,168 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 12 | 116,927 | 2 | 5,500 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 38 | 362,981 |
| SODIUM SILICOFLUORIDE | 52 | 2,297,730 |
| HYDROFLUOSILICIC ACID | 201 | 5,478,061 |

# STATE SUMMARY DATA AS OF 12/31/89

# UTAH

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 20 | 5,413 | 257 | 39,000 |
| 1,001-5,000 | 4 | 10,420 | 93 | 121,000 |
| 5,001-10,000 | 1 | 9,900 | 22 | 91,000 |
| 10,001-50,000 | 1 | 17,000 | 28 | 317,000 |
| 50,001-100,000 | 0 | 0 | 7 | 291,000 |
| >100,000 | 0 | 0 | 4 | 848,000 |
| TOTAL | 26 | 42,733 | 411 | 1,707,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 9 | 35,609 | 83.3 |
| CONSECUTIVE | 2 | 1,100 | 2.6 |
| NATURAL | 15 | 6,024 | 14.1 |
| TOTAL | 26 | 42,733 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 7 | 5,109 | 2 | 175 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 1 | 9,900 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 4 | 10,309 |
| SODIUM SILICOFLUORIDE | 1 | 17,000 |
| HYDROFLUOSILICIC ACID | 2 | 4,300 |

# STATE SUMMARY DATA AS OF 12/31/89

# VERMONT

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 33 | 7,280 | 396 | 75,000 |
| 1,001-5,000 | 18 | 49,047 | 55 | 134,000 |
| 5,001-10,000 | 4 | 32,300 | 9 | 72,000 |
| 10,001-50,000 | 3 | 84,000 | 5 | 141,000 |
| 50,001-100,000 | 1 | 60,000 | 0 | 0 |
| >100,000 | 0 | 0 | 0 | 0 |
| TOTAL | 59 | 232,627 | 465 | 421,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 51 | 232,627 | 100.0 |
| CONSECUTIVE | 8 | 0 | 0.0 |
| NATURAL | 0 | 0 | 0.0 |
| TOTAL | 59 | 232,627 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 23 | 5,630 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 42 | 68,427 |
| SODIUM SILICOFLUORIDE | 1 | 50,000 |
| HYDROFLUOSILICIC ACID | 16 | 114,200 |

# STATE SUMMARY DATA AS OF 12/31/89

# VIRGINIA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 210 | 54,825 | 1,327 | 257,000 |
| 1,001-5,000 | 51 | 134,820 | 155 | 360,000 |
| 5,001-10,000 | 21 | 148,473 | 35 | 247,000 |
| 10,001-50,000 | 33 | 741,217 | 51 | 1,115,000 |
| 50,001-100,000 | 3 | 246,441 | 3 | 232,000 |
| >100,000 | 12 | 2,601,897 | 12 | 2,737,000 |
| TOTAL | 330 | 3,927,673 | 1,583 | 4,950,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 101 | 3,232,857 | 82.3 |
| CONSECUTIVE | 21 | 483,035 | 12.3 |
| NATURAL | 208 | 211,781 | 5.4 |
| TOTAL | 330 | 3,927,673 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 5 | 3,020 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 2 | 11,714 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 37 | 900,960 |
| SODIUM SILICOFLUORIDE | 29 | 885,770 |
| HYDROFLUOSILICIC ACID | 54 | 1,913,821 |

# STATE SUMMARY DATA AS OF 12/31/89

# WASHINGTON

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 43 | 15,693 | 2,108 | 320,000 |
| 1,001-5,000 | 35 | 84,881 | 192 | 433,000 |
| 5,001-10,000 | 11 | 79,851 | 37 | 278,000 |
| 10,001-50,000 | 31 | 604,794 | 64 | 1,306,000 |
| 50,001-100,000 | 2 | 153,750 | 8 | 500,000 |
| >100,000 | 3 | 846,000 | 4 | 1,026,000 |
| TOTAL | 125 | 1,784,969 | 2,413 | 3,861,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 66 | 1,222,747 | 68.5 |
| CONSECUTIVE | 43 | 501,923 | 28.1 |
| NATURAL | 16 | 60,299 | 3.4 |
| TOTAL | 125 | 1,784,969 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 26 | 9,525 | 1 | 450 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 3 | 57,709 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 48 | 368,976 |
| SODIUM SILICOFLUORIDE | 18 | 263,654 |
| HYDROFLUOSILICIC ACID | 41 | 1,079,755 |

# STATE SUMMARY DATA AS OF 12/31/89

# WEST VIRGINIA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 13 | 9,717 | 516 | 138,000 |
| 1,001-5,000 | 83 | 231,630 | 235 | 542,000 |
| 5,001-10,000 | 25 | 181,053 | 32 | 228,000 |
| 10,001-50,000 | 12 | 239,255 | 15 | 362,000 |
| 50,001-100,000 | 4 | 228,078 | 2 | 123,000 |
| >100,000 | 2 | 296,000 | 2 | 286,000 |
| TOTAL | 139 | 1,185,733 | 802 | 1,679,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 135 | 1,170,524 | 98.7 |
| CONSECUTIVE | 3 | 14,550 | 1.2 |
| NATURAL | 1 | 659 | 0.1 |
| TOTAL | 139 | 1,187,533 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 97 | 317,496 |
| SODIUM SILICOFLUORIDE | 16 | 350,232 |
| HYDROFLUOSILICIC ACID | 25 | 517,346 |

# STATE SUMMARY DATA AS OF 12/31/89

# WISCONSIN

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 229 | 71,562 | 1,045 | 220,000 |
| 1,001-5,000 | 161 | 383,738 | 219 | 487,000 |
| 5,001-10,000 | 34 | 258,856 | 39 | 295,000 |
| 10,001-50,000 | 42 | 832,601 | 41 | 859,000 |
| 50,001-100,000 | 10 | 639,731 | 7 | 459,000 |
| >100,000 | 2 | 793,835 | 3 | 1,005,000 |
| TOTAL | 478 | 2,980,323 | 1,354 | 3,326,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 302 | 2,573,117 | 86.3 |
| CONSECUTIVE | 25 | 233,162 | 7.8 |
| NATURAL | 151 | 174,044 | 5.8 |
| TOTAL | 478 | 2,980,323 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 43 | 7,261 | 0 | 0 |
| INDIAN SYSTEMS | 11 | 8,137 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 2 | 6,719 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 53 | 36,496 |
| SODIUM SILICOFLUORIDE | 26 | 570,744 |
| HYDROFLUOSILICIC ACID | 245 | 2,195,156 |

# STATE SUMMARY DATA AS OF 12/31/89

# WYOMING

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 11 | 3,796 | 262 | 51,000 |
| 1,001-5,000 | 4 | 11,286 | 29 | 65,000 |
| 5,001-10,000 | 1 | 5,310 | 11 | 80,000 |
| 10,001-50,000 | 3 | 48,091 | 6 | 143,000 |
| 50,001-100,000 | 1 | 58,429 | 1 | 51,000 |
| >100,000 | 0 | 0 | 0 | 0 |
| TOTAL | 20 | 126,912 | 309 | 390,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 7 | 105,065 | 82.8 |
| CONSECUTIVE | 1 | 359 | 0.3 |
| NATURAL | 12 | 21,488 | 16.9 |
| TOTAL | 20 | 126,912 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 1 | 1,668 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 1 | 1,668 |
| SODIUM SILICOFLUORIDE | 6 | 92,209 |
| HYDROFLUOSILICIC ACID | 1 | 11,547 |


# FLUORIDATION STATISTICS TERRITORY SUMMARIES

# STATE SUMMARY DATA AS OF 12/31/89

# AMERICAN SAMOA

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 0 | 0 | 50 | 15,000 |
| 1,001-5,000 | 0 | 0 | 4 | 8,000 |
| 5,001-10,000 | 0 | 0 | 0 | 0 |
| 10,001-50,000 | 0 | 0 | 1 | 18,000 |
| 50,001-100,000 | 0 | 0 | 0 | 0 |
| >100,000 | 0 | 0 | 0 | 0 |
| TOTAL | 0 | 0 | 55 | 40,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 0 | 0 | 0 |
| CONSECUTIVE | 0 | 0 | 0 |
| NATURAL | 0 | 0 | 0 |
| TOTAL | 0 | 0 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 0 | 0 |
| SODIUM SILICOFLUORIDE | 0 | 0 |
| HYDROFLUOSILICIC ACID | 0 | 0 |

# STATE SUMMARY DATA AS OF 12/31/89

# NORTHERN MARIANAS

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 0 | 0 | 2 | 2,000 |
| 1,001-5,000 | 0 | 0 | 2 | 3,000 |
| 5,001-10,000 | 0 | 0 | 0 | 0 |
| 10,001-50,000 | 0 | 0 | 0 | 0 |
| 50,001-100,000 | 0 | 0 | 0 | 0 |
| >100,000 | 0 | 0 | 0 | 0 |
| TOTAL | 0 | 0 | 4 | 4,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 0 | 0 | 0 |
| CONSECUTIVE | 0 | 0 | 0 |
| NATURAL | 0 | 0 | 0 |
| TOTAL | 0 | 0 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 0 | 0 |
| SODIUM SILICOFLUORIDE | 0 | 0 |
| HYDROFLUOSILICIC ACID | 0 | 0 |

# STATE SUMMARY DATA AS OF 12/31/89

## GUAM

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 2 | 1,000 | 2 | 1,000 |
| 1,001-5,000 | 3 | 7,000 | 3 | 7,000 |
| 5,001-10,000 | 2 | 14,000 | 2 | 14,000 |
| 10,001-50,000 | 2 | 25,000 | 2 | 25,000 |
| 50,001-100,000 | 1 | 62,000 | 1 | 62,000 |
| >100,000 | 0 | 0 | 0 | 0 |
| TOTAL | 10 | 109,000 | 10 | 109,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 10 | 109,000 | 100.0 |
| CONSECUTIVE | 0 | 0 | 0.0 |
| NATURAL | 0 | 0 | 0.0 |
| TOTAL | 10 | 109,000 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 2 | 41,000 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 8 | 68,000 |
| SODIUM SILICOFLUORIDE | 1 | 25,000 |
| HYDROFLUOSILICIC ACID | 1 | 15,000 |

# STATE SUMMARY DATA AS OF 12/31/89

# REPUBLIC OF PALAU

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 0 | 0 | 31 | 7,000 |
| 1,001-5,000 | 0 | 0 | 0 | 0 |
| 5,001-10,000 | 0 | 0 | 0 | 0 |
| 10,001-50,000 | 0 | 0 | 0 | 0 |
| 50,001-100,000 | 0 | 0 | 0 | 0 |
| >100,000 | 0 | 0 | 0 | 0 |
| TOTAL | 0 | 0 | 31 | 6,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 0 | 0 | 0 |
| CONSECUTIVE | 0 | 0 | 0 |
| NATURAL | 0 | 0 | 0 |
| TOTAL | 0 | 0 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 0 | 0 |
| SODIUM SILICOFLUORIDE | 0 | 0 |
| HYDROFLUOSILICIC ACID | 0 | 0 |

# STATE SUMMARY DATA AS OF 12/31/89

# TRUST TERRITORIES

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 0 | 0 | 165 | 36,000 |
| 1,001-5,000 | 0 | 0 | 8 | 19,000 |
| 5,001-10,000 | 0 | 0 | 4 | 35,000 |
| 10,001-50,000 | 0 | 0 | 0 | 0 |
| 50,001-100,000 | 0 | 0 | 0 | 0 |
| >100,000 | 0 | 0 | 0 | 0 |
| TOTAL | 0 | 0 | 177 | 89,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 0 | 0 | 0 |
| CONSECUTIVE | 0 | 0 | 0 |
| NATURAL | 0 | 0 | 0 |
| TOTAL | 0 | 0 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 0 | 0 |
| SODIUM SILICOFLUORIDE | 0 | 0 |
| HYDROFLUOSILICIC ACID | 0 | 0 |

# STATE SUMMARY DATA AS OF 12/31/89

# VIRGIN ISLANDS

SYSTEM SIZE CLASSIFICATION

| | FLUORIDATED SYSTEMS | | PUBLIC WATER SYSTEMS | |
|---|---|---|---|---|
| | NUMBER OF SYSTEMS | TOTAL POPULATION | NUMBER OF SYSTEMS | TOTAL POPULATION |
| =<1,000 | 0 | 0 | 140 | 20,000 |
| 1,001-5,000 | 0 | 0 | 1 | 1,000 |
| 5,001-10,000 | 0 | 0 | 2 | 19,000 |
| 10,001-50,000 | 0 | 0 | 0 | 0 |
| 50,001-100,000 | 0 | 0 | 0 | 0 |
| >100,000 | 0 | 0 | 0 | 0 |
| TOTAL | 0 | 0 | 143 | 41,000 |

FLUORIDATED SYSTEM CLASSIFICATION

| | NUMBER | POPULATION | PERCENTAGE (POP.) |
|---|---|---|---|
| ADJUSTED | 0 | 0 | 0 |
| CONSECUTIVE | 0 | 0 | 0 |
| NATURAL | 0 | 0 | 0 |
| TOTAL | 0 | 0 | |

SCHOOLS, INDIAN AND MILITARY SYSTEMS

| | ADJUSTED | | NATURAL | |
|---|---|---|---|---|
| | NUMBER | POP. | NUMBER | POP. |
| TOTAL SCHOOLS | 0 | 0 | 0 | 0 |
| INDIAN SYSTEMS | 0 | 0 | 0 | 0 |
| INDIAN SCHOOLS | 0 | 0 | 0 | 0 |
| MILITARY SYSTEMS | 0 | 0 | 0 | 0 |

CHEMICAL USAGE OF FLUORIDATING SYSTEMS

| | NUMBER | POPULATION |
|---|---|---|
| SODIUM FLUORIDE | 0 | 0 |
| SODIUM SILICOFLUORIDE | 0 | 0 |
| HYDROFLUOSILICIC ACID | 0 | 0 |

Shalanda D. Young, Director, Office of Management and Budget
Brenda Mallory, Chair of the Council on Environmental Quality
Gina McCarthy, National Climate Advisor

CC:
Richard Moore, Chair, White House Environmental Justice Advisory Council
Peggy Shepherd, Chair, White House Environmental Justice Advisory Council
White House Environmental Justice Advisory Council Members

April 6, 2022

Dear Director Shalanda Young, Chair Brenda Mallory, and Advisor Gina McCarthy,

Thank you for your commitment to carrying forward President Joe Biden's Justice40 Initiative. The United Frontline Table submits the following comments in support of strengthened and robust implementation of this Initiative as outlined in Executive Order 14008 and the Interim Guidance issued by the Office of Management and Budget on July 20, 2021.

The United Frontline Table[1] is a national network of Black, Indigenous, Asian, Pacific Islander, Latinx, and working class-led organizations representing hundreds of grassroots groups and communities across the US. Our membership collectively represent hundreds of thousands of people in frontline communities across the country, who face the brunt of historic racism, poverty, pollution, climate change and other inequities, and who work together towards a regenerative future that repairs historic harms and inequality and invests in the resilience of the most impacted communities.

We look forward to a robust Justice40 program, and offer the following comments to strengthen the initiative and achieve the full breadth of its envisioned impact:

**Meaningful Access and Impact**

1. **Ensure that the program application process does not inhibit access.** For example, consider creating application processes where eligible entities including community based organizations, small businesses, and local governments, where applicable, can apply for multiple grants from across federal departments through one application. Such a process can facilitate communities with limited capacity and the greatest need to participate fairly and meaningfully.

[1] Visit www.unitedfrontlinetable.org for more information about the United Frontline Table.

2. **Devote a portion of federal Justice40 resources to technical assistance from agencies** on proposal development, application process, implementation and long-term governance, especially for those communities with greatest environmental justice burdens, to facilitate maximum access to programs by eligible entities, and lasting impact from Justice40 investments.
3. **Ensure a maximum proportion of project dollar amounts are contracted with local Black, Indigenous, and People of Color and worker-owned businesses**, or if they lack capacity to take on Justice40-funded projects at scale, require that winning contractors subcontract with otherwise-eligible Black, Indigenous, and People of Color and worker-owner contractors, and allow them to shadow the lead contractor onsite to develop experience and skill.
4. **Require all implementing agencies to undertake robust stakeholder and community engagement at every stage of project development and implementation,** including via direct outreach to frontline and environmental justice communities, hearings or listening sessions in targeted geographies, field liaisons, and attention to language justice and access.
5. **Develop a transparent auditing framework to track progress toward and beyond the 40%** of funding to be invested in disadvantaged frontline communities.

**<u>Do No Harm</u>**

6. **Ensure that all federal climate investments have clear requirements to explicitly prohibit increases of harmful burdens on disadvantaged communities.** Require agencies to conduct and publicly report impact assessments that project potential harms of investments, programs, rules, and other program activities before issuance of any project or program funds.
7. **No federal funding should be allocated to any projects, programs, or investments that will harm any frontline constituency.** For Justice40 to keep its promises, funding decisions must be required to respect and balance the interests of all frontline constituencies, rather than forcing them into competition. This requires diverse stakeholder engagement and ensuring investments do no harm in any community.

**<u>A Comprehensive Approach</u>**

8. **Develop funding criteria that require investments to support development and investment in collective community ownership of essential assets**, such as affordable housing, microgrids, worker-owned businesses, community land trusts, and community development finance institutions, in order to build the resilience of frontline communities over the long term.

9. **Create separate programs and funding mechanisms responsive to the specific needs** of the Gulf South, Native American Tribes and communities, and US territories including Puerto Rico, the Northern Mariana Islands, American Samoa, and Guam. Undertake comprehensive outreach across communities in these areas, with attention to appropriate language access, to ensure awareness and equitable deployment of Justice40 funds and programs.
10. **OMB should exercise oversight of agencies in the designation of Justice40 covered programs beyond those named in the pilot program**, first with a focus on formally designating as part of Justice40 specific relevant programs of the Infrastructure Investment and Jobs Act and any relevant provisions from the Build Back Better Act that pass into law, and broadly seeking to expand the scope of Justice40 into additional specific areas including in public health, education, immigration, housing, open space, lands conservation, ecosystems protection and restoration, and other areas with clear climate impacts**.** All implicated agencies should be responsible for developing plans detailing how each of their covered programs will be tailored to achieve Justice40 investment goals, including targeted investment for the most vulnerable communities and engagement with stakeholders to determine programmatic priorities.
11. **Agencies should issue rules or policies to accompany formula funding in all Justice40 policy areas** instructing a broad range of recipients, including states, counties and tribal governments, about their obligations to adhere to Justice40 in the allocation of formula funds, such as the use of mapping tools like the Climate and Economic Justice Screening Tool (CEJST), to ensure that funding is targeted to reach the most vulnerable communities.
12. **Require competitive grant programs that fall within Justice40 utilize the Climate and Economic Justice Screening Tool in rating proposals.** Proposals benefiting the most vulnerable communities should receive higher consideration, all other things being equal as to proposal requirements. The CEJST should also be incorporated as a decisional factor in oversight of formula funding, as well as in impact assessments of rulemakings, permitting and other Justice40 actions bearing on frontline communities.

**<u>Lasting Legacy</u>**

13. **Ensure to the greatest extent possible that Justice40 efforts are embedded in long-term guidance, rules and policy of implementing agencies** so progress to achieve Justice40 targets continues regardless of political changes in the administration:
    a. The Administration should work with Members of Congress to advance legislation that codifies the Justice40 Initiative into law.

b. Ensure agencies, GAO, CEQ, and OMB have adequate levels of funding and staffing for long-term implementation and oversight of Justice40.
c. Give guidance for agencies to develop clear multi-year targets and timetables to meet Justice40 targets.
d. To the greatest extent possible, ensure uniform uptake of the Justice40 initiative across agencies, leveraging the advisory role of the WHEJAC and the inter-agency efforts of the WHEJIC.

We strongly recommend that any further Justice40 guidance from the Biden administration to implementing entities include direction that conforms to the above recommendations. We look forward to continuing to work with your offices and directly with departments and agencies to ensure robust and equitable implementation that fulfills the transformative potential of Justice40.

Sincerely,

Member Organizations of the United Frontline Table:

Asian Pacific Environmental Network
Center for Economic Democracy
Climate Justice Alliance
Grassroots Global Justice Alliance
Gulf Coast Center for Law and Policy
Indigenous Environmental Network
Kentuckians for the Commonwealth
Labor Network for Sustainability
New Economy Coalition
People's Action
Right to the City
Trade Unions for Energy Democracy
UPROSE

**Statement to the White House Environmental Justice Advisory Council**

Jamie Banks, President, Quiet Communities Inc

March 30, 2022

EJScreen 2.0 is intended to protect public health and the environment, yet does not include noise as an indicator, putting EJ communities at risk for noise-related health and environmental harms.

Noise was first recognized as a public health hazard in 1968. The need to address it is described in the Clean Air Act of 1970. The Noise Control Act of 1972 states "it is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health or welfare."

Noise causes hearing loss and tinnitus, contributes to various health problems, and impairs children's learning and work productivity. It comes from transportation, industry, construction, mining, blasting, and so forth. There is a nexus between noise and fossil fuels. Chronic noise, even at low levels, can cause annoyance, sleep issues, and stress that contribute to cardiovascular and cerebrovascular disease, metabolic disturbances, worsening of psychological disorders, and early death. It threatens the health of more than 100 million Americans, with children among the most vulnerable and environmental justice communities affected disproportionately.

Measures can be taken. For example, installing sound insulation and relocating noise sources have been shown to reduce noise and reverses its adverse impacts on learning and cardiovascular health. Quieter equipment are available.

In its recent policy statement, called *Noise as a Public Health Hazard*, the American Public Health Association calls on the federal government to:

1. Ensure that reduction of noise exposures is part of all environmental and health efforts;
2. Acknowledge the disparate impacts of noise on communities of color and low-income communities; and,
3. Implement programs and policies across all federal agencies, including the Environmental Protection Agency, Departments of Labor, Transportation, Defense, Health and Human Services, Education, and Housing and Urban Development, and the Federal Aviation Administration, National Institute of Standards and Technology, and the Consumer Product Safety Commission.

The Bipartisan Infrastructure Law will allocate funds to build safer and more sustainable airports, highways, and transportation infrastructure. Including noise as an indicator in EJScreen 2.0 will help reduce the impacts of noise and related air pollution from these projects on the health and well-being of EJ communities. Failure to include it exposes those communities to potential harms to health, learning, and well-being.

Thank you for your work and your time.

Jamie Banks

jamie@quietcommunities.org

Contact info : Karen L. Martin at whejac@epa.gov or by phone 202-564-0203

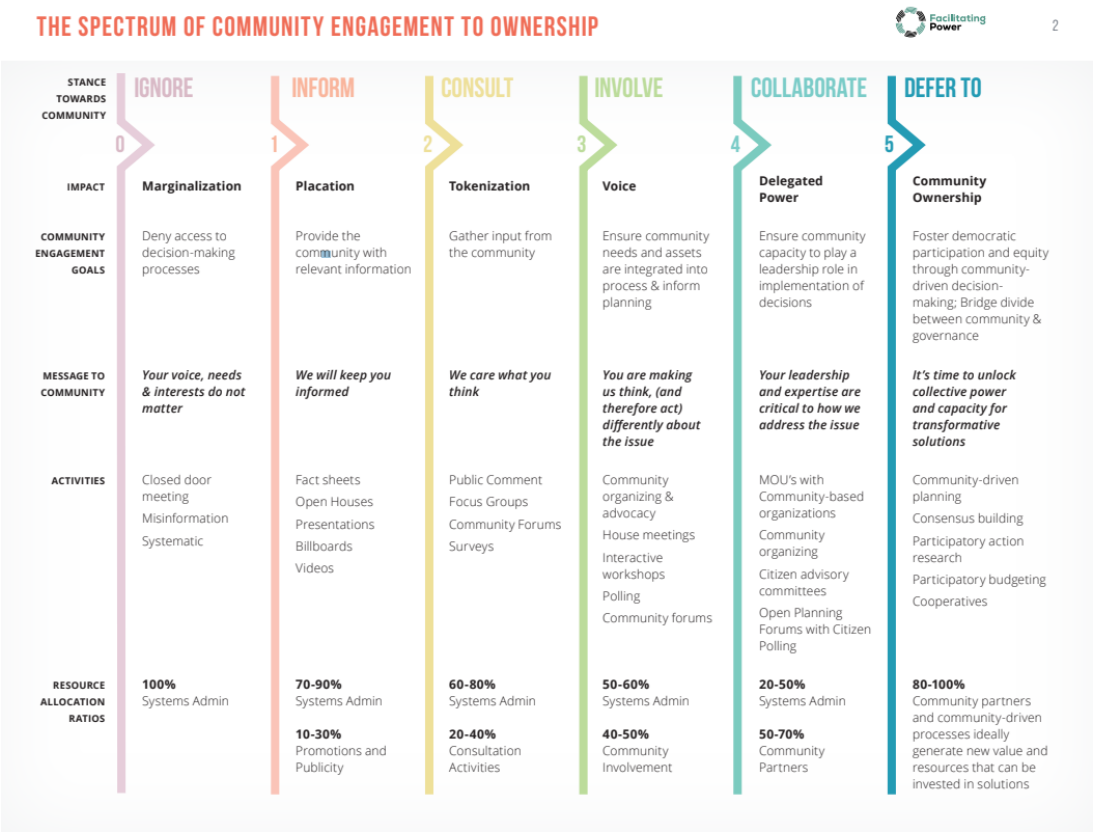
Objective: Provide comments relevant to the performance scorecard that is being developed by the White House Environmental Justice Advisory Council to **assess the progress of federal agencies in addressing current and historic environmental injustice.**

**On behalf of The Chisholm Legacy Project, we offer the following recommendations to the White House Environmental Justice Advisory Council and the Council on Environmental Quality regarding development of the Justice40 Scorecard:**

We agree with White House Environmental Justice Advisory Council's (WHEJAC) concerns around use of the term "disadvantaged community." Terms that might be more appropriate to consider include overburdened, underinvested in, or historically disenfranchised/marginalized. We advocate for language that assigns a level of culpability to government actors for historical and ongoing neglect and outright abuse. We also advocate for framings that acknowledge that while these communities may be overburdened and historically marginalized, they do not lack agency. Interventions must first and foremost recognize a community's right to self-determinism. For the sake of this written comment, we will be using the phrases "frontline and fenceline communities" and "EJ communities." In addition, we will be referencing the WHEJAC Recommendations and EO 12898 Revisions Report, dated May 21, 2021, hereafter called the May 2021 Report.

In the development of a Justice40 scorecard, input throughout the entire process must be driven primarily by stakeholder representatives, such as BIPOC communities, Black femmes from frontline and fenceline communities, those living in public housing, communities that were excluded from the REAP Program, etc. In the process of data collection in EJ communities, research entities should engage in just models of collaborative relationship and mutually beneficial partnership led by affected communities. The Chisholm Legacy Project will be publishing a guiding document for this relationship in the coming months. Additionally, when seeking collaborations, partnerships, and mentorship opportunities, nontraditional indicators of success and leadership must be considered to meaningfully incorporate the lived experiences of BIPOC/Black femme voices in frontline and fenceline communities.

Frontline and fenceline communities are often distrustful of government engagement. In order to rebuild trust, government actors must authentically transfer power to communities rather than simply consulting after decisions have been made. To this end, we find the following graphic from Facilitating Power useful. True, meaningful, and transformative change happens when communities own the changes to their own circumstances. It is imperative that the Justice40 Scorecard create requirements for agencies to defer to community decision-making.




WHEJAC must more clearly expound on its commitment to "do no harm." Immediate direct effects of any action or lack of action are not the only effects that should be considered. Medium- and long-term outcomes, especially in continued or emerging disparities, should be monitored. In addition, consideration should be given to "loss and damage" in frontline and fenceline communities in the form of reparations (e.g., payments to BIPOC who developed health conditions as a result of living in HUD financed homes that were built on toxic sites). Pollution and toxins in the air, water, and soil are among the most immediate threats to these communities and must be addressed in a holistic, intersectional manner to alleviate the disproportionate burden that is experienced. For instance, coal ash is a major threat to public health. The recommendation and metric guidelines outlined in the May 2021 Report for clean up in the Tennessee Valley Authority region should include the monitoring and evaluation of key performance indicators with mechanisms of measurement developed through community-led, democratic decision-making processes. These guidelines and metrics should also be applied to all toxic coal ash regions, including those outside of TVA territory, and should include equitable compensation for victims.

Additionally, because Black and other communities of color are disproportionately exposed to PM2.5 and other air pollutants in vehicle exhaust, we recommend direct funding towards the installation of green barriers between EJ communities and transportation

corridors, with air monitors that can measure improvement in air quality installed in all metropolitan and suburban areas. These communities should be the first considered for accelerated transition to electric public transportation, with the requirement that the electricity is not derived from dirty energy sources.

In addition to WHEJAC's goal of replacing lead water pipes, we should be ensuring that everyone in the United States has reliable access to safe and clean drinking water. Citizen science opportunities can help ensure progress. While expanding criteria to the Drinking Water State Revolving Fund (DWSRF), WHEJAC should also incentivize states to include unincorporated townships, specifically freedmen's settlements such as Sandbranch, Texas. The Sandbranch community and many other freedmen's settlements like it, currently have no running water or wastewater infrastructure.

There is an immense amount of energy democracy work already occurring at the community level. We recommend WHEJAC catalog action taken to localize energy and uplift energy democracy and justice in marginalized communities through mechanisms such as microgrids, solar coops, etc. WHEJAC should also measure the degree of interdisciplinary, intersectional solutions by monitoring engagement of diverse community members to ensure climate action does not lead to further subsequent inequities. Additionally, the Department of Energy needs to take a more active stance in making clean energy resources accessible to communities by partnering with community members in the expansion of renewable energy. Application processes for grant programs require time and technical expertise to participate. The burden should not be on the most affected and least resourced communities.

Divestment and investment must be utilized to equitably transition to a living economy away from dirty energy. Therefore, WHEJAC must more clearly define the threshold of divestment from fossil fuels, plastics, dangerous chemicals, and nuclear energy by 2030 that is addressed in the May 2021 report. Updated language from most recent IPCC report about divesting from so-called "clean" solutions that are neither clean nor in the best interest of frontline communities must be adopted by WHEJAC. Furthermore, there must be more clearly outlined mechanisms and oversight in place to make sure banks are investing 40+% in frontline and fenceline communities. These may require a separate team to track and analyze the monitoring and enforcements. This should include requirements and metrics for community ownership, asset ownership, and overall lending and investing practices being non-extractive. Additionally, with regards to green bank financing, we recommend including "no interest" loans to increase community participation and mitigate the risk of default.

Finally, we have significant concerns regarding gaps in data acquisition and coverage in the Climate Economic Justice Screening tool. These gaps will lead to too many communities falling through the cracks, which points to an incomplete commitment to Justice40, and therefore they must be addressed while the screening tool is still in beta. These concerns are (but are not limited to) the following:

**Clean energy and energy efficiency:**
**Affordable and sustainable housing:**
-Urban Heat Island is not accounted for
-Ignores community planning
-Ignores Radon

**Clean transit:**
-Ozone (O3) not accounted for
-Focus seems to be on pass through vehicles not community access to multimodal transit
-Percentage of roads improved with bicycle lanes
-Percentage of roads improved with sidewalks
-Number of bus routes
-Number of bus shelters

**Reduction and remediation of legacy pollution:**
-Leaking underground storage tanks are more than likely going to be missed
-RMP facilities cover a lot but facilities can also have TRI and NPDES but not be RMP facilities

**Health Burdens:**
-Access to medical facilities
-Food deserts

Additionally, datasets used for the scorecard and the mapping are not well designed to address wealth gaps. Income and household value are both accounted for, but with so many people - especially in EJ communities – renting or living in public housing or living with little to no income, not including non-housing assets as another economic indicator can misrepresent the economic situation of many communities (including high net wealth communities as well).

We look forward to continuing to engage with WHEJAC and CEQ and hope that our recommendations on behalf of the equity of frontline and fenceline communities will be integrated into the development of the Justice40 Scorecard. Thank you.

March 28, 2022

The Honorable Brenda Mallory
Chair
Council on Environmental Quality
Executive Office of the President
Washington, DC 20500

**Re: Support for a United Nations General Assembly Resolution Recognizing the Right to a Healthy Environment**

Dear Chair Mallory:

On behalf of the New York City Bar Association (the "City Bar"), we write to request that the Biden Administration support a United Nations General Assembly resolution recognizing the right to a healthy environment. The City Bar, founded in 1870, is an independent, non-governmental organization with approximately 24,000 members including lawyers, judges, law professors, law students and government officials from the United States and over 50 countries. We have a long history of dedication to promoting the rule of law, reform of the law and access to justice in support of a fair society.

In September 2020, the City Bar issued a report supporting the formal recognition by the United Nations of the human right to a healthy environment.[1] As set forth in the report, the recognition of this right is imperative in an era where the harrowing effects of human activities on the natural world are increasingly palpable as a result of climate change, loss of biological diversity, air, water, and land pollution. As the report acknowledges, the current coronavirus pandemic is greatly exacerbated by environmental conditions. Vulnerable groups, who frequently bear the brunt of environmental injustices and suffer their consequences, are affected most by the pandemic. Further, the right to a healthy environment has been developing at international, regional and national levels, as treaty bodies, regional tribunals, special rapporteurs, and other international human rights bodies have elaborated on the fundamental importance of a healthy

[1] "Support for the Formal Recognition by the United Nations of the Human Right to a Healthy Environment," Sept. 14, 2020, https://www.nycbar.org/member-and-career-services/committees/reports-listing/reports/detail/human-right-to-a-healthy-environment-un-formal-recognition.

environment for the full enjoyment of other human rights, such as the rights to life, health, food, water, and sanitation.

On October 8th, 2021, the United Nations Human Rights Council adopted Resolution 48/13, which recognizes the right to a healthy environment as a human right.[2] Additionally, in November 2021, in New York State, a statewide voter referendum passed an amendment to the New York State Constitution guaranteeing that "each person shall have the right to clean air and water, and a healthful environment."[3] As the City Bar report states, the time has come for the United Nations to acknowledge and amplify existing global efforts, and to explicitly advance the right to a healthy environment. A United Nations General Assembly resolution would advance this important notion that each and every human being has the right to live in an environment that supports a dignified and fulfilling life.

For all these reasons, we urge the United States to vote in favor of a resolution recognizing the right to a healthy environment when it is considered at the United Nations General Assembly.

We appreciate your consideration of this request.

Sincerely,

Bret Parker, Executive Director
New York City Bar Association

Susan Kath, Director
Environment Program, Cyrus R. Vance Center for International Justice

Scott Caplan, Co-Chair
Doris Toyou, Co-Chair
African Affairs Committee

Michael A. Fernandez, Chair
Inter-American Affairs Committee

Viren Michael Mascarenhas, Co-Chair
Irit Tamir, Co-Chair
Business & Human Rights Working Group

Kenneth Rivlin, Chair
International Environmental Law Committee

Margaret Barry, Co-Chair
Bethany Davis Noll, Co-Chair
Environmental Law Committee

Ramya Jawahar Kudekallu, Chair
International Human Rights Committee

Clayton T. Cheney, Co-Chair
Catherine E. Van Kampen, Co-Chair
United Nations Committee

[2] *See* https://documents-dds-ny.un.org/doc/UNDOC/GEN/G21/289/50/PDF/G2128950.pdf?OpenElement.

[3] NYS Const. Art. 1, Sect. 19, https://dos.ny.gov/system/files/documents/2022/01/Constitution-January-1-2022.pdf.

Cc:

Hon. Antony Blinken, Secretary of State
Hon. Debra Anne Haaland, Secretary, Department of Interior
Hon. Thomas J. Vilsack, Secretary, Department of Agriculture
Hon. Michael S. Regan, Administrator, Environmental Protection Agency
Hon. Richard W. Spinrad, Administrator, National Oceanic and Atmospheric Administration
Hon. Richard Moore, Co-Chair, White House Environmental Justice Advisory Council
Hon. Peggy Shepard, Co-Chair, White House Environmental Justice Advisory Council

**Contact**
Elizabeth Kocienda, Director of Advocacy | 212.382.4788 | ekocienda@nycbar.org
Mary Margulis-Ohnuma, Policy Counsel | 212.382.6767 | mmargulis-ohnuma@nycbar.org

March 31, 2022

WHEJAC Councilors,

In follow-up to my oral comment yesterday, already submitted in writing with close to 100 scientific references attached, I wanted to take a moment to reflect on what was said by councilors and others that are relevant to two issues, only one of which I mentioned before this, fluoridation, and one of which I would like to bring up today, wireless technology.

1. Dr. Kimberly Leary eloquently spoke to the need to critically re-examine "policies, programs and services" that we have assumed to be right, but in fact may include baked in systemic inequities. This is absolutely applies to fluoridation. Not only do the marketing mantras continue to be used in order to suppress 21st century scientific evidence, all but forgotten are the truly appalling decision that persisted until not that long ago to fluoridate water supplies in Indigenous school systems with six times the "safe & effective" amount recommended based on the rationale that water in reservation homes was not fluoridated. This action undoubtedly caused kidney disease and diabetes in countless children. These life-long afflictions leave a multi-generational scar on indigenous families, as will the damage from wireless technology.

2. Tom Cormons' admonition that Justice40 will only be as good as its implementation for achieving transformative justice, and focusing on the "right incentive structures" to deploy funds also resonated. If we believe marketing slogans, we can believe we are doing right when in fact we are doing wrong. This will always be a challenge. Again, I refer you to my earlier submission with its scientific citations relevant to fluoridation policy. I'll include a few more references with this article relative to wireless technology.

3. Maria López-Núñez hit the nail on the head when she worried about the perversion of funding and advocated for a more humble government. There are many people who knowingly do the wrong thing because it serves their agenda, but there are many more who are ignorant of what they do. Disciplined study, a curious and open mind, professional integrity and personal courage are required for good decision-making, as well as humility.

4. Radhika Fox's comments worried me a great deal. Making millions and billions of dollars available to states for "infrastructure" or any other reason, even with memos regarding obligation and expectations, is rife for misuse. In 2016, Erin Brockovich said, "Regulatory gaps are lobbyist created Grand Canyons designed to cheat the system." We need to be very careful and thoughtful about how we manage money.

Finally, the comment that will always resonate with me, as I expect it will with you, came from the public. A woman gave voice to the exhaustion she feels from constantly fighting the power brokers in service of her community where her friends, family and neighbors are relentlessly being poisoned, suffering and dying.

We are all entitled to clean and safe food and medicine, yet government allows those necessary products to be contaminated, and I suspect WHEJAC is as powerless to affect change there as any single exhausted environmental health activist.

We are all entitled to clean and safe water and air, and although government has allowed them to be polluted, too, WHEJAC has power here.

As I said yesterday, using its tool to track fluoride concentrations in water, preventing monies from being used in service of any artificial fluoridation scheme, and working towards ending fluoridation are concrete actions WHEJAC can take independently and in concert with IAC to achieve environmental justice.

Additionally, I suggest WHEJAC take a stand against the spread of wireless technology, especially Smart Meters and 5G because the inescapable 24/7 bombardment with electro magnetic frequencies (EMF) and radiofrequency radiation (RF) cause endocrine disruption, anxiety and depression, cardiac irregularities, blood disease, cardiac disease, and cancers.

Consider: A group of EMF scientists have petitioned the United Nations several times to address this as an air pollution problem that poses a planetary threat to life. Telecom workers protested 5G rollouts in the streets in France in concert with mayoral protests. The National Toxicology Program validated cardiac tumors associated with wireless exposure. Smart Meter rollouts are being protested across the country. In August 2021, a federal court ruled that, the FCC has miserably failed in its mission:

- "…the FCC completely failed to acknowledge, let alone respond to, comments concerning the impact of RF radiation on the environment…The record contains substantive evidence of potential environmental harms." - *The U.S. Court of Appeals for the D.C. Circuit*
- "The court's decision exposes the FCC and FDA as captive agencies that have abandoned their duty to protect public health in favor of a single-minded crusade to increase telecom industry profits." - *Plaintiff Attorney*

Communities all over the country, like in Pittsfield MA, are fighting the telecoms to remove wireless stations that are causing illness in their communities - an uphill battle as telecom lobbyists managed to get Congress to pass an act in 1996 declaring wireless technology safe and outlawing the use of either human health concerns or environmental damage as valid objections to expansion of these profitable technologies. This arrogant display of systemic injustice, like fluoridation policy, puts us all at risk. It puts me in mind of this trope: *Environmental equity is poisoning everyone equally. Environmental justice is don't poison anyone*.

- I suggest that WHEJAC allocates some time for studying the harms of wireless technologies and takes action to prevent EJ communities from becoming targets for the Telecom expansion of their latest technologies.

Best of luck in achieving your goal of environmental justice.
*Karen Spencer*

**WIRELESS TECHNOLOGY REFERENCES:**


EMF Scientists Appeal: https://www.emfscientist.org/

Smith-Roe SL, et al. Evaluation of the genotoxicity of cell phone radiofrequency radiation in male and female rats and mice following subchronic exposure. Environ Mol Mutagen. 2020 Feb;61(2):276-290

Ronald L. Melnick. Commentary on the utility of the National Toxicology Program study on cell phone radiofrequency radiation data for assessing human health risks despite unfounded criticisms aimed at minimizing the findings of adverse health effects. Environmental Research
Volume 168, January 2019, Pages 1-6.

'Historic Win': CHD Wins Case Against FCC on Safety Guidelines for 5G and Wireless. Children's Health Defense Team. Aug. 14, 2021.

Employees at France's Biggest Phone Company Undermine Country's 5G Push. Dafna Tachover. 9/22/20.

Peter Hensinger, Isabel Wilke. (2016) Wireless communication technologies: New study findings confirm risks of nonionizing radiation. New Technologies - New Risks.

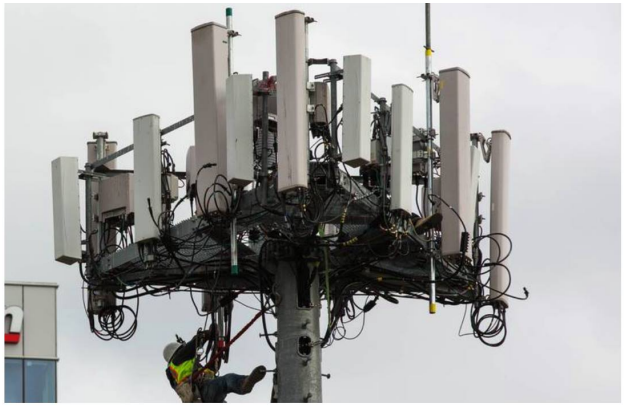
Pittsfield, MA Board of Health Unanimously Votes to Issue Cease and Desist for Verizon Cell Tower. Environmental Health Trust. Feb. 3, 2022

**Cardiac Disorders**

Electrosmog can disrupt heart rhythms due to the nature of the different signatures and the sum of the broadcasts causing anxiety, anger, depression and disease.

**Environmental Impact**

Despite presumptuous language in the 1996 Telecom Act declaring there is no environmental risk from EMR, we have scientific proof that plants and animals suffer.



Technician repairs cell phone tower. *Photo*: Loren Holmes/Alaska Dispatch News/Zuma Press

## DNA Damage

Even low levels of microwave frequencies used in telecommunication networks have been confirmed in multiple studies across the world to cause cell death and cell degeneration. Cell damage can be mitigated by avoidance of WiFi networks. However, the damage depresses our immune system, triggers biochemical reactions, and impacts sperm and fetuses leading to life threatening and multi-generational health effects.

Less visible than 20th century smokestacks and pollution, 21st century electrosmog is an even more deadly threat to people and planet.

## Health References


- Wireless communication technologies: New study findings confirm risks of nonionizing radiation. Peter Hensinger, Isabel Wilke. *New Technologies - New Risks*. May 29, 2016; translated by Katharina Gustavs, May 2017.
- Biological effects from exposure to electromagnetic radiation emitted by cell tower base stations and other antenna arrays. Blake Levitt and Henry Lai, *Environ. Rev*. 2010. Vol 18: 369–395.
- How does long term exposure to base stations and mobile phones affect human hormone profiles? Eskander EF, et al. *Clinical Biochemistry*, Volume 45, Issues 1–2, January 2012, Pages 157-161.
- Radiation from wireless technology affects the blood, the heart, and the autonomic nervous system. Havas, M. *Reviews on Environmental Health*. 2013, 28(2-3), pp. 75-84.
- A Review on Electromagnetic Fields (EMFs) and the Reproductive System. Asghari, Ali et al. *Electronic Physician*. 2016 Jul; 8(7): 2655–2662..


"It makes little sense to keep denying health symptoms that are being reported in good faith… Effects reported include: genetic, growth, and reproductive; increases in permeability of the blood–brain barrier; behavioral; molecular, cellular, and metabolic; and increases in cancer risk."
*- Blake Levitt and Henry Lai (2010)*

## Environmental References


- Radiofrequency radiation injures trees around mobile phone base stations. Waldmann-Selsam C, Balmori-de la Puente A, Breunig H, Balmori A. *Sci Total Environ*. 2016 Dec 1;572:554-569.
- Anthropogenic radiofrequency electromagnetic fields as an emerging threat to wildlife orientation. Balmori A. *Sci Total Environ*. 2015 Jun 15;518-519,
- Magnetoreception. Gould JL.*Current Biology*. 2010, Vol 20, Issue 10.
- The effect of the non ionizing radiation on cultivated plants of Arabidopsis thaliana (Col.). Aikaterina L.Stefi, et al. *Flora - Morphology, Distribution, Functional Ecology of Plants*. Volume 223, August 2016, Pages 114-120.


## Websites

- BioInitiative.org
- EHtrust.org
- SmartGridAwareness.org
- JustProveIt.net
- NaturalScience.org
- WhatIs5G.info
- Building-Biology.org

*Facebook* @Citizens for Safe Technology

"The entire earth turns more and more into a huge laboratory… only we cannot clean up this laboratory quite as easily when we realize the experiment went wrong."
*- Neitzke et al. in "Electrosmog - A Risk?" (1994)*

**Neurological Damage**

Headaches, brain fog and sleep disturbance are associated with radio frequencies. Electromagnetic hyper-sensitivity (EHS) is a recognized functional disability in Sweden.

**Carcinogenicity**

The carcinogenic impact of electrosmog cannot be overstated. Blood, breast and brain cancers may be most documented, but the impact of EMR on biology is all inclusive


## Environment v. Economy

The 1996 Telecom Act was designed to stimulate the economy. It assumed radio frequencies (RF) had no impact other than thermal based on incomplete and suspect science, a model that prohibited any zoning objections due to health or environment. Although U.S. radio frequency exposure limits are much higher than limits in China, Russia and Europe, no politically determined current legal limit offers adequate protection per scientific evidence.

See inside for recent 21st century scientific citations and reviews for evidence of adverse impacts to environment and health. This science is dismissed as irrelevant under the law by the U.S. government in its decision making.

## Organizational Objections

- U.S. Department of Interior memo to the National Telecommunications and Information Administration (NTIA) regarding environmental damage from Cell Phone Base Stations and other WiFi technology. 7 Feb 2014.
- International EMF Scientist Appeal to United Nations, Member States & WHO. May 11, 2015 updated January 29, 2017.
- American Academy of Environmental Medicine (AAEM). Recommendations Regarding Electromagnetic and Radiofrequency Exposure. July 12, 2012.
- International Association of Firefighters: Division of Occupational Health, Safety and Medicine. Position Statement Opposing Cell Phone Base Stations at Firehouses. March 2005.
- Texas House State Affairs Interim Report re Public Utility Commission of Texas processes, procedures and problems. August 15, 2016.
- French National Assembly law to reduce exposures to wireless radiation from electromagnetic fields. January 29, 2015.

"In May 2011 the World Health Organization elevated exposure to wireless radiation, including WiFi, into the Class 2b list of Carcinogens…The AAEM strongly supports the use of wired Internet connections, and encourages avoidance of radiofrequency such as from WiFi, cellular and mobile phones and towers, and 'smart meters.'"
*- AAEM Position Statement (2013)*

# Safe Technology

***Our future is our responsibility!***

**"…the electromagnetic radiation standards used by the Federal Communications Commission (FCC) continue to be based on thermal heating, a criterion now nearly 30 years out of date and inapplicable today."**

***- U.S. Department of the Interior (2014)***

*For information on pending Massachusetts EMF legislation, visit:*
*tinyurl.com/MA-EMF-Bills*

*Also critical pending national legislation:*
*S.19 - MOBILE NOW Act*
*S. 88 - DIGIT Act*

Dec 2017

# APPENDIX B:
# Attendee List

| | | |
|---|---|---|
| Astrika | Adams | SBA OA |
| Sara | Adelsberg | Deloitte |
| Rebecca | Adler Miserendino | Lewis-Burke Associates |
| David | Ailor | American Coke and Coal Chemicals Institute - |
| Olugbenga | Ajilore | USDA |
| Jose | Almanzar | Seyfarth Shaw LLP |
| Rudaina | Alrefai-Kirkpatrick | Food and Drug Administration |
| Shanika | Amarakoon | ERG |
| Donald | Ami | DOE/NNSA/Los Alamos |
| Valerie | Amor | Private Citizen |
| Scott | Andrews | Aclima Inc. |
| Peggy | Anthony | Private Citizen |
| Francisca | Aparicio | Alianza Nacional de Campesinas |
| Karol | Archer | FAA |
| Gabriel | Arellano | STEMSign |
| JoAnn | Armenta | Purpose Focused Alternative Learning |
| Mily | Arreola | Alianza Nacional de Campesinas |
| Brian | Ashton | ARED LLC |
| Joseph | Baietti | HUD |
| Taaka | Bailey | MDEQ |
| Sabrina | Bailey | Illinois Environmental Protection Agency |
| Louis | Bailey | WE ACT For Environmental Justice |
| Sandra | Baird | MassDEP |
| Jamie | Banks | Quiet Communities |
| Erica | Bannerman | Government |
| Chelsea | Barnes | Private Citizen |
| Xavier | Barraza | Los Jardines Institute |
| Catie | Bartone | VTDEC |
| Krystyna | Bednarczyk | FAA |
| Hormis | Bedolla | Alianza Nacional de Campesinas |
| Samantha | Beers | US EPA |
| Marlene | Begay | Walker River Paiute Tribe |
| Funmilola | Belie | Southern Connecticut State University |
| Emily | Benayoun | EPA |
| Agatha | Benjamin | EPA |
| Arielle | Benjamin | EPA |
| Crystal | Bergemann | HUD |

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|---|---|---|
| Lily | Black | EPA |
| Michael | Blair | Innovate Inc |
| Molly | Blessing | Household & Commercial Products Association |
| Nik | Blosser | White House |
| Lyndsey | Bloxom | The Water Research Foundation |
| Conrad | Blume | MODNR |
| Terri | Blunk | EPA |
| Coline | Bodenreider | PHASC |
| Kofi | Boone | NCSU |
| Victoria | Bortfeld | American Public Health Organization |
| Terry | Bowers | Department of Defense |
| Joelle | Bowers | USDA |
| Randa | Boykin | NCDEQ |
| Laura | Bretheim | University of Minnesota |
| Marcia | Briggins | Re-Right the Culture |
| Olivia | Brister | Progressive Leadership Alliance of Nevada |
| Emily | Brooks | U.S. Geological Survey |
| Erin | Broussard | Arizona Electric Power Cooperative |
| Aiden | Browne | University of California, Irvine |
| Kelsey | Brugger | E&E News/POLITICO |
| Sharunda | Buchanan | CDC/ATSDR |
| Khrystle | Bullock | HipHop Caucus |
| Omari | Burrell | EPA |
| Jeff | Burright | Oregon Department of Energy |
| Stan | Buzzelle | EPA |
| April | Byrne | ORISE |
| Stacey | Callaway | Ecology |
| Charles | Callaway | WE ACT |
| Hailey | Campbell | City and County of Honolulu |
| Morgan | Capilla | EPA |
| Ari | Caramanica | USDA-NIFA |
| James | Carlton | Private Citizen |
| Maria | Carnevale | Western Pacific Regional Fisheries Management Council |
| Adam | Carpenter | American Water Works Association |
| De'Lisa | Carrico | DOE |
| Oscar | Carrillo | EPA |
| Reba | Carruth | Private Citizen |
| Kim | Carter | Private Citizen |
| Elvira | Carvajal | Alianza Nacional De Campesinas |
| Ester | Ceja | Idaho Transportation Department |
| Audelia | Cervantes | Lideres Campesinas |
| Audelia | Cervantes | Lideres Campesinas |
| Brian | Chalfant | Pennsylvania Department of Environmental Protection |

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|---|---|---|
| Mark | Chambers | Stony Brook University |
| Kevin | Chang | Kua'aina Ulu Auamo |
| Amelia | Cheek | IERG |
| Lauren | Childs-Gleason | NASA |
| Eric | Choi | GHGSat Inc. |
| Stephanie | Coates | EDF |
| Majidah | Cochran | Beveridge & diamond |
| Deborah | Cohen | USEPA |
| Kimberlie | Cole | Strata-G LLC |
| Bob | Collin | Private Citizen |
| Rachel | Connolly | UCLA |
| Jasmin | Contreras | EPA |
| Cara | Cook | Alliance of Nurses for Healthy Environments |
| Farrah | Court | TCEQ |
| Kelly | Crandall | Colorado Public Utilities Commission |
| Bria | Crawford | Environmental Protection Agency |
| Brandi | Johnson | EJ Activist |
| Jace | Cuje | EPA/ORD |
| Anita | Cunningham | NC Disaster Survival and Resiliency School |
| C | Cunningham | DOI |
| Rebecca | Curry | Earthjustice |
| Diana | Cutt | EPA |
| Lew | Daly | Roosevelt Institute |
| Rachel | Davis | Waterspirit |
| William | Davis | Emr |
| Shanell | Davis-Bryant | Groundwork Jacksonville |
| Cemelli | De Aztlan | La Mujer Obrera |
| Marian | Dean | USACE |
| Tamara | DeRidder | TDR & Associates - Land Use Planning |
| Chris | Dobens | WE ACT for Environmental Justice |
| John | Doherty | IUPAT |
| Ali | Dominguez | Deloitte |
| William | Donnelly | IncrediBlocks LLC |
| Cecelia | Donovan | EcoLogix Group, Inc. |
| Lori | Dowil | Corteva |
| Melinda | Downing | Department of Energy |
| Charlotte | Keys | JPAP/MTAC |
| Rebecca | Dudley | Columbia University |
| Grace | Elam | EPA |
| Tania | Ellersick | USDA Forest Service |
| Nora | Elmarzouky | Emerald Cities Collaborative |
| Marcus | England | FAA |
| Lena | Epps-Price | EPA |

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| Jorge | Escobar | USDS/EOP |
| Monica | Espinosa | EPA |
| Mirella | Estrada | Alianza Nacional |
| Cynthia | Ferguson | US Dept. of Justice/ Environment |
| Nicolette | Fertakis | EPA |
| Timothy | Fields | MDB, Inc. |
| Stephanie | Fiorenza | setwnv |
| Robin | Forman | Independent Environmental Advocate |
| Kailea | Frederick | NDN Collective |
| Denise | Freeman | U.S. Department of Energy |
| Sarah | Froman | EPA |
| Kari | Fulton | Climate Justice Alliance |
| Juana | Garcia | Alianza Nacional de Campesinas |
| Carlos | Garcia | Bloom Energy |
| Josefina | Garcia | Alianza Nacional de Campesinas |
| Sergio | García Mejía | Bureau of Ocean Energy Management |
| Danny | Garza | Mexican American Political Association |
| Sierra | Generette | UCOR |
| Andrew | George | UNC Chapel Hill Institute for the Environment |
| Venu | Ghanta | Duke Energy |
| Robert | Gibbs | USDA |
| Ora | Giles | Transcription, Etc., LLC |
| Linda | Giles | Transcription, Etc. |
| Kristin | Gimbel | Metropolitan Group |
| Alicyn | Gitlin | Sierra Club - Grand Canyon Chapter |
| Sonya | Goines | Department of Energy |
| Dewayne | Goldmon | USDA |
| Leo | Goldsmith | ICF |
| Rachel | Gonsenhauser | EPA |
| Catalina | Gonzalez | Center for Progressive Reform |
| Vanessa | Gordon | USDA |
| Eve | Granatosky | Lewis-Burke Associates LLC |
| running | Grass | Three Circles Center |
| Lena | Green | Community Advocate/NAACP |
| Matthew | Greene | U.S. Fish and Wildlife Service |
| Joy | Grewatz | Meguire Whitney |
| Ardie | Griffin | Emerald Cities Collaborative |
| Tyneshia | Griffin | New Virginia Majority |
| Ebony | Griffin | Earthjustice |
| Emily | Gulick | Jacobs Engineering |
| Rose | Gutowski | FEMA |
| Betsy | Hale | KCPS |

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| Yvonka | Hall | Northeast Ohio Black Health Coalition |
| Richard | Hamel | ALL4, LLC |
| Graham | Hamilton | Break Free from Plastic |
| Stephanie | Hammonds | WVDEP-DAQ |
| Rose | Hanks | LSU |
| Christine | Harada | Federal Permitting Improvement Steering Council |
| Linsey | Haram | USDA |
| Angela | Harris | Southeast care |
| Jill | Harrison | University of Colorado Boulder |
| Sherrie | Hart | NDN Collective |
| Betsy | Harvey | Boston Region MPO |
| Jenny | Heeter | National Renewable Energy Laboratory |
| Joshua | Helms | FEMA |
| Norrel | Hemphill | We the People of Detroit |
| Carey | Hengstenberg | Environmental Justice Coordinator |
| Tyler | Hepner | NYSDEC |
| Sinthia | Hernandez | Lideres Campesinas |
| Stephanie | Herron | EJHA |
| Brian | Holtzclaw | EPA |
| Courtney | Hoover | Department of the Interior |
| Janice | Horn | Tennessee Valley Authority |
| Melissa | Horton | Southern Company |
| Thomas | Hudson | Weyerhaeuser NR Company |
| Donald | Huisingh | Univ. of TN |
| Jennifer | Huser | EPA |
| Naadiya | Hutchinson | Congressman Donald McEachin |
| Patricia | Iscaro | Politico Agency IQ |
| Shakenya | Jackson | City of Apopka |
| Justin | Jackson | BlueGreen Alliance |
| Marnese | Jackson | Midwest Building Decarbonization Coalition |
| William | James | U.S. Army Corps of Engineers |
| Sarah | Jareczek | Intermountain Fair Housing Council |
| Tyler | Jenkins | Senate EPW |
| Julie | Jimenez | Private Citizen |
| Katherine | Jimenez | Southern Connecticut State University |
| Sabrina | Johnson | EPA |
| Brett | Johnson | NYSACC, Gorham Conservation Board. |
| Bonita | Johnson | EPA |
| Stephanie | Johnson | DelDOT |
| Marian | Thompson | NC DEQ EJE Advisory Committee |
| Lena | Jones | Minneapolis College |
| Sean | Joyner | U.S. Department of Housing and Urban Development |
| Miriam | Juárez | Alianza Nacional de Campesinas |

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|---|---|---|
| Darren | Kaihlanen | USDA |
| Cheryl | Kelly | Department of the Interior |
| Kameron | Kerger | USDS |
| Sonia | Kikeri | Emerald Cities Collaborative |
| Lee | Killinger | Florida Crystals |
| John | Kinsman | Edison Electric Institute |
| Bob | Kitchen | Virginia Clinicians for Climate Action |
| Amy | Klusmeier | US DOE |
| Trish | Koman | EPA |
| Renee | Kramer | North Carolina Department of Environmental Quality |
| Gretchen | Kroh | USDA |
| Emma | Kurnat-Thoma | Georgetown University NHS |
| Elyse | Kutsche | Private Citizen |
| Yukyan | Lam | NRDC |
| Kim | Lambert | U.S. Fish and Wildlife Service |
| Katie | Lambeth | EGLE |
| Tiffany | Landry | USDA |
| Peiley | Lau | EPA |
| Diane | Lauricella | Norwalk Zero Waste Coalition |
| Sharon | Lavigne | Rise St. James |
| Aine | Lawlor | HCNR |
| Matthew | Lee | EPA |
| Stephen | Lee | Bloomberg |
| Jada | Lee | Washington University |
| Rachel | Lekanoff | Aleutian Pribilof Islands Association, Inc. |
| Justin | Leon | Native American Fish & Wildlife Society |
| Jake | Li | EPA |
| Christopher | Lindsay | IAPMO |
| Colleen | Litkenhaus | Dow |
| C | Liv | HHS |
| Tasha | Lo Porto | USDA Forest Service |
| Anna | Loizeaux | The JPB Foundation |
| Keisha | Long | SC DHEC |
| David | Lonnberg | shift7 |
| Victoria | Loong | We the People of Detroit |
| Olivia | Lopez | Ocean Conservancy |
| Ysabel | Lopez | Mujeres Divinas |
| Sara | Lovtang | Oregon Dept of Energy |
| Jade | Lu | Massachusetts Clean Energy Center |
| Sonrisa | Lucero | DOE - Office of Economic Impact and Diversity |
| Lauren | Lurkins | Illinois Farm Bureau |
| Khali | Abdegeo | UMASS Medical School/Baystate Hospital Community |
| Jolene | Mafnas | Climate Justice Alliance |

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| Mark | Magaña | GreenLatinos |
| Sam | Mardell | RMI |
| Larissa | Mark | EPA |
| Karen | Martin | Private Citizen |
| Anna | Martin | House Natural Resources Committee - Majority |
| Akilah | Martin | USACE |
| Marva | King | Retiree |
| Brendan | Mascarenhas | American Chemistry Council |
| Arsenio | Mataka | HHS |
| Shifali | Mathews | AECOM |
| Beth | Mattern | USDS |
| Henry | Mayer | CRESP - Vanderbilt University |
| Eileen | Mayer | US EPA |
| Catherine | Mazzocchi | Rockland County Environmental Management Council |
| Bud | McAllister | Partners in Healthy Communities |
| Mary | McCarron | Ohio EPA |
| Caitlin | McHale | National Mining Association |
| Roland | McKee | FAA |
| Dean | McMath | FAA |
| Rachel | Meidl | Baker Institute for Public Policy |
| Liat | Meitzenheimer | Fresh Air Vallejo |
| Trisha | Mejia | The Surfrider Foundation |
| Danielle | Mercurio | VNF |
| Hunter | Merritt | U.S. Army Corps of Engineers IWR |
| Debbie | Michel | East Bay Municipal Utility District (EBMUD) |
| Emily | Miller | Food & Water Watch |
| Mike | Miller | TCEQ |
| Kelly | Miller | Private Citizen |
| Vernice | Miller-Travis | Metropolitan Group |
| Melissa | Minor | General Services Administration |
| Katherine | Mlika | U.S. Digital Service |
| Lena | Moffitt | Evergreen Action |
| Jasmine | Moll | Healthy Gulf |
| Monica | Montejo | Alianza Nacional de Campesinas |
| Morgan | Moore | National Audubon Society |
| Chris | Moore | Eastman Chemical Co. - Kingsport, TN |
| Danilo | Morales | CSNDC |
| Olivia | Morgan | LSU |
| Sandra | Morse | Aegis Environmental Inc. |
| Brandon | Morton | Dallas College |
| Bridget | Moss | Private Citizen |
| John | Mueller | Private Citizen |
| Conor | Mulderrig | Grove Climate Group |

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|---|---|---|
| Phyllis | Mullenix | Private Citizen |
| Melissa | Muroff | Delaware County District Attorney's Office |
| Knowledge | Murphy | Multnomah County/Office of Sustainability |
| Sharmila | Murthy | CEQ |
| Olga | Naidenko | ENVIRONMENTAL WORKING GROUP |
| Tina | Ndoh | EPA |
| Emma | Nechamkin | USDS |
| Jonathan | Nelson | EPA |
| Lin | Nelson | Evergreen State College |
| Anuli | Njoku | SCSU |
| Wendy | Noreña | Deloitte |
| Marven | Norman | CCAEJ |
| Avriel | Null | Tennessee Valley Organization |
| Yamiles | Nunez | Alianza Nacional de Campesinas |
| Leanne | Nurse | The Nature Conservancy |
| Onyemaechi | Nweke | EPA |
| Maya | Nye | Coming Clean |
| Carlos | Ochoa | Azul |
| January | O'Connor | Raven's Group LLC |
| Teraine | Okpoko | Teraine Okpoko P.C. |
| Laura | Olah | Citizens for Safe Water Around Badger (CSWAB) |
| Ashley | Oleksiak | Alaska Dept. of Environmental Conservation |
| Sarah | Olsen | The Missouri Department of Natural Resources |
| John | Oluwaleye | Gender-Based Violence as a Public Health Issue |
| Danielle | O'Neil | Environmental Protection Agency |
| Gail | Orendorff | USDOT |
| Elyse | Osterweil | EPA |
| Kelsey | Owens | U.S. Department of Transportation |
| Anthony | Paciorek | Michigan United |
| Anthony | Pahnke | Alianza Nacional de Campesinas |
| Monica | Palmeira | Greenlining Institute |
| Kai | Palmer-Dunning | Home Energy Efficiency Team |
| Alex | Papali | Center for Economic Democracy/ United Frontline Table |
| George | Parra | Socially Immersed |
| Bryan | Parthum | EPA |
| Regan | Patterson | Congressional Black Caucus Foundation |
| Rachel | Patterson | Evergreen |
| William | Patterson | EBMUD (East Bay Municipal Utility District) |
| Charles | Pearson | Syngenta Crop Protection, LLC |
| Katharine | Pelzer | Aclima |
| Jodie | Peotter | Wisconsin DNR |
| Nestor | Perez | Earthjustice |
| Brett | Perlman | Center for Houston's Future |

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| Hannah | Perls | Harvard Environmental & Energy Law Program |
| Chris | Perrigan | Brightwater Strategies, PLLC |
| Rebecca | Perrin | EPA |
| Kandyce | Perry | New Jersey Department of Environmental Protection |
| Julie | Petersen | U.S. Department of Energy |
| Lucia | Petty | HUD, FHEO |
| Sarah | Phillips | Waste Connections |
| Lori | Pierce | USDOT |
| Andrew | Pike | Virginia Department of Transportation |
| Paul | Presendieu | New York State Association of Conservation Commissions |
| Reginald | Harris | USEPA |
| LeeAnn | Racz | ToxStrategies, Inc. |
| Carmita | Thompson | USDA, RD-Civil Rights |
| Maria | Rahim | Chevron |
| Betseygail | Rand | Private Citizen |
| Elise | Rasmussen | Washington State Department of Health |
| Amee | Raval | Asian Pacific Environmental Network |
| Shantha | Ready Alonso | Interior |
| Tony | Reames | DOE |
| Leslie | Reed | Brightwater strategies |
| Dawn | Reeves | Inside EPA |
| Mayra | Reiter | Farmworker Justice |
| Liz | Rettenmaier | Private Citizen |
| Monica | Reyes | Rancho Vista/Redwood Community Organization |
| Cinthia | Reyes | Private Citizen |
| Annette | Rich | WE ACT for Environmental Justice |
| Pinkham | Richard | Booz Allen Hamilton |
| Charissee | Ridgeway | CEQ |
| Marelyn | Rivera | NJDEP |
| Sarah | Rizvi | NYU Law |
| Washington, | Robert | FHWA |
| Christina | Robichaud | EPA |
| Donovan | Robinson | OMB |
| Phillip | Rodbell | CEQ |
| Alex | Rodriguez | Conduit Government Relations |
| Julie | Roemele | EPA |
| Marlene | Rojas | Alianza Nacional de Campesinas |
| Theresa | Romanosky | AAR |
| Angila | Romious | Otis College of Art and Design |
| Anne | Rosenblatt | EPA |
| Abigail | Ruskey | University of California - Merced |
| Naveena | Sadasivam | Grist |
| Kirstin | Safakas | EPA |

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|---|---|---|
| Adrien | Salazar | Grassroots Global Justice Alliance |
| Dulce | Salgado | Alianza Nacional de Campesinas |
| Allison | Sanborn | AECOM |
| Cynthia | Sanchez | IEPA |
| Steven | Sander | California Department of Resources Recovery and Recycling |
| Denise | Sarchiapone | B&D Environmental Consulting LLC |
| Mily | Sauceda | Alianza Nacional de Campesinas |
| Marisol | Saucedo | Alianza Nacional de Campesinas |
| Oral | Saulters | Tribal TAB |
| Hassanatu | Savage | Deloitte |
| Stephanie | Schlea | Association of State Drinking Water Administrators |
| Isabel | Segarra Trevino | Harris County Attorney (Texas) |
| Action | Service | MDEQ |
| Monisha | Shah | 20024 |
| Sachin | Shah | USGS |
| Vim | Shah | USDS |
| Preeti | Shankar | Center for Neighborhood Technology |
| Nayyirah | Shariff | Flint Rising |
| Natalie | Shepp | Pima County Department of Environmental Quality |
| Gina | Shirey | Alaska Department of Environmental Conservation |
| Jacqueline | Shirley | NEJAC and RCAC |
| Dave | Shukla | Long Beach Alliance for Clean Energy |
| Sarah | Sieloff | MFA |
| Jose | Silva | PLAN |
| Rachael | Singer | Private Citizen |
| Ross | Smith | North Carolina Manufacturers Alliance |
| Megan | Smith | shift7 |
| Christopher | Smith | Interstate Natural Gas Association of America |
| Sheldon | Snipe | Smart Set |
| Jessica | Snyder | EPA |
| Dan | Solitz | Private Citizen |
| Karen | Spencer | None |
| Ramsey | Sprague | Mobile Environmental Justice Action Coalition |
| Isabela | Blackburn | Washington Unversity in St. Louis |
| Joanna | Stancil | USDA-Forest Service |
| Anastasia | Standrik | The JPB Foundation |
| Lucy | Stanfield | EPA |
| Erik | Stanfield | Navajo Nation |
| Rebecca | Stearns | Southern CT State University |
| Claire | Still | AECOM |
| Craig | Stroman | USDA-Civil Rights Office |
| Callie | Struby | Deloitte |

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| Asher | Sullivan | Private Citizen |
| Kate | Sullivan | Great Plains Institute |
| Mitchell | Sumner | EPA |
| Katy | Super | Environmental justice health alliance |
| Feleena | Sutton | Aera Energy |
| Constance | Sutton | Private Citizen |
| Kristy | Swartz | DOI -OWF |
| Sandra | Talley | NRC |
| James | Tanner | DOE-Savannah River |
| Philip | Tannian | US Ecology Inc. |
| Patricia | Taylor | Environment and Human Health, Inc. |
| Theresa | Taylor | US Dept. of the Interior - Bureau of Reclamation |
| Romona | Taylor Williams | MCUP |
| Andrea | Thi | Federal Government, Department of JUSTICE |
| Ron | Thomas | EPA |
| Susan | Thomas | Just Transition NWI |
| Tami | Thomas-Burton | EPA |
| Suzanne | Thornsbury | USDA |
| Demi | Tighe | DOT/FAA |
| Amber | Tilley | EPA |
| Analisa | Toma | NACD |
| Jackie | Toth | Good Energy Collective |
| Samantha | Tremaine | General Services Administration |
| Kathy | Triantafillou | EPA |
| Rebecca | Truka | Hexion Inc |
| Liz | Upchurch | TVA |
| Karen | Utt | TVA |
| Venus | Uttchin | Private Citizen |
| Enrique | Valdivia | texas rio grande legal aid, inc |
| Angie | Vandell | USDA RD |
| Cynthia | Garcia | Alianza Nacional de Campesinas, Inc. |
| Gloria | Vaughn | EPA |
| Cristina | Villa | Department of the Interior |
| Ashley | Voskuhl | ASDWA |
| Rachel | Vranizan | California Environmental Justice Alliance |
| Carla | Walker | World Resources Institute |
| Maria | Wallace | EPA |
| Margaret | Walls | Resources for the Future |
| Charlene | Wang | DOT |
| Michelle | Ward | Private Citizen |
| Phillip | Washington | USDA |
| Michon | Washington | FAA |
| Melissa | Schutten | Puget Sound Partnership |

| | | |
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| Cheryl | Watson | Blacks In Green |
| Eric | Werwa | Department of the Interior |
| Sue | Westerberg | Southern CT state university |
| T'Shari | White | UNC Greensboro |
| Chad | Whiteman | U.S. Chamber of Commerce |
| Jalonne | White-Newsome | Empowering A Green Environment and Economy, LLC |
| Devlin | Whiteside | Owens Corning |
| Kevin | Wickersham | Hudson Center for Community and Environment Inc |
| Wesley | Wiggins | EPA |
| Adam | Wilke | USDA NIFA |
| Jane | Williams | California Communities Against Toxics |
| Keisha | Williams | State of Michigan |
| Clarence | Williams | Tecolote Perch |
| Deborah | Williams | CWLP |
| MJ | Wilson | FEMA |
| Michele | Witt | USDA Rural Development |
| Leah | Wood | Washington State Department of Health |
| D | Wu | NYS OAG - EPB |
| Timothy | Wu | USDA |
| Zach | Yamada | WPRFMC |
| naomi | yoder | Healthy Gulf |
| Suzanne | Yohannan | Inside EPA's Superfund Report |
| Dondre | Young | Office of U.S. Senator Debbie Stabenow |
| Rachel | Young | EOP/CEQ |
| Matthew | Young | BeechWood Inc. |
| Tariq | Zahran | EVHybridNoire |
| Rachel | Zander | Department of Natural Resources |
| Hilary | Zarin | DOI |
| Steven | Zuiss | Koch |
| Ariela | Zycherman | NOAA |

I, Richard Moore, Co-Chair of the White House Environmental Justice Advisory Council, certify that this is the final meeting summary for the public meeting held on March 30-31, 2022, and it accurately reflects the discussions and decisions of the meeting.

Richard Moore

I, Peggy Shepard, Co-Chair of the White House Environmental Justice Advisory Council, certify that this is the final meeting summary for the public meeting held on March 30-31, 2022, and it accurately reflects the discussions and decisions of the meeting.

Peggy Shepard